

# RamGautam\_Project

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## 1 Pest Counts in NH Corn Farms

```
In [1]: # Ram Gautam
        # University of New Hampshire
        # Computer Science

In [2]: import pandas as pd
        from patsy import dmatrices
        import numpy as np
        import statsmodels.api as sm
        import matplotlib.pyplot as plt

In [3]: import seaborn as sns
        from sklearn.model_selection import train_test_split
        from sklearn.linear_model import LinearRegression
        from sklearn import metrics

In [4]: import statsmodels.formula.api as smf
        import statsmodels.api as sm

In [5]: from scipy.interpolate import *

In [6]: %matplotlib inline
```

## 2 1. Multiple Linear Regression

```
In [7]: def Multiple_Linear_Regression(df_LinearRegression):
        #print (df_CEW_final.head())
        #print("Calling Multiple Linear Regression Modle")
        #print(sns.distplot(df_CEW_final['trap_count']))
        X_LR = df_LinearRegression[['tempf', 'dwpf', 'drct', 'feel']]
        y_LR = df_LinearRegression['trap_count']

        #splitting data into training and testing data
        X_train_lm, X_test_lm, y_train_lm,y_test_lm = train_test_split(X_LR,y_LR, test_size=0.2)
        #traing the data into the model
        regressionModel = LinearRegression()
```

```

regressionModel.fit(X_train_lm, y_train_lm)

#get the intercept
print("Intercept: " , regressionModel.intercept_)

#get the coeffecients
print("Coeffecients " , regressionModel.coef_)

#do the predictions - we need to pass the featuress that the model never seen before
predictions = regressionModel.predict(X_test_lm)
predictions_ret = regressionModel.predict(X_LR)
print(predictions.shape)

#print(y_test_lm)

#cheeking with the scatter plot
plt.scatter(y_test_lm , predictions)
plt.savefig('linearRegression.png')

print("----- Linear Regression Evaluations-----")
print("Mean Absolute Error (MAE): ", metrics.mean_absolute_error(y_test_lm , predictions))
print("Mean Squared Error (MSE): ", metrics.mean_squared_error(y_test_lm , predictions))
print("Root Mean Squared Error (RMSE): ", np.sqrt(metrics.mean_squared_error(y_test_lm , predictions)))

#sns.distplot((y_test_lm - predictions))
df_LinearRegression['regression_count'] = predictions_ret

#converting into integer
df_LinearRegression['regression_count'] = df_LinearRegression['regression_count'].astype(int)

return df_LinearRegression

```

## 3 2. Poisson Regression

```

In [8]: def Poisson_Regression(df_Poisson_Regression, pest, farm):

    equation = """trap_count ~ tempf + dwpf + drct + feel"""

    #setting up trainig and testing data set
    y_train, X_train = dmatrices(equation, df_Poisson_Regression, return_type='dataframe')
    y_test, X_test = dmatrices(equation, df_Poisson_Regression, return_type='dataframe')

    #setting up poission regression modle
    poisson_training_results = sm.GLM(y_train, X_train, family=sm.families.Poisson()).fit()

    #making the summary of Poisson Regression
    print(poisson_training_results.summary())

```

```

#predictions of the results
poisson_predictions = poisson_training_results.get_prediction(X_test)

predictions_summary_frame = poisson_predictions.summary_frame()
print(predictions_summary_frame)

#the original count from the data frame
actual_counts = y_test['trap_count']

#the predicted poission count
poisson_count = predictions_summary_frame['mean']

#making scatter plot here

plt.clf()
fig = plt.figure()
fig.suptitle('Poisson Regression Scatter plot' + pest + " on " + farm + "Farm")
plt.scatter(x=poisson_count, y=actual_counts, marker='o')

z = np.polyfit(poisson_count, actual_counts, 1)
p = np.poly1d(z)
plt.plot(poisson_count, p(poisson_count), "r--")

plt.xlabel('Poisson counts')
plt.ylabel('Actual counts')
plt.savefig('Poisson'+ pest + farm + '.png')
plt.show()

#assigning the poission count here --
farm = farm.strip()
if farm == "all":
    df_Poisson_Regression['poisson_count'] = poisson_count
    df_Poisson_Regression['poisson_count'] = df_Poisson_Regression['poisson_count']
else:
    df_Poisson_Regression['poisson_count_farm'] = poisson_count
    df_Poisson_Regression['poisson_count_farm'] = df_Poisson_Regression['poisson_count_farm']

return df_Poisson_Regression

```

## 4 3. Negative Binomial Regression

```

In [9]: def Negative_Binomial_Regression(df_Negative_Binomial_Regression, pest, farm):

    if farm == "all":
        df_Negative_Binomial_Regression.drop('poisson_count', axis=1, inplace=True)

```

```

equation = """trap_count ~ tempf + dwpf + drct + feel"""

#setting up trainig and testing data set
y_train, X_train = dmatrices(equation, df_Negative_Binomial_Regression, return_type='matrix')
y_test, X_test = dmatrices(equation, df_Negative_Binomial_Regression, return_type='matrix')

#setting up poission regression modle
poisson_training_results = sm.GLM(y_train, X_train, family=sm.families.Poisson()).fit()

#making the summary of Poisson Regression
#print(poisson_training_results.summary())

#predictions of the results
poisson_predictions = poisson_training_results.get_prediction(X_test)
predictions_summary_frame = poisson_predictions.summary_frame()
#print(predictions_summary_frame)

#adding lamda vector for negative binomial regression
df_Negative_Binomial_Regression['LAMBDA'] = poisson_training_results.mu

#adding dispersion value
df_Negative_Binomial_Regression['AUX_OLS_DEP'] = df_Negative_Binomial_Regression.aux_ols_dep

#defining ols expression
ols_expr = """AUX_OLS_DEP ~ LAMBDA - 1"""

#getting olsr results
aux_olsr_results = smf.ols(ols_expr, df_Negative_Binomial_Regression).fit()

#defining negative binomial regression model
M2_NB = sm.GLM(y_train, X_train, family=sm.families.NegativeBinomial(alpha = aux_olsr_results.pval)).fit()

print(M2_NB.summary())

M2_NB_pred = M2_NB.get_prediction(X_test)
predictions_summary_frame = M2_NB_pred.summary_frame()

print(predictions_summary_frame)

#counts after negative binomial regression
NB_counts=predictions_summary_frame['mean']

#actual counts
NB_actual_counts = y_test['trap_count']

#making scatter plot here
plt.clf()

```

```

fig = plt.figure()
fig.suptitle('Negative Binomial Regression Scatter plot' + pest + " on " + farm + " ")
plt.scatter(x=NB_counts, y=NB_actual_counts, marker='x')

z = np.polyfit(NB_counts, NB_actual_counts, 1)
p = np.poly1d(z)
plt.plot(NB_counts, p(NB_counts), "r--")

plt.xlabel('Negative Binomial counts')
plt.ylabel('Actual counts')
plt.savefig('Negative Binomial ' + pest + farm + '.png')
plt.show()

#assigning the poisson count here --
#df_Negative_Binomial_Regression['NB_count_farm'] = NB_counts

farm = farm.strip()
if farm == "all":
    #df_Poisson_Regression['poisson_count'] = poisson_count
    df_Negative_Binomial_Regression['NB_count'] = NB_counts
    df_Negative_Binomial_Regression['NB_count'] = df_Negative_Binomial_Regression['NB_count']

else:
    #df_Poisson_Regression['poisson_count_farm'] = poisson_count
    df_Negative_Binomial_Regression['NB_count_farm'] = NB_counts
    df_Negative_Binomial_Regression['NB_count_farm'] = df_Negative_Binomial_Regression['NB_count_farm']

df_Negative_Binomial_Regression.drop('LAMBDA', axis=1, inplace=True)
df_Negative_Binomial_Regression.drop('AUX_OLS_DEP', axis=1, inplace=True)

return df_Negative_Binomial_Regression

```

In [10]: *#Reading the Original data frame*

```
df = pd.read_csv('pest_traps.csv', header=0, infer_datetime_format=True, parse_dates=
```

In [11]: df.shape

Out[11]: (12434, 7)

## 5 Bulding CEW DataFrame

In [12]: *#dividing the dataframe based on each pests - pest CEW*

```
df_CEW = df.loc[['CEW'], ['farm', 'trap_count', 'year', 'date']]
```

In [13]: df\_CEW.head()

```
Out[13]:
```

	farm	trap_count	year	date
pest				
CEW	Pelham-G	0	2006	20060619
CEW	Litchfield-W	0	2006	20060619
CEW	Litchfield-M	0	2006	20060619
CEW	Merrimack-T	0	2006	20060619
CEW	Hollis-L	1	2006	20060619

```
In [14]: df_CEW.tail()
```

```
Out[14]:
```

	farm	trap_count	year	date
pest				
CEW	Hollis-K	3	2018	20181008
CEW	Hollis-B2	0	2018	20181008
CEW	Hollis-L	8	2018	20181008
CEW	Hollis-K	3	2018	20181015
CEW	Hollis-L	2	2018	20181015

```
In [15]: df_CEW.shape
```

```
Out[15]: (3626, 4)
```

```
In [16]: from datetime import date
```

```
def compute_weeks(startDate, endDate):
    s_yyyy = str(startDate)[0:4]
    s_mm = str(startDate)[5:7]
    s_dd = str(startDate)[8:10]

    d1 = date(int(s_yyyy),int(s_mm),int(s_dd))

    e_yyyy = str(endDate)[0:4]
    e_mm = str(endDate)[5:7]
    e_dd = str(endDate)[8:10]

    d2 = date(int(e_yyyy),int(e_mm),int(e_dd))

    return (int((d2-d1).days / 7))

def convert_pandasDate(change_date):
    change_date = str(change_date)[:4] + "/" + str(change_date)[4:6] + "/" + str(change_date)[6:]
    change_date = pd.to_datetime(change_date)
    return (change_date)
```

```
In [17]: start_cek_date = df_CEW['date'].values[0]
search_cek_STdate = convert_pandasDate(start_cek_date)

end_cek_date = df_CEW['date'].values[3626-1]
```

```

search_cek_ENDdate = convert_pandasDate(end_cek_date)

df_CEW['date'] = df_CEW['date'].apply(convert_pandasDate)
#df_CEW['date'] = pd.to_datetime(df_CEW['date'])

print(search_cek_STdate)
print(search_cek_ENDdate)

print("total weeks " , compute_weeks(search_cek_STdate, search_cek_ENDdate))

```

```

2006-06-19 00:00:00
2018-10-15 00:00:00
total weeks 643

```

```
In [18]: df_CEW['date'] = pd.to_datetime(df_CEW['date'])
```

## 6 Building ECB DataFrame

```
In [19]: #dividing the dataframe based on each pests - pest ECB
df_ECB = df.loc[['ECB'], ['farm', 'trap_count', 'year', 'date']]
```

```
In [20]: df_ECB.head()
```

```
Out[20]:
```

	farm	trap_count	year	date
pest				
ECB	Litchfield-W	16	2006	20060619
ECB	Hollis-B	7	2006	20060619
ECB	Mason-B	11	2006	20060619
ECB	Litchfield-W	25	2006	20060626
ECB	Hollis-B	31	2006	20060626

```
In [21]: df_ECB.tail()
```

```
Out[21]:
```

	farm	trap_count	year	date
pest				
ECB	Hollis-JL-Pl	0	2018	20180924
ECB	Peterborough-R	0	2018	20180924
ECB	Mason-B	0	2018	20180924
ECB	NewIpswich-B	0	2018	20180924
ECB	Milford-M	0	2018	20180924

```
In [22]: df_ECB.shape
```

```
Out[22]: (4979, 4)
```

```
In [23]: start_cek_date = df_ECB['date'].values[0]
search_cek_STdate = convert_pandasDate(start_cek_date)
```

```

end_ecb_date = df_ECB['date'].values[4979-1]
search_ecb_ENDdate = convert_pandasDate(end_cew_date)

df_ECB['date'] = df_ECB['date'].apply(convert_pandasDate)

print(search_ecb_STdate)
print(search_ecb_ENDdate)

print("total weeeeks " , compute_weeks(search_ecb_STdate, search_ecb_ENDdate))

```

```

2006-06-19 00:00:00
2018-10-15 00:00:00
total weeeeks 643

```

```
In [24]: df_ECB['date'] = pd.to_datetime(df_ECB['date'])
```

## 7 Building FAW DataFrame

```
In [25]: #dividing the dataframe based on each pests - pest FAW
df_FAW = df.loc[['FAW'], ['farm', 'trap_count', 'year', 'date']]
```

```
In [26]: df_FAW.head()
```

```
Out[26]:
```

	farm	trap_count	year	date
pest				
FAW	Pelham-G	0	2006	20060619
FAW	Litchfield-W	0	2006	20060619
FAW	Litchfield-M	0	2006	20060619
FAW	Merrimack-T	0	2006	20060619
FAW	Hollis-L	0	2006	20060619

```
In [27]: df_FAW.tail()
```

```
Out[27]:
```

	farm	trap_count	year	date
pest				
FAW	Antrim-T	0	2018	20181001
FAW	Milford-M	0	2018	20181001
FAW	Hollis-B2	0	2018	20181008
FAW	Hollis-L	2	2018	20181008
FAW	Hollis-L	3	2018	20181015

```
In [28]: df_FAW.shape
```

```
Out[28]: (3829, 4)
```

```
In [29]: start_faw_date = df_FAW['date'].values[0]
search_faw_STdate = convert_pandasDate(start_cew_date)
```



```

end_faw_date = df_FAW['date'].values[3829-1]
search_faw_ENDdate = convert_pandasDate(end_cew_date)

df_FAW['date'] = df_FAW['date'].apply(convert_pandasDate)

print(search_faw_STdate)
print(search_faw_ENDdate)

print("total weeeeks " , compute_weeks(search_faw_STdate, search_faw_ENDdate))

```

```

2006-06-19 00:00:00
2018-10-15 00:00:00
total weeeeks 643

```

```
In [30]: df_FAW['date'] = pd.to_datetime(df_FAW['date'])
```

## 8 NOAA DATA - Weather Data

```
In [31]: df_NOOA = pd.read_csv('DAW.csv', header=0)
```

```

/anaconda3/lib/python3.6/site-packages/IPython/core/interactiveshell.py:2785: DtypeWarning: Co
interactivity=interactivity, compiler=compiler, result=result)

```

```
In [32]: df_NOOA.shape
```

```
Out[32]: (473979, 29)
```

```
In [33]: df_NOOA.columns
```

```

Out[33]: Index(['station', 'valid', 'tmpf', 'dwpf', 'relh', 'drct', 'sknt', 'p01i',
                'alti', 'mslp', 'vsby', 'gust', 'skyc1', 'skyc2', 'skyc3', 'skyc4',
                'skyl1', 'skyl2', 'skyl3', 'skyl4', 'wxcodes', 'ice_accretion_1hr',
                'ice_accretion_3hr', 'ice_accretion_6hr', 'peak_wind_gust',
                'peak_wind_drct', 'peak_wind_time', 'feel', 'metar'],
                dtype='object')

```

```
In [34]: df_equation = df_NOOA[['tmpf', 'dwpf', 'drct', 'feel', 'valid']]
df_equation.head()
```

```

Out[34]:
   tmpf  dwpf  drct  feel  valid
0  24.80  10.40  60.0  20.46  1/1/06 0:38
1  24.08  10.04  80.0  19.63  1/1/06 0:51
2  21.92  15.98  20.0  13.39  1/1/06 1:51
3  21.20  17.60  30.0  11.61  1/1/06 2:15
4  21.92  17.06  30.0  13.39  1/1/06 2:51

```

```
In [35]: df_equation['valid'] = pd.to_datetime(df_equation['valid'])
```

```
/anaconda3/lib/python3.6/site-packages/ipykernel_launcher.py:1: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: <http://pandas.pydata.org/pandas-docs/stable/indexing.html>  
"""Entry point for launching an IPython kernel.

```
In [36]: print(search_cew_STdate)
         print(search_cew_ENDdate)
```

```
2006-06-19 00:00:00
2018-10-15 00:00:00
```

## 9 selecting weather dataframe within the date range - CEW Pest

```
In [37]: #selecting the dataframe within the range - CEW Pest
         #df_equation = df_equation.loc[(df_equation['valid'] >= search_st_date) & (df_equation['valid'] <= search_ew_enddate)]
         df_equation = df_equation.loc[(df_equation['valid'] >= search_cew_STdate) & (df_equation['valid'] <= search_cew_ENDdate)]
```

```
In [38]: #need to get all the columns from here and sum up fro every week
         #select date and each column, and find the average for each column
         df_tempf = df_equation[['tmpf', 'dwpf', 'drct', 'feel', 'valid']]
         df_tempf["tmpf"] = df_tempf["tmpf"].fillna(0)
         df_tempf["dwpf"] = df_tempf["dwpf"].fillna(0)
         df_tempf["drct"] = df_tempf["drct"].fillna(0)
         df_tempf["feel"] = df_tempf["feel"].fillna(0)
```

```
In [39]: df_tempf.tail()
```

```
Out[39]:
```

	tmpf	dwpf	drct	feel	valid
341757	0.0	0.0	0.0	0.0	2018-10-14 23:35:00
341758	0.0	0.0	190.0	0.0	2018-10-14 23:40:00
341759	0.0	0.0	0.0	0.0	2018-10-14 23:50:00
341760	46.0	39.9	0.0	46.0	2018-10-14 23:51:00
341761	0.0	0.0	0.0	0.0	2018-10-14 23:55:00

```
In [40]: #df_tempf
```

```
In [41]: from datetime import date
```

```
def getweekly_temperature(df_tempf,CEW_weather_data_dic):

    week_counts = 0

    count = 0
    temp_index = 0
```

```

count_day0 = 0
count_day1 = 0
count_day2 = 0
count_day3 = 0
count_day4 = 0
count_day5 = 0
count_day6= 0
totaldays = 0

temperature = 0
dewTemp = 0
winDir = 0
feelTemp = 0

#empty sets for all the values
lst_tempf = []
lst_dwpf = []
lst_drct = []
lst_feel = []
lst_date = []

for i , j in df_tempf.iterrows():

    if count ==0:
        row = (i,j)
        #print(row[1][1])
        #initial_date = row[1][1]
        initial_date = row[1][4]
        f_yyyy = str(initial_date)[0:4]
        f_mm = str(initial_date)[5:7]
        f_dd = str(initial_date)[8:10]
        f_date = date(int(f_yyyy),int(f_mm),int(f_dd))

        row_data = (i,j)
        #print(row_data)
        #summing up the temperature
        #temperature = row_data[1][0]
        temperature = temperature + row_data[1][0]
        dewTemp = dewTemp + row_data[1][1]
        winDir = winDir + row_data[1][2]
        feelTemp = feelTemp + row_data[1][3]

        #last_date = row_data[1][1]
        last_date = row_data[1][4]
        l_yyyy = str(last_date)[0:4]
        l_mm = str(last_date)[5:7]
        l_dd = str(last_date)[8:10]

```

```

l_date = date(int(l_yyyy),int(l_mm),int(l_dd))

#change in date
delta = l_date - f_date
#print (delta.days)
if delta.days%7 == 0:
    week_counts = week_counts + 1

if delta.days == 0:
    count_day0 = count_day0 + 1
elif delta.days == 1:
    count_day1 = count_day1 + 1
elif delta.days == 2:
    count_day2 = count_day2 + 1
elif delta.days == 3:
    count_day3 = count_day3 + 1
elif delta.days == 4:
    count_day4 = count_day4 + 1
elif delta.days == 5:
    count_day5 = count_day5 + 1
elif delta.days == 6:
    count_day6 = count_day6 + 1
#elif delta.days == 7:
else:
    #compute average temperature
    totaldays = count_day0 + count_day1 + count_day2 + count_day3 + count_day4 + count_day5 + count_day6

    avg_Temp = temperature/totaldays
    avg_dewTemp = dewTemp/totaldays
    avg_winDir = winDir/totaldays
    avg_feelTemp = feelTemp/totaldays

    #appending values to the list
    lst_tempf.append(avg_Temp)
    lst_dwpf.append(avg_dewTemp)
    lst_drct.append(avg_winDir)
    lst_feel.append(avg_feelTemp)

    lst_date.append(f_date)
    #print(f_date)

    #get the start date
    #put all into the date frame

    temp_index = temp_index + 1

    #flush the date
    f_date = l_date

```

```

        #flush days count
        count_day0 = 0
        count_day1 = 0
        count_day2 = 0
        count_day3 = 0
        count_day4 = 0
        count_day5 = 0
        count_day6 = 0

        #flushing all the records ---- temperature
        temperature = 0
        dewTemp = 0
        winDir = 0
        feelTemp = 0

        #initialize the repetition
        count = count + 1

    print("total temperature index ", temp_index)
    print("total weeks: ", week_counts)

    #assigning list to the dictionary
    CEW_weather_data_dic['tempf'] = lst_tempf
    CEW_weather_data_dic['dwpf'] = lst_dwpf
    CEW_weather_data_dic['drct'] = lst_drct
    CEW_weather_data_dic['feel'] = lst_feel
    CEW_weather_data_dic['date'] = lst_date

    #return CEW_weather_data_dic
    #print(df_tempf)

```

```

In [42]: #calling getweekly_temperature
         CEW_weather_data_dic = {}
         getweekly_temperature(df_tempf,CEW_weather_data_dic)

```

```

total temperature index  642
total weeks:  47922

```

```

In [43]: #creating data frame needed for equation
         #print(CEW_weather_data_dic)
         df_CEW_weather = pd.DataFrame(CEW_weather_data_dic)

```

```

In [44]: df_CEW_weather.head()

```

```

Out[44]:
```

	tempf	dwpf	drct	feel	date
0	70.977613	63.913169	63.703704	71.301399	2006-06-19
1	71.243468	65.095887	84.233871	71.733347	2006-06-26

```

2  71.056485  59.203758  127.515152  71.263273  2006-07-03
3  71.830909  66.491782   59.745455  72.608255  2006-07-10
4  73.200175  66.515808  101.004367  74.150786  2006-07-17

```

```
In [45]: df_CEW_weather.tail()
```

```

Out[45]:
   tempf  dwpf  drct  feel  date
637  6.936188  6.288330  156.129550  6.983009  2018-09-03
638  9.211018  8.905188  113.670949  9.217243  2018-09-10
639  7.760753  7.281021  110.056730  7.728195  2018-09-17
640  6.692446  6.180576  161.330935  6.548972  2018-09-24
641  7.799536  7.509856  134.674923  7.750764  2018-10-01

```

```
In [46]: df_CEW['date'] = df_CEW['date'].dt.date
```

```
In [47]: df_CEW_weather['date'] = pd.to_datetime(df_CEW_weather['date'])
```

```
In [48]: df_CEW_weather['date'] = df_CEW_weather['date'].dt.date
```

```
In [49]: df_CEW_final = df_CEW.merge(df_CEW_weather, on='date')
```

## 10 Pest Trap Predictions - CEW

```
In [50]: df_CEW_final.columns
```

```
Out[50]: Index(['farm', 'trap_count', 'year', 'date', 'tempf', 'dwpf', 'drct', 'feel'], dtype=
```

## 11 1. Multiple Linear Regression using all data

```
In [51]: df_CEW_final = Multiple_Linear_Regression(df_CEW_final)
```

```
Intercept: 8.848344854621619
```

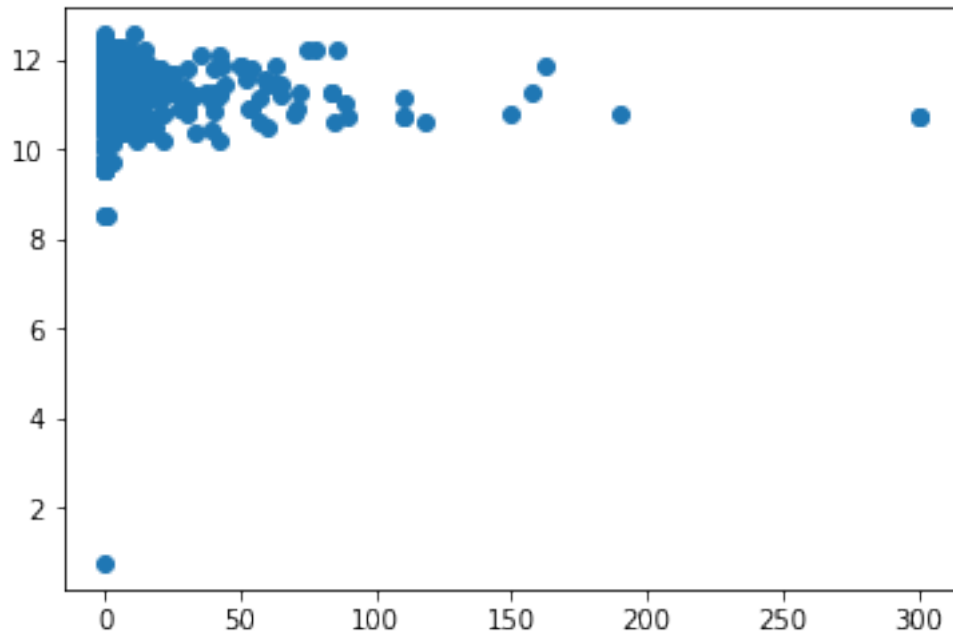
```
Coeffecients [-0.71959129  0.03611909  0.02071853  0.68803956]
(515,)
```

```
----- Linear Regression Evaluations-----
```

```
Mean Absolute Error (MAE): 14.705005947180688
```

```
Mean Squared Error (MSE): 860.9897652483703
```

```
Root Mean Squared Error (RMSE): 29.342627102022924
```



```
In [52]: df_CEW_final.head()
```

```
Out [52]:
```

	farm	trap_count	year	date	tempf	dwpf \
0	Pelham-G	0	2006	2006-06-19	70.977613	63.913169
1	Litchfield-W	0	2006	2006-06-19	70.977613	63.913169
2	Litchfield-M	0	2006	2006-06-19	70.977613	63.913169
3	Merrimack-T	0	2006	2006-06-19	70.977613	63.913169
4	Hollis-L	1	2006	2006-06-19	70.977613	63.913169

	drct	feel	regression_count
0	63.703704	71.301399	10
1	63.703704	71.301399	10
2	63.703704	71.301399	10
3	63.703704	71.301399	10
4	63.703704	71.301399	10

## 12 2. Poisson Regression using all data

```
In [53]: df_CEW_final = Poisson_Regression(df_CEW_final, " CEW ", " all ")
```

```

Generalized Linear Model Regression Results
=====
Dep. Variable:          trap_count    No. Observations:      2571
Model:                  GLM          Df Residuals:            2566
Model Family:           Poisson      Df Model:                4

```

Link Function: log Scale: 1.0000  
 Method: IRLS Log-Likelihood: -41041.  
 Date: Fri, 08 May 2020 Deviance: 75750.  
 Time: 08:03:41 Pearson chi2: 1.55e+05  
 No. Iterations: 6 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	2.2900	0.042	54.923	0.000	2.208	2.372
tempf	-0.0907	0.008	-12.012	0.000	-0.106	-0.076
dwpf	-0.0165	0.003	-6.496	0.000	-0.021	-0.012
drct	0.0014	0.000	5.331	0.000	0.001	0.002
feel	0.1047	0.007	14.292	0.000	0.090	0.119

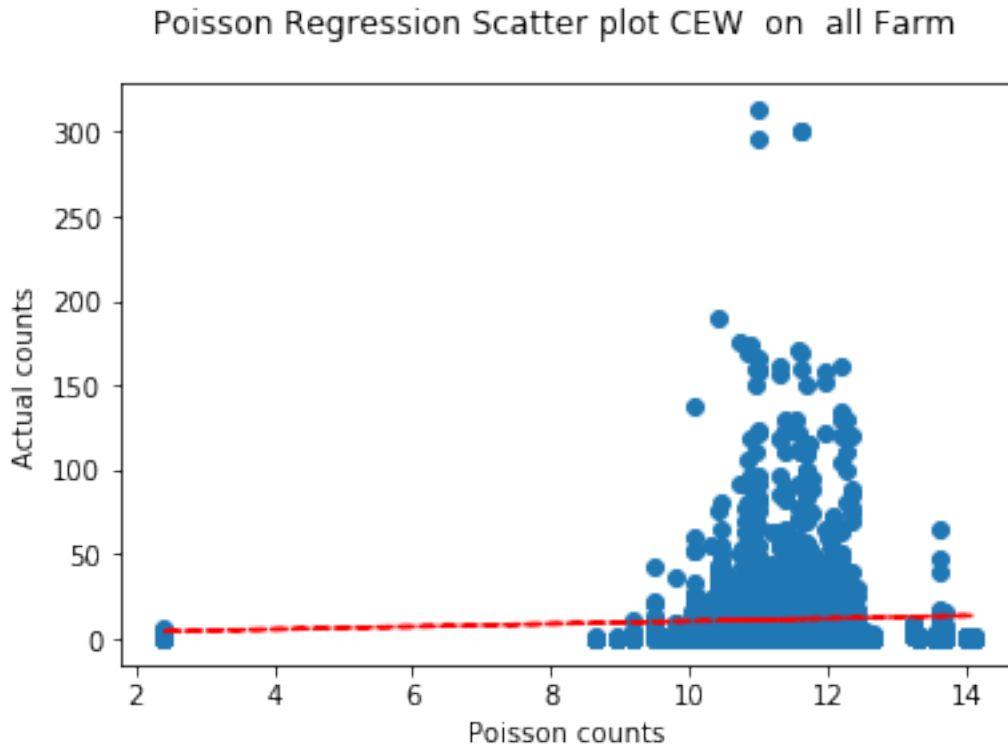
	mean	mean_se	mean_ci_lower	mean_ci_upper
0	10.502287	0.121299	10.267216	10.742741
1	10.502287	0.121299	10.267216	10.742741
2	10.502287	0.121299	10.267216	10.742741
3	10.502287	0.121299	10.267216	10.742741
4	10.502287	0.121299	10.267216	10.742741
5	10.502287	0.121299	10.267216	10.742741
6	10.502287	0.121299	10.267216	10.742741
7	10.502287	0.121299	10.267216	10.742741
8	10.502287	0.121299	10.267216	10.742741
9	10.502287	0.121299	10.267216	10.742741
10	10.502287	0.121299	10.267216	10.742741
11	10.824663	0.103944	10.622843	11.030318
12	10.824663	0.103944	10.622843	11.030318
13	10.824663	0.103944	10.622843	11.030318
14	10.824663	0.103944	10.622843	11.030318
15	10.824663	0.103944	10.622843	11.030318
16	10.824663	0.103944	10.622843	11.030318
17	10.824663	0.103944	10.622843	11.030318
18	10.824663	0.103944	10.622843	11.030318
19	10.824663	0.103944	10.622843	11.030318
20	10.824663	0.103944	10.622843	11.030318
21	10.824663	0.103944	10.622843	11.030318
22	12.268939	0.116009	12.043660	12.498433
23	12.268939	0.116009	12.043660	12.498433
24	12.268939	0.116009	12.043660	12.498433
25	12.268939	0.116009	12.043660	12.498433
26	12.268939	0.116009	12.043660	12.498433
27	12.268939	0.116009	12.043660	12.498433
28	12.268939	0.116009	12.043660	12.498433
29	12.268939	0.116009	12.043660	12.498433
...	...	...	...	...
2541	11.342433	0.197355	10.962146	11.735912
2542	11.342433	0.197355	10.962146	11.735912



2543	11.342433	0.197355	10.962146	11.735912
2544	12.080906	0.207162	11.681623	12.493836
2545	12.080906	0.207162	11.681623	12.493836
2546	12.080906	0.207162	11.681623	12.493836
2547	12.080906	0.207162	11.681623	12.493836
2548	12.080906	0.207162	11.681623	12.493836
2549	12.080906	0.207162	11.681623	12.493836
2550	12.080906	0.207162	11.681623	12.493836
2551	12.080906	0.207162	11.681623	12.493836
2552	12.080906	0.207162	11.681623	12.493836
2553	12.080906	0.207162	11.681623	12.493836
2554	12.080906	0.207162	11.681623	12.493836
2555	12.080906	0.207162	11.681623	12.493836
2556	12.080906	0.207162	11.681623	12.493836
2557	12.080906	0.207162	11.681623	12.493836
2558	12.080906	0.207162	11.681623	12.493836
2559	12.080906	0.207162	11.681623	12.493836
2560	12.080906	0.207162	11.681623	12.493836
2561	11.680781	0.185481	11.322844	12.050034
2562	11.680781	0.185481	11.322844	12.050034
2563	11.680781	0.185481	11.322844	12.050034
2564	11.680781	0.185481	11.322844	12.050034
2565	11.680781	0.185481	11.322844	12.050034
2566	11.680781	0.185481	11.322844	12.050034
2567	11.680781	0.185481	11.322844	12.050034
2568	11.680781	0.185481	11.322844	12.050034
2569	11.680781	0.185481	11.322844	12.050034
2570	11.680781	0.185481	11.322844	12.050034

[2571 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



### 13 3. Negative Binomial Regression using all data

```
In [54]: df_CEW_final = Negative_Binomial_Regression(df_CEW_final, " CEW ", " all ")
```

#### Generalized Linear Model Regression Results

```
=====
Dep. Variable:          trap_count    No. Observations:          2571
Model:                  GLM          Df Residuals:                2566
Model Family:          NegativeBinomial    Df Model:                  4
Link Function:          log            Scale:                    1.0000
Method:                 IRLS          Log-Likelihood:           -21422.
Date:                   Fri, 08 May 2020    Deviance:                 35463.
Time:                   08:03:41          Pearson chi2:             8.07e+04
No. Iterations:         9                Covariance Type:         nonrobust
=====
```

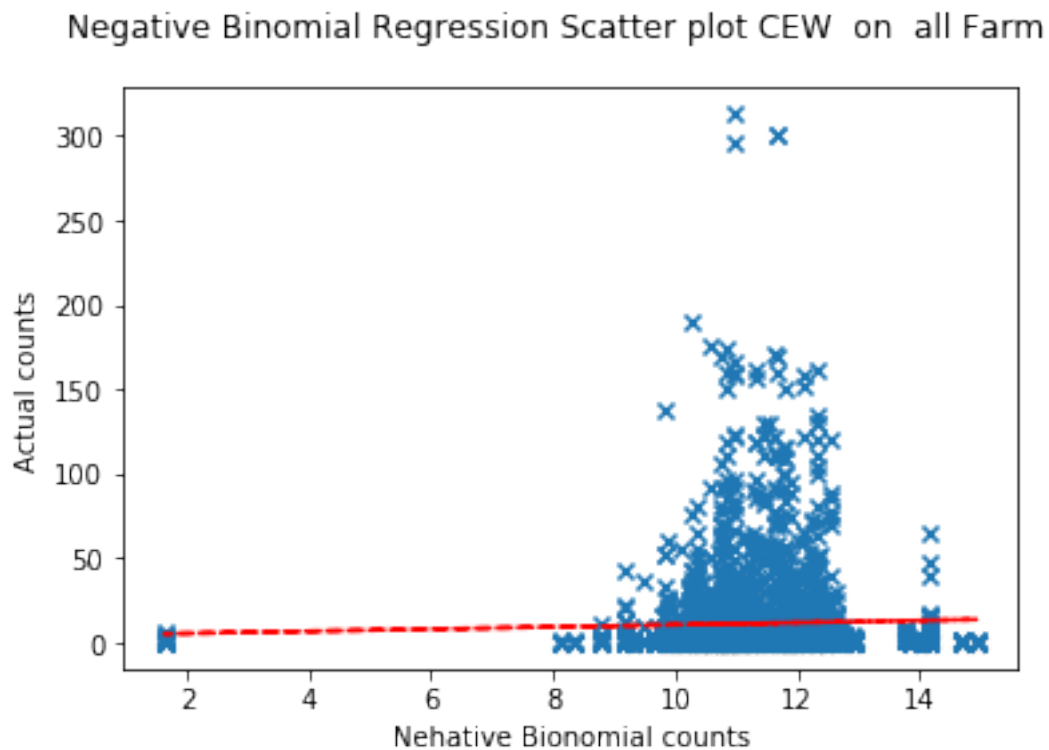
	coef	std err	z	P> z	[0.025	0.975]
Intercept	2.2547	0.058	38.913	0.000	2.141	2.368
tempf	-0.1137	0.010	-11.283	0.000	-0.134	-0.094
dwpf	-0.0196	0.004	-5.554	0.000	-0.027	-0.013
drct	0.0017	0.000	4.569	0.000	0.001	0.002
feel	0.1306	0.010	13.363	0.000	0.111	0.150

=====				
	mean	mean_se	mean_ci_lower	mean_ci_upper
0	10.402834	0.165452	10.083557	10.732221
1	10.402834	0.165452	10.083557	10.732221
2	10.402834	0.165452	10.083557	10.732221
3	10.402834	0.165452	10.083557	10.732221
4	10.402834	0.165452	10.083557	10.732221
5	10.402834	0.165452	10.083557	10.732221
6	10.402834	0.165452	10.083557	10.732221
7	10.402834	0.165452	10.083557	10.732221
8	10.402834	0.165452	10.083557	10.732221
9	10.402834	0.165452	10.083557	10.732221
10	10.402834	0.165452	10.083557	10.732221
11	10.794575	0.142464	10.518931	11.077442
12	10.794575	0.142464	10.518931	11.077442
13	10.794575	0.142464	10.518931	11.077442
14	10.794575	0.142464	10.518931	11.077442
15	10.794575	0.142464	10.518931	11.077442
16	10.794575	0.142464	10.518931	11.077442
17	10.794575	0.142464	10.518931	11.077442
18	10.794575	0.142464	10.518931	11.077442
19	10.794575	0.142464	10.518931	11.077442
20	10.794575	0.142464	10.518931	11.077442
21	10.794575	0.142464	10.518931	11.077442
22	12.507795	0.166754	12.185196	12.838935
23	12.507795	0.166754	12.185196	12.838935
24	12.507795	0.166754	12.185196	12.838935
25	12.507795	0.166754	12.185196	12.838935
26	12.507795	0.166754	12.185196	12.838935
27	12.507795	0.166754	12.185196	12.838935
28	12.507795	0.166754	12.185196	12.838935
29	12.507795	0.166754	12.185196	12.838935
...	...	...	...	...
2541	11.250947	0.273468	10.727527	11.799906
2542	11.250947	0.273468	10.727527	11.799906
2543	11.250947	0.273468	10.727527	11.799906
2544	12.116615	0.290373	11.560653	12.699314
2545	12.116615	0.290373	11.560653	12.699314
2546	12.116615	0.290373	11.560653	12.699314
2547	12.116615	0.290373	11.560653	12.699314
2548	12.116615	0.290373	11.560653	12.699314
2549	12.116615	0.290373	11.560653	12.699314
2550	12.116615	0.290373	11.560653	12.699314
2551	12.116615	0.290373	11.560653	12.699314
2552	12.116615	0.290373	11.560653	12.699314
2553	12.116615	0.290373	11.560653	12.699314
2554	12.116615	0.290373	11.560653	12.699314
2555	12.116615	0.290373	11.560653	12.699314

2556	12.116615	0.290373	11.560653	12.699314
2557	12.116615	0.290373	11.560653	12.699314
2558	12.116615	0.290373	11.560653	12.699314
2559	12.116615	0.290373	11.560653	12.699314
2560	12.116615	0.290373	11.560653	12.699314
2561	11.649882	0.258753	11.153616	12.168229
2562	11.649882	0.258753	11.153616	12.168229
2563	11.649882	0.258753	11.153616	12.168229
2564	11.649882	0.258753	11.153616	12.168229
2565	11.649882	0.258753	11.153616	12.168229
2566	11.649882	0.258753	11.153616	12.168229
2567	11.649882	0.258753	11.153616	12.168229
2568	11.649882	0.258753	11.153616	12.168229
2569	11.649882	0.258753	11.153616	12.168229
2570	11.649882	0.258753	11.153616	12.168229

[2571 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



In [55]: df\_CEW\_final.head()

```
Out [55]:
```

	farm	trap_count	year	date	tempf	dwpf	\
0	Pelham-G	0	2006	2006-06-19	70.977613	63.913169	
1	Litchfield-W	0	2006	2006-06-19	70.977613	63.913169	
2	Litchfield-M	0	2006	2006-06-19	70.977613	63.913169	
3	Merrimack-T	0	2006	2006-06-19	70.977613	63.913169	
4	Hollis-L	1	2006	2006-06-19	70.977613	63.913169	

	drct	feel	regression_count	poisson_count	NB_count
0	63.703704	71.301399	10	10	10
1	63.703704	71.301399	10	10	10
2	63.703704	71.301399	10	10	10
3	63.703704	71.301399	10	10	10
4	63.703704	71.301399	10	10	10

```
In [56]: #selcting all the farms for the CEW pest
all_CEW_FARMS = df_CEW_final.farm.unique()
```

```
In [57]: all_CEW_FARMS
```

```
Out [57]: array(['Pelham-G', 'Litchfield-W', 'Litchfield-M', 'Merrimack-T',
                'Hollis-L', 'Hollis-B', 'Hollis-K', 'Milford-S', 'Antrim-T',
                'Mason-B', 'Peterborough-R', 'Plainfield-E', 'Milford-L',
                'NorthHaverhill-B', 'Jaffrey-C', 'Hollis-JL', 'Hudson-S',
                'Litchfield-W1', 'Hollis-L1', 'Mason-B1', 'Merrimack-S',
                'Litchfield-W2', 'Mason-B2', 'Hollis-L2', 'Hollis-B1', 'Loudon-P',
                'Amherst-P', 'Concord-A', 'Concord-D2', 'Concord-P', 'Boscawen-C',
                'Weare-I', 'NewBoston-M', 'Concord-D1', 'NewLondon-S', 'Hollis-B2',
                'Loudon-P1', 'Loudon-P2', 'NewIpswich-B', 'Milford-M',
                'Bradford-W', 'NewLondon-SL', 'Hollis-JL-T', 'Claremont-TL',
                'Meredith-M', 'CenterConway-S', 'Hollis-JL-P1', 'NewBoston-D',
                'Weare-D'], dtype=object)
```

```
In [58]: all_CEW_FARMS.shape
```

```
Out [58]: (49,)
```

## 14 Poisson Regression and Negative Binomial Regression for each individual farm

```
In [59]: farm_count = 0
all_CEW_FARMS_DataFrame = []
compute_CEW_FARMS = []

for farm in all_CEW_FARMS:
    farmsdataframe = "df_CEW_" + farm
    farmsdataframe = df_CEW_final.loc[df_CEW_final['farm'] == farm]

    count_row = farmsdataframe.shape[0]
```

```

#print ((farmsdataframe['trap_count'] > 1).any())
if (farmsdataframe['trap_count'] > 1).any() == True:

    #computing if there more than 50 records
    if count_row > 50:

        #poission regression
        farmsdataframe = Poisson_Regression(farmsdataframe," CEW ", farm)

        #negative binomial regression
        farmsdataframe = Negative_Binomial_Regression(farmsdataframe," CEW ", farm)

    all_CEW_FARMS_DataFrame.append(farmsdataframe)

    compute_CEW_FARMS.append(farm)

    farm_count = farm_count + 1

```

#### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          121
Model:                  GLM          Df Residuals:              116
Model Family:           Poisson      Df Model:                  4
Link Function:          log          Scale:                    1.0000
Method:                 IRLS         Log-Likelihood:          -821.31
Date:                   Fri, 08 May 2020    Deviance:                1433.0
Time:                   08:03:42           Pearson chi2:            2.42e+03
No. Iterations:         6               Covariance Type:        nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-1.0062	0.370	-2.719	0.007	-1.732	-0.281
tempf	-0.0256	0.040	-0.648	0.517	-0.103	0.052
dwpf	-0.0156	0.017	-0.913	0.361	-0.049	0.018
drct	0.0111	0.002	6.115	0.000	0.008	0.015
feel	0.0598	0.037	1.615	0.106	-0.013	0.132

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
0          3.176978  0.268656      2.691744      3.749685
11         3.996585  0.272249      3.497075      4.567443
22         6.933632  0.392505      6.205478      7.747228
33         3.089388  0.282164      2.583030      3.695010
45         5.179942  0.370826      4.501823      5.960209
59         4.307315  0.410099      3.574076      5.190982
73         6.336537  0.465736      5.486414      7.318385
86        12.848280  1.488460     10.238449     16.123370
100        5.451233  0.372870      4.767291      6.233297

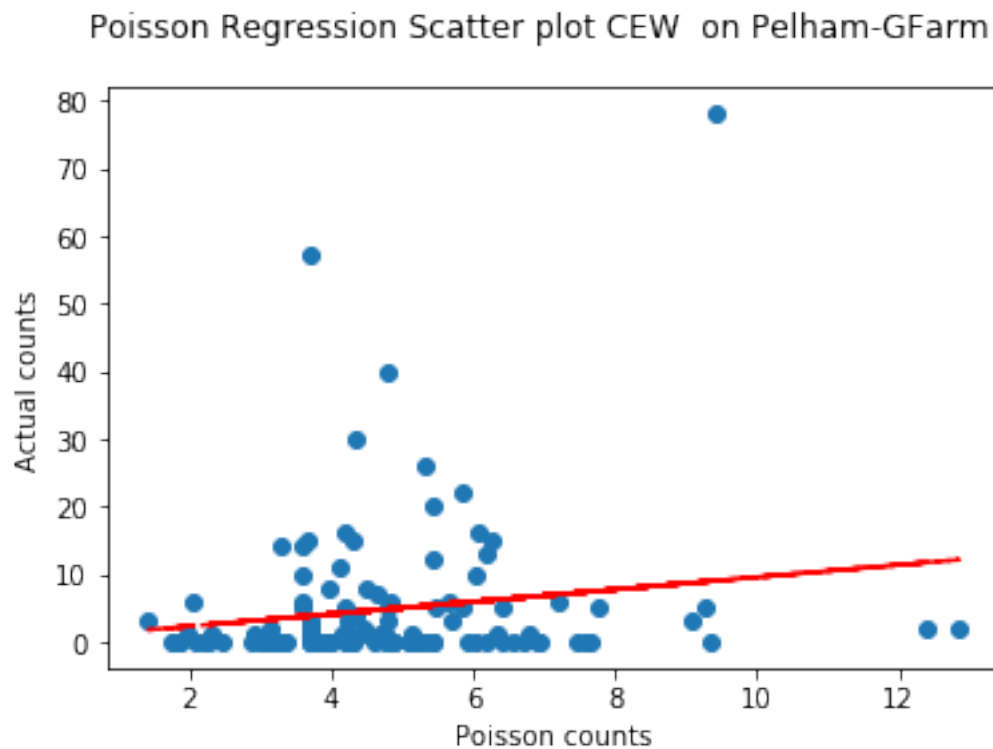
```

114	3.605496	0.215699	3.206578	4.054043
127	4.655187	0.276777	4.143128	5.230531
140	3.251352	0.217780	2.851342	3.707478
152	3.311187	0.220352	2.906285	3.772500
164	6.567343	0.585007	5.515263	7.820116
176	3.714619	0.355907	3.078638	4.481981
191	3.711391	0.254003	3.245500	4.244160
203	5.417942	0.336609	4.796787	6.119532
216	3.046614	0.273947	2.554340	3.633760
230	4.794589	0.310337	4.223340	5.443104
244	4.340525	0.272899	3.837296	4.909748
258	4.832580	0.210580	4.436984	5.263448
272	5.119485	0.245645	4.659976	5.624305
286	9.433273	0.925345	7.783320	11.432994
300	3.701323	0.307217	3.145615	4.355203
314	3.306336	0.217475	2.906425	3.761275
328	4.106654	0.215148	3.705900	4.550746
342	6.190899	0.328494	5.579411	6.869404
377	2.475090	0.267169	2.003133	3.058245
391	3.874294	0.301156	3.326803	4.511886
405	5.288977	0.279738	4.768163	5.866679
...	...	...	...	...
1648	5.436486	0.340917	4.807731	6.147469
1695	2.999102	0.350518	2.385106	3.771158
1704	3.718654	0.283618	3.202325	4.318234
1722	6.896555	0.635357	5.757233	8.261342
1741	4.282924	0.302967	3.728446	4.919861
1760	4.672920	0.216014	4.268154	5.116073
1779	5.686150	0.264180	5.191243	6.228240
1798	4.247585	0.347819	3.617764	4.987052
1818	5.832237	0.527511	4.884793	6.963445
1838	3.182464	0.269893	2.695108	3.757948
1859	3.696762	0.239816	3.255386	4.197981
1879	2.920044	0.240228	2.485205	3.430967
1974	4.867819	0.280810	4.347415	5.450517
1984	3.174649	0.488072	2.348722	4.291013
2000	3.946454	0.277039	3.439165	4.528569
2018	5.105270	0.253209	4.632349	5.626473
2039	3.775044	0.248860	3.317484	4.295712
2059	9.064562	0.939118	7.398771	11.105397
2080	3.888373	0.327508	3.296654	4.586299
2102	7.638593	0.554125	6.626204	8.805661
2126	5.920206	0.326735	5.313237	6.596513
2267	2.182251	0.469619	1.431286	3.327230
2286	1.794341	0.392446	1.168789	2.754698
2306	2.096394	0.433851	1.397384	3.145068
2328	1.872840	0.381498	1.256350	2.791842
2353	1.420245	0.307469	0.929152	2.170901

2378	2.061989	0.428466	1.372186	3.098560
2404	1.843621	0.384120	1.225528	2.773448
2432	1.971979	0.422817	1.295371	3.002000
2457	1.740244	0.384036	1.129190	2.681964

[121 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



/anaconda3/lib/python3.6/site-packages/ipykernel\_launcher.py:49: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row\_indexer,col\_indexer] = value instead

See the caveats in the documentation: <http://pandas.pydata.org/pandas-docs/stable/indexing.html>  
/anaconda3/lib/python3.6/site-packages/ipykernel\_launcher.py:50: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row\_indexer,col\_indexer] = value instead

See the caveats in the documentation: <http://pandas.pydata.org/pandas-docs/stable/indexing.html>  
/anaconda3/lib/python3.6/site-packages/ipykernel\_launcher.py:24: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.



Try using `.loc[row_indexer,col_indexer] = value` instead

See the caveats in the documentation: <http://pandas.pydata.org/pandas-docs/stable/indexing.html>

/anaconda3/lib/python3.6/site-packages/ipykernel\_launcher.py:27: SettingWithCopyWarning:

A value is trying to be set on a copy of a slice from a DataFrame.

Try using `.loc[row_indexer,col_indexer] = value` instead

See the caveats in the documentation: <http://pandas.pydata.org/pandas-docs/stable/indexing.html>

### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          121
Model:                  GLM          Df Residuals:              116
Model Family:          NegativeBinomial    Df Model:                4
Link Function:          log              Scale:                  1.0000
Method:                 IRLS            Log-Likelihood:         -306.61
Date:                   Fri, 08 May 2020    Deviance:                279.85
Time:                   08:03:42           Pearson chi2:            361.
No. Iterations:         16                Covariance Type:        nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-1.1277	0.835	-1.350	0.177	-2.764	0.509
tempf	-0.0828	0.103	-0.802	0.422	-0.285	0.119
dwpf	-0.0813	0.044	-1.848	0.065	-0.168	0.005
drct	0.0104	0.005	2.185	0.029	0.001	0.020
feel	0.1774	0.098	1.804	0.071	-0.015	0.370

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
0          3.031101  0.607717      2.046160      4.490153
11         3.598040  0.581543      2.621128      4.939053
22         8.506015  1.407032      6.150688     11.763283
33         2.771399  0.609460      1.800989      4.264688
45         4.981950  0.886803      3.514656      7.061810
59         5.611959  1.308661      3.553216      8.863543
73         7.645073  1.510419      5.190530     11.260342
86        17.053718  5.822590      8.733662     33.299810
100        4.695819  0.852478      3.289912      6.702523
114        3.033796  0.422316      2.309383      3.985445
127        3.914175  0.592704      2.909021      5.266638
140        2.827371  0.442291      2.080787      3.841828
152        3.011730  0.426891      2.281205      3.976195
164        5.866325  1.416935      3.654008      9.418090
176        4.202707  0.937919      2.713727      6.508666
191        3.062842  0.507432      2.213620      4.237855
203        4.788238  0.777960      3.482397      6.583747
216        2.885839  0.619948      1.894145      4.396740

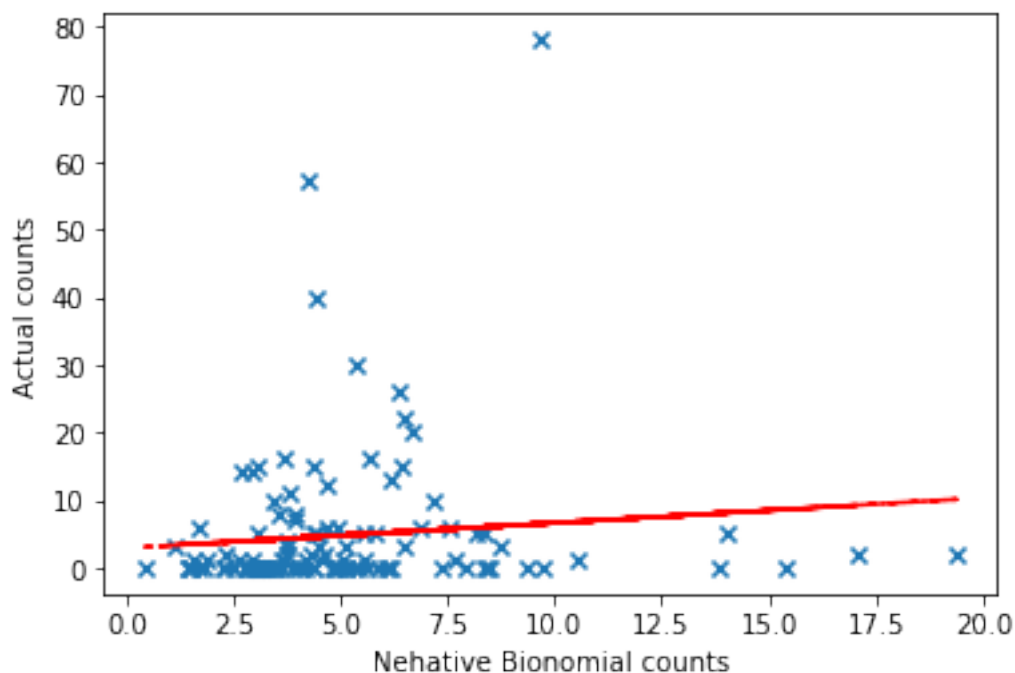
```

230	5.528253	0.860502	4.074683	7.500358
244	3.735088	0.576547	2.760003	5.054660
258	4.709392	0.515330	3.800330	5.835907
272	5.551190	0.687547	4.354716	7.076399
286	9.692853	2.700662	5.614181	16.734659
300	4.261550	0.845874	2.888104	6.288143
314	2.696666	0.407396	2.005547	3.625948
328	3.790713	0.459313	2.989390	4.806836
342	6.156471	0.926996	4.583151	8.269885
377	2.263815	0.594485	1.353047	3.787645
391	4.209796	0.775332	2.934219	6.039898
405	5.130913	0.678577	3.959324	6.649184
...	...	...	...	...
1648	4.862400	0.810435	3.507338	6.740991
1695	3.339903	0.957669	1.903988	5.858732
1704	3.192969	0.586230	2.227994	4.575889
1722	9.702975	2.383917	5.994788	15.704929
1741	3.461617	0.609464	2.451397	4.888149
1760	4.527765	0.508613	3.633010	5.642884
1779	6.470635	0.829907	5.032386	8.319934
1798	5.134589	1.032378	3.462264	7.614673
1818	8.189172	1.950448	5.134592	13.060928
1838	3.028197	0.610599	2.039622	4.495919
1859	3.730459	0.562675	2.775704	5.013619
1879	2.606952	0.509740	1.777038	3.824452
1974	5.279134	0.736270	4.016495	6.938699
1984	3.049409	1.178404	1.429816	6.503564
2000	4.039939	0.666215	2.924191	5.581411
2018	4.954423	0.608567	3.894372	6.303022
2039	3.085221	0.492730	2.256025	4.219186
2059	8.743830	2.514431	4.976509	15.363093
2080	3.130504	0.672651	2.054550	4.769928
2102	7.912519	1.668934	5.233311	11.963355
2126	6.165094	0.926875	4.591642	8.277731
2267	1.827084	0.759692	0.808786	4.127469
2286	1.475375	0.620082	0.647371	3.362421
2306	1.672229	0.667601	0.764667	3.656954
2328	1.504615	0.590518	0.697193	3.247114
2353	1.135331	0.480431	0.495364	2.602078
2378	1.661829	0.665479	0.758094	3.642920
2404	1.466073	0.587656	0.668286	3.216242
2432	1.568564	0.647269	0.698640	3.521691
2457	1.440768	0.611731	0.626881	3.311335

[121 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot CEW on Pelham-GFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          71
Model:                  GLM           Df Residuals:                66
Model Family:           Poisson       Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                  IRLS         Log-Likelihood:            -1624.1
Date:                   Fri, 08 May 2020    Deviance:                 2949.4
Time:                   08:03:42           Pearson chi2:             3.27e+03
No. Iterations:         6               Covariance Type:         nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	8.1329	0.262	31.007	0.000	7.619	8.647
tempf	0.0215	0.022	0.972	0.331	-0.022	0.065
dwpf	-0.1705	0.008	-20.851	0.000	-0.187	-0.154
drct	-0.0099	0.001	-11.087	0.000	-0.012	-0.008
feel	0.0721	0.020	3.552	0.000	0.032	0.112

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
1      26.307240  1.047871    24.331573    28.443326

```

12	18.207249	0.690951	16.902147	19.613124
23	31.192923	1.043747	29.212855	33.307201
34	19.725128	0.899906	18.037903	21.570173
46	15.029908	0.677410	13.759162	16.418015
60	30.350252	1.468588	27.604149	33.369541
74	20.752974	0.940198	18.989665	22.680017
87	29.920072	1.879232	26.454528	33.839603
101	23.769564	0.900847	22.067919	25.602424
115	30.400877	0.927013	28.637193	32.273182
128	26.999153	0.878869	25.330401	28.777842
141	33.447056	1.005958	31.532403	35.477968
153	56.214811	2.227980	52.013347	60.755656
165	39.021705	1.981841	35.324438	43.105950
177	105.148817	5.570842	94.777940	116.654506
190	20.336806	0.705147	19.000658	21.766912
202	18.397484	0.676353	17.118489	19.772038
214	24.794600	1.058492	22.804416	26.958471
228	25.324430	0.932444	23.561259	27.219545
242	18.931625	0.654587	17.691166	20.259062
256	28.089453	0.661830	26.821785	29.417033
270	29.789631	0.784309	28.291403	31.367201
284	19.357411	1.075534	17.360129	21.584481
298	48.563254	1.711008	45.322909	52.035267
312	33.979088	1.190737	31.723629	36.394904
326	43.925918	1.251451	41.540344	46.448491
340	24.518327	0.779529	23.037108	26.094784
353	38.647180	1.599212	35.636519	41.912188
361	46.156881	2.295113	41.870789	50.881717
375	31.704187	1.533040	28.837473	34.855881
...	...	...	...	...
552	27.532654	1.098778	25.461159	29.772684
567	37.985433	1.495679	35.164217	41.032995
581	92.117626	5.003217	82.815404	102.464719
865	17.195394	0.913588	15.494870	19.082546
885	24.575117	1.109651	22.493700	26.849134
907	19.344606	0.686588	18.044657	20.738203
928	46.497207	2.876285	41.188135	52.490607
949	57.058712	3.160216	51.189145	63.601309
971	40.569689	1.216499	38.254106	43.025438
993	40.470378	1.217788	38.152578	42.928988
1015	27.733457	0.832179	26.149452	29.413413
1036	31.885738	1.628910	28.847762	35.243645
1056	69.537163	2.623562	64.580597	74.874147
1077	52.706898	1.771779	49.346202	56.296474
1096	61.577673	2.203395	57.407054	66.051286
1114	18.752096	0.816904	17.217442	20.423539
1143	9.832564	3.058581	5.344247	18.090353
1160	51.588248	2.604393	46.728143	56.953842

1180	46.567613	2.932177	41.161122	52.684243
1201	22.179256	0.739874	20.775518	23.677839
1224	21.261381	0.679147	19.971090	22.635035
1248	21.660646	0.678728	20.370389	23.032628
1273	19.861834	0.703376	18.529998	21.289395
1297	18.497761	0.658775	17.250618	19.835068
1322	28.121930	0.727905	26.730847	29.585405
1348	18.106678	0.770026	16.658640	19.680585
1372	35.534764	0.949626	33.721435	37.445603
1392	23.001718	1.127059	20.895479	25.320263
1412	16.681536	0.818752	15.151581	18.365981
1430	35.352564	1.937922	31.751232	39.362371

[71 rows x 4 columns]

/anaconda3/lib/python3.6/site-packages/ipykernel\_launcher.py:77: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row\_indexer,col\_indexer] = value instead

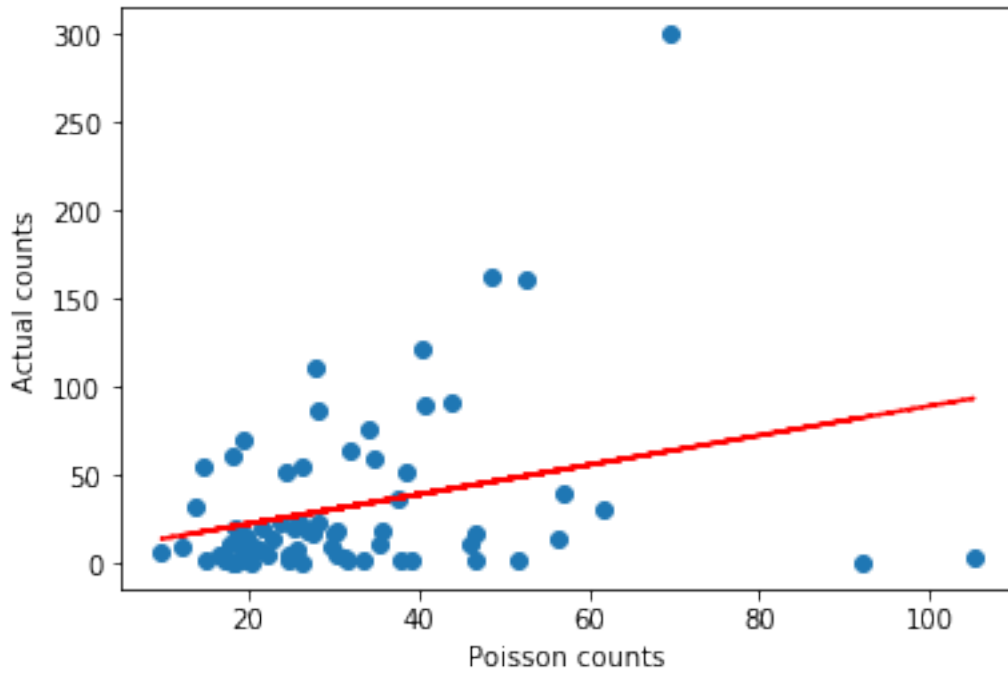
See the caveats in the documentation: <http://pandas.pydata.org/pandas-docs/stable/indexing.html>  
/anaconda3/lib/python3.6/site-packages/ipykernel\_launcher.py:78: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row\_indexer,col\_indexer] = value instead

See the caveats in the documentation: <http://pandas.pydata.org/pandas-docs/stable/indexing.html>  
/anaconda3/lib/python3.6/site-packages/pandas/core/frame.py:3694: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: <http://pandas.pydata.org/pandas-docs/stable/indexing.html>  
errors=errors)

<Figure size 432x288 with 0 Axes>

# Poisson Regression Scatter plot CEW on Litchfield-WFarm



## Generalized Linear Model Regression Results

```
=====
Dep. Variable:          trap_count    No. Observations:          71
Model:                  GLM           Df Residuals:                66
Model Family:          NegativeBinomial  Df Model:                  4
Link Function:         log           Scale:                    1.0000
Method:                IRLS          Log-Likelihood:            -326.81
Date:                  Fri, 08 May 2020  Deviance:                  198.70
Time:                  08:03:43         Pearson chi2:              151.
No. Iterations:        17              Covariance Type:          nonrobust
=====
```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	9.8477	1.274	7.728	0.000	7.350	12.345
tempf	-0.0087	0.062	-0.140	0.889	-0.131	0.114
dwpf	-0.1903	0.038	-4.980	0.000	-0.265	-0.115
drct	-0.0031	0.004	-0.793	0.428	-0.011	0.005
feel	0.0822	0.054	1.529	0.126	-0.023	0.188

```
=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
1      15.270918    2.594808    10.945371    21.305897
12     11.816540    1.762115     8.821792    15.827921
23     30.502101    4.546001    22.775482    40.849988
=====
```

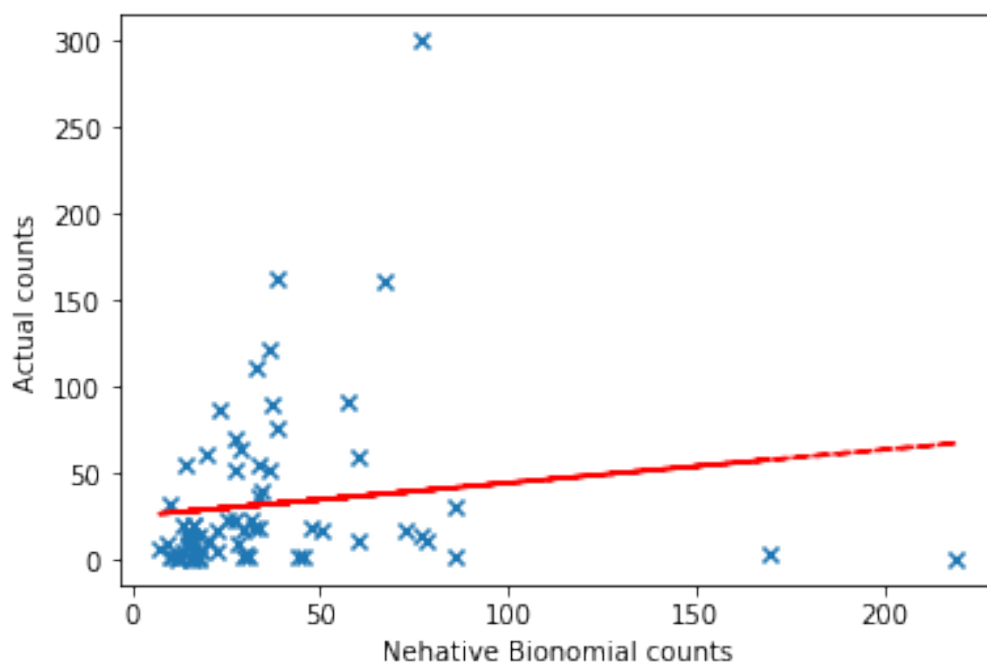
34	10.460790	1.980297	7.218159	15.160117
46	10.259561	1.830544	7.231937	14.554688
60	16.040279	3.410002	10.574382	24.331497
74	15.808051	2.691920	11.322153	22.071288
87	50.526707	13.888796	29.481016	86.596339
101	31.280474	4.709076	23.287901	42.016154
115	31.923028	4.225349	24.628536	41.378008
128	33.919895	4.532712	26.104088	44.075829
141	29.616165	3.995306	22.735226	38.579658
153	76.851840	16.188039	50.857796	116.131758
165	85.906854	20.235146	54.141391	136.309531
177	169.451121	49.814582	95.238276	301.493092
190	16.081410	2.124726	12.412543	20.834713
202	17.507972	2.399377	13.383912	22.902802
214	13.675997	2.484286	9.579341	19.524608
228	16.071615	2.532252	11.801678	21.886449
242	15.469769	1.988991	12.023821	19.903302
256	27.648773	2.547067	23.081353	33.120011
270	28.171479	2.841554	23.118095	34.329482
284	27.124111	6.198334	17.331696	42.449243
298	38.736241	6.854536	27.383811	54.795015
312	38.293418	6.161523	27.935942	52.491012
326	57.603605	8.646247	42.922511	77.306180
340	27.386568	3.381841	21.499416	34.885790
353	36.117238	7.036516	24.653568	52.911403
361	59.816407	14.628523	37.038466	96.602341
375	17.735204	3.790748	11.665387	26.963311
...	...	...	...	...
552	29.785687	5.150968	21.222946	41.803205
567	45.439876	8.505829	31.484867	65.580151
581	219.417430	64.198800	123.657419	389.333763
865	11.895501	2.622094	7.722441	18.323603
885	12.442154	2.431960	8.482397	18.250409
907	14.685471	2.040896	11.183897	19.283356
928	72.513078	20.882427	41.236900	127.510711
949	34.382900	9.123053	20.440302	57.835927
971	36.866562	5.434017	27.616470	49.214958
993	36.753007	5.382119	27.583077	48.971457
1015	32.811336	3.989286	25.854292	41.640427
1036	29.003110	6.743389	18.388036	45.746073
1056	76.852053	16.034008	51.058171	115.676645
1077	66.819109	12.096461	46.860310	95.278785
1096	85.663512	16.721685	58.430509	125.589137
1114	22.841663	3.871828	16.384866	31.842897
1143	7.197284	5.896531	1.444785	35.853700
1160	43.857706	10.740408	27.138969	70.875883
1180	31.196780	9.263316	17.432552	55.828835
1201	22.267583	2.847881	17.330451	28.611214

1224	15.400750	1.899421	12.093739	19.612056
1248	16.239996	1.927065	12.870071	20.492309
1273	14.680963	1.995067	11.248139	19.161453
1297	13.400563	1.816996	10.273248	17.479875
1322	23.372915	2.398228	19.114966	28.579342
1348	19.640879	3.213816	14.252128	27.067124
1372	47.462412	5.919826	37.169123	60.606233
1392	15.338442	3.181402	10.214814	23.032021
1412	18.531623	3.605877	12.655722	27.135634
1430	78.609917	19.229728	48.669241	126.969703

[71 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

Negative Binomial Regression Scatter plot CEW on Litchfield-WFarm



Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	147
Model:	GLM	Df Residuals:	142
Model Family:	Poisson	Df Model:	4
Link Function:	log	Scale:	1.0000



Method: IRLS Log-Likelihood: -2056.5  
Date: Fri, 08 May 2020 Deviance: 3762.8  
Time: 08:03:43 Pearson chi2: 7.16e+03  
No. Iterations: 6 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	2.3816	0.181	13.123	0.000	2.026	2.737
tempf	-0.2770	0.045	-6.196	0.000	-0.365	-0.189
dwpf	0.0213	0.012	1.773	0.076	-0.002	0.045
drct	0.0029	0.001	2.486	0.013	0.001	0.005
feel	0.2516	0.044	5.770	0.000	0.166	0.337

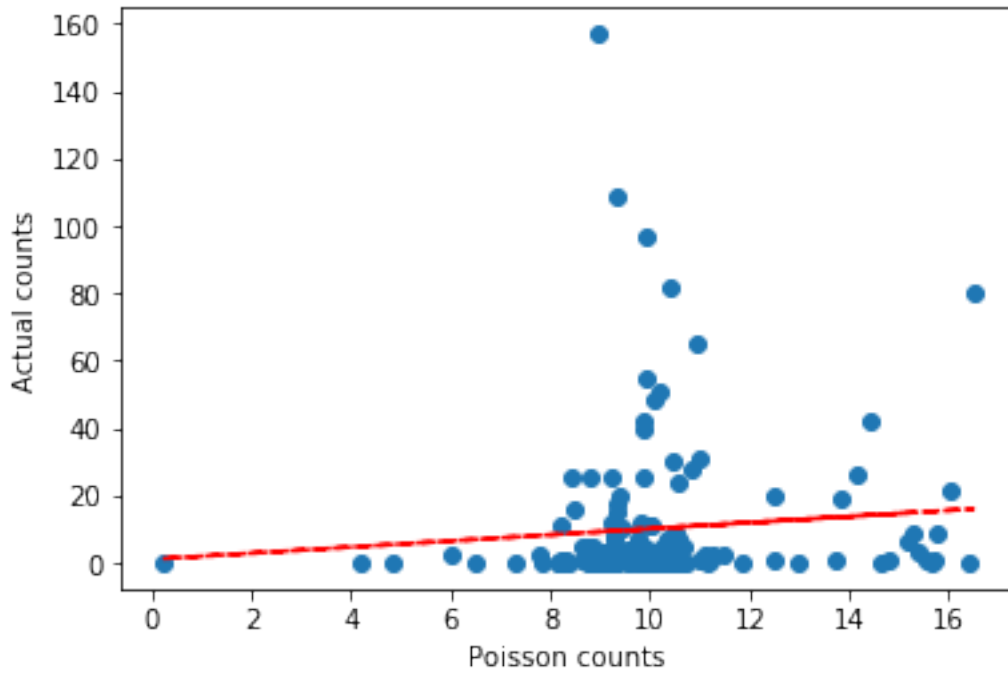
	mean	mean_se	mean_ci_lower	mean_ci_upper
2	9.087069	0.454627	8.238309	10.023273
13	10.241416	0.419049	9.452165	11.096568
24	9.580303	0.439363	8.756735	10.481328
35	10.409880	0.575224	9.341367	11.600615
47	11.839416	0.608703	10.704521	13.094633
61	11.154084	0.779488	9.726327	12.791426
75	13.749310	0.997841	11.926306	15.850972
88	10.683133	0.913031	9.035475	12.631249
102	10.546769	0.457188	9.687708	11.482007
116	9.885053	0.342851	9.235409	10.580396
129	9.829666	0.373643	9.123954	10.589962
142	8.659015	0.382702	7.940501	9.442544
154	9.270532	0.340541	8.626544	9.962594
166	9.199672	0.566758	8.153292	10.380344
178	8.185837	0.529874	7.210482	9.293127
189	10.068554	0.420609	9.277022	10.927620
201	10.018342	0.398680	9.266639	10.831022
213	9.713798	0.514677	8.755659	10.776786
227	10.373288	0.466576	9.497965	11.329280
241	10.300783	0.399112	9.547502	11.113497
255	9.790119	0.276322	9.263244	10.346961
269	11.249103	0.427756	10.441197	12.119522
283	10.806422	0.718139	9.486706	12.309726
297	8.942350	0.477378	8.053990	9.928695
311	9.868661	0.369211	9.170915	10.619494
325	8.796288	0.328615	8.175230	9.464527
339	10.063738	0.370781	9.362638	10.817337
352	9.332746	0.464100	8.466049	10.288170
360	9.057209	0.480313	8.163085	10.049269
374	8.798734	0.571247	7.747418	9.992713
...	...	...	...	...
1964	8.911868	0.473302	8.030862	9.889522
1981	4.173784	0.596587	3.154003	5.523291
1996	10.514773	0.465633	9.640634	11.468173

2014	9.325927	0.295471	8.764429	9.923397
2035	8.999299	0.392173	8.262565	9.801724
2055	11.107753	0.762794	9.708952	12.708084
2076	6.017572	0.533429	5.057855	7.159394
2098	10.464433	0.531000	9.473773	11.558686
2122	7.858100	0.378670	7.149891	8.636458
2145	8.139645	0.351928	7.478295	8.859481
2165	11.000523	0.751338	9.622239	12.576232
2184	9.398105	0.477441	8.507415	10.382045
2202	9.721883	0.574017	8.659487	10.914620
2219	9.768975	0.434537	8.953367	10.658880
2233	6.508159	0.586904	5.453773	7.766392
2244	9.317437	0.372928	8.614446	10.077797
2264	16.409953	1.163352	14.281146	18.856089
2283	14.773503	1.023988	12.896879	16.923194
2303	15.628950	1.036087	13.724650	17.797473
2325	15.684450	1.034814	13.781912	17.849624
2350	13.855839	1.005138	12.019447	15.972805
2375	15.755577	1.051688	13.823450	17.957761
2401	15.289820	1.011799	13.429950	17.407259
2429	15.403536	1.044555	13.486466	17.593112
2454	15.533454	1.102632	13.515934	17.852128
2480	16.489579	1.192265	14.310809	19.000059
2504	14.407013	0.995084	12.582935	16.495518
2525	14.150225	1.034227	12.261675	16.329650
2544	16.019133	1.167101	13.887475	18.477990
2561	15.191411	1.013747	13.328955	17.314108

[147 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

# Poisson Regression Scatter plot CEW on Litchfield-MFarm



## Generalized Linear Model Regression Results

```
=====
Dep. Variable:          trap_count    No. Observations:          147
Model:                  GLM           Df Residuals:              142
Model Family:          NegativeBinomial Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                 IRLS          Log-Likelihood:            -1238.1
Date:                   Fri, 08 May 2020 Deviance:                  2077.8
Time:                   08:03:43       Pearson chi2:              4.38e+03
No. Iterations:         11             Covariance Type:          nonrobust
=====
```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	2.3692	0.236	10.045	0.000	1.907	2.831
tempf	-0.3470	0.058	-5.952	0.000	-0.461	-0.233
dwpf	0.0197	0.015	1.300	0.194	-0.010	0.049
drct	0.0030	0.001	2.012	0.044	7.78e-05	0.006
feel	0.3230	0.057	5.665	0.000	0.211	0.435

```
=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
2           9.192900  0.583481    8.117571    10.410678
13          10.489815  0.548527    9.467979    11.621933
24           9.745800  0.566015    8.697241    10.920774
=====
```

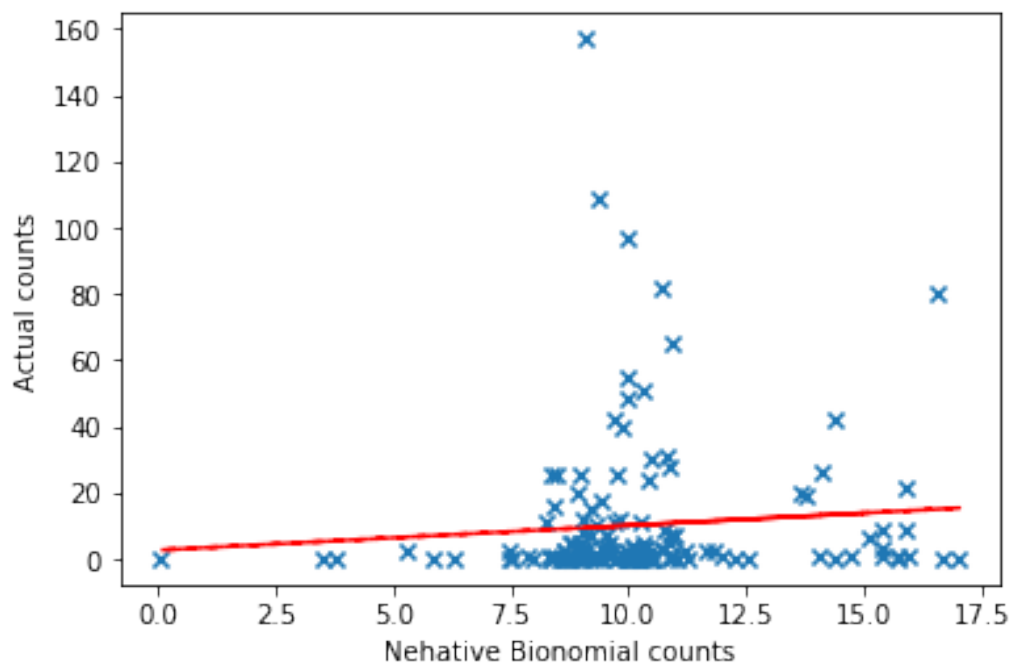
35	10.841697	0.764259	9.442651	12.448030
47	12.558024	0.834668	11.024180	14.305279
61	12.262298	1.100399	10.284577	14.620335
75	15.384001	1.455241	12.780575	18.517751
88	10.872284	1.189109	8.774539	13.471540
102	10.442382	0.582539	9.360832	11.648895
116	9.778718	0.433058	8.965734	10.665422
129	9.591854	0.468742	8.715762	10.556009
142	8.411785	0.473395	7.533288	9.392727
154	9.028901	0.423413	8.236023	9.898109
166	8.637651	0.685439	7.393477	10.091196
178	7.871607	0.643011	6.707041	9.238381
189	10.096098	0.537593	9.095553	11.206707
201	9.966708	0.510184	9.015290	11.018532
213	10.003057	0.674075	8.765424	11.415439
227	10.944652	0.629879	9.777192	12.251514
241	10.391306	0.515114	9.429197	11.451584
255	9.805124	0.352674	9.137698	10.521299
269	11.794622	0.580356	10.710272	12.988755
283	10.847331	0.927780	9.173161	12.827050
297	9.064612	0.608347	7.947364	10.338922
311	9.709310	0.464432	8.840408	10.663615
325	8.458232	0.403184	7.703797	9.286550
339	10.068803	0.476939	9.176099	11.048353
352	9.177133	0.581527	8.105296	10.390707
360	8.634037	0.587937	7.555289	9.866809
374	8.844365	0.729447	7.524247	10.396096
...	...	...	...	...
1964	8.739166	0.588874	7.657962	9.973021
1981	3.517611	0.647956	2.451622	5.047102
1996	11.032288	0.625510	9.871975	12.328979
2014	9.303642	0.377245	8.592873	10.073204
2035	8.780560	0.489574	7.871585	9.794500
2055	11.178136	0.988406	9.399473	13.293376
2076	5.297833	0.608890	4.229296	6.636339
2098	10.466698	0.682921	9.210249	11.894551
2122	7.516942	0.462692	6.662650	8.480772
2145	7.986608	0.439736	7.169617	8.896697
2165	10.791147	0.947982	9.084293	12.818702
2184	8.932364	0.584720	7.856806	10.155161
2202	9.396992	0.712369	8.099549	10.902268
2219	9.434642	0.538534	8.436036	10.551456
2233	5.836242	0.671864	4.657400	7.313461
2244	9.025452	0.462972	8.162168	9.980043
2264	16.676131	1.648578	13.738736	20.241554
2283	14.716576	1.419853	12.181001	17.779952
2303	15.704450	1.453169	13.099632	18.827227
2325	15.933880	1.467129	13.302898	19.085206

2350	13.787268	1.372052	11.344102	16.756615
2375	15.891816	1.481476	13.237998	19.077645
2401	15.373523	1.420190	12.827449	18.424958
2429	15.389411	1.457081	12.782907	18.527396
2454	15.696067	1.553041	12.929122	19.055162
2480	16.585882	1.661977	13.628389	20.185181
2504	14.372946	1.374026	11.917154	17.334809
2525	14.081330	1.417393	11.560158	17.152348
2544	15.900895	1.597278	13.059202	19.360943
2561	15.132221	1.409063	12.607866	18.162004

[147 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

Negative Binomial Regression Scatter plot CEW on Litchfield-MFarm



Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	57
Model:	GLM	Df Residuals:	52
Model Family:	Poisson	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -261.86  
Date: Fri, 08 May 2020 Deviance: 442.06  
Time: 08:03:44 Pearson chi2: 1.00e+03  
No. Iterations: 6 Covariance Type: nonrobust

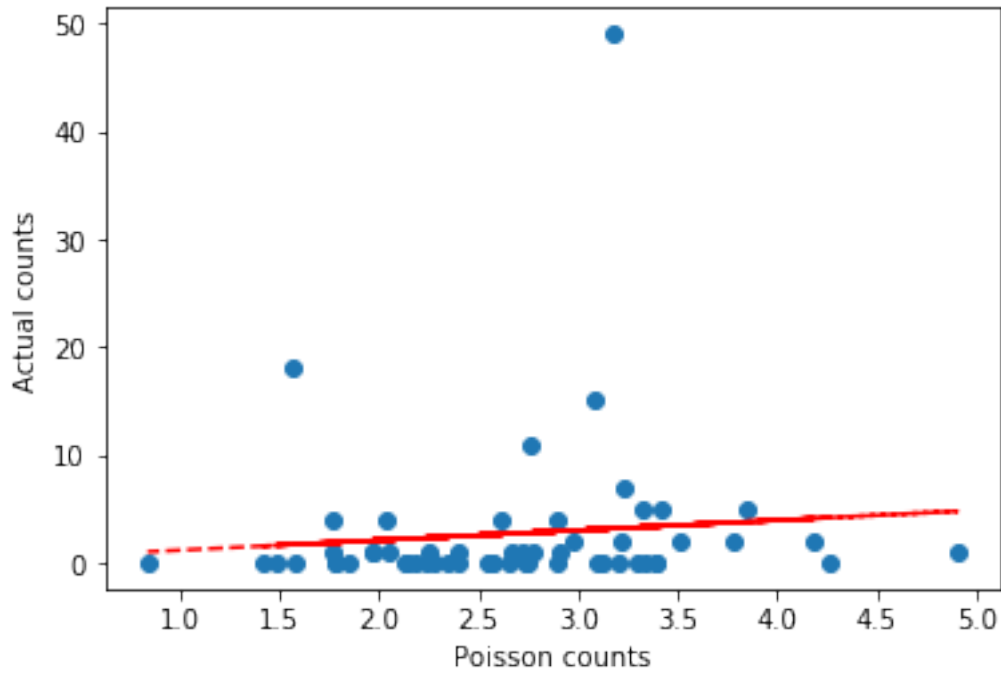
	coef	std err	z	P> z	[0.025	0.975]
Intercept	3.1511	1.593	1.978	0.048	0.028	6.274
tempf	-0.8531	0.300	-2.848	0.004	-1.440	-0.266
dwpf	0.0833	0.044	1.894	0.058	-0.003	0.169
drct	0.0111	0.004	2.728	0.006	0.003	0.019
feel	0.7260	0.274	2.646	0.008	0.188	1.264

	mean	mean_se	mean_ci_lower	mean_ci_upper
3	1.479193	0.314923	0.974546	2.245159
14	2.235216	0.312423	1.699591	2.939642
25	1.843400	0.395422	1.210684	2.806778
36	2.188388	0.378886	1.558661	3.072537
48	3.300892	0.496988	2.457383	4.433939
62	2.123896	0.551724	1.276488	3.533862
76	4.904716	1.346422	2.863819	8.400055
89	3.122806	0.873068	1.805377	5.401596
103	3.783502	0.505770	2.911436	4.916779
117	2.975777	0.352815	2.358740	3.754229
130	3.099495	0.348772	2.486046	3.864316
143	1.771994	0.292116	1.282745	2.447846
155	2.912253	0.542976	2.020815	4.196929
167	3.335762	0.649144	2.277982	4.884724
179	1.969816	0.516077	1.178738	3.291805
188	2.577706	0.310816	2.035151	3.264902
200	2.540122	0.362352	1.920567	3.359540
212	1.780957	0.336066	1.230360	2.577953
226	1.969849	0.362783	1.372996	2.826161
240	2.668884	0.301315	2.139094	3.329888
254	2.399880	0.228290	1.991675	2.891750
268	3.387736	0.495333	2.543620	4.511977
282	3.422587	0.725660	2.258822	5.185935
296	1.566101	0.345239	1.016663	2.412474
310	3.227115	0.496071	2.387636	4.361751
324	2.251816	0.294793	1.742205	2.910493
338	2.652492	0.321719	2.091281	3.364308
373	1.418680	0.340094	0.886808	2.269548
387	2.139583	0.384915	1.503822	3.044121
401	2.050106	0.335434	1.487663	2.825192
415	2.732142	0.566609	1.819599	4.102331
430	2.607196	0.447338	1.862628	3.649400
445	3.515635	0.656855	2.437624	5.070383
460	2.768742	0.344226	2.169982	3.532718

475	1.770328	0.283101	1.294000	2.421994
490	2.894939	0.407476	2.196994	3.814608
505	4.183406	0.669555	3.056996	5.724862
520	2.758782	0.321792	2.194982	3.467399
535	3.846904	0.585729	2.854352	5.184597
550	3.212209	0.540105	2.310371	4.466075
565	3.387524	0.623845	2.361160	4.860034
579	2.714042	0.690765	1.648059	4.469515
603	3.200356	0.303413	2.657659	3.853872
616	1.584743	0.309350	1.080935	2.323367
630	2.895801	0.395459	2.215777	3.784525
646	2.393403	0.380771	1.752252	3.269153
662	1.785627	0.351959	1.213426	2.627654
679	2.039669	0.299315	1.529849	2.719384
696	3.326735	0.656373	2.259821	4.897362
714	3.174982	0.304975	2.630138	3.832693
732	3.076538	0.492580	2.247904	4.210628
750	2.554674	0.289229	2.046285	3.189369
768	2.282508	0.488626	1.500347	3.472423
786	2.747073	0.317544	2.190165	3.445591
803	2.343925	0.529033	1.505998	3.648070
818	4.263822	0.937848	2.770597	6.561827
833	0.837576	0.482644	0.270725	2.591313

<Figure size 432x288 with 0 Axes>

Poisson Regression Scatter plot CEW on Merrimack-TFarm



#### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          57
Model:                  GLM           Df Residuals:              52
Model Family:          NegativeBinomial Df Model:                4
Link Function:          log           Scale:                  1.0000
Method:                IRLS          Log-Likelihood:          -109.06
Date:                  Fri, 08 May 2020 Deviance:                31.217
Time:                  08:03:44        Pearson chi2:            46.0
No. Iterations:        21              Covariance Type:        nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	8.1483	7.331	1.111	0.266	-6.221	22.517
tempf	-2.0193	1.345	-1.501	0.133	-4.656	0.618
dwpf	0.0144	0.188	0.077	0.939	-0.354	0.383
drct	0.0107	0.017	0.614	0.539	-0.023	0.045
feel	1.8748	1.243	1.508	0.132	-0.562	4.311

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
3          1.108870   0.940613     0.210299     5.846869
14         1.847169   1.083113     0.585319     5.829355
25         1.631422   1.475434     0.277174     9.602410

```

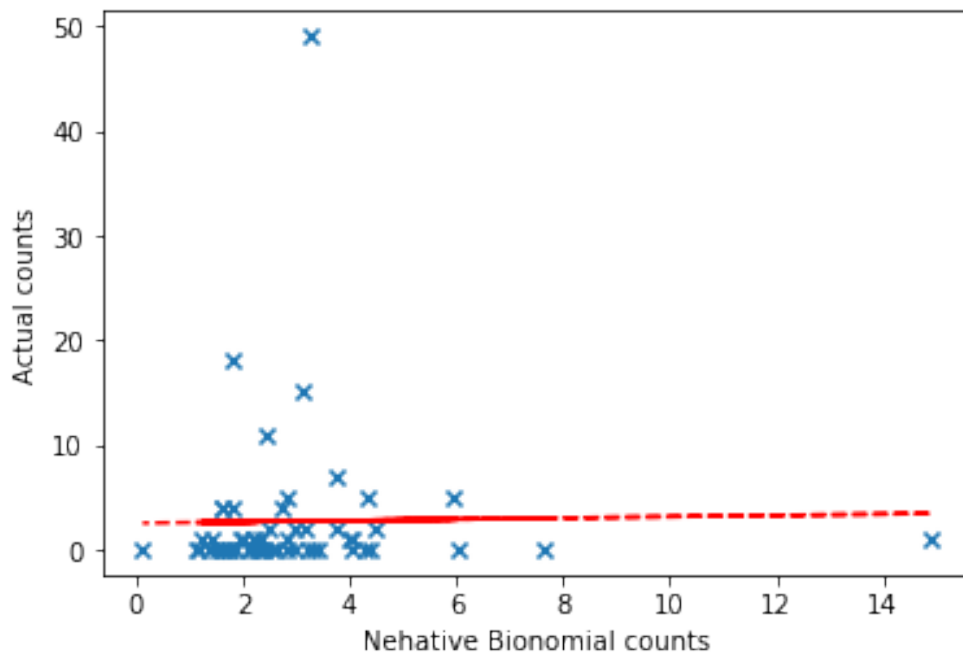


36	2.281982	1.649846	0.553227	9.412843
48	4.035314	2.791076	1.040239	15.653868
62	4.367822	4.823515	0.501485	38.042759
76	14.910856	19.231992	1.190213	186.801617
89	3.429689	4.409666	0.275954	42.625851
103	3.733040	2.399786	1.058930	13.160062
117	3.154221	1.758704	1.057515	9.408011
130	2.640368	1.408312	0.928224	7.510624
143	1.229373	0.822944	0.331046	4.565403
155	4.064016	3.483088	0.757580	21.801304
167	2.557114	2.258413	0.452876	14.438470
179	2.812563	3.130453	0.317463	24.917867
188	2.124733	1.135140	0.745675	6.054236
200	1.687749	1.084717	0.478895	5.948062
212	1.711122	1.295051	0.388199	7.542356
226	2.335871	1.753465	0.536387	10.172301
240	2.198365	1.111287	0.816229	5.920895
254	2.204561	0.870082	1.017128	4.778249
268	6.025145	4.206168	1.533705	23.669727
282	2.805570	2.764180	0.406796	19.349297
296	1.816884	1.573037	0.332941	9.914882
310	3.768489	2.733682	0.909287	15.618284
324	1.927719	1.055581	0.659086	5.638258
338	2.253253	1.238884	0.767012	6.619390
373	1.159582	1.124166	0.173419	7.753645
387	2.955031	2.184581	0.693889	12.584452
401	1.409017	0.984691	0.358141	5.543427
415	1.493197	1.397860	0.238376	9.353447
430	1.627977	1.254518	0.359512	7.371974
445	2.489754	2.128423	0.466109	13.299196
460	2.016659	1.145827	0.662211	6.141421
475	1.602902	0.983794	0.481366	5.337510
490	2.745693	1.791736	0.764170	9.865389
505	4.501880	3.425609	1.013189	20.003107
520	2.416442	1.293874	0.846065	6.901585
535	4.340602	3.157877	1.042998	18.064107
550	2.978964	2.336739	0.640282	13.859864
565	4.271750	3.700624	0.782003	23.334748
579	4.000339	4.504362	0.440198	36.353437
603	3.331174	1.553493	1.335486	8.309123
616	1.352602	1.031896	0.303243	6.033223
630	2.389416	1.486943	0.705644	8.090919
646	1.760792	1.222573	0.451536	6.866321
662	1.600618	1.291450	0.329231	7.781709
679	1.802248	1.067345	0.564557	5.753359
696	5.945200	5.306694	1.033672	34.194014
714	3.271149	1.526296	1.310797	8.163288
732	3.101643	2.303042	0.723694	13.293176

750	2.106437	1.064871	0.782058	5.673589
768	3.239634	2.971654	0.536667	19.556306
786	2.332189	1.220665	0.836076	6.505514
803	2.840056	2.864059	0.393488	20.498511
818	7.665661	8.007670	0.989398	59.392029
833	0.122778	0.307067	0.000913	16.518630

<Figure size 432x288 with 0 Axes>

### Negative Binomial Regression Scatter plot CEW on Merrimack-TFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          131
Model:                  GLM           Df Residuals:                126
Model Family:           Poisson       Df Model:                   4
Link Function:          log           Scale:                     1.0000
Method:                 IRLS          Log-Likelihood:             -1651.0
Date:                   Fri, 08 May 2020    Deviance:                  2932.4
Time:                   08:03:44           Pearson chi2:              4.81e+03
No. Iterations:         5                Covariance Type:          nonrobust
=====

```

```

=====
              coef      std err          z      P>|z|      [0.025      0.975]
-----

```

Intercept	2.4252	0.176	13.742	0.000	2.079	2.771
tempf	-0.1507	0.033	-4.523	0.000	-0.216	-0.085
dwpf	0.0676	0.012	5.433	0.000	0.043	0.092
drct	0.0054	0.001	4.659	0.000	0.003	0.008
feel	0.0807	0.032	2.501	0.012	0.017	0.144

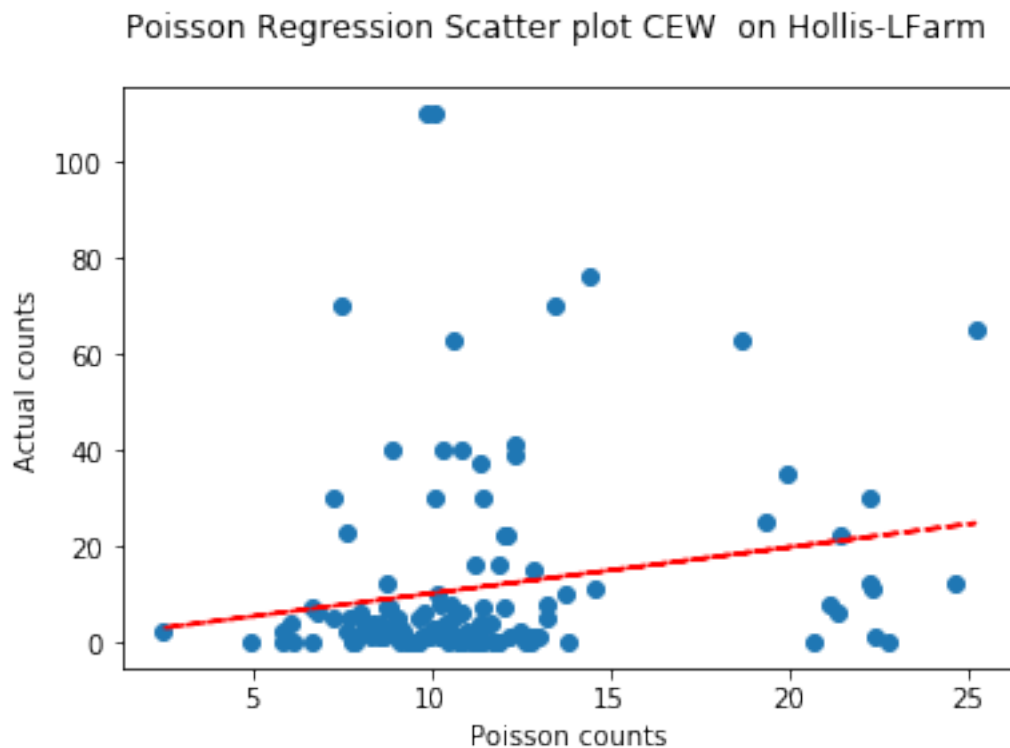
=====

	mean	mean_se	mean_ci_lower	mean_ci_upper
4	8.502088	0.443956	7.674996	9.418311
15	10.226770	0.431006	9.415962	11.107395
26	8.575923	0.431635	7.770322	9.465046
37	9.681282	0.554388	8.653460	10.831185
49	11.144371	0.539337	10.135876	12.253210
63	7.627142	0.533184	6.650551	8.747140
77	10.592199	0.661107	9.372573	11.970532
90	10.297001	0.908985	8.661030	12.241988
104	12.778486	0.538295	11.765826	13.878302
118	11.348379	0.385611	10.617213	12.129897
131	12.073349	0.429508	11.260207	12.945212
144	9.626746	0.396282	8.880555	10.435636
156	10.478381	0.358728	9.798357	11.205600
168	12.603594	0.724640	11.260426	14.106977
180	8.273725	0.527917	7.301110	9.375906
196	11.181255	0.471558	10.294185	12.144766
208	11.390430	0.443134	10.554191	12.292927
222	8.834825	0.491979	7.921322	9.853676
236	8.459860	0.400604	7.710024	9.282620
250	11.242965	0.437457	10.417443	12.133905
264	10.181454	0.300647	9.608923	10.788098
278	10.211543	0.386861	9.480775	10.998637
292	12.097877	0.802611	10.622771	13.777820
306	7.673550	0.439253	6.859168	8.584624
320	11.658520	0.421587	10.860828	12.514801
334	10.191170	0.334230	9.556701	10.867762
348	10.771033	0.403539	10.008453	11.591717
358	10.492708	0.513581	9.532884	11.549172
364	11.734313	0.559690	10.687055	12.884196
369	11.213054	0.607364	10.083654	12.468950
...	...	...	...	...
1978	9.320283	0.389528	8.587255	10.115885
1988	4.927821	0.570901	3.926820	6.183992
2004	9.182726	0.422695	8.390532	10.049716
2022	9.596848	0.310088	9.007931	10.224268
2043	10.432887	0.427420	9.627910	11.305166
2063	12.827874	0.868079	11.234476	14.647267
2084	8.214693	0.545951	7.211410	9.357557
2108	11.454067	0.588773	10.356319	12.668173
2132	8.408786	0.374115	7.706595	9.174958
2153	8.046830	0.337590	7.411639	8.736458

2173	14.416599	0.968367	12.638262	16.445167
2192	12.312180	0.579970	11.226356	13.503026
2209	11.872800	0.696041	10.584042	13.318482
2226	12.798987	0.526452	11.807657	13.873545
2239	7.847172	0.607231	6.742879	9.132317
2250	11.434542	0.416369	10.646914	12.280436
2272	22.809960	1.335253	20.337461	25.583049
2291	20.706301	1.221713	18.445055	23.244762
2312	22.419865	1.241739	20.113545	24.990638
2334	21.362233	1.172197	19.184001	23.787791
2359	18.664091	1.198621	16.456675	21.167598
2384	22.256909	1.235608	19.962264	24.815322
2411	21.427474	1.191083	19.215667	23.893869
2438	22.346991	1.273907	19.984611	24.988628
2464	21.128158	1.261677	18.794543	23.751524
2489	24.644721	1.504243	21.865983	27.776583
2512	19.912046	1.191870	17.707846	22.390614
2533	19.310596	1.237363	17.031517	21.894650
2552	25.200536	1.586963	22.274437	28.511026
2568	22.286586	1.256134	19.955723	24.889698

[131 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



# Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          131
Model:                  GLM           Df Residuals:              126
Model Family:          NegativeBinomial    Df Model:                  4
Link Function:          log             Scale:                  1.0000
Method:                 IRLS            Log-Likelihood:           -1097.6
Date:                   Fri, 08 May 2020    Deviance:                 1784.8
Time:                   08:03:44           Pearson chi2:             3.21e+03
No. Iterations:         6                 Covariance Type:         nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	2.5027	0.222	11.270	0.000	2.067	2.938
tempf	-0.1567	0.038	-4.093	0.000	-0.232	-0.082
dwpf	0.0663	0.015	4.439	0.000	0.037	0.096
drct	0.0051	0.001	3.576	0.000	0.002	0.008
feel	0.0871	0.037	2.356	0.018	0.015	0.159

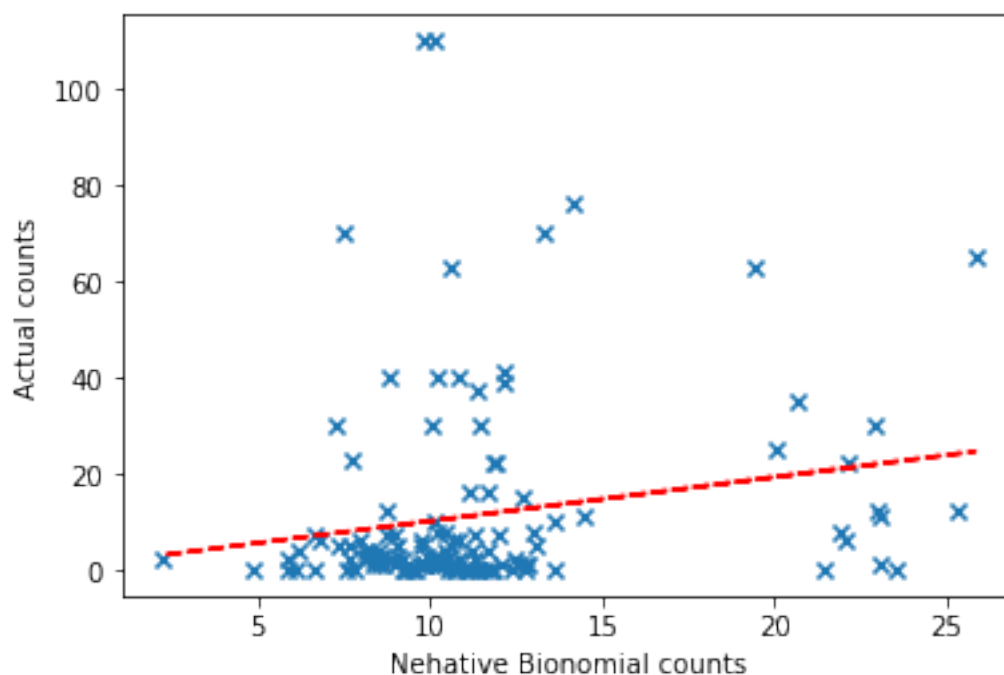
	mean	mean_se	mean_ci_lower	mean_ci_upper
4	8.530328	0.539436	7.535949	9.655918
15	10.195193	0.525502	9.215544	11.278981
26	8.491892	0.510201	7.548549	9.553125
37	9.722794	0.677852	8.481001	11.146411
49	11.075468	0.650085	9.871882	12.425795
63	7.682654	0.633107	6.536813	9.029350
77	10.569610	0.772447	9.159073	12.197376
90	10.068248	1.091097	8.141588	12.450843
104	12.636932	0.668745	11.391899	14.018035
118	11.335475	0.473549	10.444318	12.302670
131	11.971466	0.531217	10.974291	13.059249
144	9.628625	0.475795	8.739818	10.607819
156	10.517240	0.434304	9.699555	11.403857
168	12.399061	0.883740	10.782504	14.257978
180	8.319631	0.628206	7.175147	9.646669
196	11.144889	0.577427	10.068719	12.336084
208	11.253411	0.548148	10.228750	12.380717
222	8.882338	0.600682	7.779710	10.141241
236	8.454832	0.473165	7.576498	9.434990
250	11.173504	0.537125	10.168831	12.277438
264	10.122816	0.364164	9.433649	10.862329
278	10.192900	0.458211	9.333250	11.131729
292	11.839058	0.981512	10.063491	13.927900
306	7.715299	0.523867	6.753926	8.813515
320	11.666875	0.518616	10.693428	12.728936

334	10.155958	0.395858	9.408986	10.962231
348	10.644709	0.496090	9.715476	11.662818
358	10.561123	0.630246	9.395368	11.871523
364	11.787667	0.682840	10.522506	13.204943
369	11.210589	0.741893	9.846859	12.763187
...	...	...	...	...
1978	9.300934	0.461940	8.438219	10.251851
1988	4.878740	0.658727	3.744369	6.356774
2004	9.197973	0.507905	8.254474	10.249315
2022	9.509576	0.376411	8.799715	10.276701
2043	10.369535	0.518520	9.401469	11.437284
2063	12.546728	1.062880	10.627278	14.812860
2084	8.100040	0.621775	6.968629	9.415145
2108	11.278805	0.722256	9.948442	12.787072
2132	8.293276	0.438509	7.476849	9.198852
2153	7.995445	0.400543	7.247705	8.820330
2173	14.140067	1.190863	11.988478	16.677804
2192	12.158514	0.711398	10.841178	13.635923
2209	11.664265	0.851380	10.109457	13.458199
2226	12.746596	0.645450	11.542288	14.076560
2239	7.828079	0.706425	6.559046	9.342641
2250	11.375600	0.506874	10.424291	12.413726
2272	23.522402	1.914659	20.053777	27.590982
2291	21.423793	1.759557	18.238384	25.165546
2312	23.083749	1.786568	19.834787	26.864895
2334	22.064696	1.685890	18.995925	25.629223
2359	19.390320	1.690502	16.344621	23.003562
2384	22.937668	1.779564	19.702024	26.704699
2411	22.131502	1.718714	19.006725	25.770005
2438	23.049413	1.839179	19.712425	26.951298
2464	21.902834	1.819297	18.612199	25.775254
2489	25.305340	2.129026	21.458415	29.841916
2512	20.642267	1.702223	17.561627	24.263308
2533	20.067016	1.757047	16.902561	23.823914
2552	25.806743	2.225297	21.793887	30.558477
2568	22.984438	1.812546	19.692842	26.826213

[131 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot CEW on Hollis-LFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          62
Model:                  GLM           Df Residuals:                57
Model Family:           Poisson       Df Model:                   4
Link Function:          log           Scale:                     1.0000
Method:                  IRLS         Log-Likelihood:             -1648.7
Date:                   Fri, 08 May 2020    Deviance:                  3091.3
Time:                   08:03:45           Pearson chi2:              4.36e+03
No. Iterations:         6                Covariance Type:          nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	3.6484	0.496	7.357	0.000	2.676	4.620
tempf	-0.4368	0.089	-4.884	0.000	-0.612	-0.262
dwpf	0.0125	0.014	0.903	0.367	-0.015	0.040
drct	0.0110	0.001	8.689	0.000	0.008	0.013
feel	0.3997	0.082	4.893	0.000	0.240	0.560

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
5      13.966743  0.944250    12.233422    15.945653
16     18.781128  0.866616    17.157135    20.558839
27     25.212796  1.586913    22.286698    28.523072

```

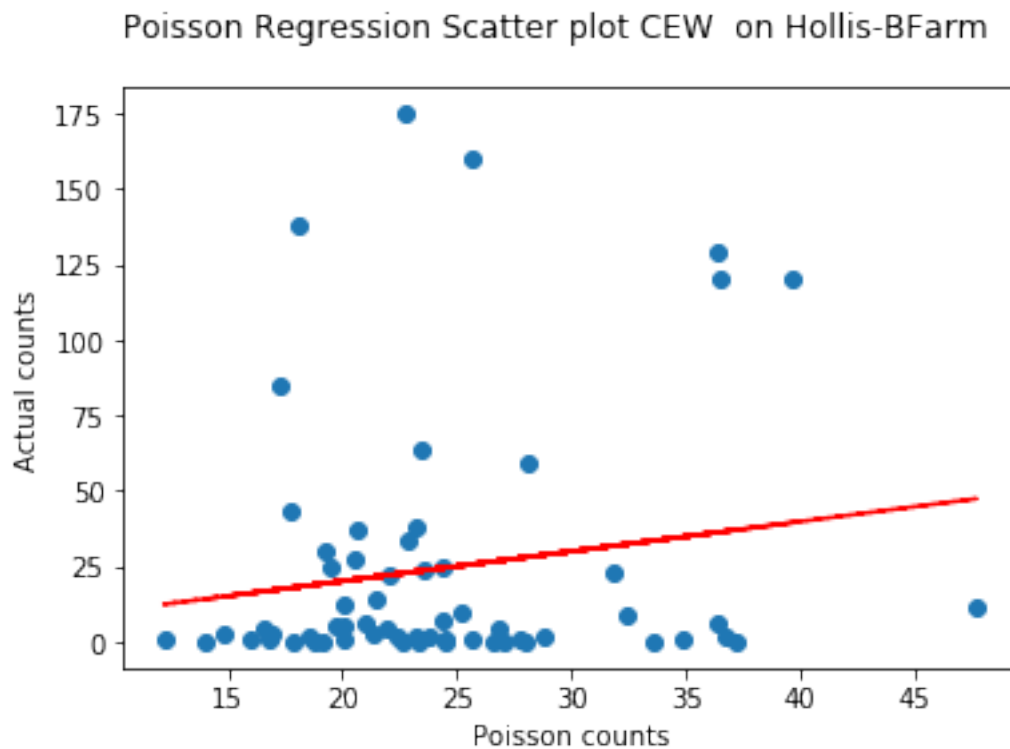
38	16.039471	0.885700	14.394172	17.872834
51	25.681243	1.215579	23.405926	28.177746
65	19.686865	1.555140	16.863080	22.983503
79	36.374011	2.933274	31.056218	42.602376
92	47.675581	3.804963	40.772003	55.748083
106	31.835499	1.380733	29.241142	34.660035
120	22.840007	0.855250	21.223781	24.579311
133	26.798790	0.931428	25.034016	28.687971
146	16.607272	0.811350	15.090816	18.276114
158	23.776344	1.359108	21.256342	26.595099
170	36.770176	2.001653	33.049048	40.910280
182	22.663791	1.789767	19.413904	26.457709
194	20.049335	0.797184	18.546213	21.674280
206	24.464947	1.097398	22.405923	26.713187
220	14.803150	0.891307	13.155361	16.657334
234	20.057507	1.150441	17.924806	22.443957
248	22.038910	0.833858	20.463706	23.735365
262	23.550049	0.687159	22.241030	24.936112
276	28.847011	1.322792	26.367479	31.559712
290	39.697656	2.490347	35.104806	44.891401
304	17.210032	1.178075	15.049240	19.681075
318	23.178632	1.109523	21.102903	25.458535
332	22.697655	0.803154	21.176848	24.327678
346	28.126120	1.006380	26.221227	30.169398
356	18.033537	0.991641	16.191029	20.085719
362	20.685435	1.375050	18.158570	23.563928
367	16.834714	0.877736	15.199364	18.646016
..	...	...	...	...
409	21.357879	1.096428	19.313494	23.618667
423	20.090672	1.360506	17.593512	22.942270
438	20.580527	1.163909	18.421192	22.992978
453	24.370581	1.483893	21.629045	27.459614
468	23.218577	0.942573	21.442753	25.141470
483	19.235352	0.931860	17.492969	21.151285
498	32.456090	1.322004	29.965739	35.153405
513	34.815164	1.804284	31.452503	38.537333
528	21.461589	0.788199	19.971036	23.063390
543	36.424501	1.724041	33.197441	39.965257
558	21.939910	1.137960	19.819170	24.287578
573	23.327775	1.327764	20.865311	26.080852
587	37.189252	2.807773	32.073923	43.120403
596	24.504749	1.303128	22.079263	27.196684
610	27.788163	0.854968	26.161980	29.515426
623	19.130208	1.127025	17.044040	21.471721
638	20.972519	0.944778	19.200182	22.908457
654	19.439451	1.024941	17.530914	21.555765
670	23.394712	1.359669	20.875987	26.217326
686	17.708035	0.845909	16.125332	19.446079



704	24.391304	1.421096	21.759153	27.341860
722	25.668911	0.830823	24.091103	27.350056
740	36.447731	1.661980	33.331631	39.855149
758	22.363606	0.732209	20.973580	23.845757
777	27.940013	1.793210	24.637458	31.685264
795	27.086699	0.857054	25.457930	28.819675
812	16.858732	1.138211	14.769178	19.243916
827	33.583876	2.365607	29.253189	38.555684
842	17.883289	2.681774	13.329117	23.993489
855	26.650112	2.194748	22.677702	31.318361

[62 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



#### Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	62
Model:	GLM	Df Residuals:	57
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -355.47  
Date: Fri, 08 May 2020 Deviance: 420.42  
Time: 08:03:45 Pearson chi2: 455.  
No. Iterations: 27 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	6.9779	1.537	4.540	0.000	3.966	9.990
tempf	-1.0486	0.273	-3.840	0.000	-1.584	-0.513
dwpf	-0.0428	0.042	-1.025	0.305	-0.125	0.039
drct	0.0103	0.004	2.674	0.007	0.003	0.018
feel	1.0093	0.251	4.024	0.000	0.518	1.501

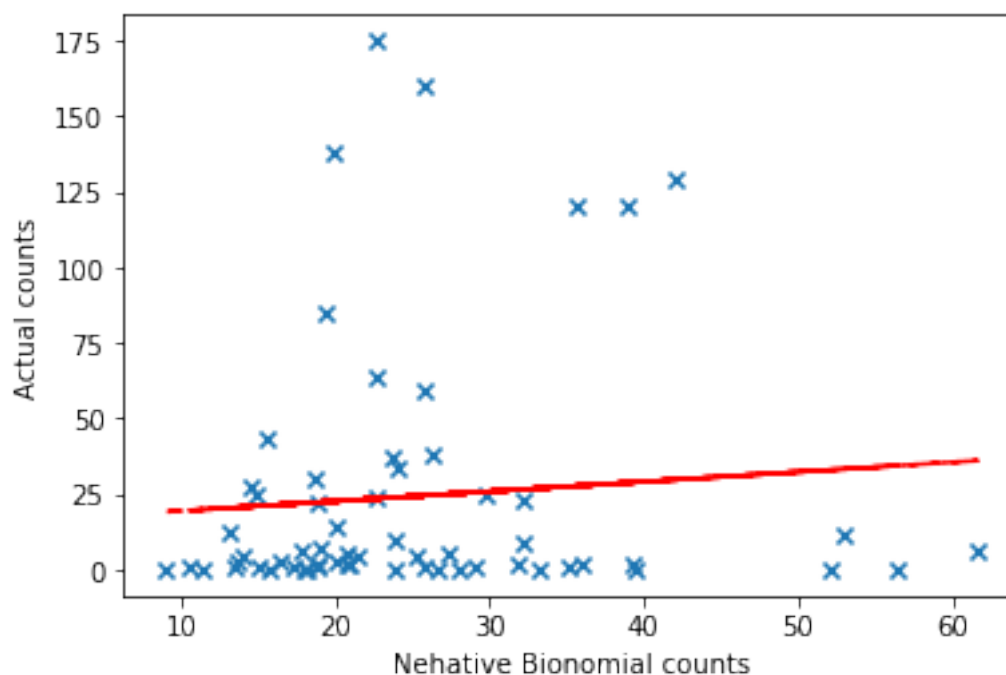
	mean	mean_se	mean_ci_lower	mean_ci_upper
5	11.411959	2.161654	7.872734	16.542259
16	15.690376	2.065125	12.122733	20.307955
27	23.888115	4.664074	16.292496	35.024837
38	14.994430	2.352282	11.025441	20.392194
51	25.876865	3.793635	19.414342	34.490592
65	27.307780	6.303662	17.369891	42.931465
79	61.578148	15.834875	37.199697	101.932774
92	52.881936	14.563010	30.824590	90.722995
106	32.157010	4.522055	24.410467	42.361881
120	24.124299	2.721313	19.339084	30.093555
133	25.322855	2.783010	20.415719	31.409474
146	13.952422	1.918152	10.656830	18.267164
158	31.780246	5.573836	22.535528	44.817412
170	36.024801	6.445339	25.369375	51.155628
182	33.186407	7.941451	20.761997	53.045840
194	17.289153	2.002905	13.777302	21.696180
206	18.917556	2.646652	14.380636	24.885822
220	13.627521	2.291196	9.801765	18.946519
234	20.834473	3.426447	15.093623	28.758850
248	18.883657	2.124551	15.146757	23.542498
262	22.643100	1.977381	19.081037	26.870132
276	39.248948	5.762273	29.434739	52.335437
290	35.594456	7.605936	23.415041	54.109036
304	19.410053	3.768457	13.266800	28.397970
318	26.275603	3.838933	19.732857	34.987703
332	22.734107	2.384871	18.509065	27.923595
346	25.852514	3.100198	20.437505	32.702256
356	19.978571	3.298393	14.455529	27.611809
362	23.743668	4.841848	15.920964	35.410025
367	13.457515	2.072392	9.951396	18.198927
..	...	...	...	...
409	16.535132	2.536595	12.241309	22.335077
423	13.145766	2.706309	8.781115	19.679866
438	14.620887	2.496389	10.462572	20.431909

453	19.111052	3.558771	13.267155	27.529060
468	18.911803	2.338826	14.841053	24.099119
483	18.765693	2.547068	14.382389	24.484893
498	32.201799	4.586927	24.357475	42.572388
513	35.178686	5.961975	25.236006	49.038662
528	20.052681	2.182529	16.200480	24.820870
543	42.134258	6.645370	30.930345	57.396570
558	21.498287	3.391987	15.779811	29.289092
573	28.047173	4.896317	19.920083	39.489992
587	56.447101	13.841913	34.906852	91.279363
596	23.844213	3.877583	17.336414	32.794929
610	29.096537	2.917109	23.905786	35.414374
623	18.074355	3.040975	12.997200	25.134823
638	17.901865	2.411250	13.748258	23.310355
654	14.880835	2.314380	10.970893	20.184250
670	22.625193	3.979052	16.028504	31.936814
686	15.530824	2.065686	11.966853	20.156216
704	29.715689	5.256503	21.009419	42.029823
722	25.852866	2.614199	21.204919	31.519605
740	38.974795	6.287143	28.410176	53.467977
758	21.030015	2.040720	17.387627	25.435417
777	39.512521	7.933222	26.658315	58.564816
795	26.662736	2.726816	21.819849	32.580495
812	20.136598	4.114820	13.491090	30.055582
827	52.015187	11.510463	33.710673	80.258847
842	8.942951	4.081730	3.655751	21.876868
855	18.261048	4.625591	11.115096	30.001169

[62 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot CEW on Hollis-BFarm



### Generalized Linear Model Regression Results

```
=====
Dep. Variable:          trap_count    No. Observations:          150
Model:                  GLM           Df Residuals:              145
Model Family:           Poisson       Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                 IRLS          Log-Likelihood:            -2617.0
Date:                   Fri, 08 May 2020    Deviance:                  4826.3
Time:                   08:03:45           Pearson chi2:              8.15e+03
No. Iterations:         5                 Covariance Type:          nonrobust
=====
```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	1.2953	0.161	8.045	0.000	0.980	1.611
tempf	-0.1764	0.033	-5.369	0.000	-0.241	-0.112
dwpf	0.0254	0.010	2.619	0.009	0.006	0.044
drct	0.0088	0.001	9.261	0.000	0.007	0.011
feel	0.1598	0.032	4.986	0.000	0.097	0.223

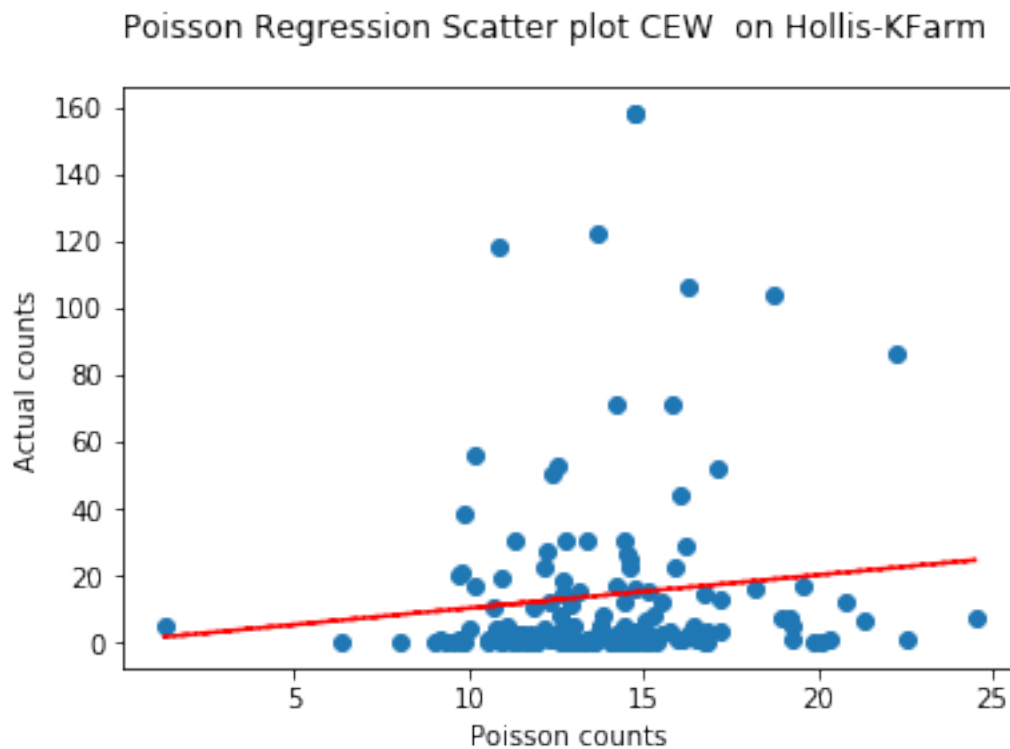
```
=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
6         10.539962  0.461240      9.673633     11.483876
17        13.308909  0.469214     12.420320     14.261070
28        16.092749  0.580850     14.993639     17.272429
=====
```

39	11.519985	0.548995	10.492698	12.647848
52	16.669509	0.684559	15.380374	18.066696
66	12.957925	0.738709	11.588039	14.489754
80	19.251977	1.056730	17.288342	21.438644
93	24.507152	1.644526	21.486905	27.951931
107	16.830012	0.575551	15.738927	17.996736
121	12.694210	0.376030	11.978191	13.453030
134	14.761487	0.443772	13.916838	15.657399
147	10.800980	0.398768	10.047016	11.611524
159	11.385235	0.356986	10.706620	12.106863
171	17.228111	0.806759	15.717286	18.884165
183	10.517094	0.549270	9.493811	11.650672
193	13.040712	0.463561	12.163077	13.981674
205	15.938736	0.509561	14.970662	16.969411
219	10.747891	0.497760	9.815267	11.769130
233	13.765512	0.517102	12.788422	14.817256
247	14.319102	0.464934	13.436238	15.259978
261	14.245552	0.330713	13.611891	14.908711
275	15.551866	0.471959	14.653816	16.504953
289	22.278666	1.162396	20.113030	24.677482
303	10.828683	0.490594	9.908591	11.834213
317	12.202619	0.391186	11.459499	12.993929
331	12.404366	0.361166	11.716312	13.132827
345	16.708138	0.478497	15.796135	17.672796
355	10.175437	0.437512	9.353068	11.070113
366	11.391056	0.522574	10.411528	12.462740
380	9.036233	0.506592	8.095937	10.085740
...	...	...	...	...
1985	6.359201	0.689553	5.141661	7.865052
2001	12.867901	0.488283	11.945606	13.861404
2019	14.187225	0.373617	13.473526	14.938729
2040	12.283086	0.444651	11.441785	13.186248
2060	22.572620	1.223672	20.297284	25.103022
2081	9.719351	0.639834	8.542832	11.057900
2104	19.251831	0.755742	17.826153	20.791530
2128	13.601160	0.497065	12.661004	14.611128
2149	11.609205	0.420832	10.813009	12.464027
2169	21.312913	1.146867	19.179571	23.683546
2188	16.223739	0.624815	15.044202	17.495757
2206	18.956525	0.860660	17.342537	20.720718
2223	13.150527	0.475054	12.251636	14.115369
2236	9.590147	0.652611	8.392684	10.958463
2247	12.830757	0.415827	12.041096	13.672203
2257	14.096954	0.983072	12.296045	16.161628
2268	14.093293	1.019974	12.229494	16.241138
2287	11.789249	0.854127	10.228615	13.587996
2307	13.503558	0.925177	11.806723	15.444258
2329	12.581518	0.859607	11.004653	14.384332

2354	9.870935	0.734507	8.531384	11.420815
2379	13.395450	0.924411	11.700825	15.335507
2406	12.332053	0.852011	10.770270	14.120309
2434	12.947098	0.914311	11.273570	14.869058
2459	11.926565	0.881350	10.318420	13.785342
2484	15.250828	1.106700	13.228929	17.581752
2508	10.722965	0.770597	9.314166	12.344849
2529	10.146304	0.765482	8.751640	11.763222
2548	15.508904	1.124921	13.453651	17.878130
2565	12.639568	0.880336	11.026729	14.488310

[150 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



# Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	150
Model:	GLM	Df Residuals:	145
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -1829.1  
Date: Fri, 08 May 2020 Deviance: 3215.4  
Time: 08:03:46 Pearson chi2: 5.90e+03  
No. Iterations: 7 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	1.3134	0.189	6.958	0.000	0.943	1.683
tempf	-0.1748	0.037	-4.762	0.000	-0.247	-0.103
dwpf	0.0215	0.011	1.895	0.058	-0.001	0.044
drct	0.0088	0.001	7.847	0.000	0.007	0.011
feel	0.1612	0.036	4.498	0.000	0.091	0.232

	mean	mean_se	mean_ci_lower	mean_ci_upper
6	10.430947	0.529999	9.442217	11.523211
17	13.127658	0.542219	12.106807	14.234587
28	16.231047	0.698605	14.917970	17.659701
39	11.324248	0.631064	10.152539	12.631185
52	16.464810	0.791484	14.984366	18.091520
66	12.953780	0.854713	11.382372	14.742132
80	19.207331	1.213160	16.970866	21.738523
93	24.966069	2.021718	21.302031	29.260336
107	16.733302	0.688312	15.437185	18.138243
121	12.579943	0.433925	11.757577	13.459828
134	14.667949	0.522362	13.679052	15.728338
147	10.718420	0.452204	9.867772	11.642398
159	11.384295	0.406145	10.615459	12.208815
171	17.334137	0.965907	15.540711	19.334529
183	10.678065	0.638076	9.497917	12.004851
193	12.851314	0.535709	11.843091	13.945370
205	15.803249	0.604542	14.661698	17.033681
219	10.612547	0.573273	9.546388	11.797777
233	13.734202	0.599913	12.607320	14.961809
247	14.140515	0.541922	13.117277	15.243572
261	14.205591	0.389621	13.462110	14.990132
275	15.541662	0.552294	14.496023	16.662726
289	22.348966	1.413132	19.744024	25.297591
303	10.870116	0.568979	9.810234	12.044506
317	12.088130	0.450039	11.237483	13.003169
331	12.414741	0.409903	11.636789	13.244701
345	16.700121	0.580595	15.600079	17.877732
355	10.063311	0.501391	9.127060	11.095602
366	11.173840	0.599111	10.059197	12.411995
380	8.925259	0.582826	7.853021	10.143899
...	...	...	...	...
1985	6.382809	0.776629	5.028539	8.101807
2001	12.754790	0.562908	11.697881	13.907192
2019	14.110759	0.437230	13.279307	14.994271

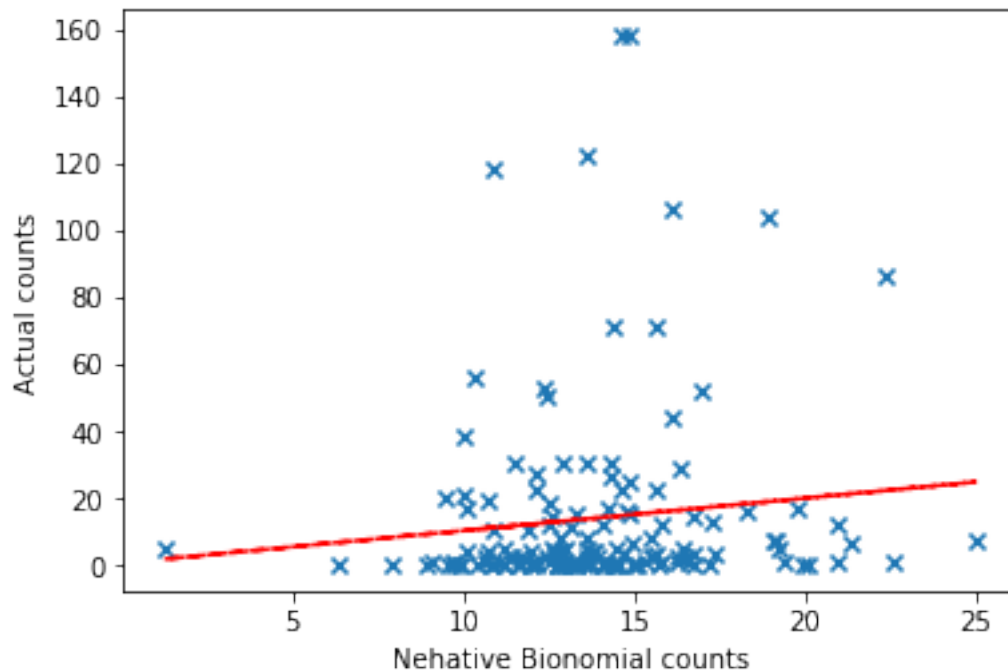
2040	12.120416	0.508284	11.164040	13.158721
2060	22.541458	1.475596	19.827188	25.627302
2081	9.671388	0.709594	8.375984	11.167136
2104	19.338209	0.924059	17.609310	21.236854
2128	13.649980	0.572899	12.572062	14.820317
2149	11.546476	0.477619	10.647301	12.521587
2169	21.304893	1.382612	18.760284	24.194648
2188	16.295770	0.746478	14.896456	17.826529
2206	19.105190	1.048305	17.157175	21.274382
2223	13.012102	0.548596	11.980099	14.133005
2236	9.742941	0.747077	8.383415	11.322939
2247	12.709964	0.477541	11.807633	13.681251
2257	14.320815	1.151393	12.232948	16.765030
2268	14.351735	1.195919	12.189179	16.897963
2287	12.003626	1.002906	10.190474	14.139386
2307	13.705396	1.082587	11.739655	16.000291
2329	12.740768	1.001932	10.920871	14.863940
2354	10.002071	0.860404	8.450207	11.838931
2379	13.598820	1.081219	11.636534	15.892008
2406	12.502836	0.995444	10.696410	14.614334
2434	13.157099	1.071575	11.215906	15.434264
2459	12.132167	1.032662	10.268005	14.334769
2484	15.506937	1.299802	13.157631	18.275712
2508	10.863475	0.901307	9.233095	12.781747
2529	10.297204	0.897501	8.680183	12.215458
2548	15.760521	1.324340	13.367339	18.582158
2565	12.820556	1.030198	10.952377	15.007395

[150 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



# Negative Binomial Regression Scatter plot CEW on Hollis-KFarm



## Generalized Linear Model Regression Results

```
=====
Dep. Variable:          trap_count    No. Observations:          133
Model:                  GLM          Df Residuals:              128
Model Family:           Poisson      Df Model:                  4
Link Function:           log          Scale:                    1.0000
Method:                  IRLS         Log-Likelihood:           -2587.4
Date:                    Fri, 08 May 2020    Deviance:                 4824.0
Time:                    08:03:46           Pearson chi2:             9.66e+03
No. Iterations:          6               Covariance Type:         nonrobust
=====
```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	3.4241	0.168	20.416	0.000	3.095	3.753
tempf	-0.0154	0.027	-0.567	0.571	-0.069	0.038
dwpf	-0.1052	0.010	-10.956	0.000	-0.124	-0.086
drct	-0.0014	0.001	-1.367	0.172	-0.003	0.001
feel	0.0967	0.026	3.691	0.000	0.045	0.148

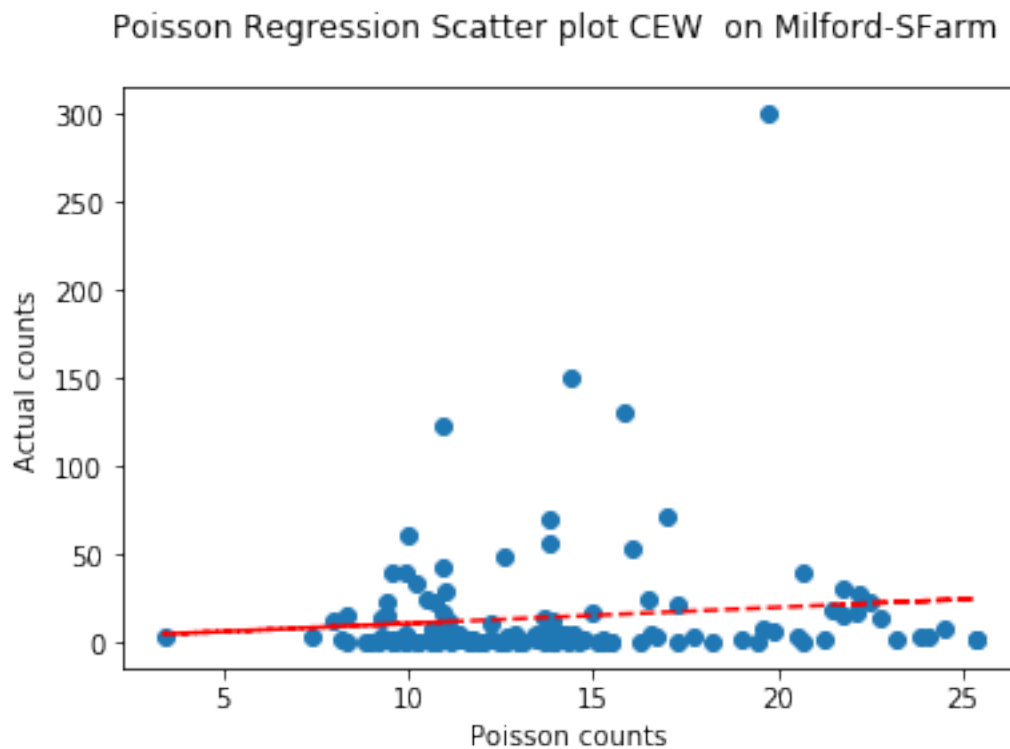
```
=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
7           11.167180  0.525048    10.184098    12.245161
18           9.950779  0.402821     9.191773    10.772459
29          16.691575  0.592494    15.569784    17.894191
=====
```

40	9.586804	0.510698	8.636336	10.641875
53	10.263369	0.456383	9.406746	11.198001
67	15.251691	0.815229	13.734720	16.936208
81	13.757024	0.695066	12.459999	15.189063
94	19.856676	1.467721	17.178664	22.952169
108	11.283191	0.455429	10.424962	12.212073
122	10.988554	0.367161	10.291990	11.732262
135	11.216424	0.386758	10.483440	12.000657
148	11.438693	0.428493	10.628951	12.310123
160	13.934758	0.419357	13.136605	14.781406
172	14.333567	0.733038	12.966497	15.844769
184	20.534813	0.940195	18.772328	22.462773
192	9.570042	0.392482	8.830896	10.371055
204	10.596131	0.399853	9.840714	11.409537
217	10.738375	0.544016	9.723350	11.859360
231	13.648717	0.500490	12.702196	14.665770
245	9.956125	0.379003	9.240328	10.727370
259	12.672374	0.329245	12.043221	13.334396
273	13.916593	0.423279	13.111225	14.771431
287	13.480892	0.808615	11.985651	15.162669
301	16.051645	0.682834	14.767590	17.447350
315	10.933616	0.388352	10.198351	11.721891
329	13.714747	0.368570	13.011058	14.456494
343	12.989019	0.434320	12.165062	13.868784
378	10.910158	0.655739	9.697746	12.274146
392	12.491839	0.546846	11.464733	13.610962
406	11.387249	0.363455	10.696714	12.122362
...	...	...	...	...
1793	17.740747	0.751764	16.326845	19.277093
1813	21.246491	1.060888	19.265695	23.430942
1833	10.828736	0.519205	9.857464	11.895708
1854	13.360359	0.458859	12.490613	14.290667
1874	10.760662	0.498961	9.825838	11.784423
1894	14.479247	0.429025	13.662324	15.345017
1913	16.591444	0.887124	14.940718	18.424549
1932	14.361780	0.403101	13.593056	15.173978
1949	12.271418	0.600388	11.149338	13.506425
1963	16.305284	0.695788	14.997036	17.727655
1995	11.671229	0.470103	10.785275	12.629959
2013	11.729206	0.346614	11.069154	12.428617
2034	9.653812	0.383977	8.929818	10.436504
2054	12.016883	0.747449	10.637686	13.574895
2075	10.986719	0.606817	9.859493	12.242820
2097	14.353710	0.651917	13.131195	15.690040
2121	14.091086	0.474379	13.191330	15.052212
2144	11.900508	0.427946	11.090626	12.769532
2164	12.233041	0.759574	10.831326	13.816156
2183	14.103044	0.595237	12.983352	15.319299

2201	15.106602	0.780878	13.651084	16.717311
2218	10.240923	0.404760	9.477556	11.065775
2232	19.452409	1.104934	17.402975	21.743191
2349	22.097470	1.734288	18.946859	25.771986
2374	22.192994	1.654556	19.175921	25.684764
2400	21.731139	1.612104	18.790438	25.132060
2428	22.724984	1.736256	19.564524	26.395985
2453	24.059096	1.894716	20.617926	28.074603
2479	22.505710	1.789634	19.257768	26.301438
2503	21.725915	1.659462	18.705179	25.234475

[133 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



#### Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	133
Model:	GLM	Df Residuals:	128
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -1302.0  
Date: Fri, 08 May 2020 Deviance: 2200.3  
Time: 08:03:46 Pearson chi2: 4.79e+03  
No. Iterations: 9 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	3.3372	0.243	13.737	0.000	2.861	3.813
tempf	-0.0211	0.035	-0.609	0.543	-0.089	0.047
dwpf	-0.1071	0.014	-7.756	0.000	-0.134	-0.080
drct	-0.0002	0.001	-0.129	0.898	-0.003	0.003
feel	0.1033	0.033	3.123	0.002	0.038	0.168

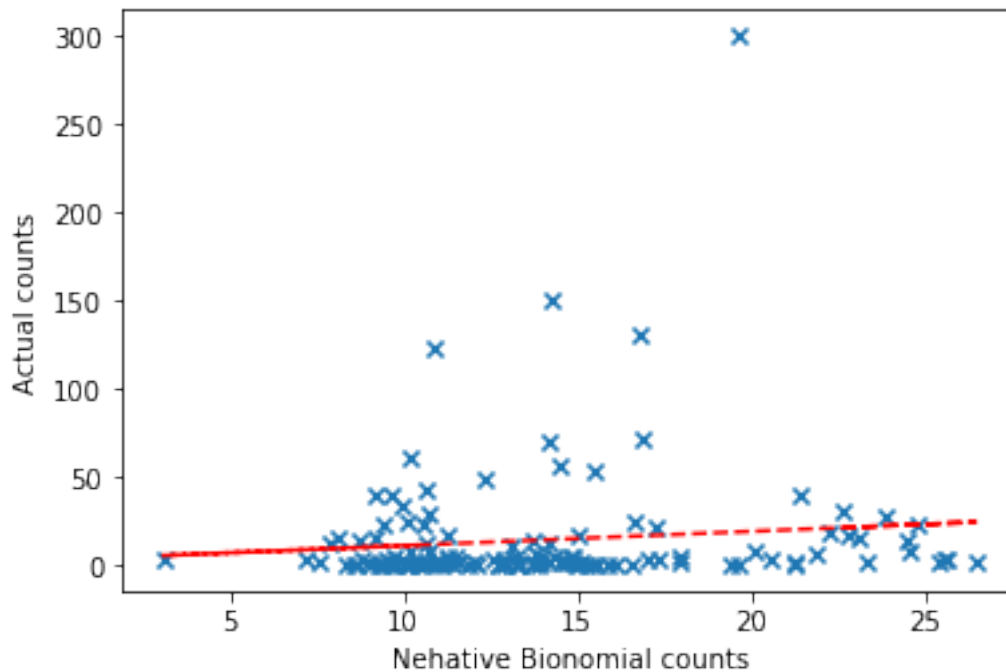
	mean	mean_se	mean_ci_lower	mean_ci_upper
7	10.449132	0.670975	9.213436	11.850558
18	9.535919	0.514493	8.579018	10.599553
29	17.010630	0.887527	15.357094	18.842205
40	8.917196	0.641800	7.743985	10.268147
53	10.057771	0.593642	8.959032	11.291259
67	14.516534	1.080808	12.545499	16.797239
81	13.772150	0.914145	12.092109	15.685610
94	21.837129	2.279176	17.797306	26.793954
108	11.520405	0.629225	10.350862	12.822094
122	10.748712	0.478406	9.850788	11.728484
135	11.288463	0.519412	10.314990	12.353807
148	10.984946	0.549903	9.958341	12.117383
160	13.747843	0.579820	12.657118	14.932560
172	15.260358	1.075176	13.292079	17.520098
184	20.588714	1.390686	18.035738	23.503067
192	9.229002	0.503959	8.292280	10.271538
204	10.607351	0.535788	9.607534	11.711215
217	9.994165	0.689944	8.729393	11.442186
231	13.225631	0.675192	11.966332	14.617455
245	9.727795	0.491560	8.810527	10.740560
259	12.602706	0.440405	11.768424	13.496131
273	13.876884	0.569857	12.803750	15.039962
287	14.358511	1.193239	12.200336	16.898457
301	15.456553	0.949727	13.702840	17.434709
315	10.673931	0.509632	9.720383	11.721019
329	13.699090	0.500219	12.752940	14.715436
343	13.245540	0.605924	12.109635	14.487996
378	10.006499	0.825437	8.512682	11.762452
392	11.862483	0.710221	10.549045	13.339455
406	11.244972	0.481439	10.339875	12.229295
...	...	...	...	...
1793	17.341264	1.083930	15.341779	19.601342
1813	21.279169	1.598861	18.365283	24.655381
1833	10.134315	0.660510	8.919014	11.515211

1854	12.876888	0.615303	11.725666	14.141136
1874	10.130408	0.637445	8.955009	11.460085
1894	14.860023	0.611255	13.709006	16.107679
1913	17.921615	1.341002	15.476943	20.752437
1932	14.636470	0.566718	13.566824	15.790451
1949	12.871384	0.862902	11.286529	14.678786
1963	15.865744	0.975105	14.065195	17.896788
1995	11.133985	0.606389	10.006720	12.388238
2013	11.562421	0.459348	10.696274	12.498705
2034	9.306088	0.487654	8.397747	10.312679
2054	12.719957	1.091003	10.751702	15.048529
2075	10.663435	0.750880	9.288780	12.241527
2097	15.073499	0.949904	13.322107	17.055136
2121	14.155630	0.666718	12.907387	15.524588
2144	11.423386	0.561923	10.373464	12.579574
2164	13.073410	1.119697	11.053151	15.462926
2183	14.800452	0.859990	13.207340	16.585730
2201	16.129625	1.159694	14.009552	18.570530
2218	10.148914	0.539209	9.145246	11.262731
2232	19.625345	1.552993	16.805832	22.917887
2349	22.783877	2.721425	18.028337	28.793839
2374	23.869403	2.704928	19.115326	29.805842
2400	23.074350	2.611173	18.484366	28.804105
2428	24.477316	2.851345	19.480852	30.755277
2453	25.601465	3.072742	20.234935	32.391259
2479	24.779945	2.968855	19.593812	31.338756
2503	22.651872	2.641432	18.023768	28.468369

[133 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot CEW on Milford-SFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          142
Model:                  GLM          Df Residuals:              137
Model Family:           Poisson      Df Model:                  4
Link Function:           log          Scale:                    1.0000
Method:                  IRLS         Log-Likelihood:           -1251.4
Date:                    Fri, 08 May 2020    Deviance:                 2179.9
Time:                    08:03:46           Pearson chi2:             3.63e+03
No. Iterations:          6              Covariance Type:         nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	0.9277	0.261	3.557	0.000	0.416	1.439
tempf	-0.0284	0.039	-0.733	0.463	-0.104	0.048
dwpf	-0.0800	0.013	-6.398	0.000	-0.105	-0.056
drct	0.0015	0.001	1.050	0.294	-0.001	0.004
feel	0.1113	0.038	2.957	0.003	0.038	0.185

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
8          6.181190  0.393237    5.456575    7.002032
19         6.033850  0.323979    5.431133    6.703453
30         9.829203  0.441956    9.000058   10.734735

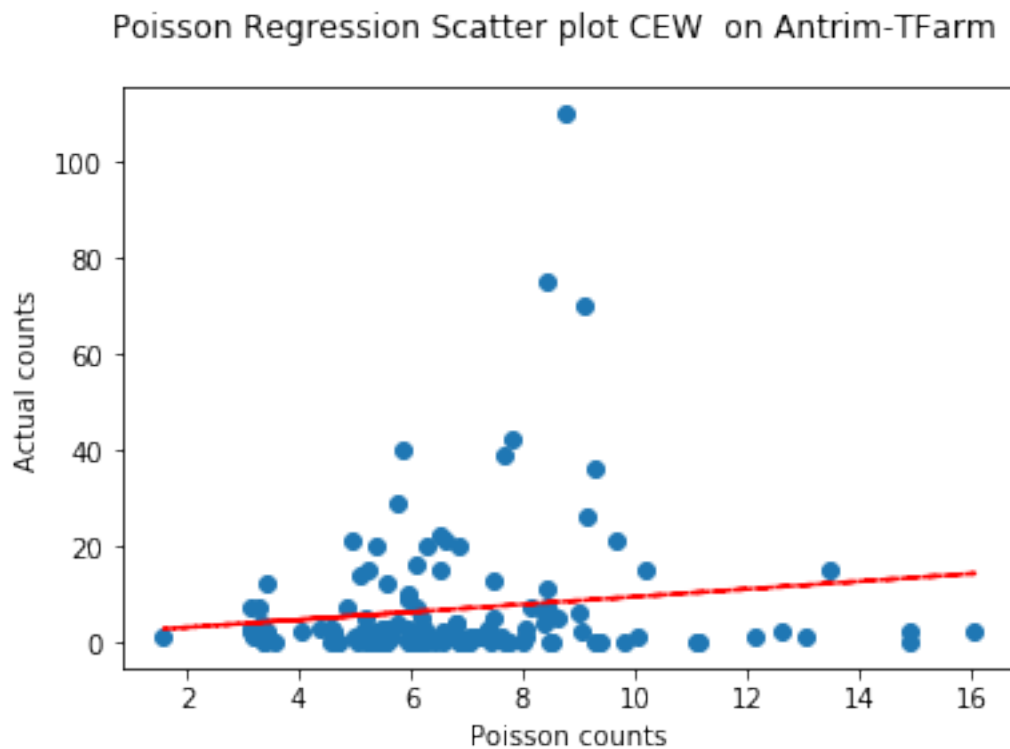
```

41	5.643320	0.402893	4.906422	6.490893
54	6.832148	0.405215	6.082364	7.674359
68	9.350180	0.691688	8.088195	10.809071
82	9.065657	0.617240	7.933134	10.359858
95	12.159481	1.170709	10.068431	14.684808
109	5.954082	0.325109	5.349792	6.626630
123	5.276911	0.240478	4.826018	5.769930
136	5.611728	0.265688	5.114419	6.157393
149	5.484092	0.282115	4.958117	6.065864
161	5.568133	0.256458	5.087504	6.094167
173	6.443291	0.466396	5.591054	7.425432
185	7.404710	0.489626	6.504645	8.429321
197	5.296506	0.285792	4.764966	5.887339
209	6.304794	0.320062	5.707682	6.964373
223	6.019285	0.412819	5.262199	6.885296
237	8.392567	0.415954	7.615658	9.248734
251	5.775810	0.289927	5.234621	6.372949
265	6.813173	0.236904	6.364319	7.293684
279	7.671816	0.309274	7.088979	8.302574
293	8.438152	0.681278	7.203162	9.884881
307	7.820552	0.456663	6.974827	8.768825
321	4.945972	0.243173	4.491605	5.446303
335	6.090136	0.241532	5.634673	6.582415
349	7.392152	0.329789	6.773231	8.067627
370	4.546151	0.306403	3.983587	5.188161
384	5.524409	0.450945	4.707650	6.482874
398	7.406698	0.444621	6.584569	8.331475
...	...	...	...	...
1957	5.481573	0.380073	4.785043	6.279493
1989	6.981841	0.900919	5.421670	8.990975
2005	6.946167	0.379562	6.240691	7.731394
2023	7.043430	0.281067	6.513541	7.616427
2044	5.357713	0.284353	4.828399	5.945052
2064	7.774239	0.654430	6.591806	9.168777
2085	5.585907	0.441207	4.784769	6.521183
2109	8.037590	0.486449	7.138544	9.049863
2133	8.064396	0.377713	7.357056	8.839744
2154	7.122796	0.350928	6.467154	7.844907
2174	6.525678	0.552300	5.528206	7.703126
2193	6.284177	0.378127	5.585095	7.070763
2210	7.638742	0.539404	6.651428	8.772608
2227	4.650093	0.253058	4.179644	5.173496
2240	6.900913	0.561776	5.883201	8.094676
2251	5.170842	0.248338	4.706314	5.681221
2273	3.564253	0.492598	2.718493	4.673141
2292	3.370123	0.470246	2.563742	4.430137
2313	3.389566	0.447588	2.616640	4.390806
2335	3.344875	0.437343	2.588721	4.321898

2360	3.147291	0.439909	2.393103	4.139163
2385	3.410658	0.452926	2.629062	4.424615
2412	3.285601	0.437314	2.531162	4.264909
2439	3.309663	0.451982	2.532445	4.325412
2465	3.347457	0.473942	2.536294	4.418049
2490	3.430269	0.473511	2.617153	4.496009
2513	3.142450	0.430570	2.402365	4.110530
2534	3.143228	0.448496	2.376408	4.157487
2553	3.345142	0.461137	2.553137	4.382833
2569	3.203883	0.431740	2.460213	4.172349

[142 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



#### Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	142
Model:	GLM	Df Residuals:	137
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000



Method: IRLS Log-Likelihood: -649.05  
Date: Fri, 08 May 2020 Deviance: 903.39  
Time: 08:03:47 Pearson chi2: 1.46e+03  
No. Iterations: 9 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	0.6535	0.377	1.735	0.083	-0.085	1.392
tempf	-0.0768	0.061	-1.251	0.211	-0.197	0.043
dwpf	-0.0961	0.020	-4.866	0.000	-0.135	-0.057
drct	0.0028	0.002	1.305	0.192	-0.001	0.007
feel	0.1756	0.060	2.923	0.003	0.058	0.293

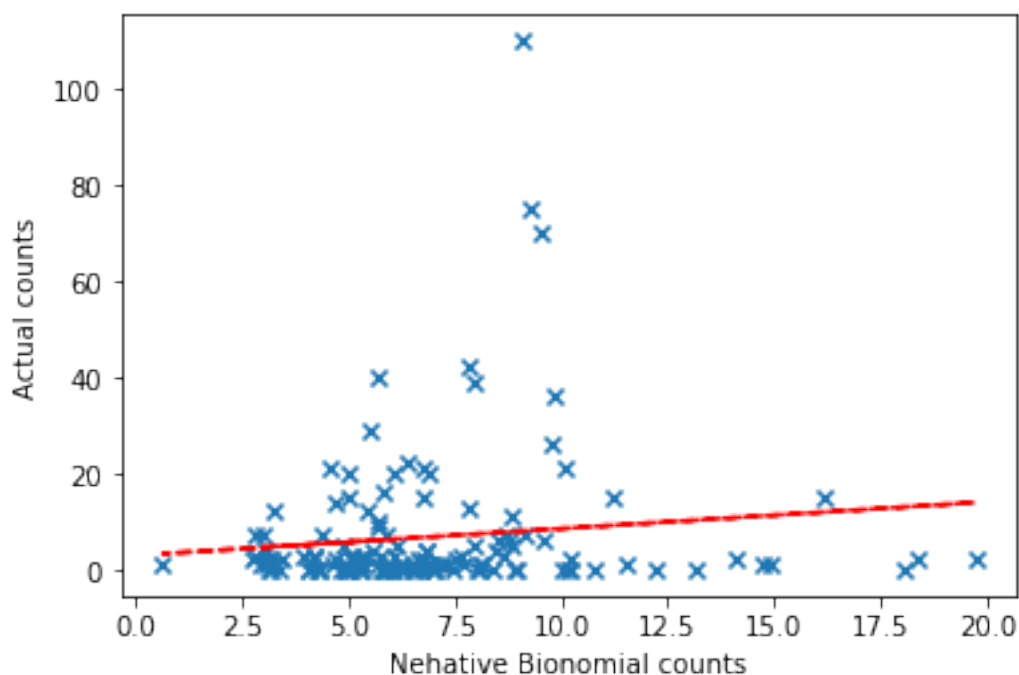
	mean	mean_se	mean_ci_lower	mean_ci_upper
8	5.811221	0.554878	4.819381	7.007184
19	5.805815	0.457641	4.974708	6.775772
30	10.776427	0.799630	9.317815	12.463370
41	5.285563	0.563821	4.288368	6.514642
54	6.982493	0.619617	5.867810	8.308928
68	10.042730	1.174815	7.985035	12.630681
82	10.196823	1.105335	8.245076	12.610582
95	14.723678	2.248724	10.914746	19.861816
109	5.892986	0.479046	5.025051	6.910832
123	4.931045	0.326423	4.331034	5.614181
136	5.386105	0.375534	4.698149	6.174799
149	5.032310	0.386403	4.329207	5.849604
161	5.229664	0.347539	4.590995	5.957180
173	6.480161	0.714596	5.220595	8.043620
185	7.342110	0.747796	6.013478	8.964293
197	4.942636	0.392114	4.230877	5.774135
209	6.229884	0.466522	5.379454	7.214758
223	5.664753	0.582956	4.630037	6.930708
237	8.774255	0.678482	7.540322	10.210114
251	5.552106	0.407844	4.807625	6.411873
265	6.803032	0.350821	6.149042	7.526578
279	8.040603	0.505640	7.108207	9.095302
293	9.275008	1.150846	7.272722	11.828554
307	7.834094	0.715202	6.550578	9.369102
321	4.545097	0.324712	3.951223	5.228232
335	5.835773	0.344555	5.198066	6.551714
349	7.641740	0.517795	6.691383	8.727073
370	4.029174	0.405762	3.307462	4.908369
384	4.987518	0.615401	3.916122	6.352033
398	7.474807	0.685673	6.244795	8.947089
...	...	...	...	...
1957	5.318505	0.554384	4.335738	6.524032
1989	6.025765	1.221928	4.049508	8.966484
2005	6.913966	0.568913	5.884187	8.123966

2023	7.019468	0.411947	6.256772	7.875137
2044	4.933460	0.386666	4.230948	5.752618
2064	8.397614	1.077557	6.530286	10.798901
2085	4.916669	0.607290	3.859522	6.263377
2109	8.630093	0.806971	7.184928	10.365936
2133	8.158559	0.598215	7.066434	9.419472
2154	6.897627	0.509193	5.968467	7.971437
2174	6.775409	0.871460	5.265663	8.718022
2193	6.261195	0.569115	5.239462	7.482173
2210	8.073544	0.877823	6.524008	9.991114
2227	4.235785	0.339749	3.619593	4.956878
2240	6.535159	0.833743	5.089341	8.391717
2251	4.783017	0.338396	4.163703	5.494447
2273	3.384249	0.621571	2.361161	4.850640
2292	3.083179	0.570198	2.145749	4.430152
2313	3.146554	0.551092	2.232311	4.435226
2335	3.072801	0.533670	2.186259	4.318842
2360	2.765525	0.518355	1.915283	3.993211
2385	3.171670	0.558624	2.245776	4.479292
2412	2.998320	0.529164	2.121545	4.237442
2439	3.046912	0.551222	2.137310	4.343624
2465	3.074839	0.577898	2.127375	4.444272
2490	3.248750	0.598766	2.263780	4.662278
2513	2.790086	0.509427	1.950748	3.990560
2534	2.778582	0.529898	1.912020	4.037887
2553	3.144455	0.580629	2.189624	4.515660
2569	2.914212	0.520347	2.053691	4.135303

[142 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot CEW on Antrim-TFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          121
Model:                  GLM          Df Residuals:                116
Model Family:           Poisson      Df Model:                    4
Link Function:          log          Scale:                      1.0000
Method:                 IRLS         Log-Likelihood:            -1691.4
Date:                   Fri, 08 May 2020    Deviance:                 3035.8
Time:                   08:03:47          Pearson chi2:              4.65e+03
No. Iterations:         6                Covariance Type:          nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	2.1164	0.175	12.119	0.000	1.774	2.459
tempf	-0.0215	0.049	-0.434	0.664	-0.118	0.075
dwpf	-0.0384	0.011	-3.597	0.000	-0.059	-0.017
drct	0.0050	0.001	4.528	0.000	0.003	0.007
feel	0.0514	0.049	1.049	0.294	-0.045	0.148

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
9          8.367362  0.459699      7.513182      9.318654
20         9.001210  0.431687      8.193667      9.888341
31        13.709982  0.544046     12.684083     14.818857

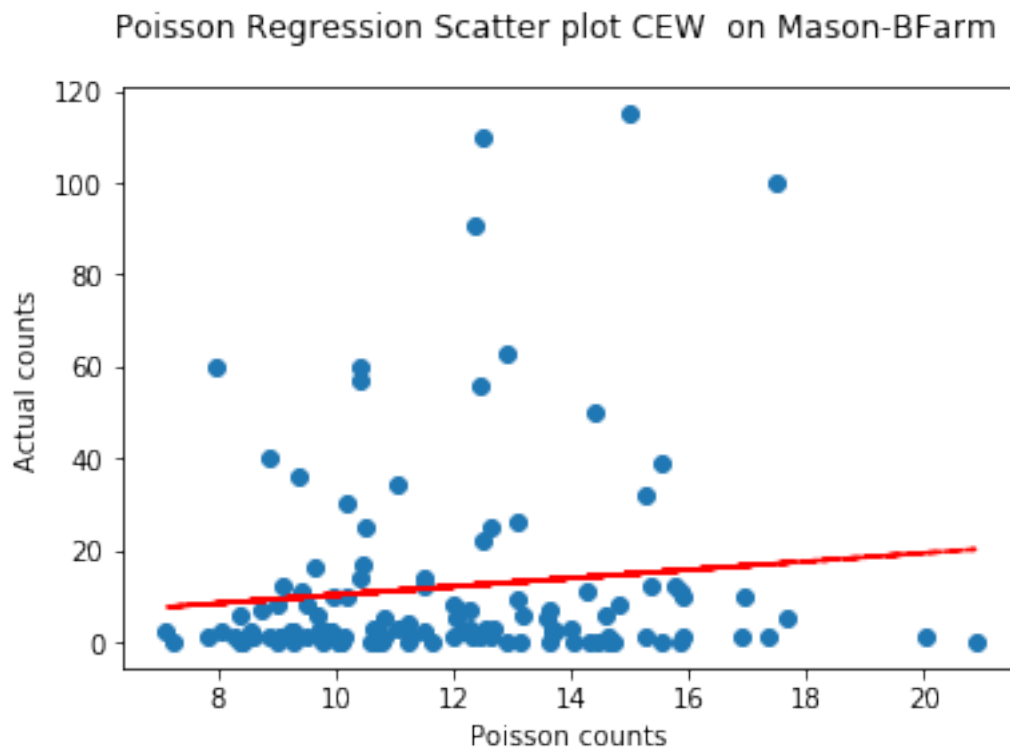
```

42	7.804058	0.508892	6.867754	8.868010
55	10.058911	0.584302	8.976486	11.271860
69	9.960897	0.786350	8.532994	11.627744
83	11.985184	0.976487	10.216295	14.060344
96	20.031700	1.576392	17.168510	23.372384
110	12.046757	0.513784	11.080699	13.097040
124	9.862917	0.379100	9.147193	10.634643
137	11.263478	0.445796	10.422765	12.172005
150	9.271766	0.433970	8.459049	10.162566
162	10.792596	0.405713	10.026002	11.617806
174	15.279858	0.989653	13.458241	17.348037
186	12.926649	0.745140	11.545680	14.472794
199	9.041409	0.421403	8.252076	9.906244
211	11.037341	0.447660	10.193911	11.950555
225	8.074031	0.489745	7.169011	9.093301
239	10.417789	0.525881	9.436427	11.501209
253	9.724729	0.415484	8.943559	10.574130
267	11.214553	0.329898	10.586251	11.880145
281	11.655625	0.489314	10.734982	12.655224
295	15.541347	0.965536	13.759611	17.553801
309	10.422641	0.523141	9.446124	11.500109
323	9.696406	0.398437	8.946102	10.509637
337	11.484633	0.441352	10.651373	12.383079
351	12.648849	0.444954	11.806141	13.551709
429	8.528328	0.548467	7.518342	9.673992
444	9.006601	0.492613	8.091047	10.025755
459	9.277738	0.565588	8.232870	10.455213
...	...	...	...	...
1959	13.629715	0.810742	12.129821	15.315075
1971	10.591315	0.530629	9.600732	11.684103
1991	8.865351	1.271655	6.692660	11.743381
2007	9.245710	0.491426	8.331005	10.260846
2027	10.703967	0.357004	10.026632	11.427058
2048	9.087653	0.432064	8.279080	9.975193
2068	14.651457	0.943003	12.915031	16.621345
2089	9.766736	0.933277	8.098627	11.778432
2113	14.737378	0.694886	13.436464	16.164246
2137	12.278178	0.574552	11.202175	13.457535
2158	9.639801	0.422451	8.846375	10.504389
2178	15.001690	0.980844	13.197350	17.052719
2197	14.273901	0.755682	12.867045	15.834581
2214	15.914100	0.923158	14.203811	17.830326
2229	10.138284	0.478212	9.243026	11.120256
2242	13.129635	1.183258	11.003767	15.666209
2253	10.028572	0.434057	9.212921	10.916435
2275	16.914982	1.235109	14.659459	19.517543
2294	15.558238	1.112326	13.523973	17.898495
2316	15.844962	1.081916	13.860215	18.113919

2339	14.569506	0.996918	12.740937	16.660509
2364	13.098564	0.971731	11.325996	15.148547
2389	15.777986	1.086066	13.786680	18.056909
2416	14.826593	1.014608	12.965589	16.954713
2443	15.902867	1.113355	13.863825	18.241803
2469	15.281013	1.121375	13.233903	17.644784
2494	17.467757	1.287970	15.117310	20.183652
2516	13.671441	0.972745	11.891865	15.717325
2537	13.656671	1.022299	11.793056	15.814787
2555	17.693788	1.313515	15.297874	20.464944

[121 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



# Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	121
Model:	GLM	Df Residuals:	116
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -1191.0  
Date: Fri, 08 May 2020 Deviance: 2004.6  
Time: 08:03:47 Pearson chi2: 3.27e+03  
No. Iterations: 7 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	2.0992	0.210	10.006	0.000	1.688	2.510
tempf	-0.0278	0.058	-0.479	0.632	-0.142	0.086
dwpf	-0.0472	0.013	-3.730	0.000	-0.072	-0.022
drct	0.0050	0.001	3.805	0.000	0.002	0.008
feel	0.0657	0.058	1.140	0.254	-0.047	0.179

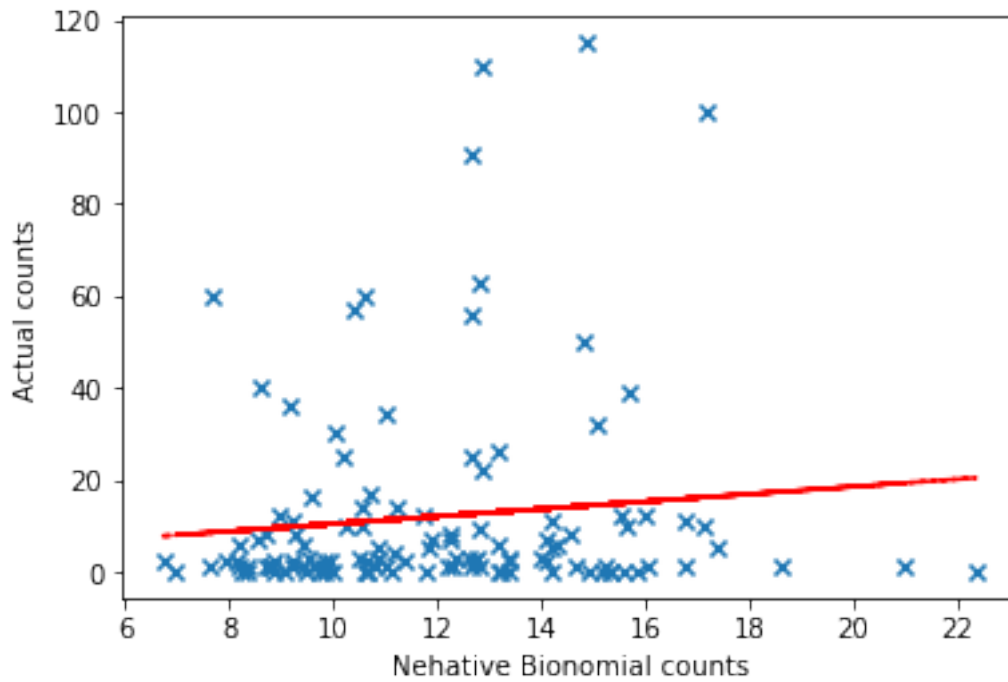
	mean	mean_se	mean_ci_lower	mean_ci_upper
9	8.269574	0.529826	7.293688	9.376032
20	8.846124	0.492522	7.931603	9.866089
31	14.123141	0.676309	12.857903	15.512880
42	7.639598	0.581351	6.581072	8.868382
55	9.983404	0.676319	8.742075	11.400994
69	10.247295	0.947820	8.548258	12.284029
83	12.264150	1.171079	10.170866	14.788257
96	21.013582	2.009031	17.422877	25.344302
110	11.864891	0.604048	10.738129	13.109885
124	9.643640	0.431868	8.833278	10.528344
137	11.047361	0.517652	10.077976	12.109990
150	9.090978	0.495724	8.169496	10.116399
162	10.679861	0.470145	9.797027	11.642250
174	15.214168	1.184093	13.061727	17.721309
186	13.191254	0.897977	11.543611	15.074069
199	8.798186	0.477407	7.910525	9.785454
211	10.879176	0.522029	9.902657	11.951990
225	7.963965	0.563926	6.931959	9.149612
239	10.578255	0.622813	9.425363	11.872167
253	9.525264	0.474220	8.639717	10.501578
267	11.189448	0.385717	10.458429	11.971564
281	11.781945	0.579219	10.699675	12.973686
295	15.719149	1.183249	13.562988	18.218084
309	10.591845	0.623139	9.438298	11.886377
323	9.443372	0.453116	8.595762	10.374563
337	11.401216	0.515053	10.435131	12.456741
351	12.685483	0.536943	11.675564	13.782759
429	8.144012	0.614838	7.023867	9.442793
444	8.703998	0.557251	7.677553	9.867674
459	8.878681	0.636915	7.714135	10.219031
...	...	...	...	...
1959	13.374367	0.953078	11.630952	15.379110
1971	10.598785	0.624256	9.443246	11.895724
1991	8.805294	1.483523	6.328966	12.250533

2007	9.230595	0.570312	8.177834	10.418883
2027	10.661721	0.416661	9.875572	11.510452
2048	8.837343	0.490305	7.926769	9.852519
2068	14.685580	1.139966	12.612950	17.098795
2089	9.511966	1.067502	7.633827	11.852182
2113	14.905795	0.854419	13.321809	16.678119
2137	12.381553	0.689892	11.100607	13.810313
2158	9.605631	0.491249	8.689484	10.618369
2178	14.885293	1.174086	12.753177	17.373863
2197	14.195779	0.903482	12.530980	16.081755
2214	16.052738	1.129402	13.984992	18.426210
2229	9.802079	0.543854	8.792057	10.928131
2242	13.261279	1.405077	10.774517	16.321988
2253	9.765619	0.494996	8.842080	10.785621
2275	16.764051	1.510475	14.050247	20.002026
2294	15.362315	1.354975	12.923485	18.261384
2316	15.590254	1.315317	13.214146	18.393623
2339	14.317067	1.208101	12.134673	16.891960
2364	12.838356	1.167858	10.741842	15.344053
2389	15.541393	1.321503	13.155618	18.359828
2416	14.560895	1.230331	12.338583	17.183469
2443	15.646170	1.353595	13.205904	18.537362
2469	15.091647	1.365962	12.638440	18.021040
2494	17.215578	1.565427	14.405260	20.574159
2516	13.390097	1.172384	11.278617	15.896869
2537	13.405051	1.232475	11.194587	16.051990
2555	17.375364	1.588996	14.524146	20.786301

[121 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot CEW on Mason-BFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          62
Model:                  GLM          Df Residuals:                57
Model Family:           Poisson      Df Model:                    4
Link Function:           log          Scale:                      1.0000
Method:                  IRLS         Log-Likelihood:             -323.90
Date:                    Fri, 08 May 2020    Deviance:                   583.82
Time:                    08:03:48           Pearson chi2:               1.36e+03
No. Iterations:          6              Covariance Type:           nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-3.5814	0.688	-5.204	0.000	-4.930	-2.233
tempf	-0.3741	0.173	-2.164	0.030	-0.713	-0.035
dwpf	0.3600	0.046	7.909	0.000	0.271	0.449
drct	0.0245	0.004	6.164	0.000	0.017	0.032
feel	0.0825	0.161	0.513	0.608	-0.233	0.398

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
10    1.369555    0.261288      0.942290      1.990556
21    3.249635    0.359442      2.616275      4.036323
32    1.158213    0.226921      0.788893      1.700430

```

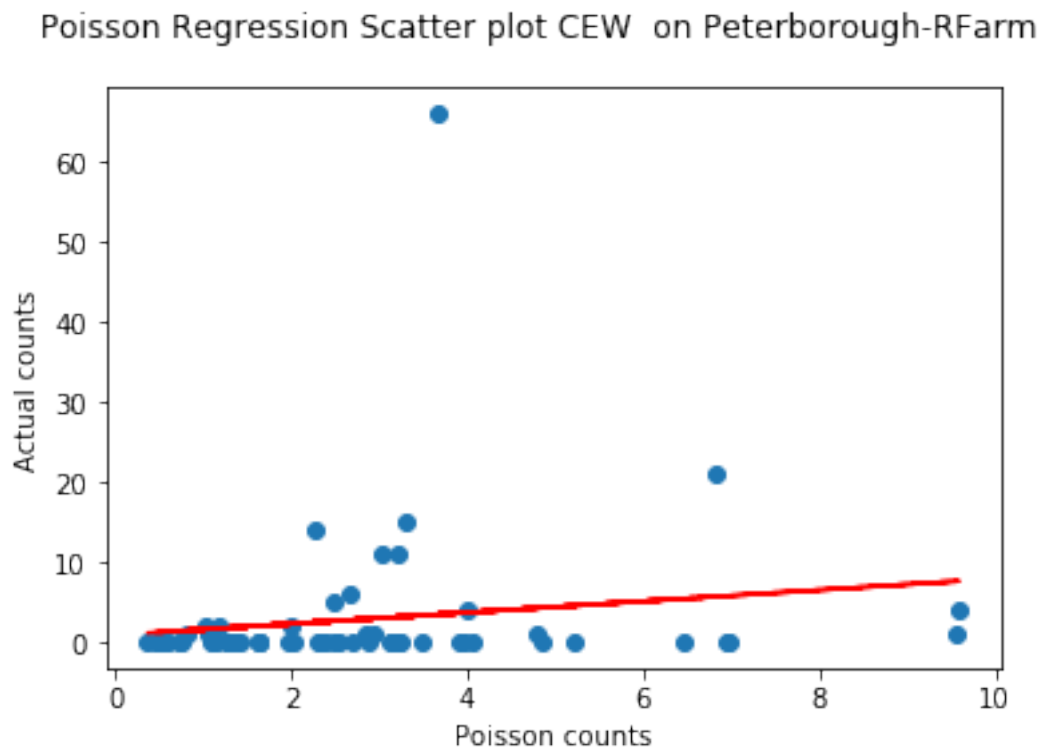


43	2.546223	0.425146	1.835567	3.532016
56	4.793446	0.685125	3.622313	6.343217
70	0.799080	0.218808	0.467208	1.366693
84	2.851134	0.689965	1.774311	4.581477
97	1.989833	0.519988	1.192281	3.320891
371	3.902986	0.560328	2.945746	5.171289
385	1.076158	0.256211	0.674873	1.716049
399	1.405269	0.268270	0.966635	2.042945
413	2.925206	0.283877	2.418530	3.538030
427	9.590745	1.479231	7.088707	12.975904
442	6.837048	0.808809	5.422171	8.621128
457	9.557787	1.446919	7.103904	12.859310
472	4.860074	0.441708	4.067067	5.807703
487	1.041559	0.190857	0.727291	1.491624
502	2.664085	0.353685	2.053724	3.455842
517	6.460309	0.833784	5.016433	8.319774
532	3.287019	0.347249	2.672263	4.043200
547	3.030005	0.383079	2.364979	3.882035
562	4.002822	0.526356	3.093403	5.179598
577	2.492950	0.318431	1.940829	3.202136
591	0.535490	0.156545	0.301933	0.949712
600	1.644819	0.376940	1.049663	2.577428
691	2.322112	0.303178	1.797833	2.999280
709	3.218939	0.642116	2.177282	4.758947
727	3.657678	0.283829	3.141621	4.258504
745	2.261109	0.367363	1.644472	3.108970
763	2.470629	0.303379	1.942159	3.142897
...	...	...	...	...
1453	0.365153	0.129914	0.181817	0.733356
1471	1.622306	0.297475	1.132535	2.323882
1490	4.057105	0.347324	3.430410	4.798291
1511	3.142153	0.391077	2.461986	4.010228
1534	3.478777	0.386281	2.798400	4.324575
1710	3.973408	0.476786	3.140682	5.026925
1728	1.971818	0.642040	1.041619	3.732716
1747	5.225520	0.513131	4.310661	6.334540
1766	2.028275	0.240764	1.607259	2.559574
1785	1.267748	0.208883	0.917874	1.750987
1804	0.446778	0.127328	0.255569	0.781047
2024	2.388407	0.273000	1.909037	2.988149
2045	3.222181	0.409144	2.512271	4.132695
2065	6.953016	1.238025	4.904694	9.856769
2086	1.345069	0.478844	0.669448	2.702541
2110	3.104707	0.438967	2.353268	4.096093
2134	1.312435	0.289595	0.851640	2.022551
2155	1.363184	0.268932	0.926035	2.006695
2175	6.968639	1.251603	4.900810	9.908960
2194	2.692310	0.441666	1.952036	3.713319

2211	2.875181	0.508443	2.033011	4.066217
2293	0.724650	0.239319	0.379328	1.384338
2314	1.255257	0.392902	0.679676	2.318267
2336	1.120635	0.351160	0.606364	2.071071
2361	0.586647	0.197131	0.303632	1.133462
2386	1.189362	0.375436	0.640652	2.208033
2413	1.038138	0.327888	0.558997	1.927972
2440	1.073603	0.345741	0.571116	2.018195
2466	0.759007	0.255854	0.392025	1.469526
2491	1.619072	0.533048	0.849229	3.086794

[62 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



#### Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	62
Model:	GLM	Df Residuals:	57
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -90.574  
Date: Fri, 08 May 2020 Deviance: 44.617  
Time: 08:03:48 Pearson chi2: 58.4  
No. Iterations: 16 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-10.0354	2.726	-3.681	0.000	-15.378	-4.693
tempf	-1.3147	0.650	-2.023	0.043	-2.588	-0.041
dwpf	0.7788	0.202	3.862	0.000	0.384	1.174
drct	0.0668	0.018	3.798	0.000	0.032	0.101
feel	0.6738	0.601	1.120	0.263	-0.505	1.853

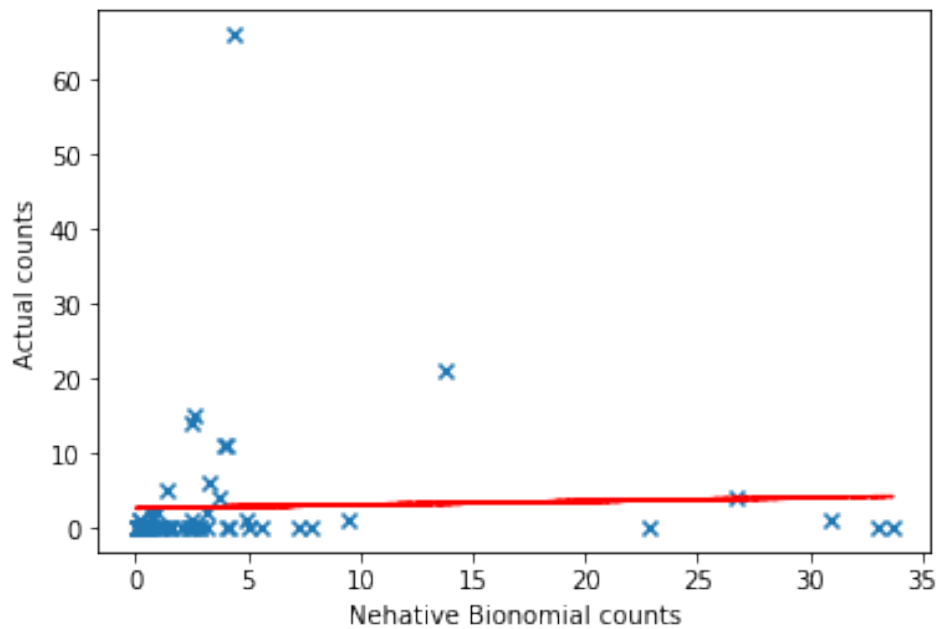
	mean	mean_se	mean_ci_lower	mean_ci_upper
10	0.280509	0.212107	0.063725	1.234760
21	2.619599	1.245645	1.031526	6.652571
32	0.446829	0.323302	0.108208	1.845125
43	1.260501	0.871683	0.325017	4.888555
56	9.446853	5.812585	2.828451	31.551916
70	0.158268	0.167908	0.019785	1.266016
84	4.958876	4.572510	0.813771	30.217904
97	3.133051	3.324283	0.391572	25.068237
371	2.870013	1.878810	0.795532	10.354044
385	0.131517	0.127550	0.019654	0.880061
399	0.450677	0.329789	0.107396	1.891230
413	2.550464	0.969358	1.210882	5.372005
427	26.714078	21.462631	5.531815	129.006841
442	13.776122	8.651954	4.022893	47.175391
457	30.949677	24.644397	6.499309	147.382212
472	7.236336	3.477796	2.821173	18.561272
487	0.218093	0.149399	0.056957	0.835092
502	3.245923	1.728400	1.143109	9.216987
517	22.826552	14.921428	6.338998	82.197763
532	2.580987	1.213403	1.027092	6.485781
547	4.065004	2.151914	1.440309	11.472716
562	3.671960	2.191856	1.139727	11.830276
577	1.383554	0.708175	0.507350	3.772985
591	0.097665	0.109923	0.010757	0.886696
600	0.556210	0.473331	0.104923	2.948533
691	1.184893	0.615049	0.428392	3.277307
709	3.974198	3.068854	0.874896	18.052719
727	4.338209	1.638081	2.069675	9.093244
745	2.502944	1.612995	0.707789	8.851132
763	1.431287	0.687863	0.558017	3.671183
...	...	...	...	...
1453	0.044839	0.062816	0.002879	0.698429
1471	1.013580	0.685988	0.269009	3.818992
1490	5.637325	2.308329	2.526559	12.578147

1511	2.426348	1.276902	0.864959	6.806293
1534	3.207271	1.535538	1.254896	8.197162
1710	3.997126	2.178641	1.373405	11.633138
1728	2.541085	3.124510	0.228236	28.291362
1747	7.831119	4.057110	2.836856	21.617744
1766	1.018059	0.440183	0.436249	2.375807
1785	0.483516	0.289551	0.149511	1.563684
1804	0.032220	0.036052	0.003595	0.288776
2024	1.470038	0.615798	0.646786	3.341153
2045	2.068711	1.114711	0.719508	5.947904
2065	33.673543	28.479200	6.417859	176.680036
2086	0.169591	0.225403	0.012533	2.294735
2110	5.021657	2.993883	1.560866	16.155801
2134	0.359019	0.286064	0.075316	1.711391
2155	0.291379	0.212763	0.069649	1.218994
2175	33.029285	28.533673	6.075116	179.574130
2194	2.783697	1.809784	0.778439	9.954503
2211	4.116388	2.993056	0.989923	17.117137
2293	0.280620	0.261257	0.045253	1.740153
2314	1.090356	0.948406	0.198236	5.997284
2336	0.756423	0.657982	0.137511	4.160931
2361	0.123278	0.123942	0.017183	0.884447
2386	0.973225	0.851931	0.175024	5.411635
2413	0.623117	0.545369	0.112092	3.463894
2440	0.747692	0.667144	0.130083	4.297590
2466	0.328598	0.310399	0.051595	2.092787
2491	2.407326	2.284187	0.374864	15.459524

[62 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot CEW on Peterborough-RFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          99
Model:                  GLM          Df Residuals:              94
Model Family:           Poisson      Df Model:                  4
Link Function:           log          Scale:                    1.0000
Method:                  IRLS        Log-Likelihood:           -1313.3
Date:                   Fri, 08 May 2020    Deviance:                 2337.7
Time:                   08:03:48          Pearson chi2:             3.47e+03
No. Iterations:         6                Covariance Type:         nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	3.1494	0.196	16.078	0.000	2.766	3.533
tempf	-0.2920	0.056	-5.174	0.000	-0.403	-0.181
dwpf	-0.1408	0.013	-11.129	0.000	-0.166	-0.116
drct	-0.0036	0.001	-3.035	0.002	-0.006	-0.001
feel	0.4112	0.056	7.364	0.000	0.302	0.521

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
50    12.677855  0.818945    11.170204    14.388994
64    26.776697  2.121871    22.924775    31.275836
78    22.424392  2.041853    18.759208    26.805680
91    19.718089  1.649743    16.735850    23.231746
=====

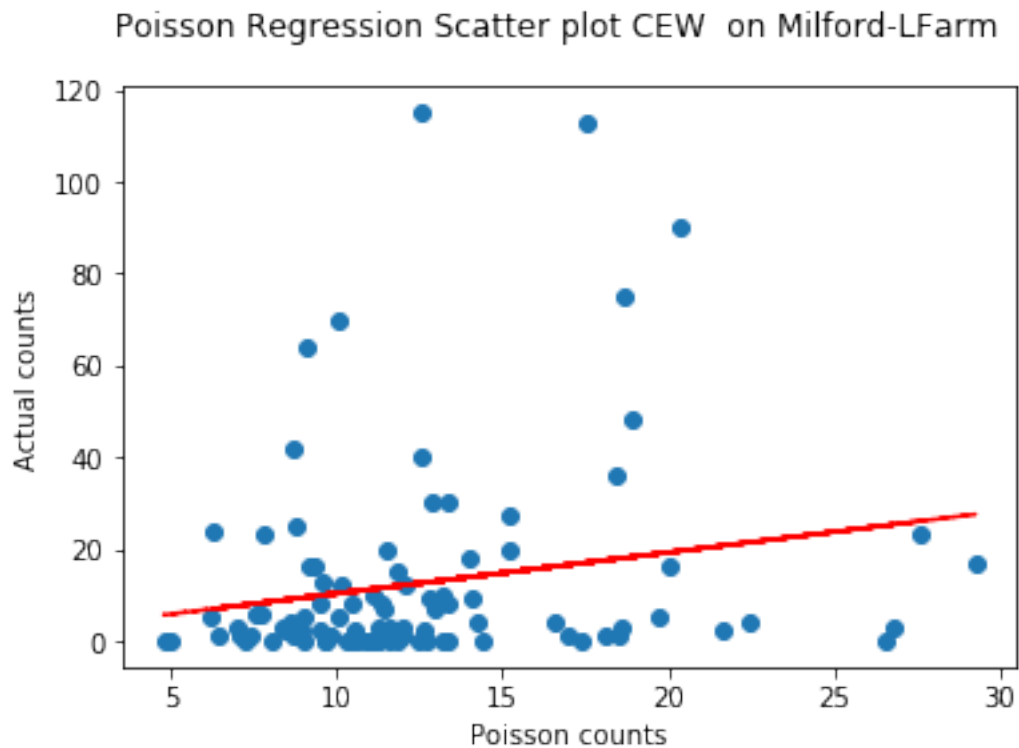
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105	9.035234	0.453323	8.189025	9.968886
119	9.327245	0.393465	8.587087	10.131201
132	8.589115	0.393617	7.851271	9.396298
145	9.623613	0.481337	8.724976	10.614805
157	11.163603	0.444902	10.324797	12.070556
169	8.647541	0.570119	7.599311	9.840361
181	16.944309	1.081022	14.952661	19.201239
218	12.811364	0.733734	11.451048	14.333277
232	18.555914	0.941625	16.799173	20.496363
246	9.479975	0.458881	8.621931	10.423410
260	12.025671	0.388697	11.287468	12.812153
274	16.545822	0.758813	15.123459	18.101958
288	11.796529	0.809414	10.312154	13.494572
302	18.442328	0.936282	16.695592	20.371811
316	8.893066	0.400389	8.141945	9.713479
330	10.477643	0.435863	9.657266	11.367711
344	11.894607	0.477956	10.993769	12.869261
379	11.864442	0.793518	10.406801	13.526250
393	17.398225	0.998718	15.546873	19.470039
407	11.591483	0.467335	10.710779	12.544604
421	6.201611	0.468954	5.347346	7.192349
436	7.557473	0.481168	6.670870	8.561911
451	6.253606	0.453968	5.424244	7.209776
466	8.329832	0.428858	7.530303	9.214252
481	14.277325	0.509978	13.311972	15.312683
496	13.187469	0.605768	12.052063	14.429839
...	...	...	...	...
1630	18.909743	0.851495	17.312368	20.654503
1649	9.590310	0.428383	8.786398	10.467777
1666	9.005647	0.388285	8.275891	9.799752
1680	9.528149	0.746663	8.171562	11.109947
1690	10.309066	0.762321	8.918171	11.916888
1839	12.920917	0.710106	11.601473	14.390423
1860	13.372123	0.552956	12.331105	14.501027
1880	11.443353	0.600562	10.324787	12.683102
1899	11.366065	0.432233	10.549705	12.245597
1918	12.083838	0.714588	10.761391	13.568799
1937	10.565685	0.431029	9.753774	11.445179
1953	7.422415	0.475038	6.547386	8.414389
1967	14.383440	0.758968	12.970227	15.950633
2103	12.612672	0.653805	11.394184	13.961465
2127	11.626799	0.605675	10.498288	12.876619
2148	11.586409	0.558185	10.542448	12.733748
2168	8.720596	0.628735	7.571406	10.044211
2187	9.175661	0.503585	8.239885	10.217711
2205	10.884374	0.646066	9.688989	12.227240
2222	7.250951	0.394995	6.516671	8.067967
2235	11.608010	1.154611	9.551939	14.106655

2246	8.045929	0.396965	7.304326	8.862826
2405	13.388834	1.247536	11.153985	16.071466
2433	13.206435	1.259834	10.954305	15.921589
2458	15.180691	1.513913	12.485456	18.457746
2483	12.875964	1.288828	10.582255	15.666837
2507	13.358378	1.256145	11.109938	16.061860
2528	14.081647	1.377686	11.624538	17.058123
2547	11.527874	1.137603	9.500584	13.987761
2564	12.468068	1.166566	10.379037	14.977567

[99 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



#### Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	99
Model:	GLM	Df Residuals:	94
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000
Method:	IRLS	Log-Likelihood:	-786.78

Date: Fri, 08 May 2020 Deviance: 1245.4  
Time: 08:03:49 Pearson chi2: 1.92e+03  
No. Iterations: 12 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	2.8050	0.267	10.520	0.000	2.282	3.328
tempf	-0.5168	0.080	-6.497	0.000	-0.673	-0.361
dwpf	-0.1370	0.017	-7.868	0.000	-0.171	-0.103
drct	-0.0010	0.002	-0.631	0.528	-0.004	0.002
feel	0.6337	0.079	8.047	0.000	0.479	0.788

	mean	mean_se	mean_ci_lower	mean_ci_upper
50	15.632467	1.363567	13.175894	18.547055
64	33.689748	3.837174	26.949341	42.116025
78	32.768322	4.225523	25.450160	42.190812
91	24.013575	2.797232	19.111916	30.172370
105	9.404645	0.601377	8.296837	10.660369
119	9.014030	0.487096	8.108157	10.021111
132	8.331919	0.486033	7.431752	9.341118
145	8.503227	0.570522	7.455428	9.698285
157	10.077057	0.548430	9.057497	11.211383
169	7.907936	0.702460	6.644329	9.411855
181	14.441961	1.318746	12.075356	17.272387
218	13.085151	1.015381	11.238989	15.234571
232	21.398347	1.550149	18.565947	24.662856
246	9.915536	0.611210	8.787123	11.188856
260	12.305073	0.515770	11.334591	13.358649
274	19.435524	1.251085	17.131821	22.049005
288	13.603330	1.244643	11.370096	16.275200
302	18.069697	1.318268	15.662164	20.847307
316	8.399448	0.489454	7.492891	9.415689
330	9.344548	0.529936	8.361536	10.443126
344	12.640533	0.661877	11.407624	14.006691
379	10.904892	0.992547	9.123180	13.034564
393	19.915919	1.606151	17.004108	23.326353
407	12.323021	0.640029	11.130324	13.643526
421	6.250818	0.611793	5.159721	7.572643
436	7.819491	0.638709	6.662710	9.177114
451	6.321880	0.593614	5.259201	7.599284
466	8.420526	0.549264	7.409963	9.568907
481	13.864683	0.697970	12.562011	15.302442
496	14.435488	0.888936	12.794242	16.287272
...	...	...	...	...
1630	18.996667	1.252993	16.692960	21.618297
1649	9.457423	0.545598	8.446312	10.589575
1666	8.519791	0.475743	7.636565	9.505169
1680	8.005399	0.855085	6.493265	9.869676

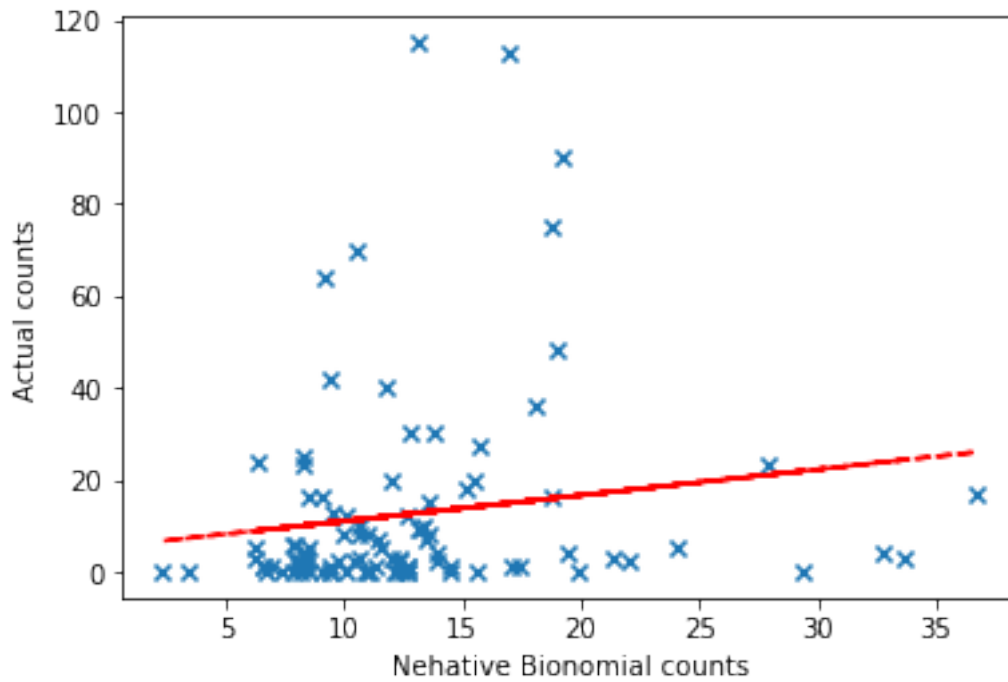


1690	7.793653	0.810952	6.355812	9.556767
1839	13.403702	0.997538	11.584469	15.508628
1860	12.654634	0.725138	11.310294	14.158762
1880	11.419357	0.802199	9.950516	13.105021
1899	10.967340	0.558020	9.926406	12.117431
1918	12.652004	1.006169	10.825956	14.786057
1937	9.671349	0.534091	8.679211	10.776899
1953	6.894449	0.583223	5.841089	8.137769
1967	12.711955	0.944137	10.989863	14.703896
2103	13.887872	0.961017	12.126459	15.905136
2127	10.420726	0.752246	9.045902	12.004501
2148	10.643644	0.694464	9.365957	12.095631
2168	9.421609	0.891876	7.826145	11.342329
2187	8.523852	0.625470	7.382030	9.842287
2205	10.954871	0.871891	9.372614	12.804239
2222	6.669069	0.471892	5.805446	7.661165
2235	8.090125	1.141990	6.134807	10.668653
2246	7.392127	0.472163	6.522288	8.377972
2405	13.588196	1.694722	10.641426	17.350970
2433	13.359277	1.703332	10.405267	17.151917
2458	15.468945	2.066115	11.906105	20.097947
2483	13.825201	1.848720	10.637704	17.967802
2507	12.819862	1.618059	10.010343	16.417906
2528	13.237320	1.740133	10.230669	17.127585
2547	12.024359	1.584014	9.288166	15.566605
2564	12.442679	1.556697	9.736896	15.900371

[99 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot CEW on Milford-LFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          129
Model:                  GLM           Df Residuals:              124
Model Family:           Poisson       Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                 IRLS          Log-Likelihood:            -481.57
Date:                   Fri, 08 May 2020    Deviance:                  747.60
Time:                   08:03:49           Pearson chi2:              1.02e+03
No. Iterations:         5                Covariance Type:          nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-1.1418	0.471	-2.422	0.015	-2.066	-0.218
tempf	-0.1417	0.069	-2.059	0.039	-0.277	-0.007
dwpf	0.0629	0.022	2.857	0.004	0.020	0.106
drct	0.0073	0.002	3.102	0.002	0.003	0.012
feel	0.1085	0.066	1.640	0.101	-0.021	0.238

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
111    3.468326    0.285735     2.951171     4.076106
125    2.802610    0.187218     2.458675     3.194657
138    3.091768    0.215355     2.697224     3.544026

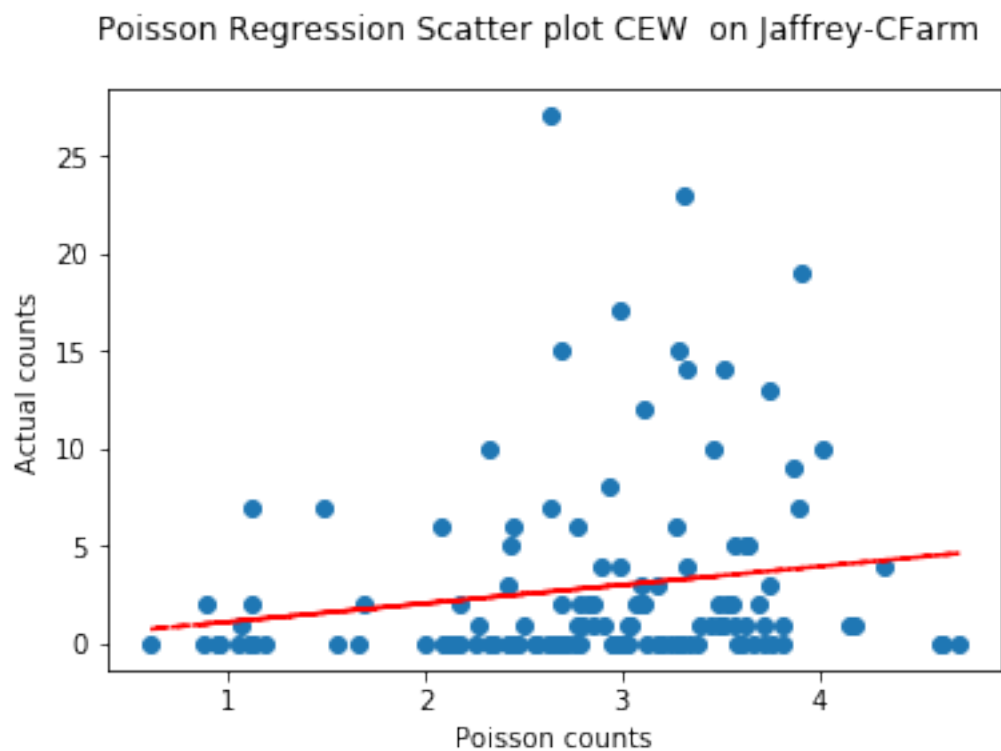
```

151	2.498036	0.202919	2.130367	2.929159
163	2.152621	0.174895	1.835733	2.524211
175	2.854723	0.353473	2.239586	3.638817
187	1.693230	0.218269	1.315195	2.179927
198	3.282437	0.254206	2.820173	3.820471
210	3.717394	0.273544	3.218127	4.294120
224	2.902774	0.323291	2.333525	3.610889
238	3.333232	0.293192	2.805392	3.960385
252	3.535980	0.250700	3.077229	4.063120
266	3.099278	0.163444	2.794934	3.436762
280	3.296021	0.223639	2.885591	3.764827
294	4.327578	0.578140	3.330651	5.622904
308	2.326447	0.249687	1.885115	2.871103
322	2.632693	0.196538	2.274341	3.047508
336	2.415102	0.165562	2.111461	2.762407
350	3.490734	0.246636	3.039314	4.009202
359	2.322223	0.236700	1.901702	2.835735
365	2.132237	0.224282	1.735005	2.620416
372	3.024505	0.305957	2.480546	3.687748
386	2.418855	0.325971	1.857376	3.150067
400	3.183997	0.324643	2.607254	3.888319
414	3.644670	0.233037	3.215387	4.131267
428	4.016918	0.454709	3.217645	5.014731
443	3.913672	0.370342	3.251150	4.711202
458	3.821388	0.414603	3.089369	4.726858
473	3.516109	0.261604	3.039007	4.068112
488	2.619047	0.185727	2.279195	3.009576
...	...	...	...	...
1866	2.548931	0.205830	2.175818	2.986027
1886	2.723095	0.271670	2.239456	3.311181
1905	2.782119	0.199642	2.417099	3.202262
1924	2.998034	0.381219	2.336689	3.846558
1990	1.656442	0.383299	1.052468	2.607014
2006	3.289069	0.293448	2.761400	3.917568
2025	3.396301	0.205939	3.015730	3.824898
2046	3.123175	0.238976	2.688222	3.628504
2066	4.624074	0.631926	3.537525	6.044356
2087	2.346290	0.315900	1.802094	3.054821
2111	3.627052	0.366252	2.975783	4.420855
2135	2.965930	0.253410	2.508615	3.506613
2156	2.984231	0.247720	2.536148	3.511481
2176	3.873328	0.533636	2.956736	5.074065
2195	2.775894	0.284879	2.270114	3.394363
2212	3.250548	0.391262	2.567433	4.115419
2228	2.782240	0.228880	2.367941	3.269026
2241	1.556943	0.241073	1.149410	2.108970
2252	2.858955	0.199499	2.493505	3.277966
2274	1.100581	0.297295	0.648174	1.868758

2315	1.130343	0.292142	0.681104	1.875886
2337	1.116702	0.284808	0.677397	1.840903
2362	0.890272	0.240909	0.523824	1.513072
2387	1.118664	0.290641	0.672277	1.861449
2414	1.061368	0.276195	0.637326	1.767543
2441	1.046410	0.280052	0.619290	1.768113
2467	0.958383	0.264977	0.557437	1.647715
2492	1.190497	0.320625	0.702234	2.018247
2514	0.948771	0.253022	0.562548	1.600160
2535	0.871692	0.241540	0.506408	1.500463

[129 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



# Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	129
Model:	GLM	Df Residuals:	124
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -271.82  
Date: Fri, 08 May 2020 Deviance: 70.097  
Time: 08:03:49 Pearson chi2: 56.5  
No. Iterations: 18 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-1.4257	1.682	-0.848	0.397	-4.722	1.871
tempf	-0.4064	0.378	-1.076	0.282	-1.147	0.334
dwpf	0.0383	0.092	0.418	0.676	-0.142	0.218
drct	0.0094	0.010	0.931	0.352	-0.010	0.029
feel	0.3955	0.374	1.057	0.290	-0.338	1.129

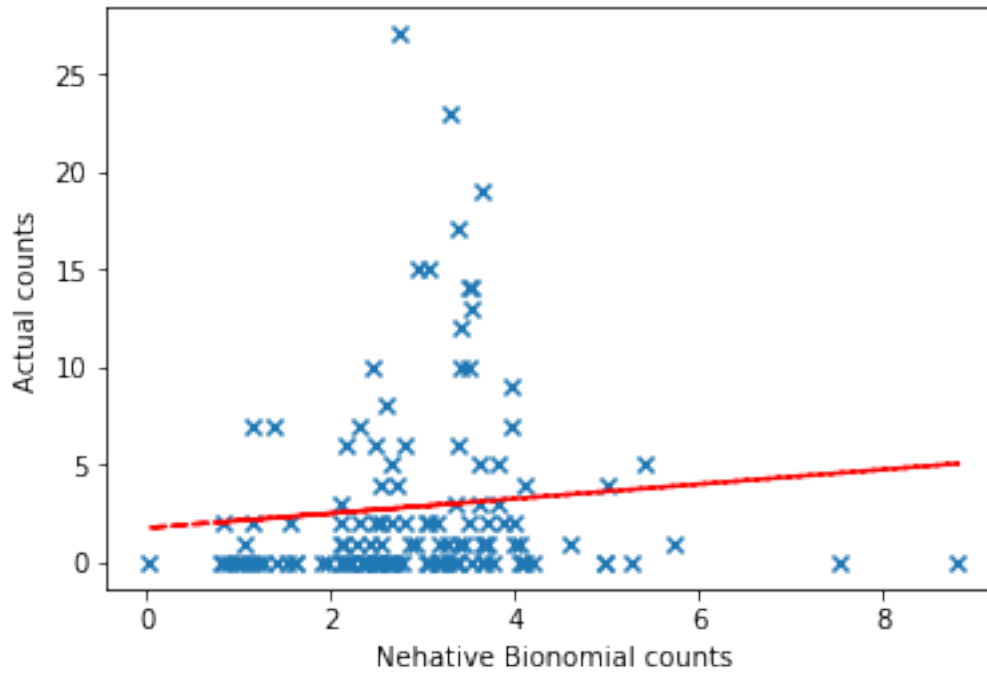
	mean	mean_se	mean_ci_lower	mean_ci_upper
111	3.404012	1.277447	1.631379	7.102765
125	2.544184	0.725617	1.454724	4.449554
138	2.799307	0.898043	1.492717	5.249569
151	2.091976	0.737584	1.048195	4.175145
163	1.895972	0.570611	1.051126	3.419868
175	2.486682	1.421573	0.810980	7.624835
187	1.541568	0.762840	0.584452	4.066089
198	3.064945	1.060877	1.555229	6.040196
210	3.651541	1.233744	1.883134	7.080618
224	2.925679	1.415194	1.133673	7.550318
238	4.107120	1.684142	1.838648	9.174367
252	3.484476	1.127869	1.847640	6.571397
266	3.148998	0.744237	1.981521	5.004333
280	4.053959	1.387093	2.073166	7.927286
294	5.017274	3.006650	1.550162	16.238977
308	2.442702	1.058894	1.044433	5.712949
322	2.311444	0.713970	1.261712	4.234544
336	2.094280	0.621707	1.170436	3.747331
350	3.699652	1.200647	1.958487	6.988775
359	1.948939	0.818330	0.855838	4.438181
365	1.603792	0.701917	0.680159	3.781688
372	2.545359	1.133172	1.063657	6.091114
386	2.163077	1.232226	0.708229	6.606483
400	3.816938	1.813007	1.504538	9.683385
414	3.818585	1.096909	2.174654	6.705246
428	3.510454	1.761029	1.313276	9.383628
443	3.649554	1.540404	1.595750	8.346702
458	3.361243	1.629899	1.299404	8.694720
473	3.280140	1.117321	1.682464	6.394977
488	2.607865	0.746683	1.487885	4.570889
...	...	...	...	...
1866	2.434924	0.802493	1.276290	4.645381
1886	2.625794	1.123790	1.134913	6.075174
1905	2.663244	0.846691	1.428234	4.966180

1924	3.172437	1.752664	1.074319	9.368132
1990	0.837528	0.942402	0.092302	7.599532
2006	3.755902	1.555060	1.668362	8.455478
2025	3.377907	0.898442	2.005620	5.689142
2046	2.647404	0.925758	1.334036	5.253790
2066	5.277975	3.230496	1.590272	17.517143
2087	1.400057	1.003662	0.343513	5.706217
2111	4.051411	1.852382	1.653563	9.926401
2135	2.669982	1.032704	1.251060	5.698212
2156	2.711035	0.934403	1.379604	5.327408
2176	3.961953	2.442407	1.183513	13.263118
2195	2.470087	1.153495	0.989039	6.168946
2212	3.252933	1.769001	1.120410	9.444376
2228	2.299778	0.837296	1.126635	4.694492
2241	1.096136	0.777039	0.273185	4.398172
2252	2.412692	0.777027	1.283411	4.535636
2274	1.198783	0.950283	0.253506	5.668829
2315	1.154580	0.865493	0.265674	5.017641
2337	1.156817	0.857715	0.270487	4.947471
2362	0.820787	0.650204	0.173753	3.877286
2387	1.157561	0.872654	0.264147	5.072733
2414	1.061224	0.795452	0.244219	4.611414
2441	1.043413	0.804593	0.230187	4.729684
2467	0.983802	0.786093	0.205479	4.710299
2492	1.257455	1.007392	0.261556	6.045335
2514	0.894662	0.689601	0.197495	4.052853
2535	0.812872	0.654856	0.167605	3.942364

[129 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot CEW on Jaffrey-CFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          119
Model:                  GLM          Df Residuals:              114
Model Family:           Poisson      Df Model:                  4
Link Function:          log          Scale:                    1.0000
Method:                 IRLS         Log-Likelihood:            -2285.8
Date:                   Fri, 08 May 2020    Deviance:                  4270.5
Time:                   08:03:49           Pearson chi2:              1.24e+04
No. Iterations:         6               Covariance Type:          nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	7.3559	0.438	16.794	0.000	6.497	8.214
tempf	-0.8515	0.079	-10.802	0.000	-1.006	-0.697
dwpf	0.0795	0.012	6.881	0.000	0.057	0.102
drct	0.0006	0.001	0.556	0.579	-0.002	0.003
feel	0.7072	0.074	9.508	0.000	0.561	0.853

	mean	mean_se	mean_ci_lower	mean_ci_upper
195	17.308584	0.599134	16.173250	18.523616
207	12.224228	0.528919	11.230307	13.306116
221	14.760518	0.702306	13.446256	16.203238

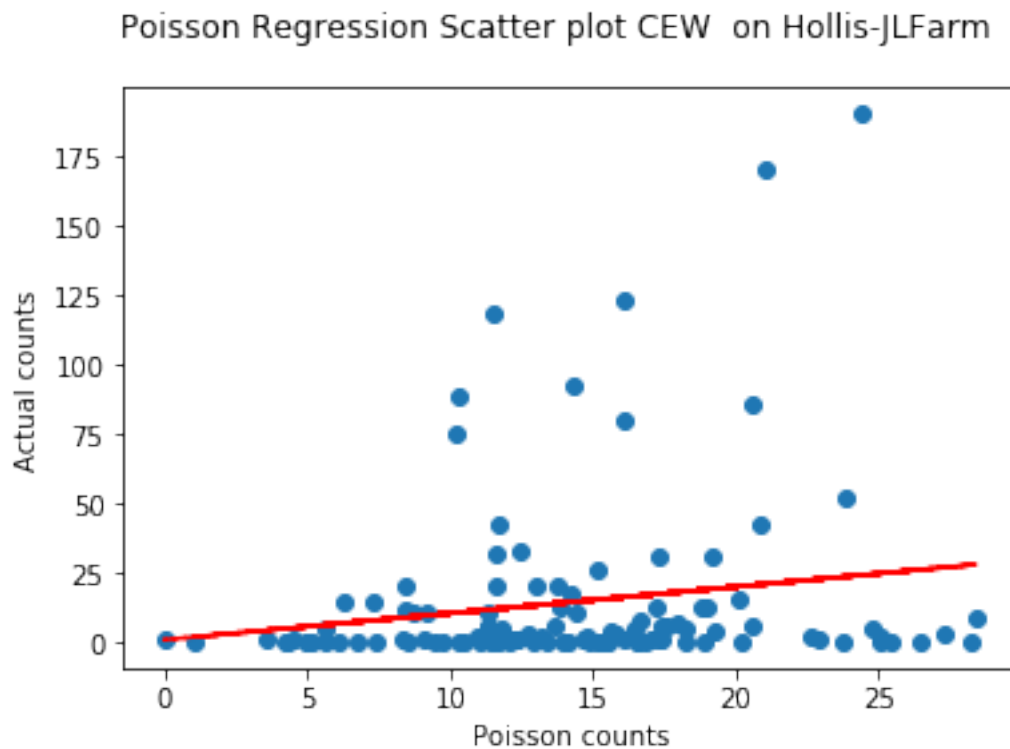
235	11.283943	0.528570	10.294099	12.368968
249	15.651643	0.539853	14.628523	16.746319
263	13.238954	0.353972	12.563046	13.951226
277	18.245392	0.829769	16.689449	19.946394
291	10.314815	0.684045	9.057588	11.746551
305	11.537021	0.598655	10.421372	12.772104
319	24.438882	0.983738	22.584887	26.445072
333	14.416576	0.526774	13.420222	15.486903
347	11.695148	0.441676	10.860741	12.593660
357	23.862748	1.148048	21.715446	26.222384
363	28.396342	1.686019	25.276837	31.900837
368	18.882234	0.858285	17.272783	20.641651
382	14.164410	0.836294	12.616587	15.902122
396	14.713444	0.705726	13.393273	16.163744
410	10.273111	0.458988	9.411775	11.213274
424	16.441729	1.013876	14.569959	18.553962
439	15.147240	0.784406	13.685279	16.765377
454	20.597839	1.091833	18.565295	22.852907
469	15.560888	0.585021	14.455495	16.750810
484	11.336873	0.417127	10.548103	12.184627
499	11.306210	0.506421	10.355964	12.343649
514	17.420496	0.870091	15.795960	19.212106
529	19.131245	0.607517	17.976832	20.359791
544	17.285939	0.808720	15.771378	18.945947
559	24.753251	1.076801	22.730227	26.956327
574	27.324815	1.311299	24.871883	30.019662
588	12.104350	0.948267	10.381437	14.113200
...	...	...	...	...
1697	28.243680	2.552272	23.659279	33.716391
1707	17.025326	0.700999	15.705370	18.456217
1725	20.196767	2.133599	16.419519	24.842958
1744	15.138387	0.640979	13.932808	16.448282
1763	11.071358	0.389206	10.334214	11.861082
1782	10.477621	0.403241	9.716356	11.298529
1801	8.565000	0.508138	7.624791	9.621145
1821	5.660529	0.434462	4.869953	6.579444
1842	15.260660	0.676994	13.989826	16.646937
1863	11.526407	0.468433	10.643908	12.482075
1883	20.084851	0.829970	18.522272	21.779253
1902	13.821163	0.505473	12.865129	14.848243
1921	19.018902	1.348285	16.551684	21.853888
1940	15.419781	0.606789	14.275203	16.656130
1977	13.375903	0.547470	12.344793	14.493137
1987	1.042039	0.247906	0.653701	1.661073
2003	14.733017	0.607189	13.589744	15.972472
2021	9.078943	0.448200	8.241646	10.001303
2042	11.835613	0.603123	10.710630	13.078759
2062	11.337725	0.773551	9.918594	12.959902



2083	3.595879	0.519030	2.709833	4.771641
2107	12.224938	0.603154	11.098138	13.466144
2131	4.994410	0.426456	4.224769	5.904259
2152	6.118681	0.488944	5.231646	7.156115
2172	17.600903	1.150048	15.485213	20.005652
2191	15.800211	0.808638	14.292207	17.467328
2208	11.713865	0.665011	10.480366	13.092542
2225	23.764106	1.018302	21.849782	25.846149
2238	7.455496	0.702140	6.198870	8.966863
2249	16.602647	0.566834	15.528028	17.751635

[119 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



#### Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	119
Model:	GLM	Df Residuals:	114
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -808.32  
Date: Fri, 08 May 2020 Deviance: 1235.1  
Time: 08:03:50 Pearson chi2: 3.07e+04  
No. Iterations: 19 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	7.8272	0.832	9.405	0.000	6.196	9.458
tempf	-0.9655	0.137	-7.050	0.000	-1.234	-0.697
dwpf	0.0788	0.020	3.881	0.000	0.039	0.119
drct	0.0005	0.002	0.232	0.817	-0.004	0.005
feel	0.8147	0.131	6.239	0.000	0.559	1.071

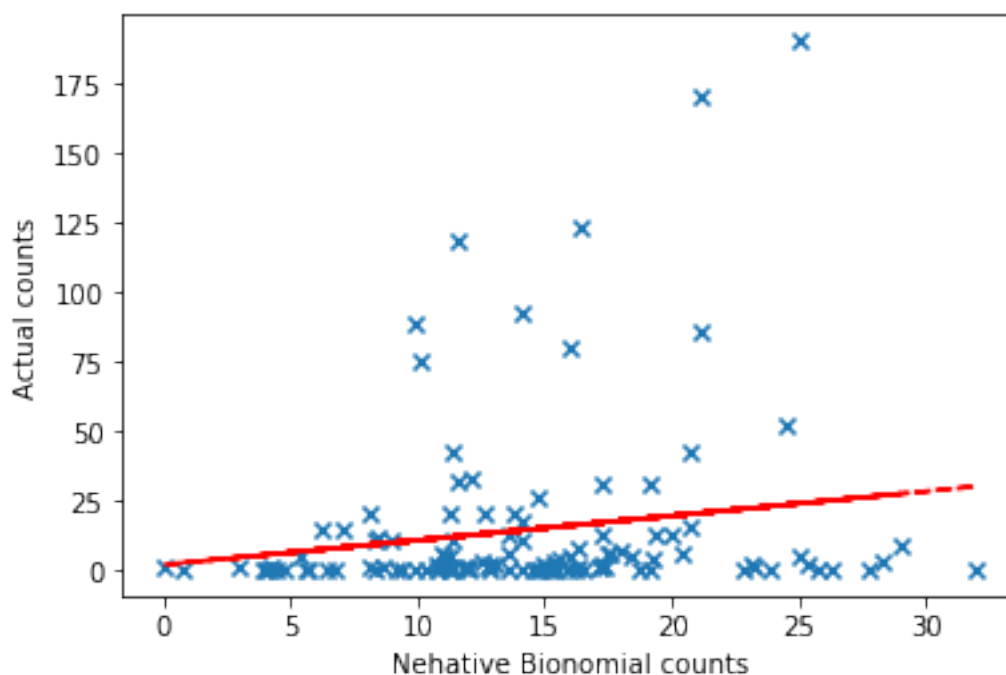
	mean	mean_se	mean_ci_lower	mean_ci_upper
195	17.259232	1.152241	15.142394	19.671994
207	11.797488	0.928361	10.111308	13.764859
221	14.905826	1.340415	12.497159	17.778734
235	11.406105	0.941023	9.703130	13.407966
249	15.537220	1.008480	13.681195	17.645037
263	13.081997	0.617471	11.926068	14.349965
277	19.134934	1.623283	16.203789	22.596302
291	9.941848	1.227830	7.804458	12.664601
305	11.564955	1.051586	9.677101	13.821100
319	25.049121	2.083521	21.280986	29.484463
333	14.103020	0.958020	12.344966	16.111439
347	11.408692	0.768718	9.997280	13.019367
357	24.471376	2.424410	20.152493	29.715839
363	29.002898	3.495435	22.900999	36.730629
368	18.745243	1.641018	15.789711	22.253994
382	14.103650	1.560308	11.354338	17.518675
396	15.221286	1.361455	12.773689	18.137873
410	9.917927	0.774906	8.509714	11.559176
424	15.950344	1.816545	12.759357	19.939363
439	14.779769	1.415806	12.249774	17.832294
454	20.393513	2.020105	16.794815	24.763320
469	15.261938	1.075603	13.292915	17.522623
484	11.138196	0.677814	9.885872	12.549160
499	11.064205	0.893572	9.444416	12.961800
514	17.550842	1.639630	14.614274	21.077478
529	19.117317	1.227026	16.857510	21.680059
544	17.261070	1.547435	14.479664	20.576759
559	25.018376	2.189620	21.074707	29.700016
574	28.229010	2.772881	23.285404	34.222169
588	12.014935	1.705360	9.097137	15.868582
...	...	...	...	...
1697	31.937323	5.441566	22.870124	44.599345
1707	17.175983	1.342801	14.735861	20.020165
1725	22.809927	4.361116	15.681207	33.179384

1744	14.801159	1.163728	12.687346	17.267150
1763	10.729634	0.629842	9.563534	12.037919
1782	10.344125	0.653885	9.138746	11.708491
1801	8.330359	0.803531	6.895383	10.063964
1821	5.378590	0.655179	4.236249	6.828972
1842	15.474653	1.306171	13.115156	18.258638
1863	11.295958	0.782113	9.862506	12.937752
1883	20.683909	1.730208	17.556165	24.368880
1902	13.564192	0.915076	11.884192	15.481684
1921	19.311814	2.585845	14.854139	25.107222
1940	15.181666	1.138651	13.106232	17.585756
1977	13.634117	1.011605	11.788832	15.768240
1987	0.759107	0.304735	0.345619	1.667280
2003	15.069228	1.160670	12.957741	17.524786
2021	8.622801	0.722601	7.316723	10.162020
2042	11.249240	1.015978	9.424248	13.427640
2062	10.957614	1.401980	8.527238	14.080679
2083	2.930519	0.720760	1.809638	4.745667
2107	12.008748	1.091838	10.048618	14.351230
2131	4.441638	0.627854	3.366823	5.859573
2152	5.584682	0.747215	4.296453	7.259167
2172	17.438510	2.153945	13.689005	22.215030
2191	15.419653	1.505144	12.734651	18.670766
2208	11.266060	1.182928	9.170574	13.840367
2225	23.901298	2.055441	20.193921	28.289307
2238	6.771791	1.079185	4.955095	9.254546
2249	16.252318	1.071869	14.281607	18.494967

[119 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot CEW on Hollis-JLFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          125
Model:                  GLM           Df Residuals:                120
Model Family:           Poisson       Df Model:                   4
Link Function:          log           Scale:                     1.0000
Method:                 IRLS          Log-Likelihood:             -1912.6
Date:                   Fri, 08 May 2020    Deviance:                   3433.8
Time:                   08:03:50           Pearson chi2:               4.73e+03
No. Iterations:         5                 Covariance Type:            nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	3.3896	0.162	20.885	0.000	3.071	3.708
tempf	-0.0307	0.025	-1.211	0.226	-0.080	0.019
dwpf	-0.0735	0.009	-7.852	0.000	-0.092	-0.055
drct	-0.0054	0.001	-5.477	0.000	-0.007	-0.003
feel	0.0939	0.025	3.835	0.000	0.046	0.142

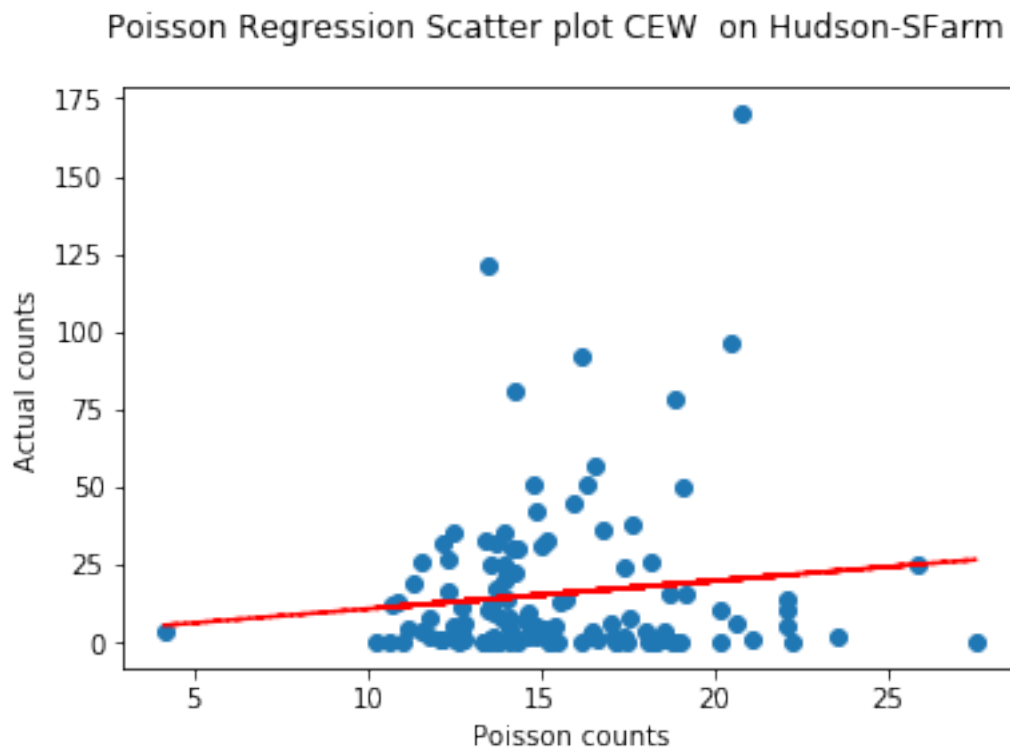
	mean	mean_se	mean_ci_lower	mean_ci_upper
215	17.566994	0.791381	16.082420	19.188610
229	18.684290	0.632692	17.484492	19.966419
243	13.498348	0.483840	12.582583	14.480763

257	14.994171	0.381396	14.264977	15.760640
271	16.494247	0.484001	15.572386	17.470681
285	12.300534	0.758432	10.900343	13.880585
299	20.449673	0.807318	18.927026	22.094814
313	13.743636	0.443820	12.900721	14.641627
327	14.804104	0.389299	14.060420	15.587122
341	13.959664	0.486734	13.037549	14.946998
354	15.209016	0.622138	14.037248	16.478599
376	18.273839	0.984302	16.442986	20.308549
390	18.809290	0.744684	17.404928	20.326965
404	14.620888	0.453363	13.758775	15.537021
418	11.203766	0.617050	10.057358	12.480849
433	12.192124	0.570186	11.124269	13.362487
448	10.879856	0.581982	9.796950	12.082460
463	12.574206	0.482088	11.663958	13.555488
478	17.390497	0.464991	16.502600	18.326166
493	14.053517	0.582587	12.956824	15.243037
508	12.103576	0.593507	10.994474	13.324563
523	13.378370	0.456348	12.513188	14.303371
538	12.745945	0.528728	11.750665	13.825526
553	12.490936	0.510138	11.530055	13.531894
568	13.743552	0.461286	12.868545	14.678056
582	17.143450	0.935319	15.404871	19.078245
606	13.497087	0.411322	12.714514	14.327826
619	18.122962	0.518634	17.134440	19.168513
634	12.799762	0.545888	11.773338	13.915671
650	13.698035	0.577781	12.611151	14.878592
...	...	...	...	...
1936	14.135178	0.413149	13.348178	14.968579
1952	11.010570	0.555247	9.974358	12.154432
1966	18.477917	0.736179	17.089930	19.978633
1983	19.028066	1.631117	16.085266	22.509250
1999	17.375781	0.628505	16.186586	18.652344
2017	14.873852	0.423146	14.067200	15.726760
2038	13.535289	0.489857	12.608447	14.530262
2058	11.581864	0.738335	10.221509	13.123266
2079	13.577995	0.696028	12.280098	15.013069
2101	13.391999	0.632872	12.207305	14.691665
2125	15.471077	0.524876	14.475796	16.534789
2147	16.599693	0.529312	15.594014	17.670229
2167	10.741580	0.683128	9.482758	12.167509
2186	12.319971	0.544188	11.298248	13.434091
2204	12.556951	0.675224	11.300888	13.952622
2221	12.146677	0.457806	11.281735	13.077933
2266	13.792857	0.972063	12.013377	15.835923
2285	14.657596	1.036826	12.760032	16.837350
2305	13.354304	0.897125	11.706811	15.233648
2327	14.129420	0.932008	12.415871	16.079461

2352	15.726526	1.137363	13.648118	18.121445
2377	13.592515	0.915755	11.911121	15.511257
2403	14.009679	0.941433	12.280852	15.981879
2431	13.561697	0.939686	11.839532	15.534367
2456	14.884893	1.064886	12.937477	17.125444
2482	12.461051	0.897094	10.821191	14.349417
2506	14.891190	1.040038	12.986119	17.075737
2527	15.556066	1.141144	13.472814	17.961444
2546	11.810593	0.862563	10.235426	13.628168
2563	13.395166	0.915390	11.715997	15.314997

[125 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



# Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	125
Model:	GLM	Df Residuals:	120
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -986.96  
Date: Fri, 08 May 2020 Deviance: 1510.0  
Time: 08:03:50 Pearson chi2: 1.99e+03  
No. Iterations: 8 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	3.3578	0.246	13.658	0.000	2.876	3.840
tempf	-0.0567	0.037	-1.544	0.123	-0.129	0.015
dwpf	-0.0778	0.015	-5.328	0.000	-0.106	-0.049
drct	-0.0055	0.002	-3.653	0.000	-0.008	-0.003
feel	0.1243	0.035	3.520	0.000	0.055	0.193

	mean	mean_se	mean_ci_lower	mean_ci_upper
215	17.883222	1.236387	15.616961	20.478353
229	19.387702	1.023483	17.482000	21.501144
243	13.519806	0.713850	12.190646	14.993886
257	15.065966	0.567905	13.993016	16.221187
271	16.940779	0.748848	15.534847	18.473951
285	12.375810	1.132505	10.343811	14.806988
299	20.874420	1.320953	18.439518	23.630845
313	13.550238	0.650357	12.333679	14.886795
327	14.576788	0.567795	13.505350	15.733229
341	14.026130	0.718436	12.686395	15.507346
354	15.019216	0.934163	13.295490	16.966420
376	18.406310	1.526043	15.645690	21.654030
390	19.497542	1.190463	17.298480	21.976158
404	14.778209	0.674353	13.513884	16.160822
418	11.047743	0.908738	9.402808	12.980445
433	12.129039	0.841503	10.586947	13.895753
448	10.684428	0.851590	9.139181	12.490945
463	12.475067	0.701230	11.173685	13.928020
478	17.542735	0.744212	16.143101	19.063720
493	14.168213	0.871850	12.558443	15.984326
508	12.153313	0.875510	10.552981	13.996332
523	13.214681	0.666904	11.970138	14.588620
538	12.599414	0.766245	11.183654	14.194398
553	12.204105	0.742709	10.831887	13.750160
568	13.502190	0.675894	12.240374	14.894082
582	17.091260	1.444320	14.482454	20.170006
606	13.437080	0.594700	12.320613	14.654719
619	18.369235	0.846095	16.783570	20.104709
634	12.723918	0.808174	11.234554	14.410726
650	13.823377	0.866051	12.226028	15.629422
...	...	...	...	...
1936	13.902790	0.595163	12.783889	15.119623
1952	10.652421	0.785754	9.218519	12.309360
1966	18.387474	1.146172	16.272825	20.776922

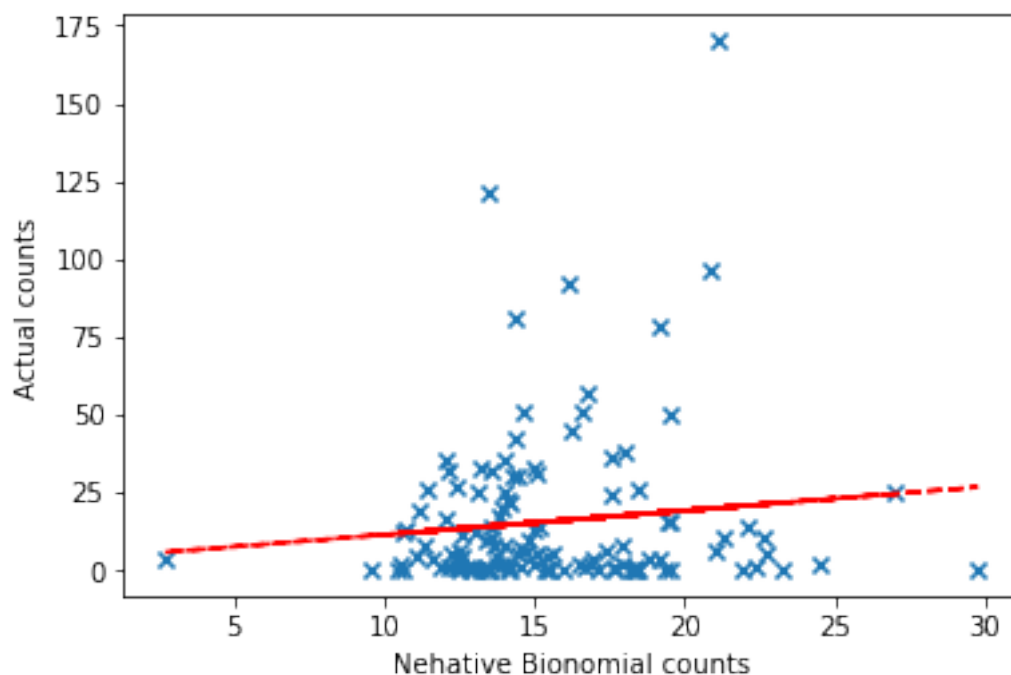
1983	18.150402	2.335487	14.104530	23.356829
1999	17.869210	0.987105	16.035574	19.912518
2017	14.961197	0.629025	13.777760	16.246285
2038	13.371577	0.715122	12.040921	14.849286
2058	11.625987	1.097017	9.662984	13.987767
2079	12.940473	0.959649	11.189898	14.964913
2101	13.455330	0.942582	11.729119	15.435593
2125	15.389941	0.786103	13.923820	17.010439
2147	16.667055	0.814951	15.143929	18.343372
2167	10.584790	0.995612	8.802735	12.727609
2186	12.016123	0.776054	10.587417	13.637623
2204	12.405466	0.988611	10.611567	14.502627
2221	11.835375	0.655290	10.618263	13.191998
2266	13.385006	1.393375	10.914624	16.414527
2285	14.123172	1.482388	11.497117	17.349044
2305	12.891528	1.280758	10.610566	15.662830
2327	13.718194	1.339907	11.328096	16.612576
2352	15.168297	1.638302	12.274392	18.744492
2377	13.146712	1.309743	10.814740	15.981525
2403	13.534733	1.347769	11.134950	16.451711
2431	13.052047	1.338740	10.675087	15.958271
2456	14.418386	1.529505	11.711729	17.750568
2482	12.005081	1.277431	9.745201	14.789019
2506	14.352401	1.492311	11.706300	17.596628
2527	14.987897	1.639489	12.095669	18.571694
2546	11.302090	1.221737	9.144190	13.969223
2563	12.867821	1.302735	10.551874	15.692077

[125 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



## Negative Binomial Regression Scatter plot CEW on Hudson-SFarm



### Generalized Linear Model Regression Results

```
=====
Dep. Variable:          trap_count    No. Observations:          72
Model:                  GLM           Df Residuals:                67
Model Family:           Poisson       Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                  IRLS         Log-Likelihood:            -1757.4
Date:                   Fri, 08 May 2020    Deviance:                  3303.5
Time:                   08:03:51           Pearson chi2:              5.45e+03
No. Iterations:         6                Covariance Type:          nonrobust
=====
```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	2.1766	0.206	10.578	0.000	1.773	2.580
tempf	-0.5789	0.047	-12.197	0.000	-0.672	-0.486
dwpf	0.1509	0.016	9.259	0.000	0.119	0.183
drct	0.0060	0.001	4.385	0.000	0.003	0.009
feel	0.4482	0.046	9.782	0.000	0.358	0.538

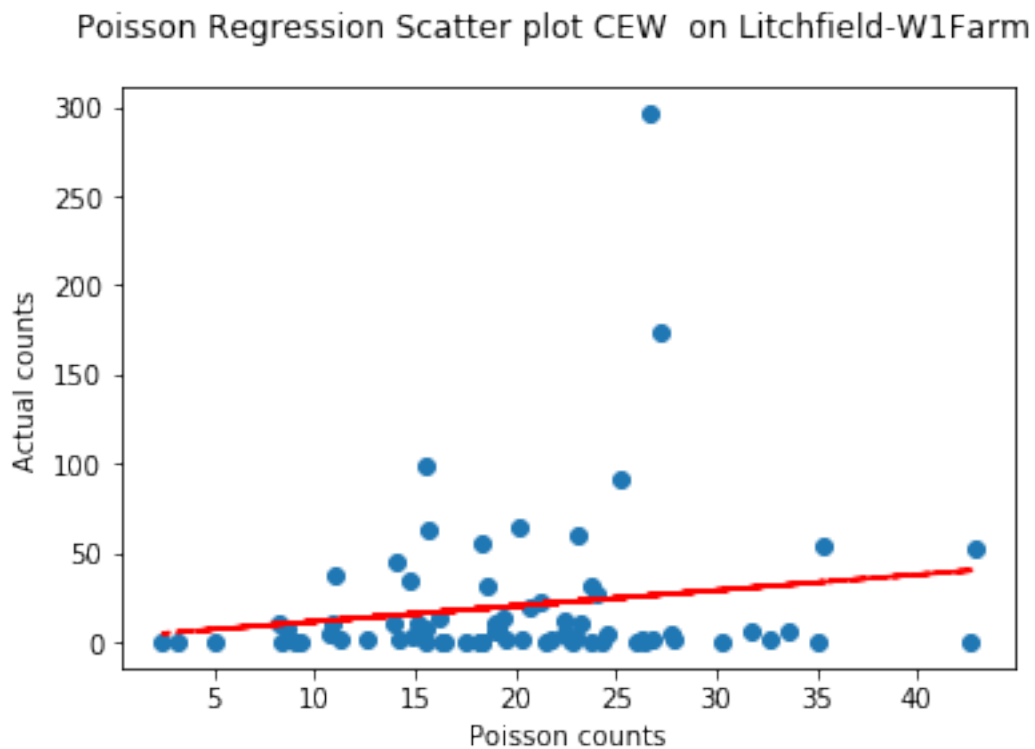
```
=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
605    22.465191    0.743124    21.054905    23.969939
618    14.006396    0.746548    12.617023    15.548764
632    33.585657    1.846548    30.154670    37.407020
=====
```

648	35.360789	1.776720	32.044457	39.020334
664	14.059359	0.795552	12.583461	15.708363
681	27.276401	1.150677	25.111835	29.627547
698	42.850600	2.611660	38.025754	48.287638
716	26.744556	0.954695	24.937346	28.682734
734	15.721229	0.972799	13.925660	17.748317
752	19.363021	0.760170	17.928995	20.911746
770	9.257410	0.697336	7.986763	10.730210
788	16.383407	0.654404	15.149720	17.717556
805	18.265816	1.237222	15.994975	20.859054
820	17.529153	0.551704	16.480509	18.644522
835	2.457065	0.409754	1.772007	3.406966
848	9.023443	0.889086	7.438799	10.945654
1445	8.395075	1.004666	6.639854	10.614281
1463	24.351559	1.359082	21.828327	27.166462
1482	27.779506	1.064571	25.769420	29.946385
1502	32.627903	1.508552	29.801206	35.722718
1523	31.678202	1.348489	29.142465	34.434578
1546	25.235133	0.863325	23.598530	26.985237
1567	15.499171	0.717157	14.155421	16.970481
1588	10.877468	0.951585	9.163531	12.911978
1626	11.047577	0.762606	9.649598	12.648088
1645	19.028785	0.822081	17.483865	20.710217
1664	19.046702	0.738645	17.652635	20.550860
1702	35.011845	1.768376	31.711921	38.655157
1719	42.623960	4.251635	35.054885	51.827356
1738	30.280128	1.511597	27.457777	33.392585
...	...	...	...	...
1973	26.474150	1.120192	24.367188	28.763295
1982	3.231668	0.533124	2.338865	4.465276
1997	27.915268	1.277261	25.520850	30.534335
2015	20.283903	0.673844	19.005271	21.648559
2036	22.957829	1.111728	20.879089	25.243529
2056	26.018900	1.998018	22.383309	30.244998
2077	8.277324	0.800934	6.847399	10.005857
2099	19.132074	1.108128	17.078926	21.432043
2123	11.340086	0.656330	10.123982	12.702269
2146	15.593751	0.781489	14.134882	17.203191
2166	23.716168	1.817537	20.408494	27.559928
2185	14.728284	0.816598	13.211678	16.418986
2203	14.818501	0.997524	12.986876	16.908452
2220	23.792907	1.206101	21.542631	26.278240
2234	5.057602	0.549857	4.086985	6.258731
2245	21.469162	0.949753	19.686096	23.413728
2265	22.743767	1.387403	20.180776	25.632261
2284	18.358364	1.103193	16.318622	20.653063
2304	22.876406	1.294247	20.475312	25.559071
2326	24.567839	1.390573	21.988104	27.450239

2351	18.557128	1.256472	16.250897	21.190645
2376	23.054377	1.310985	20.622906	25.772521
2402	22.442399	1.269405	20.087362	25.073539
2430	21.196808	1.221657	18.932689	23.731688
2455	20.729233	1.270746	18.382424	23.375650
2481	24.086209	1.540551	21.248374	27.303052
2505	20.182462	1.246255	17.881870	22.779036
2526	18.359072	1.229528	16.100701	20.934215
2545	23.180996	1.524243	20.378030	26.369507
2562	21.776563	1.240303	19.476388	24.348390

[72 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



#### Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	72
Model:	GLM	Df Residuals:	67
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -407.16  
Date: Fri, 08 May 2020 Deviance: 521.56  
Time: 08:03:51 Pearson chi2: 662.  
No. Iterations: 15 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	1.7770	0.524	3.392	0.001	0.750	2.804
tempf	-1.0255	0.127	-8.072	0.000	-1.275	-0.777
dwpf	0.1357	0.039	3.465	0.001	0.059	0.212
drct	0.0093	0.003	2.676	0.007	0.002	0.016
feel	0.9082	0.127	7.162	0.000	0.660	1.157

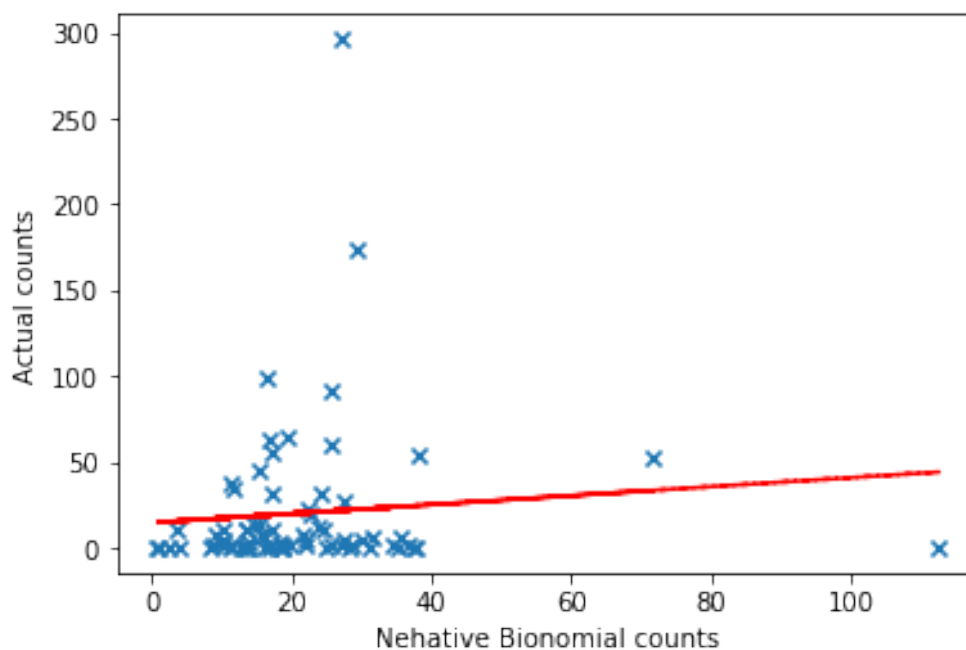
	mean	mean_se	mean_ci_lower	mean_ci_upper
605	21.857799	2.012725	18.248429	26.181068
618	13.678179	1.634944	10.821432	17.289079
632	31.657308	4.922355	23.341121	42.936461
648	38.130645	5.636603	28.539517	50.945014
664	15.452656	1.998987	11.991954	19.912065
681	29.205227	3.674118	22.823198	37.371856
698	71.809937	13.333853	49.903530	103.332712
716	27.031654	2.818837	22.034849	33.161576
734	16.907219	2.616443	12.483782	22.898033
752	15.410664	1.649406	12.494449	19.007526
770	8.497735	1.412541	6.134959	11.770493
788	13.436097	1.356267	11.024302	16.375523
805	13.394571	2.405895	9.419729	19.046676
820	16.236712	1.259765	13.946189	18.903432
835	0.568916	0.248321	0.241833	1.338384
848	3.926321	1.039946	2.336319	6.598412
1445	11.366260	3.213556	6.530694	19.782256
1463	37.260627	5.799302	27.464254	50.551320
1482	30.140927	3.390124	24.177815	37.574754
1502	36.561001	5.108042	27.803167	48.077500
1523	35.401145	4.599734	27.442216	45.668362
1546	25.745258	2.619452	21.090736	31.426988
1567	16.258173	1.734525	13.190466	20.039336
1588	10.242848	2.056932	6.910118	15.182943
1626	11.425763	1.763352	8.443417	15.461521
1645	17.084082	1.927243	13.695195	21.311552
1664	15.904507	1.641301	12.992077	19.469817
1702	37.816011	5.654767	28.209307	50.694287
1719	112.566127	32.470730	63.954461	198.127427
1738	28.172425	3.982447	21.354952	37.166346
...	...	...	...	...
1973	35.244229	4.416867	27.568555	45.056976
1982	0.969824	0.391977	0.439197	2.141540
1997	34.502047	4.687000	26.436970	45.027522

2015	19.646301	1.767012	16.471105	23.433593
2036	18.241931	2.491427	13.957780	23.841046
2056	31.002074	6.275827	20.848745	46.100071
2077	3.520448	0.881512	2.155058	5.750914
2099	21.441965	3.209221	15.990614	28.751732
2123	8.825507	1.151610	6.833911	11.397511
2146	12.915231	1.586405	10.151899	16.430738
2166	24.165323	4.830913	16.331575	35.756675
2185	11.750610	1.659236	8.909784	15.497215
2203	13.794181	2.349338	9.879265	19.260484
2220	18.454541	2.581266	14.029569	24.275163
2234	2.573366	0.655000	1.562589	4.237976
2245	16.856736	2.073942	13.244856	21.453577
2265	27.078265	4.490377	19.564396	37.477897
2284	18.469631	2.985536	13.454425	25.354281
2304	24.898690	3.817543	18.436042	33.626783
2326	27.606020	4.233322	20.439672	37.284960
2351	17.251441	3.096318	12.135294	24.524517
2376	25.597261	3.947900	18.919582	34.631832
2402	23.748597	3.636169	17.591778	32.060198
2430	22.158416	3.463961	16.310708	30.102641
2455	22.621005	3.742654	16.356120	31.285529
2481	27.565722	4.747729	19.668187	38.634423
2505	19.520777	3.230091	14.113975	26.998826
2526	17.327514	3.084028	12.224627	24.560483
2545	24.687179	4.351752	17.475325	34.875279
2562	22.063003	3.403260	16.306667	29.851356

[72 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot CEW on Litchfield-W1Farm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          51
Model:                  GLM           Df Residuals:                46
Model Family:           Poisson       Df Model:                    4
Link Function:           log          Scale:                      1.0000
Method:                  IRLS         Log-Likelihood:             -1286.7
Date:                   Fri, 08 May 2020    Deviance:                  2415.4
Time:                   08:03:51           Pearson chi2:              3.35e+03
No. Iterations:         6               Covariance Type:          nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-1.0396	0.658	-1.580	0.114	-2.329	0.250
tempf	-0.2555	0.076	-3.381	0.001	-0.404	-0.107
dwpf	0.0358	0.016	2.253	0.024	0.005	0.067
drct	0.0107	0.002	6.953	0.000	0.008	0.014
feel	0.2688	0.070	3.860	0.000	0.132	0.405

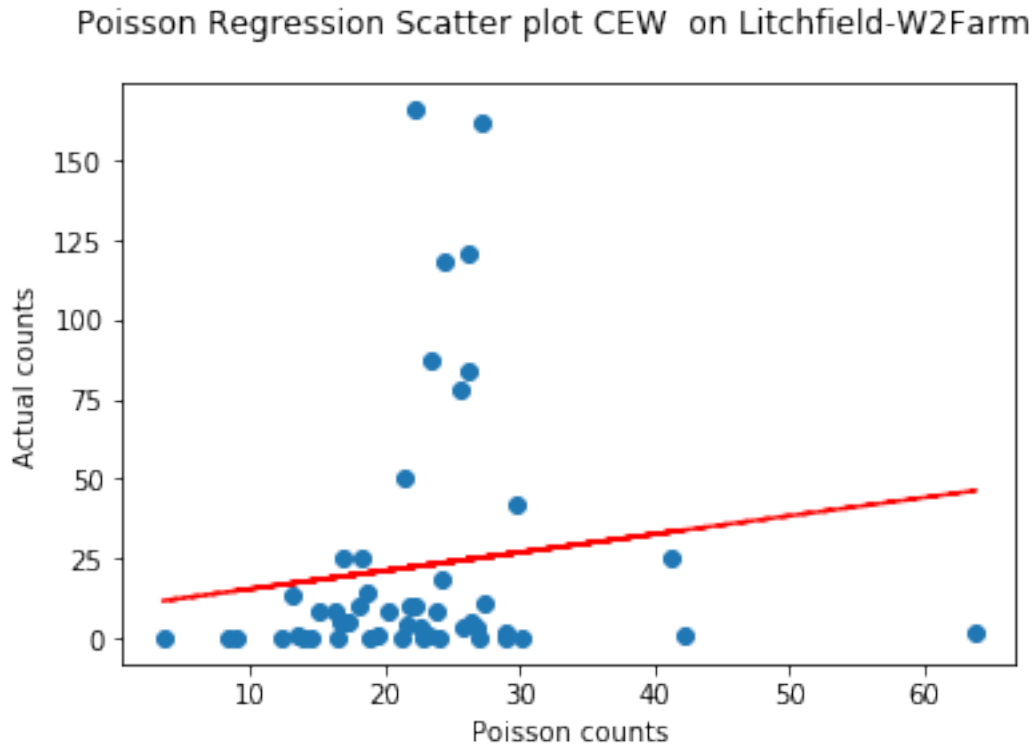
```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
633    21.659467    1.204985    19.421944    24.154765
649    29.690182    1.662011    26.605039    33.133079
665    26.285851    1.433441    23.621291    29.250982
=====

```

682	24.477961	1.099067	22.415892	26.729721
699	41.305316	2.513494	36.661394	46.537486
717	22.268294	0.926148	20.525091	24.159547
735	27.206754	1.606313	24.233769	30.544463
753	15.226229	0.792582	13.749412	16.861670
771	13.889593	1.267192	11.615333	16.609148
789	16.580766	0.821054	15.047156	18.270683
806	9.073792	1.028806	7.265705	11.331827
821	13.547477	1.306833	11.213696	16.366962
836	3.585384	0.607333	2.572465	4.997144
849	8.466714	0.894554	6.883049	10.414751
1202	29.087608	1.414289	26.443633	31.995941
1225	26.353646	1.005262	24.455219	28.399445
1249	22.196988	0.899385	20.502404	24.031634
1274	21.434398	1.018569	19.528187	23.526680
1298	25.572634	1.088744	23.525340	27.798093
1323	23.541491	0.922024	21.801977	25.419796
1349	24.271896	1.479439	21.538755	27.351855
1373	18.729788	0.781503	17.259030	20.325879
1393	13.261271	1.152052	11.185061	15.722874
1413	21.874611	1.699928	18.784146	25.473535
1431	23.857160	1.962961	20.304023	28.032085
1524	28.982769	1.381770	26.397230	31.821555
1547	27.452713	1.176040	25.241832	29.857241
1568	26.169744	1.253276	23.825126	28.745094
1589	16.276081	1.442745	13.680363	19.364312
1607	16.828202	1.075515	14.846913	19.073888
1627	18.341404	1.321789	15.925387	21.123950
1646	18.904906	1.047605	16.959211	21.073827
1720	63.795856	6.136006	52.835072	77.030487
1739	24.137394	1.228633	21.845542	26.669688
1758	22.838658	0.792049	21.337854	24.445021
1777	25.776577	1.105323	23.698723	28.036614
1796	17.067359	1.317030	14.671752	19.854120
1816	22.612189	2.149513	18.768409	27.243177
1836	21.200841	1.249678	18.887707	23.797258
1857	17.226719	0.911419	15.529871	19.108972
1877	16.809687	1.158226	14.686216	19.240189
1897	18.146225	0.880906	16.499273	19.957575
1916	20.240823	1.787590	17.023677	24.065946
1935	14.569471	0.881221	12.940757	16.403174
1998	26.920968	1.285552	24.515650	29.562280
2016	26.819012	1.340946	24.315479	29.580310
2037	19.495149	1.018031	17.598556	21.596136
2057	42.169718	3.673174	35.551439	50.020060
2078	12.419830	1.610591	9.632360	16.013955
2100	30.103592	1.708571	26.934393	33.645691
2124	23.248845	2.016012	19.615070	27.555793

<Figure size 432x288 with 0 Axes>



#### Generalized Linear Model Regression Results

```
=====
Dep. Variable:          trap_count    No. Observations:          51
Model:                  GLM           Df Residuals:                46
Model Family:          NegativeBinomial Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                 IRLS          Log-Likelihood:           -266.83
Date:                   Fri, 08 May 2020 Deviance:                 310.28
Time:                   08:03:52       Pearson chi2:              288.
No. Iterations:         31             Covariance Type:          nonrobust
=====
```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-3.8476	1.967	-1.956	0.051	-7.704	0.008
tempf	-1.6103	0.275	-5.855	0.000	-2.149	-1.071
dwpf	0.0681	0.047	1.434	0.152	-0.025	0.161
drct	0.0244	0.005	5.173	0.000	0.015	0.034
feel	1.6126	0.261	6.184	0.000	1.102	2.124

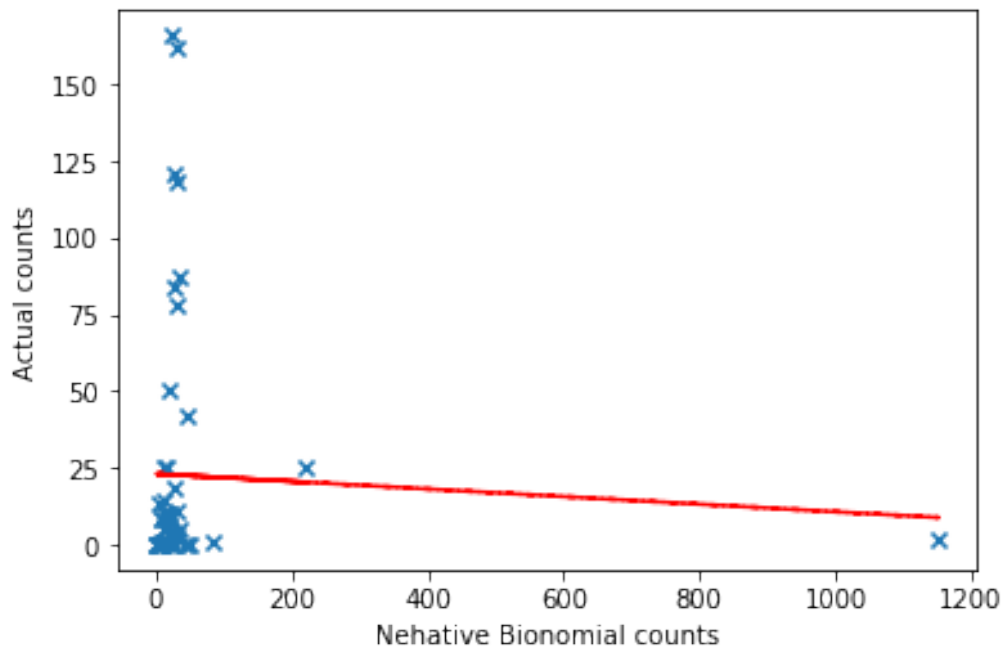


=====				
	mean	mean_se	mean_ci_lower	mean_ci_upper
633	21.385209	3.495543	15.523133	29.461008
649	46.104466	8.028904	32.772512	64.859896
665	28.974345	4.901951	20.797218	40.366585
682	31.738831	4.380190	24.216921	41.597089
699	219.343487	53.371900	136.146211	353.381594
717	23.991400	2.940185	18.868591	30.505049
735	29.790223	5.552739	20.673515	42.927262
753	7.228928	1.112433	5.346698	9.773770
771	6.782111	1.786056	4.047647	11.363894
789	8.162888	1.230844	6.074284	10.969645
806	2.897939	0.953870	1.520241	5.524158
821	8.446009	2.342563	4.904158	14.545833
836	0.025457	0.016704	0.007036	0.092113
849	0.585353	0.228785	0.272098	1.259245
1202	31.844824	5.068128	23.311460	43.501900
1225	33.210823	4.019889	26.196839	42.102743
1249	19.612139	2.423508	15.393607	24.986735
1274	19.987295	2.802738	15.184254	26.309620
1298	31.160795	4.091128	24.090928	40.305428
1323	33.717688	4.216540	26.388301	43.082821
1349	28.021722	5.135832	19.565290	40.133161
1373	10.917222	1.412656	8.471674	14.068736
1393	5.984413	1.537837	3.616471	9.902801
1413	21.351578	4.922236	13.589398	33.547467
1431	23.813851	5.984309	14.552133	38.970197
1524	46.633638	7.059156	34.661620	62.740754
1547	32.050858	4.392778	24.500614	41.927828
1568	26.743716	4.038141	19.892777	35.954073
1589	9.610069	2.518304	5.750034	16.061370
1607	11.517767	2.137283	8.006007	16.569929
1627	14.015330	2.946586	9.282105	21.162167
1646	12.732847	2.101237	9.214167	17.595232
1720	1152.119448	469.947369	517.957337	2562.719219
1739	23.118932	3.626596	16.999745	31.440767
1758	19.567123	2.146510	15.781573	24.260718
1777	31.809356	4.311578	24.388177	41.488756
1796	10.294056	2.338919	6.594541	16.068988
1816	18.005526	5.131501	10.299518	31.477103
1836	25.681473	4.557806	18.136496	36.365243
1857	10.802358	1.669057	7.979958	14.623002
1877	15.199020	3.035191	10.276225	22.480064
1897	10.824095	1.567624	8.149190	14.377017
1916	17.320181	4.574102	10.321858	29.063437
1935	6.215444	1.109087	4.381101	8.817816
1998	51.115271	8.188158	37.341920	69.968842
2016	25.355703	4.095444	18.475232	34.798571

2037	10.792153	1.845949	7.718162	15.090453
2057	82.895445	23.071112	48.042746	143.032098
2078	0.922116	0.445695	0.357574	2.377962
2100	40.531260	7.409643	28.325616	57.996374
2124	10.056719	2.908217	5.705643	17.725889

<Figure size 432x288 with 0 Axes>

### Negative Binomial Regression Scatter plot CEW on Litchfield-W2Farm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          72
Model:                  GLM           Df Residuals:              67
Model Family:           Poisson       Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                 IRLS          Log-Likelihood:            -905.42
Date:                   Fri, 08 May 2020    Deviance:                  1582.2
Time:                   08:03:52           Pearson chi2:              2.19e+03
No. Iterations:         5                Covariance Type:          nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	3.0249	0.230	13.169	0.000	2.575	3.475

tempf	-0.0934	0.034	-2.736	0.006	-0.160	-0.026
dwpf	-0.0187	0.014	-1.366	0.172	-0.045	0.008
drct	-0.0015	0.001	-0.983	0.325	-0.004	0.001
feel	0.1046	0.033	3.191	0.001	0.040	0.169

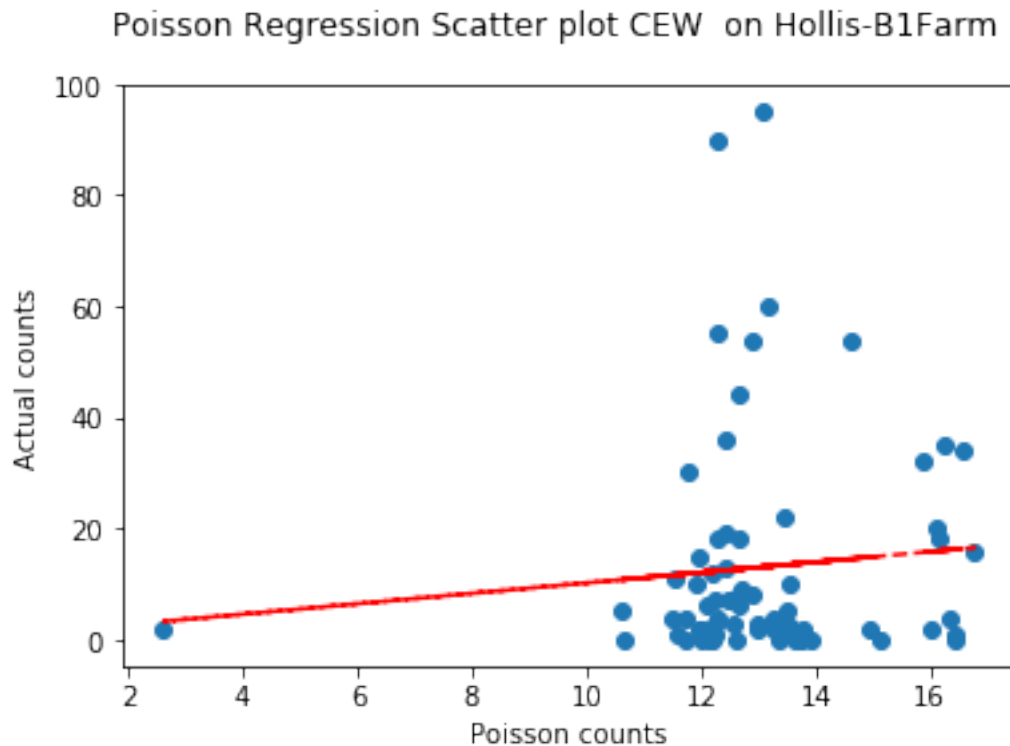
=====

	mean	mean_se	mean_ci_lower	mean_ci_upper
857	13.941931	1.255221	11.686582	16.632531
871	13.776323	0.939469	12.052749	15.746373
891	13.478691	0.953653	11.733376	15.483618
913	12.576415	0.574979	11.498492	13.755388
934	12.654218	1.401838	10.184481	15.722865
956	14.618541	1.329246	12.232221	17.470396
978	13.085338	0.620401	11.924160	14.359591
1000	12.905097	0.611325	11.760862	14.160657
1022	12.303348	0.595413	11.189995	13.527473
1042	13.558556	1.021295	11.697603	15.715565
1147	2.624225	1.298511	0.994974	6.921339
1164	13.583670	1.081673	11.620788	15.878105
1184	14.954136	1.420809	12.413313	18.015028
1206	12.106593	0.590369	11.003066	13.320796
1230	12.667436	0.586488	11.568552	13.870701
1254	12.430048	0.630255	11.254167	13.728791
1279	12.407689	0.750005	11.021444	13.968293
1303	12.447465	0.691422	11.163466	13.879146
1328	13.193708	0.558025	12.144104	14.334028
1354	11.945115	0.823921	10.434657	13.674217
1377	12.212924	0.516223	11.241922	13.267794
1449	13.520298	1.222272	11.324925	16.141252
1467	13.627725	0.670188	12.375499	15.006659
1486	12.255401	0.646112	11.052274	13.589497
1507	12.906308	0.809712	11.412993	14.595012
1529	12.660534	0.744985	11.281444	14.208209
1552	12.301184	0.593084	11.191994	13.520301
1573	12.662624	0.502464	11.715135	13.686745
1594	13.728504	0.971079	11.951265	15.770031
1612	12.610282	0.910616	10.946057	14.527534
...	...	...	...	...
1920	12.231269	0.979727	10.454184	14.310438
1939	12.290145	0.508175	11.333430	13.327621
1955	11.507000	0.842267	9.969136	13.282100
1969	13.726883	0.802398	12.240957	15.393186
1976	13.376386	0.638425	12.181838	14.688070
1986	10.645391	1.250934	8.455463	13.402500
2002	13.454566	0.773523	12.020786	15.059361
2020	12.223921	0.512409	11.259767	13.270635
2041	11.923744	0.674896	10.671705	13.322677
2061	11.614884	1.070568	9.695224	13.914638
2082	10.611413	0.751585	9.236009	12.191638

2105	12.161952	0.826402	10.645457	13.894479
2129	11.734918	0.552558	10.700395	12.869460
2150	12.211455	0.580508	11.125076	13.403920
2170	11.549610	1.071194	9.629877	13.852046
2189	11.781694	0.754528	10.391895	13.357364
2207	11.741001	0.926224	10.059017	13.704233
2224	12.031525	0.681284	10.767663	13.443734
2237	12.140120	0.942177	10.427074	14.134599
2248	12.028161	0.608225	10.893233	13.281334
2269	16.450018	1.302936	14.084658	19.212614
2288	16.430361	1.323645	14.030512	19.240692
2308	15.999083	1.208889	13.796801	18.552899
2330	16.342417	1.219038	14.119593	18.915177
2355	16.566167	1.441430	13.968784	19.646513
2380	16.147319	1.221369	13.922470	18.727704
2407	16.235165	1.233353	13.989192	18.841730
2435	16.120263	1.257579	13.834642	18.783491
2460	16.784525	1.364223	14.312799	19.683102
2485	15.858589	1.307936	13.491548	18.640920

[72 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



# Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          72
Model:                  GLM          Df Residuals:              67
Model Family:          NegativeBinomial    Df Model:                4
Link Function:          log            Scale:                  1.0000
Method:                 IRLS          Log-Likelihood:         -717.76
Date:                   Fri, 08 May 2020    Deviance:                1192.3
Time:                   08:03:52          Pearson chi2:            1.72e+03
No. Iterations:         6                Covariance Type:        nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	3.0058	0.260	11.564	0.000	2.496	3.515
tempf	-0.0995	0.037	-2.664	0.008	-0.173	-0.026
dwpf	-0.0187	0.015	-1.213	0.225	-0.049	0.012
drct	-0.0013	0.002	-0.791	0.429	-0.005	0.002
feel	0.1108	0.036	3.098	0.002	0.041	0.181

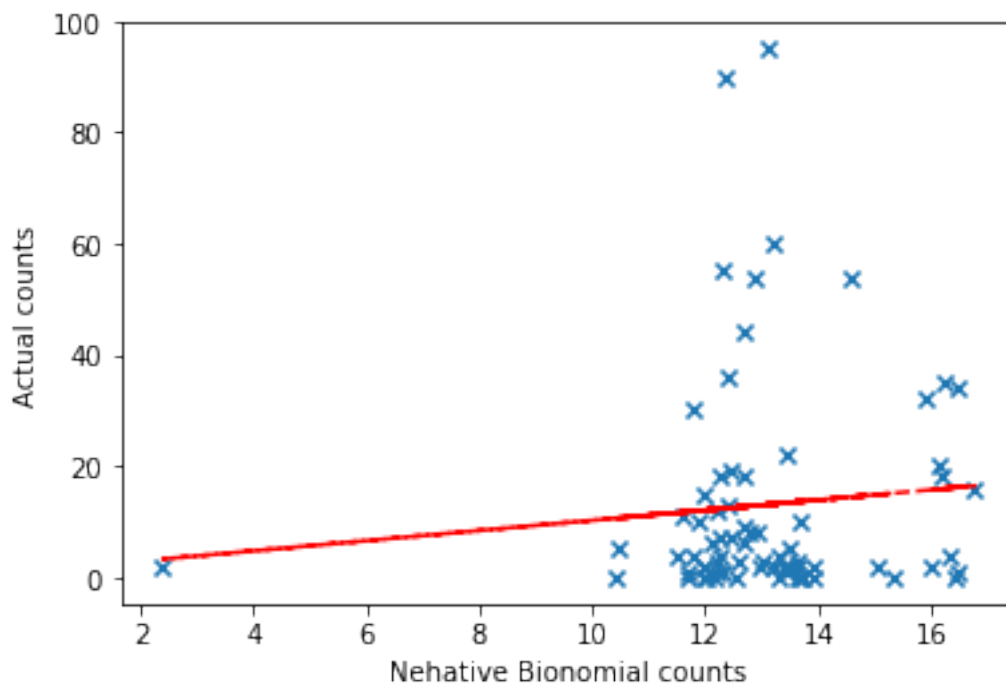
	mean	mean_se	mean_ci_lower	mean_ci_upper
857	13.942381	1.419081	11.420895	17.020558
871	13.931344	1.057153	12.006081	16.165338
891	13.449800	1.072703	11.503429	15.725495
913	12.609872	0.647293	11.402934	13.944558
934	12.761388	1.590845	9.995084	16.293312
956	14.585435	1.498144	11.925817	17.838183
978	13.091091	0.701507	11.785902	14.540819
1000	12.897888	0.689769	11.614406	14.323204
1022	12.339472	0.668735	11.095985	13.722312
1042	13.683232	1.159585	11.589205	16.155623
1147	2.392343	1.291193	0.830641	6.890222
1164	13.613877	1.225696	11.411579	16.241191
1184	15.073845	1.614280	12.219899	18.594328
1206	12.136683	0.662797	10.904732	13.507813
1230	12.671810	0.659941	11.442174	14.033588
1254	12.408875	0.707452	11.096957	13.875891
1279	12.383176	0.841898	10.838301	14.148255
1303	12.445392	0.777224	11.011600	14.065875
1328	13.209331	0.628688	12.032851	14.500839
1354	11.963963	0.926331	10.279436	13.924538
1377	12.211111	0.576053	11.132691	13.393996
1449	13.611929	1.388333	11.145571	16.624056
1467	13.714940	0.754759	12.312626	15.276968
1486	12.282655	0.726574	10.938049	13.792552
1507	12.905354	0.910829	11.238133	14.819914

1529	12.668515	0.838323	11.127524	14.422909
1552	12.308565	0.666430	11.069303	13.686567
1573	12.684985	0.566088	11.622611	13.844465
1594	13.676191	1.093306	11.692791	15.996027
1612	12.549872	1.020112	10.701623	14.717327
...	...	...	...	...
1920	12.295223	1.104442	10.310403	14.662135
1939	12.270628	0.565605	11.210665	13.430811
1955	11.509661	0.941624	9.804476	13.511411
1969	13.651677	0.902559	11.992512	15.540386
1976	13.421055	0.719043	12.083226	14.907006
1986	10.435266	1.358508	8.085194	13.468419
2002	13.467111	0.871015	11.863727	15.287193
2020	12.225031	0.574995	11.148447	13.405578
2041	11.877345	0.753853	10.488026	13.450704
2061	11.706726	1.210079	9.559827	14.335764
2082	10.484557	0.814413	9.003906	12.208694
2105	12.230707	0.931338	10.535003	14.199350
2129	11.711930	0.614086	10.568123	12.979534
2150	12.165342	0.649925	10.955935	13.508254
2170	11.616241	1.207847	9.474546	14.242060
2189	11.786349	0.842809	10.245007	13.559583
2207	11.786965	1.041082	9.913334	14.014715
2224	11.993119	0.761157	10.590335	13.581715
2237	12.024238	1.038162	10.152326	14.241298
2248	11.988431	0.678451	10.729785	13.394720
2269	16.494747	1.506951	13.790510	19.729268
2288	16.413598	1.527893	13.676279	19.698793
2308	16.018581	1.397546	13.500837	19.005854
2330	16.351107	1.408517	13.810930	19.358485
2355	16.497545	1.651574	13.558301	20.073974
2380	16.168498	1.412386	13.624283	19.187824
2407	16.231775	1.425018	13.665875	19.279448
2435	16.126479	1.453619	13.514917	19.242686
2460	16.781356	1.575562	13.960781	20.171786
2485	15.910231	1.509217	13.210916	19.161081

[72 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot CEW on Hollis-B1Farm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          56
Model:                  GLM           Df Residuals:                51
Model Family:           Poisson       Df Model:                    4
Link Function:          log           Scale:                      1.0000
Method:                  IRLS          Log-Likelihood:              -477.03
Date:                   Fri, 08 May 2020    Deviance:                    814.54
Time:                   08:03:52           Pearson chi2:                1.12e+03
No. Iterations:         5                 Covariance Type:            nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	2.5923	0.377	6.882	0.000	1.854	3.331
tempf	-0.0160	0.031	-0.511	0.609	-0.077	0.045
dwpf	-0.0119	0.020	-0.586	0.558	-0.052	0.028
drct	-0.0045	0.002	-1.803	0.071	-0.009	0.000
feel	0.0247	0.028	0.894	0.371	-0.029	0.079

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
869    7.178551    0.648031     6.014452     8.567961
889    8.957989    0.939389     7.293708    11.002025
911    7.312882    0.501377     6.393365     8.364646

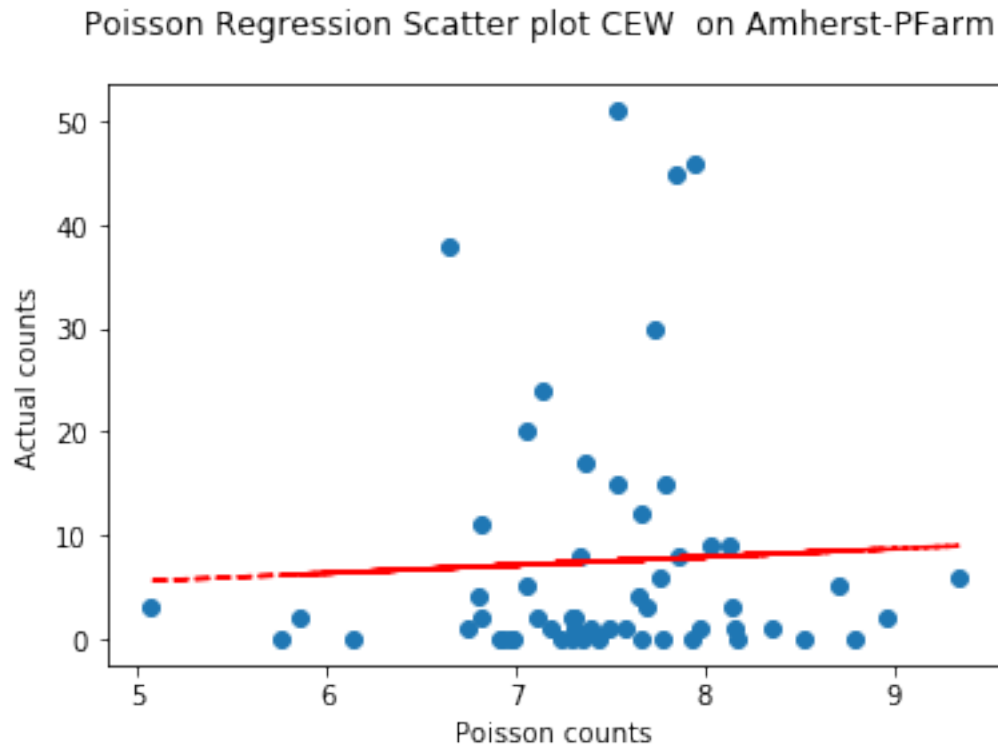
```

932	5.855583	1.050461	4.119732	8.322835
954	9.340954	1.281214	7.139036	12.222016
976	7.536157	0.504564	6.609368	8.592903
998	7.532671	0.499053	6.615389	8.577143
1020	6.645868	0.558735	5.636234	7.836359
1041	6.821141	0.771841	5.464368	8.514794
1061	7.943316	0.675735	6.723423	9.384544
1082	7.728243	0.413786	6.958340	8.583332
1101	6.972742	0.661630	5.789416	8.397934
1141	5.059514	2.111641	2.232806	11.464806
1158	7.571811	0.863348	6.055425	9.467928
1178	7.973053	1.036861	6.179162	10.287735
1199	6.739599	0.556659	5.732299	7.923904
1222	7.698445	0.507701	6.764995	8.760694
1246	7.766457	0.562455	6.738729	8.950923
1271	7.849543	0.683931	6.617275	9.311284
1295	7.664852	0.616479	6.546999	8.973571
1320	7.787953	0.457188	6.941509	8.737611
1346	6.803348	0.745693	5.488141	8.433738
1443	6.814072	0.924068	5.223647	8.888727
1461	7.487734	0.486289	6.592792	8.504160
1480	7.107055	0.583559	6.050590	8.347985
1500	8.140753	0.726475	6.834456	9.696727
1521	7.862848	0.659238	6.671343	9.267156
1544	7.370718	0.530211	6.401456	8.486739
1565	7.135463	0.440867	6.321649	8.054044
1586	8.712065	0.907773	7.102778	10.685970
1699	8.028940	0.767054	6.657907	9.682303
1716	7.770912	0.688008	6.532956	9.243454
1735	7.296397	0.679140	6.079665	8.756635
1754	7.433874	0.419794	6.654991	8.303916
1773	7.232971	0.430722	6.436176	8.128410
1792	8.151005	0.666729	6.943608	9.568350
1812	7.662984	0.745044	6.333426	9.271653
1832	8.794898	0.898874	7.198377	10.745510
1853	8.168039	0.546291	7.164537	9.312096
1980	8.523090	1.186686	6.487579	11.197254
1994	8.349523	0.667266	7.138985	9.765330
2012	7.299985	0.458937	6.453696	8.257251
2033	7.643248	0.610524	6.535608	8.938607
2053	5.754151	0.928731	4.193683	7.895268
2074	7.306191	0.519328	6.356048	8.398368
2096	6.140518	0.741892	4.845780	7.781197
2120	6.926366	0.474442	6.056195	7.921566
2143	7.929144	0.509184	6.991413	8.992650
2263	6.909742	0.936813	5.297331	9.012941
2282	7.356227	0.994913	5.643286	9.589109
2302	6.981479	0.907143	5.411853	9.006350



2324	7.400451	0.924531	5.793199	9.453617
2348	8.127643	1.156207	6.150012	10.741211
2373	7.050319	0.912341	5.470912	9.085687
2399	7.339584	0.940010	5.710243	9.433836
2427	7.050940	0.941110	5.427934	9.159239

<Figure size 432x288 with 0 Axes>



#### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          56
Model:                  GLM           Df Residuals:              51
Model Family:          NegativeBinomial    Df Model:                  4
Link Function:          log             Scale:                  1.0000
Method:                 IRLS            Log-Likelihood:          -346.73
Date:                   Fri, 08 May 2020    Deviance:                537.82
Time:                   08:03:53           Pearson chi2:            770.
No. Iterations:         6                 Covariance Type:        nonrobust
=====

```

```

=====
              coef      std err          z      P>|z|      [0.025      0.975]
=====

```

Intercept	2.6789	0.455	5.891	0.000	1.788	3.570
tempf	-0.0176	0.037	-0.474	0.635	-0.090	0.055
dwpf	-0.0139	0.025	-0.565	0.572	-0.062	0.034
drct	-0.0052	0.003	-1.727	0.084	-0.011	0.001
feel	0.0278	0.032	0.858	0.391	-0.036	0.091

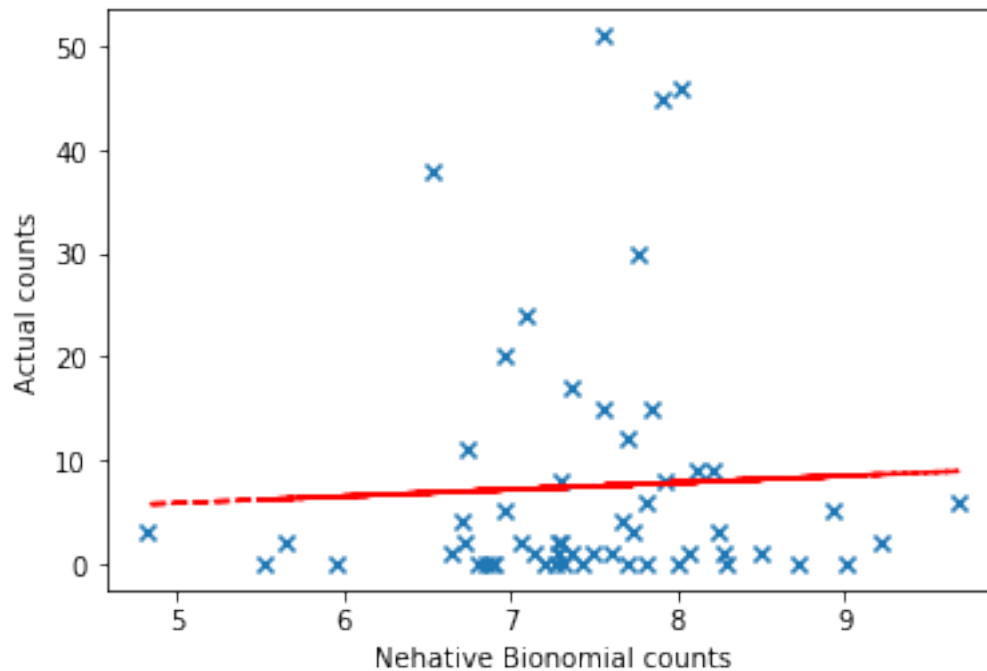
=====

	mean	mean_se	mean_ci_lower	mean_ci_upper
869	7.134081	0.770084	5.773719	8.814962
889	9.217026	1.173644	7.181309	11.829816
911	7.290807	0.601363	6.202495	8.570078
932	5.647223	1.213378	3.706324	8.604517
954	9.679270	1.613461	6.981580	13.419349
976	7.553516	0.610423	6.447048	8.849879
998	7.550164	0.603872	6.454702	8.831543
1020	6.528606	0.656321	5.361041	7.950452
1041	6.732450	0.911704	5.163022	8.778945
1061	8.025309	0.828386	6.555401	9.824811
1082	7.768155	0.504273	6.840089	8.822142
1101	6.904157	0.785795	5.523716	8.629585
1141	4.821832	2.354417	1.851762	12.555647
1158	7.599854	1.045650	5.803499	9.952233
1178	8.064252	1.265132	5.929613	10.967354
1199	6.635730	0.656114	5.466701	8.054751
1222	7.736031	0.617066	6.616403	9.045122
1246	7.814512	0.684709	6.581418	9.278640
1271	7.909080	0.833253	6.433518	9.723069
1295	7.695334	0.747871	6.360678	9.310040
1320	7.838202	0.557304	6.818599	9.010269
1346	6.702236	0.884648	5.174485	8.681052
1443	6.727755	1.094730	4.890620	9.254999
1461	7.492056	0.583722	6.431054	8.728104
1480	7.052908	0.696678	5.811490	8.559510
1500	8.248850	0.891055	6.674907	10.193930
1521	7.925597	0.803618	6.497170	9.668070
1544	7.356979	0.637827	6.207305	8.719589
1565	7.089585	0.524297	6.132984	8.195394
1586	8.930484	1.132491	6.965184	11.450315
1699	8.117415	0.937885	6.472470	10.180414
1716	7.815583	0.825539	6.354059	9.613279
1735	7.268980	0.815845	5.833612	9.057523
1754	7.430893	0.505730	6.502946	8.491254
1773	7.200320	0.513871	6.260420	8.281331
1792	8.269148	0.822707	6.804147	10.049577
1812	7.703423	0.905113	6.118880	9.698299
1832	9.020532	1.118214	7.074806	11.501376
1853	8.285488	0.674791	7.063079	9.719459
1980	8.726689	1.465299	6.279488	12.127599
1994	8.495066	0.823645	7.024865	10.272959

2012	7.277674	0.550288	6.275243	8.440237
2033	7.672154	0.739942	6.350722	9.268544
2053	5.526664	1.071042	3.780107	8.080197
2074	7.292986	0.615584	6.180980	8.605049
2096	5.957949	0.862092	4.486743	7.911563
2120	6.854187	0.559716	5.840452	8.043878
2143	8.010754	0.624609	6.875497	9.333461
2263	6.800251	1.109729	4.938759	9.363367
2282	7.311962	1.191266	5.313197	10.062638
2302	6.882986	1.076660	5.065579	9.352435
2324	7.362133	1.107629	5.482024	9.887043
2348	8.205916	1.407597	5.862957	11.485170
2373	6.961223	1.084483	5.129530	9.446993
2399	7.292430	1.124826	5.389868	9.866576
2427	6.961832	1.118802	5.080788	9.539290

<Figure size 432x288 with 0 Axes>

Negative Binomial Regression Scatter plot CEW on Amherst-PFarm



#### Generalized Linear Model Regression Results

=====

Dep. Variable:	trap_count	No. Observations:	78
----------------	------------	-------------------	----

```

Model:                      GLM      Df Residuals:      73
Model Family:               Poisson  Df Model:         4
Link Function:              log      Scale:           1.0000
Method:                     IRLS     Log-Likelihood:   -529.64
Date:                       Fri, 08 May 2020 Deviance:       885.38
Time:                       08:03:53 Pearson chi2:      1.17e+03
No. Iterations:             6       Covariance Type:    nonrobust

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	3.2519	0.313	10.395	0.000	2.639	3.865
tempf	-0.2553	0.081	-3.156	0.002	-0.414	-0.097
dwpf	0.0031	0.022	0.141	0.888	-0.039	0.045
drct	-0.0069	0.002	-3.248	0.001	-0.011	-0.003
feel	0.2402	0.079	3.051	0.002	0.086	0.395

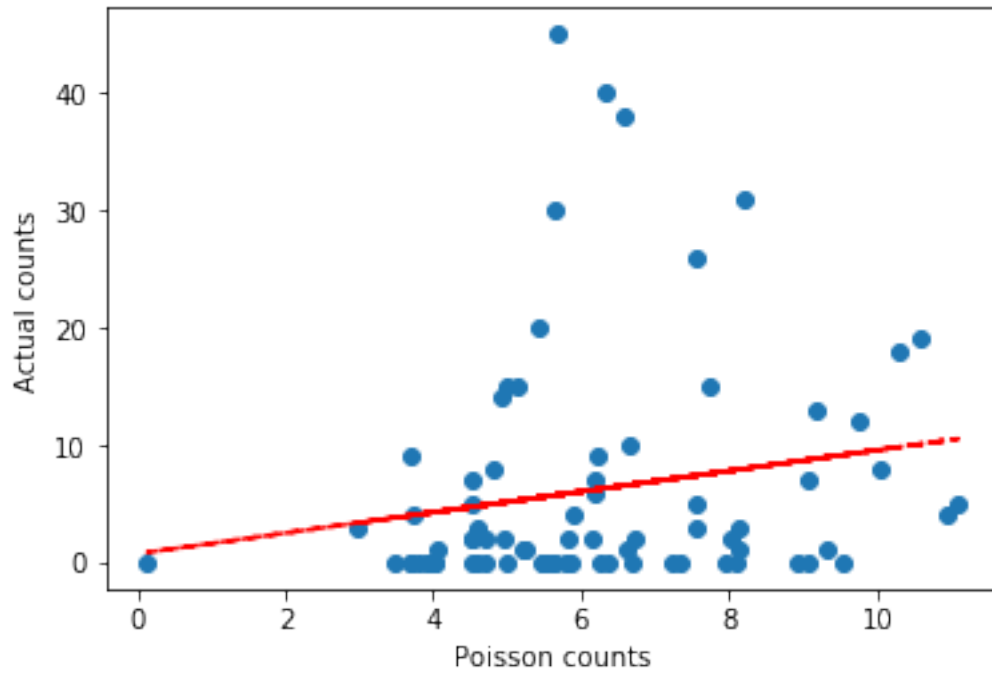
	mean	mean_se	mean_ci_lower	mean_ci_upper
877	6.247656	0.800301	4.860506	8.030688
897	8.018774	0.745338	6.683279	9.621136
919	5.626313	0.378359	4.931536	6.418974
940	2.979426	0.505659	2.136335	4.155237
962	7.745027	1.059530	5.923488	10.126711
984	5.136220	0.406764	4.397770	5.998666
1006	5.003511	0.405276	4.269027	5.864362
1028	4.539630	0.346765	3.908412	5.272792
1048	4.543985	0.559615	3.569497	5.784513
1069	5.681496	0.562831	4.678853	6.898999
1090	6.198213	0.340651	5.565252	6.903164
1109	4.513763	0.468892	3.682269	5.533016
1156	0.136224	0.162854	0.013081	1.418575
1175	4.697415	0.619349	3.627680	6.082596
1196	5.875975	0.950131	4.279990	8.067095
1219	4.605640	0.349519	3.969107	5.344254
1243	6.172256	0.386994	5.458514	6.979325
1268	6.220066	0.419300	5.450230	7.098640
1292	6.640792	0.535966	5.669190	7.778910
1317	6.339982	0.480881	5.464183	7.356153
1343	6.574720	0.387954	5.856666	7.380812
1368	5.437874	0.565665	4.434906	6.667666
1388	4.593378	0.338785	3.975134	5.307776
1408	8.128878	0.967069	6.438218	10.263503
1458	4.022481	0.583938	3.026399	5.346404
1477	6.159154	0.532550	5.199027	7.296591
1497	5.468647	0.424172	4.697395	6.366529
1518	7.332652	0.622260	6.209074	8.659549
1541	6.728255	0.544354	5.741633	7.884415
1563	5.662499	0.385941	4.954415	6.471781
...	...	...	...	...

1929	3.719834	0.454395	2.927826	4.726089
1947	4.696569	0.359301	4.042605	5.456322
1961	3.939020	0.480836	3.100859	5.003736
1979	6.695743	0.496658	5.789763	7.743491
1992	3.714150	0.906085	2.302526	5.991207
2009	7.552996	0.609470	6.448128	8.847178
2029	5.236681	0.323620	4.639306	5.910977
2050	5.809008	0.472917	4.952275	6.813953
2070	3.714404	0.514754	2.830916	4.873616
2091	3.816286	0.607786	2.793043	5.214398
2115	4.043374	0.419283	3.299723	4.954620
2139	4.039553	0.367880	3.379207	4.828940
2160	5.502148	0.389317	4.789648	6.320639
2180	3.684550	0.520289	2.793751	4.859385
2199	3.902313	0.426811	3.149364	4.835276
2216	3.477644	0.432149	2.725904	4.436697
2231	5.654646	0.496100	4.761314	6.715588
2277	9.086421	0.867844	7.535198	10.956986
2296	9.541854	0.888149	7.950667	11.451489
2318	8.940324	0.797815	7.505746	10.649094
2341	10.062447	0.880623	8.476372	11.945304
2366	11.098427	1.129517	9.091433	13.548477
2391	9.172230	0.818133	7.701060	10.924444
2418	9.746375	0.853610	8.209051	11.571597
2445	9.076249	0.824542	7.595879	10.845131
2471	10.290043	0.970386	8.553541	12.379081
2496	8.189934	0.837080	6.703174	10.006457
2518	10.583619	0.991975	8.807513	12.717892
2539	10.932341	1.106909	8.964545	13.332085
2557	7.573907	0.812572	6.137595	9.346344

[78 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

# Poisson Regression Scatter plot CEW on Concord-AFarm



## Generalized Linear Model Regression Results

```
=====
Dep. Variable:          trap_count    No. Observations:          78
Model:                  GLM           Df Residuals:              73
Model Family:          NegativeBinomial  Df Model:                  4
Link Function:          log           Scale:                  1.0000
Method:                 IRLS          Log-Likelihood:           -268.45
Date:                   Fri, 08 May 2020  Deviance:                300.81
Time:                   08:03:53         Pearson chi2:             356.
No. Iterations:         18              Covariance Type:         nonrobust
=====
```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	3.5330	0.580	6.088	0.000	2.396	4.670
tempf	-0.4096	0.153	-2.672	0.008	-0.710	-0.109
dwpf	0.0004	0.038	0.011	0.991	-0.074	0.075
drct	-0.0086	0.004	-2.275	0.023	-0.016	-0.001
feel	0.3950	0.150	2.636	0.008	0.101	0.689

```
=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
877      7.331841  1.760786    4.579224    11.739085
897      9.192228  1.612909    6.517261    12.965115
919      5.753688  0.695787    4.539537     7.292578
=====
```

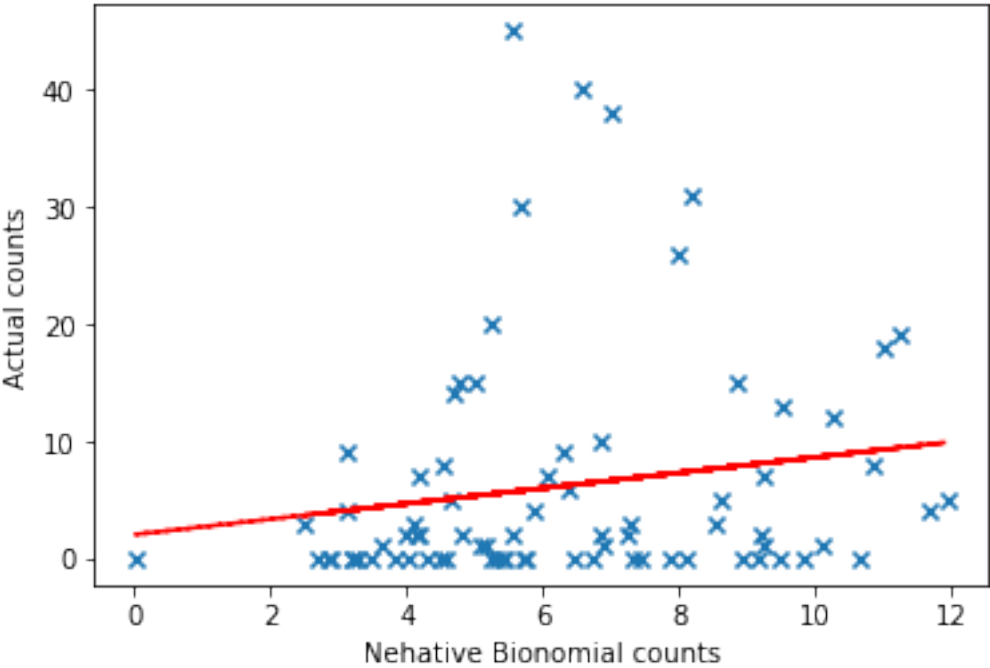
940	2.505646	0.731048	1.414402	4.438810
962	8.847812	2.178706	5.460520	14.336321
984	4.994407	0.679861	3.824853	6.521586
1006	4.767251	0.666034	3.625320	6.268876
1028	4.193743	0.542332	3.254805	5.403543
1048	4.636364	1.001116	3.036548	7.079050
1069	5.559163	0.968488	3.951096	7.821701
1090	6.069547	0.617535	4.972243	7.409012
1109	4.182492	0.740513	2.956170	5.917537
1156	0.012846	0.029165	0.000150	1.099860
1175	4.580390	1.040625	2.934383	7.149704
1196	6.735071	1.939497	3.830204	11.843021
1219	4.290207	0.556391	3.327263	5.531836
1243	6.397291	0.739181	5.100858	8.023226
1268	6.299775	0.782469	4.938566	8.036172
1292	6.850035	1.016767	5.120908	9.163021
1317	6.565844	0.912086	5.000887	8.620533
1343	7.002855	0.771551	5.642773	8.690758
1368	5.240387	0.959023	3.660903	7.501335
1388	4.100516	0.519948	3.198199	5.257405
1408	8.537696	1.884918	5.538801	13.160293
1458	3.825487	0.954291	2.346116	6.237695
1477	6.831050	1.093466	4.991524	9.348496
1497	5.449072	0.750356	4.160151	7.137333
1518	8.110573	1.289620	5.938905	11.076350
1541	7.251045	1.089950	5.400713	9.735316
1563	5.657147	0.692132	4.450984	7.190166
...	...	...	...	...
1929	3.128786	0.658920	2.070682	4.727574
1947	4.128047	0.554565	3.172441	5.371502
1961	3.211501	0.686996	2.111646	4.884218
1979	7.437653	1.038475	5.657020	9.778767
1992	2.674377	1.219147	1.094440	6.535114
2009	8.611141	1.321451	6.374363	11.632811
2029	5.066197	0.552463	4.091283	6.273424
2050	5.573623	0.831299	4.160848	7.466092
2070	3.294562	0.793989	2.054273	5.283687
2091	2.877741	0.858655	1.603510	5.164541
2115	3.630287	0.644108	2.563985	5.140038
2139	3.462780	0.552691	2.532594	4.734611
2160	5.310840	0.692915	4.112495	6.858373
2180	3.113266	0.762403	1.926490	5.031133
2199	3.204776	0.611384	2.205015	4.657831
2216	2.851949	0.610639	1.874513	4.339053
2231	5.228223	0.824334	3.838354	7.121363
2277	9.479007	1.885867	6.418221	13.999453
2296	9.830785	1.932899	6.686942	14.452694
2318	9.174013	1.710185	6.366219	13.220174

2341	10.835926	2.005470	7.539265	15.574103
2366	11.942377	2.515305	7.903339	18.045586
2391	9.523072	1.782162	6.599058	13.742703
2418	10.247578	1.902332	7.122074	14.744700
2445	9.256981	1.767921	6.366560	13.459656
2471	11.011855	2.200789	7.442905	16.292155
2496	8.188158	1.690772	5.462881	12.272999
2518	11.265327	2.221231	7.654360	16.579778
2539	11.683132	2.464056	7.727425	17.663786
2557	7.286679	1.549753	4.802788	11.055180

[78 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

Negative Binomial Regression Scatter plot CEW on Concord-AFarm



Generalized Linear Model Regression Results

=====			
Dep. Variable:	trap_count	No. Observations:	72
Model:	GLM	Df Residuals:	67
Model Family:	Poisson	Df Model:	4
Link Function:	log	Scale:	1.0000



Method: IRLS Log-Likelihood: -241.88  
Date: Fri, 08 May 2020 Deviance: 385.61  
Time: 08:03:54 Pearson chi2: 605.  
No. Iterations: 5 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	0.7517	0.518	1.452	0.147	-0.263	1.767
tempf	-0.4517	0.181	-2.491	0.013	-0.807	-0.096
dwpf	0.1843	0.041	4.461	0.000	0.103	0.265
drct	0.0056	0.003	1.624	0.104	-0.001	0.012
feel	0.2791	0.175	1.595	0.111	-0.064	0.622

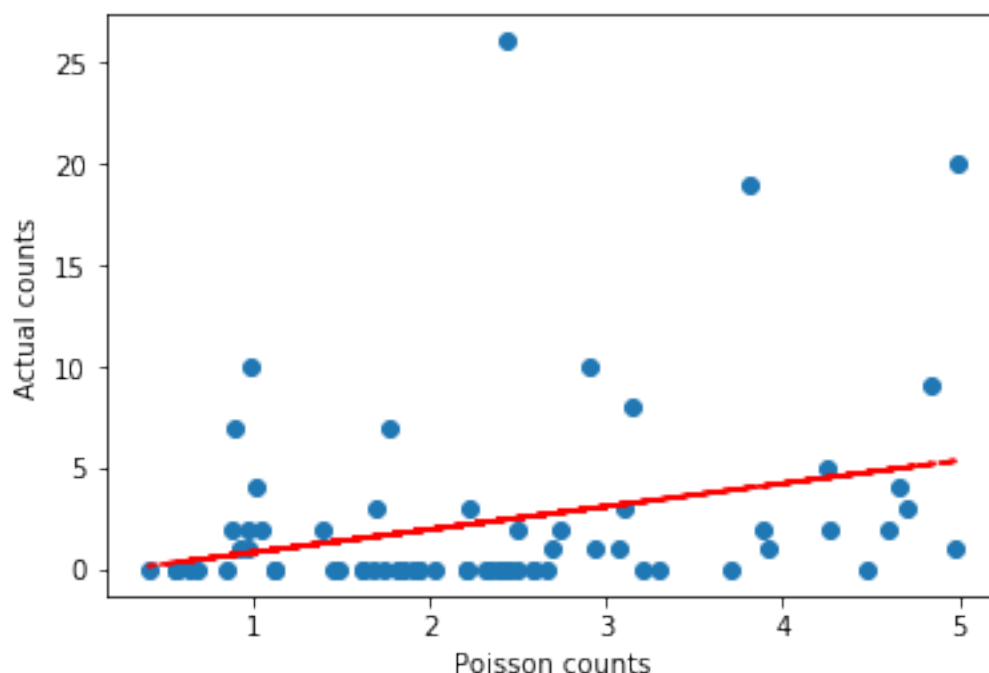
	mean	mean_se	mean_ci_lower	mean_ci_upper
882	2.336961	0.618130	1.391577	3.924602
903	2.022447	0.345398	1.447129	2.826487
925	2.212003	0.242173	1.784823	2.741425
946	0.558257	0.184265	0.292332	1.066087
968	0.876805	0.242720	0.509648	1.508467
990	1.018786	0.184843	0.713913	1.453852
1012	0.988374	0.184525	0.685498	1.425071
1033	1.766781	0.214406	1.392791	2.241194
1053	0.914977	0.235040	0.553036	1.513796
1074	0.893622	0.200420	0.575769	1.386947
1093	1.824509	0.213671	1.450309	2.295259
1111	0.845420	0.191167	0.542748	1.316881
1127	3.199388	0.497640	2.358681	4.339751
1176	0.563225	0.164737	0.317480	0.999191
1197	0.630084	0.219921	0.317907	1.248811
1220	1.899393	0.217884	1.516951	2.378255
1244	2.306388	0.239149	1.882224	2.826138
1269	2.498004	0.269732	2.021535	3.086776
1293	3.103246	0.396936	2.415122	3.987433
1318	2.903715	0.342685	2.304084	3.659396
1344	2.227771	0.242039	1.800489	2.756452
1369	3.809180	0.585612	2.818190	5.148643
1389	1.686455	0.223624	1.300485	2.186977
1409	3.708064	0.763163	2.477193	5.550531
1427	4.707287	0.892191	3.246676	6.824996
1437	1.918802	0.383490	1.296910	2.838902
1459	0.561502	0.173092	0.306871	1.027420
1478	1.812627	0.328183	1.271146	2.584769
1498	2.662984	0.301257	2.133408	3.324016
1519	3.072675	0.444419	2.314207	4.079726
...	...	...	...	...
1791	1.445619	0.188598	1.119449	1.866823
1811	0.969537	0.202019	0.644470	1.458566
1830	0.683144	0.175910	0.412408	1.131611

1851	2.499890	0.394166	1.835308	3.405123
1872	1.611967	0.221352	1.231603	2.109801
1892	2.731383	0.397735	2.053211	3.633555
1911	1.680687	0.228945	1.286872	2.195019
1930	1.746236	0.334609	1.199494	2.542188
1993	0.403826	0.222871	0.136905	1.191161
2010	2.392645	0.363452	1.776550	3.222398
2030	1.933729	0.195079	1.586808	2.356495
2051	2.585740	0.352751	1.979076	3.378370
2071	2.453208	0.493486	1.653891	3.638830
2092	1.113470	0.391665	0.558814	2.218656
2116	1.842732	0.289165	1.354846	2.506307
2140	1.118336	0.214147	0.768384	1.627670
2161	1.481982	0.217862	1.110990	1.976859
2181	2.685951	0.546635	1.802455	4.002503
2200	1.837180	0.338141	1.280809	2.635234
2217	1.612745	0.318925	1.094557	2.376256
2342	4.837644	0.721114	3.612029	6.479127
2367	3.891535	0.673147	2.772570	5.462098
2392	4.650841	0.694195	3.471198	6.231373
2419	4.594787	0.675725	3.444172	6.129795
2446	4.472077	0.676154	3.325158	6.014594
2472	4.265643	0.680925	3.119658	5.832597
2497	4.990303	0.838435	3.590163	6.936488
2519	4.247494	0.672893	3.113754	5.794036
2540	3.919885	0.674161	2.798205	5.491199
2558	4.982526	0.863036	3.548221	6.996622

[72 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

# Poisson Regression Scatter plot CEW on Weare-IFarm



## Generalized Linear Model Regression Results

```
=====
Dep. Variable:          trap_count    No. Observations:          72
Model:                  GLM           Df Residuals:              67
Model Family:           NegativeBinomial  Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                 IRLS          Log-Likelihood:            -134.63
Date:                   Fri, 08 May 2020  Deviance:                 29.634
Time:                   08:03:54         Pearson chi2:              29.9
No. Iterations:         33              Covariance Type:          nonrobust
=====
```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	2.3769	2.501	0.950	0.342	-2.526	7.280
tempf	-0.4935	0.692	-0.713	0.476	-1.850	0.863
dwpf	0.1378	0.161	0.856	0.392	-0.178	0.453
drct	-0.0057	0.016	-0.366	0.715	-0.036	0.025
feel	0.3555	0.681	0.522	0.602	-0.980	1.691

```
=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
882    2.218041    2.413271      0.262933      18.710843
903    3.228979    2.589200      0.670684      15.545785
925    2.142090    1.140365      0.754556       6.081126
=====
```

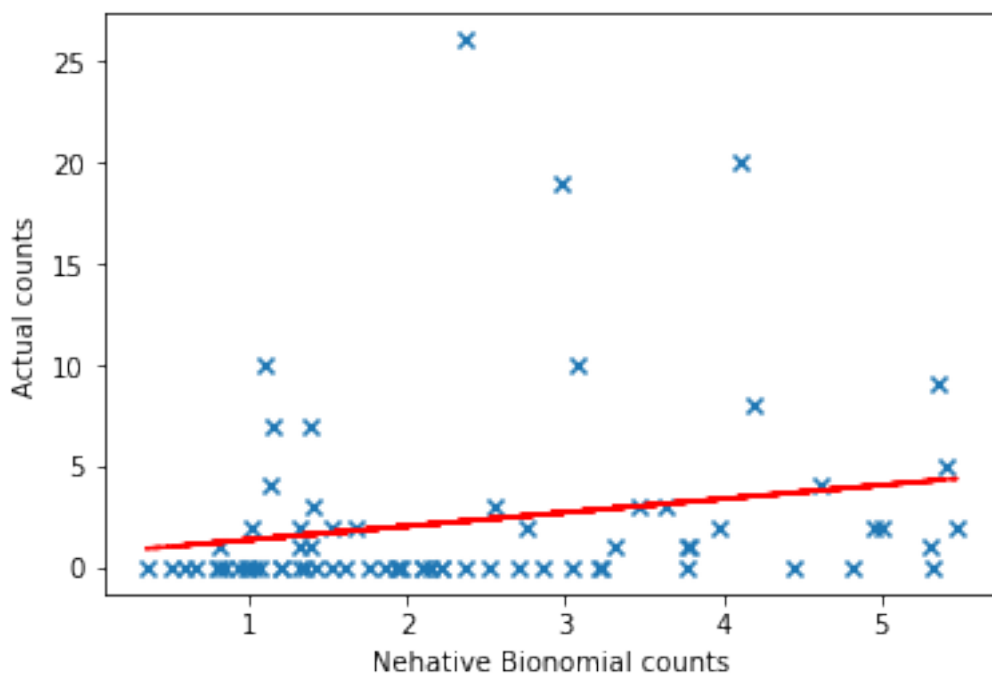
946	0.354859	0.439695	0.031286	4.024894
968	1.681641	1.792414	0.208191	13.583295
990	1.132589	0.666850	0.357189	3.591254
1012	1.094593	0.657725	0.337115	3.554080
1033	1.389189	0.728374	0.497121	3.882042
1053	0.817208	0.774920	0.127403	5.241876
1074	1.157515	0.866737	0.266781	5.022256
1093	2.099974	0.959167	0.857879	5.140460
1111	0.804342	0.610968	0.181501	3.564535
1127	2.220765	1.714920	0.488863	10.088292
1176	0.663863	0.650077	0.097398	4.524852
1197	0.855048	1.098683	0.068905	10.610390
1220	1.521852	0.804051	0.540320	4.286411
1244	2.520210	1.318832	0.903652	7.028659
1269	2.759007	1.532623	0.928778	8.195842
1293	3.464898	2.292832	0.947161	12.675274
1318	3.077594	1.902840	0.916059	10.339493
1344	2.551577	1.300204	0.939859	6.927149
1369	2.982509	2.269685	0.671148	13.253941
1389	1.401928	0.740577	0.497821	3.948008
1409	5.322208	5.228829	0.775934	36.505548
1427	3.627590	3.270518	0.619730	21.234111
1437	1.029157	0.955304	0.166864	6.347466
1459	0.517423	0.557797	0.062550	4.280212
1478	1.930691	1.420708	0.456407	8.167206
1498	2.367692	1.386289	0.751527	7.459431
1519	3.774581	2.745033	0.907485	15.699941
...	...	...	...	...
1791	1.426053	0.665802	0.571115	3.560805
1811	1.314546	0.927049	0.329980	5.236768
1830	0.818342	0.694117	0.155220	4.314425
1851	3.771779	2.920067	0.827096	17.200320
1872	2.098053	1.135002	0.726665	6.057568
1892	3.970554	2.885829	0.955413	16.501027
1911	1.347864	0.738054	0.460841	3.942220
1930	1.007245	0.871164	0.184898	5.487033
1993	0.588020	1.176258	0.011659	29.655857
2010	3.212657	2.300082	0.789681	13.070042
2030	1.865374	0.876795	0.742454	4.686649
2051	2.709104	1.778705	0.748094	9.810600
2071	1.319833	1.275785	0.198484	8.776327
2092	1.066618	1.416929	0.078931	14.413590
2116	1.198964	0.855656	0.296030	4.855984
2140	0.976506	0.665515	0.256778	3.713570
2161	1.757386	1.019332	0.563829	5.477562
2181	1.384468	1.363322	0.200947	9.538577
2200	1.199160	0.957438	0.250759	5.734521
2217	0.929261	0.814161	0.166866	5.174972

2342	5.362425	5.166968	0.811307	35.443530
2367	5.475637	5.786121	0.690188	43.441194
2392	4.607720	4.493940	0.681245	31.165113
2419	5.010692	4.862131	0.748054	33.563105
2446	4.450338	4.441660	0.629291	31.472750
2472	4.960384	5.163654	0.644811	38.159090
2497	4.103539	4.291916	0.528301	31.873919
2519	5.399784	5.464619	0.742941	39.246259
2540	5.309732	5.673426	0.653984	43.109987
2558	3.793572	4.025020	0.474149	30.351635

[72 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

Negative Binomial Regression Scatter plot CEW on Weare-IFarm



Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	51
Model:	GLM	Df Residuals:	46
Model Family:	Poisson	Df Model:	4
Link Function:	log	Scale:	1.0000

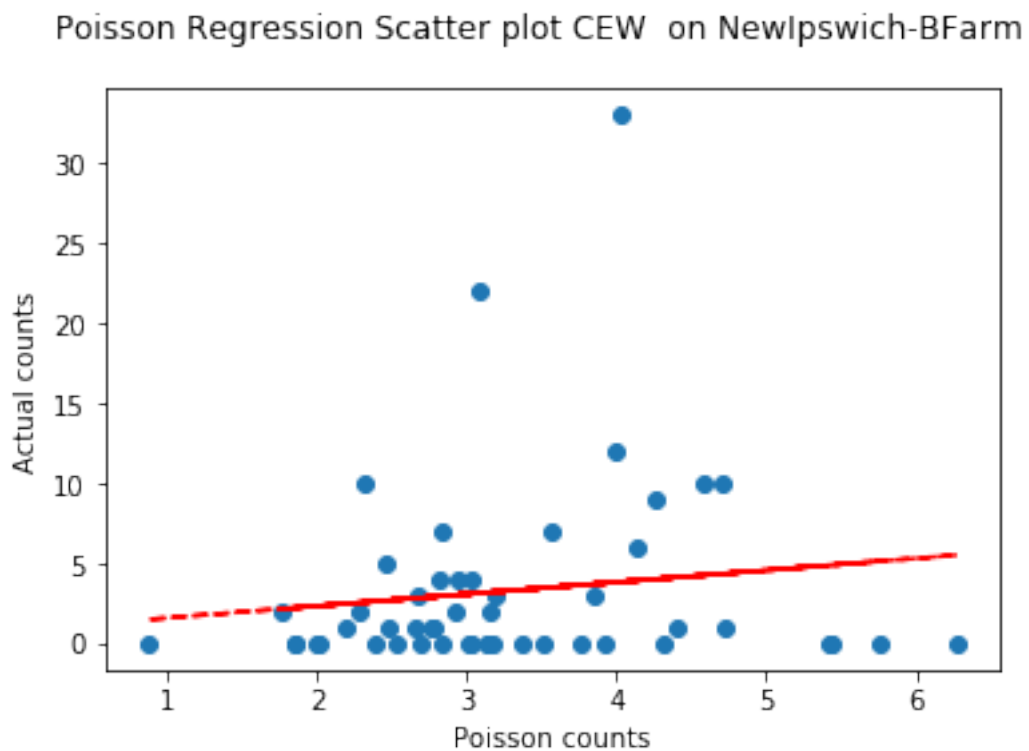
Method: IRLS Log-Likelihood: -217.57  
Date: Fri, 08 May 2020 Deviance: 346.02  
Time: 08:03:54 Pearson chi2: 485.  
No. Iterations: 6 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	0.8866	0.577	1.537	0.124	-0.244	2.018
tempf	-0.7883	0.238	-3.318	0.001	-1.254	-0.323
dwpf	0.0467	0.040	1.159	0.247	-0.032	0.126
drct	0.0010	0.004	0.272	0.785	-0.006	0.009
feel	0.7497	0.235	3.191	0.001	0.289	1.210

	mean	mean_se	mean_ci_lower	mean_ci_upper
1211	3.178807	0.353987	2.555498	3.954145
1235	4.397779	0.447818	3.602111	5.369202
1259	3.852399	0.395763	3.149822	4.711687
1284	4.261362	0.518707	3.356893	5.409529
1308	4.576589	0.520826	3.661621	5.720192
1334	4.715002	0.546786	3.756388	5.918251
1360	3.997128	0.616862	2.953829	5.408925
1383	2.314937	0.309550	1.781220	3.008574
1402	3.770745	0.822614	2.458848	5.782593
1422	3.918247	0.740269	2.705674	5.674246
1455	2.838669	0.860655	1.566893	5.142689
1473	6.274341	1.447894	3.991546	9.862684
1492	4.310933	0.503851	3.428349	5.420726
1513	5.759134	0.845237	4.319475	7.678624
1536	5.442528	0.745099	4.161679	7.117587
1558	4.026450	0.395546	3.321260	4.881370
1579	3.087241	0.376126	2.431457	3.919894
1600	2.935404	0.667065	1.880329	4.582494
1618	4.136657	0.640716	3.053578	5.603894
1638	2.460424	0.431812	1.744301	3.470552
1656	2.479175	0.335292	1.901901	3.231666
1672	2.391605	0.327190	1.829104	3.127091
1806	2.682947	0.543924	1.803204	3.991897
1825	2.527921	0.616715	1.567123	4.077779
1846	5.420702	0.848467	3.988619	7.366965
1867	3.146401	0.432617	2.403130	4.119560
1887	4.728410	0.669742	3.582194	6.241387
1906	2.277642	0.309058	1.745758	2.971575
1925	2.191533	0.416901	1.509461	3.181810
1943	2.024718	0.323347	1.480566	2.768861
1958	1.854338	0.395400	1.220921	2.816374
2026	3.370835	0.318632	2.800765	4.056937
2047	3.041415	0.451167	2.274089	4.067653
2067	3.519213	0.772075	2.289295	5.409902

2088	0.872868	0.394568	0.359894	2.117008
2112	3.012966	0.486576	2.195483	4.134835
2136	1.851127	0.371009	1.249787	2.741806
2157	2.789605	0.429165	2.063432	3.771336
2177	2.687026	0.568760	1.774594	4.068598
2196	1.776784	0.349449	1.208439	2.612430
2213	1.996313	0.391786	1.358865	2.932790
2338	3.566277	0.649582	2.495585	5.096333
2363	2.820867	0.579280	1.886183	4.218728
2388	3.187561	0.582798	2.227559	4.561292
2415	3.142146	0.562587	2.212191	4.463032
2442	2.842147	0.522467	1.982310	4.074941
2468	3.159515	0.610675	2.163212	4.614682
2493	3.037850	0.616092	2.041447	4.520583
2515	2.917685	0.555206	2.009385	4.236562
2536	2.767693	0.567640	1.851573	4.137091
2554	2.659939	0.542635	1.783300	3.967520

<Figure size 432x288 with 0 Axes>



Generalized Linear Model Regression Results

=====

```

Dep. Variable:          trap_count    No. Observations:          51
Model:                  GLM           Df Residuals:              46
Model Family:          NegativeBinomial Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                 IRLS          Log-Likelihood:           -108.68
Date:                   Fri, 08 May 2020 Deviance:                 37.536
Time:                   08:03:54       Pearson chi2:              31.0
No. Iterations:         19            Covariance Type:          nonrobust

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	0.7609	2.109	0.361	0.718	-3.374	4.895
tempf	-1.7103	0.882	-1.939	0.052	-3.439	0.018
dwpf	0.0019	0.147	0.013	0.990	-0.287	0.290
drct	0.0019	0.014	0.136	0.892	-0.026	0.029
feel	1.7110	0.876	1.952	0.051	-0.007	3.429

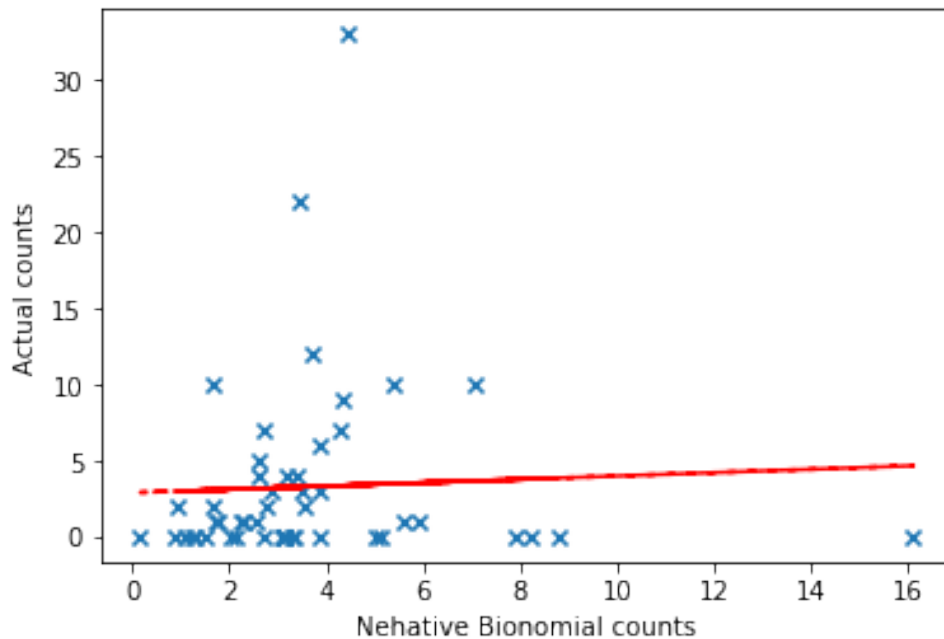
	mean	mean_se	mean_ci_lower	mean_ci_upper
1211	3.132217	1.274131	1.411231	6.951933
1235	5.600063	2.473422	2.356331	13.309125
1259	3.857811	1.634473	1.681531	8.850689
1284	4.330433	2.197469	1.601736	11.707702
1308	5.385510	2.635231	2.064039	14.051921
1334	7.068053	3.497596	2.679701	18.642894
1360	3.722004	2.214312	1.159781	11.944763
1383	1.644286	0.726414	0.691725	3.908604
1402	2.722738	2.308156	0.516909	14.341604
1422	3.133492	2.245563	0.769183	12.765196
1455	5.007438	5.575400	0.564765	44.398012
1473	16.121678	14.920126	2.628143	98.894362
1492	5.148774	2.494124	1.992380	13.305629
1513	8.787542	5.535223	2.556821	30.201916
1536	7.913981	4.677790	2.484663	25.207082
1558	4.454578	1.840265	1.982258	10.010435
1579	3.441616	1.505691	1.460043	8.112584
1600	3.401399	2.751932	0.696603	16.608475
1618	3.846108	2.394626	1.135154	13.031312
1638	2.589350	1.580070	0.783018	8.562684
1656	1.744373	0.803352	0.707339	4.301809
1672	1.527494	0.717578	0.608284	3.835770
1806	2.870959	2.040516	0.712920	11.561474
1825	3.127192	2.693321	0.578162	16.914501
1846	8.243927	5.367847	2.300877	29.537572
1867	3.066027	1.531598	1.151776	8.161758
1887	5.888518	3.439807	1.874012	18.502894
1906	1.633562	0.732313	0.678498	3.932987
1925	1.699907	1.131270	0.461275	6.264565
1943	1.224410	0.655761	0.428594	3.497900



1958	0.870006	0.644274	0.203786	3.714247
2026	3.314921	1.192545	1.637769	6.709553
2047	2.117535	1.175502	0.713354	6.285736
2067	3.840376	3.126513	0.778747	18.938731
2088	0.161298	0.261920	0.006690	3.888929
2112	3.132318	1.842644	0.988850	9.922041
2136	1.088146	0.729131	0.292634	4.046219
2157	2.236873	1.216928	0.770126	6.497126
2177	2.048144	1.547561	0.465800	9.005787
2196	0.914033	0.612517	0.245782	3.399180
2213	1.317769	0.887414	0.352064	4.932386
2338	4.259269	2.808805	1.169511	15.511931
2363	2.585303	1.928606	0.599135	11.155730
2388	3.474469	2.290593	0.954381	12.648969
2415	3.276527	2.115778	0.924188	11.616276
2442	2.730808	1.806932	0.746560	9.988901
2468	3.570509	2.491626	0.909352	14.019368
2493	3.173334	2.320227	0.757091	13.300979
2515	2.748202	1.894367	0.711714	10.611860
2536	2.543840	1.891912	0.592150	10.928184
2554	2.313415	1.696755	0.549474	9.740026

<Figure size 432x288 with 0 Axes>

### Negative Binomial Regression Scatter plot CEW on NewIpswich-BFarm



# Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          60
Model:                  GLM          Df Residuals:                55
Model Family:           Poisson      Df Model:                    4
Link Function:          log          Scale:                      1.0000
Method:                 IRLS         Log-Likelihood:            -370.38
Date:                   Fri, 08 May 2020    Deviance:                  614.30
Time:                   08:03:55           Pearson chi2:              767.
No. Iterations:         5               Covariance Type:          nonrobust
=====

```

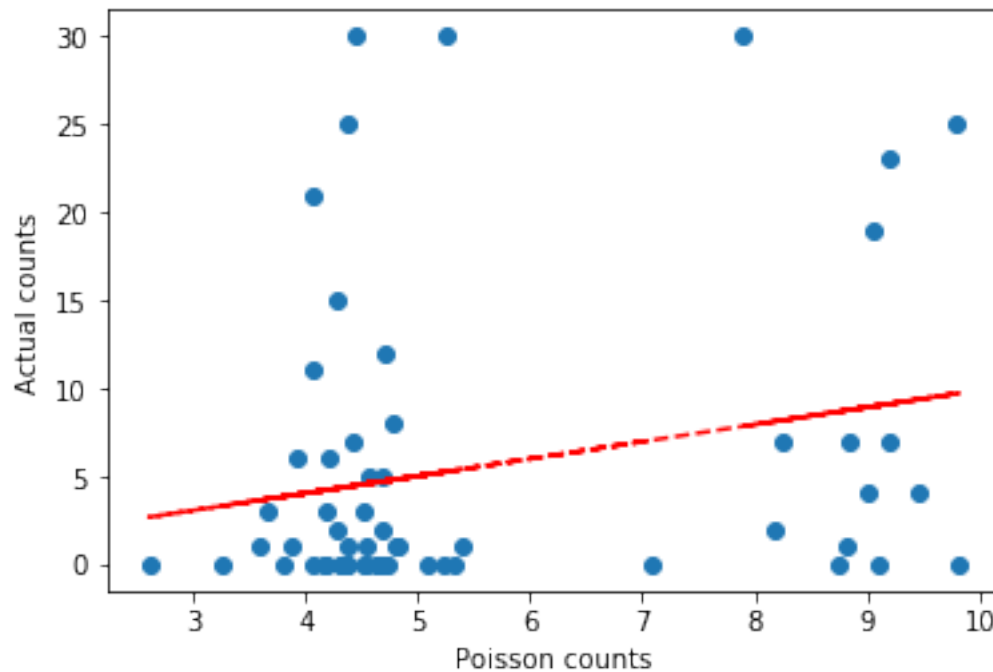
	coef	std err	z	P> z	[0.025	0.975]
Intercept	1.8379	0.387	4.753	0.000	1.080	2.596
tempf	-0.2994	0.118	-2.540	0.011	-0.530	-0.068
dwpf	0.0014	0.036	0.039	0.969	-0.068	0.071
drct	0.0032	0.003	1.219	0.223	-0.002	0.008
feel	0.2874	0.117	2.461	0.014	0.059	0.516

	mean	mean_se	mean_ci_lower	mean_ci_upper
1261	4.206431	0.389633	3.508074	5.043811
1286	4.286120	0.494162	3.419214	5.372821
1310	4.426002	0.456084	3.616582	5.416577
1336	4.773862	0.409533	4.035043	5.647960
1362	4.825989	0.643318	3.716368	6.266916
1475	5.331619	0.756494	4.037231	7.041003
1494	4.626207	0.435767	3.846324	5.564219
1515	4.548756	0.545299	3.596265	5.753521
1538	4.506249	0.503532	3.619939	5.609564
1560	4.384951	0.375540	3.707365	5.186378
1581	4.435473	0.445200	3.643365	5.399795
1602	3.921565	0.680841	2.790476	5.511129
1620	4.060299	0.564021	3.092549	5.330888
1640	4.714489	0.698964	3.525629	6.304238
1658	4.718504	0.444895	3.922355	5.676253
1674	4.673019	0.414399	3.927479	5.560084
1685	3.793472	0.693651	2.650888	5.428533
1713	4.517225	0.583459	3.506935	5.818562
1731	7.072295	1.870748	4.211166	11.877318
1750	4.347331	0.525682	3.430006	5.509986
1769	4.274101	0.315518	3.698352	4.939481
1788	4.680144	0.487419	3.816012	5.739957
1808	4.067847	0.641139	2.986796	5.540177
1827	4.179098	0.864748	2.785801	6.269242
1848	4.310724	0.545767	3.363429	5.524820
1869	4.058863	0.407781	3.333396	4.942218
1889	4.354518	0.528190	3.433143	5.523167
1908	4.537122	0.416167	3.790566	5.430712

1927	5.393182	0.770334	4.076279	7.135529
1945	4.376233	0.413764	3.635976	5.267202
1960	4.631071	0.638360	3.534674	6.067552
1972	4.325763	0.552563	3.367691	5.556396
2008	4.689512	0.548226	3.729222	5.897082
2028	4.192231	0.323188	3.604328	4.876028
2049	3.872685	0.446720	3.089050	4.855115
2069	5.219755	0.817498	3.840061	7.095158
2090	2.603984	0.595344	1.663526	4.076120
2114	5.079344	0.617936	4.001780	6.447064
2138	3.652956	0.457811	2.857371	4.670058
2159	3.593225	0.372617	2.932344	4.403052
2179	5.259521	0.816752	3.879386	7.130654
2198	4.570034	0.563612	3.588746	5.819641
2215	4.802893	0.684268	3.632723	6.349997
2230	4.372608	0.528850	3.449777	5.542302
2243	3.257051	0.789347	2.025516	5.237371
2254	4.150242	0.439181	3.372863	5.106790
2276	9.820814	0.972321	8.088599	11.923992
2295	8.746370	0.835478	7.253016	10.547197
2317	9.104781	0.812853	7.643219	10.845827
2340	9.003350	0.814722	7.540117	10.750538
2365	7.895699	0.894481	6.323543	9.858724
2390	9.199902	0.824508	7.717867	10.966525
2417	8.832294	0.781976	7.425257	10.505954
2444	9.051917	0.817379	7.583644	10.804464
2470	9.198798	0.891473	7.607457	11.123018
2495	9.790444	1.035493	7.957460	12.045652
2517	8.240493	0.824877	6.772477	10.026719
2538	8.177019	0.902804	6.585913	10.152525
2556	9.452415	1.053736	7.597183	11.760696
2570	8.811140	0.790457	7.390433	10.504958

<Figure size 432x288 with 0 Axes>

### Poisson Regression Scatter plot CEW on Milford-MFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          60
Model:                  GLM           Df Residuals:              55
Model Family:          NegativeBinomial  Df Model:                  4
Link Function:         log           Scale:                    1.0000
Method:                IRLS          Log-Likelihood:           -181.13
Date:                  Fri, 08 May 2020  Deviance:                179.83
Time:                  08:03:55         Pearson chi2:             190.
No. Iterations:        22              Covariance Type:         nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	1.5722	0.785	2.002	0.045	0.033	3.112
tempf	-0.6749	0.235	-2.870	0.004	-1.136	-0.214
dwpf	-0.0135	0.067	-0.200	0.842	-0.146	0.119
drct	0.0051	0.005	0.969	0.333	-0.005	0.015
feel	0.6768	0.235	2.884	0.004	0.217	1.137

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
1261    4.164346  0.726099    2.958902    5.860883
1286    4.250745  0.922444    2.778099    6.504027
1310    4.705952  0.916061    3.213309    6.891955

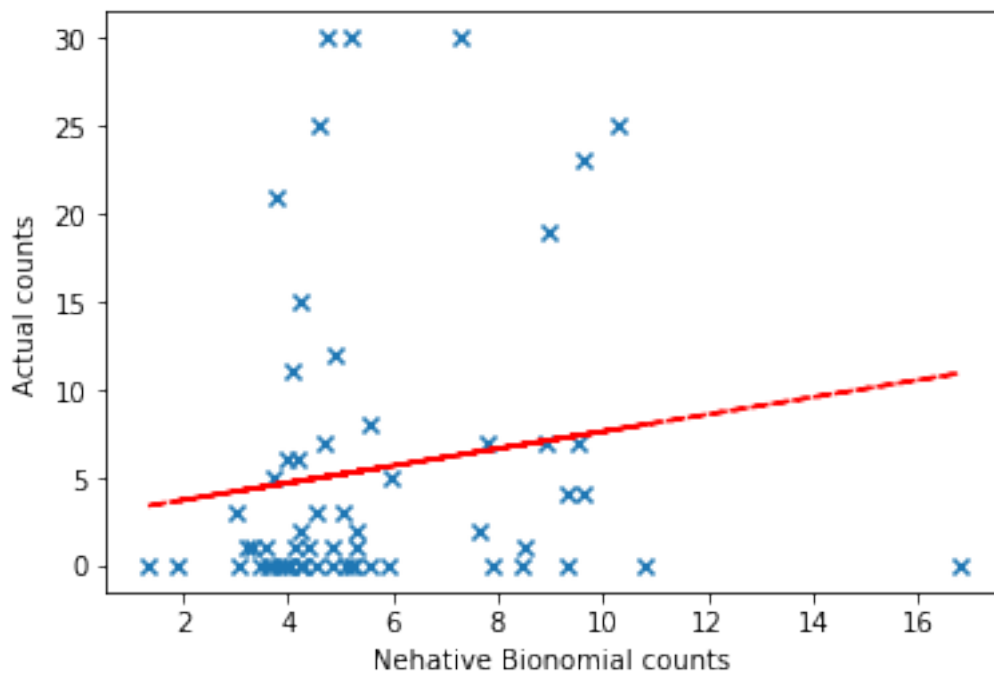
```

1336	5.580733	0.924957	4.032850	7.722721
1362	4.842076	1.240106	2.931096	7.998953
1475	7.912908	2.238723	4.544790	13.777119
1494	5.080741	0.925759	3.554921	7.261461
1515	5.277009	1.202292	3.376398	8.247495
1538	5.188041	1.102656	3.420508	7.868938
1560	4.608418	0.752124	3.346803	6.345613
1581	4.732400	0.908705	3.248146	6.894890
1602	3.971744	1.318148	2.072446	7.611659
1620	3.784063	0.996902	2.257934	6.341695
1640	4.919241	1.381879	2.836511	8.531232
1658	4.287164	0.799846	2.974154	6.179832
1674	4.013482	0.699342	2.852337	5.647310
1685	3.086891	1.101934	1.533438	6.214075
1713	5.064773	1.236420	3.138797	8.172532
1731	16.782549	8.939484	5.908160	47.672022
1750	4.208765	0.964667	2.685688	6.595591
1769	4.255525	0.593763	3.237330	5.593959
1788	5.318044	1.066701	3.589357	7.879292
1808	4.076839	1.218652	2.269247	7.324286
1827	4.550110	1.782901	2.111007	9.807404
1848	4.864418	1.181916	3.021434	7.831568
1869	3.906066	0.745511	2.687073	5.678056
1889	4.540361	1.051399	2.883898	7.148268
1908	4.114759	0.731579	2.904063	5.830191
1927	5.299629	1.506497	3.035841	9.251494
1945	3.663538	0.669630	2.560449	5.241858
1960	3.640107	0.998861	2.125889	6.232863
1972	3.806893	0.938942	2.347621	6.173242
2008	5.940301	1.348235	3.807293	9.268311
2028	4.212245	0.619310	3.157656	5.619045
2049	3.314680	0.727751	2.155544	5.097137
2069	5.936655	1.874184	3.197570	11.022080
2090	1.308083	0.591390	0.539266	3.172978
2114	5.535079	1.346915	3.435509	8.917775
2138	3.022102	0.724521	1.889041	4.834782
2159	3.228147	0.637526	2.192046	4.753975
2179	5.177369	1.614259	2.810036	9.539077
2198	3.709830	0.905407	2.299392	5.985425
2215	4.411461	1.245472	2.536680	7.671833
2230	3.579099	0.833822	2.267094	5.650384
2243	1.872671	0.874438	0.749886	4.676572
2254	3.462474	0.702754	2.326078	5.154052
2276	10.802797	2.593149	6.748546	17.292677
2295	8.452430	1.958691	5.367001	13.311638
2317	9.330579	2.052661	6.062480	14.360410
2340	9.603728	2.121892	6.228328	14.808404
2365	7.307836	1.890392	4.401491	12.133266

2390	9.604035	2.124609	6.225161	14.816884
2417	8.928683	1.951891	5.817107	13.704643
2444	8.964108	2.004143	5.783628	13.893568
2470	9.546147	2.258050	6.004606	15.176504
2495	10.302776	2.578587	6.308337	16.826494
2517	7.818477	1.852890	4.913570	12.440769
2538	7.620388	1.950410	4.614400	12.584587
2556	9.311617	2.405249	5.612476	15.448837
2570	8.524845	1.885650	5.525928	13.151271

<Figure size 432x288 with 0 Axes>

Negative Binomial Regression Scatter plot CEW on Milford-MFarm



```
In [60]: print ("total farms ", farm_count)
```

```
total farms 23
```

```
In [61]: #valid farms that are used for predictions
compute_CEW_FARMS
```

```
Out[61]: ['Pelham-G',
          'Litchfield-W',
```

```

'Litchfield-M',
'Merrimack-T',
'Hollis-L',
'Hollis-B',
'Hollis-K',
'Milford-S',
'Antrim-T',
'Mason-B',
'Peterborough-R',
'Milford-L',
'Jaffrey-C',
'Hollis-JL',
'Hudson-S',
'Litchfield-W1',
'Litchfield-W2',
'Hollis-B1',
'Amherst-P',
'Concord-A',
'Weare-I',
'NewIpswich-B',
'Milford-M']

```

```
In [62]: all_CEW_FARMS_DataFrame[1].head()
```

```

Out[62]:
      farm  trap_count  year      date      tempf      dwpf  \
1  Litchfield-W         0  2006  2006-06-19  70.977613  63.913169
12 Litchfield-W         0  2006  2006-06-26  71.243468  65.095887
23 Litchfield-W         3  2006  2006-07-03  71.056485  59.203758
34 Litchfield-W         1  2006  2006-07-10  71.830909  66.491782
46 Litchfield-W         1  2006  2006-07-17  73.200175  66.515808

      drct      feel  regression_count  poisson_count  NB_count  \
1   63.703704  71.301399              10             10         10
12  84.233871  71.733347              11             10         10
23 127.515152  71.263273              11             12         12
34  59.745455  72.608255              10             10         10
46 101.004367  74.150786              11             11         11

      poisson_count_farm  NB_count_farm
1              26              15
12             18              11
23             31              30
34             19              10
46             15              10

```

```

In [63]: df_CEW_final['poisson_count_farm'] = 0
df_CEW_final['NB_count_farm'] = 0

```

```

In [64]: #combining all the computed counts on the major dataframe
count = 0

```

```

for df_Farm in all_CEW_FARMS_DataFrame:
    #print (df_Farm.head())

    #getting all poisson regression count
    df_CEW_final.loc[df_CEW_final.farm == compute_CEW_FARMS[count], ['poisson_count_farm']]

    #getting all negative binomial regression count
    df_CEW_final.loc[df_CEW_final.farm == compute_CEW_FARMS[count], ['NB_count_farm']]

    count = count + 1

```

```
In [65]: print("total farms ", count )
```

```
total farms 23
```

```
In [66]: df_CEW_final
```

```

Out[66]:
   farm trap_count year   date   tempf   dwpf \
0   Pelham-G         0  2006  2006-06-19  70.977613  63.913169
1  Litchfield-W         0  2006  2006-06-19  70.977613  63.913169
2  Litchfield-M         0  2006  2006-06-19  70.977613  63.913169
3  Merrimack-T         0  2006  2006-06-19  70.977613  63.913169
4   Hollis-L         1  2006  2006-06-19  70.977613  63.913169
5   Hollis-B         0  2006  2006-06-19  70.977613  63.913169
6   Hollis-K         0  2006  2006-06-19  70.977613  63.913169
7  Milford-S         0  2006  2006-06-19  70.977613  63.913169
8   Antrim-T         0  2006  2006-06-19  70.977613  63.913169
9   Mason-B         0  2006  2006-06-19  70.977613  63.913169
10 Peterborough-R      0  2006  2006-06-19  70.977613  63.913169
11   Pelham-G         0  2006  2006-06-26  71.243468  65.095887
12  Litchfield-W         0  2006  2006-06-26  71.243468  65.095887
13  Litchfield-M         0  2006  2006-06-26  71.243468  65.095887
14  Merrimack-T         0  2006  2006-06-26  71.243468  65.095887
15   Hollis-L         1  2006  2006-06-26  71.243468  65.095887
16   Hollis-B         0  2006  2006-06-26  71.243468  65.095887
17   Hollis-K         0  2006  2006-06-26  71.243468  65.095887
18  Milford-S         0  2006  2006-06-26  71.243468  65.095887
19   Antrim-T         0  2006  2006-06-26  71.243468  65.095887
20   Mason-B         0  2006  2006-06-26  71.243468  65.095887
21 Peterborough-R      0  2006  2006-06-26  71.243468  65.095887
22   Pelham-G         0  2006  2006-07-03  71.056485  59.203758
23  Litchfield-W         3  2006  2006-07-03  71.056485  59.203758
24  Litchfield-M         0  2006  2006-07-03  71.056485  59.203758
25  Merrimack-T         0  2006  2006-07-03  71.056485  59.203758
26   Hollis-L         4  2006  2006-07-03  71.056485  59.203758
27   Hollis-B        10  2006  2006-07-03  71.056485  59.203758
28   Hollis-K         1  2006  2006-07-03  71.056485  59.203758
29  Milford-S         3  2006  2006-07-03  71.056485  59.203758

```



...	...	...	...	...	...	...
2541	Weare-D	0	2018	2018-09-17	7.760753	7.281021
2542	NewBoston-D	2	2018	2018-09-17	7.760753	7.281021
2543	NewLondon-SL	5	2018	2018-09-17	7.760753	7.281021
2544	Litchfield-M	21	2018	2018-09-24	6.692446	6.180576
2545	Litchfield-W1	10	2018	2018-09-24	6.692446	6.180576
2546	Hudson-S	8	2018	2018-09-24	6.692446	6.180576
2547	Milford-L	20	2018	2018-09-24	6.692446	6.180576
2548	Hollis-K	12	2018	2018-09-24	6.692446	6.180576
2549	Hollis-B2	8	2018	2018-09-24	6.692446	6.180576
2550	Hollis-JL-Pl	23	2018	2018-09-24	6.692446	6.180576
2551	Hollis-JL-T	60	2018	2018-09-24	6.692446	6.180576
2552	Hollis-L	65	2018	2018-09-24	6.692446	6.180576
2553	Antrim-T	1	2018	2018-09-24	6.692446	6.180576
2554	NewIpswich-B	1	2018	2018-09-24	6.692446	6.180576
2555	Mason-B	5	2018	2018-09-24	6.692446	6.180576
2556	Milford-M	4	2018	2018-09-24	6.692446	6.180576
2557	Concord-A	3	2018	2018-09-24	6.692446	6.180576
2558	Weare-I	1	2018	2018-09-24	6.692446	6.180576
2559	Weare-D	2	2018	2018-09-24	6.692446	6.180576
2560	NewLondon-SL	1	2018	2018-09-24	6.692446	6.180576
2561	Litchfield-M	6	2018	2018-10-01	7.799536	7.509856
2562	Litchfield-W1	2	2018	2018-10-01	7.799536	7.509856
2563	Hudson-S	0	2018	2018-10-01	7.799536	7.509856
2564	Milford-L	0	2018	2018-10-01	7.799536	7.509856
2565	Hollis-K	8	2018	2018-10-01	7.799536	7.509856
2566	Hollis-B2	2	2018	2018-10-01	7.799536	7.509856
2567	Hollis-JL-Pl	6	2018	2018-10-01	7.799536	7.509856
2568	Hollis-L	12	2018	2018-10-01	7.799536	7.509856
2569	Antrim-T	1	2018	2018-10-01	7.799536	7.509856
2570	Milford-M	1	2018	2018-10-01	7.799536	7.509856

	drct	feel	regression_count	poisson_count	NB_count	\
0	63.703704	71.301399	10	10	10	
1	63.703704	71.301399	10	10	10	
2	63.703704	71.301399	10	10	10	
3	63.703704	71.301399	10	10	10	
4	63.703704	71.301399	10	10	10	
5	63.703704	71.301399	10	10	10	
6	63.703704	71.301399	10	10	10	
7	63.703704	71.301399	10	10	10	
8	63.703704	71.301399	10	10	10	
9	63.703704	71.301399	10	10	10	
10	63.703704	71.301399	10	10	10	
11	84.233871	71.733347	11	10	10	
12	84.233871	71.733347	11	10	10	
13	84.233871	71.733347	11	10	10	
14	84.233871	71.733347	11	10	10	

15	84.233871	71.733347	11	10	10
16	84.233871	71.733347	11	10	10
17	84.233871	71.733347	11	10	10
18	84.233871	71.733347	11	10	10
19	84.233871	71.733347	11	10	10
20	84.233871	71.733347	11	10	10
21	84.233871	71.733347	11	10	10
22	127.515152	71.263273	11	12	12
23	127.515152	71.263273	11	12	12
24	127.515152	71.263273	11	12	12
25	127.515152	71.263273	11	12	12
26	127.515152	71.263273	11	12	12
27	127.515152	71.263273	11	12	12
28	127.515152	71.263273	11	12	12
29	127.515152	71.263273	11	12	12
...	...	...	...	...	...
2541	110.056730	7.728195	11	11	11
2542	110.056730	7.728195	11	11	11
2543	110.056730	7.728195	11	11	11
2544	161.330935	6.548972	12	12	12
2545	161.330935	6.548972	12	12	12
2546	161.330935	6.548972	12	12	12
2547	161.330935	6.548972	12	12	12
2548	161.330935	6.548972	12	12	12
2549	161.330935	6.548972	12	12	12
2550	161.330935	6.548972	12	12	12
2551	161.330935	6.548972	12	12	12
2552	161.330935	6.548972	12	12	12
2553	161.330935	6.548972	12	12	12
2554	161.330935	6.548972	12	12	12
2555	161.330935	6.548972	12	12	12
2556	161.330935	6.548972	12	12	12
2557	161.330935	6.548972	12	12	12
2558	161.330935	6.548972	12	12	12
2559	161.330935	6.548972	12	12	12
2560	161.330935	6.548972	12	12	12
2561	134.674923	7.750764	11	11	11
2562	134.674923	7.750764	11	11	11
2563	134.674923	7.750764	11	11	11
2564	134.674923	7.750764	11	11	11
2565	134.674923	7.750764	11	11	11
2566	134.674923	7.750764	11	11	11
2567	134.674923	7.750764	11	11	11
2568	134.674923	7.750764	11	11	11
2569	134.674923	7.750764	11	11	11
2570	134.674923	7.750764	11	11	11

poisson\_count\_farm NB\_count\_farm

0	3	3
1	26	15
2	9	9
3	1	1
4	8	8
5	13	11
6	10	10
7	11	10
8	6	5
9	8	8
10	1	0
11	3	3
12	18	11
13	10	10
14	2	1
15	10	10
16	18	15
17	13	13
18	9	9
19	6	5
20	9	8
21	3	2
22	6	8
23	31	30
24	9	9
25	1	1
26	8	8
27	25	23
28	16	16
29	16	17
...	...	...
2541	0	0
2542	0	0
2543	0	0
2544	16	15
2545	23	24
2546	11	11
2547	11	12
2548	15	15
2549	0	0
2550	0	0
2551	0	0
2552	25	25
2553	3	3
2554	2	2
2555	17	17
2556	9	9
2557	7	7

2558	4	3
2559	0	0
2560	0	0
2561	15	15
2562	21	22
2563	13	12
2564	12	12
2565	12	12
2566	0	0
2567	0	0
2568	22	22
2569	3	2
2570	8	8

[2571 rows x 13 columns]

```
In [67]: #writing into the csv file
df_CEW_final.to_csv("CEW_predicted_count.csv", index = False, sep = ',')
```

## 15 Selecting weather dataframe within the date range - ECB Pest

```
In [68]: print(search_ecb_STdate)
print(search_ecb_ENDdate)
```

2006-06-19 00:00:00  
2018-10-15 00:00:00

```
In [69]: df_equation_ECB = df_equation.loc[(df_equation['valid'] >= search_ecb_STdate) & (df_e
```

```
In [70]: #need to get all the columns from here and sum up fro every week
#select date and each column, and find the average for each column
df_tempf_ECB = df_equation_ECB[['tmpf', 'dwpf', 'drct', 'feel', 'valid']]
df_tempf_ECB["tmpf"] = df_tempf_ECB["tmpf"].fillna(0)
df_tempf_ECB["dwpf"] = df_tempf_ECB["dwpf"].fillna(0)
df_tempf_ECB["drct"] = df_tempf_ECB["drct"].fillna(0)
df_tempf_ECB["feel"] = df_tempf_ECB["feel"].fillna(0)
```

```
In [71]: #calling getweekly_temperature
ECB_weather_data_dic = {}
getweekly_temperature(df_tempf_ECB, ECB_weather_data_dic)
```

total temperature index 642  
total weeks: 47922

```
In [72]: df_ECB_weather = pd.DataFrame(ECB_weather_data_dic)
```

```
In [73]: df_ECB['date'] = df_ECB['date'].dt.date
```

```
In [74]: #combining weather data and pest count data based on the date -----
#creating data frame needed for equation
df_ECB_weather['date'] = pd.to_datetime(df_ECB_weather['date'])
df_ECB_weather['date'] = df_ECB_weather['date'].dt.date
df_ECB_final = df_ECB.merge(df_ECB_weather, on='date')
```

```
In [75]: df_ECB_final.head()
```

```
Out[75]:
```

	farm	trap_count	year	date	tempf	dwpf	\
0	Litchfield-W	16	2006	2006-06-19	70.977613	63.913169	
1	Hollis-B	7	2006	2006-06-19	70.977613	63.913169	
2	Mason-B	11	2006	2006-06-19	70.977613	63.913169	
3	Litchfield-W	25	2006	2006-06-26	71.243468	65.095887	
4	Hollis-B	31	2006	2006-06-26	71.243468	65.095887	

	drct	feel
0	63.703704	71.301399
1	63.703704	71.301399
2	63.703704	71.301399
3	84.233871	71.733347
4	84.233871	71.733347

## 16 Pest Trap Predictions - ECB pest

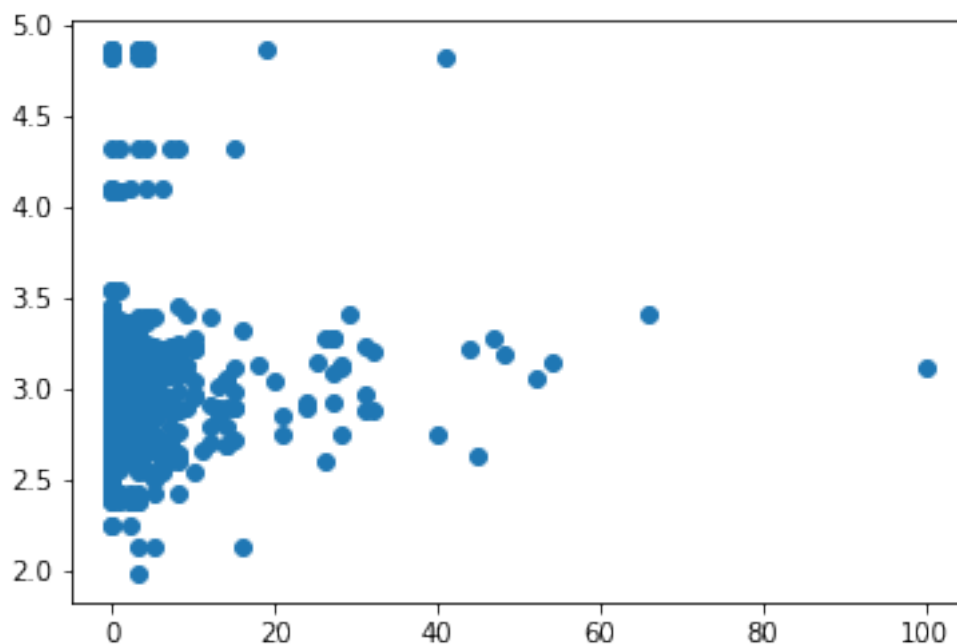
```
In [76]: df_ECB_final.columns
```

```
Out[76]: Index(['farm', 'trap_count', 'year', 'date', 'tempf', 'dwpf', 'drct', 'feel'], dtype=
```

## 17 1. Multiple Linear Regression on all data

```
In [77]: df_ECB_final = Multiple_Linear_Regression(df_ECB_final)
```

```
Intercept: 3.3808220267663303
Coefficients [ 0.04189007 0.04614086 -0.00587125 -0.07856854]
(804,)
----- Linear Regression Evaluations-----
Mean Absolute Error (MAE): 4.021307385460009
Mean Squared Error (MSE): 61.86105644875795
Root Mean Squared Error (RMSE): 7.865180001039897
```



## 18 2. Poission Regression on all data

```
In [78]: df_ECB_final = Poisson_Regression(df_ECB_final, " ECB ", " all ")
```

### Generalized Linear Model Regression Results

```
=====
Dep. Variable:          trap_count    No. Observations:          4020
Model:                  GLM          Df Residuals:              4015
Model Family:           Poisson      Df Model:                  4
Link Function:           log          Scale:                    1.0000
Method:                  IRLS         Log-Likelihood:         -20982.
Date:                   Fri, 08 May 2020    Deviance:                36540.
Time:                   08:04:29           Pearson chi2:            8.28e+04
No. Iterations:         6                Covariance Type:      nonrobust
=====
```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	1.2365	0.070	17.763	0.000	1.100	1.373
tempf	-0.0035	0.004	-0.925	0.355	-0.011	0.004
dwpf	0.0308	0.004	7.917	0.000	0.023	0.038
drct	-0.0022	0.000	-5.133	0.000	-0.003	-0.001
feel	-0.0221	0.002	-10.177	0.000	-0.026	-0.018

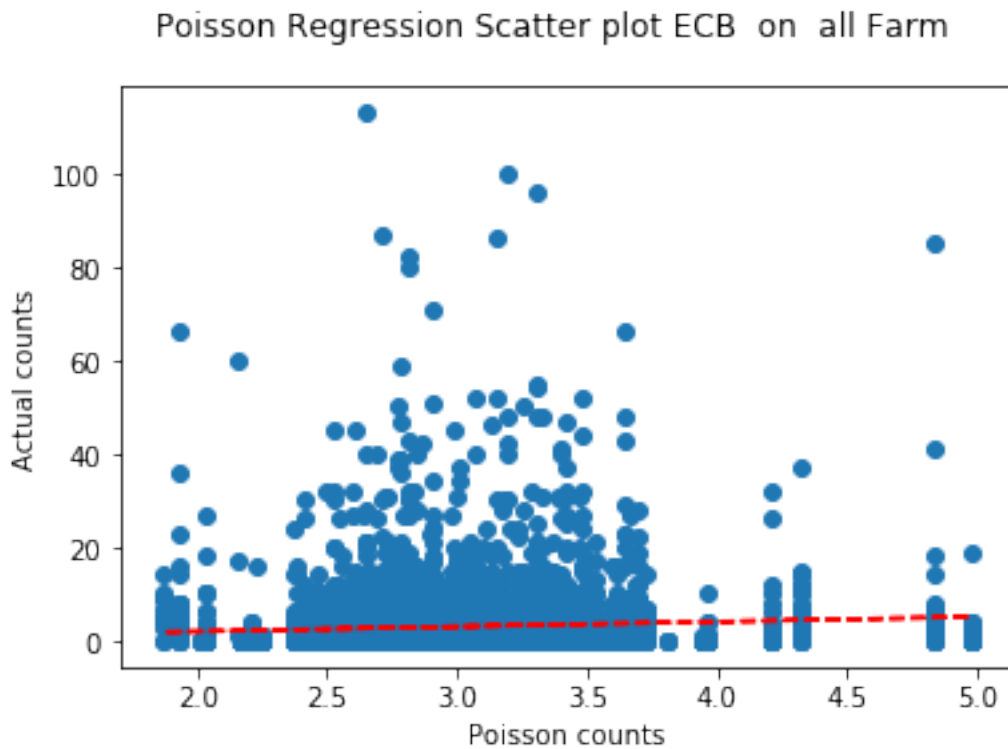
```
=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
0      3.484824  0.060365      3.368497      3.605168
=====
```

1	3.484824	0.060365	3.368497	3.605168
2	3.484824	0.060365	3.368497	3.605168
3	3.420675	0.049845	3.324362	3.519779
4	3.420675	0.049845	3.324362	3.519779
5	3.420675	0.049845	3.324362	3.519779
6	2.625314	0.040086	2.547910	2.705069
7	2.625314	0.040086	2.547910	2.705069
8	2.625314	0.040086	2.547910	2.705069
9	3.686626	0.071031	3.550004	3.828506
10	3.686626	0.071031	3.550004	3.828506
11	3.686626	0.071031	3.550004	3.828506
12	3.244769	0.050942	3.146445	3.346165
13	3.244769	0.050942	3.146445	3.346165
14	3.244769	0.050942	3.146445	3.346165
15	3.111367	0.057636	3.000428	3.226408
16	3.111367	0.057636	3.000428	3.226408
17	3.111367	0.057636	3.000428	3.226408
18	2.909125	0.040040	2.831697	2.988670
19	2.909125	0.040040	2.831697	2.988670
20	2.909125	0.040040	2.831697	2.988670
21	2.155955	0.067482	2.027669	2.292358
22	2.155955	0.067482	2.027669	2.292358
23	2.155955	0.067482	2.027669	2.292358
24	2.958304	0.050285	2.861370	3.058521
25	2.958304	0.050285	2.861370	3.058521
26	2.958304	0.050285	2.861370	3.058521
27	3.267339	0.039274	3.191264	3.345228
28	3.267339	0.039274	3.191264	3.345228
29	3.267339	0.039274	3.191264	3.345228
...	...	...	...	...
3990	2.797668	0.081575	2.642266	2.962210
3991	2.797668	0.081575	2.642266	2.962210
3992	2.797668	0.081575	2.642266	2.962210
3993	2.797668	0.081575	2.642266	2.962210
3994	2.797668	0.081575	2.642266	2.962210
3995	2.797668	0.081575	2.642266	2.962210
3996	2.785602	0.085558	2.622859	2.958443
3997	2.785602	0.085558	2.622859	2.958443
3998	2.785602	0.085558	2.622859	2.958443
3999	2.785602	0.085558	2.622859	2.958443
4000	2.785602	0.085558	2.622859	2.958443
4001	2.785602	0.085558	2.622859	2.958443
4002	2.785602	0.085558	2.622859	2.958443
4003	2.785602	0.085558	2.622859	2.958443
4004	2.785602	0.085558	2.622859	2.958443
4005	2.785602	0.085558	2.622859	2.958443
4006	2.785602	0.085558	2.622859	2.958443
4007	2.785602	0.085558	2.622859	2.958443

4008	2.785602	0.085558	2.622859	2.958443
4009	2.785602	0.085558	2.622859	2.958443
4010	2.785602	0.085558	2.622859	2.958443
4011	2.785602	0.085558	2.622859	2.958443
4012	2.785602	0.085558	2.622859	2.958443
4013	2.481624	0.074581	2.339670	2.632191
4014	2.481624	0.074581	2.339670	2.632191
4015	2.481624	0.074581	2.339670	2.632191
4016	2.481624	0.074581	2.339670	2.632191
4017	2.481624	0.074581	2.339670	2.632191
4018	2.481624	0.074581	2.339670	2.632191
4019	2.481624	0.074581	2.339670	2.632191

[4020 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



## 19 3. Negative Binomial Regression on all data

```
In [79]: df_ECB_final = Negative_Binomial_Regression(df_ECB_final, " ECB ", " all ")
```



# Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          4020
Model:                  GLM           Df Residuals:              4015
Model Family:          NegativeBinomial    Df Model:                  4
Link Function:          log             Scale:                  1.0000
Method:                IRLS            Log-Likelihood:          -13039.
Date:                  Fri, 08 May 2020    Deviance:                19361.
Time:                  08:04:30           Pearson chi2:            4.92e+04
No. Iterations:        7                 Covariance Type:        nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	1.1577	0.090	12.929	0.000	0.982	1.333
tempf	-0.0057	0.005	-1.141	0.254	-0.016	0.004
dwpf	0.0328	0.005	6.547	0.000	0.023	0.043
drct	-0.0017	0.001	-3.062	0.002	-0.003	-0.001
feel	-0.0211	0.003	-6.780	0.000	-0.027	-0.015

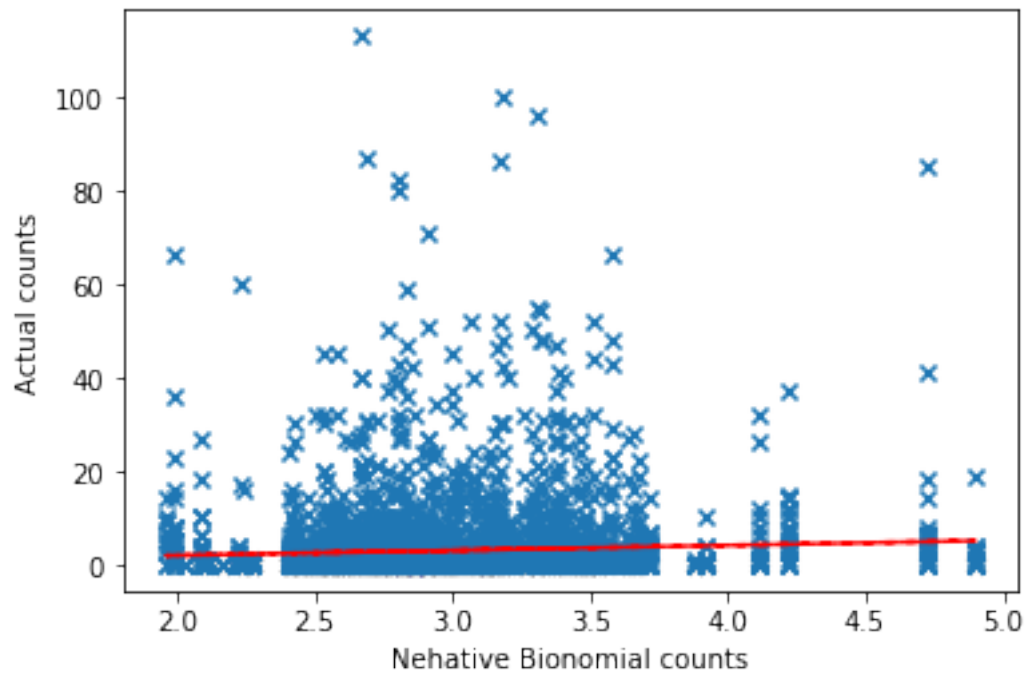
	mean	mean_se	mean_ci_lower	mean_ci_upper
0	3.438022	0.078495	3.287565	3.595364
1	3.438022	0.078495	3.287565	3.595364
2	3.438022	0.078495	3.287565	3.595364
3	3.417175	0.065986	3.290263	3.548983
4	3.417175	0.065986	3.290263	3.548983
5	3.417175	0.065986	3.290263	3.548983
6	2.649487	0.050908	2.551563	2.751168
7	2.649487	0.050908	2.551563	2.751168
8	2.649487	0.050908	2.551563	2.751168
9	3.645848	0.092752	3.468515	3.832248
10	3.645848	0.092752	3.468515	3.832248
11	3.645848	0.092752	3.468515	3.832248
12	3.271175	0.067405	3.141695	3.405990
13	3.271175	0.067405	3.141695	3.405990
14	3.271175	0.067405	3.141695	3.405990
15	3.075595	0.074366	2.933240	3.224859
16	3.075595	0.074366	2.933240	3.224859
17	3.075595	0.074366	2.933240	3.224859
18	2.937128	0.052568	2.835882	3.041988
19	2.937128	0.052568	2.835882	3.041988
20	2.937128	0.052568	2.835882	3.041988
21	2.227902	0.088336	2.061323	2.407942
22	2.227902	0.088336	2.061323	2.407942
23	2.227902	0.088336	2.061323	2.407942
24	3.004587	0.065751	2.878442	3.136261
25	3.004587	0.065751	2.878442	3.136261
26	3.004587	0.065751	2.878442	3.136261
27	3.265113	0.051888	3.164981	3.368412

28	3.265113	0.051888	3.164981	3.368412
29	3.265113	0.051888	3.164981	3.368412
...	...	...	...	...
3990	2.753150	0.102242	2.559878	2.961013
3991	2.753150	0.102242	2.559878	2.961013
3992	2.753150	0.102242	2.559878	2.961013
3993	2.753150	0.102242	2.559878	2.961013
3994	2.753150	0.102242	2.559878	2.961013
3995	2.753150	0.102242	2.559878	2.961013
3996	2.732627	0.106988	2.530777	2.950576
3997	2.732627	0.106988	2.530777	2.950576
3998	2.732627	0.106988	2.530777	2.950576
3999	2.732627	0.106988	2.530777	2.950576
4000	2.732627	0.106988	2.530777	2.950576
4001	2.732627	0.106988	2.530777	2.950576
4002	2.732627	0.106988	2.530777	2.950576
4003	2.732627	0.106988	2.530777	2.950576
4004	2.732627	0.106988	2.530777	2.950576
4005	2.732627	0.106988	2.530777	2.950576
4006	2.732627	0.106988	2.530777	2.950576
4007	2.732627	0.106988	2.530777	2.950576
4008	2.732627	0.106988	2.530777	2.950576
4009	2.732627	0.106988	2.530777	2.950576
4010	2.732627	0.106988	2.530777	2.950576
4011	2.732627	0.106988	2.530777	2.950576
4012	2.732627	0.106988	2.530777	2.950576
4013	2.496039	0.095137	2.316367	2.689646
4014	2.496039	0.095137	2.316367	2.689646
4015	2.496039	0.095137	2.316367	2.689646
4016	2.496039	0.095137	2.316367	2.689646
4017	2.496039	0.095137	2.316367	2.689646
4018	2.496039	0.095137	2.316367	2.689646
4019	2.496039	0.095137	2.316367	2.689646

[4020 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

Negative Binomial Regression Scatter plot ECB on all Farm



In [80]: df\_ECB\_final

Out [80]:

	farm	trap_count	year	date	tempf	dwpf	\
0	Litchfield-W	16	2006	2006-06-19	70.977613	63.913169	
1	Hollis-B	7	2006	2006-06-19	70.977613	63.913169	
2	Mason-B	11	2006	2006-06-19	70.977613	63.913169	
3	Litchfield-W	25	2006	2006-06-26	71.243468	65.095887	
4	Hollis-B	31	2006	2006-06-26	71.243468	65.095887	
5	Mason-B	7	2006	2006-06-26	71.243468	65.095887	
6	Litchfield-W	3	2006	2006-07-03	71.056485	59.203758	
7	Hollis-B	4	2006	2006-07-03	71.056485	59.203758	
8	Mason-B	1	2006	2006-07-03	71.056485	59.203758	
9	Litchfield-W	12	2006	2006-07-10	71.830909	66.491782	
10	Hollis-B	0	2006	2006-07-10	71.830909	66.491782	
11	Mason-B	0	2006	2006-07-10	71.830909	66.491782	
12	Litchfield-W	4	2006	2006-07-17	73.200175	66.515808	
13	Hollis-B	3	2006	2006-07-17	73.200175	66.515808	
14	Mason-B	0	2006	2006-07-17	73.200175	66.515808	
15	Litchfield-W	5	2006	2006-07-24	76.523205	66.146667	
16	Hollis-B	24	2006	2006-07-24	76.523205	66.146667	
17	Mason-B	1	2006	2006-07-24	76.523205	66.146667	
18	Litchfield-W	13	2006	2006-07-31	73.577906	64.511937	
19	Hollis-B	34	2006	2006-07-31	73.577906	64.511937	

20	Mason-B	5	2006	2006-07-31	73.577906	64.511937
21	Litchfield-W	17	2006	2006-08-07	68.126420	54.403086
22	Hollis-B	60	2006	2006-08-07	68.126420	54.403086
23	Mason-B	1	2006	2006-08-07	68.126420	54.403086
24	Litchfield-W	1	2006	2006-08-21	61.424232	55.161577
25	Hollis-B	12	2006	2006-08-21	61.424232	55.161577
26	Mason-B	0	2006	2006-08-21	61.424232	55.161577
27	Litchfield-W	1	2006	2006-08-28	60.727258	55.386048
28	Hollis-B	2	2006	2006-08-28	60.727258	55.386048
29	Mason-B	1	2006	2006-08-28	60.727258	55.386048
...	...	...	...	...	...	...
3990	Weare-I	0	2018	2018-09-10	9.211018	8.905188
3991	Goffstown-D	0	2018	2018-09-10	9.211018	8.905188
3992	NewBoston-D	0	2018	2018-09-10	9.211018	8.905188
3993	NewLondon-SL	0	2018	2018-09-10	9.211018	8.905188
3994	Meredith-M	0	2018	2018-09-10	9.211018	8.905188
3995	CenterConway-S	0	2018	2018-09-10	9.211018	8.905188
3996	Milford-S	0	2018	2018-09-17	7.760753	7.281021
3997	Litchfield-M	5	2018	2018-09-17	7.760753	7.281021
3998	Litchfield-W	0	2018	2018-09-17	7.760753	7.281021
3999	Hudson-S	0	2018	2018-09-17	7.760753	7.281021
4000	Milford-L	0	2018	2018-09-17	7.760753	7.281021
4001	Hollis-K	0	2018	2018-09-17	7.760753	7.281021
4002	Hollis-B	0	2018	2018-09-17	7.760753	7.281021
4003	Hollis-JL-Pl	8	2018	2018-09-17	7.760753	7.281021
4004	Hollis-JL-T	0	2018	2018-09-17	7.760753	7.281021
4005	Hollis-L	0	2018	2018-09-17	7.760753	7.281021
4006	Antrim-T	0	2018	2018-09-17	7.760753	7.281021
4007	Peterborough-R	0	2018	2018-09-17	7.760753	7.281021
4008	Jaffrey-C	0	2018	2018-09-17	7.760753	7.281021
4009	Mason-B	0	2018	2018-09-17	7.760753	7.281021
4010	NewIpswich-B	0	2018	2018-09-17	7.760753	7.281021
4011	Milford-M	0	2018	2018-09-17	7.760753	7.281021
4012	NewBoston-D	0	2018	2018-09-17	7.760753	7.281021
4013	Milford-S	0	2018	2018-09-24	6.692446	6.180576
4014	Litchfield-M	0	2018	2018-09-24	6.692446	6.180576
4015	Hollis-JL-Pl	0	2018	2018-09-24	6.692446	6.180576
4016	Peterborough-R	0	2018	2018-09-24	6.692446	6.180576
4017	Mason-B	0	2018	2018-09-24	6.692446	6.180576
4018	NewIpswich-B	0	2018	2018-09-24	6.692446	6.180576
4019	Milford-M	0	2018	2018-09-24	6.692446	6.180576

	drct	feel	regression_count	poisson_count	NB_count
0	63.703704	71.301399	3	3	3
1	63.703704	71.301399	3	3	3
2	63.703704	71.301399	3	3	3
3	84.233871	71.733347	3	3	3
4	84.233871	71.733347	3	3	3

5	84.233871	71.733347	3	3	3
6	127.515152	71.263273	2	2	2
7	127.515152	71.263273	2	2	2
8	127.515152	71.263273	2	2	2
9	59.745455	72.608255	3	3	3
10	59.745455	72.608255	3	3	3
11	59.745455	72.608255	3	3	3
12	101.004367	74.150786	3	3	3
13	101.004367	74.150786	3	3	3
14	101.004367	74.150786	3	3	3
15	71.217949	77.945513	3	3	3
16	71.217949	77.945513	3	3	3
17	71.217949	77.945513	3	3	3
18	111.465969	75.210314	2	2	2
19	111.465969	75.210314	2	2	2
20	111.465969	75.210314	2	2	2
21	185.802469	68.206975	2	2	2
22	185.802469	68.206975	2	2	2
23	185.802469	68.206975	2	2	2
24	131.410788	61.338880	2	2	3
25	131.410788	61.338880	2	2	3
26	131.410788	61.338880	2	2	3
27	96.491935	60.696452	3	3	3
28	96.491935	60.696452	3	3	3
29	96.491935	60.696452	3	3	3
...	...	...	...	...	...
3990	113.670949	9.217243	2	2	2
3991	113.670949	9.217243	2	2	2
3992	113.670949	9.217243	2	2	2
3993	113.670949	9.217243	2	2	2
3994	113.670949	9.217243	2	2	2
3995	113.670949	9.217243	2	2	2
3996	110.056730	7.728195	2	2	2
3997	110.056730	7.728195	2	2	2
3998	110.056730	7.728195	2	2	2
3999	110.056730	7.728195	2	2	2
4000	110.056730	7.728195	2	2	2
4001	110.056730	7.728195	2	2	2
4002	110.056730	7.728195	2	2	2
4003	110.056730	7.728195	2	2	2
4004	110.056730	7.728195	2	2	2
4005	110.056730	7.728195	2	2	2
4006	110.056730	7.728195	2	2	2
4007	110.056730	7.728195	2	2	2
4008	110.056730	7.728195	2	2	2
4009	110.056730	7.728195	2	2	2
4010	110.056730	7.728195	2	2	2
4011	110.056730	7.728195	2	2	2

4012	110.056730	7.728195	2	2	2
4013	161.330935	6.548972	2	2	2
4014	161.330935	6.548972	2	2	2
4015	161.330935	6.548972	2	2	2
4016	161.330935	6.548972	2	2	2
4017	161.330935	6.548972	2	2	2
4018	161.330935	6.548972	2	2	2
4019	161.330935	6.548972	2	2	2

[4020 rows x 11 columns]

```
In [81]: #all the farms for this pest
all_ECB_FARMS = df_ECB_final.farm.unique()
```

```
In [82]: all_ECB_FARMS
```

```
Out[82]: array(['Litchfield-W', 'Hollis-B', 'Mason-B', 'Milford-S', 'Hollis-K',
                'Nashua-S', 'Antrim-T', 'Jaffrey-C', 'Merrimack-T', 'Pelham-G',
                'Hollis-L', 'Litchfield-M', 'Hudson-S', 'Hollis-JL', 'Milford-L',
                'Peterborough-R', 'Merrimack-S', 'Concord-A', 'Amherst-P',
                'Concord-D2', 'Concord-P', 'Loudon-P', 'Boscawen-C', 'Weare-I',
                'Concord-D1', 'NewBoston-M', 'Milford-M', 'Loudon-P1', 'Loudon-P2',
                'Dunbarton', 'NewIpswich-B', 'Bradford-W', 'NewLondon-SL',
                'Concord-D', 'Surry-G', 'Plainfield-E', 'Plymouth-L', 'Bristol-W',
                'Grafton-AH', 'SugarHill-SH', 'NorthHaverhill-GC', 'Piermont-PM',
                'Derry-JF', 'Durham-T', 'Stratham-B', 'Hollis-JL-P1',
                'Hollis-JL-T', 'Goffstown-D', 'NewBoston-D', 'CenterConway-S',
                'Claremont-TL', 'Meredith-M', 'Pelham-C'], dtype=object)
```

```
In [83]: all_ECB_FARMS.shape
```

```
Out[83]: (53,)
```

## 20 Poission & Negative Binomial Regression for each Farms

```
In [84]: #creating data frame for all the pests
farm_count = 0
check = 0
all_ECB_FARMS_DataFrame = []
compute_ECB_FARMS = []

for farm in all_ECB_FARMS:
    farmsdataframe = "df_ECB_" + farm
    farmsdataframe = df_ECB_final.loc[df_ECB_final['farm'] == farm]

    count_row = farmsdataframe.shape[0]

    #print ((farmsdataframe['trap_count'] > 1).any())
```

```

if (farmsdataframe['trap_count'] > 1).any() == True:

    #computing if there more than 50 records
    if count_row > 50:

        #poission regression
        farmsdataframe = Poisson_Regression(farmsdataframe," ECB ", farm)

        #negative binomial regression
        farmsdataframe = Negative_Binomial_Regression(farmsdataframe," ECB ", farm)

    all_ECB_FARMS_DataFrame.append(farmsdataframe)

    compute_ECB_FARMS.append(farm)

    check = check + 1

farm_count = farm_count + 1

```

#### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          215
Model:                  GLM          Df Residuals:              210
Model Family:           Poisson      Df Model:                  4
Link Function:          log          Scale:                    1.0000
Method:                 IRLS         Log-Likelihood:         -1856.7
Date:                   Fri, 08 May 2020    Deviance:              3245.3
Time:                   08:04:30           Pearson chi2:          5.14e+03
No. Iterations:         6               Covariance Type:      nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	1.4325	0.219	6.535	0.000	1.003	1.862
tempf	0.0247	0.015	1.681	0.093	-0.004	0.054
dwpf	-0.0587	0.010	-6.003	0.000	-0.078	-0.040
drct	-0.0037	0.001	-3.295	0.001	-0.006	-0.001
feel	0.0405	0.013	3.235	0.001	0.016	0.065

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
0      8.069230  0.384372      7.349972      8.858874
3      7.150890  0.302983      6.581043      7.770081
6      8.418116  0.323063      7.808151      9.075730
9      7.577919  0.408098      6.818828      8.421514
12     7.159862  0.335317      6.531914      7.848178
15    10.333690  0.532590      9.340825     11.432090
18     8.165298  0.350956      7.505612      8.882964
21     7.402320  0.593076      6.326585      8.660966
=====

```

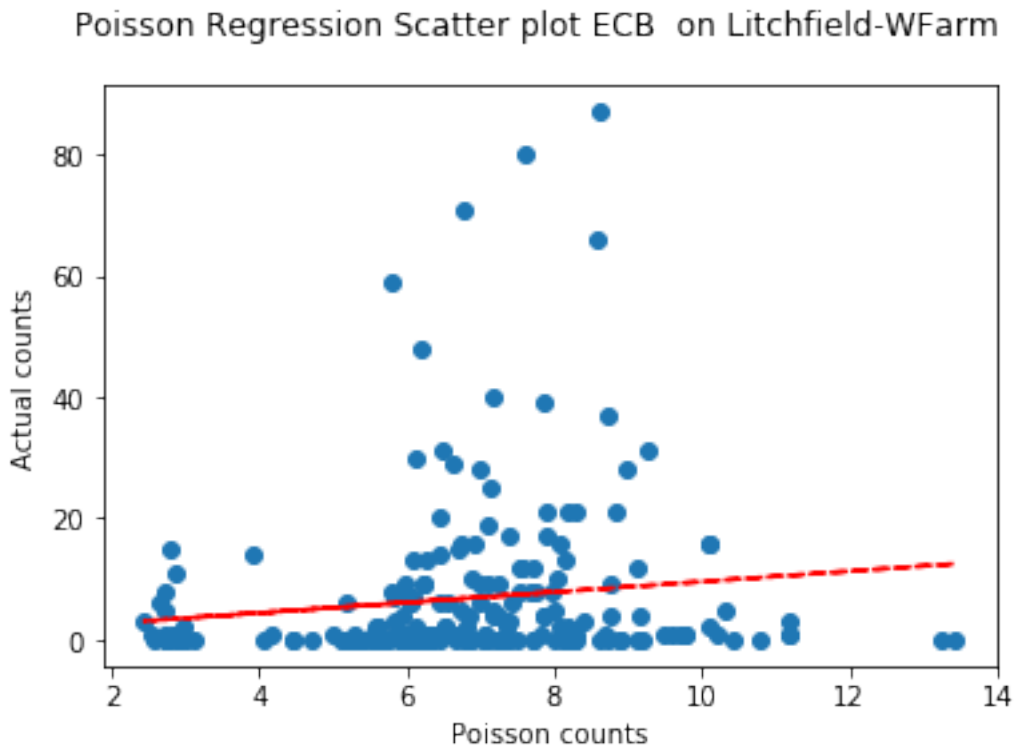
24	5.547920	0.264211	5.053509	6.090701
27	5.961614	0.215106	5.554576	6.398480
30	5.624673	0.224268	5.201851	6.081862
33	6.673968	0.240788	6.218331	7.162991
36	6.059447	0.216366	5.649877	6.498708
39	5.106203	0.304171	4.543525	5.738564
42	7.241912	0.357114	6.574741	7.976784
45	5.815240	0.216502	5.406016	6.255442
54	6.083442	0.214210	5.677759	6.518112
65	6.828424	0.775831	5.465234	8.531634
76	10.208861	0.504752	9.265987	11.247678
87	6.535533	0.246429	6.069956	7.036821
98	6.300521	0.267599	5.797273	6.847455
109	6.289846	0.274811	5.773644	6.852200
120	8.012316	0.413268	7.241921	8.864664
131	8.915965	0.334466	8.283944	9.596206
142	6.412332	0.263739	5.915700	6.950658
153	6.875072	0.202075	6.490205	7.282761
164	7.388105	0.222909	6.963879	7.838174
175	6.233416	0.434145	5.438030	7.145138
186	8.747824	0.379528	8.034712	9.524227
197	5.703701	0.221220	5.286187	6.154191
...	...	...	...	...
3247	7.020396	0.319130	6.421967	7.674589
3278	10.108679	0.491028	9.190675	11.118377
3309	8.003693	0.309688	7.419161	8.634278
3342	7.545364	0.238502	7.092095	8.027603
3376	6.523071	0.345085	5.880601	7.235734
3411	7.356726	0.268766	6.848372	7.902814
3446	9.120007	0.335522	8.485545	9.801907
3479	7.154709	0.223773	6.729294	7.607017
3509	8.025254	0.234582	7.578403	8.498452
3536	5.888870	0.427637	5.107631	6.789603
3559	6.236676	0.179773	5.894096	6.599169
3576	5.439722	0.254604	4.962911	5.962341
3582	2.744617	0.346782	2.142557	3.515856
3602	2.847251	0.359208	2.223507	3.645969
3623	2.641365	0.327712	2.071192	3.368500
3644	2.526590	0.318403	1.973630	3.234476
3667	2.445268	0.313270	1.902289	3.143232
3691	2.733093	0.330072	2.157029	3.463002
3717	2.770052	0.342424	2.174029	3.529479
3743	2.876541	0.363081	2.246108	3.683923
3769	2.778165	0.332022	2.198011	3.511447
3795	2.940656	0.344087	2.338002	3.698654
3821	3.126655	0.391372	2.446429	3.996017
3847	2.807427	0.336208	2.220094	3.550141
3874	2.868719	0.344668	2.266829	3.630424



3901	2.731201	0.338630	2.141987	3.482494
3926	2.883604	0.365811	2.248811	3.697584
3951	2.569569	0.320467	2.012341	3.281096
3975	2.982816	0.368237	2.341765	3.799353
3998	3.020286	0.387076	2.349411	3.882729

[215 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



#### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          215
Model:                  GLM           Df Residuals:              210
Model Family:          NegativeBinomial  Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                 IRLS          Log-Likelihood:           -781.56
Date:                   Fri, 08 May 2020  Deviance:                919.16
Time:                   08:04:30         Pearson chi2:             1.32e+03
No. Iterations:         11              Covariance Type:         nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	1.7179	0.400	4.295	0.000	0.934	2.502
tempf	0.0477	0.025	1.887	0.059	-0.002	0.097
dwpf	-0.0855	0.021	-4.163	0.000	-0.126	-0.045
drct	-0.0064	0.002	-2.871	0.004	-0.011	-0.002
feel	0.0410	0.020	2.101	0.036	0.003	0.079

	mean	mean_se	mean_ci_lower	mean_ci_upper
0	8.595552	0.821254	7.127652	10.365756
3	7.015344	0.582040	5.962489	8.254112
6	8.540879	0.668162	7.326764	9.956185
9	7.771747	0.827163	6.308462	9.574448
12	6.759961	0.611666	5.661407	8.071683
15	11.574970	1.206354	9.436412	14.198186
18	7.976066	0.646392	6.804656	9.349133
21	6.783804	1.078366	4.967806	9.263645
24	4.947343	0.459717	4.123601	5.935639
27	5.726966	0.393691	5.005071	6.552983
30	5.156751	0.394467	4.438776	5.990858
33	6.776426	0.477018	5.903117	7.778931
36	6.099173	0.389810	5.381075	6.913100
39	4.500945	0.511728	3.601867	5.624446
42	7.925299	0.776297	6.540922	9.602678
45	5.740690	0.390040	5.024940	6.558392
54	5.702330	0.384576	4.996267	6.508173
65	5.890753	1.327332	3.787687	9.161518
76	11.294476	1.199591	9.171906	13.908252
87	6.134252	0.451381	5.310397	7.085920
98	6.014702	0.502578	5.106099	7.084985
109	5.776807	0.494122	4.885173	6.831180
120	8.497238	0.874709	6.944720	10.396827
131	9.383376	0.703068	8.101793	10.867685
142	6.043613	0.487907	5.159151	7.079704
153	6.710090	0.386308	5.994094	7.511611
164	7.318522	0.433976	6.515513	8.220499
175	5.433764	0.745364	4.152783	7.109881
186	9.738537	0.892881	8.136752	11.655648
197	5.475486	0.398034	4.748381	6.313930
...	...	...	...	...
3247	6.597863	0.586693	5.542594	7.854048
3278	11.520499	1.179275	9.426265	14.080010
3309	8.049570	0.633009	6.899779	9.390964
3342	7.607081	0.467921	6.743099	8.581762
3376	6.015075	0.622728	4.910412	7.368247
3411	7.360306	0.528513	6.394030	8.472607
3446	9.922281	0.781303	8.503269	11.578095
3479	7.077331	0.434333	6.275258	7.981920

3509	8.304530	0.511591	7.359999	9.370275
3536	5.481463	0.771690	4.159707	7.223209
3559	6.095145	0.325766	5.488959	6.768276
3576	5.151507	0.433826	4.367690	6.075986
3582	2.477185	0.495124	1.674270	3.665146
3602	2.637969	0.527135	1.783107	3.902670
3623	2.322839	0.456931	1.579710	3.415552
3644	2.142219	0.433331	1.441059	3.184534
3667	2.020815	0.419436	1.345405	3.035289
3691	2.413890	0.461372	1.659685	3.510826
3717	2.475843	0.483739	1.688155	3.631063
3743	2.682691	0.536983	1.812130	3.971477
3769	2.477869	0.468196	1.710973	3.588506
3795	2.692318	0.498286	1.873218	3.869584
3821	3.052729	0.616680	2.054649	4.535643
3847	2.518994	0.476640	1.738458	3.649978
3874	2.625379	0.499046	1.808802	3.810595
3901	2.457016	0.481639	1.673210	3.607991
3926	2.692396	0.541587	1.815164	3.993575
3951	2.205009	0.438075	1.493826	3.254773
3975	2.831558	0.558328	1.923912	4.167406
3998	2.923522	0.601934	1.952763	4.376864

[215 rows x 4 columns]

/anaconda3/lib/python3.6/site-packages/ipykernel\_launcher.py:49: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row\_indexer,col\_indexer] = value instead

See the caveats in the documentation: <http://pandas.pydata.org/pandas-docs/stable/indexing.html>.  
/anaconda3/lib/python3.6/site-packages/ipykernel\_launcher.py:50: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row\_indexer,col\_indexer] = value instead

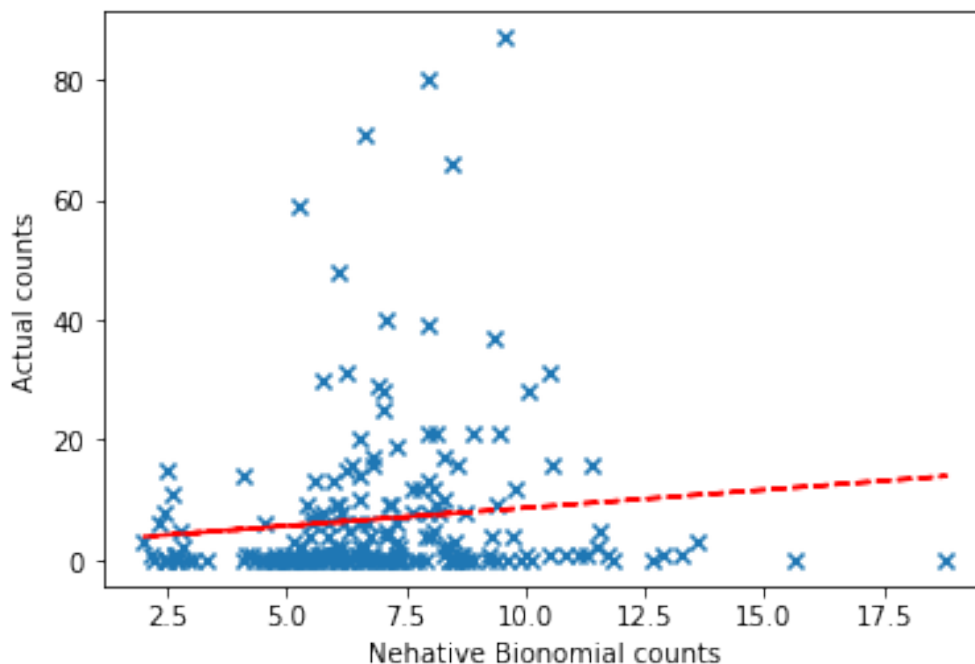
See the caveats in the documentation: <http://pandas.pydata.org/pandas-docs/stable/indexing.html>.  
/anaconda3/lib/python3.6/site-packages/ipykernel\_launcher.py:24: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row\_indexer,col\_indexer] = value instead

See the caveats in the documentation: <http://pandas.pydata.org/pandas-docs/stable/indexing.html>.  
/anaconda3/lib/python3.6/site-packages/ipykernel\_launcher.py:27: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row\_indexer,col\_indexer] = value instead

See the caveats in the documentation: <http://pandas.pydata.org/pandas-docs/stable/indexing.html>.

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot ECB on Litchfield-WFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          204
Model:                  GLM           Df Residuals:              199
Model Family:           Poisson       Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                 IRLS          Log-Likelihood:            -1431.2
Date:                   Fri, 08 May 2020    Deviance:                  2487.8
Time:                   08:04:31           Pearson chi2:              4.12e+03
No. Iterations:         6                Covariance Type:          nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	0.0776	0.241	0.322	0.747	-0.394	0.549
tempf	-0.1177	0.018	-6.622	0.000	-0.153	-0.083
dwpf	0.1144	0.014	8.066	0.000	0.087	0.142
drct	0.0099	0.001	7.001	0.000	0.007	0.013
feel	0.0245	0.014	1.741	0.082	-0.003	0.052

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
1         4.117610  0.253343      3.649838      4.645332

```

4	5.659142	0.272915	5.148739	6.220141
7	4.473498	0.236328	4.033477	4.961522
10	4.966608	0.323400	4.371535	5.642685
13	6.624568	0.336905	5.996090	7.318920
16	3.508893	0.256020	3.041332	4.048336
19	5.734824	0.276736	5.217291	6.303693
22	6.026334	0.583514	4.984639	7.285725
25	7.133593	0.372784	6.439121	7.902965
28	5.534042	0.217939	5.122959	5.978112
31	6.403304	0.271290	5.893064	6.957723
34	4.531212	0.200797	4.154264	4.942363
37	4.307511	0.173990	3.979647	4.662386
40	6.575573	0.434500	5.776810	7.484782
43	2.928157	0.209714	2.544671	3.369435
48	4.752648	0.196262	4.383137	5.153310
58	5.852788	0.218729	5.439412	6.297580
69	7.062701	0.966475	5.401204	9.235302
80	3.183418	0.254676	2.721428	3.723835
91	6.006745	0.246094	5.543268	6.508974
102	6.042753	0.291891	5.496904	6.642807
113	6.755237	0.320025	6.156240	7.412516
124	4.271994	0.278677	3.759272	4.854645
135	4.291121	0.216465	3.887157	4.737067
146	6.324602	0.287723	5.785085	6.914433
157	5.247022	0.176281	4.912648	5.604155
168	5.065706	0.186019	4.713927	5.443737
179	7.695808	0.611987	6.585138	8.993806
190	3.212752	0.215623	2.816755	3.664421
201	5.468405	0.229239	5.037067	5.936678
...	...	...	...	...
3131	5.302503	0.189724	4.943390	5.687704
3160	4.696189	0.161309	4.390437	5.023234
3190	4.671863	0.197223	4.300873	5.074854
3222	5.393981	0.200872	5.014303	5.802408
3254	5.938627	0.304089	5.371556	6.565563
3285	3.064179	0.229555	2.645732	3.548808
3316	4.492760	0.236528	4.052289	4.981109
3349	4.769020	0.182682	4.424080	5.140854
3383	7.220445	0.426303	6.431438	8.106247
3418	5.112781	0.218807	4.701421	5.560133
3453	3.540791	0.209873	3.152441	3.976981
3484	5.143839	0.186221	4.791501	5.522086
3586	4.470864	0.480110	3.622296	5.518219
3606	4.120763	0.443904	3.336438	5.089465
3627	4.963838	0.524011	4.036081	6.104854
3648	5.593472	0.612282	4.513420	6.931978
3671	6.182518	0.699847	4.952349	7.718262
3696	5.004426	0.513152	4.093289	6.118376

3722	4.723454	0.495529	3.845578	5.801733
3748	4.007729	0.433216	3.242557	4.953465
3774	4.863066	0.492752	3.987144	5.931416
3800	4.548381	0.452964	3.741858	5.528742
3826	3.542644	0.393525	2.849536	4.404341
3852	4.762171	0.483340	3.903118	5.810295
3879	4.465081	0.456378	3.654497	5.455456
3906	4.619526	0.485775	3.759133	5.676847
3931	4.036288	0.438633	3.261970	4.994410
3955	5.465189	0.584791	4.431229	6.740409
3979	3.912930	0.419357	3.171590	4.827554
4002	3.585285	0.403993	2.874813	4.471341

[204 rows x 4 columns]

```
/anaconda3/lib/python3.6/site-packages/ipykernel_launcher.py:77: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

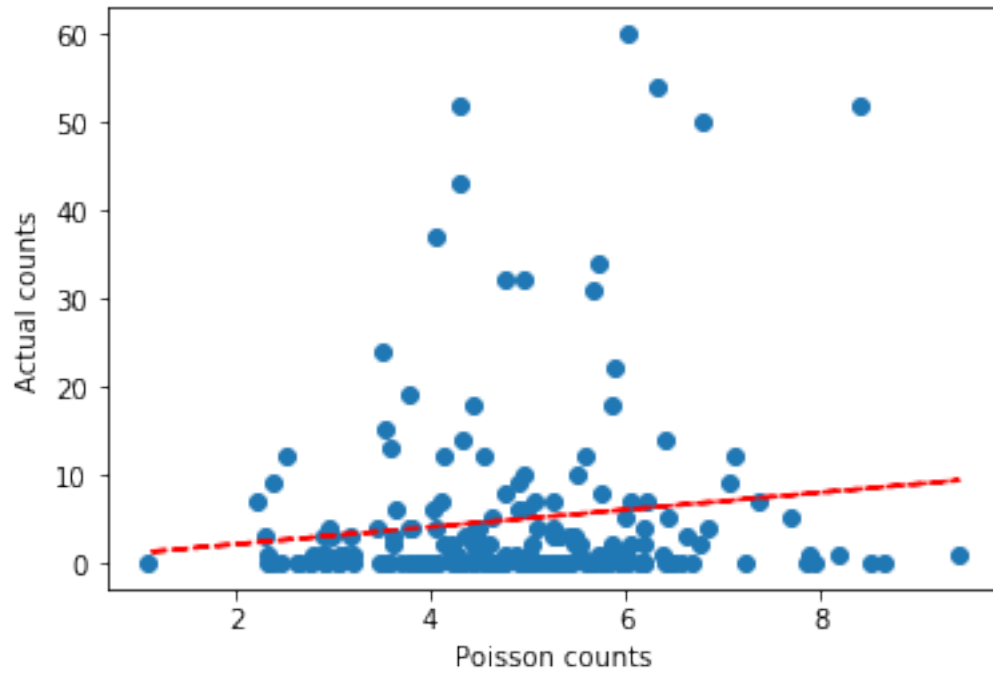
```
See the caveats in the documentation: http://pandas.pydata.org/pandas-docs/stable/indexing.html
/anaconda3/lib/python3.6/site-packages/ipykernel_launcher.py:78: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: http://pandas.pydata.org/pandas-docs/stable/indexing.html
/anaconda3/lib/python3.6/site-packages/pandas/core/frame.py:3694: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame
```

```
See the caveats in the documentation: http://pandas.pydata.org/pandas-docs/stable/indexing.html
errors=errors)
```

<Figure size 432x288 with 0 Axes>

### Poisson Regression Scatter plot ECB on Hollis-BFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          204
Model:                  GLM           Df Residuals:              199
Model Family:          NegativeBinomial Df Model:                  4
Link Function:         log           Scale:                    1.0000
Method:                IRLS          Log-Likelihood:          -815.01
Date:                  Fri, 08 May 2020 Deviance:                1166.8
Time:                  08:04:31        Pearson chi2:            2.01e+03
No. Iterations:        9              Covariance Type:        nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	0.0323	0.341	0.095	0.925	-0.637	0.701
tempf	-0.1164	0.023	-5.132	0.000	-0.161	-0.072
dwpf	0.1216	0.020	6.178	0.000	0.083	0.160
drct	0.0101	0.002	4.972	0.000	0.006	0.014
feel	0.0172	0.017	1.024	0.306	-0.016	0.050

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
1         4.124633  0.355217      3.484008      4.883053
4         5.726588  0.400583      4.992903      6.568084
7         4.395146  0.321398      3.808278      5.072452

```

10	5.021145	0.466058	4.185959	6.022968
13	6.695827	0.501474	5.781690	7.754497
16	3.434040	0.338854	2.830173	4.166753
19	5.686178	0.387332	4.975516	6.498346
22	5.901248	0.832524	4.475688	7.780867
25	7.231088	0.570019	6.195900	8.439232
28	5.597008	0.321383	5.001262	6.263720
31	6.487656	0.414154	5.724657	7.352350
34	4.558932	0.282747	4.037116	5.148196
37	4.298756	0.237612	3.857386	4.790630
40	6.605598	0.647579	5.450856	8.004967
43	2.850712	0.272591	2.363522	3.438326
48	4.806882	0.276649	4.294124	5.380868
58	5.877680	0.331052	5.263361	6.563699
69	6.888900	1.376414	4.656701	10.191108
80	3.063188	0.327804	2.483609	3.778019
91	6.032889	0.372688	5.344923	6.809404
102	6.147869	0.434556	5.352519	7.061403
113	6.847931	0.489614	5.952510	7.878048
124	4.286976	0.393916	3.580445	5.132926
135	4.245970	0.291465	3.711471	4.857443
146	6.421835	0.433357	5.626244	7.329928
157	5.252556	0.256932	4.772366	5.781063
168	5.033428	0.260556	4.547801	5.570913
179	7.720454	0.916113	6.118414	9.741971
190	3.151330	0.284884	2.639638	3.762214
201	5.536787	0.335928	4.916021	6.235940
...	...	...	...	...
3131	5.285741	0.276834	4.770076	5.857152
3160	4.679616	0.223371	4.261672	5.138548
3190	4.627104	0.269523	4.127887	5.186694
3222	5.423480	0.294800	4.875397	6.033178
3254	5.935944	0.451945	5.113073	6.891245
3285	2.998341	0.302316	2.460687	3.653472
3316	4.427866	0.324702	3.835082	5.112276
3349	4.785553	0.256346	4.308600	5.315303
3383	7.396286	0.644309	6.235387	8.773319
3418	5.148293	0.315487	4.565640	5.805301
3453	3.466458	0.273465	2.969858	4.046096
3484	5.166860	0.269290	4.665124	5.722557
3586	4.404956	0.661776	3.281420	5.913183
3606	4.058659	0.610287	3.022667	5.449729
3627	4.918512	0.728620	3.679072	6.575507
3648	5.548374	0.857443	4.098467	7.511211
3671	6.142903	0.984706	4.486692	8.410486
3696	4.956963	0.712680	3.739689	6.570462
3722	4.657742	0.684012	3.492789	6.211244
3748	3.944457	0.594981	2.934893	5.301298

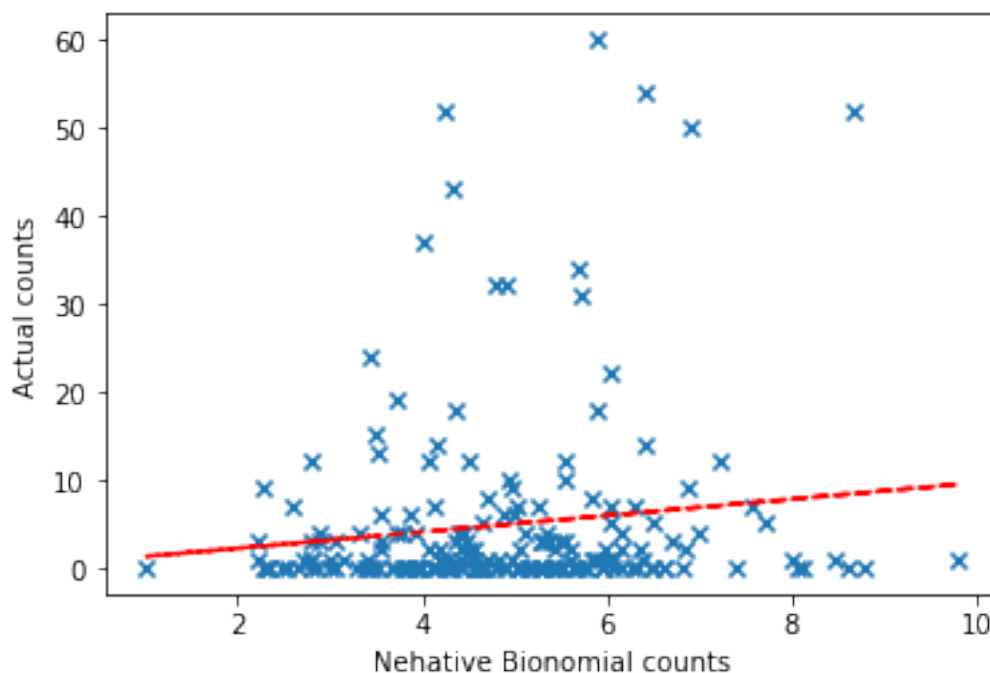


3774	4.819303	0.683930	3.649103	6.364764
3800	4.505450	0.626697	3.430347	5.917500
3826	3.493079	0.541644	2.577622	4.733665
3852	4.714229	0.669612	3.568662	6.227532
3879	4.420716	0.631277	3.341499	5.848493
3906	4.570255	0.672429	3.425325	6.097883
3931	3.972392	0.602207	2.951288	5.346784
3955	5.422387	0.816452	4.036683	7.283773
3979	3.867731	0.578582	2.884850	5.185483
4002	3.531469	0.555319	2.594807	4.806243

[204 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

Negative Binomial Regression Scatter plot ECB on Hollis-BFarm



Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	217
Model:	GLM	Df Residuals:	212
Model Family:	Poisson	Df Model:	4
Link Function:	log	Scale:	1.0000

```

Method:                IRLS    Log-Likelihood:        -641.11
Date:                  Fri, 08 May 2020    Deviance:        991.54
Time:                  08:04:31    Pearson chi2:    1.41e+03
No. Iterations:        5    Covariance Type:        nonrobust

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-0.3930	0.431	-0.912	0.362	-1.237	0.451
tempf	0.0047	0.021	0.221	0.825	-0.037	0.047
dwpf	0.0305	0.020	1.549	0.121	-0.008	0.069
drct	-0.0020	0.002	-0.929	0.353	-0.006	0.002
feel	-0.0106	0.014	-0.734	0.463	-0.039	0.018

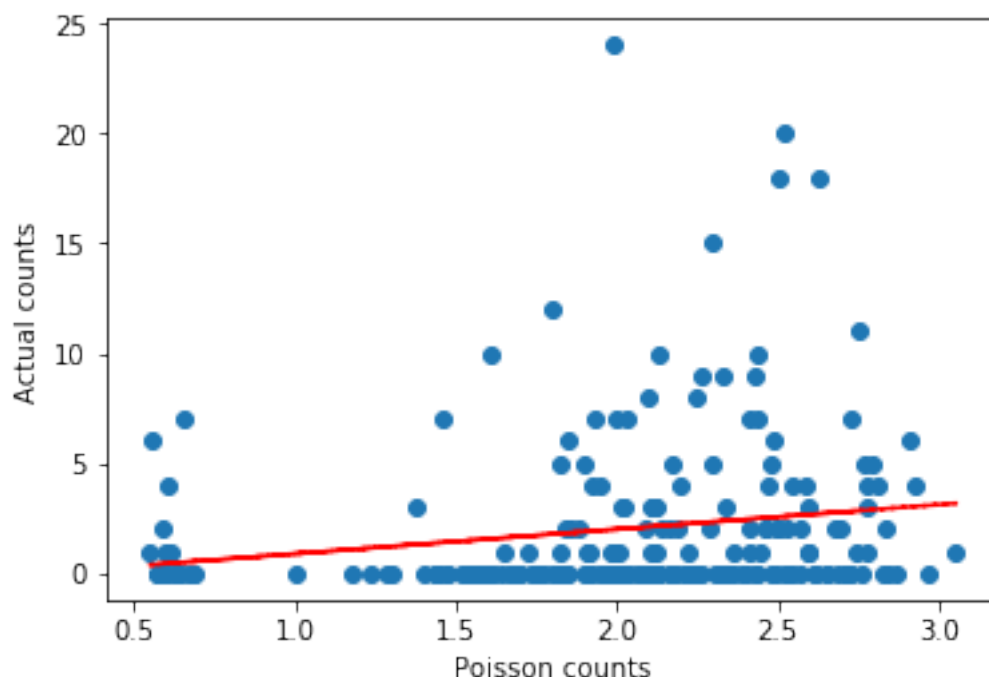
	mean	mean_se	mean_ci_lower	mean_ci_upper
2	2.749004	0.234530	2.325709	3.249341
5	2.728236	0.198374	2.365865	3.146112
8	2.102931	0.164645	1.803773	2.451705
11	2.967672	0.280334	2.466092	3.571268
14	2.712064	0.221081	2.311597	3.181910
17	2.774827	0.269900	2.293198	3.357609
20	2.476260	0.183333	2.141788	2.862963
23	1.650580	0.255761	1.218262	2.236312
26	1.957783	0.168609	1.653701	2.317781
29	2.118440	0.132789	1.873531	2.395364
32	1.975414	0.139997	1.719230	2.269773
35	2.246717	0.141763	1.985361	2.542478
38	1.769656	0.121430	1.546968	2.024400
41	1.478691	0.165687	1.187136	1.841852
44	1.519297	0.157931	1.239254	1.862624
52	1.989157	0.130073	1.749880	2.261154
63	1.925379	0.122061	1.700410	2.180112
74	1.371895	0.298530	0.895563	2.101579
85	2.011243	0.214708	1.631532	2.479325
96	2.101562	0.142414	1.840179	2.400073
107	2.493673	0.182020	2.161265	2.877207
118	2.300632	0.177805	1.977251	2.676901
129	2.836724	0.260374	2.369670	3.395833
140	2.619106	0.182575	2.284635	3.002543
151	2.465300	0.174421	2.146085	2.831997
162	2.163968	0.111575	1.955972	2.394083
173	2.183376	0.116093	1.967293	2.423194
184	1.907579	0.248377	1.477922	2.462145
195	2.223860	0.191653	1.878238	2.633082
206	2.039325	0.140453	1.781814	2.334051
...	...	...	...	...
3261	2.106281	0.179136	1.782883	2.488339
3292	2.544589	0.249435	2.099802	3.083593
3323	2.019486	0.158671	1.731258	2.355700

3356	2.461665	0.136245	2.208603	2.743723
3390	2.843959	0.266882	2.366166	3.418232
3425	2.598007	0.162700	2.297914	2.937290
3460	2.265848	0.171651	1.953203	2.628538
3490	2.385820	0.128127	2.147460	2.650637
3519	2.099025	0.125790	1.866409	2.360632
3546	1.301492	0.180938	0.991070	1.709144
3569	1.925631	0.099305	1.740509	2.130442
3593	0.569083	0.145666	0.344585	0.939841
3613	0.597528	0.152758	0.362034	0.986206
3634	0.583663	0.146634	0.356709	0.955014
3655	0.554485	0.140994	0.336858	0.912710
3678	0.548083	0.141121	0.330886	0.907850
3703	0.612822	0.149646	0.379732	0.988989
3729	0.587191	0.146749	0.359791	0.958316
3755	0.597132	0.152814	0.361607	0.986061
3781	0.630238	0.152413	0.392334	1.012405
3807	0.681410	0.161156	0.428643	1.083231
3833	0.688819	0.174211	0.419590	1.130798
3859	0.630753	0.152829	0.392298	1.014151
3886	0.651866	0.158534	0.404712	1.049956
3912	0.601682	0.151114	0.367778	0.984348
3938	0.605303	0.155436	0.365925	1.001276
3962	0.577583	0.145416	0.352623	0.946058
3986	0.671195	0.167647	0.411377	1.095108
4009	0.649079	0.168260	0.390518	1.078831
4017	0.571800	0.145019	0.347828	0.939993

[217 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

Poisson Regression Scatter plot ECB on Mason-BFarm



# Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          217
Model:                  GLM           Df Residuals:              212
Model Family:          NegativeBinomial    Df Model:                  4
Link Function:         log              Scale:                  1.0000
Method:                IRLS            Log-Likelihood:          -457.14
Date:                  Fri, 08 May 2020    Deviance:                526.56
Time:                  08:04:32           Pearson chi2:            736.
No. Iterations:        7                 Covariance Type:        nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-0.3101	0.545	-0.569	0.569	-1.377	0.757
tempf	-0.0009	0.030	-0.029	0.977	-0.060	0.059
dwpf	0.0336	0.027	1.230	0.219	-0.020	0.087
drct	-0.0014	0.003	-0.465	0.642	-0.007	0.004
feel	-0.0101	0.021	-0.472	0.637	-0.052	0.032

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
2          2.642531  0.324405      2.077419      3.361369
5          2.661997  0.279034      2.167621      3.269127
8          2.069380  0.219813      1.680444      2.548334

```

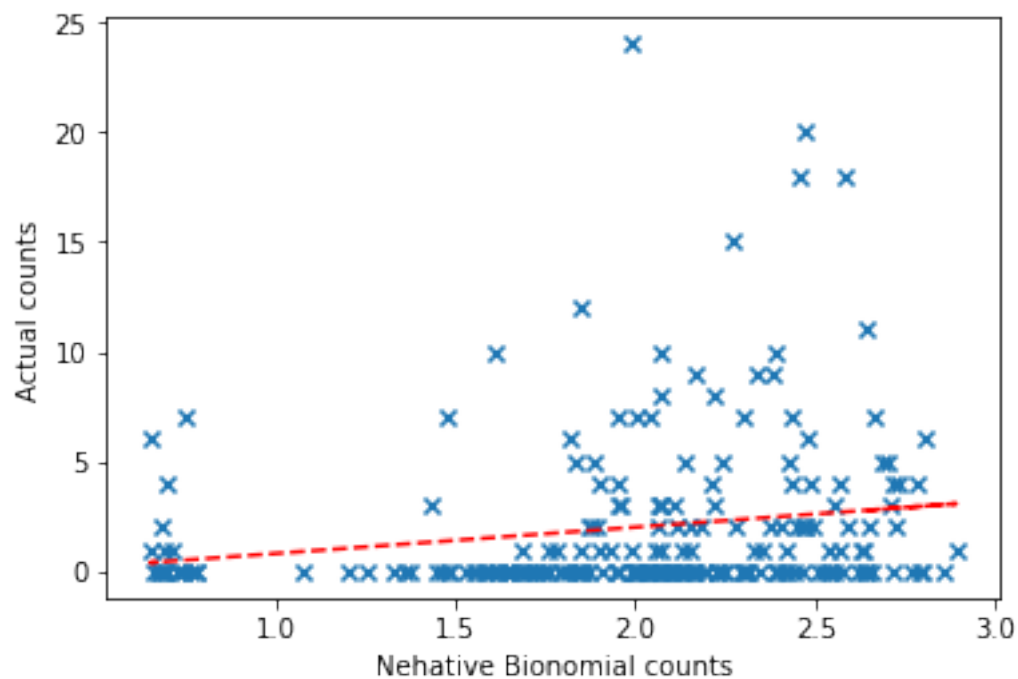
11	2.857277	0.388450	2.188923	3.729702
14	2.659161	0.304241	2.124988	3.327613
17	2.624420	0.358367	2.008173	3.429775
20	2.424122	0.248851	1.982319	2.964390
23	1.682378	0.353992	1.113835	2.541125
26	2.002644	0.236981	1.588099	2.525399
29	2.130658	0.186657	1.794502	2.529785
32	2.011842	0.195510	1.662931	2.433959
35	2.223518	0.200410	1.863460	2.653147
38	1.794928	0.156008	1.513784	2.128288
41	1.552389	0.230449	1.160491	2.076632
44	1.532470	0.207857	1.174732	1.999149
52	2.004869	0.176479	1.687169	2.382393
63	1.953492	0.168392	1.649824	2.313052
74	1.432492	0.425129	0.800711	2.562762
85	1.951529	0.285973	1.464339	2.600809
96	2.109765	0.197756	1.755690	2.535248
107	2.471487	0.260668	2.009935	3.039027
118	2.302622	0.248936	1.862943	2.846072
129	2.723537	0.359555	2.102614	3.527823
140	2.519620	0.246793	2.079510	3.052874
151	2.446612	0.248285	2.005322	2.985012
162	2.154211	0.157351	1.866868	2.485782
173	2.163393	0.163493	1.865556	2.508781
184	1.948225	0.346009	1.375510	2.759400
195	2.155464	0.262302	1.698073	2.736055
206	2.061789	0.193757	1.714954	2.478768
...	...	...	...	...
3261	2.105557	0.243570	1.678420	2.641396
3292	2.416536	0.330923	1.847689	3.160515
3323	1.998666	0.213004	1.621904	2.462949
3356	2.404625	0.189234	2.060921	2.805649
3390	2.793960	0.368266	2.157870	3.617555
3425	2.535050	0.230133	2.121847	3.028720
3460	2.193656	0.233070	1.781274	2.701509
3490	2.348650	0.181953	2.017783	2.733770
3519	2.066404	0.172214	1.754996	2.433069
3546	1.360582	0.253868	0.943846	1.961320
3569	1.941775	0.134338	1.695548	2.223759
3593	0.664494	0.192857	0.376224	1.173643
3613	0.692040	0.200885	0.391782	1.222412
3634	0.683029	0.194791	0.390560	1.194511
3655	0.655210	0.190625	0.370454	1.158849
3678	0.651141	0.193178	0.364036	1.164678
3703	0.713180	0.197630	0.414306	1.227657
3729	0.684530	0.194014	0.392771	1.193012
3755	0.690731	0.200818	0.390693	1.221185
3781	0.730488	0.200350	0.426731	1.250464

3807	0.780976	0.209837	0.461245	1.322340
3833	0.781147	0.227498	0.441399	1.382398
3859	0.730299	0.200644	0.426226	1.251300
3886	0.750507	0.207235	0.436833	1.289420
3912	0.699876	0.199305	0.400519	1.222980
3938	0.699528	0.204251	0.394701	1.239772
3962	0.679254	0.194844	0.387137	1.191788
3986	0.766646	0.218906	0.438072	1.341666
4009	0.741441	0.220546	0.413887	1.328226
4017	0.675131	0.195809	0.382396	1.191962

[217 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

Negative Binomial Regression Scatter plot ECB on Mason-BFarm



Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	199
Model:	GLM	Df Residuals:	194
Model Family:	Poisson	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -1476.6  
Date: Fri, 08 May 2020 Deviance: 2480.1  
Time: 08:04:32 Pearson chi2: 3.03e+03  
No. Iterations: 5 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	1.8103	0.201	8.999	0.000	1.416	2.205
tempf	0.0433	0.010	4.201	0.000	0.023	0.063
dwpf	0.0018	0.011	0.166	0.868	-0.019	0.023
drct	5.335e-05	0.001	0.045	0.964	-0.002	0.002
feel	-0.0430	0.006	-7.603	0.000	-0.054	-0.032

	mean	mean_se	mean_ci_lower	mean_ci_upper
46	7.109633	0.244056	6.647029	7.604433
56	6.911124	0.243372	6.450212	7.404971
67	6.914957	0.824553	5.473820	8.735514
78	6.789783	0.382229	6.080478	7.581830
89	6.951790	0.269394	6.443340	7.500361
100	6.911735	0.305810	6.337613	7.537868
111	6.975299	0.312953	6.388118	7.616452
122	6.832646	0.375613	6.134732	7.609957
133	6.778630	0.266762	6.275442	7.322165
144	6.907976	0.294122	6.354906	7.509181
155	6.909619	0.211679	6.506946	7.337211
166	6.733409	0.210002	6.334141	7.157845
177	6.952452	0.501693	6.035522	8.008685
188	6.841703	0.336198	6.213503	7.533415
199	6.889004	0.259876	6.398030	7.417654
210	6.986747	0.188719	6.626485	7.366596
221	6.934207	0.283969	6.399388	7.513722
239	6.804774	0.301424	6.238913	7.421957
247	6.832922	0.251008	6.358248	7.343033
260	6.902195	0.386210	6.185268	7.702220
273	6.946736	0.370211	6.257745	7.711585
287	6.890681	0.450689	6.061622	7.833132
303	6.736572	0.312414	6.151255	7.377584
319	6.938873	0.260832	6.446030	7.469396
335	6.995384	0.445762	6.174063	7.925962
351	6.959941	0.381152	6.251592	7.748550
367	6.965681	0.432583	6.167401	7.867287
383	6.957751	0.313197	6.370196	7.599500
399	6.912170	0.228255	6.478968	7.374337
415	6.918453	0.331842	6.297690	7.600404
...	...	...	...	...
3250	7.029236	0.328993	6.413113	7.704551
3281	6.948690	0.378487	6.245093	7.731556
3312	7.033945	0.294025	6.480642	7.634488

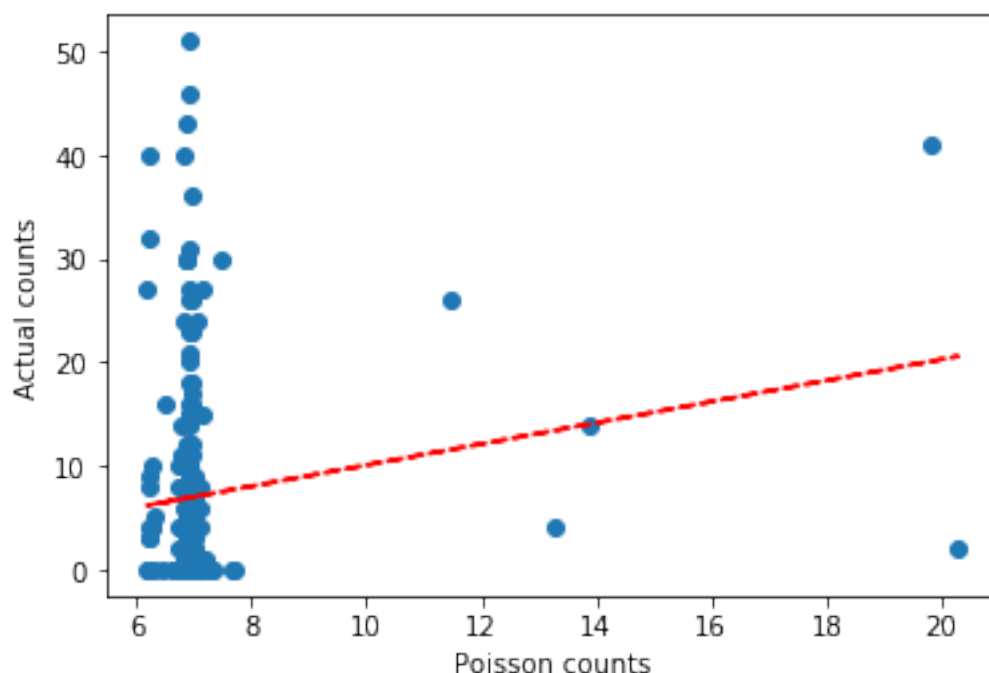
3345	7.124070	0.230686	6.685982	7.590863
3379	6.997249	0.378761	6.292915	7.780416
3414	6.937710	0.265299	6.436741	7.477669
3449	6.837647	0.287936	6.295964	7.425935
3481	6.977020	0.228097	6.543980	7.438716
3511	6.916430	0.229318	6.481268	7.380810
3538	7.359512	0.535133	6.381981	8.486771
3561	7.038640	0.193091	6.670183	7.427452
3579	6.228747	0.554941	5.230752	7.417154
3599	6.225948	0.556205	5.225911	7.417353
3620	6.281045	0.551519	5.287989	7.460592
3641	6.294512	0.574513	5.263458	7.527537
3664	6.244582	0.589535	5.189717	7.513860
3688	6.234354	0.531012	5.275823	7.367035
3714	6.188301	0.538180	5.218488	7.338347
3740	6.244744	0.559618	5.238837	7.443795
3766	6.251012	0.526193	5.300277	7.372284
3792	6.223224	0.514417	5.292421	7.317732
3818	6.270433	0.579258	5.231958	7.515032
3844	6.234849	0.525377	5.285668	7.354482
3871	6.243606	0.530119	5.286441	7.374075
3898	6.246799	0.545764	5.263694	7.413521
3923	6.190284	0.557598	5.188449	7.385564
3949	6.231553	0.554596	5.234088	7.419107
3973	6.261141	0.558208	5.257328	7.456617
3996	6.249911	0.585340	5.201803	7.509202
4013	6.282937	0.570313	5.258934	7.506330

[199 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



# Poisson Regression Scatter plot ECB on Milford-SFarm



## Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          199
Model:                  GLM           Df Residuals:              194
Model Family:           NegativeBinomial    Df Model:                  4
Link Function:          log             Scale:                  1.0000
Method:                 IRLS            Log-Likelihood:           -721.51
Date:                   Fri, 08 May 2020    Deviance:                 787.11
Time:                   08:04:32           Pearson chi2:             801.
No. Iterations:         8                 Covariance Type:         nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	1.7637	0.388	4.543	0.000	1.003	2.525
tempf	0.0394	0.023	1.727	0.084	-0.005	0.084
dwpf	0.0043	0.021	0.202	0.840	-0.037	0.045
drct	0.0004	0.002	0.189	0.850	-0.004	0.005
feel	-0.0412	0.016	-2.610	0.009	-0.072	-0.010

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
46    7.091386    0.476223    6.216825    8.088978
56    6.967880    0.475914    6.094844    7.965970
67    7.120407    1.650697    4.520370    11.215939

```

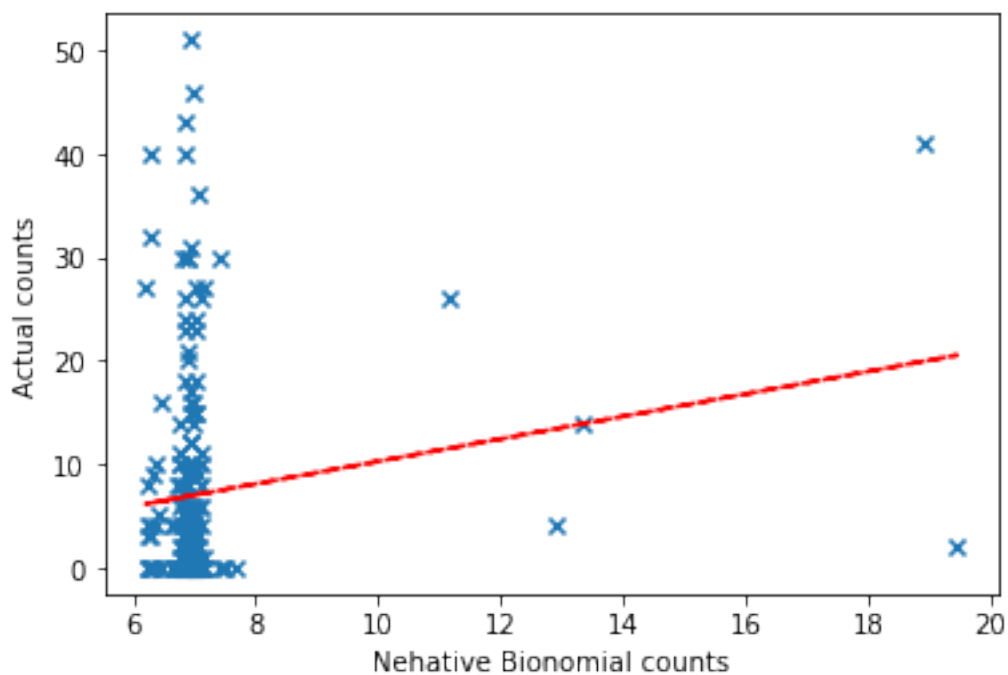
78	6.753892	0.740439	5.447982	8.372836
89	7.013544	0.527681	6.051950	8.127926
100	6.932938	0.595320	5.859034	8.203678
111	7.047444	0.613988	5.941186	8.359690
122	6.770448	0.723795	5.490599	8.348628
133	6.752856	0.517946	5.810320	7.848287
144	6.948432	0.574159	5.909501	8.170014
155	6.933663	0.412060	6.171301	7.790202
166	6.755676	0.412311	5.994025	7.614110
177	7.100176	0.996160	5.393179	9.347455
188	6.760328	0.647152	5.603819	8.155516
199	6.901105	0.503800	5.981065	7.962670
210	6.991625	0.366276	6.309363	7.747664
221	7.002208	0.556810	5.991673	8.183176
239	6.773464	0.582577	5.722689	8.017178
247	6.851317	0.489518	5.956029	7.881182
260	6.838426	0.743475	5.526031	8.462505
273	6.944997	0.718588	5.670216	8.506374
287	6.790149	0.863824	5.291658	8.712983
303	6.691684	0.605650	5.603959	7.990536
319	6.974217	0.507911	6.046514	8.044255
335	7.068920	0.874945	5.546217	9.009677
351	7.020054	0.746304	5.699660	8.646334
367	7.056465	0.851527	5.570188	8.939321
383	7.017688	0.613412	5.912771	8.329081
399	6.880110	0.441590	6.066835	7.802405
415	7.002828	0.652548	5.833854	8.406038
...	...	...	...	...
3250	7.102967	0.645445	5.944171	8.487667
3281	6.854400	0.725581	5.570119	8.434792
3312	7.056816	0.572400	6.019566	8.272797
3345	7.114569	0.447825	6.288831	8.048728
3379	7.054149	0.740460	5.742430	8.665498
3414	6.930869	0.513891	5.993426	8.014939
3449	6.788830	0.556658	5.780956	7.972420
3481	6.984341	0.442716	6.168369	7.908253
3511	6.905096	0.444589	6.086458	7.833843
3538	7.448891	1.060311	5.635435	9.845907
3561	7.049964	0.376730	6.348938	7.828395
3579	6.279694	1.050510	4.524219	8.716322
3599	6.252327	1.049633	4.499281	8.688410
3620	6.350482	1.046870	4.597132	8.772560
3641	6.398793	1.099481	4.569190	8.961007
3664	6.371128	1.135165	4.493191	9.033951
3688	6.301868	1.008071	4.605829	8.622451
3714	6.249062	1.020925	4.536824	8.607515
3740	6.265859	1.055374	4.504127	8.716671
3766	6.308902	0.997100	4.628330	8.599698

3792	6.258071	0.972481	4.614950	8.486215
3818	6.247263	1.090341	4.437402	8.795304
3844	6.288329	0.995009	4.611570	8.574756
3871	6.277597	1.001419	4.592060	8.581818
3898	6.296077	1.032606	4.565268	8.683080
3923	6.210285	1.052114	4.455591	8.656009
3949	6.322995	1.058064	4.554977	8.777270
3973	6.261208	1.051657	4.504920	8.702204
3996	6.234446	1.101731	4.409368	8.814942
4013	6.387115	1.091058	4.569841	8.927059

[199 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

Negative Binomial Regression Scatter plot ECB on Milford-SFarm



Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	191
Model:	GLM	Df Residuals:	186
Model Family:	Poisson	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -1077.5  
Date: Fri, 08 May 2020 Deviance: 1772.5  
Time: 08:04:32 Pearson chi2: 2.45e+03  
No. Iterations: 5 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	1.2233	0.286	4.283	0.000	0.664	1.783
tempf	-0.1229	0.024	-5.068	0.000	-0.170	-0.075
dwpf	0.0699	0.014	4.993	0.000	0.042	0.097
drct	-0.0052	0.002	-3.391	0.001	-0.008	-0.002
feel	0.0761	0.022	3.506	0.000	0.034	0.119

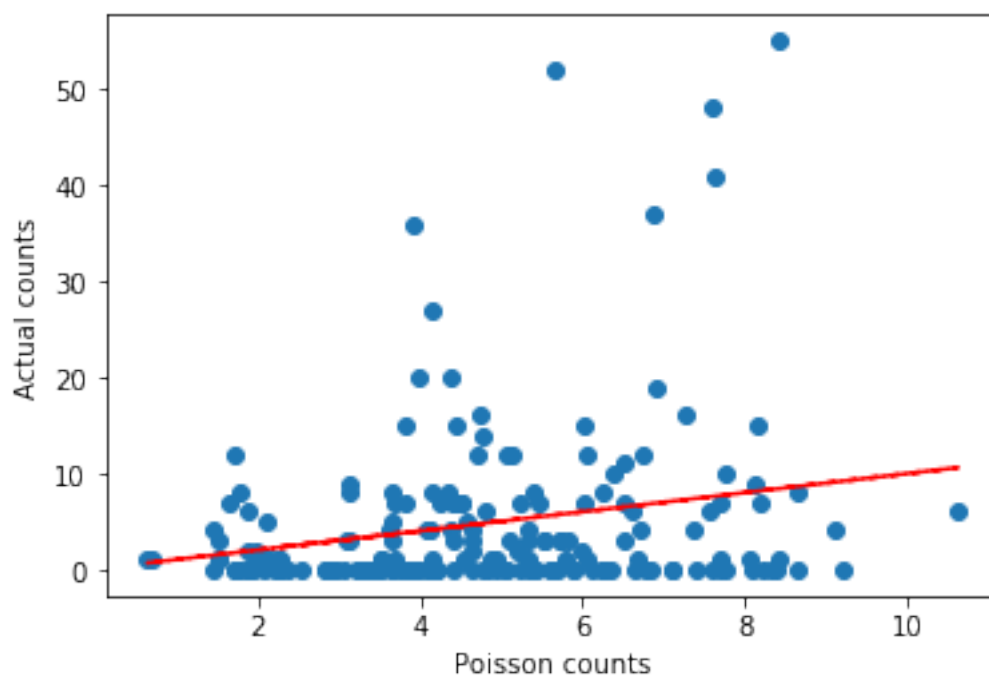
	mean	mean_se	mean_ci_lower	mean_ci_upper
47	5.059240	0.228540	4.630567	5.527598
57	4.396366	0.200517	4.020413	4.807474
68	1.644803	0.271748	1.189821	2.273769
79	3.668385	0.297789	3.128793	4.301035
90	4.626304	0.229114	4.198354	5.097876
101	7.111259	0.337456	6.479683	7.804394
112	5.437577	0.293169	4.892293	6.043636
123	8.647696	0.536144	7.658208	9.765032
134	6.508739	0.316673	5.916746	7.159964
145	6.616006	0.308508	6.038151	7.249162
156	5.092194	0.184777	4.742616	5.467539
167	5.315313	0.211325	4.916849	5.746068
178	3.477582	0.337637	2.874979	4.206492
189	5.391791	0.328855	4.784281	6.076442
200	5.702169	0.249241	5.234005	6.212209
211	4.189130	0.160309	3.886423	4.515414
222	4.406726	0.237447	3.965070	4.897577
230	6.640212	0.373857	5.946448	7.414917
248	3.978298	0.212643	3.582613	4.417685
261	7.593864	0.491574	6.689011	8.621121
274	8.127259	0.480795	7.237499	9.126405
289	8.636148	0.658890	7.436664	10.029101
305	7.700681	0.417212	6.924881	8.563395
321	5.895889	0.260463	5.406867	6.429139
337	8.071666	0.595351	6.985221	9.327092
353	7.555890	0.469178	6.690072	8.533760
369	6.892192	0.502938	5.973698	7.951909
385	6.055675	0.310718	5.476299	6.696347
401	5.115964	0.204325	4.730767	5.532524
417	3.812417	0.251490	3.350040	4.338613
...	...	...	...	...
3102	4.364169	0.177089	4.030524	4.725433
3130	4.404593	0.188513	4.050187	4.790010
3159	4.882889	0.168898	4.562827	5.225402

3189	5.330343	0.236613	4.886191	5.814869
3221	5.888090	0.227524	5.458620	6.351349
3253	4.071259	0.260749	3.590975	4.615780
3284	5.712947	0.395540	4.988002	6.543253
3315	3.662776	0.224678	3.247858	4.130701
3348	5.540360	0.218050	5.129057	5.984645
3382	7.704984	0.478626	6.821752	8.702571
3417	6.838486	0.277098	6.316390	7.403737
3452	5.024396	0.277637	4.508669	5.599114
3585	1.703749	0.269531	1.249530	2.323082
3605	1.888398	0.297546	1.386672	2.571660
3626	1.724028	0.267692	1.271678	2.337283
3647	1.519328	0.241484	1.112654	2.074640
3670	1.507509	0.244726	1.096674	2.072251
3695	1.870340	0.282755	1.390713	2.515381
3721	1.786146	0.276865	1.318180	2.420245
3747	1.868280	0.294563	1.371630	2.544762
3773	1.953605	0.291699	1.457945	2.617777
3799	2.258069	0.329437	1.696495	3.005536
3825	2.388608	0.373423	1.758216	3.245022
3851	1.972984	0.295210	1.471505	2.645364
3878	2.121446	0.317688	1.581845	2.845117
3905	1.871949	0.289760	1.382089	2.535432
3930	1.974560	0.312919	1.447358	2.693795
3954	1.706424	0.267340	1.255256	2.319753
3978	2.286969	0.351805	1.691687	3.091724
4001	2.219633	0.355174	1.622094	3.037289

[191 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

### Poisson Regression Scatter plot ECB on Hollis-KFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          191
Model:                  GLM           Df Residuals:              186
Model Family:          NegativeBinomial  Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                 IRLS          Log-Likelihood:            -663.84
Date:                   Fri, 08 May 2020  Deviance:                  850.04
Time:                   08:04:33         Pearson chi2:              1.13e+03
No. Iterations:         7               Covariance Type:          nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	1.1125	0.386	2.879	0.004	0.355	1.870
tempf	-0.1182	0.028	-4.180	0.000	-0.174	-0.063
dwpf	0.0744	0.020	3.738	0.000	0.035	0.113
drct	-0.0047	0.002	-2.145	0.032	-0.009	-0.000
feel	0.0683	0.024	2.877	0.004	0.022	0.115

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
47      5.064799  0.320581      4.473884      5.733764
57      4.433262  0.281375      3.914699      5.020516
68      1.696258  0.390346      1.080467      2.663006

```

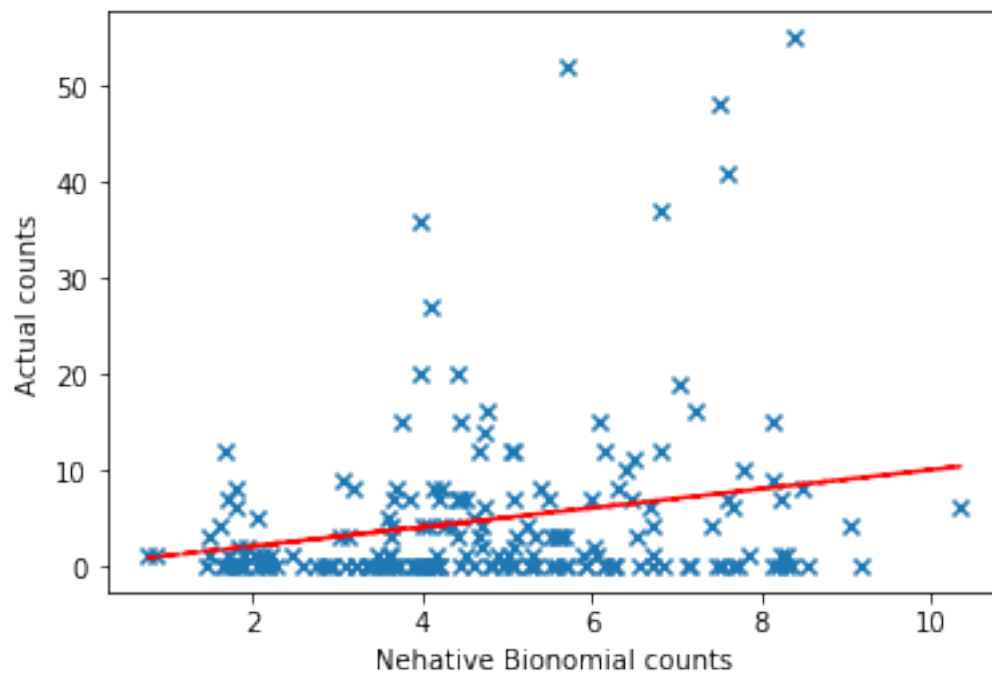
79	3.612665	0.400907	2.906482	4.490429
90	4.681360	0.324916	4.085953	5.363531
101	7.152152	0.529842	6.185553	8.269800
112	5.526771	0.429693	4.745616	6.436508
123	8.542730	0.818237	7.080553	10.306854
134	6.452908	0.456494	5.617453	7.412615
145	6.676502	0.475447	5.806751	7.676527
156	5.109783	0.269164	4.608551	5.665530
167	5.299909	0.297460	4.747820	5.916196
178	3.572325	0.481366	2.743171	4.652101
189	5.283780	0.467749	4.442135	6.284890
200	5.703051	0.371769	5.019025	6.480300
211	4.188357	0.215025	3.787426	4.631730
222	4.460524	0.333472	3.852560	5.164430
230	6.577061	0.558283	5.569024	7.767561
248	3.968854	0.286528	3.445192	4.572111
261	7.502889	0.738911	6.185847	9.100344
274	8.153804	0.748036	6.811933	9.760008
289	8.480060	0.980469	6.760558	10.636904
305	7.600922	0.621689	6.475084	8.922513
321	5.947601	0.383455	5.241589	6.748707
337	8.239102	0.907618	6.639137	10.224642
353	7.679288	0.717797	6.393778	9.223258
369	7.039191	0.758000	5.699843	8.693258
385	6.139876	0.468934	5.286265	7.131326
401	5.076048	0.295986	4.527849	5.690620
417	3.864779	0.349760	3.236617	4.614854
...	...	...	...	...
3102	4.404037	0.242809	3.952951	4.906597
3130	4.422044	0.261082	3.938831	4.964538
3159	4.876741	0.242821	4.423305	5.376658
3189	5.321114	0.331485	4.709513	6.012141
3221	5.923601	0.342848	5.288345	6.635168
3253	4.138187	0.363444	3.483789	4.915508
3284	5.615474	0.557673	4.622252	6.822119
3315	3.682928	0.304386	3.132155	4.330553
3348	5.572882	0.315475	4.987629	6.226809
3382	7.841105	0.726742	6.538601	9.403070
3417	6.846736	0.435576	6.044102	7.755958
3452	4.955940	0.387152	4.252372	5.775916
3585	1.647689	0.323156	1.121843	2.420018
3605	1.817660	0.355479	1.238921	2.666747
3626	1.677969	0.323641	1.149760	2.448843
3647	1.489361	0.296216	1.008570	2.199347
3670	1.482220	0.302448	0.993629	2.211062
3695	1.817949	0.340663	1.259146	2.624746
3721	1.729432	0.331809	1.187386	2.518924
3747	1.797383	0.352067	1.224360	2.638591

3773	1.896851	0.351015	1.319828	2.726147
3799	2.181874	0.394734	1.530505	3.110462
3825	2.283029	0.449169	1.552544	3.357214
3851	1.912710	0.354485	1.330132	2.750449
3878	2.049633	0.380839	1.424019	2.950098
3905	1.812622	0.347890	1.244340	2.640435
3930	1.895816	0.373042	1.289152	2.787970
3954	1.665720	0.324716	1.136759	2.440818
3978	2.195582	0.422150	1.506216	3.200458
4001	2.121564	0.425757	1.431649	3.143951

[191 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

Negative Binomial Regression Scatter plot ECB on Hollis-KFarm



Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	163
Model:	GLM	Df Residuals:	158
Model Family:	Poisson	Df Model:	4
Link Function:	log	Scale:	1.0000



Method: IRLS Log-Likelihood: -322.17  
Date: Fri, 08 May 2020 Deviance: 520.07  
Time: 08:04:33 Pearson chi2: 811.  
No. Iterations: 5 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-2.1163	1.071	-1.976	0.048	-4.215	-0.017
tempf	0.0267	0.032	0.822	0.411	-0.037	0.090
dwpf	0.0215	0.032	0.680	0.496	-0.040	0.083
drct	0.0090	0.003	2.726	0.006	0.003	0.015
feel	-0.0286	0.018	-1.606	0.108	-0.063	0.006

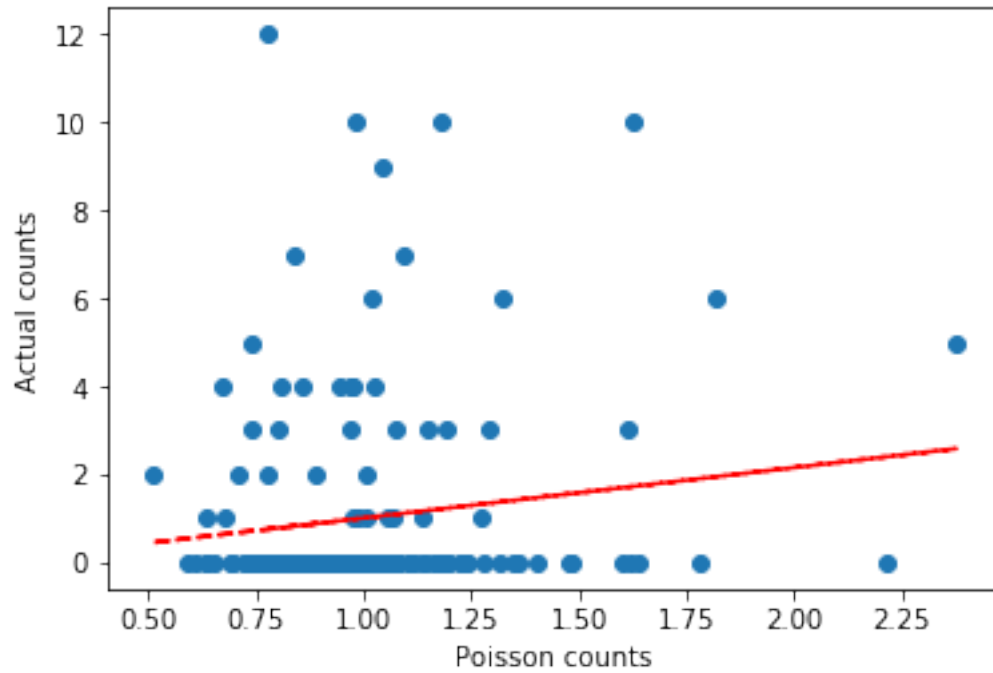
	mean	mean_se	mean_ci_lower	mean_ci_upper
49	0.778037	0.120643	0.574133	1.054360
60	1.045603	0.110482	0.850013	1.286198
71	2.376034	0.707417	1.325636	4.258740
82	1.040399	0.174471	0.748957	1.445251
93	1.137787	0.109607	0.942024	1.374232
104	0.876232	0.110494	0.684355	1.121907
115	1.139230	0.135835	0.901819	1.439141
126	0.706054	0.116815	0.510516	0.976487
137	0.909659	0.128757	0.689281	1.200497
148	0.970094	0.115637	0.767978	1.225401
159	0.986955	0.082157	0.838379	1.161862
170	0.971123	0.082958	0.821412	1.148121
181	1.615239	0.292576	1.132543	2.303663
192	0.738877	0.112798	0.547806	0.996594
203	0.793466	0.121631	0.587554	1.071543
214	0.886479	0.114136	0.688770	1.140939
225	1.184900	0.118773	0.973550	1.442131
278	0.768911	0.119337	0.567241	1.042281
293	0.611400	0.117034	0.420135	0.889738
309	0.792025	0.120479	0.587839	1.067136
325	1.072784	0.125765	0.852558	1.349897
341	1.002434	0.181486	0.702990	1.429428
357	1.006107	0.158404	0.738973	1.369808
373	1.023337	0.177272	0.728727	1.437051
389	1.019310	0.124995	0.801542	1.296244
405	0.854381	0.087813	0.698498	1.045052
421	1.290261	0.148095	1.030333	1.615762
437	1.272764	0.188090	0.952701	1.700353
453	0.857177	0.108704	0.668535	1.099048
469	1.184717	0.177017	0.883956	1.587810
...	...	...	...	...
2770	0.759386	0.164259	0.496985	1.160330
2792	0.828158	0.115016	0.630808	1.087249
2813	1.045149	0.110564	0.849438	1.285952

2836	0.899162	0.104816	0.715504	1.129961
2857	1.618245	0.313634	1.106807	2.366010
2880	0.945296	0.083266	0.795409	1.123428
2903	1.358231	0.179390	1.048455	1.759532
2926	1.138929	0.113012	0.937637	1.383435
2948	0.916384	0.122525	0.705127	1.190933
2969	1.478619	0.296306	0.998345	2.189936
2989	1.170918	0.205801	0.829696	1.652473
3007	1.400886	0.227995	1.018285	1.927242
3057	0.507418	0.159723	0.273797	0.940380
3079	1.054164	0.172479	0.764958	1.452710
3106	1.003625	0.093022	0.836907	1.203554
3134	1.045454	0.090204	0.882798	1.238080
3163	0.928803	0.079789	0.784876	1.099122
3193	1.024493	0.112885	0.825502	1.271450
3225	0.999815	0.102754	0.817409	1.222925
3257	1.315065	0.159153	1.037367	1.667102
3288	0.813485	0.146111	0.572090	1.156738
3319	1.199968	0.133050	0.965585	1.491245
3352	0.985536	0.102350	0.804032	1.208012
3386	1.064637	0.182965	0.760181	1.491028
3421	0.892562	0.105328	0.708257	1.124827
3456	0.884061	0.116194	0.683294	1.143819
3486	0.957779	0.090952	0.795123	1.153710
3515	0.979030	0.092844	0.812970	1.179010
3542	1.482055	0.318816	0.972202	2.259293
3565	0.921304	0.101611	0.742204	1.143622

[163 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

Poisson Regression Scatter plot ECB on Nashua-SFarm



#### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          163
Model:                  GLM           Df Residuals:                158
Model Family:          NegativeBinomial    Df Model:                  4
Link Function:          log              Scale:                  1.0000
Method:                 IRLS             Log-Likelihood:           -275.53
Date:                   Fri, 08 May 2020    Deviance:                 401.36
Time:                   08:04:33           Pearson chi2:             657.
No. Iterations:         6                  Covariance Type:         nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-1.9777	1.192	-1.659	0.097	-4.314	0.359
tempf	0.0248	0.037	0.670	0.503	-0.048	0.097
dwpf	0.0223	0.035	0.637	0.524	-0.046	0.091
drct	0.0085	0.004	2.274	0.023	0.001	0.016
feel	-0.0287	0.021	-1.352	0.176	-0.070	0.013

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
49    0.794829  0.135629    0.568887    1.110509
60    1.045604  0.123687    0.829234    1.318432
71    2.235699  0.774373    1.133927    4.408000

```

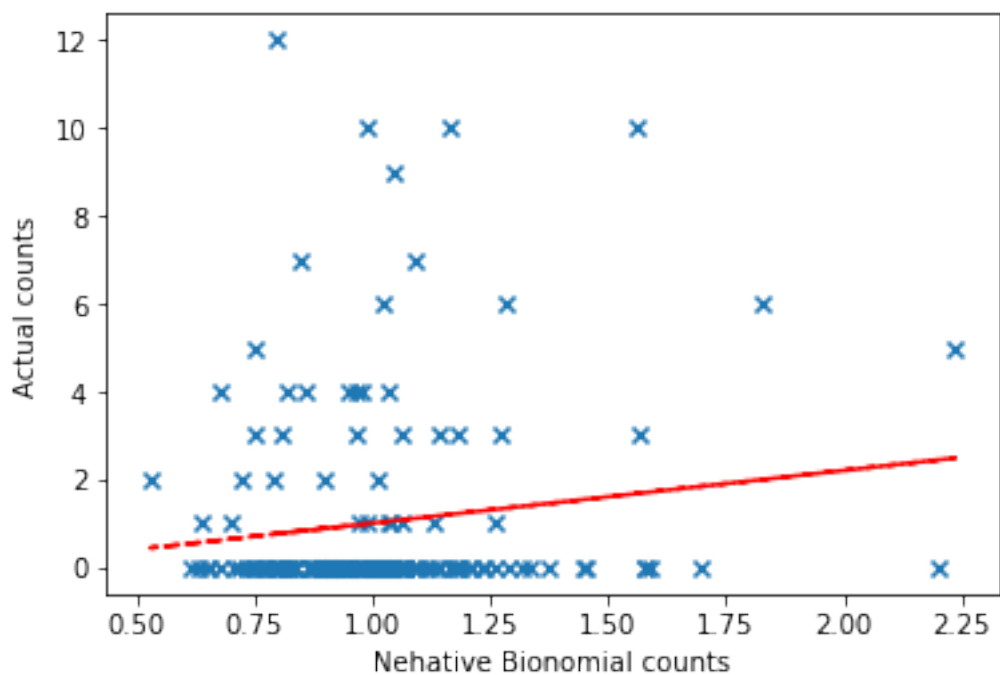
82	1.024162	0.192454	0.708625	1.480201
93	1.130225	0.123785	0.911884	1.400846
104	0.888019	0.123524	0.676114	1.166338
115	1.134166	0.151935	0.872265	1.474705
126	0.721146	0.132522	0.503039	1.033820
137	0.909929	0.142681	0.669168	1.237313
148	0.975986	0.128692	0.753713	1.263809
159	0.988176	0.091129	0.824777	1.183945
170	0.970928	0.092082	0.806232	1.169268
181	1.568983	0.328663	1.040669	2.365505
192	0.748271	0.125811	0.538198	1.040342
203	0.809971	0.136866	0.581616	1.127983
214	0.894928	0.126607	0.678215	1.180890
225	1.172993	0.134792	0.936442	1.469297
278	0.787286	0.135368	0.562050	1.102785
293	0.630276	0.134598	0.414718	0.957874
309	0.800437	0.134748	0.575484	1.113321
325	1.068209	0.139771	0.826570	1.380488
341	1.012100	0.203208	0.682842	1.500122
357	1.012753	0.176758	0.719352	1.425822
373	1.032756	0.198729	0.708279	1.505882
389	1.024009	0.139439	0.784144	1.337246
405	0.860394	0.096745	0.690217	1.072529
421	1.268971	0.169126	0.977249	1.647777
437	1.259557	0.211059	0.906953	1.749245
453	0.870615	0.121617	0.662097	1.144804
469	1.176491	0.198983	0.844546	1.638907
...	...	...	...	...
2770	0.767274	0.184727	0.478649	1.229939
2792	0.836284	0.128343	0.619044	1.129760
2813	1.041970	0.122870	0.826953	1.312894
2836	0.909325	0.116854	0.706862	1.169780
2857	1.574867	0.350401	1.018252	2.435750
2880	0.951077	0.092508	0.786000	1.150824
2903	1.332874	0.204341	0.986945	1.800053
2926	1.126121	0.127174	0.902522	1.405116
2948	0.918945	0.136041	0.687507	1.228293
2969	1.452468	0.332258	0.927664	2.274167
2989	1.164851	0.230389	0.790527	1.716424
3007	1.374187	0.257593	0.951671	1.984288
3057	0.529051	0.184496	0.267090	1.047941
3079	1.039613	0.190344	0.726146	1.488399
3106	1.006157	0.103439	0.822539	1.230764
3134	1.042332	0.101194	0.861723	1.260796
3163	0.932446	0.087865	0.775200	1.121588
3193	1.018294	0.125287	0.800100	1.295992
3225	1.000268	0.113983	0.800055	1.250583
3257	1.291384	0.180455	0.981998	1.698243

3288	0.816391	0.162500	0.552675	1.205943
3319	1.179934	0.150328	0.919204	1.514621
3352	0.985789	0.113499	0.786648	1.235342
3386	1.066001	0.203348	0.733473	1.549284
3421	0.899541	0.117055	0.697039	1.160874
3456	0.883948	0.128423	0.664907	1.175147
3486	0.960823	0.100662	0.782467	1.179833
3515	0.975645	0.102785	0.793629	1.199407
3542	1.444913	0.355097	0.892592	2.339001
3565	0.928393	0.112546	0.732056	1.177389

[163 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

Negative Binomial Regression Scatter plot ECB on Nashua-SFarm



Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	187
Model:	GLM	Df Residuals:	182
Model Family:	Poisson	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -425.36  
Date: Fri, 08 May 2020 Deviance: 669.50  
Time: 08:04:34 Pearson chi2: 1.31e+03  
No. Iterations: 5 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-2.4901	0.607	-4.103	0.000	-3.680	-1.301
tempf	-0.0696	0.047	-1.473	0.141	-0.162	0.023
dwpf	0.0262	0.027	0.962	0.336	-0.027	0.080
drct	0.0084	0.003	3.008	0.003	0.003	0.014
feel	0.0752	0.042	1.796	0.073	-0.007	0.157

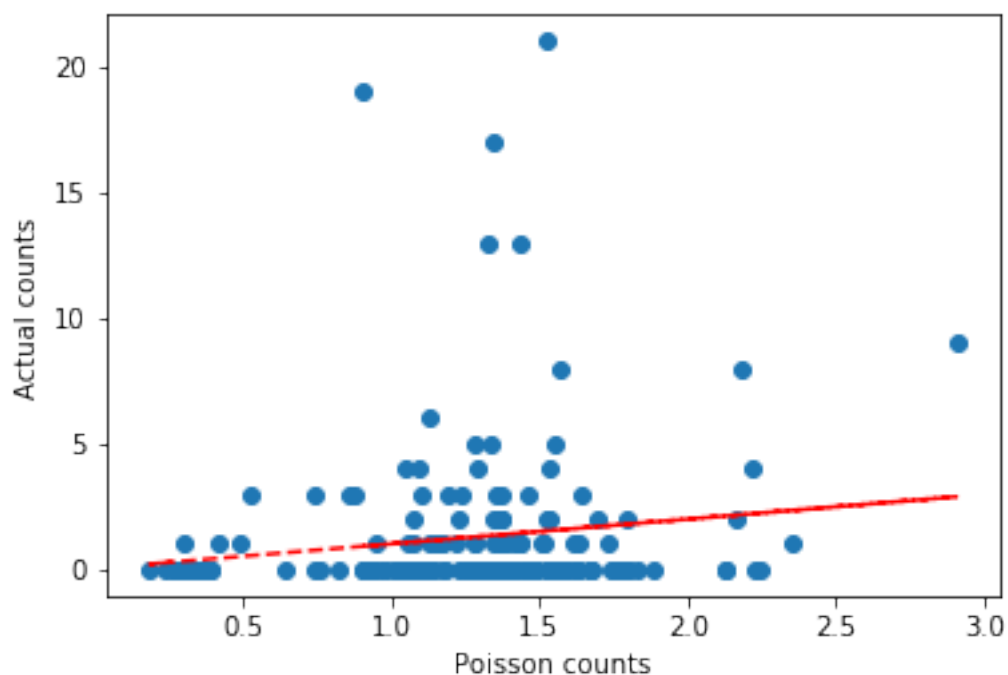
	mean	mean_se	mean_ci_lower	mean_ci_upper
50	0.907620	0.093562	0.741579	1.110838
61	1.348726	0.106953	1.154580	1.575519
72	2.905320	0.739734	1.763871	4.785434
83	1.571888	0.218965	1.196324	2.065354
94	1.554303	0.127456	1.323536	1.825307
105	1.277773	0.134702	1.039251	1.571040
116	1.610688	0.161322	1.323603	1.960041
127	1.151056	0.154488	0.884816	1.497406
138	1.527519	0.155771	1.250790	1.865473
149	1.431888	0.142549	1.178065	1.740400
160	1.376136	0.094478	1.202880	1.574347
171	1.465581	0.109050	1.266701	1.695686
182	2.177040	0.334434	1.611039	2.941892
193	1.074637	0.136495	0.837812	1.378405
204	1.013485	0.102166	0.831784	1.234879
215	1.064766	0.084481	0.911419	1.243914
226	1.628802	0.138954	1.378008	1.925239
252	1.520631	0.124576	1.295060	1.785492
265	0.875126	0.121727	0.666303	1.149396
279	1.104186	0.142037	0.858120	1.420813
294	0.941842	0.149393	0.690180	1.285269
310	1.353919	0.160446	1.073300	1.707908
326	1.629064	0.141087	1.374734	1.930445
342	1.485102	0.227873	1.099381	2.006154
358	1.515411	0.198250	1.172666	1.958333
374	1.417298	0.209915	1.060205	1.894664
390	1.424970	0.148557	1.161624	1.748018
406	1.194645	0.100232	1.013495	1.408173
422	1.742155	0.171685	1.436161	2.113345
438	1.793762	0.228783	1.397010	2.303193
...	...	...	...	...
3194	1.594316	0.129165	1.360234	1.868680
3226	1.472694	0.117606	1.259324	1.722215
3258	1.807756	0.177157	1.491845	2.190564

3289	1.273620	0.178656	0.967471	1.676647
3320	1.626656	0.148148	1.360732	1.944549
3353	1.389240	0.113081	1.184380	1.629533
3387	1.671655	0.220265	1.291185	2.164238
3422	1.358649	0.125521	1.133620	1.628347
3457	1.342965	0.143929	1.088527	1.656876
3487	1.379031	0.105556	1.186916	1.602242
3516	1.374876	0.108560	1.177749	1.604997
3543	1.379050	0.240787	0.979394	1.941793
3566	1.121446	0.084198	0.967989	1.299231
3590	0.323459	0.120131	0.156203	0.669808
3610	0.299413	0.111352	0.144446	0.620631
3631	0.346137	0.125444	0.170123	0.704259
3652	0.390837	0.142215	0.191543	0.797489
3675	0.422194	0.155025	0.205571	0.867088
3700	0.361290	0.127672	0.180742	0.722190
3726	0.347780	0.126253	0.170724	0.708456
3752	0.294891	0.109783	0.142159	0.611716
3778	0.352923	0.123603	0.177651	0.701121
3804	0.340091	0.117009	0.173276	0.667503
3830	0.267422	0.098264	0.130145	0.549502
3856	0.348439	0.122462	0.174970	0.693889
3883	0.324590	0.114646	0.162439	0.648606
3935	0.293448	0.109816	0.140926	0.611043
3959	0.375629	0.136135	0.184615	0.764278
3983	0.284903	0.103367	0.139916	0.580131
4006	0.262017	0.098737	0.125190	0.548391

[187 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

Poisson Regression Scatter plot ECB on Antrim-TFarm



#### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          187
Model:                  GLM           Df Residuals:              182
Model Family:          NegativeBinomial    Df Model:                  4
Link Function:          log             Scale:                  1.0000
Method:                 IRLS            Log-Likelihood:           -354.57
Date:                   Fri, 08 May 2020    Deviance:                 499.83
Time:                   08:04:34           Pearson chi2:             1.07e+03
No. Iterations:         6                 Covariance Type:         nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-2.4860	0.667	-3.725	0.000	-3.794	-1.178
tempf	-0.0704	0.050	-1.405	0.160	-0.169	0.028
dwpf	0.0264	0.030	0.868	0.386	-0.033	0.086
drct	0.0078	0.003	2.467	0.014	0.002	0.014
feel	0.0768	0.044	1.751	0.080	-0.009	0.163

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
50      0.912500  0.102112      0.732792      1.136280
61      1.337041  0.119596      1.122034      1.593248
72      2.718562  0.801592      1.525299      4.845333

```



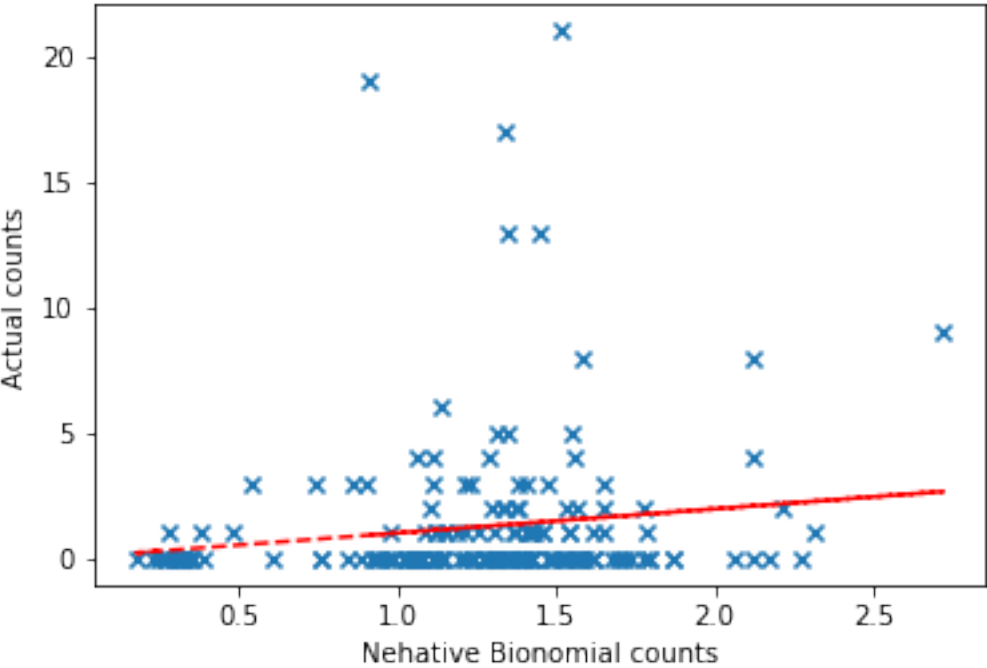
83	1.578450	0.246744	1.161904	2.144327
94	1.546798	0.144850	1.287427	1.858422
105	1.301132	0.152421	1.034207	1.636949
116	1.612084	0.182365	1.291507	2.012234
127	1.199412	0.179062	0.895140	1.607111
138	1.568488	0.176438	1.258144	1.955383
149	1.450933	0.161018	1.167306	1.803475
160	1.382182	0.106078	1.189155	1.606542
171	1.476253	0.122048	1.255417	1.735935
182	2.117335	0.375440	1.495742	2.997245
193	1.099993	0.154407	0.835421	1.448352
204	1.019816	0.112812	0.821036	1.266722
215	1.059813	0.091390	0.895012	1.254960
226	1.616795	0.158544	1.334092	1.959404
252	1.515107	0.141282	1.262030	1.818933
265	0.902717	0.139616	0.666659	1.222362
279	1.133155	0.162257	0.855865	1.500284
294	0.985400	0.174522	0.696399	1.394334
310	1.402791	0.183622	1.085357	1.813064
326	1.648004	0.159802	1.362762	1.992951
342	1.509612	0.258575	1.079112	2.111854
358	1.540335	0.224837	1.157094	2.050509
374	1.424803	0.236037	1.029776	1.971366
390	1.433081	0.167192	1.140155	1.801264
406	1.210418	0.111682	1.010176	1.450352
422	1.714971	0.196045	1.370731	2.145661
438	1.774533	0.257308	1.335548	2.357810
...	...	...	...	...
3194	1.614145	0.146071	1.351803	1.927399
3226	1.492233	0.132612	1.253694	1.776157
3258	1.790212	0.202554	1.434151	2.234673
3289	1.314099	0.204117	0.969197	1.781739
3320	1.616220	0.168816	1.317017	1.983395
3353	1.410368	0.126179	1.183530	1.680682
3387	1.704779	0.250157	1.278686	2.272858
3422	1.390294	0.142056	1.137977	1.698555
3457	1.366883	0.162314	1.083062	1.725081
3487	1.397511	0.118551	1.183444	1.650299
3516	1.382237	0.121876	1.162866	1.642992
3543	1.307847	0.259172	0.886904	1.928578
3566	1.118170	0.091681	0.952173	1.313105
3590	0.299793	0.119718	0.137058	0.655749
3610	0.279848	0.111913	0.127797	0.612808
3631	0.320153	0.124837	0.149090	0.687488
3652	0.357653	0.140286	0.165801	0.771503
3675	0.384804	0.152485	0.176985	0.836648
3700	0.335670	0.127553	0.159390	0.706913
3726	0.322667	0.125909	0.150178	0.693272

3752	0.275750	0.110406	0.125808	0.604398
3778	0.329084	0.123923	0.157315	0.688405
3804	0.320464	0.118525	0.155224	0.661606
3830	0.254751	0.100910	0.117204	0.553715
3856	0.325257	0.122891	0.155102	0.682079
3883	0.304859	0.115779	0.144821	0.641752
3935	0.275061	0.110684	0.125000	0.605272
3959	0.346060	0.135003	0.161096	0.743393
3983	0.269827	0.105402	0.125482	0.580216
4006	0.248298	0.100805	0.112047	0.550235

[187 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

Negative Binomial Regression Scatter plot ECB on Antrim-TFarm



Generalized Linear Model Regression Results

=====			
Dep. Variable:	trap_count	No. Observations:	188
Model:	GLM	Df Residuals:	183
Model Family:	Poisson	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -690.43  
Date: Fri, 08 May 2020 Deviance: 1140.6  
Time: 08:04:34 Pearson chi2: 1.95e+03  
No. Iterations: 6 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-1.0679	0.377	-2.832	0.005	-1.807	-0.329
tempf	-0.1008	0.025	-3.966	0.000	-0.151	-0.051
dwpf	0.1100	0.022	5.058	0.000	0.067	0.153
drct	0.0105	0.002	4.896	0.000	0.006	0.015
feel	0.0166	0.019	0.875	0.382	-0.021	0.054

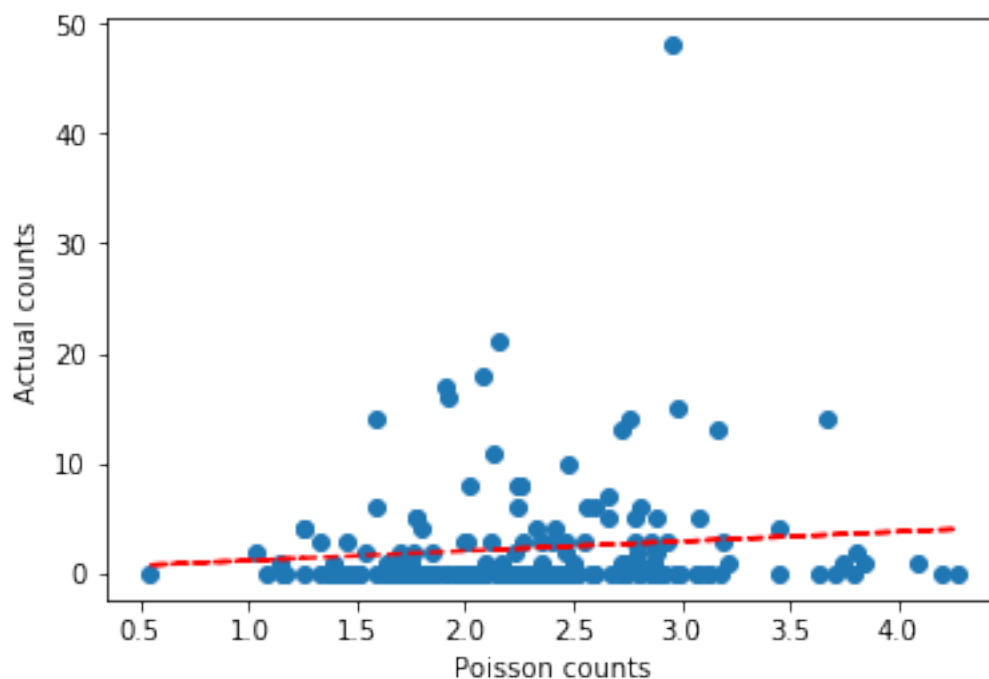
	mean	mean_se	mean_ci_lower	mean_ci_upper
51	2.135297	0.136076	1.884576	2.419374
62	2.725980	0.151390	2.444840	3.039449
73	3.670244	0.740426	2.471585	5.450223
84	1.591954	0.193500	1.254493	2.020192
95	2.867669	0.173475	2.547048	3.228650
106	2.787594	0.206756	2.410436	3.223764
117	3.218573	0.228646	2.800233	3.699410
128	1.987946	0.199611	1.632807	2.420328
139	2.084413	0.162107	1.789720	2.427631
150	2.961067	0.205906	2.583793	3.393430
161	2.477537	0.125786	2.242870	2.736755
172	2.398418	0.132800	2.151760	2.673350
183	3.801792	0.445041	3.022358	4.782234
194	1.512547	0.156798	1.234438	1.853313
205	2.440222	0.158502	2.148526	2.771520
216	2.140121	0.110236	1.934611	2.367461
227	2.885522	0.185674	2.543621	3.273380
233	2.015452	0.175111	1.699873	2.389619
237	2.152302	0.173046	1.838511	2.519650
253	2.151736	0.153193	1.871491	2.473947
266	1.915801	0.193180	1.572241	2.334432
280	2.661975	0.245083	2.222469	3.188397
296	1.684952	0.203223	1.330221	2.134279
312	2.007788	0.178232	1.687161	2.389347
328	2.781207	0.168703	2.469454	3.132317
344	3.795308	0.419745	3.055679	4.713966
360	3.452822	0.319539	2.880052	4.139501
376	3.841676	0.413082	3.111674	4.742937
392	3.163882	0.231871	2.740554	3.652600
408	1.909998	0.129739	1.671915	2.181986
...	...	...	...	...
3228	2.581416	0.146912	2.308952	2.886031
3260	2.924308	0.219561	2.524142	3.387915
3291	1.501786	0.173398	1.197643	1.883167

3322	2.226490	0.174148	1.910041	2.595367
3355	2.306208	0.135035	2.056166	2.586656
3389	3.452530	0.313277	2.890020	4.124527
3424	2.422258	0.160339	2.127530	2.757813
3459	1.715679	0.156314	1.435107	2.051106
3489	2.445869	0.135689	2.193871	2.726811
3518	1.992614	0.136478	1.742299	2.278892
3545	2.391650	0.311911	1.852195	3.088222
3568	2.271114	0.111716	2.062379	2.500975
3592	1.589900	0.284694	1.119309	2.258342
3612	1.457132	0.261833	1.024580	2.072298
3633	1.775920	0.311630	1.259095	2.504889
3654	2.022257	0.364410	1.420529	2.878872
3677	2.236986	0.413527	1.557081	3.213775
3702	1.797104	0.306194	1.286897	2.509588
3728	1.687948	0.294715	1.198780	2.376723
3754	1.418763	0.255862	0.996329	2.020304
3780	1.746203	0.294385	1.254858	2.429938
3806	1.630522	0.270075	1.178517	2.255888
3832	1.250662	0.229496	0.872860	1.791988
3858	1.707554	0.288509	1.226182	2.377900
3885	1.592367	0.271037	1.140671	2.222932
3911	1.642004	0.287738	1.164698	2.314917
3937	1.421706	0.257424	0.996978	2.027375
3961	1.959062	0.346456	1.385208	2.770647
3985	1.382983	0.245965	0.975955	1.959765
4008	1.257721	0.234763	0.872370	1.813291

[188 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

Poisson Regression Scatter plot ECB on Jaffrey-CFarm



#### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          188
Model:                  GLM           Df Residuals:              183
Model Family:          NegativeBinomial    Df Model:                  4
Link Function:          log             Scale:                  1.0000
Method:                 IRLS            Log-Likelihood:           -465.87
Date:                   Fri, 08 May 2020    Deviance:                 625.17
Time:                   08:04:35           Pearson chi2:             1.10e+03
No. Iterations:         7                 Covariance Type:         nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-1.2719	0.493	-2.581	0.010	-2.238	-0.306
tempf	-0.1099	0.032	-3.480	0.001	-0.172	-0.048
dwpf	0.1276	0.029	4.466	0.000	0.072	0.184
drct	0.0117	0.003	4.093	0.000	0.006	0.017
feel	0.0113	0.022	0.502	0.615	-0.033	0.055

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
51      2.145073  0.177015      1.824734      2.521650
62      2.784646  0.213539      2.396052      3.236262
73      3.764237  1.033618      2.197588      6.447740

```

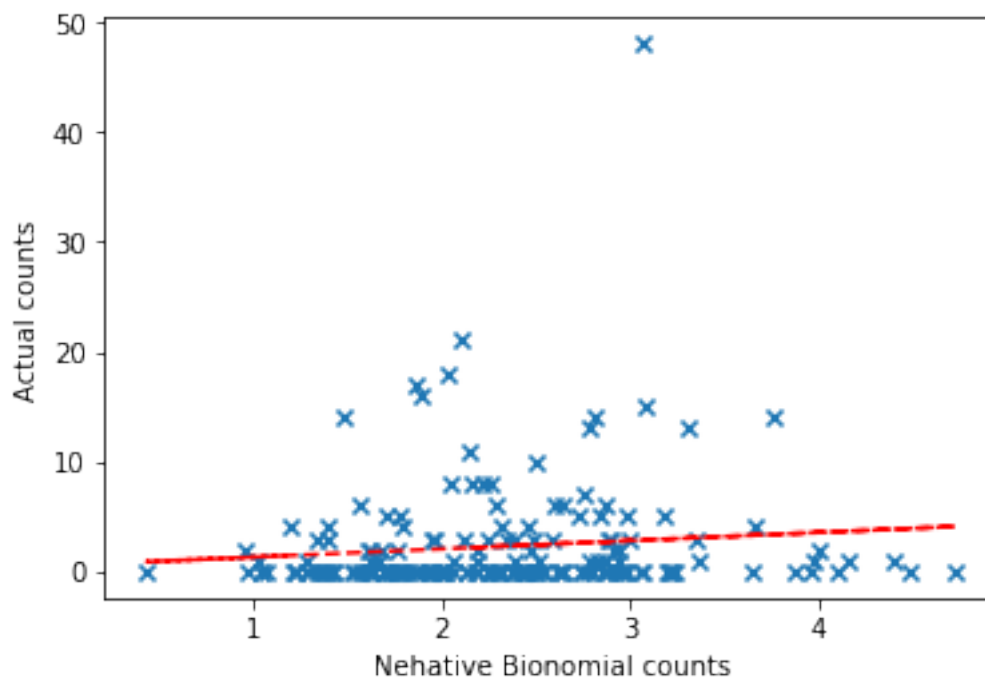
84	1.472473	0.229657	1.084646	1.998971
95	2.937512	0.246499	2.492021	3.462641
106	2.877530	0.288254	2.364565	3.501775
117	3.360544	0.330814	2.770874	4.075702
128	1.951493	0.257866	1.506229	2.528383
139	2.027750	0.202544	1.667214	2.466253
150	3.068331	0.290974	2.547895	3.695072
161	2.492222	0.170084	2.180196	2.848904
172	2.386111	0.173986	2.068352	2.752689
183	4.004501	0.647601	2.916712	5.497981
194	1.418584	0.188767	1.092919	1.841289
205	2.485823	0.214591	2.098888	2.944090
216	2.126515	0.140975	1.867407	2.421576
227	2.950106	0.263024	2.477119	3.513408
233	2.006893	0.229261	1.604299	2.510515
237	2.175531	0.228047	1.771492	2.671724
253	2.097592	0.194651	1.748766	2.515998
266	1.893828	0.252043	1.459006	2.458237
280	2.750923	0.339391	2.160045	3.503436
296	1.626721	0.258495	1.191385	2.221130
312	1.953751	0.225053	1.558904	2.448608
328	2.833757	0.233370	2.411366	3.330137
344	4.102752	0.614211	3.059457	5.501816
360	3.667102	0.461298	2.865809	4.692441
376	4.162449	0.607797	3.126491	5.541670
392	3.315420	0.333703	2.721846	4.038439
408	1.853464	0.160859	1.563544	2.197143
...	...	...	...	...
3228	2.611845	0.199734	2.248299	3.034177
3260	2.984423	0.308410	2.437234	3.654463
3291	1.398914	0.207169	1.046489	1.870026
3322	2.181781	0.224528	1.783255	2.669371
3355	2.301892	0.176004	1.981534	2.674043
3389	3.652752	0.450232	2.868814	4.650910
3424	2.436563	0.213820	2.051543	2.893841
3459	1.624399	0.188647	1.293718	2.039604
3489	2.460546	0.181712	2.128973	2.843760
3518	1.931961	0.169527	1.626697	2.294510
3545	2.387343	0.416821	1.695502	3.361488
3568	2.276163	0.146600	2.006228	2.582418
3592	1.557440	0.348305	1.004729	2.414203
3612	1.413435	0.316980	0.910718	2.193653
3633	1.767867	0.388252	1.149508	2.718862
3654	2.042979	0.464217	1.308728	3.189176
3677	2.286949	0.535788	1.444895	3.619734
3702	1.788481	0.381111	1.177877	2.715618
3728	1.663483	0.362868	1.084774	2.550924
3754	1.371555	0.308766	0.882246	2.132242

3780	1.732782	0.364980	1.146709	2.618391
3806	1.603858	0.331577	1.069525	2.405142
3832	1.192912	0.274869	0.759408	1.873878
3858	1.688851	0.356326	1.116860	2.553783
3885	1.563454	0.332139	1.030995	2.370901
3911	1.618620	0.354148	1.054157	2.485331
3937	1.374400	0.310659	0.882498	2.140487
3961	1.972157	0.437987	1.276151	3.047760
3985	1.336333	0.297412	0.863919	2.067077
4008	1.200664	0.280963	0.758988	1.899365

[188 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

Negative Binomial Regression Scatter plot ECB on Jaffrey-CFarm



Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	53
Model:	GLM	Df Residuals:	48
Model Family:	Poisson	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -26.613  
Date: Fri, 08 May 2020 Deviance: 33.242  
Time: 08:04:35 Pearson chi2: 49.4  
No. Iterations: 6 Covariance Type: nonrobust

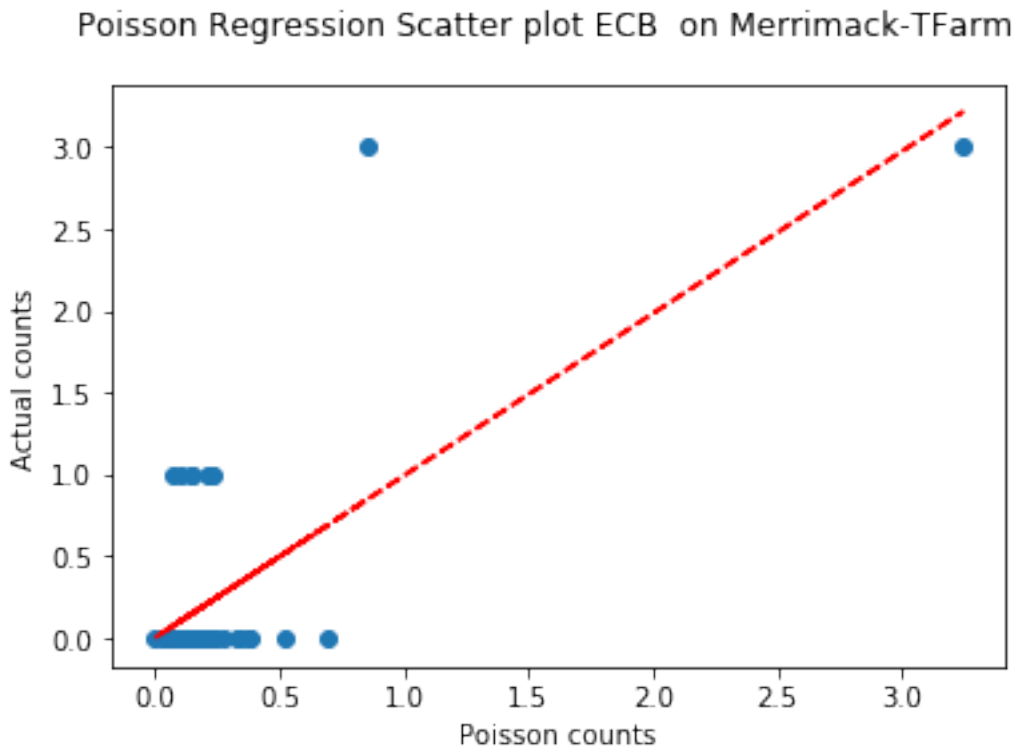
	coef	std err	z	P> z	[0.025	0.975]
Intercept	1.5494	7.281	0.213	0.831	-12.721	15.820
tempf	-2.9333	1.193	-2.458	0.014	-5.272	-0.594
dwpf	0.1158	0.172	0.674	0.500	-0.221	0.453
drct	0.0056	0.016	0.346	0.729	-0.026	0.037
feel	2.7651	1.088	2.543	0.011	0.634	4.897

	mean	mean_se	mean_ci_lower	mean_ci_upper
53	0.125423	0.064141	4.603388e-02	0.341727
64	0.067594	0.113023	2.550488e-03	1.791404
75	0.168994	0.182480	2.035849e-02	1.402806
86	0.105198	0.058959	3.507131e-02	0.315549
97	0.229813	0.095612	1.016806e-01	0.519410
108	0.121668	0.077346	3.499909e-02	0.422956
119	0.385793	0.233374	1.178813e-01	1.262596
130	0.518391	0.285816	1.759324e-01	1.527459
141	0.243559	0.101222	1.078578e-01	0.549994
152	0.138355	0.057947	6.088177e-02	0.314415
163	0.695903	0.362045	2.510204e-01	1.929247
174	0.115731	0.114150	1.674448e-02	0.799881
185	0.139323	0.115095	2.759571e-02	0.703400
196	0.165739	0.110735	4.474132e-02	0.613957
207	0.041838	0.027294	1.164819e-02	0.150273
218	0.118513	0.069238	3.771143e-02	0.372443
242	0.177230	0.115328	4.950391e-02	0.634503
255	0.151223	0.109210	3.671951e-02	0.622787
268	0.178644	0.103456	5.741693e-02	0.555821
282	0.175337	0.149733	3.288281e-02	0.934924
298	0.853376	0.413694	3.299900e-01	2.206886
314	0.157598	0.106498	4.191274e-02	0.592594
330	0.196420	0.161222	3.931100e-02	0.981422
346	0.222794	0.151805	5.860290e-02	0.847005
362	0.207270	0.146993	5.162694e-02	0.832142
378	0.151449	0.076675	5.614698e-02	0.408516
394	0.095326	0.060126	2.769057e-02	0.328167
410	0.118679	0.081227	3.103057e-02	0.453898
426	0.337469	0.227091	9.024828e-02	1.261908
442	0.141452	0.064475	5.789246e-02	0.345618
458	0.084980	0.065930	1.857529e-02	0.388776
474	0.135439	0.089545	3.706601e-02	0.494893
490	0.158600	0.128711	3.232334e-02	0.778199
506	0.024797	0.032004	1.976176e-03	0.311155



574	0.214153	0.156456	5.115128e-02	0.896590
591	0.157358	0.103970	4.310028e-02	0.574509
608	0.180141	0.108950	5.505575e-02	0.589414
625	0.210004	0.134705	5.973535e-02	0.738285
642	0.151744	0.071060	6.060428e-02	0.379942
659	0.080698	0.061715	1.802548e-02	0.361271
676	0.273147	0.130886	1.067870e-01	0.698674
693	0.375322	0.222219	1.176056e-01	1.197789
710	0.091342	0.073406	1.890651e-02	0.441298
727	0.332883	0.154566	1.339855e-01	0.827039
744	3.242167	1.656002	1.191426e+00	8.822745
761	0.235146	0.092104	1.091262e-01	0.506693
778	0.077012	0.062252	1.579390e-02	0.375512
795	0.071303	0.036806	2.592560e-02	0.196105
812	0.045520	0.048199	5.713237e-03	0.362671
828	0.049446	0.030374	1.483353e-02	0.164820
844	0.115875	0.113167	1.708774e-02	0.785770
860	0.146799	0.157298	1.797396e-02	1.198956
875	0.000023	0.000053	2.661570e-07	0.002059

<Figure size 432x288 with 0 Axes>



# Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          53
Model:                  GLM           Df Residuals:              48
Model Family:          NegativeBinomial Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                IRLS          Log-Likelihood:           -32.939
Date:                  Fri, 08 May 2020 Deviance:                 10.672
Time:                  08:04:35       Pearson chi2:             15.2
No. Iterations:        11            Covariance Type:         nonrobust
=====

```

```

=====
              coef      std err          z      P>|z|      [0.025      0.975]
-----
Intercept      0.0345      13.782      0.003      0.998     -26.978      27.047
tempf         -3.1796       3.354     -0.948      0.343     -9.754       3.395
dwpf           0.2357       0.337       0.700      0.484     -0.425       0.896
drct           0.0192       0.032       0.606      0.544     -0.043       0.081
feel           2.9056       3.122       0.931      0.352     -3.212       9.024
=====

```

```

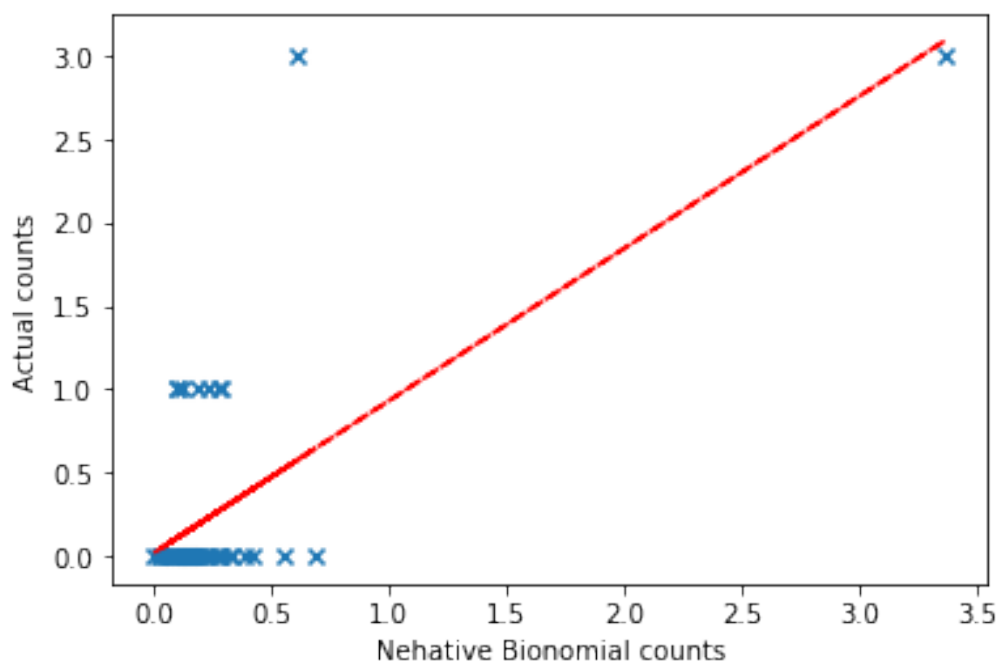
=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
-----
53    0.144411  0.121795  2.765045e-02  0.754219
64    0.126131  0.330258  7.448329e-04  21.359241
75    0.099995  0.205201  1.791510e-03  5.581349
86    0.121147  0.114712  1.893729e-02  0.775005
97    0.243087  0.193058  5.125603e-02  1.152865
108   0.154059  0.175350  1.655192e-02  1.433916
119   0.260025  0.339948  2.005315e-02  3.371695
130   0.386477  0.545799  2.426731e-02  6.154977
141   0.278137  0.222749  5.788462e-02  1.336450
152   0.133720  0.097733  3.192085e-02  0.560167
163   0.687756  1.101740  2.977601e-02  15.885564
174   0.195279  0.306683  8.991978e-03  4.240880
185   0.073992  0.123800  2.786008e-03  1.965085
196   0.165809  0.197273  1.610221e-02  1.707391
207   0.035608  0.051314  2.112950e-03  0.600076
218   0.139139  0.130197  2.223086e-02  0.870849
242   0.153123  0.177165  1.585585e-02  1.478734
255   0.103362  0.137430  7.631233e-03  1.399986
268   0.174109  0.188512  2.085466e-02  1.453583
282   0.095874  0.165126  3.278289e-03  2.803822
298   0.608575  0.942455  2.924975e-02  12.662120
314   0.162309  0.202944  1.399715e-02  1.882119
330   0.283502  0.438286  1.369703e-02  5.867960
346   0.291221  0.371713  2.386451e-02  3.553793
362   0.325973  0.437995  2.341337e-02  4.538375
378   0.189240  0.174518  3.104795e-02  1.153435
394   0.066473  0.086385  5.205698e-03  0.848823
410   0.146835  0.154687  1.862555e-02  1.157577
=====

```

426	0.557116	0.775762	3.636478e-02	8.535133
442	0.147972	0.122064	2.937769e-02	0.745322
458	0.114977	0.152025	8.612681e-03	1.534920
474	0.151350	0.180493	1.461778e-02	1.567056
490	0.155032	0.224228	9.105409e-03	2.639635
506	0.019886	0.046729	1.987767e-04	1.989456
574	0.235749	0.323542	1.600513e-02	3.472482
591	0.127455	0.149472	1.279722e-02	1.269395
608	0.186557	0.208951	2.076987e-02	1.675675
625	0.220925	0.251662	2.369289e-02	2.060026
642	0.177813	0.141239	3.748382e-02	0.843494
659	0.053540	0.084801	2.401524e-03	1.193650
676	0.323991	0.301405	5.232019e-02	2.006299
693	0.422944	0.508286	4.011663e-02	4.459036
710	0.070920	0.106217	3.766443e-03	1.335398
727	0.280425	0.288035	3.745567e-02	2.099501
744	3.367409	8.143726	2.942757e-02	385.334054
761	0.276776	0.211998	6.168007e-02	1.241970
778	0.096577	0.122040	8.114137e-03	1.149479
795	0.070697	0.075260	8.775507e-03	0.569554
812	0.030743	0.060212	6.615723e-04	1.428571
828	0.053541	0.066106	4.761423e-03	0.602063
844	0.075436	0.131293	2.489498e-03	2.285860
860	0.155225	0.306157	3.251559e-03	7.410187
875	0.000015	0.000117	5.202777e-12	45.437211

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot ECB on Merrimack-TFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          157
Model:                  GLM           Df Residuals:                152
Model Family:           Poisson       Df Model:                    4
Link Function:          log           Scale:                      1.0000
Method:                  IRLS          Log-Likelihood:             -596.34
Date:                   Fri, 08 May 2020    Deviance:                   942.62
Time:                   08:04:35           Pearson chi2:               1.37e+03
No. Iterations:         5                 Covariance Type:           nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	2.1606	0.618	3.497	0.000	0.950	3.372
tempf	-0.0289	0.023	-1.231	0.218	-0.075	0.017
dwpf	0.0033	0.018	0.186	0.853	-0.032	0.038
drct	-0.0034	0.002	-1.606	0.108	-0.008	0.001
feel	0.0142	0.016	0.869	0.385	-0.018	0.046

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
55    2.743641    0.200992    2.376679    3.167261
66    1.799927    0.409467    1.152429    2.811223
77    2.441498    0.252956    1.992811    2.991208

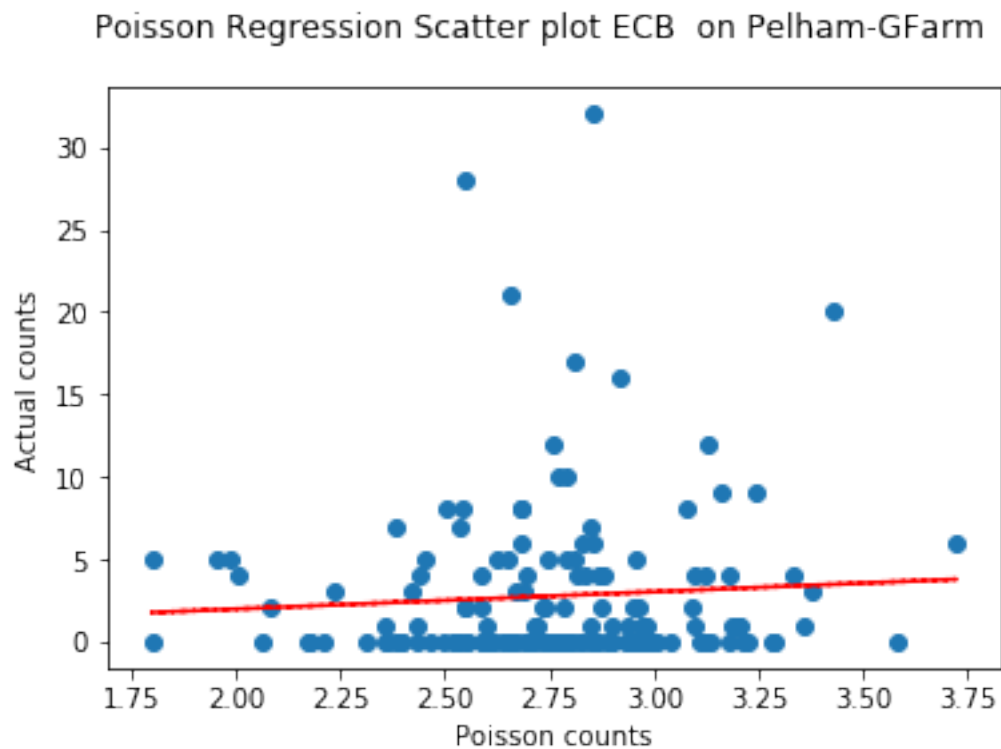
```

88	2.586995	0.180719	2.255970	2.966592
99	2.962500	0.215283	2.569225	3.415973
110	2.607463	0.203854	2.237022	3.039246
121	3.111744	0.304394	2.568849	3.769374
132	2.691375	0.225842	2.283217	3.172497
143	2.810022	0.198096	2.447390	3.226386
154	2.740276	0.144035	2.472027	3.037633
165	2.731247	0.146610	2.458496	3.034258
176	2.211533	0.299748	1.695598	2.884457
187	2.979518	0.242283	2.540561	3.494318
198	3.182633	0.283878	2.672163	3.790620
209	2.943495	0.220195	2.542068	3.408313
220	2.527574	0.189679	2.181858	2.928069
246	2.548648	0.170358	2.235700	2.905402
259	3.426258	0.354186	2.797873	4.195774
272	3.179985	0.287092	2.664267	3.795529
286	3.330333	0.379757	2.663332	4.164377
302	2.897911	0.258091	2.433750	3.450595
318	2.596870	0.188568	2.252379	2.994049
334	2.850757	0.301105	2.317683	3.506440
350	2.796001	0.257185	2.334755	3.348370
366	2.876259	0.302130	2.341075	3.533789
382	2.787537	0.210898	2.403372	3.233109
398	2.856122	0.154368	2.569040	3.175285
414	2.423728	0.219107	2.030180	2.893565
430	2.524997	0.258204	2.066416	3.085346
446	3.038165	0.225370	2.627058	3.513606
...	...	...	...	...
2556	3.226911	0.275878	2.729073	3.815564
2655	2.713954	0.175765	2.390429	3.081265
2675	2.770824	0.155033	2.483034	3.091969
2697	1.954706	0.349014	1.377523	2.773728
2719	2.652307	0.180986	2.320280	3.031848
2741	2.697111	0.197817	2.335976	3.114076
2762	2.785464	0.362052	2.159032	3.593652
2784	2.878540	0.231744	2.458353	3.370547
2805	2.619152	0.171910	2.302988	2.978722
2828	2.899374	0.194434	2.542273	3.306636
2850	2.233299	0.310714	1.700283	2.933408
2872	2.761655	0.147245	2.487627	3.065869
2895	2.395463	0.249795	1.952664	2.938673
2918	2.468111	0.171588	2.153710	2.828408
2940	2.701811	0.213784	2.313676	3.155057
3033	2.993180	0.382508	2.329996	3.845125
3049	3.722563	0.639211	2.658766	5.211996
3071	2.435605	0.243522	2.002167	2.962876
3098	2.761806	0.167618	2.452068	3.110668
3126	2.680905	0.163729	2.378464	3.021803

3155	2.801311	0.138951	2.541792	3.087327
3185	2.584029	0.177839	2.257957	2.957188
3217	2.689445	0.166496	2.382140	3.036393
3249	2.366626	0.213797	1.982593	2.825047
3280	2.739594	0.288251	2.229079	3.367028
3311	2.396237	0.193575	2.045347	2.807323
3344	2.663442	0.166353	2.356563	3.010284
3378	2.669199	0.267214	2.193649	3.247841
3413	2.827686	0.191127	2.476837	3.228234
3448	2.707568	0.202242	2.338832	3.134439

[157 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



# Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	157
Model:	GLM	Df Residuals:	152
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -420.98  
Date: Fri, 08 May 2020 Deviance: 526.49  
Time: 08:04:36 Pearson chi2: 759.  
No. Iterations: 7 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	2.2113	0.832	2.659	0.008	0.581	3.841
tempf	-0.0299	0.030	-0.981	0.327	-0.090	0.030
dwpf	0.0033	0.024	0.137	0.891	-0.044	0.050
drct	-0.0031	0.003	-1.088	0.277	-0.009	0.002
feel	0.0139	0.021	0.677	0.498	-0.026	0.054

	mean	mean_se	mean_ci_lower	mean_ci_upper
55	2.777837	0.270561	2.295091	3.362124
66	1.877465	0.559374	1.047041	3.366509
77	2.435187	0.332390	1.863579	3.182123
88	2.604563	0.239041	2.175771	3.117858
99	2.943793	0.289815	2.427207	3.570325
110	2.613691	0.270900	2.133193	3.202420
121	3.041226	0.401632	2.347669	3.939677
132	2.646539	0.297412	2.123353	3.298635
143	2.797407	0.265362	2.322793	3.368998
154	2.744911	0.192160	2.392980	3.148600
165	2.729911	0.194253	2.374539	3.138468
176	2.254045	0.400294	1.591469	3.192469
187	2.949446	0.324329	2.377607	3.658817
198	3.202855	0.388252	2.525540	4.061817
209	2.978662	0.301746	2.442262	3.632873
220	2.547701	0.250187	2.101646	3.088426
246	2.562480	0.222975	2.160692	3.038982
259	3.389242	0.474939	2.575269	4.460489
272	3.148867	0.385150	2.477654	4.001916
286	3.252884	0.500078	2.406635	4.396700
302	2.837595	0.340524	2.242861	3.590032
318	2.580266	0.249104	2.135442	3.117749
334	2.831837	0.402169	2.143795	3.740703
350	2.775567	0.343233	2.178162	3.536822
366	2.884281	0.406739	2.187770	3.802537
382	2.790952	0.283070	2.287809	3.404747
398	2.845563	0.208258	2.465309	3.284467
414	2.455509	0.289402	1.949038	3.093591
430	2.552190	0.344788	1.958484	3.325875
446	3.043296	0.306513	2.498121	3.707448
...	...	...	...	...
2556	3.184274	0.369576	2.536398	3.997638
2655	2.742963	0.235916	2.317448	3.246609
2675	2.789933	0.208172	2.410355	3.229287

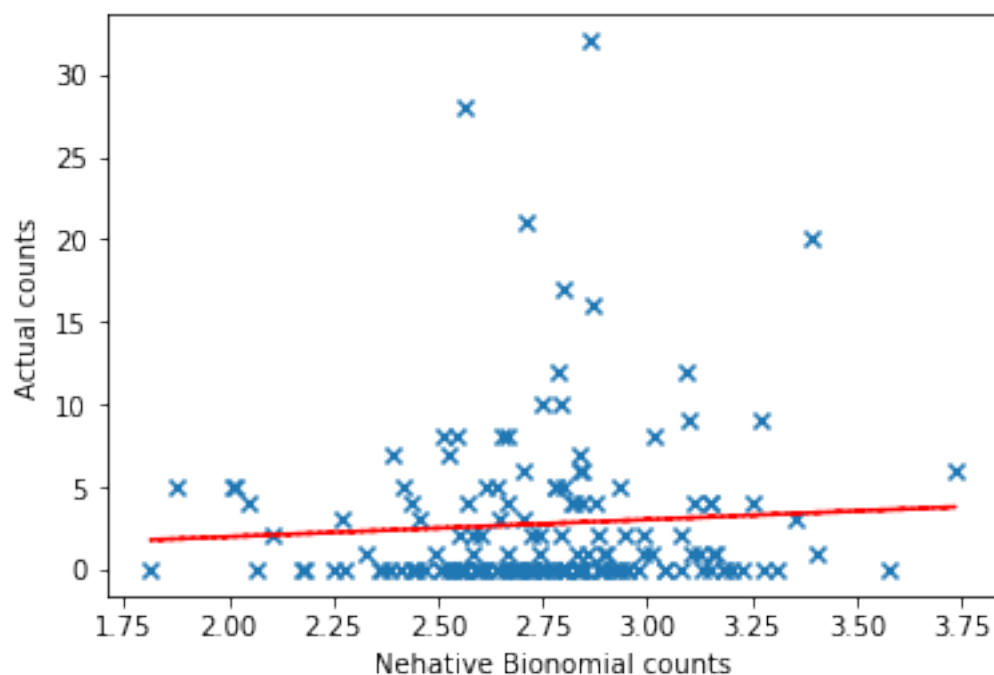
2697	2.011152	0.468995	1.273348	3.176455
2719	2.642122	0.239117	2.212674	3.154918
2741	2.662466	0.261447	2.196333	3.227526
2762	2.725811	0.472147	1.941138	3.827676
2784	2.826769	0.307076	2.284667	3.497500
2805	2.603647	0.227025	2.194631	3.088891
2828	2.879967	0.261417	2.410589	3.440739
2850	2.271849	0.415487	1.587477	3.251257
2872	2.756927	0.195254	2.399610	3.167451
2895	2.439406	0.332430	1.867612	3.186263
2918	2.469260	0.223649	2.067620	2.948920
2940	2.658325	0.281948	2.159373	3.272566
3033	2.935655	0.504125	2.096682	4.110337
3049	3.734929	0.868347	2.368009	5.890895
3071	2.436709	0.320810	1.882508	3.154064
3098	2.785862	0.225656	2.376905	3.265181
3126	2.703163	0.217538	2.308720	3.164995
3155	2.806480	0.187024	2.462849	3.198057
3185	2.565801	0.233583	2.146507	3.067000
3217	2.672448	0.220997	2.272582	3.142672
3249	2.383269	0.280903	1.891676	3.002614
3280	2.684708	0.378404	2.036677	3.538931
3311	2.407869	0.252702	1.960201	2.957775
3344	2.640813	0.219821	2.243281	3.108792
3378	2.637399	0.354294	2.026889	3.431798
3413	2.793233	0.254946	2.335693	3.340401
3448	2.682117	0.267408	2.206037	3.260939

[157 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



## Negative Binomial Regression Scatter plot ECB on Pelham-GFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          181
Model:                  GLM           Df Residuals:              176
Model Family:           Poisson       Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                 IRLS          Log-Likelihood:            -717.81
Date:                   Fri, 08 May 2020    Deviance:                  1190.5
Time:                   08:04:36           Pearson chi2:              2.00e+03
No. Iterations:         6                Covariance Type:          nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	0.3714	0.368	1.010	0.312	-0.349	1.092
tempf	-0.1221	0.021	-5.860	0.000	-0.163	-0.081
dwpf	0.1789	0.022	8.069	0.000	0.135	0.222
drct	0.0031	0.002	1.376	0.169	-0.001	0.008
feel	-0.0319	0.012	-2.670	0.008	-0.055	-0.008

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
59      2.653870  0.164090      2.350983      2.995778
70      0.982633  0.238518      0.610628      1.581270
81      0.951925  0.129444      0.729214      1.242653

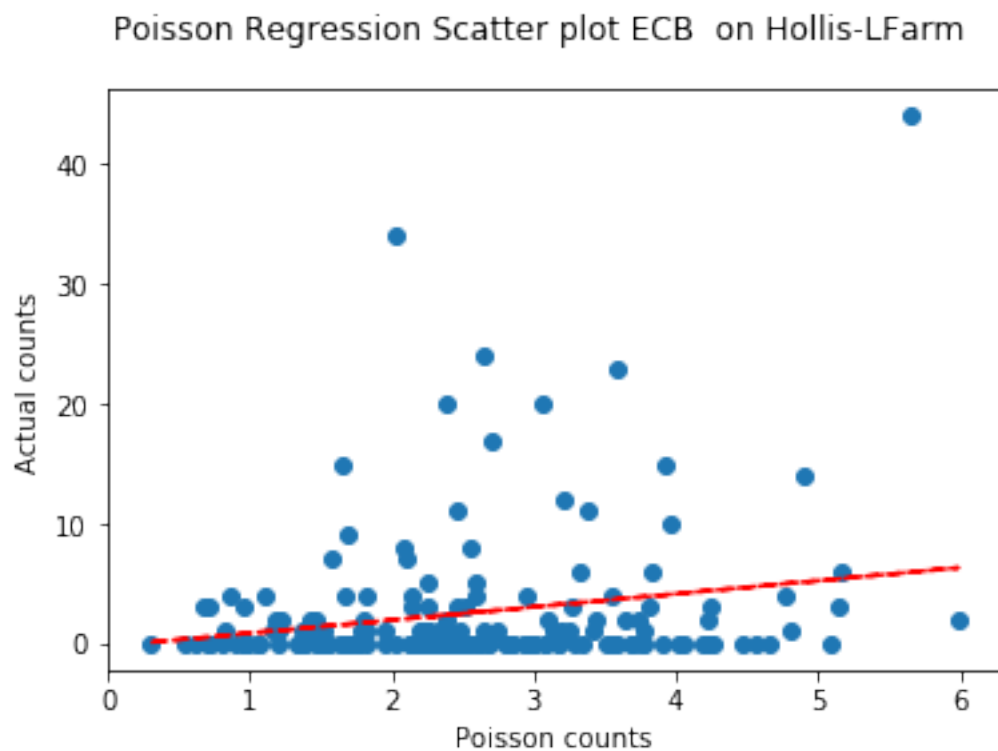
```

92	2.607492	0.179965	2.277584	2.985188
103	4.055908	0.272819	3.554941	4.627471
114	3.331446	0.244296	2.885452	3.846376
125	3.188903	0.303214	2.646706	3.842173
136	2.129881	0.161477	1.835784	2.471093
147	3.770479	0.242462	3.323989	4.276942
158	2.537620	0.134734	2.286822	2.815924
169	2.305838	0.133578	2.058346	2.583088
180	2.304275	0.317192	1.759395	3.017904
191	1.664977	0.171716	1.360255	2.037962
202	3.551304	0.205083	3.171261	3.976891
213	2.303945	0.118292	2.083381	2.547859
224	2.427972	0.184467	2.092054	2.817828
232	3.507602	0.284555	2.991964	4.112107
236	3.703705	0.267718	3.214462	4.267411
251	1.582809	0.135462	1.338381	1.871876
264	3.579724	0.346671	2.960852	4.327951
277	4.807661	0.414373	4.060398	5.692449
292	3.071739	0.362539	2.437373	3.871209
308	2.531920	0.210119	2.151843	2.979130
324	2.844039	0.173402	2.523698	3.205042
340	5.985633	0.630055	4.869806	7.357133
356	4.898251	0.424937	4.132347	5.806109
372	5.649681	0.587575	4.607843	6.927080
388	3.920303	0.275487	3.415892	4.499198
404	2.026220	0.137627	1.773660	2.314743
420	2.099685	0.198536	1.744491	2.527199
...	...	...	...	...
3105	2.555984	0.134890	2.304819	2.834520
3133	2.252501	0.140059	1.994057	2.544440
3162	2.266295	0.123501	2.036715	2.521752
3192	2.019905	0.139984	1.763359	2.313774
3224	2.822354	0.155629	2.533232	3.144475
3256	2.152474	0.196495	1.799839	2.574200
3287	1.493649	0.174165	1.188489	1.877162
3318	1.511384	0.145301	1.251820	1.824767
3351	2.492657	0.142531	2.228387	2.788268
3385	4.564704	0.385433	3.868469	5.386244
3420	3.085375	0.184531	2.744094	3.469100
3455	1.535432	0.145818	1.274657	1.849559
3589	2.137711	0.323799	1.588611	2.876606
3609	2.189059	0.331127	1.627424	2.944517
3630	2.378468	0.356104	1.773599	3.189623
3651	2.330097	0.369058	1.708261	3.178291
3674	2.462482	0.407339	1.780611	3.405472
3699	2.447152	0.354828	1.841790	3.251487
3725	2.233450	0.330617	1.670986	2.985242
3751	2.129411	0.323367	1.581242	2.867613

3777	2.485494	0.355022	1.878578	3.288488
3803	2.584195	0.360907	1.965383	3.397845
3829	2.342642	0.369525	1.719644	3.191342
3855	2.449713	0.349926	1.851512	3.241185
3882	2.503839	0.359261	1.890047	3.316960
3909	2.388154	0.353488	1.786774	3.191942
3934	2.213254	0.337518	1.641437	2.984270
3958	2.489347	0.380687	1.844651	3.359362
3982	2.457892	0.371594	1.827572	3.305604
4005	2.275120	0.362795	1.664447	3.109844

[181 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



Generalized Linear Model Regression Results			
=====			
Dep. Variable:	trap_count	No. Observations:	181
Model:	GLM	Df Residuals:	176
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -491.96  
Date: Fri, 08 May 2020 Deviance: 683.50  
Time: 08:04:36 Pearson chi2: 1.22e+03  
No. Iterations: 7 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	0.5408	0.462	1.169	0.242	-0.366	1.447
tempf	-0.1115	0.027	-4.159	0.000	-0.164	-0.059
dwpf	0.1654	0.027	6.063	0.000	0.112	0.219
drct	0.0019	0.003	0.659	0.510	-0.004	0.007
feel	-0.0312	0.016	-1.895	0.058	-0.063	0.001

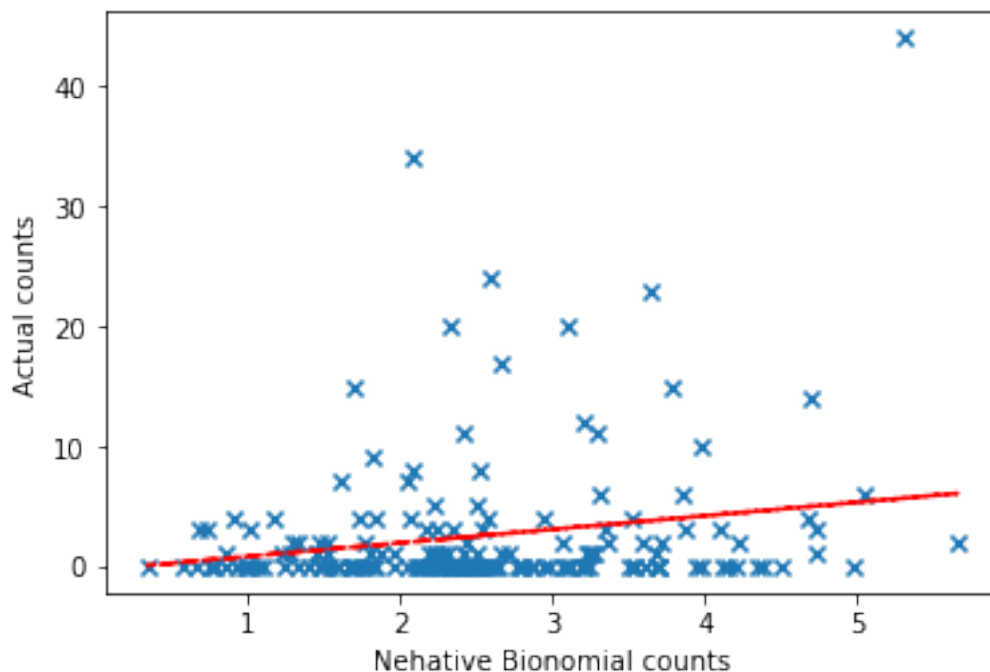
	mean	mean_se	mean_ci_lower	mean_ci_upper
59	2.599810	0.206822	2.224468	3.038485
70	0.937254	0.282129	0.519555	1.690764
81	1.007594	0.158733	0.739929	1.372084
92	2.550117	0.225093	2.144996	3.031751
103	3.975336	0.366184	3.318687	4.761913
114	3.216198	0.313223	2.657326	3.892609
125	3.270900	0.401650	2.571248	4.160933
136	2.183759	0.200851	1.823542	2.615134
147	3.675722	0.323870	3.092736	4.368602
158	2.524910	0.170000	2.212764	2.881089
169	2.310055	0.165095	2.008114	2.657395
180	2.184676	0.379831	1.553802	3.071696
191	1.760272	0.217154	1.382204	2.241751
202	3.509434	0.274664	3.010358	4.091249
213	2.314606	0.144957	2.047240	2.616890
224	2.374856	0.227669	1.968048	2.865753
232	3.546924	0.375709	2.881962	4.365315
236	3.690999	0.350997	3.063364	4.447227
251	1.606664	0.160089	1.321632	1.953168
264	3.652069	0.458484	2.855475	4.670888
277	4.726652	0.546220	3.768663	5.928159
292	3.202455	0.482212	2.384037	4.301830
308	2.603788	0.272410	2.121057	3.196382
324	2.805251	0.223533	2.399632	3.279433
340	5.658104	0.793974	4.297600	7.449307
356	4.690743	0.550177	3.727385	5.903084
372	5.313616	0.733499	4.054050	6.964520
388	3.782728	0.360966	3.137468	4.560692
404	2.080348	0.167796	1.776151	2.436643
420	2.050442	0.240828	1.628818	2.581205
...	...	...	...	...
3105	2.532398	0.169993	2.220206	2.888489
3133	2.236072	0.171205	1.924480	2.598112
3162	2.283868	0.150888	2.006480	2.599604

3192	2.044475	0.168690	1.739198	2.403336
3224	2.803378	0.202228	2.433763	3.229127
3256	2.107178	0.238826	1.687433	2.631332
3287	1.590921	0.220404	1.212618	2.087244
3318	1.529321	0.172501	1.225989	1.907703
3351	2.508759	0.179095	2.181191	2.885522
3385	4.386858	0.501777	3.505836	5.489282
3420	3.088559	0.245106	2.643657	3.608334
3455	1.605824	0.177696	1.292726	1.994754
3589	2.126988	0.402664	1.467650	3.082531
3609	2.201422	0.416014	1.520014	3.188299
3630	2.336290	0.437702	1.618283	3.372863
3651	2.253907	0.447573	1.527240	3.326326
3674	2.354570	0.488985	1.567251	3.537405
3699	2.405283	0.436489	1.685380	3.432689
3725	2.210276	0.409189	1.537671	3.177091
3751	2.148076	0.407414	1.481178	3.115246
3777	2.452057	0.438220	1.727460	3.480593
3803	2.574671	0.449868	1.828071	3.626191
3829	2.403727	0.474175	1.632946	3.538333
3855	2.423444	0.433035	1.707400	3.439779
3882	2.497239	0.448065	1.756847	3.549657
3909	2.368467	0.438358	1.647883	3.404148
3934	2.232867	0.425457	1.536994	3.243794
3958	2.418313	0.463358	1.661190	3.520512
3982	2.491090	0.470899	1.719823	3.608236
4005	2.329048	0.464277	1.575790	3.442378

[181 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot ECB on Hollis-LFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          171
Model:                  GLM           Df Residuals:                166
Model Family:           Poisson       Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                 IRLS          Log-Likelihood:            -1511.6
Date:                   Fri, 08 May 2020    Deviance:                  2706.9
Time:                   08:04:37           Pearson chi2:              6.81e+03
No. Iterations:         6                 Covariance Type:          nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	1.4918	0.246	6.064	0.000	1.010	1.974
tempf	-0.1026	0.014	-7.232	0.000	-0.130	-0.075
dwpf	0.1379	0.015	9.489	0.000	0.109	0.166
drct	0.0029	0.002	1.909	0.056	-7.84e-05	0.006
feel	-0.0198	0.009	-2.251	0.024	-0.037	-0.003

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
243      3.965721  0.220401    3.556439    4.422104
256      7.297600  0.493930    6.390978    8.332834
269      9.135287  0.551925    8.115127   10.283693

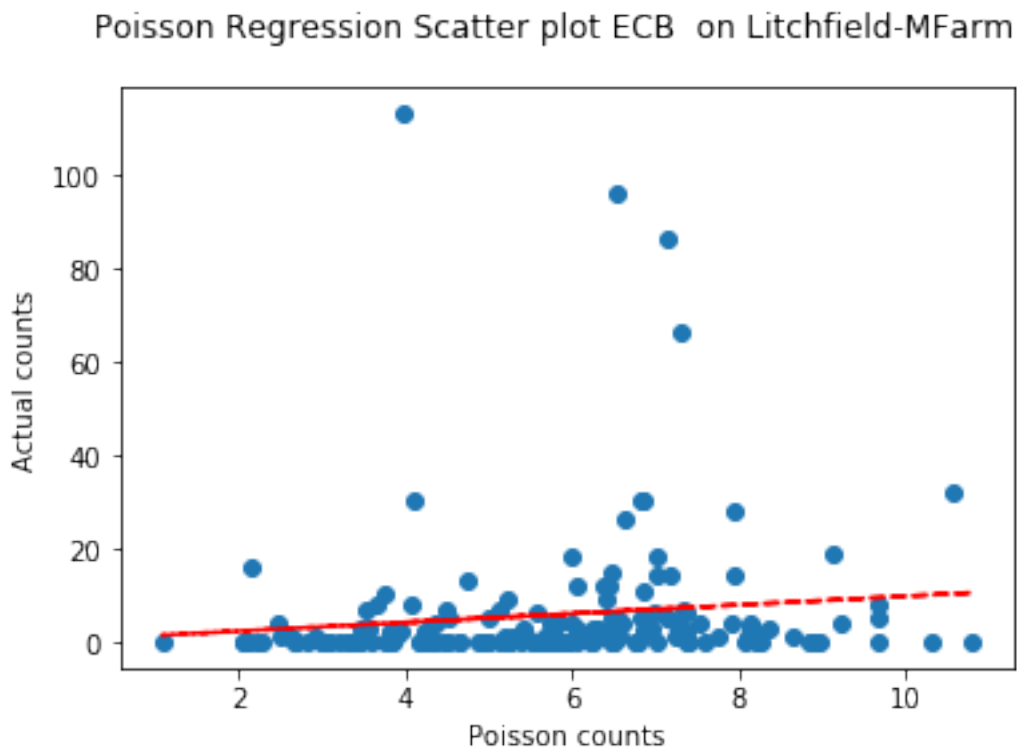
```

283	6.299169	0.514689	5.367027	7.393204
299	5.425431	0.308972	4.852430	6.066095
315	6.068818	0.257705	5.584173	6.595525
331	10.814939	0.783161	9.383925	12.464177
347	9.246845	0.558798	8.213995	10.409568
363	10.569520	0.753295	9.191571	12.154044
379	7.933751	0.391142	7.203001	8.738637
395	4.728654	0.213674	4.327871	5.166552
411	4.992562	0.318287	4.406131	5.657043
427	7.258828	0.499658	6.342705	8.307274
443	7.747835	0.327918	7.131063	8.417953
459	5.724115	0.348293	5.080608	6.449128
475	8.925982	0.453755	8.079508	9.861141
491	7.590956	0.319723	6.989479	8.244193
507	2.918318	0.254412	2.459953	3.462090
521	5.913466	0.218052	5.501170	6.356662
530	1.073485	0.203847	0.739876	1.557519
544	5.377100	0.256474	4.897202	5.904027
559	2.491780	0.242202	2.059551	3.014718
575	7.352973	0.280336	6.823551	7.923471
592	7.963785	0.471321	7.091577	8.943268
609	9.673934	0.608561	8.551777	10.943340
626	9.689655	0.599853	8.582491	10.939646
643	6.464730	0.265430	5.964880	7.006468
660	4.226098	0.214626	3.825697	4.668405
677	8.971307	0.490517	8.059632	9.986107
694	8.194746	0.438410	7.378995	9.100679
...	...	...	...	...
3277	3.594719	0.274546	3.094957	4.175181
3308	3.797106	0.237584	3.358870	4.292518
3341	5.450002	0.212835	5.048419	5.883531
3375	8.640813	0.509172	7.698328	9.698685
3410	6.412083	0.271237	5.901909	6.966358
3445	3.763251	0.232335	3.334355	4.247315
3478	5.939740	0.220504	5.522908	6.388031
3508	4.155486	0.205987	3.770751	4.579477
3535	3.384056	0.346414	2.768872	4.135919
3558	5.682187	0.187859	5.325666	6.062575
3575	4.657916	0.260398	4.174511	5.197298
3581	6.340232	0.557651	5.336276	7.533070
3601	6.398152	0.567301	5.377515	7.612502
3622	6.874002	0.596740	5.798502	8.148983
3643	6.834429	0.634914	5.696736	8.199329
3666	7.169142	0.703068	5.915494	8.688471
3690	6.974380	0.586373	5.914808	8.223763
3716	6.535427	0.561083	5.523269	7.733067
3742	6.256486	0.558099	5.252917	7.451787
3768	7.021548	0.581991	5.968701	8.260112

3794	7.137513	0.584632	6.078902	8.380475
3820	6.565568	0.632082	5.436573	7.929017
3846	6.939731	0.575676	5.898374	8.164939
3873	7.013144	0.589207	5.948389	8.268490
3900	6.855366	0.589622	5.791882	8.114121
3925	6.440425	0.578674	5.400498	7.680602
3950	7.153505	0.637017	6.007858	8.517617
3974	6.861853	0.621745	5.745330	8.195356
3997	6.486459	0.625932	5.368690	7.836950
4014	7.401174	0.680172	6.181228	8.861893

[171 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



Generalized Linear Model Regression Results

```
=====
Dep. Variable:          trap_count    No. Observations:          171
Model:                  GLM          Df Residuals:              166
Model Family:          NegativeBinomial    Df Model:                  4
Link Function:          log              Scale:                  1.0000
=====
```



Method: IRLS Log-Likelihood: -661.59  
Date: Fri, 08 May 2020 Deviance: 909.53  
Time: 08:04:37 Pearson chi2: 2.66e+03  
No. Iterations: 10 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	0.9482	0.408	2.322	0.020	0.148	1.748
tempf	-0.1237	0.024	-5.218	0.000	-0.170	-0.077
dwpf	0.1665	0.023	7.182	0.000	0.121	0.212
drct	0.0064	0.003	2.551	0.011	0.001	0.011
feel	-0.0211	0.016	-1.360	0.174	-0.051	0.009

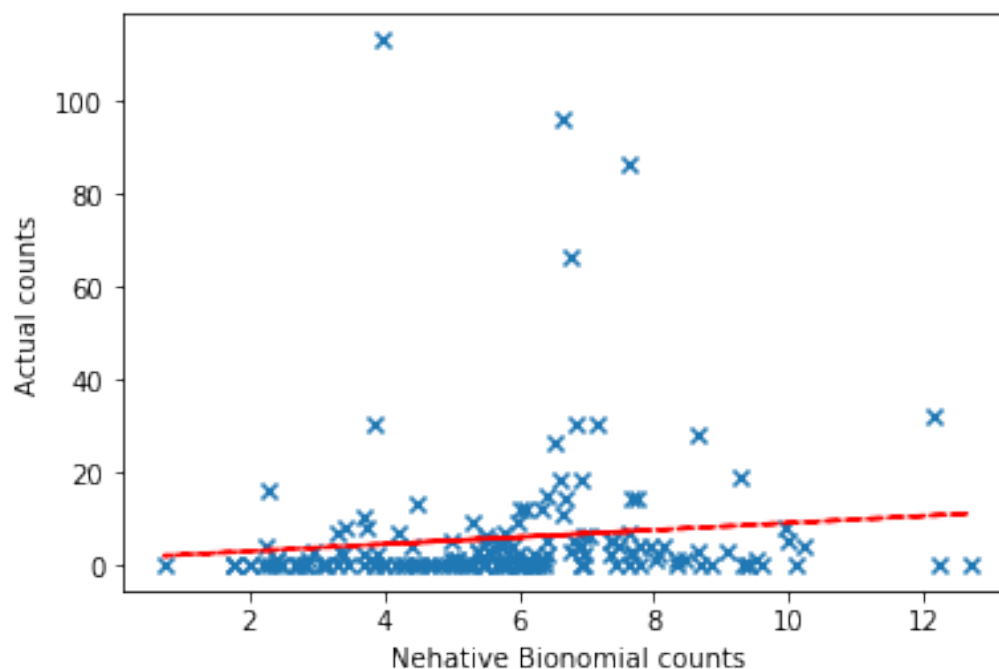
	mean	mean_se	mean_ci_lower	mean_ci_upper
243	3.963289	0.325128	3.374641	4.654616
256	6.748223	0.777827	5.383647	8.458674
269	9.288261	0.983039	7.548246	11.429382
283	5.553167	0.760333	4.246149	7.262502
299	5.077113	0.481749	4.215503	6.114828
315	6.385417	0.460270	5.544131	7.354364
331	12.245609	1.539379	9.571433	15.666927
347	10.218024	1.086415	8.295915	12.585474
363	12.140486	1.493660	9.539192	15.451141
379	8.667294	0.752164	7.311638	10.274302
395	4.484457	0.315604	3.906651	5.147724
411	5.496143	0.555314	4.508740	6.699784
427	8.459235	0.978770	6.742848	10.612527
443	8.024802	0.608041	6.917332	9.309580
459	6.371240	0.629142	5.250132	7.731749
475	9.330585	0.838198	7.824247	11.126926
491	7.625205	0.570910	6.584470	8.830437
507	2.877470	0.379290	2.222341	3.725726
521	6.057059	0.373830	5.366947	6.835910
530	0.735386	0.217583	0.411781	1.313304
544	4.972263	0.390874	4.262264	5.800532
559	2.403284	0.349525	1.807214	3.195955
575	7.620100	0.519340	6.667268	8.709102
592	7.672302	0.785759	6.276967	9.377812
609	9.976939	1.096926	8.042869	12.376096
626	9.952058	1.074521	8.053949	12.297502
643	6.912933	0.483065	6.028117	7.927624
660	3.982601	0.305588	3.426522	4.628925
677	9.575208	0.927401	7.919643	11.576862
694	8.702175	0.829313	7.219526	10.489310
...	...	...	...	...
3277	3.145929	0.373034	2.493538	3.969006
3308	3.857970	0.358644	3.215360	4.629010
3341	5.445640	0.348438	4.803802	6.173235

3375	9.535073	0.991574	7.776884	11.690751
3410	6.407353	0.473102	5.544064	7.405070
3445	3.457287	0.322343	2.879871	4.150476
3478	6.021523	0.379793	5.321314	6.813870
3508	4.029426	0.295525	3.489913	4.652345
3535	3.700317	0.592657	2.703381	5.064896
3558	5.741895	0.311332	5.162999	6.385698
3575	4.846409	0.424160	4.082465	5.753308
3581	6.124916	0.937292	4.537757	8.267211
3601	5.978677	0.921658	4.419631	8.087684
3622	6.862152	1.036005	5.104477	9.225065
3643	7.156346	1.146763	5.227466	9.796962
3666	7.741560	1.303027	5.566188	10.767109
3690	6.947307	1.016734	5.214872	9.255275
3716	6.406750	0.957292	4.780264	8.586649
3742	5.803973	0.899338	4.283807	7.863591
3768	6.913998	0.998453	5.209630	9.175961
3794	6.816351	0.972247	5.153962	9.014936
3820	5.767324	0.954607	4.169496	7.977469
3846	6.782431	0.980438	5.109042	9.003913
3873	6.678849	0.976949	5.014089	8.896337
3900	6.645632	0.995735	4.954481	8.914037
3925	5.954854	0.929364	4.385565	8.085682
3950	7.359466	1.136093	5.438072	9.959733
3974	6.231540	0.976668	4.583390	8.472353
3997	5.735675	0.953941	4.140141	7.946098
4014	7.774599	1.234437	5.695419	10.612808

[171 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot ECB on Litchfield-MFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          178
Model:                  GLM           Df Residuals:              173
Model Family:           Poisson       Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                  IRLS         Log-Likelihood:            -1552.9
Date:                   Fri, 08 May 2020    Deviance:                  2720.3
Time:                   08:04:37           Pearson chi2:              4.51e+03
No. Iterations:         5               Covariance Type:          nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	3.1288	0.198	15.788	0.000	2.740	3.517
tempf	-0.0197	0.014	-1.443	0.149	-0.046	0.007
dwpf	-0.0059	0.012	-0.506	0.613	-0.029	0.017
drct	-0.0040	0.001	-3.143	0.002	-0.007	-0.002
feel	0.0117	0.010	1.131	0.258	-0.009	0.032

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
245    5.856799  0.253159    5.381053    6.374606
258    7.808886  0.465867    6.947166    8.777494
271    7.074513  0.410139    6.314643    7.925821

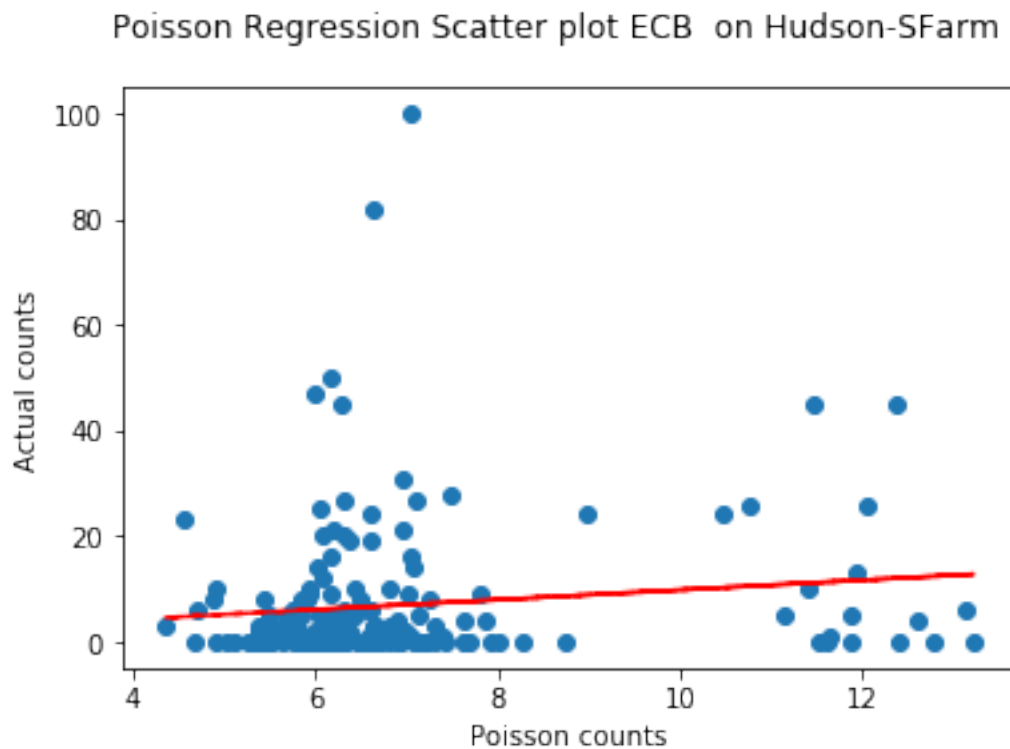
```

285	7.625555	0.530870	6.652934	8.740368
301	6.575647	0.323820	5.970638	7.241962
317	5.803337	0.240757	5.350136	6.294927
333	6.191322	0.427731	5.407265	7.089068
349	6.121032	0.363695	5.448145	6.877026
365	6.270169	0.422197	5.494956	7.154746
381	6.175524	0.304505	5.606637	6.802134
397	6.573359	0.231318	6.135265	7.042735
413	5.461066	0.304398	4.895892	6.091484
429	5.560710	0.354578	4.907423	6.300964
445	6.811622	0.291049	6.264409	7.406635
461	5.957993	0.323637	5.356276	6.627306
477	7.182256	0.355475	6.518263	7.913888
493	7.435676	0.300971	6.868575	8.049599
509	6.167699	0.417790	5.400875	7.043398
532	7.399556	1.053559	5.597710	9.781397
546	7.849575	0.293686	7.294559	8.446820
561	5.782027	0.428601	5.000156	6.686159
577	6.984839	0.267334	6.480045	7.528956
594	7.635929	0.414282	6.865633	8.492649
611	7.069703	0.426156	6.281907	7.956295
628	7.318246	0.430770	6.520834	8.213171
645	6.252816	0.251404	5.778988	6.765493
662	6.361047	0.240153	5.907349	6.849590
679	6.560105	0.355889	5.898380	7.296068
696	6.136342	0.330251	5.522031	6.818994
713	5.809093	0.247202	5.344241	6.314379
...	...	...	...	...
3216	6.041211	0.228603	5.609369	6.506299
3248	5.321216	0.287572	4.786408	5.915779
3279	6.383139	0.361098	5.713225	7.131605
3310	5.501760	0.270494	4.996344	6.058301
3343	6.034924	0.213591	5.630484	6.468415
3377	5.837660	0.340723	5.206637	6.545161
3412	6.354660	0.261058	5.863053	6.887488
3447	6.277078	0.283128	5.745979	6.857266
3480	6.198446	0.222033	5.778194	6.649263
3510	6.104022	0.228076	5.672978	6.567819
3537	5.369238	0.459740	4.539716	6.350336
3560	6.592970	0.200543	6.211401	6.997978
3583	11.876935	0.817285	10.378409	13.591830
3603	12.381040	0.850193	10.821961	14.164729
3624	11.467969	0.786361	10.025809	13.117577
3645	10.756903	0.806720	9.286475	12.460160
3668	10.479448	0.837749	8.959660	12.257030
3692	11.401491	0.756147	10.011749	12.984144
3718	11.620966	0.784098	10.181443	13.264017
3744	12.415075	0.856484	10.844940	14.212534

3770	11.527397	0.749873	10.147508	13.094927
3796	11.888031	0.757811	10.491788	13.470086
3822	13.145265	0.979360	11.359322	15.211999
3848	11.625307	0.755058	10.235742	13.203515
3875	12.038977	0.785943	10.593036	13.682288
3902	11.919565	0.800781	10.449004	13.597088
3927	12.597316	0.875407	10.993266	14.435416
3952	11.145890	0.793129	9.694920	12.814016
3976	12.774326	0.895229	11.134880	14.655157
3999	13.230798	0.986595	11.431773	15.312935

[178 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



# Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	178
Model:	GLM	Df Residuals:	173
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -654.47  
Date: Fri, 08 May 2020 Deviance: 773.59  
Time: 08:04:38 Pearson chi2: 1.18e+03  
No. Iterations: 8 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	3.3825	0.405	8.348	0.000	2.588	4.177
tempf	-0.0156	0.025	-0.619	0.536	-0.065	0.034
dwpf	-0.0140	0.022	-0.629	0.529	-0.058	0.030
drct	-0.0054	0.002	-2.174	0.030	-0.010	-0.001
feel	0.0130	0.018	0.711	0.477	-0.023	0.049

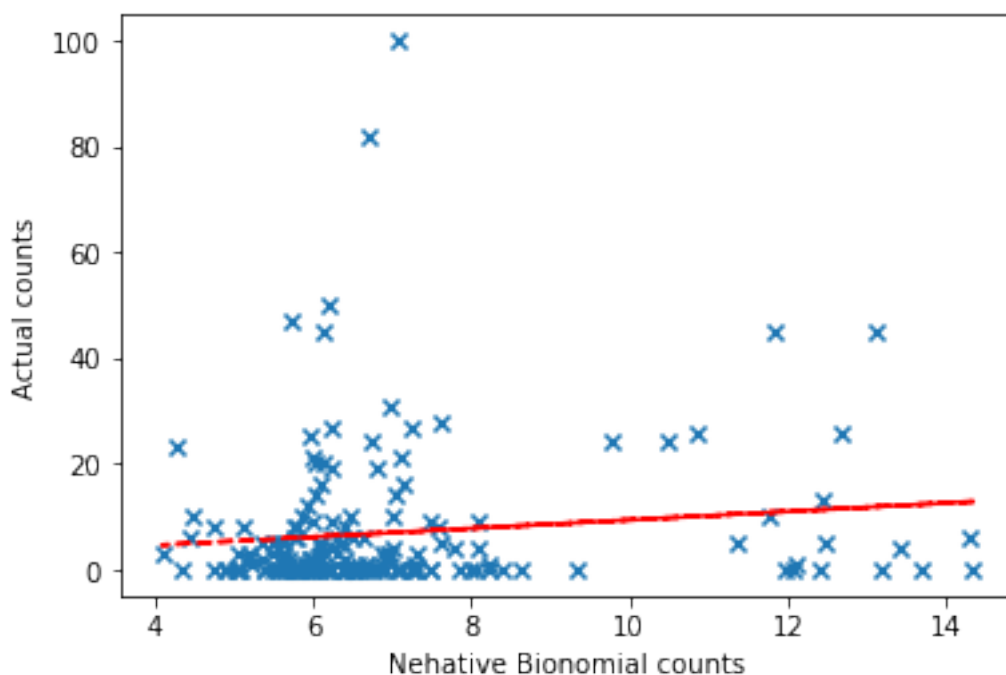
	mean	mean_se	mean_ci_lower	mean_ci_upper
245	5.751255	0.462909	4.911915	6.734019
258	8.088123	0.955630	6.416178	10.195747
271	7.072987	0.799008	5.668211	8.825915
285	8.000958	1.102228	6.107714	10.481060
301	6.685160	0.648598	5.527487	8.085294
317	5.630988	0.446802	4.819969	6.578471
333	5.931258	0.789779	4.568827	7.699968
349	5.895717	0.675361	4.710104	7.379768
365	5.979579	0.774541	4.638884	7.707750
381	5.960791	0.563486	4.952655	7.174139
397	6.635670	0.453339	5.804061	7.586433
413	5.181993	0.544343	4.217764	6.366657
429	5.209426	0.634315	4.103411	6.613551
445	6.734243	0.558862	5.723335	7.923707
461	5.672894	0.586868	4.631768	6.948043
477	7.115736	0.687872	5.887554	8.600126
493	7.466557	0.602339	6.374595	8.745571
509	6.073572	0.782043	4.718915	7.817110
532	8.229416	2.266045	4.797146	14.117414
546	8.092478	0.626732	6.952791	9.418980
561	5.701903	0.796260	4.336619	7.497016
577	6.909580	0.518049	5.965302	8.003333
594	7.797429	0.835468	6.320451	9.619551
611	7.039241	0.825042	5.594482	8.857106
628	7.312621	0.839174	5.839717	9.157025
645	6.066026	0.463850	5.221743	7.046817
662	6.411685	0.465260	5.561672	7.391610
679	6.418963	0.672951	5.226689	7.883209
696	5.982954	0.624410	4.876185	7.340932
713	5.728049	0.456122	4.900338	6.695569
...	...	...	...	...
3216	5.920603	0.429734	5.135507	6.825722
3248	5.049470	0.514940	4.134673	6.166668
3279	6.585918	0.731294	5.297851	8.187153

3310	5.346564	0.491058	4.465763	6.401089
3343	5.963694	0.406500	5.217896	6.816090
3377	5.603529	0.632462	4.491463	6.990939
3412	6.316528	0.506219	5.398355	7.390868
3447	6.367590	0.553737	5.369738	7.550872
3480	6.113813	0.420992	5.341942	6.997215
3510	6.075583	0.427932	5.292170	6.974967
3537	5.067370	0.823155	3.685628	6.967127
3560	6.528807	0.380957	5.823260	7.319839
3583	12.406881	2.036005	8.994520	17.113832
3603	13.117785	2.152874	9.509603	18.095001
3624	11.833188	1.921328	8.607839	16.267073
3645	10.874536	1.870418	7.762547	15.234115
3668	10.473956	1.884319	7.361650	14.902060
3692	11.773053	1.852715	8.648411	16.026619
3718	12.068896	1.937432	8.810962	16.531480
3744	13.184169	2.170918	9.547576	18.205912
3770	11.959529	1.854648	8.824951	16.207495
3796	12.491964	1.900493	9.271100	16.831786
3822	14.284709	2.461711	10.190189	20.024449
3848	12.096713	1.876261	8.925689	16.394305
3875	12.668377	1.977093	9.329922	17.201406
3902	12.453744	2.000527	9.090040	17.062161
3927	13.411991	2.221945	9.693396	18.557119
3952	11.370173	1.887347	8.212498	15.741963
3976	13.708610	2.261245	9.921723	18.940862
3999	14.347950	2.495313	10.203608	20.175576

[178 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot ECB on Hudson-SFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          148
Model:                  GLM           Df Residuals:                143
Model Family:           Poisson       Df Model:                   4
Link Function:          log           Scale:                     1.0000
Method:                 IRLS          Log-Likelihood:             -422.12
Date:                   Fri, 08 May 2020    Deviance:                   675.50
Time:                   08:04:38           Pearson chi2:               1.40e+03
No. Iterations:         6                Covariance Type:           nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	3.8366	0.786	4.884	0.000	2.297	5.376
tempf	-0.0812	0.028	-2.949	0.003	-0.135	-0.027
dwpf	0.0838	0.026	3.190	0.001	0.032	0.135
drct	-0.0087	0.003	-2.938	0.003	-0.015	-0.003
feel	-0.0299	0.015	-2.038	0.042	-0.059	-0.001

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
250    0.986149    0.109711      0.792949      1.226423
263    3.398425    0.433586      2.646535      4.363928
276    3.045064    0.345003      2.438687      3.802217
=====

```

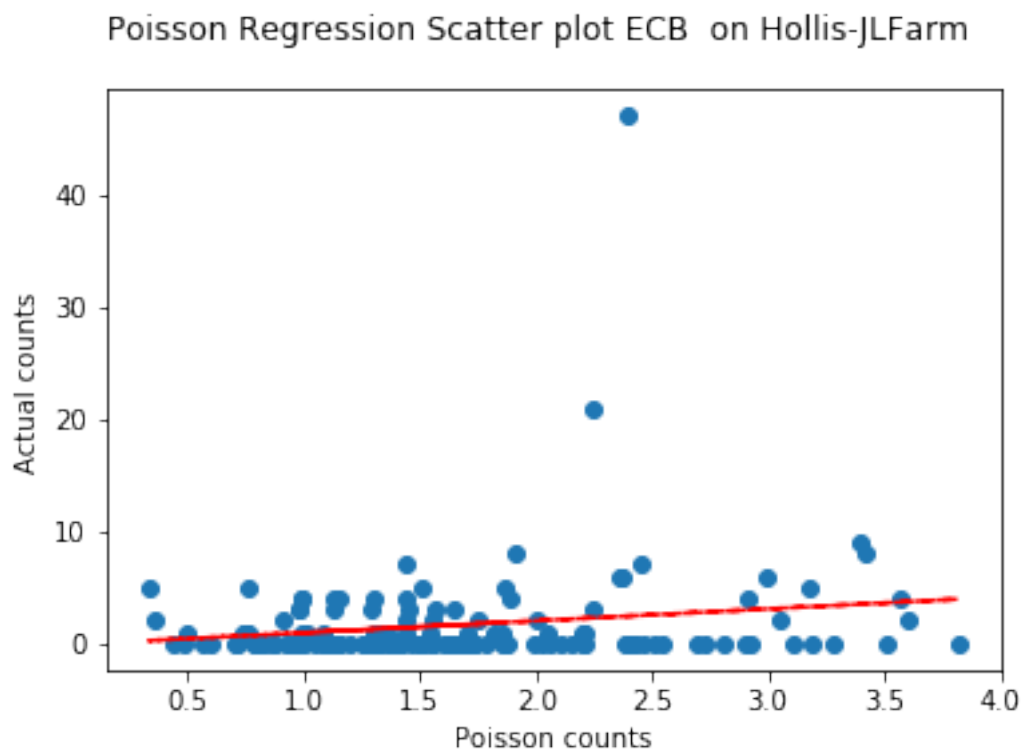


291	2.811517	0.416481	2.103046	3.758657
307	1.627535	0.196671	1.284315	2.062478
323	1.305098	0.137143	1.062177	1.603576
339	2.386152	0.338935	1.806307	3.152135
355	2.052766	0.252941	1.612333	2.613511
371	2.449676	0.343839	1.860514	3.225406
387	1.906481	0.191534	1.565729	2.321391
403	1.550683	0.121104	1.330597	1.807172
419	0.976790	0.133575	0.747137	1.277034
435	1.327904	0.191905	1.000353	1.762705
451	2.463294	0.218660	2.069938	2.931401
467	1.400340	0.204048	1.052452	1.863221
483	3.183258	0.382779	2.514878	4.029274
499	3.108407	0.370298	2.461137	3.925905
515	0.964706	0.188994	0.657108	1.416291
525	2.393738	0.369325	1.769076	3.238970
537	0.757335	0.253718	0.392757	1.460336
551	2.922528	0.431855	2.187654	3.904260
566	0.707217	0.134044	0.487774	1.025384
583	2.542741	0.265317	2.072456	3.119744
600	3.421240	0.405338	2.712288	4.315503
617	3.174402	0.378188	2.513348	4.009325
634	3.505161	0.436894	2.745438	4.475116
651	1.709846	0.158295	1.426114	2.050029
668	1.305458	0.119860	1.090461	1.562844
685	2.429311	0.256606	1.975020	2.988098
702	1.861064	0.223118	1.471340	2.354018
...	...	...	...	...
2790	1.694508	0.182995	1.371260	2.093955
2811	1.320396	0.127198	1.093213	1.594790
2834	2.110164	0.179654	1.785858	2.493363
2855	0.857797	0.172835	0.577934	1.273182
2878	1.704551	0.114381	1.494485	1.944144
2901	0.961318	0.147850	0.711137	1.299513
2924	0.991190	0.111567	0.794964	1.235852
2946	1.380371	0.154216	1.108917	1.718276
2967	1.199098	0.244085	0.804613	1.786992
2987	1.499186	0.241910	1.092710	2.056866
3006	0.998129	0.178074	0.703600	1.415949
3039	1.436080	0.265162	1.000024	2.062278
3055	3.597171	0.783931	2.346706	5.513957
3077	0.742577	0.122365	0.537622	1.025667
3104	1.644368	0.130568	1.407378	1.921265
3132	1.354480	0.120004	1.138566	1.611339
3161	1.547838	0.107882	1.350199	1.774407
3191	1.096769	0.118181	0.887964	1.354675
3223	1.464109	0.129309	1.231392	1.740808
3255	0.919351	0.127348	0.700767	1.206116

3286	1.156857	0.179584	0.853383	1.568251
3317	0.827578	0.110335	0.637271	1.074716
3350	1.386843	0.125645	1.161209	1.656320
3384	1.711585	0.231675	1.312751	2.231591
3419	1.740165	0.157184	1.457820	2.077193
3454	1.134719	0.134026	0.900222	1.430299
3485	1.558804	0.122330	1.336571	1.817988
3514	1.153063	0.109639	0.957010	1.389280
3541	0.783146	0.174322	0.506259	1.211470
3564	1.849833	0.147674	1.581905	2.163141

[148 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



Generalized Linear Model Regression Results			
=====			
Dep. Variable:	trap_count	No. Observations:	148
Model:	GLM	Df Residuals:	143
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -284.59  
Date: Fri, 08 May 2020 Deviance: 347.58  
Time: 08:04:38 Pearson chi2: 755.  
No. Iterations: 8 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	3.8137	1.088	3.504	0.000	1.681	5.947
tempf	-0.0836	0.038	-2.215	0.027	-0.158	-0.010
dwpf	0.0795	0.034	2.341	0.019	0.013	0.146
drct	-0.0073	0.004	-1.833	0.067	-0.015	0.001
feel	-0.0257	0.022	-1.169	0.242	-0.069	0.017

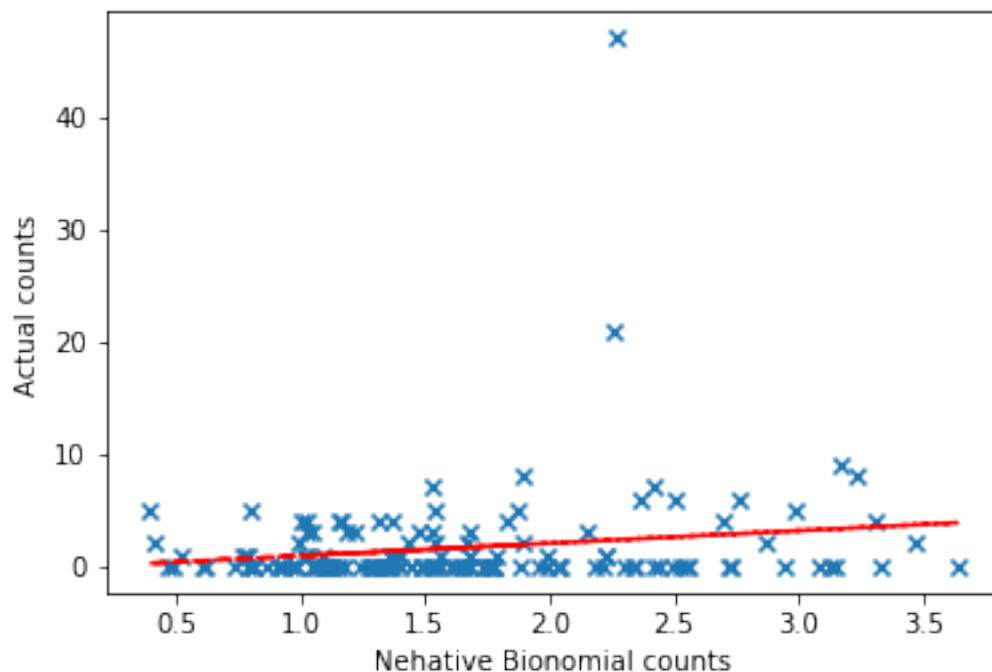
	mean	mean_se	mean_ci_lower	mean_ci_upper
250	1.029205	0.137450	0.792180	1.337148
263	3.169816	0.585149	2.207507	4.551621
276	2.866301	0.462394	2.089322	3.932224
291	2.552346	0.525313	1.705096	3.820589
307	1.534464	0.246869	1.119471	2.103298
323	1.296702	0.176637	0.992864	1.693522
339	2.296797	0.441542	1.575744	3.347801
355	1.987708	0.331827	1.433023	2.757096
371	2.420849	0.458046	1.670754	3.507701
387	1.899184	0.257018	1.456710	2.476059
403	1.537781	0.155759	1.260891	1.875475
419	1.042611	0.178182	0.745852	1.457446
435	1.387424	0.260119	0.960778	2.003529
451	2.424125	0.307802	1.890053	3.109110
467	1.518292	0.283478	1.053001	2.189182
483	3.126581	0.533665	2.237593	4.368760
499	3.081472	0.528445	2.201835	4.312525
515	1.093786	0.270725	0.673363	1.776703
525	2.530655	0.531927	1.676162	3.820762
537	0.790918	0.340334	0.340297	1.838255
551	2.948145	0.618791	1.953839	4.448451
566	0.791263	0.184368	0.501172	1.249266
583	2.560265	0.377493	1.917703	3.418129
600	3.238205	0.559319	2.308237	4.542846
617	2.992737	0.504888	2.150142	4.165527
634	3.334828	0.592766	2.353815	4.724704
651	1.756488	0.213822	1.383651	2.229790
668	1.303310	0.148636	1.042252	1.629757
685	2.346393	0.344745	1.759290	3.129420
702	1.776405	0.288682	1.291856	2.442699
...	...	...	...	...
2790	1.607301	0.233199	1.209480	2.135972
2811	1.311982	0.162469	1.029247	1.672384
2834	2.040831	0.243034	1.616000	2.577348

2855	0.933379	0.243051	0.560280	1.554928
2878	1.682430	0.152222	1.409037	2.008868
2901	1.042551	0.201867	0.713314	1.523751
2924	1.016080	0.140048	0.775542	1.331223
2946	1.326180	0.192660	0.997573	1.763033
2967	1.332825	0.349698	0.796967	2.228979
2987	1.642961	0.342372	1.092063	2.471763
3006	1.113514	0.251400	0.715350	1.733297
3039	1.362592	0.327586	0.850601	2.182762
3055	3.470126	1.060705	1.906165	6.317277
3077	0.771390	0.155262	0.519934	1.144457
3104	1.682739	0.173734	1.374469	2.060150
3132	1.402103	0.154773	1.129324	1.740769
3161	1.560597	0.139697	1.309469	1.859885
3191	1.098055	0.147680	0.843614	1.429238
3223	1.445594	0.166511	1.153454	1.811726
3255	0.966204	0.168363	0.686666	1.359541
3286	1.109150	0.219760	0.752208	1.635468
3317	0.868311	0.140979	0.631647	1.193648
3350	1.361686	0.158818	1.083424	1.711415
3384	1.649996	0.299968	1.155407	2.356302
3419	1.674144	0.204642	1.317482	2.127360
3454	1.125394	0.165310	0.843861	1.500854
3485	1.537060	0.158415	1.255923	1.881129
3514	1.172320	0.134635	0.936031	1.468258
3541	0.911061	0.256022	0.525226	1.580332
3564	1.887173	0.203985	1.526880	2.332483

[148 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot ECB on Hollis-JLFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          171
Model:                  GLM           Df Residuals:                166
Model Family:           Poisson       Df Model:                    4
Link Function:          log           Scale:                      1.0000
Method:                  IRLS          Log-Likelihood:              -493.79
Date:                   Fri, 08 May 2020    Deviance:                   750.82
Time:                   08:04:38           Pearson chi2:                881.
No. Iterations:         5                 Covariance Type:             nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	2.9360	0.374	7.852	0.000	2.203	3.669
tempf	-0.0218	0.026	-0.827	0.408	-0.074	0.030
dwpf	-0.0088	0.024	-0.373	0.709	-0.055	0.037
drct	-0.0117	0.002	-4.778	0.000	-0.016	-0.007
feel	0.0132	0.019	0.686	0.492	-0.025	0.051

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
288    3.502786    0.428158    2.756565    4.451015
304    2.457733    0.210102    2.078591    2.906032
320    1.666824    0.131628    1.427812    1.945846

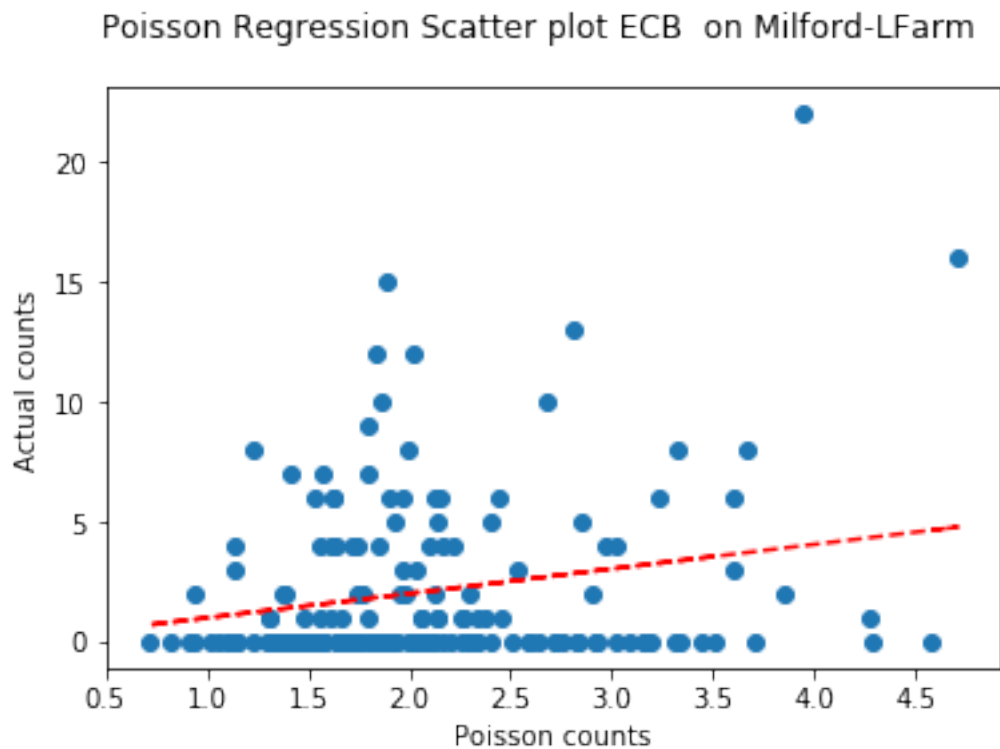
```

336	1.951851	0.261781	1.500667	2.538687
352	1.905812	0.217287	1.524166	2.383021
368	1.842374	0.243536	1.421874	2.387232
384	1.795371	0.170825	1.489925	2.163435
400	2.118992	0.137081	1.866654	2.405442
416	1.224052	0.137433	0.982267	1.525351
432	1.306949	0.165348	1.019927	1.674743
448	2.208719	0.173933	1.892821	2.577338
464	1.336224	0.145891	1.078806	1.655065
480	2.402023	0.222467	2.003280	2.880133
496	2.513048	0.182703	2.179300	2.897909
512	1.307746	0.183631	0.993115	1.722056
580	2.159271	0.154098	1.877416	2.483439
597	3.021740	0.289127	2.505025	3.645039
614	2.636386	0.293530	2.119523	3.279292
631	2.719198	0.295788	2.197097	3.365369
648	1.698024	0.133834	1.454971	1.981680
665	1.981349	0.143859	1.718533	2.284357
682	2.168575	0.221387	1.775319	2.648942
699	2.024084	0.202430	1.663793	2.462395
716	1.552177	0.135292	1.308423	1.841343
733	2.329395	0.186661	1.990828	2.725538
750	2.025325	0.180372	1.700937	2.411578
767	1.837628	0.148866	1.567840	2.153840
784	1.123372	0.143381	0.874743	1.442668
801	2.048862	0.132796	1.804440	2.326393
818	1.740890	0.176107	1.427791	2.122648
...	...	...	...	...
3252	1.226485	0.133227	0.991288	1.517485
3283	2.290605	0.245189	1.857105	2.825295
3314	1.336349	0.135496	1.095506	1.630142
3347	1.860418	0.120810	1.638083	2.112931
3381	1.791861	0.199800	1.440096	2.229549
3416	2.139847	0.154985	1.856658	2.466229
3451	1.999632	0.175207	1.684101	2.374282
3483	1.911545	0.125239	1.681187	2.173467
3513	1.748150	0.130819	1.509666	2.024308
3540	0.935296	0.160787	0.667758	1.310023
3563	1.916035	0.111256	1.709927	2.146985
3577	1.498161	0.143687	1.241425	1.807991
3584	3.195147	0.413673	2.479057	4.118083
3604	3.663498	0.469545	2.849698	4.709698
3625	2.962221	0.383666	2.298107	3.818254
3646	2.440245	0.349257	1.843343	3.230433
3669	2.251131	0.344797	1.667345	3.039316
3694	3.015528	0.377424	2.359537	3.853896
3720	3.082238	0.391998	2.402208	3.954775
3746	3.699491	0.476364	2.874333	4.761533

3772	3.161806	0.386781	2.487759	4.018482
3798	3.600423	0.427215	2.853333	4.543124
3824	4.704446	0.646839	3.593124	6.159489
3850	3.232911	0.394215	2.545658	4.105704
3877	3.605902	0.438582	2.841078	4.576618
3904	3.327669	0.419166	2.599678	4.259521
3929	3.850863	0.498233	2.988325	4.962361
3953	2.721867	0.368032	2.088206	3.547812
3977	4.276957	0.553981	3.318038	5.513005
4000	4.579627	0.631668	3.494812	6.001177

[171 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



#### Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	171
Model:	GLM	Df Residuals:	166
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -378.83  
Date: Fri, 08 May 2020 Deviance: 456.21  
Time: 08:04:39 Pearson chi2: 508.  
No. Iterations: 7 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	2.8552	0.507	5.629	0.000	1.861	3.849
tempf	-0.0352	0.033	-1.059	0.289	-0.100	0.030
dwpf	0.0092	0.030	0.301	0.764	-0.051	0.069
drct	-0.0115	0.003	-3.579	0.000	-0.018	-0.005
feel	0.0120	0.023	0.511	0.609	-0.034	0.058

	mean	mean_se	mean_ci_lower	mean_ci_upper
288	3.664517	0.608516	2.646485	5.074160
304	2.526418	0.290816	2.016152	3.165826
320	1.720343	0.170948	1.415899	2.090248
336	2.167854	0.372620	1.547824	3.036256
352	2.076241	0.302779	1.560079	2.763177
368	2.023991	0.341380	1.454250	2.816944
384	1.903623	0.229162	1.503529	2.410184
400	2.107527	0.179918	1.782816	2.491379
416	1.213768	0.170244	0.922031	1.597813
432	1.362687	0.217373	0.996814	1.862852
448	2.329286	0.236776	1.908520	2.842819
464	1.332862	0.182409	1.019281	1.742916
480	2.568653	0.308899	2.029282	3.251385
496	2.624498	0.253163	2.172391	3.170695
512	1.185576	0.211786	0.835362	1.682612
580	2.245952	0.206266	1.875975	2.688896
597	3.210593	0.412785	2.495437	4.130703
614	2.883310	0.419666	2.167699	3.835162
631	2.960921	0.421886	2.239461	3.914805
648	1.740822	0.170964	1.436015	2.110326
665	1.944567	0.184055	1.615310	2.340938
682	2.346326	0.308349	1.813533	3.035647
699	2.183789	0.281633	1.696036	2.811812
716	1.503098	0.164763	1.212502	1.863340
733	2.446089	0.259979	1.986112	3.012595
750	2.135342	0.246898	1.702346	2.678473
767	1.917977	0.195736	1.570274	2.342671
784	1.092479	0.175055	0.798030	1.495571
801	2.111567	0.174539	1.795750	2.482927
818	1.623280	0.210477	1.258998	2.092963
...	...	...	...	...
3252	1.222793	0.165925	0.937239	1.595348
3283	2.230194	0.318827	1.685216	2.951413
3314	1.286855	0.163271	1.003534	1.650162

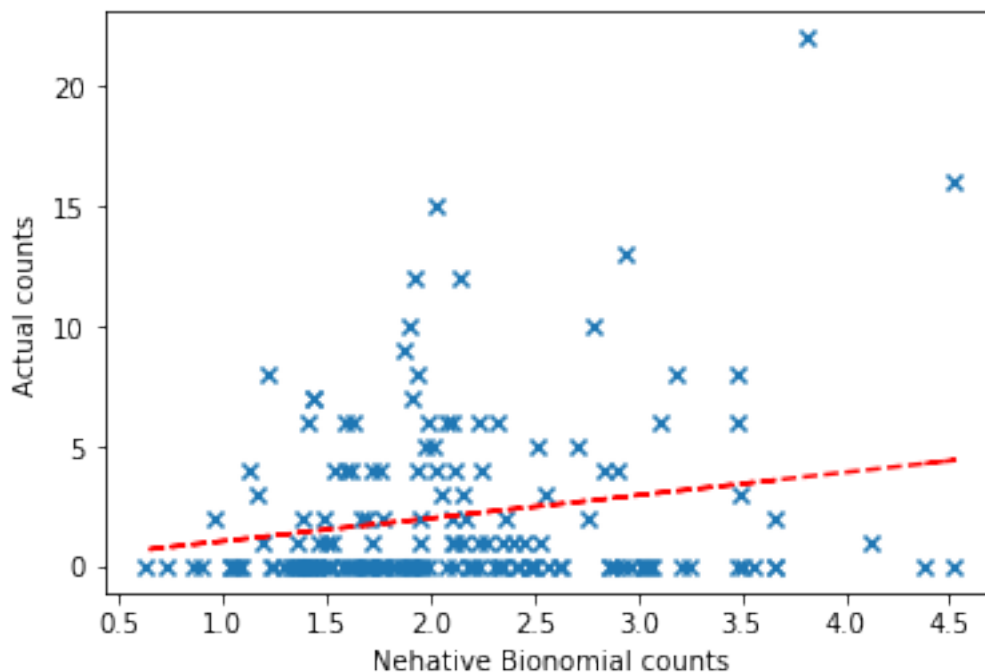


3347	1.893810	0.157658	1.608697	2.229453
3381	1.944137	0.277362	1.469906	2.571368
3416	2.230922	0.211723	1.852261	2.686995
3451	1.942672	0.222924	1.551397	2.432630
3483	1.963023	0.164127	1.666314	2.312565
3513	1.707832	0.162219	1.417730	2.057297
3540	0.860530	0.187764	0.561097	1.319758
3563	1.928906	0.140994	1.671445	2.226025
3577	1.441414	0.174298	1.137261	1.826911
3584	3.020364	0.569396	2.087332	4.370458
3604	3.479383	0.654543	2.406433	5.030726
3625	2.829871	0.529325	1.961327	4.083037
3646	2.320315	0.467919	1.562759	3.445100
3669	2.150972	0.458461	1.416473	3.266338
3694	2.896104	0.524394	2.030898	4.129906
3720	2.930555	0.540887	2.041010	4.207795
3746	3.503961	0.662160	2.419378	5.074751
3772	3.044724	0.541659	2.148416	4.314967
3798	3.493717	0.607925	2.484130	4.913616
3824	4.525966	0.906041	3.057113	6.700559
3850	3.109636	0.552731	2.194877	4.405638
3877	3.481086	0.621291	2.453553	4.938942
3904	3.186117	0.586154	2.221596	4.569392
3929	3.664611	0.696362	2.525106	5.318341
3953	2.610741	0.503364	1.789154	3.809603
3977	4.127878	0.783733	2.845214	5.988788
4000	4.382452	0.882622	2.953153	6.503517

[171 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot ECB on Milford-LFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          165
Model:                  GLM           Df Residuals:                160
Model Family:           Poisson       Df Model:                    4
Link Function:          log           Scale:                      1.0000
Method:                  IRLS         Log-Likelihood:              -179.07
Date:                   Fri, 08 May 2020    Deviance:                   265.56
Time:                   08:04:39           Pearson chi2:                473.
No. Iterations:         6                Covariance Type:            nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-0.1445	0.975	-0.148	0.882	-2.055	1.766
tempf	0.1689	0.036	4.662	0.000	0.098	0.240
dwpf	-0.1069	0.036	-2.948	0.003	-0.178	-0.036
drct	-0.0168	0.005	-3.484	0.000	-0.026	-0.007
feel	-0.0578	0.018	-3.179	0.001	-0.093	-0.022

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
295    0.998844    0.250873    0.610530    1.634136
311    0.793436    0.137182    0.565383    1.113476
327    0.447951    0.074486    0.323364    0.620540

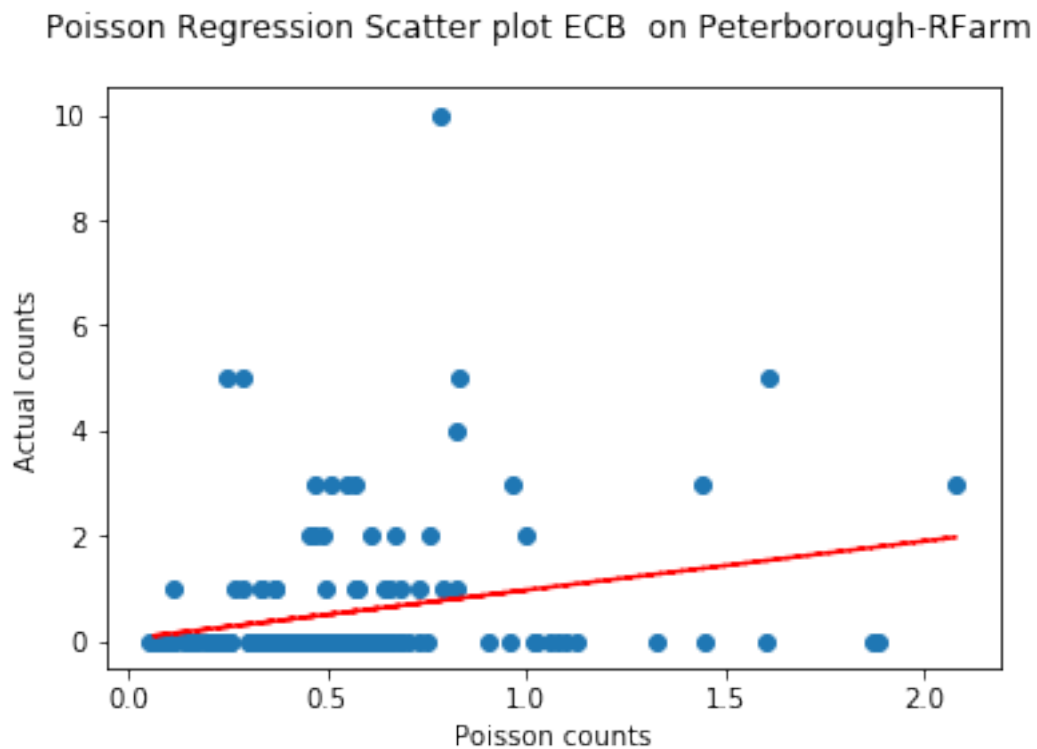
```

343	0.329566	0.081916	0.202474	0.536432
359	0.365896	0.080068	0.238282	0.561854
375	0.268168	0.065910	0.165653	0.434123
391	0.336373	0.063520	0.232317	0.487035
407	0.606745	0.069582	0.484606	0.759666
423	0.289865	0.067919	0.183125	0.458822
439	0.234957	0.059821	0.142650	0.386996
455	0.390891	0.065761	0.281096	0.543572
471	0.224163	0.055294	0.138229	0.363521
487	0.347319	0.069880	0.234136	0.515215
503	0.379615	0.070200	0.264201	0.545446
540	1.883094	0.805127	0.814584	4.353193
555	0.485093	0.092721	0.333523	0.705543
570	0.403734	0.113300	0.232928	0.699790
587	0.336691	0.058258	0.239854	0.472623
604	0.545232	0.114224	0.361625	0.822062
621	0.454852	0.100728	0.294693	0.702054
638	0.420777	0.093586	0.272103	0.650684
655	0.317610	0.054625	0.226724	0.444928
672	0.639905	0.075461	0.507853	0.806293
689	0.389516	0.077709	0.263457	0.575891
706	0.466268	0.094673	0.313187	0.694172
723	0.521435	0.080693	0.385014	0.706195
740	0.622382	0.105012	0.447133	0.866317
757	0.575912	0.110544	0.395341	0.838958
774	0.348199	0.058585	0.250387	0.484220
791	0.253292	0.068233	0.149389	0.429461
...	...	...	...	...
3259	0.334107	0.075363	0.214726	0.519861
3290	1.083172	0.190823	0.766904	1.529867
3321	0.456968	0.087806	0.313565	0.665953
3354	0.576514	0.076276	0.444828	0.747185
3388	0.406057	0.090271	0.262637	0.627796
3423	0.571380	0.086901	0.424098	0.769811
3458	0.753471	0.101864	0.578082	0.982072
3488	0.499859	0.067739	0.383262	0.651928
3517	0.550273	0.070745	0.427704	0.707965
3544	0.219103	0.079870	0.107241	0.447650
3567	0.398890	0.054995	0.304437	0.522648
3591	0.090009	0.057386	0.025799	0.314034
3611	0.108473	0.068400	0.031520	0.373306
3632	0.080865	0.050911	0.023543	0.277755
3653	0.063293	0.040773	0.017907	0.223712
3676	0.054116	0.035398	0.015016	0.195030
3701	0.085404	0.052193	0.025780	0.282923
3727	0.086901	0.054235	0.025573	0.295298
3753	0.112566	0.070951	0.032726	0.387190
3779	0.092607	0.055875	0.028384	0.302148

3805	0.113664	0.066429	0.036154	0.357350
3831	0.164658	0.100705	0.049658	0.545985
3857	0.095420	0.057585	0.029238	0.311409
3884	0.109823	0.066026	0.033802	0.356812
3910	0.093529	0.058417	0.027498	0.318124
3936	0.113823	0.071838	0.033037	0.392156
3960	0.069564	0.044099	0.020081	0.240983
3984	0.138282	0.084296	0.041868	0.456725
4007	0.149094	0.093758	0.043469	0.511375
4016	0.063465	0.040644	0.018089	0.222665

[165 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



# Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	165
Model:	GLM	Df Residuals:	160
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -138.97  
Date: Fri, 08 May 2020 Deviance: 89.305  
Time: 08:04:39 Pearson chi2: 160.  
No. Iterations: 11 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-0.7921	1.698	-0.467	0.641	-4.120	2.535
tempf	0.2056	0.080	2.563	0.010	0.048	0.363
dwpf	-0.1424	0.076	-1.875	0.061	-0.291	0.006
drct	-0.0160	0.009	-1.783	0.075	-0.034	0.002
feel	-0.0548	0.051	-1.072	0.284	-0.155	0.045

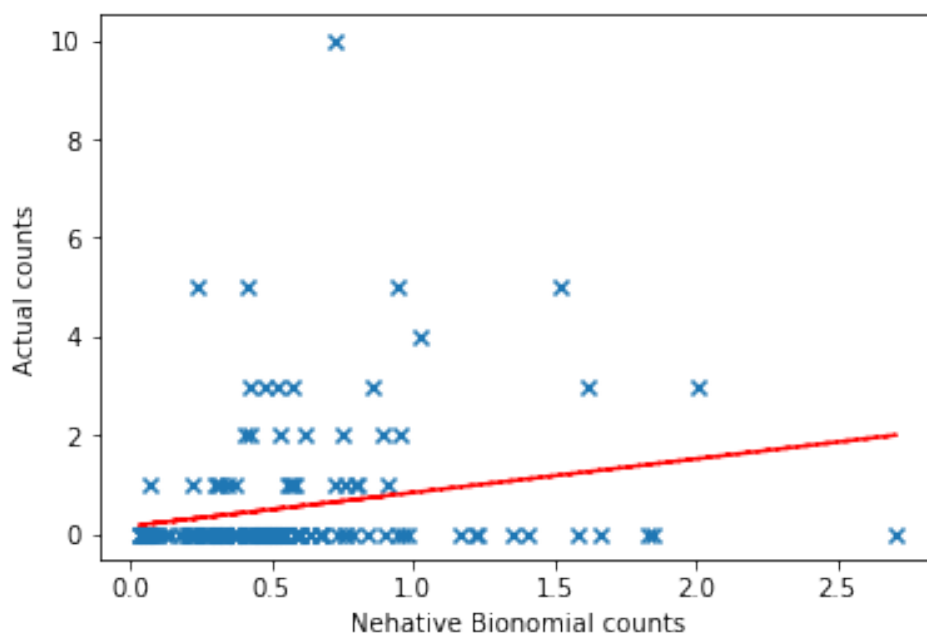
	mean	mean_se	mean_ci_lower	mean_ci_upper
295	0.895046	0.436169	0.344383	2.326209
311	0.796395	0.269511	0.410270	1.545921
327	0.453978	0.129041	0.260068	0.792473
343	0.275347	0.128933	0.109976	0.689386
359	0.321530	0.130175	0.145413	0.710953
375	0.221367	0.101283	0.090294	0.542711
391	0.303660	0.102053	0.157152	0.586755
407	0.617476	0.140461	0.395360	0.964380
423	0.311658	0.119118	0.147347	0.659195
439	0.226408	0.099828	0.095407	0.537286
455	0.338191	0.101163	0.188166	0.607830
471	0.218705	0.086821	0.100451	0.476173
487	0.279915	0.099927	0.139045	0.563504
503	0.313636	0.099171	0.168763	0.582873
540	2.706796	2.523687	0.435348	16.829650
555	0.425483	0.140288	0.222961	0.811963
570	0.504617	0.248041	0.192557	1.322405
587	0.288968	0.083791	0.163692	0.510118
604	0.446763	0.172941	0.209208	0.954061
621	0.368051	0.152052	0.163777	0.827108
638	0.332523	0.136245	0.148955	0.742311
655	0.298417	0.084238	0.171611	0.518924
672	0.683520	0.162146	0.429366	1.088116
689	0.332744	0.122716	0.161505	0.685542
706	0.427309	0.159040	0.206031	0.886237
723	0.592938	0.158978	0.350579	1.002843
740	0.589346	0.186664	0.316788	1.096408
757	0.572829	0.199298	0.289651	1.132855
774	0.319455	0.092731	0.180852	0.564281
791	0.277450	0.121704	0.117437	0.655489
...	...	...	...	...
3259	0.366079	0.135443	0.177274	0.755971
3290	1.233290	0.464293	0.589679	2.579376
3321	0.533347	0.170511	0.285024	0.998018

3354	0.590987	0.139647	0.371915	0.939100
3388	0.374431	0.151864	0.169097	0.829101
3423	0.549335	0.154189	0.316898	0.952258
3458	0.843005	0.239770	0.482757	1.472080
3488	0.492479	0.117792	0.308174	0.787008
3517	0.599655	0.139608	0.379954	0.946395
3544	0.254161	0.153707	0.077684	0.831543
3567	0.378014	0.083923	0.244642	0.584096
3591	0.055850	0.054313	0.008303	0.375662
3611	0.066224	0.064007	0.009961	0.440271
3632	0.049864	0.047772	0.007626	0.326040
3653	0.040017	0.039290	0.005841	0.274145
3676	0.034109	0.034121	0.004802	0.242301
3701	0.052886	0.049177	0.008547	0.327227
3727	0.054178	0.051505	0.008407	0.349158
3753	0.069077	0.066818	0.010374	0.459941
3779	0.057108	0.052466	0.009434	0.345703
3805	0.069397	0.062055	0.012028	0.400395
3831	0.098537	0.094127	0.015153	0.640770
3857	0.058841	0.054105	0.009705	0.356758
3884	0.066679	0.061321	0.010995	0.404383
3910	0.056931	0.054227	0.008802	0.368231
3936	0.068939	0.066850	0.010305	0.461187
3960	0.042916	0.041409	0.006476	0.284402
3984	0.082508	0.077776	0.013005	0.523455
4007	0.088729	0.086802	0.013042	0.603645
4016	0.039049	0.038113	0.005765	0.264494

[165 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot ECB on Peterborough-RFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          132
Model:                  GLM           Df Residuals:                127
Model Family:           Poisson       Df Model:                    4
Link Function:          log           Scale:                      1.0000
Method:                 IRLS          Log-Likelihood:             -228.03
Date:                   Fri, 08 May 2020    Deviance:                  360.70
Time:                   08:04:40           Pearson chi2:              629.
No. Iterations:         6                Covariance Type:          nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	0.0302	0.697	0.043	0.965	-1.336	1.396
tempf	-0.0368	0.076	-0.483	0.629	-0.186	0.113
dwpf	-0.0883	0.040	-2.210	0.027	-0.167	-0.010
drct	-0.0006	0.004	-0.143	0.886	-0.009	0.008
feel	0.1107	0.070	1.591	0.112	-0.026	0.247

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
912    1.280676    0.240769    0.885956    1.851254
928    0.673314    0.120219    0.474501    0.955428
950    0.779143    0.092276    0.617742    0.982714
972    0.985793    0.114524    0.785051    1.237865

```

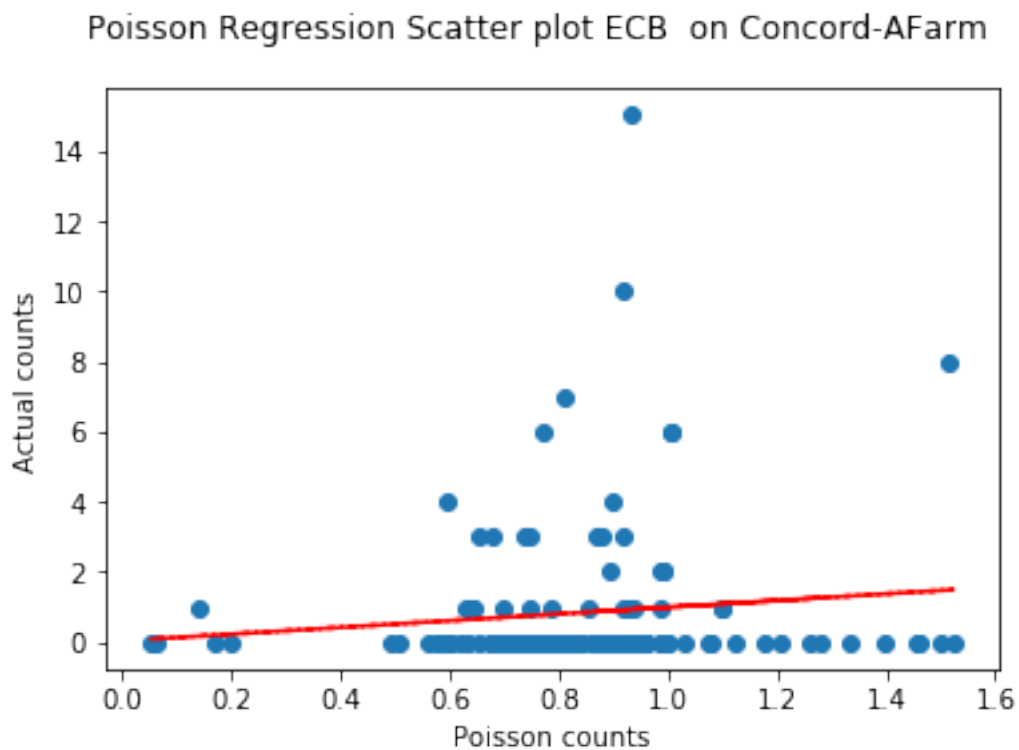
995	1.000801	0.139796	0.761112	1.315974
1018	1.398658	0.337484	0.871614	2.244394
1042	0.919395	0.174408	0.633914	1.333440
1066	0.736875	0.156615	0.485824	1.117656
1090	0.746034	0.111393	0.556753	0.999666
1114	1.454234	0.404200	0.843422	2.507400
1138	1.099882	0.288160	0.658171	1.838034
1162	1.008279	0.125745	0.789633	1.287466
1186	0.988297	0.122800	0.774680	1.260819
1210	0.826413	0.116169	0.627398	1.088556
1233	1.259444	0.235989	0.872337	1.818331
1257	1.077742	0.176919	0.781239	1.486775
1281	0.799582	0.091840	0.638402	1.001456
1305	1.179438	0.180777	0.873390	1.592728
1324	0.618087	0.136163	0.401358	0.951847
1362	0.140524	0.160292	0.015025	1.314302
1387	0.059824	0.102463	0.002084	1.717025
1412	0.196570	0.166540	0.037355	1.034385
1438	0.052209	0.090283	0.001761	1.547752
1464	0.167238	0.174692	0.021587	1.295619
1490	1.332082	0.274924	0.888904	1.996216
1516	1.522790	0.373304	0.941830	2.462112
1542	0.774733	0.115587	0.578304	1.037883
1568	0.709043	0.107505	0.526761	0.954401
1594	0.654523	0.107293	0.474670	0.902523
1619	0.600147	0.115582	0.411459	0.875366
...	...	...	...	...
3232	0.711681	0.099985	0.540379	0.937285
3264	0.819940	0.134790	0.594090	1.131648
3295	0.952710	0.174914	0.664788	1.365331
3326	0.961627	0.125986	0.743854	1.243155
3359	0.717090	0.094094	0.554475	0.927397
3393	0.562509	0.127197	0.361120	0.876209
3428	0.679472	0.108871	0.496346	0.930161
3463	0.983906	0.136577	0.749545	1.291544
3493	0.714676	0.095950	0.549325	0.929797
3522	0.920424	0.097726	0.747501	1.133350
3549	0.995616	0.269292	0.585951	1.691698
3571	0.731850	0.083585	0.585068	0.915457
3578	0.838426	0.130298	0.618275	1.136967
3596	0.957450	0.244856	0.580005	1.580520
3616	0.937164	0.242382	0.564504	1.555838
3637	0.899369	0.225567	0.550113	1.470361
3658	0.918587	0.243766	0.546055	1.545270
3681	0.917087	0.256019	0.530621	1.585028
3706	0.901901	0.220222	0.558877	1.455465
3732	0.955251	0.239205	0.584747	1.560512
3758	0.942403	0.245117	0.566033	1.569033



3784	0.886698	0.213750	0.552819	1.422225
3810	0.870614	0.209189	0.543627	1.394282
3836	0.876111	0.245161	0.506254	1.516177
3862	0.896335	0.216714	0.558044	1.439701
3889	0.876291	0.214913	0.541862	1.417125
3915	0.899987	0.225010	0.551345	1.469091
3941	0.940459	0.247020	0.562036	1.573677
3965	0.902330	0.231486	0.545753	1.491882
3989	0.865819	0.228539	0.516116	1.452471

[132 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



# Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	132
Model:	GLM	Df Residuals:	127
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000
Method:	IRLS	Log-Likelihood:	-166.84

Date: Fri, 08 May 2020 Deviance: 195.84  
Time: 08:04:40 Pearson chi2: 354.  
No. Iterations: 8 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	0.3034	0.928	0.327	0.744	-1.515	2.122
tempf	-0.0164	0.083	-0.196	0.844	-0.180	0.147
dwpf	-0.1063	0.054	-1.969	0.049	-0.212	-0.000
drct	-0.0025	0.006	-0.430	0.667	-0.014	0.009
feel	0.1047	0.072	1.456	0.145	-0.036	0.246

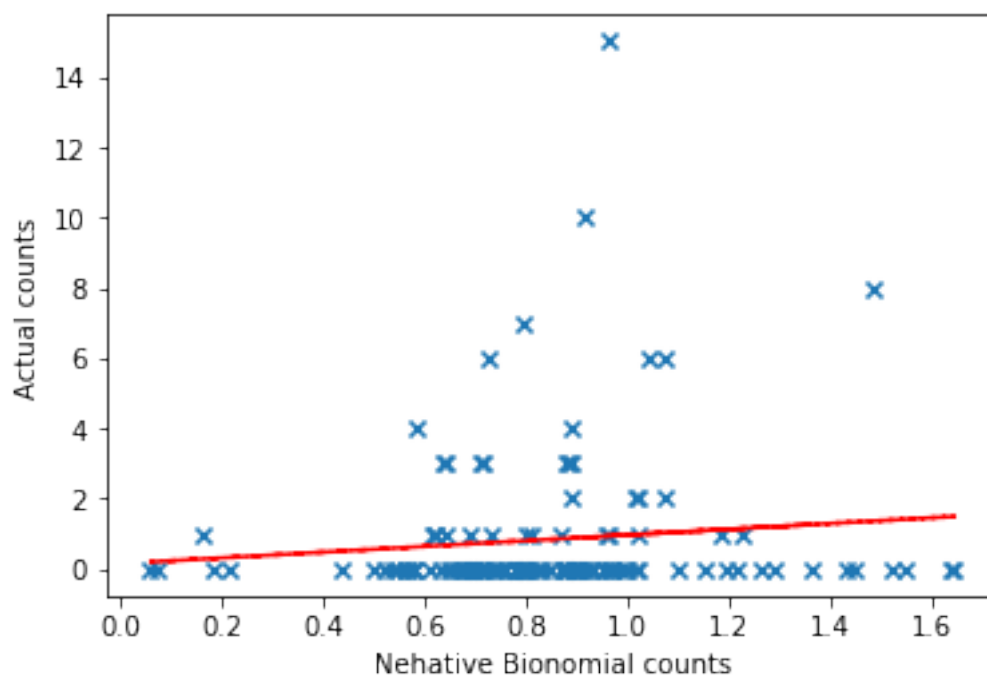
	mean	mean_se	mean_ci_lower	mean_ci_upper
912	1.364690	0.360012	0.813735	2.288680
928	0.681104	0.157429	0.432981	1.071417
950	0.787122	0.120216	0.583499	1.061804
972	0.994086	0.160725	0.724103	1.364731
995	0.985098	0.189125	0.676177	1.435153
1018	1.548746	0.517485	0.804576	2.981217
1042	0.875090	0.206760	0.550728	1.390491
1066	0.759667	0.210057	0.441831	1.306143
1090	0.718130	0.137972	0.492793	1.046506
1114	1.450151	0.561753	0.678701	3.098474
1138	1.227968	0.430617	0.617578	2.441640
1162	1.041281	0.179070	0.743338	1.458644
1186	1.022106	0.174477	0.731463	1.428233
1210	0.791382	0.147944	0.548604	1.141599
1233	1.263831	0.325974	0.762329	2.095249
1257	1.154302	0.258680	0.743986	1.790912
1281	0.811498	0.120516	0.606561	1.085676
1305	1.217273	0.263546	0.796340	1.860705
1324	0.562462	0.162647	0.319118	0.991369
1362	0.160633	0.188660	0.016074	1.605300
1387	0.070713	0.124716	0.002230	2.242630
1412	0.215846	0.188936	0.038821	1.200123
1438	0.059394	0.105857	0.001806	1.953544
1464	0.183484	0.197355	0.022287	1.510594
1490	1.431657	0.413318	0.813014	2.521042
1516	1.646226	0.550077	0.855196	3.168937
1542	0.737477	0.144703	0.502032	1.083343
1568	0.692682	0.134711	0.473145	1.014081
1594	0.638552	0.134642	0.422392	0.965333
1619	0.579061	0.144397	0.355194	0.944026
...	...	...	...	...
3232	0.692150	0.124923	0.485927	0.985892
3264	0.777969	0.170656	0.506107	1.195865
3295	1.017815	0.249581	0.629425	1.645864
3326	0.955050	0.172770	0.669951	1.361474

3359	0.712298	0.117963	0.514867	0.985436
3393	0.522780	0.153758	0.293743	0.930401
3428	0.669010	0.137772	0.446829	1.001670
3463	1.023024	0.190540	0.710146	1.473750
3493	0.701154	0.120563	0.500553	0.982148
3522	0.931546	0.133648	0.703208	1.234028
3549	0.968092	0.345972	0.480528	1.950361
3571	0.723357	0.103369	0.546656	0.957173
3578	0.825614	0.164216	0.559077	1.219222
3596	0.964610	0.328394	0.494957	1.879907
3616	0.959630	0.330229	0.488864	1.883737
3637	0.890191	0.297517	0.462378	1.713837
3658	0.888092	0.314380	0.443749	1.777373
3681	0.870680	0.323841	0.420013	1.804906
3706	0.891618	0.289576	0.471768	1.685112
3732	0.952965	0.316977	0.496534	1.828965
3758	0.969607	0.335639	0.491976	1.910941
3784	0.881750	0.282812	0.470253	1.653330
3810	0.877585	0.280048	0.469527	1.640280
3836	0.924947	0.344337	0.445896	1.918668
3862	0.894622	0.287623	0.476405	1.679973
3889	0.886022	0.289041	0.467480	1.679293
3915	0.903259	0.300631	0.470444	1.734271
3941	0.967031	0.337642	0.487798	1.917081
3965	0.877492	0.299649	0.449337	1.713621
3989	0.897727	0.315317	0.450992	1.786979

[132 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot ECB on Concord-AFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          121
Model:                  GLM           Df Residuals:              116
Model Family:           Poisson       Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                  IRLS         Log-Likelihood:            -925.18
Date:                   Fri, 08 May 2020    Deviance:                  1543.7
Time:                   08:04:40           Pearson chi2:              1.76e+03
No. Iterations:         5                Covariance Type:          nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	2.1064	0.263	8.018	0.000	1.591	2.621
tempf	0.0873	0.012	7.112	0.000	0.063	0.111
dwpf	0.0005	0.014	0.039	0.969	-0.027	0.028
drct	-0.0070	0.001	-4.702	0.000	-0.010	-0.004
feel	-0.0771	0.004	-19.801	0.000	-0.085	-0.070

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
919      9.788257  0.515999    8.827410    10.853691
940      7.734707  0.298291    7.171616     8.342010
962      6.995925  0.339538    6.361115     7.694087

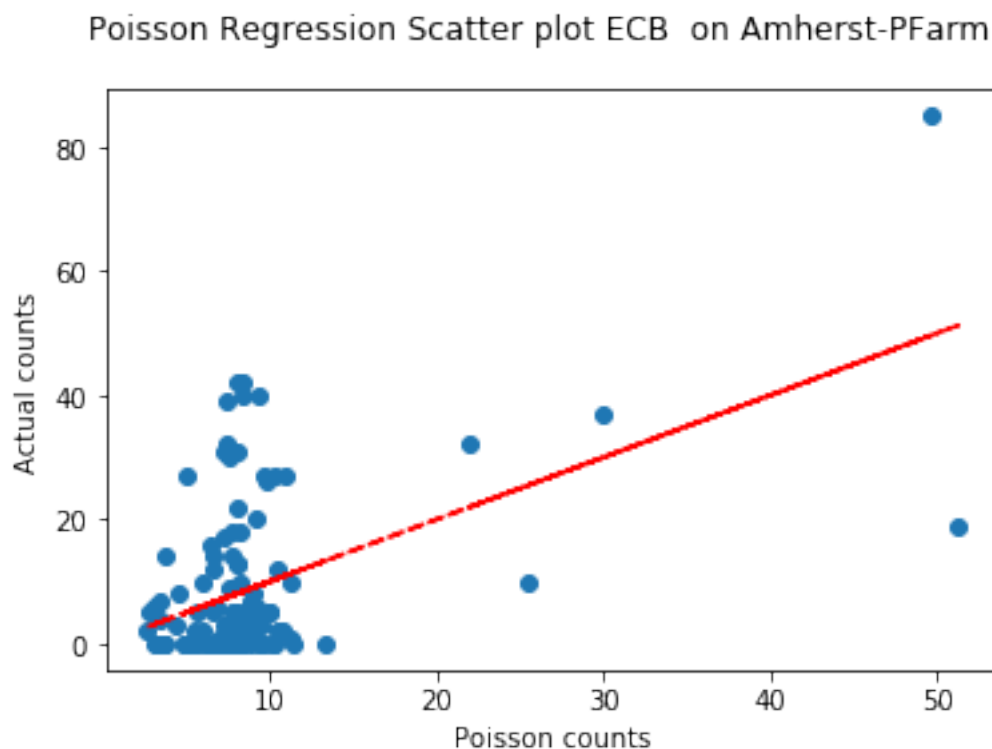
```

985	6.807997	0.393304	6.079174	7.624196
1008	8.153047	0.733075	6.835729	9.724226
1032	7.315487	0.434404	6.511751	8.218428
1056	11.271810	0.714747	9.954486	12.763462
1080	8.112892	0.389446	7.384400	8.913253
1104	5.085000	0.586004	4.056925	6.373602
1128	10.883211	0.927292	9.209400	12.861238
1152	8.003917	0.373920	7.303598	8.771387
1176	8.118957	0.373925	7.418182	8.885933
1200	6.560432	0.352832	5.904094	7.289733
1223	6.634062	0.508162	5.709242	7.708691
1247	8.009393	0.466196	7.145859	8.977279
1271	7.623474	0.293237	7.069870	8.220427
1295	6.414262	0.415310	5.649801	7.282160
1340	29.901280	1.913268	26.376956	33.896502
1365	49.676180	4.391845	41.772832	59.074828
1390	21.995759	1.274102	19.635103	24.640229
1416	51.323227	4.671092	42.938153	61.345760
1442	25.547457	1.451290	22.855618	28.556330
1468	7.978554	0.644211	6.810762	9.346578
1494	8.210519	0.741594	6.878409	9.800613
1520	7.040201	0.380707	6.332211	7.827351
1546	8.794862	0.399044	8.046517	9.612805
1572	9.006936	0.442222	8.180595	9.916748
1598	9.153784	0.541867	8.151039	10.279888
1623	8.845498	0.491280	7.933164	9.862753
1648	8.353053	0.327232	7.735694	9.019682
...	...	...	...	...
3128	6.863681	0.296400	6.306653	7.469908
3157	7.796782	0.268979	7.287021	8.342202
3187	8.007706	0.320652	7.403269	8.661491
3219	8.423818	0.367613	7.733263	9.176037
3251	6.636847	0.417633	5.866766	7.508012
3282	10.331660	0.612552	9.198211	11.604779
3313	6.983895	0.382094	6.273760	7.774411
3346	9.051875	0.346721	8.397196	9.757595
3380	8.907166	0.650643	7.719012	10.278207
3415	9.320306	0.440799	8.495189	10.225565
3450	8.641900	0.394286	7.902659	9.450291
3482	8.524795	0.346015	7.872892	9.230678
3512	7.759329	0.299678	7.193651	8.369490
3539	4.831019	0.490968	3.958518	5.895828
3562	7.519604	0.275369	6.998805	8.079158
3580	3.200243	0.433018	2.454759	4.172124
3600	3.515805	0.472994	2.700907	4.576568
3621	3.158135	0.421676	2.430960	4.102830
3642	2.803426	0.387295	2.138431	3.675217
3665	2.623690	0.371944	1.987207	3.464033

3689	3.242235	0.420102	2.515086	4.179612
3715	3.165599	0.418798	2.442558	4.102674
3741	3.560865	0.479830	2.734357	4.637200
3767	3.391310	0.433808	2.639270	4.357637
3793	3.758869	0.468450	2.944259	4.798863
3819	4.389679	0.591735	3.370464	5.717101
3845	3.417349	0.437290	2.659305	4.391476
3872	3.678500	0.471056	2.861995	4.727947
3899	3.368508	0.446197	2.598283	4.367056
3924	3.587676	0.484637	2.753148	4.675165

[121 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



#### Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	121
Model:	GLM	Df Residuals:	116
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -400.92  
Date: Fri, 08 May 2020 Deviance: 343.90  
Time: 08:04:41 Pearson chi2: 293.  
No. Iterations: 9 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	1.8995	0.607	3.131	0.002	0.710	3.089
tempf	0.0937	0.034	2.742	0.006	0.027	0.161
dwpf	-0.0065	0.035	-0.185	0.853	-0.075	0.062
drct	-0.0070	0.004	-1.917	0.055	-0.014	0.000
feel	-0.0742	0.019	-3.881	0.000	-0.112	-0.037

	mean	mean_se	mean_ci_lower	mean_ci_upper
919	9.737300	1.336855	7.440040	12.743885
940	7.595947	0.709341	6.325476	9.121591
962	7.220226	0.804010	5.804504	8.981245
985	7.147418	0.936570	5.528547	9.240327
1008	8.761932	1.948660	5.666201	13.549016
1032	7.738783	1.075733	5.893198	10.162355
1056	11.595902	1.909210	8.397661	16.012192
1080	8.324252	0.973072	6.619773	10.467605
1104	5.501834	1.462758	3.267389	9.264332
1128	11.497474	2.528135	7.471968	17.691712
1152	8.358373	0.951107	6.687483	10.446739
1176	8.465907	0.952774	6.790116	10.555280
1200	6.660652	0.821287	5.230700	8.481518
1223	7.198245	1.261692	5.105403	10.149000
1247	8.222583	1.199048	6.178498	10.942931
1271	7.488124	0.687608	6.254753	8.964703
1295	6.651813	1.000253	4.953844	8.931774
1340	28.666796	8.920034	15.578193	52.752279
1365	46.694183	21.516766	18.924636	115.212084
1390	20.897708	5.078422	12.979122	33.647438
1416	48.870309	22.895004	19.510571	122.410928
1442	25.355409	7.191293	14.542970	44.206705
1468	8.658452	1.691806	5.903654	12.698710
1494	9.127033	2.000984	5.939019	14.026345
1520	7.181967	0.907812	5.605962	9.201034
1546	8.939331	1.030219	7.131941	11.204753
1572	9.037025	1.134498	7.065885	11.558045
1598	9.081777	1.366494	6.762300	12.196838
1623	8.878600	1.246566	6.742715	11.691067
1648	8.444627	0.853696	6.926751	10.295118
...	...	...	...	...
3128	6.915077	0.688750	5.688744	8.405774
3157	7.857007	0.666116	6.654148	9.277306
3187	8.307661	0.805456	6.869924	10.046288

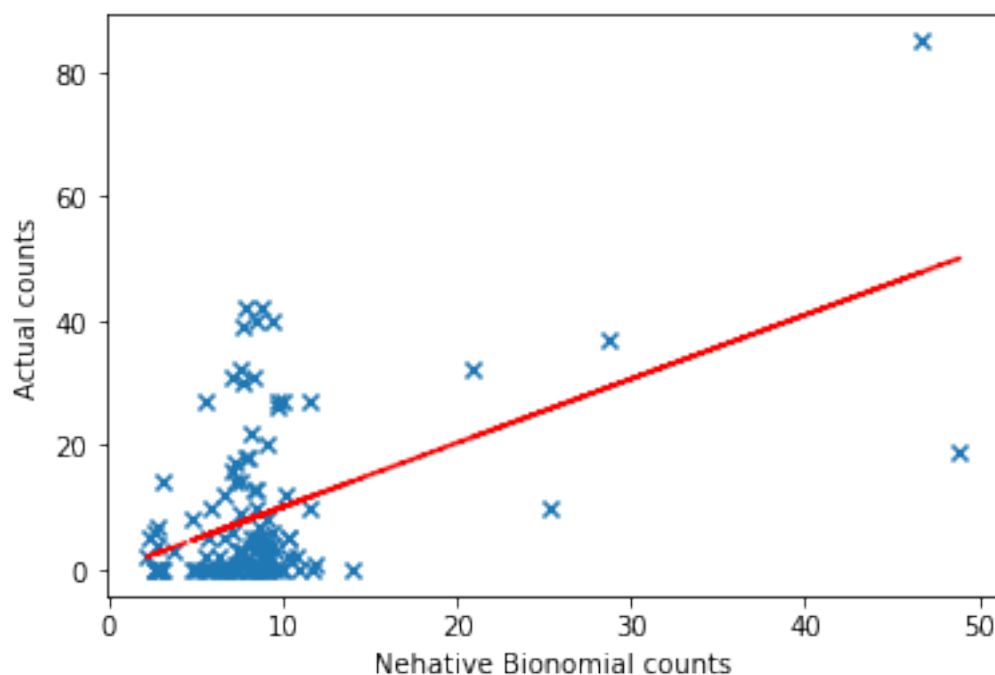
3219	8.558635	0.929790	6.917226	10.589539
3251	6.829106	0.989187	5.141247	9.071086
3282	10.896259	1.666455	8.074137	14.704786
3313	7.282306	0.905123	5.707850	9.291061
3346	9.258999	0.895659	7.659915	11.191907
3380	8.965768	1.625547	6.284338	12.791322
3415	9.436917	1.148518	7.434210	11.979135
3450	9.013254	1.051163	7.171516	11.327975
3482	8.630301	0.883801	7.060854	10.548596
3512	7.991054	0.743595	6.658813	9.589839
3539	4.870530	1.132167	3.088248	7.681397
3562	7.433842	0.639552	6.280328	8.799224
3580	2.663771	0.681412	1.613441	4.397851
3600	2.925317	0.749862	1.770027	4.834659
3621	2.626632	0.662323	1.602371	4.305617
3642	2.336447	0.617616	1.391712	3.922496
3665	2.183846	0.599861	1.274716	3.741371
3689	2.709277	0.662927	1.677161	4.376551
3715	2.644055	0.660590	1.620342	4.314540
3741	2.965987	0.763206	1.791177	4.911339
3767	2.835962	0.685209	1.766193	4.553683
3793	3.153583	0.749152	1.979687	5.023566
3819	3.669013	0.981214	2.172251	6.197099
3845	2.858605	0.691247	1.779601	4.591827
3872	3.072616	0.748588	1.906023	4.953230
3899	2.800266	0.701156	1.714225	4.574367
3924	2.983384	0.771516	1.797152	4.952603

[121 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



## Negative Binomial Regression Scatter plot ECB on Amherst-PFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          127
Model:                  GLM           Df Residuals:              122
Model Family:           Poisson       Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                 IRLS          Log-Likelihood:            -157.90
Date:                   Fri, 08 May 2020    Deviance:                  229.15
Time:                   08:04:41           Pearson chi2:              374.
No. Iterations:         6                Covariance Type:          nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-1.3786	0.854	-1.615	0.106	-3.052	0.295
tempf	-0.1178	0.066	-1.785	0.074	-0.247	0.012
dwpf	0.0805	0.053	1.507	0.132	-0.024	0.185
drct	0.0072	0.005	1.369	0.171	-0.003	0.017
feel	0.0489	0.051	0.961	0.336	-0.051	0.149

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
933    0.559371    0.115459      0.373254      0.838290
955    0.565267    0.079707      0.428774      0.745212
978    0.530908    0.092407      0.377453      0.746750

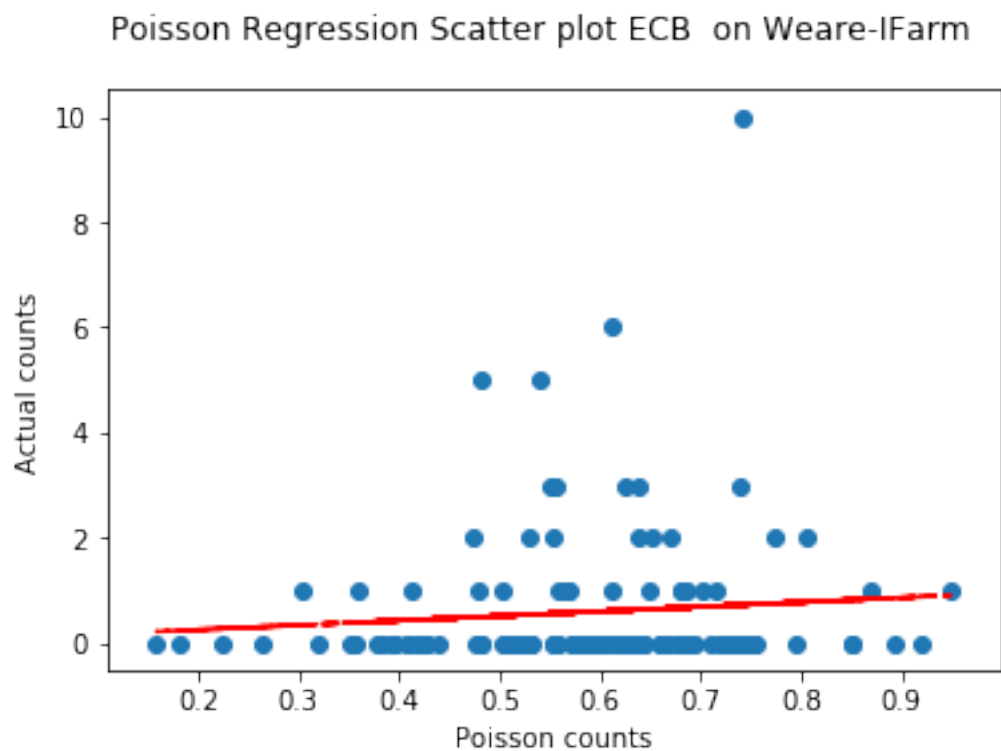
```

1001	0.578850	0.109904	0.398981	0.839809
1024	0.350370	0.129731	0.169572	0.723934
1048	0.683106	0.133844	0.465273	1.002923
1072	0.507548	0.128578	0.308916	0.833898
1096	0.659067	0.103469	0.484504	0.896524
1120	0.518385	0.202824	0.240775	1.116078
1144	0.355657	0.128144	0.175526	0.720646
1168	0.480661	0.093079	0.328855	0.702543
1192	0.476951	0.091623	0.327308	0.695009
1215	0.668536	0.106496	0.489250	0.913521
1239	0.521764	0.140629	0.307647	0.884902
1263	0.422829	0.105159	0.259697	0.688433
1287	0.553494	0.077980	0.419942	0.729519
1307	0.481204	0.115923	0.300105	0.771586
1326	0.851069	0.206261	0.529264	1.368541
1363	0.225358	0.187566	0.044098	1.151675
1388	0.158914	0.197734	0.013868	1.820944
1413	0.303075	0.189289	0.089110	1.030806
1439	0.181115	0.227573	0.015432	2.125684
1465	0.263150	0.199823	0.059407	1.165640
1491	0.391394	0.127168	0.207038	0.739908
1517	0.382882	0.140178	0.186823	0.784695
1543	0.682497	0.110787	0.496511	0.938150
1569	0.628812	0.102121	0.457387	0.864487
1595	0.639007	0.112927	0.451938	0.903509
1620	0.679255	0.143518	0.448936	1.027734
1645	0.684709	0.132765	0.468229	1.001275
...	...	...	...	...
3143	0.642263	0.084201	0.496729	0.830437
3172	0.584174	0.073216	0.456940	0.746835
3202	0.578353	0.085002	0.433600	0.771430
3234	0.634394	0.094229	0.474162	0.848773
3266	0.678993	0.127779	0.469546	0.981865
3297	0.419087	0.107632	0.253334	0.693290
3328	0.555370	0.101705	0.387884	0.795175
3361	0.570212	0.081435	0.430995	0.754399
3395	0.773874	0.190988	0.477088	1.255284
3430	0.610650	0.106842	0.433375	0.860442
3465	0.474847	0.095455	0.320216	0.704148
3524	0.530146	0.080746	0.393323	0.714564
3551	0.593835	0.195368	0.311621	1.131632
3572	0.601567	0.071959	0.475844	0.760509
3617	0.648889	0.199197	0.355522	1.184334
3638	0.737710	0.217439	0.413995	1.314547
3659	0.804323	0.250210	0.437156	1.479871
3682	0.870004	0.284157	0.458676	1.650202
3707	0.743057	0.212610	0.424101	1.301893
3733	0.718732	0.210972	0.404307	1.277685

3759	0.634555	0.196370	0.345983	1.163814
3785	0.725210	0.205407	0.416267	1.263443
3811	0.689790	0.195559	0.395728	1.202367
3837	0.573798	0.193338	0.296450	1.110624
3863	0.715674	0.203373	0.410043	1.249110
3890	0.681632	0.197743	0.386024	1.203609
3916	0.702330	0.207040	0.394108	1.251603
3942	0.641630	0.200138	0.348159	1.182475
3966	0.795454	0.238654	0.441810	1.432169
3990	0.618139	0.195164	0.332918	1.147717

[127 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



Generalized Linear Model Regression Results			
=====			
Dep. Variable:	trap_count	No. Observations:	127
Model:	GLM	Df Residuals:	122
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -125.05  
Date: Fri, 08 May 2020 Deviance: 81.780  
Time: 08:04:41 Pearson chi2: 119.  
No. Iterations: 9 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-1.5693	1.512	-1.038	0.299	-4.533	1.394
tempf	-0.1494	0.104	-1.434	0.152	-0.354	0.055
dwpf	0.0995	0.092	1.085	0.278	-0.080	0.279
drct	0.0085	0.009	0.916	0.360	-0.010	0.027
feel	0.0649	0.075	0.867	0.386	-0.082	0.212

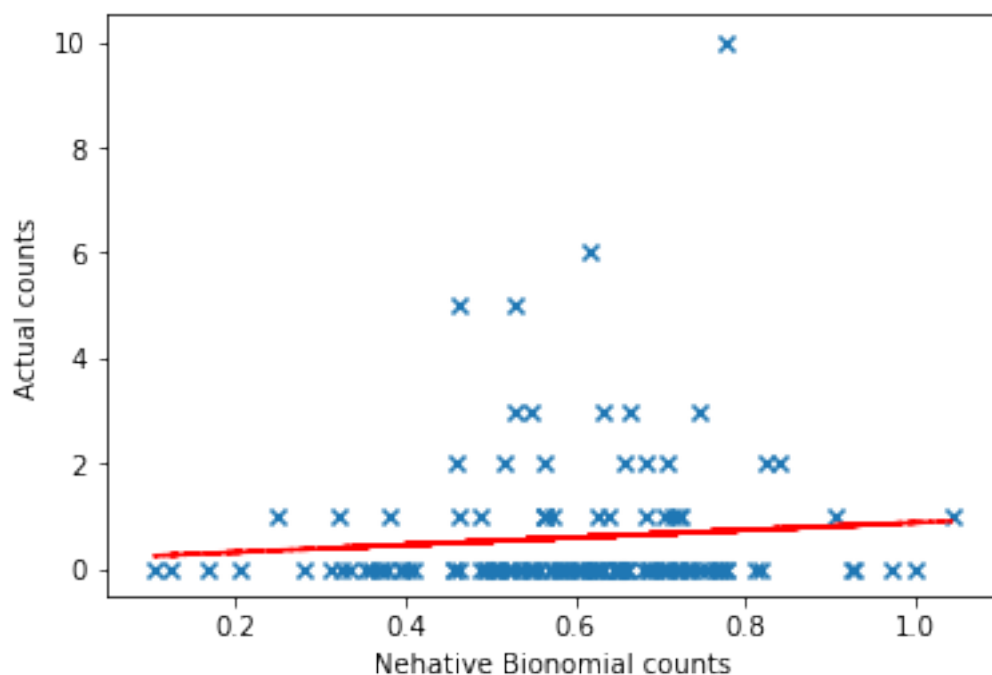
	mean	mean_se	mean_ci_lower	mean_ci_upper
933	0.564298	0.201779	0.279989	1.137305
955	0.563618	0.136190	0.350998	0.905035
978	0.518251	0.151074	0.292690	0.917639
1001	0.577893	0.189265	0.304139	1.098053
1024	0.313186	0.192351	0.093975	1.043735
1048	0.719901	0.248202	0.366271	1.414960
1072	0.506806	0.221223	0.215421	1.192327
1096	0.686172	0.194691	0.393475	1.196600
1120	0.494664	0.332151	0.132665	1.844437
1144	0.325732	0.197864	0.099038	1.071315
1168	0.462630	0.146993	0.248187	0.862360
1192	0.458012	0.144264	0.247040	0.849153
1215	0.687589	0.199775	0.389061	1.215179
1239	0.509936	0.231531	0.209429	1.241635
1263	0.394337	0.161841	0.176410	0.881477
1287	0.548400	0.131437	0.342835	0.877220
1307	0.457184	0.183155	0.208491	1.002525
1326	0.925188	0.409984	0.388179	2.205097
1363	0.169203	0.206677	0.015441	1.854087
1388	0.105071	0.191742	0.002939	3.756835
1413	0.249188	0.229869	0.040862	1.519629
1439	0.123494	0.227985	0.003313	4.603309
1465	0.205507	0.229138	0.023107	1.827697
1491	0.359167	0.192828	0.125403	1.028693
1517	0.353225	0.213645	0.107947	1.155825
1543	0.708292	0.211168	0.394856	1.270535
1569	0.649876	0.187376	0.369324	1.143547
1595	0.662532	0.207844	0.358240	1.225290
1620	0.715519	0.268291	0.343126	1.492066
1645	0.722063	0.250462	0.365864	1.425053
...	...	...	...	...
3143	0.656822	0.155453	0.413037	1.044494
3172	0.587648	0.127336	0.384302	0.898591
3202	0.583938	0.146959	0.356571	0.956286

3234	0.653915	0.174341	0.387776	1.102710
3266	0.700460	0.240299	0.357579	1.372132
3297	0.396431	0.169843	0.171194	0.918010
3328	0.547472	0.171675	0.296103	1.012232
3361	0.572854	0.142176	0.352197	0.931756
3395	0.839421	0.372980	0.351370	2.005370
3430	0.627918	0.193596	0.343135	1.149054
3465	0.459081	0.151990	0.239926	0.878418
3524	0.521358	0.131798	0.317653	0.855694
3551	0.574589	0.330458	0.186129	1.773783
3572	0.605036	0.127369	0.400490	0.914054
3617	0.640478	0.360719	0.212376	1.931537
3638	0.745125	0.406457	0.255805	2.170451
3659	0.823447	0.474295	0.266290	2.546342
3682	0.905646	0.546616	0.277462	2.956062
3707	0.754529	0.399301	0.267433	2.128809
3733	0.723802	0.392304	0.250186	2.093994
3759	0.623067	0.353314	0.205048	1.893276
3785	0.733748	0.383873	0.263163	2.045823
3811	0.694661	0.361323	0.250626	1.925396
3837	0.556646	0.339159	0.168636	1.837415
3863	0.722479	0.378852	0.258508	2.019187
3890	0.682808	0.363810	0.240307	1.940129
3916	0.704459	0.383051	0.242668	2.045024
3942	0.633067	0.361472	0.206741	1.938532
3966	0.816374	0.453619	0.274737	2.425831
3990	0.608103	0.349376	0.197212	1.875085

[127 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot ECB on Weare-IFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          71
Model:                  GLM           Df Residuals:                66
Model Family:           Poisson       Df Model:                   4
Link Function:          log           Scale:                     1.0000
Method:                 IRLS          Log-Likelihood:             -113.75
Date:                   Fri, 08 May 2020    Deviance:                  170.02
Time:                   08:04:41           Pearson chi2:               235.
No. Iterations:         6                Covariance Type:           nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-3.5053	2.060	-1.702	0.089	-7.543	0.532
tempf	-0.0915	0.051	-1.778	0.075	-0.192	0.009
dwpf	0.2013	0.062	3.272	0.001	0.081	0.322
drct	0.0089	0.007	1.361	0.174	-0.004	0.022
feel	-0.0487	0.018	-2.719	0.007	-0.084	-0.014

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
973    0.537993  0.121598    0.345451    0.837851
996    0.687237  0.170782    0.422259    1.118495
1019   0.247743  0.108038    0.105391    0.582371

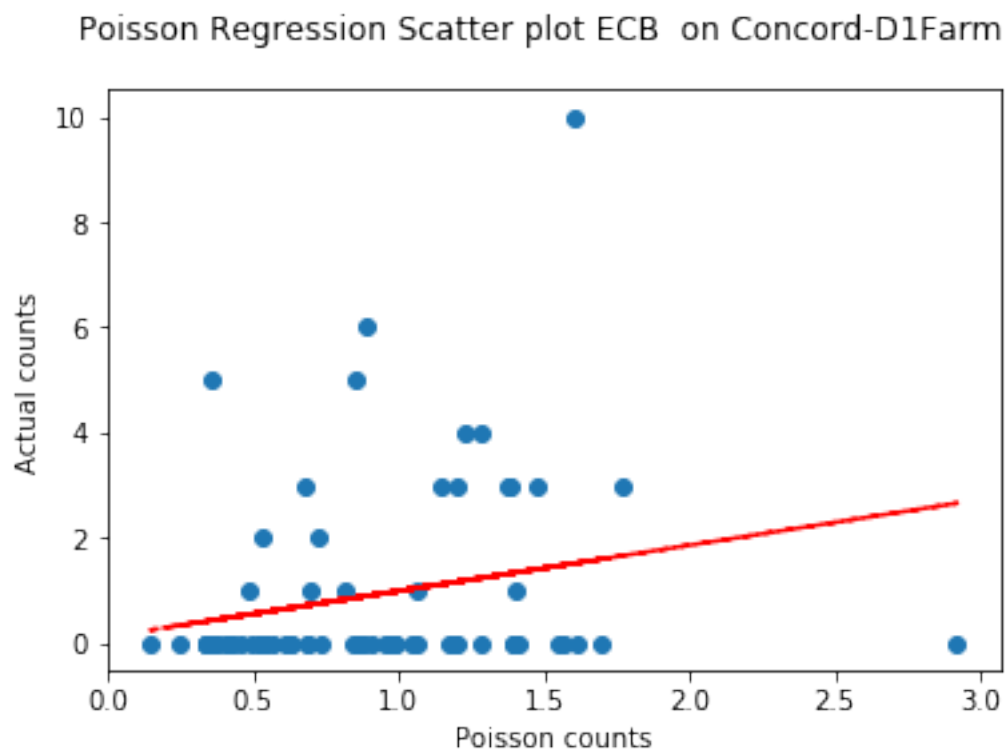
```

1043	1.168467	0.369590	0.628606	2.171973
1067	0.967011	0.266750	0.563154	1.660486
1091	1.189408	0.230173	0.813967	1.738019
1115	0.361391	0.170139	0.143628	0.909315
1139	0.371744	0.155701	0.163579	0.844812
1163	0.523163	0.120825	0.332699	0.822665
1187	0.526092	0.120425	0.335905	0.823961
1211	0.861583	0.175092	0.578516	1.283155
1234	0.541628	0.196013	0.266474	1.100901
1258	0.341373	0.118129	0.173252	0.672637
1282	0.563975	0.172147	0.310056	1.025839
1357	1.224138	0.384887	0.660998	2.267046
1382	1.772986	0.730478	0.790691	3.975612
1407	1.201307	0.359326	0.668419	2.159033
1433	2.918895	1.245271	1.264956	6.735372
1459	1.547075	0.427053	0.900630	2.657518
1485	0.338142	0.130886	0.158352	0.722066
1511	0.342141	0.156791	0.139357	0.840001
1537	1.046104	0.208873	0.707322	1.547149
1563	1.148317	0.186104	0.835814	1.577660
1589	1.202521	0.189729	0.882661	1.638294
1615	1.395233	0.261802	0.965889	2.015425
1640	1.404386	0.257607	0.980281	2.011974
1665	0.907393	0.127467	0.689004	1.195003
1688	1.609372	0.422050	0.962571	2.690790
1707	0.734375	0.159027	0.480389	1.122646
1724	1.414892	0.440977	0.768124	2.606248
...	...	...	...	...
1983	1.382678	0.278702	0.931423	2.052556
2005	1.394514	0.289359	0.928539	2.094331
2027	1.473728	0.316611	0.967270	2.245364
2049	1.286257	0.225605	0.912074	1.813952
2071	0.726295	0.128960	0.512832	1.028611
2093	0.423514	0.142356	0.219156	0.818432
2115	1.285368	0.301941	0.811101	2.036948
2134	0.399934	0.121550	0.220439	0.725586
2147	0.869800	0.242858	0.503216	1.503435
2201	0.146033	0.089890	0.043701	0.487986
2223	1.691117	0.706995	0.745276	3.837342
2245	0.359708	0.118011	0.189100	0.684240
2267	0.489304	0.123391	0.298487	0.802107
2289	0.891201	0.233200	0.533633	1.488363
2311	0.529432	0.122069	0.336939	0.831896
2333	1.374655	0.334784	0.852887	2.215623
2355	0.981501	0.323668	0.514270	1.873227
2377	1.564632	0.342927	1.018241	2.404217
2399	0.974428	0.297632	0.535496	1.773139
2421	1.607019	0.337840	1.064326	2.426427

2443	0.953100	0.127390	0.733446	1.238538
2465	0.680172	0.119633	0.481842	0.960138
2487	0.427405	0.124692	0.241273	0.757130
2509	0.360052	0.120122	0.187234	0.692382
2531	1.061476	0.253718	0.664436	1.695773
2551	0.699519	0.139008	0.473860	1.032642
2570	0.986801	0.234925	0.618851	1.573521
2588	0.685517	0.172795	0.418274	1.123508
2603	0.610973	0.261570	0.264001	1.413967
2617	0.628770	0.182329	0.356175	1.109995

[71 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



# Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	71
Model:	GLM	Df Residuals:	66
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000



Method: IRLS Log-Likelihood: -102.26  
Date: Fri, 08 May 2020 Deviance: 136.81  
Time: 08:04:42 Pearson chi2: 197.  
No. Iterations: 8 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-3.8774	2.266	-1.711	0.087	-8.319	0.564
tempf	-0.0844	0.057	-1.479	0.139	-0.196	0.027
dwpf	0.2054	0.067	3.047	0.002	0.073	0.338
drct	0.0095	0.007	1.317	0.188	-0.005	0.024
feel	-0.0549	0.021	-2.654	0.008	-0.096	-0.014

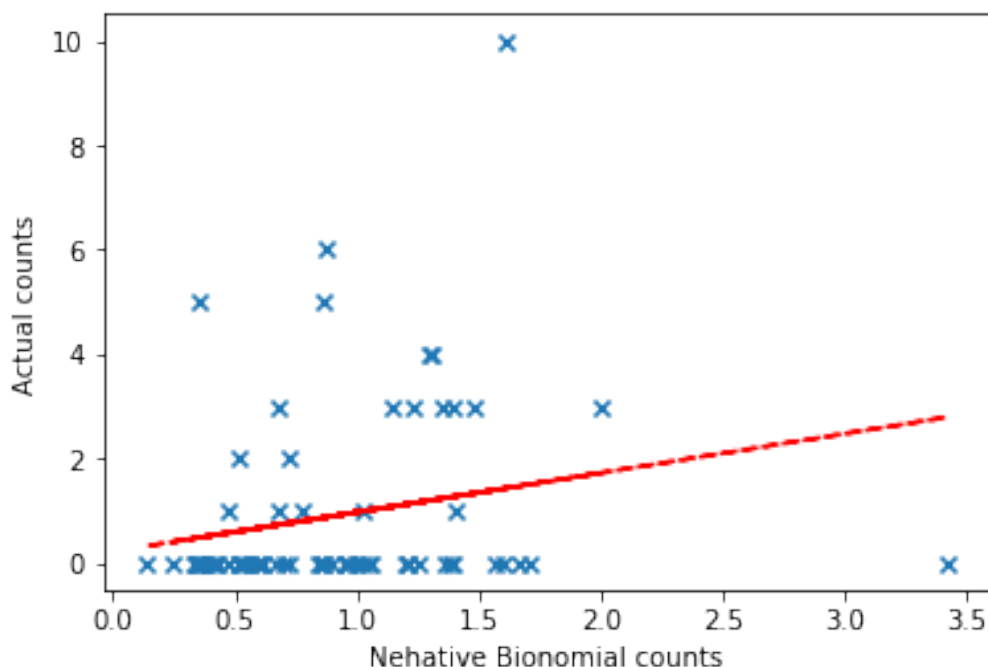
	mean	mean_se	mean_ci_lower	mean_ci_upper
973	0.531201	0.128262	0.330925	0.852683
996	0.695452	0.186272	0.411414	1.175588
1019	0.242213	0.113745	0.096487	0.608033
1043	1.207018	0.419613	0.610658	2.385773
1067	0.961006	0.295141	0.526390	1.754462
1091	1.205015	0.259220	0.790468	1.836965
1115	0.367560	0.187089	0.135539	0.996764
1139	0.360782	0.165244	0.147022	0.885338
1163	0.518178	0.127668	0.319714	0.839841
1187	0.520976	0.127237	0.322798	0.840824
1211	0.859271	0.192129	0.554378	1.331848
1234	0.555201	0.216627	0.258423	1.192807
1258	0.326405	0.121966	0.156925	0.678925
1282	0.533119	0.178416	0.276667	1.027286
1357	1.301992	0.464309	0.647228	2.619143
1382	1.999888	0.952985	0.785944	5.088848
1407	1.230782	0.410962	0.639680	2.368098
1433	3.418179	1.703386	1.287106	9.077689
1459	1.704567	0.545018	0.910859	3.189900
1485	0.338486	0.140760	0.149819	0.764740
1511	0.346620	0.171775	0.131227	0.915558
1537	1.055653	0.233252	0.684611	1.627790
1563	1.149968	0.209074	0.805248	1.642259
1589	1.194922	0.213378	0.842054	1.695663
1615	1.381877	0.293782	0.910977	2.096195
1640	1.405440	0.291619	0.935824	2.110720
1665	0.893917	0.139500	0.658360	1.213754
1688	1.598461	0.472357	0.895707	2.852583
1707	0.717937	0.170922	0.450234	1.144813
1724	1.365200	0.474751	0.690541	2.699003
...	...	...	...	...
1983	1.397064	0.316076	0.896681	2.176679
2005	1.392190	0.325669	0.880198	2.201995
2027	1.485414	0.358809	0.925199	2.384842

2049	1.295061	0.255390	0.879895	1.906119
2071	0.725692	0.138330	0.499457	1.054402
2093	0.410109	0.150012	0.200236	0.839956
2115	1.254460	0.330833	0.748123	2.103490
2134	0.386078	0.126399	0.203234	0.733420
2147	0.847604	0.263367	0.461008	1.558395
2201	0.135275	0.090442	0.036485	0.501552
2223	1.663637	0.778530	0.664849	4.162885
2245	0.347897	0.122975	0.174007	0.695561
2267	0.471397	0.128311	0.276500	0.803672
2289	0.873748	0.254467	0.493725	1.546276
2311	0.514709	0.127961	0.316189	0.837871
2333	1.351610	0.370099	0.790269	2.311682
2355	0.962215	0.354119	0.467745	1.979409
2377	1.563142	0.386544	0.962738	2.537984
2399	0.997036	0.333835	0.517255	1.921838
2421	1.607306	0.382234	1.008495	2.561669
2443	0.947073	0.140419	0.708237	1.266450
2465	0.675271	0.127128	0.466905	0.976622
2487	0.414605	0.130538	0.223684	0.768483
2509	0.355555	0.127123	0.176430	0.716539
2531	1.045412	0.279547	0.618975	1.765639
2551	0.681448	0.148180	0.444979	1.043581
2570	0.954971	0.253737	0.567316	1.607516
2588	0.666759	0.184882	0.387207	1.148139
2603	0.591481	0.280194	0.233729	1.496819
2617	0.603261	0.192440	0.322829	1.127295

[71 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot ECB on Concord-D1Farm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          103
Model:                  GLM           Df Residuals:                98
Model Family:           Poisson       Df Model:                   4
Link Function:          log           Scale:                     1.0000
Method:                 IRLS          Log-Likelihood:             -118.18
Date:                   Fri, 08 May 2020    Deviance:                  178.85
Time:                   08:04:42           Pearson chi2:              305.
No. Iterations:         6                Covariance Type:          nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-3.2004	2.325	-1.377	0.169	-7.757	1.356
tempf	-0.0650	0.060	-1.077	0.282	-0.183	0.053
dwpf	0.1477	0.065	2.279	0.023	0.021	0.275
drct	0.0019	0.007	0.280	0.780	-0.011	0.015
feel	-0.0298	0.027	-1.091	0.275	-0.083	0.024

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
1025  0.204344  0.093109      0.083660      0.499124
1049  0.650125  0.227262      0.327677      1.289876
1073  0.716271  0.208364      0.405006      1.266756

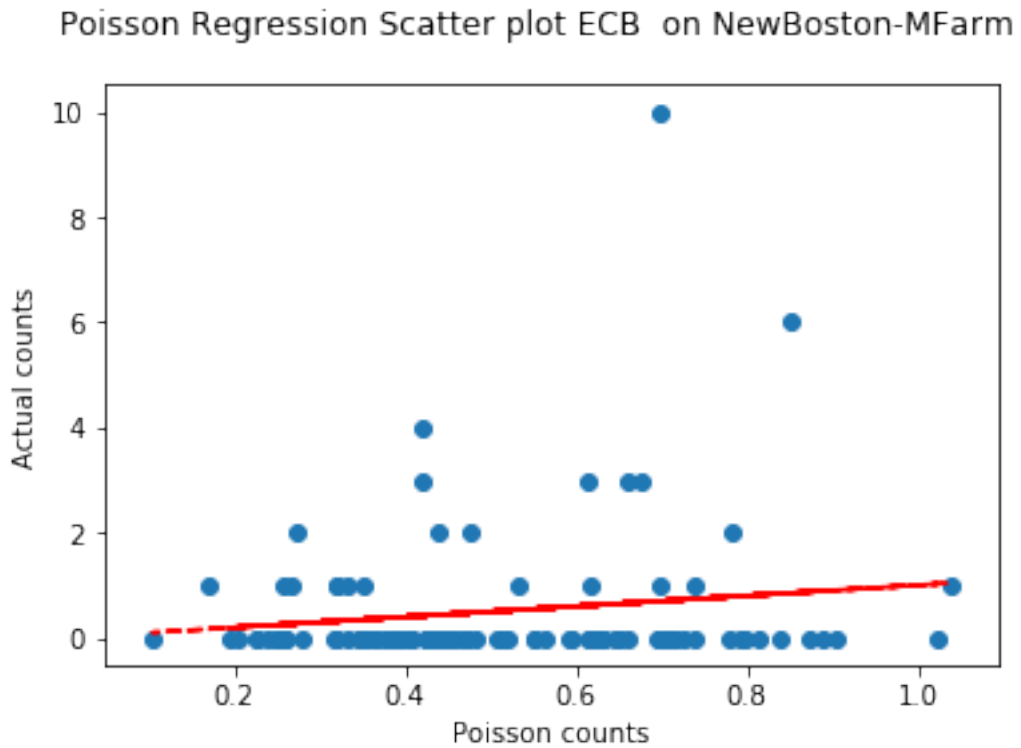
```

1097	0.660064	0.137180	0.439220	0.991948
1121	0.195095	0.102397	0.069741	0.545764
1145	0.345322	0.145795	0.150955	0.789953
1169	0.349745	0.084091	0.218320	0.560288
1193	0.351593	0.083574	0.220653	0.560236
1216	0.438161	0.095255	0.286145	0.670938
1240	0.331767	0.135053	0.149394	0.736773
1264	0.252200	0.091074	0.124269	0.511832
1288	0.349994	0.122388	0.176363	0.694566
1308	0.224906	0.079067	0.112916	0.447967
1327	0.644050	0.193631	0.357281	1.160993
1364	0.612684	0.276856	0.252697	1.485500
1389	0.698638	0.448535	0.198504	2.458869
1414	0.629916	0.249677	0.289665	1.369838
1440	1.022232	0.683810	0.275517	3.792717
1466	0.710976	0.298808	0.311970	1.620306
1492	0.256145	0.106817	0.113115	0.580031
1518	0.280725	0.141371	0.104622	0.753253
1544	0.531789	0.112289	0.351564	0.804403
1570	0.674880	0.118224	0.478758	0.951345
1596	0.699086	0.123351	0.494697	0.987919
1621	0.790185	0.170458	0.517736	1.206005
1646	0.783188	0.159044	0.526030	1.166063
1671	0.551583	0.084246	0.408887	0.744079
1693	0.727418	0.210327	0.412730	1.282040
1711	0.385005	0.093442	0.239264	0.619521
1728	0.888430	0.325707	0.433076	1.822561
...	...	...	...	...
2692	0.418668	0.082302	0.284801	0.615458
2714	0.170260	0.098753	0.054627	0.530663
2736	0.355749	0.082729	0.225526	0.561163
2757	0.623785	0.121935	0.425252	0.915007
2779	0.394143	0.153366	0.183841	0.845019
2800	0.695809	0.150275	0.455675	1.062491
2822	0.616309	0.108305	0.436733	0.869723
2845	0.737093	0.142994	0.503955	1.078085
2866	0.562255	0.232039	0.250408	1.262461
2889	0.512689	0.078026	0.380461	0.690873
2912	0.405880	0.124575	0.222404	0.740718
2935	0.436813	0.088227	0.294016	0.648963
2957	0.623628	0.131731	0.412215	0.943467
2978	0.444152	0.192306	0.190101	1.037718
3067	0.240020	0.162989	0.063420	0.908383
3089	0.256621	0.090052	0.129002	0.510493
3116	0.452997	0.092153	0.304043	0.674925
3144	0.427719	0.083302	0.291998	0.626522
3173	0.446064	0.076568	0.318630	0.624464
3203	0.507126	0.096527	0.349218	0.736436

3235	0.632123	0.103593	0.458465	0.871561
3267	0.483741	0.126558	0.289680	0.807807
3298	0.439414	0.136627	0.238896	0.808236
3329	0.364186	0.091534	0.222527	0.596024
3362	0.590508	0.095604	0.429947	0.811029
3396	1.037108	0.322883	0.563403	1.909100
3431	0.698796	0.126545	0.490011	0.996540
3466	0.393106	0.092812	0.247481	0.624421
3495	0.595891	0.088164	0.445891	0.796352
3525	0.387215	0.074077	0.266140	0.563371

[103 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



#### Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	103
Model:	GLM	Df Residuals:	98
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -88.747  
Date: Fri, 08 May 2020 Deviance: 51.320  
Time: 08:04:42 Pearson chi2: 75.5  
No. Iterations: 10 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-3.9953	4.330	-0.923	0.356	-12.481	4.491
tempf	-0.0445	0.118	-0.376	0.707	-0.276	0.187
dwpf	0.1453	0.119	1.224	0.221	-0.087	0.378
drct	0.0037	0.013	0.288	0.773	-0.021	0.029
feel	-0.0393	0.062	-0.635	0.525	-0.161	0.082

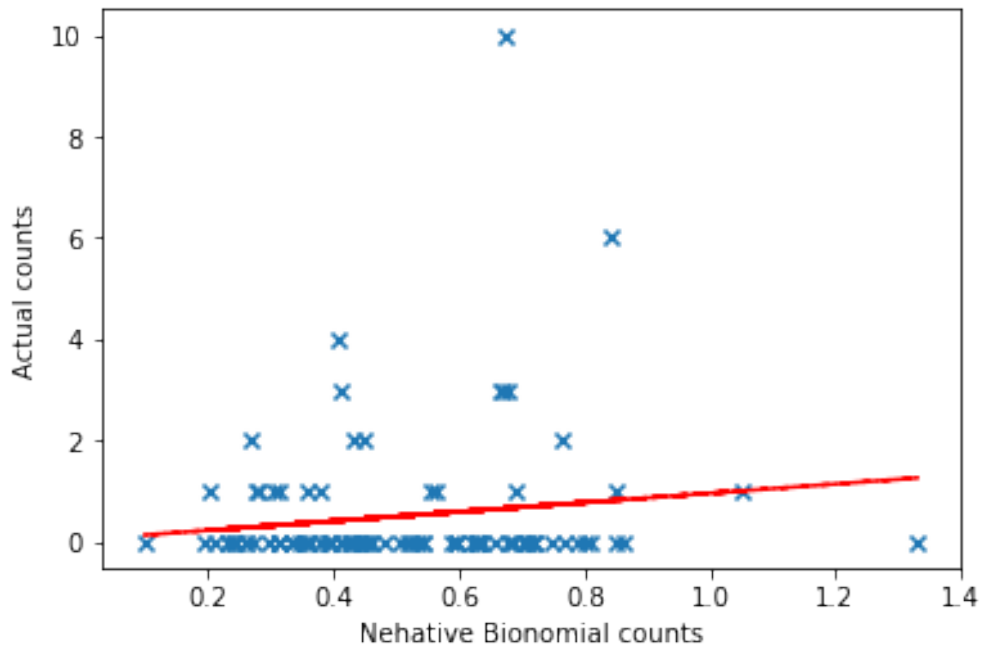
	mean	mean_se	mean_ci_lower	mean_ci_upper
1025	0.212120	0.165404	0.046009	0.977959
1049	0.711996	0.481750	0.189033	2.681738
1073	0.688052	0.411254	0.213232	2.220195
1097	0.679226	0.292153	0.292341	1.578115
1121	0.229713	0.214001	0.037000	1.426160
1145	0.332601	0.256305	0.073448	1.506141
1169	0.358184	0.145152	0.161867	0.792596
1193	0.359399	0.143949	0.163925	0.787964
1216	0.449861	0.180249	0.205126	0.986586
1240	0.378690	0.274604	0.091420	1.568647
1264	0.241077	0.149779	0.071336	0.814706
1288	0.314440	0.199728	0.090545	1.091969
1308	0.229201	0.135342	0.072042	0.729198
1327	0.638601	0.376070	0.201353	2.025348
1364	0.665859	0.668648	0.093028	4.765942
1389	0.849046	1.246489	0.047784	15.086362
1414	0.628517	0.525747	0.121983	3.238447
1440	1.329796	2.038113	0.065946	26.815098
1466	0.848446	0.808751	0.130993	5.495430
1492	0.278439	0.199898	0.068176	1.137174
1518	0.313842	0.279552	0.054766	1.798505
1544	0.553316	0.227195	0.247437	1.237320
1570	0.669321	0.256331	0.315972	1.417820
1596	0.675179	0.263704	0.314027	1.451684
1621	0.747362	0.349769	0.298652	1.870239
1646	0.764262	0.340163	0.319436	1.828527
1671	0.533304	0.170815	0.284669	0.999104
1693	0.703006	0.405444	0.227010	2.177069
1711	0.377690	0.164114	0.161165	0.885117
1728	0.768038	0.569352	0.179630	3.283863
...	...	...	...	...
2692	0.406632	0.144046	0.203081	0.814203
2714	0.202088	0.210146	0.026327	1.551258
2736	0.359542	0.141382	0.166354	0.777080

2757	0.628605	0.255839	0.283102	1.395766
2779	0.394378	0.282452	0.096892	1.605238
2800	0.676445	0.312499	0.273528	1.672876
2822	0.628375	0.230610	0.306079	1.290045
2845	0.704984	0.297662	0.308163	1.612789
2866	0.618707	0.489417	0.131268	2.916164
2889	0.504116	0.151310	0.279925	0.907859
2912	0.427117	0.243022	0.140032	1.302765
2935	0.459943	0.166830	0.225921	0.936379
2957	0.630528	0.272140	0.270595	1.469223
2978	0.456906	0.373370	0.092098	2.266753
3067	0.194551	0.242938	0.016832	2.248733
3089	0.272952	0.161487	0.085603	0.870327
3116	0.440182	0.165809	0.210378	0.921012
3144	0.423495	0.149955	0.211567	0.847714
3173	0.432521	0.136474	0.233038	0.802764
3203	0.522216	0.190274	0.255686	1.066578
3235	0.633972	0.223492	0.317687	1.265147
3267	0.519075	0.256236	0.197262	1.365894
3298	0.442592	0.253929	0.143761	1.362591
3329	0.388958	0.169760	0.165347	0.914972
3362	0.597685	0.201867	0.308305	1.158680
3396	1.050063	0.676107	0.297269	3.709206
3431	0.683023	0.272543	0.312453	1.493090
3466	0.394302	0.164048	0.174457	0.891187
3495	0.589192	0.187936	0.315316	1.100948
3525	0.389960	0.126659	0.206325	0.737038

[103 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

# Negative Binomial Regression Scatter plot ECB on NewBoston-MFarm



## Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          111
Model:                  GLM          Df Residuals:                106
Model Family:           Poisson      Df Model:                    4
Link Function:           log         Scale:                      1.0000
Method:                  IRLS        Log-Likelihood:            -157.19
Date:                    Fri, 08 May 2020    Deviance:                  267.68
Time:                    08:04:43          Pearson chi2:              577.
No. Iterations:          6              Covariance Type:          nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	0.9012	1.041	0.866	0.387	-1.139	2.941
tempf	0.1600	0.047	3.416	0.001	0.068	0.252
dwpf	-0.1061	0.052	-2.052	0.040	-0.207	-0.005
drct	-0.0217	0.006	-3.683	0.000	-0.033	-0.010
feel	-0.0554	0.018	-3.087	0.002	-0.091	-0.020

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
1355  1.942317  0.553063      1.111592      3.393865
1380  2.249975  0.927509      1.002966      5.047416
1405  1.455521  0.358703      0.897937      2.359344
=====

```

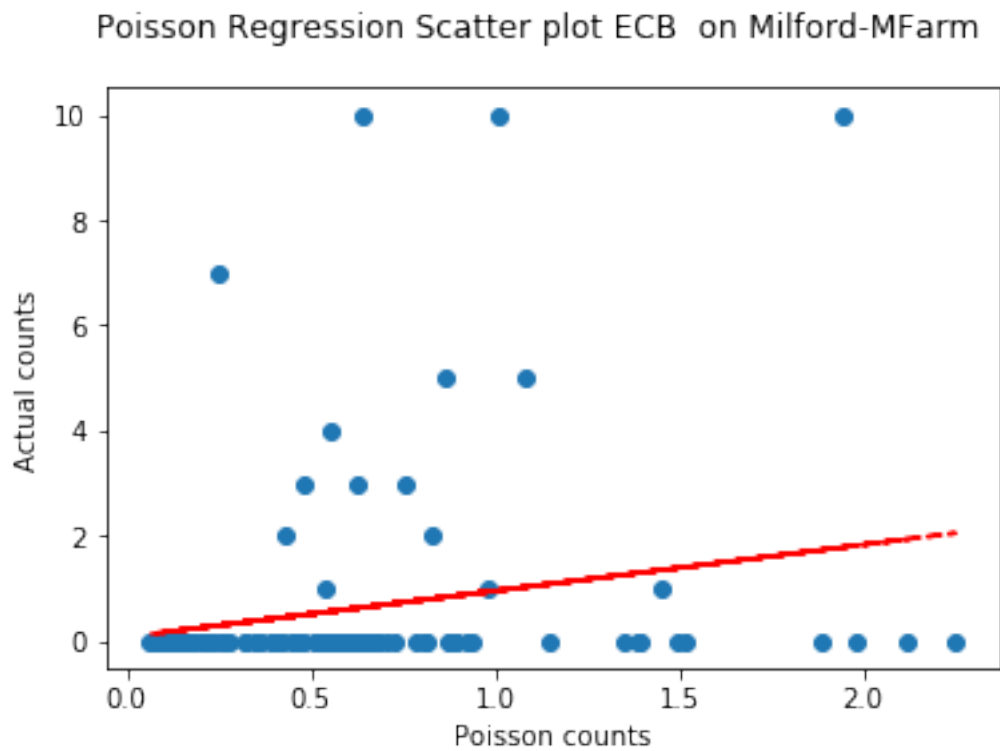


1431	1.883754	0.804149	0.815940	4.349009
1457	1.396460	0.370306	0.830445	2.348259
1483	0.939842	0.281959	0.522022	1.692080
1509	1.148446	0.382791	0.597578	2.207122
1535	0.363737	0.086346	0.228415	0.579228
1561	0.623516	0.113233	0.436784	0.890080
1587	0.623289	0.120620	0.426543	0.910785
1613	0.600113	0.139000	0.381132	0.944911
1638	0.563477	0.124287	0.365700	0.868214
1663	0.623128	0.096558	0.459915	0.844261
1686	0.281498	0.084961	0.155800	0.508608
1743	0.392604	0.079193	0.264398	0.582978
1764	0.613463	0.088335	0.462615	0.813497
1785	0.599745	0.120587	0.404409	0.889432
1806	0.538535	0.091415	0.386123	0.751108
1827	0.604631	0.103122	0.432828	0.844628
1849	0.403821	0.074388	0.281442	0.579413
1871	0.814469	0.128518	0.597807	1.109656
1893	0.454566	0.087948	0.311108	0.664177
1915	0.259122	0.100353	0.121297	0.553550
1937	0.578275	0.216487	0.277635	1.204469
1959	0.587571	0.108209	0.409544	0.842985
1981	0.415643	0.097827	0.262047	0.659267
2003	0.724203	0.166922	0.460964	1.137769
2025	0.645170	0.146394	0.413551	1.006512
2047	0.507978	0.104602	0.339287	0.760540
2069	0.514657	0.093820	0.360037	0.735680
...	...	...	...	...
3263	0.320785	0.089176	0.186031	0.553148
3294	1.352750	0.273317	0.910409	2.010012
3325	0.451242	0.107545	0.282841	0.719907
3358	0.665721	0.103198	0.491294	0.902077
3392	0.468852	0.136033	0.265502	0.827949
3427	0.702968	0.129720	0.489623	1.009275
3462	0.884337	0.142037	0.645509	1.211527
3492	0.583465	0.096586	0.421801	0.807089
3521	0.610004	0.095210	0.449237	0.828304
3548	0.182580	0.080609	0.076851	0.433767
3570	0.461372	0.072867	0.338545	0.628761
3595	0.121700	0.070233	0.039270	0.377153
3615	0.155706	0.088754	0.050946	0.475881
3636	0.106271	0.060733	0.034671	0.325738
3657	0.076497	0.045426	0.023888	0.244966
3680	0.063234	0.038533	0.019154	0.208763
3705	0.113320	0.062833	0.038223	0.335954
3731	0.115935	0.065566	0.038267	0.351242
3757	0.162187	0.092469	0.053053	0.495814
3783	0.125540	0.068589	0.043025	0.366300

3809	0.163318	0.086380	0.057920	0.460513
3835	0.264463	0.148536	0.087960	0.795139
3861	0.130520	0.071269	0.044760	0.380598
3888	0.157552	0.085636	0.054295	0.457178
3914	0.129201	0.072939	0.042729	0.390665
3940	0.166915	0.095312	0.054506	0.511151
3964	0.088226	0.051119	0.028341	0.274654
3988	0.213330	0.118342	0.071922	0.632768
4011	0.236040	0.135686	0.076503	0.728272
4019	0.078542	0.046241	0.024772	0.249025

[111 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



#### Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	111
Model:	GLM	Df Residuals:	106
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -94.225  
Date: Fri, 08 May 2020 Deviance: 107.18  
Time: 08:04:43 Pearson chi2: 279.  
No. Iterations: 10 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	0.1544	1.656	0.093	0.926	-3.090	3.399
tempf	0.1829	0.077	2.361	0.018	0.031	0.335
dwpf	-0.1189	0.082	-1.442	0.149	-0.281	0.043
drct	-0.0220	0.009	-2.361	0.018	-0.040	-0.004
feel	-0.0549	0.038	-1.464	0.143	-0.128	0.019

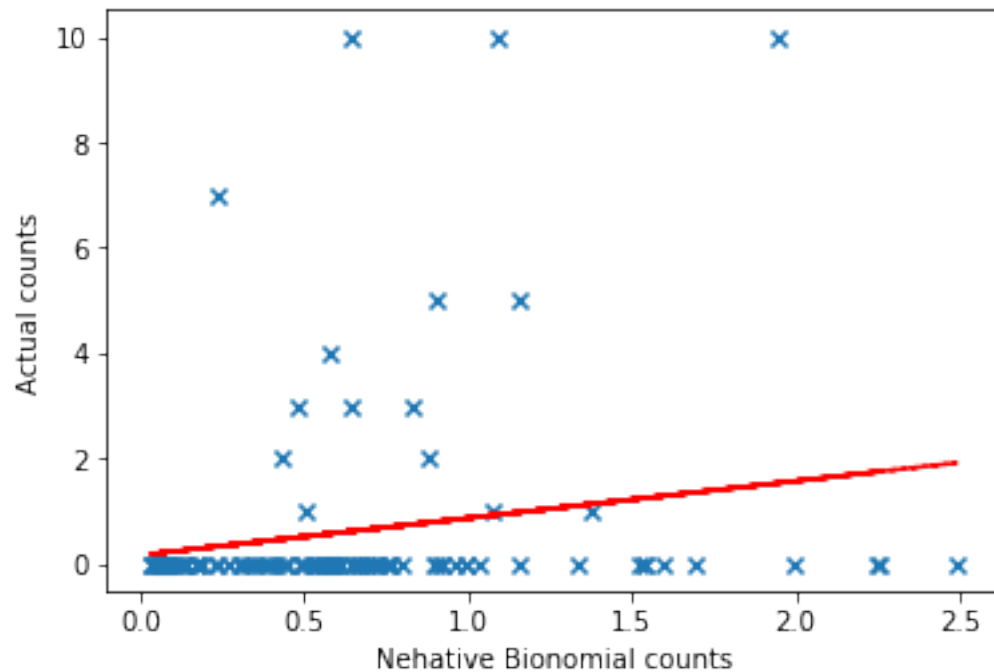
	mean	mean_se	mean_ci_lower	mean_ci_upper
1355	1.943240	1.179886	0.591151	6.387847
1380	2.244925	2.001712	0.391038	12.887987
1405	1.380810	0.678476	0.527092	3.617271
1431	1.998407	1.826464	0.333211	11.985274
1457	1.542033	0.858301	0.517979	4.590661
1483	1.155688	0.548054	0.456227	2.927521
1509	1.522959	0.815793	0.533004	4.351567
1535	0.384675	0.127331	0.201065	0.735954
1561	0.668668	0.179752	0.394811	1.132482
1587	0.645647	0.187320	0.365627	1.140124
1613	0.605723	0.211556	0.305479	1.201063
1638	0.587112	0.192188	0.309091	1.115210
1663	0.648386	0.150911	0.410883	1.023173
1686	0.266833	0.118873	0.111438	0.638918
1743	0.364524	0.103914	0.208486	0.637346
1764	0.596236	0.135657	0.381725	0.931290
1785	0.577167	0.176981	0.316440	1.052718
1806	0.505075	0.129661	0.305379	0.835357
1827	0.544710	0.147507	0.320377	0.926124
1849	0.391456	0.100740	0.236390	0.648241
1871	0.920851	0.237152	0.555872	1.525471
1893	0.486728	0.129510	0.288932	0.819930
1915	0.299422	0.165892	0.101085	0.886918
1937	0.712155	0.396209	0.239335	2.119055
1959	0.671088	0.177731	0.399344	1.127747
1981	0.437329	0.147770	0.225525	0.848051
2003	0.767977	0.270602	0.384965	1.532057
2025	0.695706	0.236834	0.356991	1.355797
2047	0.538921	0.160208	0.300943	0.965086
2069	0.559622	0.142031	0.340299	0.920298
...	...	...	...	...
3263	0.345243	0.134553	0.160836	0.741084
3294	1.596799	0.570609	0.792641	3.216796
3325	0.499035	0.166420	0.259579	0.959386

3358	0.724769	0.165383	0.463412	1.133529
3392	0.500513	0.215579	0.215174	1.164235
3427	0.749439	0.210313	0.432381	1.298992
3462	0.993148	0.268229	0.584954	1.686187
3492	0.613642	0.147580	0.383003	0.983168
3521	0.655797	0.150018	0.418843	1.026805
3548	0.173156	0.110030	0.049837	0.601623
3570	0.440850	0.098326	0.284735	0.682560
3595	0.059894	0.052566	0.010723	0.334537
3615	0.077153	0.067275	0.013968	0.426155
3636	0.052478	0.045499	0.009593	0.287070
3657	0.037679	0.033763	0.006507	0.218195
3680	0.030957	0.028445	0.005113	0.187450
3705	0.057047	0.048018	0.010958	0.296974
3731	0.057826	0.049669	0.010740	0.311355
3757	0.080608	0.070350	0.014571	0.445922
3783	0.063632	0.052875	0.012484	0.324326
3809	0.084501	0.068372	0.017303	0.412660
3835	0.135815	0.118189	0.024672	0.747624
3861	0.066192	0.055017	0.012981	0.337519
3888	0.080038	0.066528	0.015695	0.408154
3914	0.063986	0.055031	0.011858	0.345272
3940	0.082693	0.072385	0.014872	0.459800
3964	0.043417	0.038076	0.007783	0.242183
3988	0.108344	0.092626	0.020281	0.578785
4011	0.118438	0.105236	0.020757	0.675794
4019	0.038424	0.034212	0.006710	0.220032

[111 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot ECB on Milford-MFarm



### Generalized Linear Model Regression Results

```
=====
Dep. Variable:          trap_count    No. Observations:          92
Model:                  GLM           Df Residuals:              87
Model Family:           Poisson       Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                 IRLS          Log-Likelihood:            -30.178
Date:                   Fri, 08 May 2020    Deviance:                  41.741
Time:                   08:04:43           Pearson chi2:              85.3
No. Iterations:         6                Covariance Type:          nonrobust
=====
```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-2.1725	2.453	-0.886	0.376	-6.980	2.635
tempf	-0.6600	0.750	-0.880	0.379	-2.130	0.810
dwpf	0.1735	0.215	0.806	0.420	-0.249	0.595
drct	0.0067	0.016	0.407	0.684	-0.026	0.039
feel	0.4898	0.733	0.669	0.504	-0.946	1.926

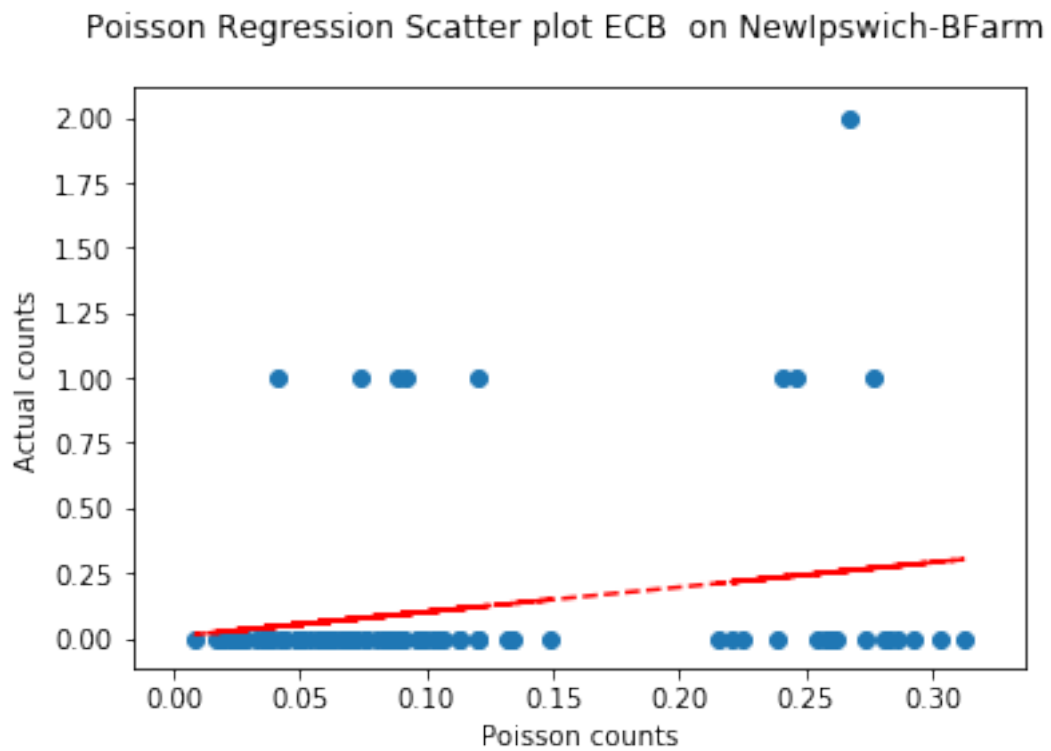
```
=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
1847  0.082942  0.037471    0.034215    0.201060
1869  0.061092  0.051326    0.011772    0.317040
1891  0.061781  0.033133    0.021595    0.176747
=====
```

1913	0.049151	0.047130	0.007505	0.321909
1935	0.023692	0.037584	0.001058	0.530774
1957	0.080375	0.068065	0.015286	0.422629
1979	0.102370	0.061108	0.031774	0.329822
2001	0.119943	0.085101	0.029856	0.481852
2023	0.113116	0.076114	0.030253	0.422943
2045	0.091288	0.049012	0.031872	0.261471
2067	0.053357	0.032618	0.016100	0.176823
2089	0.035954	0.037947	0.004543	0.284525
2111	0.113227	0.095838	0.021551	0.594873
2130	0.042101	0.037683	0.007285	0.243313
2144	0.084280	0.048522	0.027269	0.260482
2157	0.091325	0.050371	0.030982	0.269199
2180	0.086334	0.065756	0.019403	0.384145
2197	0.019429	0.033417	0.000667	0.565561
2219	0.099382	0.143529	0.005861	1.685103
2241	0.032903	0.036013	0.003851	0.281128
2263	0.049515	0.034557	0.012609	0.194444
2285	0.091530	0.051437	0.030424	0.275369
2307	0.049160	0.035837	0.011779	0.205175
2329	0.133304	0.112762	0.025398	0.699647
2351	0.148936	0.183251	0.013356	1.660803
2373	0.132119	0.102587	0.028842	0.605200
2395	0.133870	0.215730	0.005688	3.150528
2417	0.120002	0.090395	0.027415	0.525271
2439	0.071758	0.033509	0.028733	0.179210
2461	0.057907	0.036228	0.016990	0.197361
...	...	...	...	...
3230	0.076519	0.037452	0.029319	0.199704
3262	0.058839	0.038505	0.016317	0.212176
3293	0.036080	0.034497	0.005539	0.235026
3324	0.038717	0.031627	0.007809	0.191968
3357	0.050289	0.034093	0.013317	0.189907
3391	0.120683	0.101299	0.023290	0.625358
3426	0.083647	0.046083	0.028413	0.246260
3461	0.048266	0.039155	0.009843	0.236677
3491	0.072226	0.035934	0.027240	0.191506
3520	0.049867	0.032645	0.013822	0.179908
3547	0.020589	0.033524	0.000847	0.500745
3594	0.245900	0.116715	0.096993	0.623414
3614	0.241320	0.119571	0.091376	0.637313
3635	0.254436	0.118143	0.102409	0.632148
3656	0.259412	0.144994	0.086742	0.775807
3679	0.312286	0.208965	0.084134	1.159127
3704	0.283567	0.130697	0.114903	0.699805
3730	0.280994	0.138575	0.106885	0.738713
3756	0.224912	0.116413	0.081552	0.620282
3782	0.273792	0.120901	0.115226	0.650569

3808	0.286024	0.134907	0.113480	0.720913
3834	0.215195	0.147905	0.055949	0.827693
3860	0.276195	0.123081	0.115317	0.661514
3887	0.267433	0.123375	0.108275	0.660539
3913	0.262318	0.118575	0.108158	0.636203
3939	0.257532	0.132528	0.093928	0.706099
3963	0.303119	0.158924	0.108476	0.847022
3987	0.239066	0.138773	0.076633	0.745800
4010	0.221099	0.145838	0.060692	0.805460
4018	0.292525	0.161493	0.099138	0.863143

[92 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



#### Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	92
Model:	GLM	Df Residuals:	87
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -47.711  
Date: Fri, 08 May 2020 Deviance: 3.5985  
Time: 08:04:44 Pearson chi2: 7.75  
No. Iterations: 24 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-3.5630	9.703	-0.367	0.713	-22.580	15.454
tempf	-1.6397	2.850	-0.575	0.565	-7.226	3.946
dwpf	0.2239	0.683	0.328	0.743	-1.114	1.562
drct	0.0164	0.063	0.259	0.795	-0.107	0.140
feel	1.4298	2.833	0.505	0.614	-4.122	6.982

	mean	mean_se	mean_ci_lower	mean_ci_upper
1847	0.077621	0.128957	2.991034e-03	2.014353
1869	0.100255	0.283668	3.914325e-04	25.677527
1891	0.066128	0.113059	2.317911e-03	1.886599
1913	0.062738	0.206892	9.784159e-05	40.229296
1935	0.028062	0.131091	2.962958e-06	265.769297
1957	0.184778	0.579399	3.958901e-04	86.243161
1979	0.145131	0.339290	1.485287e-03	14.181145
2001	0.185167	0.516132	7.851278e-04	43.670558
2023	0.174168	0.461303	9.693338e-04	31.294340
2045	0.110842	0.231774	1.840003e-03	6.677146
2067	0.054285	0.097150	1.626862e-03	1.811381
2089	0.024338	0.081454	3.447377e-05	17.182217
2111	0.103809	0.331554	1.984262e-04	54.308989
2130	0.034996	0.086742	2.717799e-04	4.506292
2144	0.073532	0.158861	1.065404e-03	5.075029
2157	0.069110	0.144484	1.148118e-03	4.160021
2180	0.058280	0.169948	1.920303e-04	17.687660
2197	0.008437	0.042482	4.365976e-07	163.031053
2219	0.039069	0.211394	9.685722e-07	1575.896422
2241	0.023583	0.075365	4.491666e-05	12.382103
2263	0.038264	0.076470	7.615186e-04	1.922640
2285	0.105394	0.224812	1.611204e-03	6.894141
2307	0.041969	0.092041	5.703760e-04	3.088083
2329	0.183519	0.596408	3.143462e-04	107.140536
2351	0.503565	2.490763	3.103046e-05	8171.884264
2373	0.199250	0.592565	5.860638e-04	67.741090
2395	0.964041	6.043948	4.442064e-06	209221.628523
2417	0.136107	0.383069	5.472676e-04	33.850132
2439	0.069177	0.115463	2.625509e-03	1.822661
2461	0.067617	0.127439	1.681880e-03	2.718451
...	...	...	...	...
3230	0.078654	0.144526	2.146044e-03	2.882687
3262	0.058804	0.132350	7.138781e-04	4.843885
3293	0.027878	0.083467	7.885098e-05	9.856660

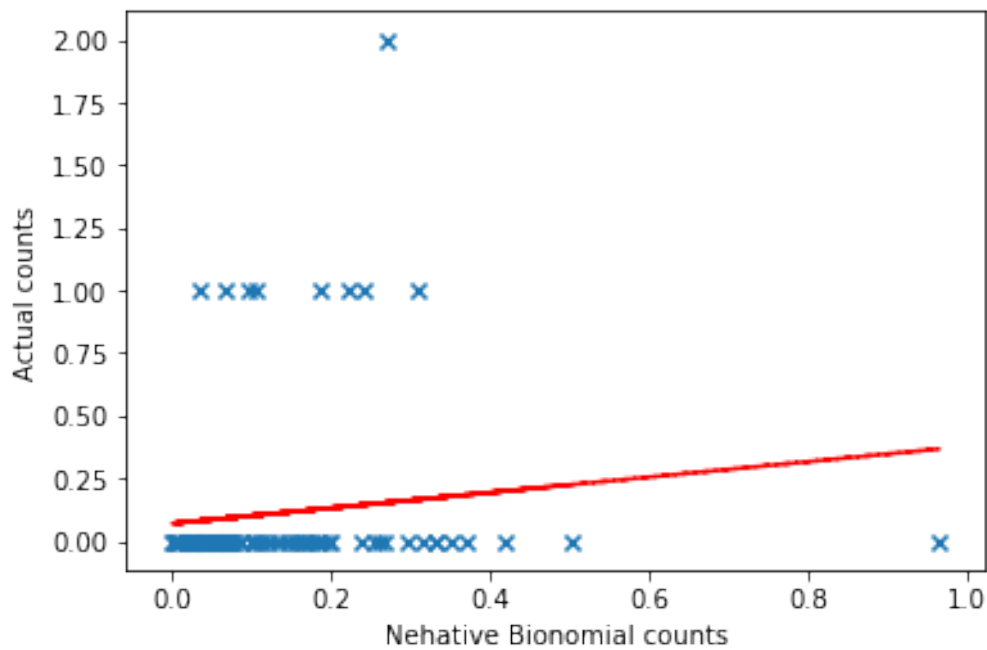


3324	0.030254	0.070215	3.200800e-04	2.859552
3357	0.029884	0.071236	2.794859e-04	3.195261
3391	0.156121	0.490876	3.289342e-04	74.099008
3426	0.087781	0.187145	1.344842e-03	5.729611
3461	0.053883	0.133536	4.187565e-04	6.933340
3491	0.065666	0.119977	1.828638e-03	2.358057
3520	0.046102	0.085363	1.223528e-03	1.737082
3547	0.004527	0.025259	8.051268e-08	254.493340
3594	0.241754	0.698642	8.384832e-04	69.703100
3614	0.221308	0.647674	7.143266e-04	68.564420
3635	0.238155	0.672587	9.395671e-04	60.365697
3656	0.265905	0.819643	6.323043e-04	111.821811
3679	0.417720	1.432721	5.027880e-04	347.045313
3704	0.330787	0.930907	1.330711e-03	82.226957
3730	0.350532	1.034814	1.076154e-03	114.177448
3756	0.189205	0.559520	5.751121e-04	62.246489
3782	0.297243	0.813788	1.389004e-03	63.609212
3808	0.333246	0.929157	1.410735e-03	78.720027
3834	0.156453	0.527230	2.117964e-04	115.570642
3860	0.309649	0.855012	1.381991e-03	69.379956
3887	0.270568	0.752428	1.161862e-03	63.008452
3913	0.255012	0.716019	1.038895e-03	62.596533
3939	0.259807	0.780779	7.187778e-04	93.908760
3963	0.371116	1.118751	1.008118e-03	136.617798
3987	0.194939	0.600357	4.660604e-04	81.537268
4010	0.163841	0.545973	2.387409e-04	112.438757
4018	0.316246	0.966990	7.893954e-04	126.693913

[92 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot ECB on Newlpswich-BFarm



```
In [85]: #print(all_ECB_FARMS_DataFrame)
         print ("check farms ", check)
         print ("total farms ", farm_count)
```

```
check farms  23
total farms  53
```

```
In [86]: len(all_ECB_FARMS_DataFrame)
```

```
Out[86]: 23
```

```
In [87]: len(compute_ECB_FARMS)
```

```
Out[87]: 23
```

```
In [88]: #valid farms used for predictions
         compute_ECB_FARMS
```

```
Out[88]: ['Litchfield-W',
          'Hollis-B',
          'Mason-B',
          'Milford-S',
          'Hollis-K',
```

```

'Nashua-S',
'Antrim-T',
'Jaffrey-C',
'Merrimack-T',
'Pelham-G',
'Hollis-L',
'Litchfield-M',
'Hudson-S',
'Hollis-JL',
'Milford-L',
'Peterborough-R',
'Concord-A',
'Amherst-P',
'Weare-I',
'Concord-D1',
'NewBoston-M',
'Milford-M',
'NewIpswich-B']

```

```
In [89]: #all_ECB_FARMS_DataFrame.head()
```

```
In [90]: all_ECB_FARMS_DataFrame[1].head()
```

```

Out[90]:
      farm  trap_count  year      date      tempf      dwpf      drct  \
1  Hollis-B           7  2006  2006-06-19  70.977613  63.913169  63.703704
4  Hollis-B          31  2006  2006-06-26  71.243468  65.095887  84.233871
7  Hollis-B           4  2006  2006-07-03  71.056485  59.203758  127.515152
10 Hollis-B           0  2006  2006-07-10  71.830909  66.491782  59.745455
13 Hollis-B           3  2006  2006-07-17  73.200175  66.515808  101.004367

      feel  regression_count  poisson_count  NB_count  poisson_count_farm  \
1  71.301399                3                3          3                4
4  71.733347                3                3          3                5
7  71.263273                2                2          2                4
10 72.608255                3                3          3                4
13 74.150786                3                3          3                6

      NB_count_farm
1                4
4                5
7                4
10               5
13               6

```

```

In [91]: df_ECB_final['poisson_count_farm'] = 0
df_ECB_final['NB_count_farm'] = 0

```

```

In [92]: #combining all the date into the main datafarme
count = 0

```

```

for df_Farm in all_ECB_FARMS_DataFrame:
    #print (df_Farm.head())

    #getting all poisson regression count
    df_ECB_final.loc[df_ECB_final.farm == compute_ECB_FARMS[count], ['poisson_count_f

    #getting all negative binomial regression count
    df_ECB_final.loc[df_ECB_final.farm == compute_ECB_FARMS[count], ['NB_count_farm']]

    count = count + 1

```

```
In [93]: print("total farms ", count )
```

```
total farms 23
```

```
In [94]: df_ECB_final.head(20)
```

```

Out[94]:
   farm trap_count year      date      tempf      dwpf \
0  Litchfield-W      16  2006  2006-06-19  70.977613  63.913169
1    Hollis-B         7  2006  2006-06-19  70.977613  63.913169
2    Mason-B        11  2006  2006-06-19  70.977613  63.913169
3  Litchfield-W      25  2006  2006-06-26  71.243468  65.095887
4    Hollis-B       31  2006  2006-06-26  71.243468  65.095887
5    Mason-B         7  2006  2006-06-26  71.243468  65.095887
6  Litchfield-W         3  2006  2006-07-03  71.056485  59.203758
7    Hollis-B         4  2006  2006-07-03  71.056485  59.203758
8    Mason-B         1  2006  2006-07-03  71.056485  59.203758
9  Litchfield-W      12  2006  2006-07-10  71.830909  66.491782
10   Hollis-B         0  2006  2006-07-10  71.830909  66.491782
11   Mason-B         0  2006  2006-07-10  71.830909  66.491782
12  Litchfield-W         4  2006  2006-07-17  73.200175  66.515808
13   Hollis-B         3  2006  2006-07-17  73.200175  66.515808
14   Mason-B         0  2006  2006-07-17  73.200175  66.515808
15  Litchfield-W         5  2006  2006-07-24  76.523205  66.146667
16   Hollis-B       24  2006  2006-07-24  76.523205  66.146667
17   Mason-B         1  2006  2006-07-24  76.523205  66.146667
18  Litchfield-W      13  2006  2006-07-31  73.577906  64.511937
19   Hollis-B      34  2006  2006-07-31  73.577906  64.511937

   drct      feel  regression_count  poisson_count  NB_count \
0  63.703704  71.301399              3              3          3
1  63.703704  71.301399              3              3          3
2  63.703704  71.301399              3              3          3
3  84.233871  71.733347              3              3          3
4  84.233871  71.733347              3              3          3
5  84.233871  71.733347              3              3          3
6 127.515152  71.263273              2              2          2

```

7	127.515152	71.263273	2	2	2
8	127.515152	71.263273	2	2	2
9	59.745455	72.608255	3	3	3
10	59.745455	72.608255	3	3	3
11	59.745455	72.608255	3	3	3
12	101.004367	74.150786	3	3	3
13	101.004367	74.150786	3	3	3
14	101.004367	74.150786	3	3	3
15	71.217949	77.945513	3	3	3
16	71.217949	77.945513	3	3	3
17	71.217949	77.945513	3	3	3
18	111.465969	75.210314	2	2	2
19	111.465969	75.210314	2	2	2

	poisson_count_farm	NB_count_farm
0	8	8
1	4	4
2	2	2
3	7	7
4	5	5
5	2	2
6	8	8
7	4	4
8	2	2
9	7	7
10	4	5
11	2	2
12	7	6
13	6	6
14	2	2
15	10	11
16	3	3
17	2	2
18	8	7
19	5	5

In [95]: df\_ECB\_final.tail(20)

```
Out[95]:
```

	farm	trap_count	year	date	tempf	dwpf	\
4000	Milford-L	0	2018	2018-09-17	7.760753	7.281021	
4001	Hollis-K	0	2018	2018-09-17	7.760753	7.281021	
4002	Hollis-B	0	2018	2018-09-17	7.760753	7.281021	
4003	Hollis-JL-Pl	8	2018	2018-09-17	7.760753	7.281021	
4004	Hollis-JL-T	0	2018	2018-09-17	7.760753	7.281021	
4005	Hollis-L	0	2018	2018-09-17	7.760753	7.281021	
4006	Antrim-T	0	2018	2018-09-17	7.760753	7.281021	
4007	Peterborough-R	0	2018	2018-09-17	7.760753	7.281021	
4008	Jaffrey-C	0	2018	2018-09-17	7.760753	7.281021	

4009	Mason-B	0	2018	2018-09-17	7.760753	7.281021
4010	NewIpswich-B	0	2018	2018-09-17	7.760753	7.281021
4011	Milford-M	0	2018	2018-09-17	7.760753	7.281021
4012	NewBoston-D	0	2018	2018-09-17	7.760753	7.281021
4013	Milford-S	0	2018	2018-09-24	6.692446	6.180576
4014	Litchfield-M	0	2018	2018-09-24	6.692446	6.180576
4015	Hollis-JL-Pl	0	2018	2018-09-24	6.692446	6.180576
4016	Peterborough-R	0	2018	2018-09-24	6.692446	6.180576
4017	Mason-B	0	2018	2018-09-24	6.692446	6.180576
4018	NewIpswich-B	0	2018	2018-09-24	6.692446	6.180576
4019	Milford-M	0	2018	2018-09-24	6.692446	6.180576

	drct	feel	regression_count	poisson_count	NB_count	\
4000	110.056730	7.728195	2	2	2	
4001	110.056730	7.728195	2	2	2	
4002	110.056730	7.728195	2	2	2	
4003	110.056730	7.728195	2	2	2	
4004	110.056730	7.728195	2	2	2	
4005	110.056730	7.728195	2	2	2	
4006	110.056730	7.728195	2	2	2	
4007	110.056730	7.728195	2	2	2	
4008	110.056730	7.728195	2	2	2	
4009	110.056730	7.728195	2	2	2	
4010	110.056730	7.728195	2	2	2	
4011	110.056730	7.728195	2	2	2	
4012	110.056730	7.728195	2	2	2	
4013	161.330935	6.548972	2	2	2	
4014	161.330935	6.548972	2	2	2	
4015	161.330935	6.548972	2	2	2	
4016	161.330935	6.548972	2	2	2	
4017	161.330935	6.548972	2	2	2	
4018	161.330935	6.548972	2	2	2	
4019	161.330935	6.548972	2	2	2	

	poisson_count_farm	NB_count_farm
4000	4	4
4001	2	2
4002	3	3
4003	0	0
4004	0	0
4005	2	2
4006	0	0
4007	0	0
4008	1	1
4009	0	0
4010	0	0
4011	0	0
4012	0	0

4013	6	6
4014	7	7
4015	0	0
4016	0	0
4017	0	0
4018	0	0
4019	0	0

```
In [96]: #writing into the csv file
df_ECB_final.to_csv("ECB_predicted_count.csv", index = False, sep = ',')
```

## 21 Selecting weather dataframe within the date range - FAW Pest

```
In [97]: print(search_faw_STdate)
print(search_faw_ENDdate)
```

```
2006-06-19 00:00:00
2018-10-15 00:00:00
```

```
In [98]: df_equation_FAW = df_equation.loc[(df_equation['valid'] >= search_faw_STdate) & (df_e
```

```
In [99]: #need to get all the columns from here and sum up fro every week
#select date and each column, and find the average for each column
df_tempf_FAW = df_equation_FAW[['tmpf','dwpf', 'drct','feel','valid']]
df_tempf_FAW["tmpf"] = df_tempf_FAW["tmpf"].fillna(0)
df_tempf_FAW["dwpf"] = df_tempf_FAW["dwpf"].fillna(0)
df_tempf_FAW["drct"] = df_tempf_FAW["drct"].fillna(0)
df_tempf_FAW["feel"] = df_tempf_FAW["feel"].fillna(0)
```

```
In [100]: #calling getweekly_temperature
FAW_weather_data_dic = {}
getweekly_temperature(df_tempf_FAW,FAW_weather_data_dic)
```

```
total temperature index 642
total weeks: 47922
```

```
In [101]: df_FAW_weather = pd.DataFrame(FAW_weather_data_dic)
```

```
In [102]: #convert orginal faw date into correct dataframe date
df_FAW['date'] = df_FAW['date'].dt.date
```

```
In [103]: #combining weather data and pest count data based on the date -----
#creating data frame needed for equation
df_FAW_weather['date'] = pd.to_datetime(df_FAW_weather['date'])
df_FAW_weather['date'] = df_FAW_weather['date'].dt.date
df_FAW_final = df_FAW.merge(df_FAW_weather, on='date')
```

```
In [104]: df_FAW_final.head()
```

```
Out[104]:
```

	farm	trap_count	year	date	tempf	dwpf	\
0	Pelham-G	0	2006	2006-06-19	70.977613	63.913169	
1	Litchfield-W	0	2006	2006-06-19	70.977613	63.913169	
2	Litchfield-M	0	2006	2006-06-19	70.977613	63.913169	
3	Merrimack-T	0	2006	2006-06-19	70.977613	63.913169	
4	Hollis-L	0	2006	2006-06-19	70.977613	63.913169	

	drct	feel
0	63.703704	71.301399
1	63.703704	71.301399
2	63.703704	71.301399
3	63.703704	71.301399
4	63.703704	71.301399

## 22 Pest Trap predictions - FAW

```
In [105]: df_FAW_final.columns
```

```
Out[105]: Index(['farm', 'trap_count', 'year', 'date', 'tempf', 'dwpf', 'drct', 'feel'], dtype=object)
```

## 23 1. Multiple Linear Regression on all data

```
In [106]: df_FAW_final = Multiple_Linear_Regression(df_FAW_final)
```

```
Intercept: 2.4125366733376303
```

```
Coeffecients [ 0.16603068 -0.2246556  0.00368826  0.02496231]  
(527,)
```

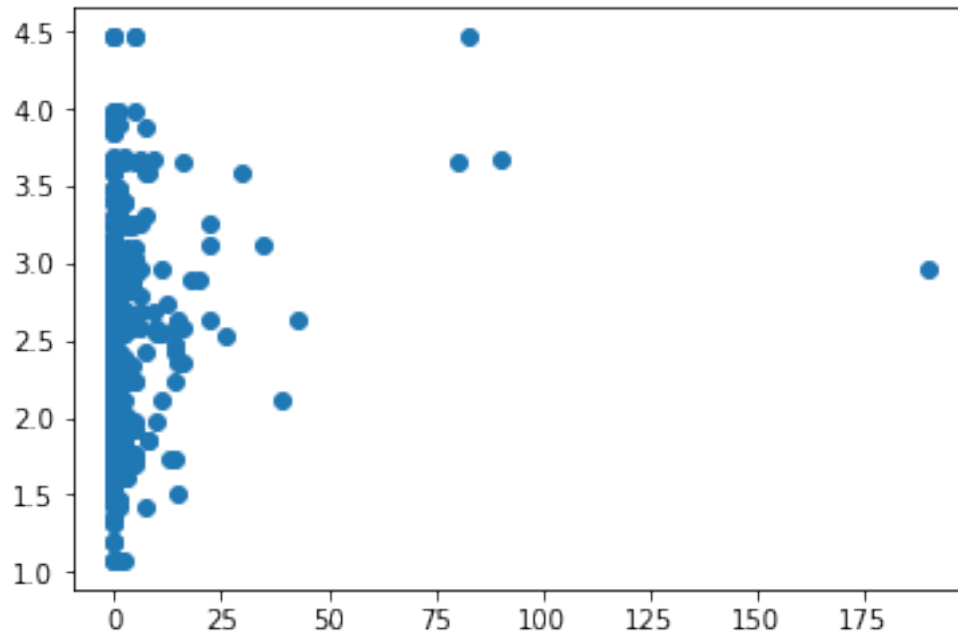
```
----- Linear Regression Evaluations-----
```

```
Mean Absolute Error (MAE): 3.681682411450239
```

```
Mean Squared Error (MSE): 125.916631872352
```

```
Root Mean Squared Error (RMSE): 11.221258034300432
```





## 24 2. Poission Regression on all data

```
In [107]: df_FAW_final = Poisson_Regression(df_FAW_final," ECB ", " all ")
```

### Generalized Linear Model Regression Results

```
=====
Dep. Variable:          trap_count    No. Observations:          2634
Model:                  GLM           Df Residuals:                2629
Model Family:           Poisson       Df Model:                    4
Link Function:           log           Scale:                     1.0000
Method:                  IRLS          Log-Likelihood:             -13336.
Date:                   Fri, 08 May 2020    Deviance:                   23704.
Time:                   08:05:18           Pearson chi2:               7.29e+04
No. Iterations:         6                Covariance Type:           nonrobust
=====
```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	1.0710	0.084	12.699	0.000	0.906	1.236
tempf	0.0774	0.011	7.154	0.000	0.056	0.099
dwpf	-0.1255	0.005	-25.234	0.000	-0.135	-0.116
drct	-0.0004	0.001	-0.773	0.440	-0.001	0.001
feel	0.0298	0.010	2.952	0.003	0.010	0.050

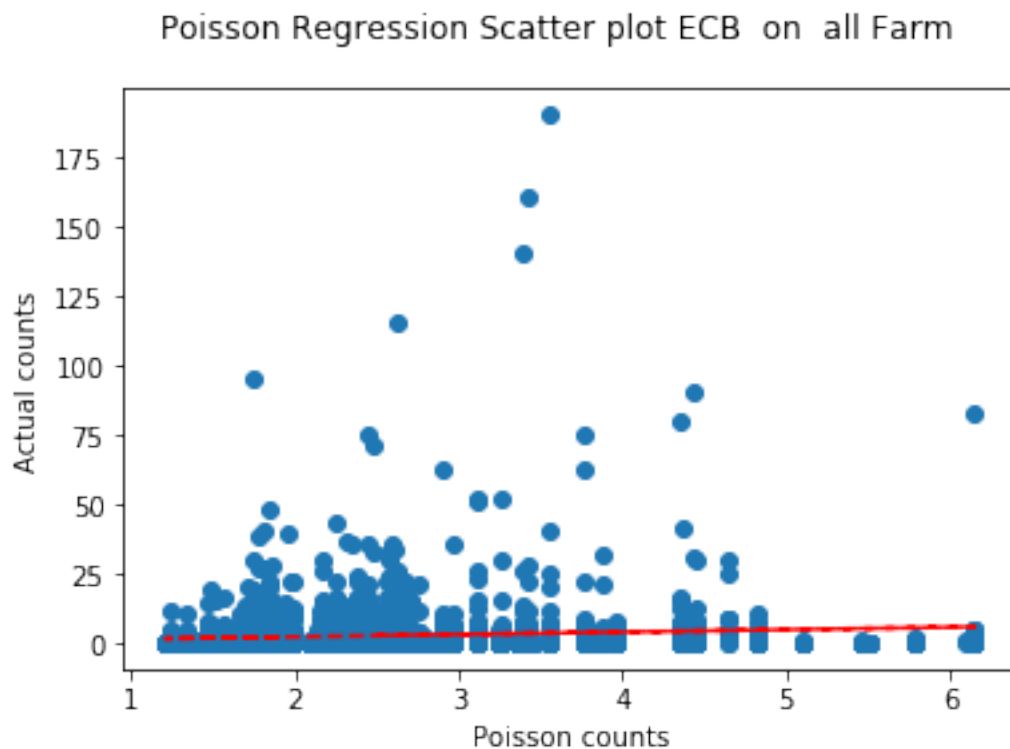
```
=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
0          1.901839  0.048888         1.808393         2.000113
=====
```

1	1.901839	0.048888	1.808393	2.000113
2	1.901839	0.048888	1.808393	2.000113
3	1.901839	0.048888	1.808393	2.000113
4	1.901839	0.048888	1.808393	2.000113
5	1.901839	0.048888	1.808393	2.000113
6	1.901839	0.048888	1.808393	2.000113
7	1.901839	0.048888	1.808393	2.000113
8	1.901839	0.048888	1.808393	2.000113
9	1.901839	0.048888	1.808393	2.000113
10	1.901839	0.048888	1.808393	2.000113
11	1.681121	0.038086	1.608107	1.757450
12	1.681121	0.038086	1.608107	1.757450
13	1.681121	0.038086	1.608107	1.757450
14	1.681121	0.038086	1.608107	1.757450
15	1.681121	0.038086	1.608107	1.757450
16	1.681121	0.038086	1.608107	1.757450
17	1.681121	0.038086	1.608107	1.757450
18	1.681121	0.038086	1.608107	1.757450
19	1.681121	0.038086	1.608107	1.757450
20	1.681121	0.038086	1.608107	1.757450
21	1.681121	0.038086	1.608107	1.757450
22	3.362671	0.057343	3.252139	3.476960
23	3.362671	0.057343	3.252139	3.476960
24	3.362671	0.057343	3.252139	3.476960
25	3.362671	0.057343	3.252139	3.476960
26	3.362671	0.057343	3.252139	3.476960
27	3.362671	0.057343	3.252139	3.476960
28	3.362671	0.057343	3.252139	3.476960
29	3.362671	0.057343	3.252139	3.476960
...	...	...	...	...
2604	2.568579	0.090812	2.396617	2.752880
2605	2.568579	0.090812	2.396617	2.752880
2606	2.566849	0.089726	2.396879	2.748873
2607	2.566849	0.089726	2.396879	2.748873
2608	2.566849	0.089726	2.396879	2.748873
2609	2.566849	0.089726	2.396879	2.748873
2610	2.566849	0.089726	2.396879	2.748873
2611	2.566849	0.089726	2.396879	2.748873
2612	2.566849	0.089726	2.396879	2.748873
2613	2.566849	0.089726	2.396879	2.748873
2614	2.566849	0.089726	2.396879	2.748873
2615	2.566849	0.089726	2.396879	2.748873
2616	2.566849	0.089726	2.396879	2.748873
2617	2.566849	0.089726	2.396879	2.748873
2618	2.566849	0.089726	2.396879	2.748873
2619	2.566849	0.089726	2.396879	2.748873
2620	2.566849	0.089726	2.396879	2.748873
2621	2.566849	0.089726	2.396879	2.748873

2622	2.566849	0.089726	2.396879	2.748873
2623	2.566849	0.089726	2.396879	2.748873
2624	2.479989	0.080162	2.327747	2.642188
2625	2.479989	0.080162	2.327747	2.642188
2626	2.479989	0.080162	2.327747	2.642188
2627	2.479989	0.080162	2.327747	2.642188
2628	2.479989	0.080162	2.327747	2.642188
2629	2.479989	0.080162	2.327747	2.642188
2630	2.479989	0.080162	2.327747	2.642188
2631	2.479989	0.080162	2.327747	2.642188
2632	2.479989	0.080162	2.327747	2.642188
2633	2.479989	0.080162	2.327747	2.642188

[2634 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



In [108]: df\_FAW\_final.head()

Out[108]:

	farm	trap_count	year	date	tempf	dwpf	\
0	Pelham-G	0	2006	2006-06-19	70.977613	63.913169	

1	Litchfield-W	0	2006	2006-06-19	70.977613	63.913169
2	Litchfield-M	0	2006	2006-06-19	70.977613	63.913169
3	Merrimack-T	0	2006	2006-06-19	70.977613	63.913169
4	Hollis-L	0	2006	2006-06-19	70.977613	63.913169

	drct	feel	regression_count	poisson_count
0	63.703704	71.301399	1	1
1	63.703704	71.301399	1	1
2	63.703704	71.301399	1	1
3	63.703704	71.301399	1	1
4	63.703704	71.301399	1	1

## 25 3. Negative Binomial Regression on all data

```
In [109]: df_FAW_final = Negative_Binomial_Regression(df_FAW_final, " ECB ", " all ")
```

### Generalized Linear Model Regression Results

```
=====
Dep. Variable:          trap_count    No. Observations:          2634
Model:                  GLM          Df Residuals:              2629
Model Family:          NegativeBinomial    Df Model:                4
Link Function:          log             Scale:                  1.0000
Method:                 IRLS           Log-Likelihood:         -8083.5
Date:                  Fri, 08 May 2020    Deviance:                 12540.
Time:                  08:05:18           Pearson chi2:             4.46e+04
No. Iterations:        9                 Covariance Type:         nonrobust
=====
```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	1.0509	0.107	9.817	0.000	0.841	1.261
tempf	0.0711	0.014	5.115	0.000	0.044	0.098
dwpf	-0.1370	0.006	-21.101	0.000	-0.150	-0.124
drct	-0.0002	0.001	-0.331	0.740	-0.002	0.001
feel	0.0460	0.013	3.543	0.000	0.021	0.072

	mean	mean_se	mean_ci_lower	mean_ci_upper
0	1.845744	0.058675	1.734252	1.964403
1	1.845744	0.058675	1.734252	1.964403
2	1.845744	0.058675	1.734252	1.964403
3	1.845744	0.058675	1.734252	1.964403
4	1.845744	0.058675	1.734252	1.964403
5	1.845744	0.058675	1.734252	1.964403
6	1.845744	0.058675	1.734252	1.964403
7	1.845744	0.058675	1.734252	1.964403
8	1.845744	0.058675	1.734252	1.964403
9	1.845744	0.058675	1.734252	1.964403
10	1.845744	0.058675	1.734252	1.964403

11	1.624281	0.044664	1.539058	1.714224
12	1.624281	0.044664	1.539058	1.714224
13	1.624281	0.044664	1.539058	1.714224
14	1.624281	0.044664	1.539058	1.714224
15	1.624281	0.044664	1.539058	1.714224
16	1.624281	0.044664	1.539058	1.714224
17	1.624281	0.044664	1.539058	1.714224
18	1.624281	0.044664	1.539058	1.714224
19	1.624281	0.044664	1.539058	1.714224
20	1.624281	0.044664	1.539058	1.714224
21	1.624281	0.044664	1.539058	1.714224
22	3.482482	0.079588	3.329935	3.642018
23	3.482482	0.079588	3.329935	3.642018
24	3.482482	0.079588	3.329935	3.642018
25	3.482482	0.079588	3.329935	3.642018
26	3.482482	0.079588	3.329935	3.642018
27	3.482482	0.079588	3.329935	3.642018
28	3.482482	0.079588	3.329935	3.642018
29	3.482482	0.079588	3.329935	3.642018
...	...	...	...	...
2604	2.551731	0.113293	2.339067	2.783729
2605	2.551731	0.113293	2.339067	2.783729
2606	2.574894	0.112960	2.362747	2.806088
2607	2.574894	0.112960	2.362747	2.806088
2608	2.574894	0.112960	2.362747	2.806088
2609	2.574894	0.112960	2.362747	2.806088
2610	2.574894	0.112960	2.362747	2.806088
2611	2.574894	0.112960	2.362747	2.806088
2612	2.574894	0.112960	2.362747	2.806088
2613	2.574894	0.112960	2.362747	2.806088
2614	2.574894	0.112960	2.362747	2.806088
2615	2.574894	0.112960	2.362747	2.806088
2616	2.574894	0.112960	2.362747	2.806088
2617	2.574894	0.112960	2.362747	2.806088
2618	2.574894	0.112960	2.362747	2.806088
2619	2.574894	0.112960	2.362747	2.806088
2620	2.574894	0.112960	2.362747	2.806088
2621	2.574894	0.112960	2.362747	2.806088
2622	2.574894	0.112960	2.362747	2.806088
2623	2.574894	0.112960	2.362747	2.806088
2624	2.468793	0.099968	2.280433	2.672711
2625	2.468793	0.099968	2.280433	2.672711
2626	2.468793	0.099968	2.280433	2.672711
2627	2.468793	0.099968	2.280433	2.672711
2628	2.468793	0.099968	2.280433	2.672711
2629	2.468793	0.099968	2.280433	2.672711
2630	2.468793	0.099968	2.280433	2.672711
2631	2.468793	0.099968	2.280433	2.672711

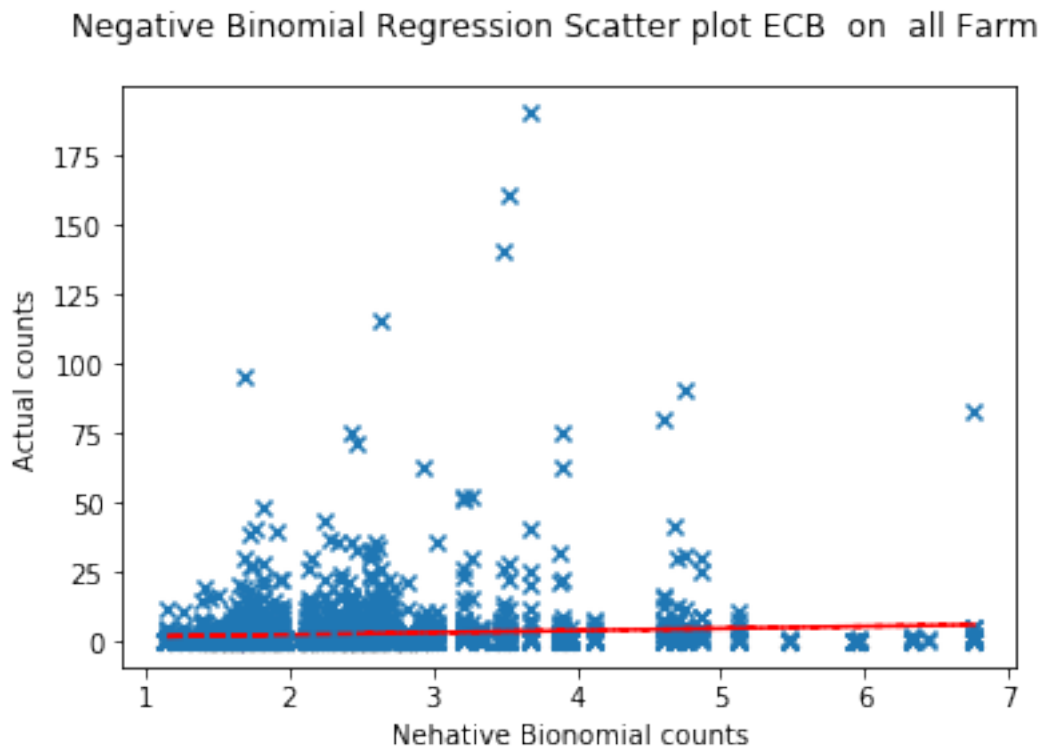
```

2632  2.468793  0.099968      2.280433      2.672711
2633  2.468793  0.099968      2.280433      2.672711

```

[2634 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



In [110]: df\_FAW\_final

```

Out[110]:
   farm  trap_count  year      date      tempf      dwpf  \
0  Pelham-G         0  2006  2006-06-19  70.977613  63.913169
1  Litchfield-W         0  2006  2006-06-19  70.977613  63.913169
2  Litchfield-M         0  2006  2006-06-19  70.977613  63.913169
3  Merrimack-T         0  2006  2006-06-19  70.977613  63.913169
4   Hollis-L         0  2006  2006-06-19  70.977613  63.913169
5   Hollis-B         0  2006  2006-06-19  70.977613  63.913169
6   Hollis-K         0  2006  2006-06-19  70.977613  63.913169
7  Milford-S         0  2006  2006-06-19  70.977613  63.913169
8   Antrim-T         0  2006  2006-06-19  70.977613  63.913169
9   Mason-B         0  2006  2006-06-19  70.977613  63.913169
10 Peterborough-R         0  2006  2006-06-19  70.977613  63.913169

```

11	Pelham-G	0	2006	2006-06-26	71.243468	65.095887
12	Litchfield-W	0	2006	2006-06-26	71.243468	65.095887
13	Litchfield-M	0	2006	2006-06-26	71.243468	65.095887
14	Merrimack-T	0	2006	2006-06-26	71.243468	65.095887
15	Hollis-L	0	2006	2006-06-26	71.243468	65.095887
16	Hollis-B	0	2006	2006-06-26	71.243468	65.095887
17	Hollis-K	0	2006	2006-06-26	71.243468	65.095887
18	Milford-S	0	2006	2006-06-26	71.243468	65.095887
19	Antrim-T	0	2006	2006-06-26	71.243468	65.095887
20	Mason-B	0	2006	2006-06-26	71.243468	65.095887
21	Peterborough-R	0	2006	2006-06-26	71.243468	65.095887
22	Pelham-G	0	2006	2006-07-03	71.056485	59.203758
23	Litchfield-W	0	2006	2006-07-03	71.056485	59.203758
24	Litchfield-M	0	2006	2006-07-03	71.056485	59.203758
25	Merrimack-T	0	2006	2006-07-03	71.056485	59.203758
26	Hollis-L	0	2006	2006-07-03	71.056485	59.203758
27	Hollis-B	0	2006	2006-07-03	71.056485	59.203758
28	Hollis-K	0	2006	2006-07-03	71.056485	59.203758
29	Milford-S	0	2006	2006-07-03	71.056485	59.203758
...	...	...	...	...	...	...
2604	NewBoston-D	1	2018	2018-09-17	7.760753	7.281021
2605	NewLondon-SL	0	2018	2018-09-17	7.760753	7.281021
2606	Litchfield-M	5	2018	2018-09-24	6.692446	6.180576
2607	Litchfield-W1	16	2018	2018-09-24	6.692446	6.180576
2608	Litchfield-W2	32	2018	2018-09-24	6.692446	6.180576
2609	Hudson-S	0	2018	2018-09-24	6.692446	6.180576
2610	Milford-L	2	2018	2018-09-24	6.692446	6.180576
2611	Hollis-K	0	2018	2018-09-24	6.692446	6.180576
2612	Hollis-B2	0	2018	2018-09-24	6.692446	6.180576
2613	Hollis-JL-PL	2	2018	2018-09-24	6.692446	6.180576
2614	Hollis-JL-T	22	2018	2018-09-24	6.692446	6.180576
2615	Hollis-L	10	2018	2018-09-24	6.692446	6.180576
2616	Antrim-T	0	2018	2018-09-24	6.692446	6.180576
2617	NewIpswich-B	0	2018	2018-09-24	6.692446	6.180576
2618	Mason-B	0	2018	2018-09-24	6.692446	6.180576
2619	Milford-M	1	2018	2018-09-24	6.692446	6.180576
2620	Concord-A	2	2018	2018-09-24	6.692446	6.180576
2621	Weare-I	0	2018	2018-09-24	6.692446	6.180576
2622	Weare-D	1	2018	2018-09-24	6.692446	6.180576
2623	NewLondon-SL	0	2018	2018-09-24	6.692446	6.180576
2624	Litchfield-M	0	2018	2018-10-01	7.799536	7.509856
2625	Litchfield-W1	2	2018	2018-10-01	7.799536	7.509856
2626	Hudson-S	0	2018	2018-10-01	7.799536	7.509856
2627	Milford-L	0	2018	2018-10-01	7.799536	7.509856
2628	Hollis-K	0	2018	2018-10-01	7.799536	7.509856
2629	Hollis-B2	2	2018	2018-10-01	7.799536	7.509856
2630	Hollis-JL-PL	0	2018	2018-10-01	7.799536	7.509856
2631	Hollis-L	2	2018	2018-10-01	7.799536	7.509856

2632	Antrim-T	0	2018	2018-10-01	7.799536	7.509856
2633	Milford-M	0	2018	2018-10-01	7.799536	7.509856

	drct	feel	regression_count	poisson_count	NB_count
0	63.703704	71.301399	1	1	1
1	63.703704	71.301399	1	1	1
2	63.703704	71.301399	1	1	1
3	63.703704	71.301399	1	1	1
4	63.703704	71.301399	1	1	1
5	63.703704	71.301399	1	1	1
6	63.703704	71.301399	1	1	1
7	63.703704	71.301399	1	1	1
8	63.703704	71.301399	1	1	1
9	63.703704	71.301399	1	1	1
10	63.703704	71.301399	1	1	1
11	84.233871	71.733347	1	1	1
12	84.233871	71.733347	1	1	1
13	84.233871	71.733347	1	1	1
14	84.233871	71.733347	1	1	1
15	84.233871	71.733347	1	1	1
16	84.233871	71.733347	1	1	1
17	84.233871	71.733347	1	1	1
18	84.233871	71.733347	1	1	1
19	84.233871	71.733347	1	1	1
20	84.233871	71.733347	1	1	1
21	84.233871	71.733347	1	1	1
22	127.515152	71.263273	3	3	3
23	127.515152	71.263273	3	3	3
24	127.515152	71.263273	3	3	3
25	127.515152	71.263273	3	3	3
26	127.515152	71.263273	3	3	3
27	127.515152	71.263273	3	3	3
28	127.515152	71.263273	3	3	3
29	127.515152	71.263273	3	3	3
...	...	...	...	...	...
2604	110.056730	7.728195	2	2	2
2605	110.056730	7.728195	2	2	2
2606	161.330935	6.548972	2	2	2
2607	161.330935	6.548972	2	2	2
2608	161.330935	6.548972	2	2	2
2609	161.330935	6.548972	2	2	2
2610	161.330935	6.548972	2	2	2
2611	161.330935	6.548972	2	2	2
2612	161.330935	6.548972	2	2	2
2613	161.330935	6.548972	2	2	2
2614	161.330935	6.548972	2	2	2
2615	161.330935	6.548972	2	2	2
2616	161.330935	6.548972	2	2	2



2617	161.330935	6.548972	2	2	2
2618	161.330935	6.548972	2	2	2
2619	161.330935	6.548972	2	2	2
2620	161.330935	6.548972	2	2	2
2621	161.330935	6.548972	2	2	2
2622	161.330935	6.548972	2	2	2
2623	161.330935	6.548972	2	2	2
2624	134.674923	7.750764	2	2	2
2625	134.674923	7.750764	2	2	2
2626	134.674923	7.750764	2	2	2
2627	134.674923	7.750764	2	2	2
2628	134.674923	7.750764	2	2	2
2629	134.674923	7.750764	2	2	2
2630	134.674923	7.750764	2	2	2
2631	134.674923	7.750764	2	2	2
2632	134.674923	7.750764	2	2	2
2633	134.674923	7.750764	2	2	2

[2634 rows x 11 columns]

```
In [111]: #all the farms for this pest
all_FAW_FARMS = df_FAW_final.farm.unique()
```

```
In [112]: all_FAW_FARMS
```

```
Out[112]: array(['Pelham-G', 'Litchfield-W', 'Litchfield-M', 'Merrimack-T',
'Hollis-L', 'Hollis-B', 'Hollis-K', 'Milford-S', 'Antrim-T',
'Mason-B', 'Peterborough-R', 'Plainfield-E', 'Milford-L',
'NorthHaverhill-B', 'Jaffrey-C', 'Hollis-JL', 'Hudson-S',
'Litchfield-W1', 'Merrimack-S', 'Litchfield-W2', 'Amherst-P',
'Concord-A', 'Concord-D2', 'Concord-P', 'Loudon-P', 'Boscawen-C',
'Weare-I', 'NewBoston-M', 'Concord-D1', 'Loudon-P1', 'Loudon-P2',
'NewIpswich-B', 'Milford-M', 'Hollis-B2', 'Hollis-B1',
'Bradford-W', 'NewLondon-SL', 'NorthHaverhill', 'Enfield',
'Plainfield', 'Plymouth', 'Bristol', 'Franconia', 'Piermont',
'Meredith-M', 'Claremont-TL', 'Hollis-JL-T', 'CenterConway-S',
'Hollis-JL-PL', 'NewBoston-D', 'Weare-D'], dtype=object)
```

```
In [113]: all_FAW_FARMS.shape
```

```
Out[113]: (51,)
```

```
In [114]: #computing pest counts for all the dataframes
farm_count = 0
all_FAW_FARMS_DataFrame = []
compute_FAW_FARMS = []

for farm in all_FAW_FARMS:
    farmsdataframe = "df_FAW_" + farm
```

```

farmsdataframe = df_FAW_final.loc[df_FAW_final['farm'] == farm]

count_row = farmsdataframe.shape[0]

#print ((farmsdataframe['trap_count'] > 1).any())
if (farmsdataframe['trap_count'] > 1).any() == True:

    #computing if there more than 50 records
    if count_row > 50:

        #Poission Regression
        farmsdataframe = Poisson_Regression(farmsdataframe," FAW ", farm)

        #Negative Binomial Regression
        farmsdataframe = Negative_Binomial_Regression(farmsdataframe," FAW ", fa

    all_FAW_FARMS_DataFrame.append(farmsdataframe)

    compute_FAW_FARMS.append(farm)

    farm_count = farm_count + 1

```

#### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          118
Model:                  GLM          Df Residuals:              113
Model Family:           Poisson      Df Model:                  4
Link Function:           log          Scale:                    1.0000
Method:                 IRLS         Log-Likelihood:          -206.88
Date:                   Fri, 08 May 2020    Deviance:                322.48
Time:                   08:05:18           Pearson chi2:             513.
No. Iterations:         6               Covariance Type:         nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-1.8182	0.748	-2.429	0.015	-3.285	-0.351
tempf	0.0563	0.069	0.820	0.412	-0.078	0.191
dwpf	-0.0574	0.039	-1.455	0.146	-0.135	0.020
drct	0.0108	0.004	2.539	0.011	0.002	0.019
feel	0.0015	0.061	0.024	0.980	-0.118	0.121

```

=====
              mean   mean_se  mean_ci_lower  mean_ci_upper
0         0.498357  0.101821      0.333910      0.743792
11        0.590111  0.098793      0.425040      0.819288
22        1.304839  0.165861      1.017088      1.673998
33        0.432954  0.095643      0.280805      0.667542
45        0.730239  0.124544      0.522746      1.020092
59        0.656140  0.144687      0.425888      1.010874
=====

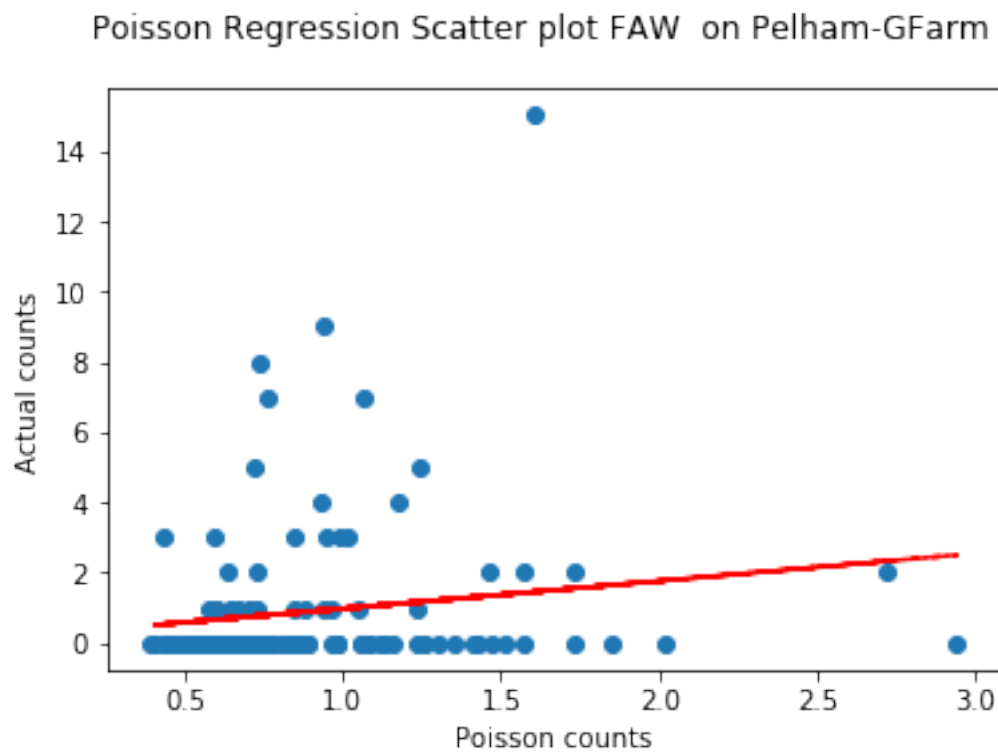
```

73	0.938266	0.147422	0.689579	1.276639
86	2.719110	0.707444	1.632923	4.527807
100	0.982898	0.159071	0.715733	1.349789
114	0.639729	0.089706	0.486001	0.842084
127	0.857634	0.118699	0.653874	1.124891
139	0.586465	0.091202	0.432385	0.795452
151	0.697042	0.095700	0.532591	0.912272
163	1.511797	0.292716	1.034386	2.209553
175	0.946197	0.189663	0.638793	1.401533
190	0.579427	0.097003	0.417348	0.804452
202	0.891629	0.133960	0.664198	1.196934
215	0.457048	0.099392	0.298439	0.699952
229	0.756344	0.116526	0.559216	1.022961
243	0.677942	0.105056	0.500365	0.918539
257	0.859861	0.091510	0.697974	1.059295
271	0.879280	0.099300	0.704690	1.097125
285	1.729861	0.392572	1.108769	2.698867
299	0.700054	0.136831	0.477262	1.026848
313	0.602025	0.090012	0.449104	0.807016
327	0.850828	0.092352	0.687779	1.052530
341	1.116502	0.140255	0.872834	1.428194
376	0.393620	0.101235	0.237770	0.651624
390	0.586058	0.109378	0.406517	0.844895
404	0.845736	0.108932	0.657050	1.088607
...	...	...	...	...
1562	1.082919	0.116540	0.876987	1.337208
1583	0.719630	0.167762	0.455696	1.136432
1602	0.445248	0.090796	0.298554	0.664019
1678	0.404906	0.109764	0.238015	0.688815
1684	0.532819	0.099362	0.369696	0.767918
1701	0.967698	0.181628	0.669849	1.397986
1720	0.661800	0.114042	0.472115	0.927697
1739	0.808146	0.091613	0.647137	1.009214
1760	1.059828	0.114690	0.857280	1.310233
1781	0.859647	0.163045	0.592758	1.246703
1802	1.230828	0.253522	0.821995	1.842999
1822	0.479326	0.098582	0.320306	0.717291
1842	0.667710	0.103216	0.493181	0.904000
1861	0.467612	0.092436	0.317411	0.688888
1958	0.595148	0.101555	0.425968	0.831520
1980	0.847067	0.101597	0.669615	1.071544
2008	0.610625	0.096429	0.448079	0.832137
2037	1.569463	0.379319	0.977297	2.520434
2067	0.774895	0.123168	0.567474	1.058131
2098	1.474230	0.246387	1.062440	2.045624
2129	1.137604	0.131909	0.906341	1.427877
2301	0.830824	0.306071	0.403582	1.710358
2323	0.704846	0.264575	0.337740	1.470978

2348	0.765821	0.272008	0.381763	1.536247
2375	0.651356	0.227079	0.328903	1.289936
2402	0.518854	0.196469	0.247019	1.089833
2429	0.753005	0.268046	0.374797	1.512861
2458	0.666739	0.238045	0.331171	1.342329
2487	0.750329	0.275947	0.364928	1.542752
2514	0.667437	0.252268	0.318190	1.400020

[118 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



```
/anaconda3/lib/python3.6/site-packages/ipykernel_launcher.py:49: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: http://pandas.pydata.org/pandas-docs/stable/indexing.html
/anaconda3/lib/python3.6/site-packages/ipykernel_launcher.py:50: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

See the caveats in the documentation: <http://pandas.pydata.org/pandas-docs/stable/indexing.html>.  
 /anaconda3/lib/python3.6/site-packages/ipykernel\_launcher.py:24: SettingWithCopyWarning:  
 A value is trying to be set on a copy of a slice from a DataFrame.  
 Try using `.loc[row_indexer,col_indexer] = value` instead

See the caveats in the documentation: <http://pandas.pydata.org/pandas-docs/stable/indexing.html>.  
 /anaconda3/lib/python3.6/site-packages/ipykernel\_launcher.py:27: SettingWithCopyWarning:  
 A value is trying to be set on a copy of a slice from a DataFrame.  
 Try using `.loc[row_indexer,col_indexer] = value` instead

See the caveats in the documentation: <http://pandas.pydata.org/pandas-docs/stable/indexing.html>.

### Generalized Linear Model Regression Results

```
=====
Dep. Variable:          trap_count    No. Observations:          118
Model:                  GLM           Df Residuals:              113
Model Family:          NegativeBinomial    Df Model:                4
Link Function:          log              Scale:                  1.0000
Method:                 IRLS             Log-Likelihood:          -172.22
Date:                  Fri, 08 May 2020    Deviance:                231.96
Time:                  08:05:19           Pearson chi2:            388.
No. Iterations:        7                 Covariance Type:        nonrobust
=====
```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-1.9963	0.868	-2.299	0.022	-3.698	-0.294
tempf	0.0662	0.079	0.837	0.403	-0.089	0.221
dwpf	-0.0693	0.046	-1.517	0.129	-0.159	0.020
drct	0.0115	0.005	2.314	0.021	0.002	0.021
feel	0.0036	0.070	0.051	0.960	-0.134	0.141

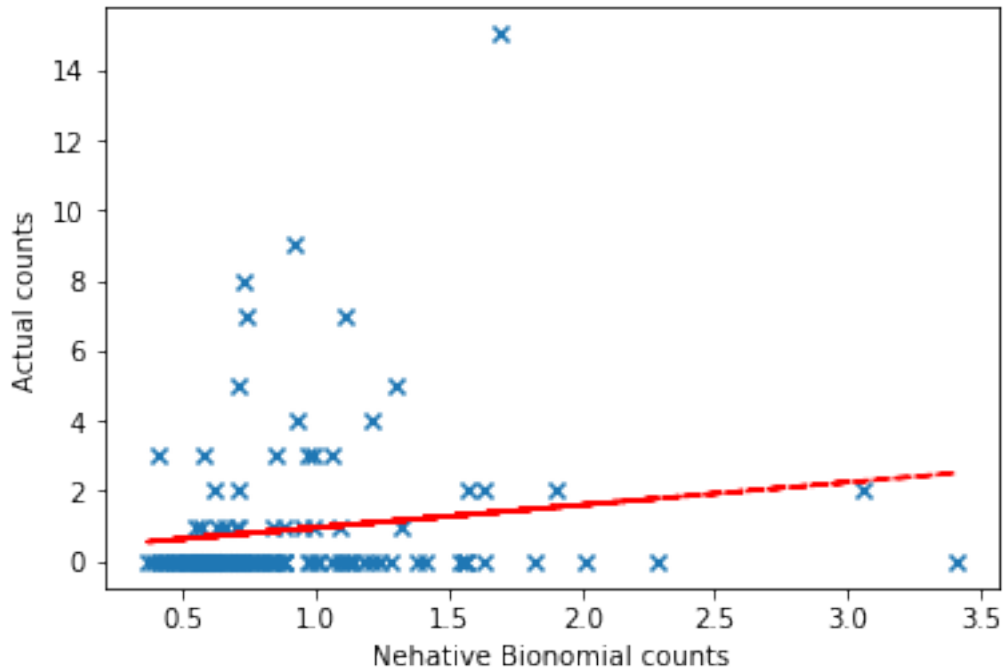
```
=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
0      0.475286  0.110393      0.301474      0.749307
11     0.564959  0.106788      0.390052      0.818297
22     1.377522  0.209775      1.022054      1.856620
33     0.403772  0.101756      0.246389      0.661685
45     0.712636  0.137943      0.487645      1.041435
59     0.655939  0.164121      0.401686      1.071125
73     0.950286  0.171360      0.667362      1.353154
86     3.056937  0.969951      1.641362      5.693360
100    0.972716  0.182707      0.673137      1.405623
114    0.611085  0.096940      0.447786      0.833935
127    0.839274  0.133363      0.614674      1.145942
139    0.561264  0.098809      0.397480      0.792537
151    0.675912  0.105068      0.498395      0.916656
163    1.559736  0.359463      0.992842      2.450318
175    0.965228  0.222294      0.614606      1.515875
=====
```

190	0.548668	0.104179	0.378170	0.796036
202	0.881172	0.152081	0.628278	1.235860
215	0.431446	0.106918	0.265453	0.701237
229	0.757473	0.131442	0.539090	1.064322
243	0.652687	0.114571	0.462687	0.920710
257	0.855525	0.103090	0.675560	1.083432
271	0.881355	0.112944	0.685600	1.133003
285	1.826461	0.495140	1.073633	3.107169
299	0.698721	0.155234	0.452057	1.079976
313	0.570015	0.096757	0.408694	0.795012
327	0.842616	0.103860	0.661776	1.072872
341	1.136293	0.168114	0.850268	1.518536
376	0.366818	0.108299	0.205657	0.654271
390	0.570775	0.120314	0.377607	0.862760
404	0.841275	0.122890	0.631827	1.120155
...	...	...	...	...
1562	1.115727	0.140331	0.871962	1.427640
1583	0.726548	0.193303	0.431316	1.223861
1602	0.412312	0.096144	0.261060	0.651195
1678	0.381178	0.118080	0.207704	0.699537
1684	0.502793	0.106381	0.332117	0.761180
1701	0.996874	0.214806	0.653468	1.520746
1720	0.632438	0.123980	0.430678	0.928715
1739	0.801343	0.102129	0.624216	1.028730
1760	1.090139	0.137343	0.851612	1.395474
1781	0.878886	0.190392	0.574827	1.343779
1802	1.317262	0.315461	0.823805	2.106298
1822	0.454094	0.106204	0.287122	0.718167
1842	0.655525	0.114306	0.465760	0.922605
1861	0.438542	0.098843	0.281942	0.682125
1958	0.577002	0.110932	0.395848	0.841057
1980	0.844392	0.114501	0.647321	1.101460
2008	0.582776	0.104159	0.410551	0.827248
2037	1.632459	0.466921	0.931920	2.859603
2067	0.764309	0.138118	0.536350	1.089155
2098	1.537745	0.308797	1.037417	2.279373
2129	1.177086	0.160182	0.901516	1.536891
2301	0.780508	0.329490	0.341228	1.785295
2323	0.654552	0.281487	0.281767	1.520545
2348	0.713058	0.290257	0.321096	1.583488
2375	0.599181	0.239366	0.273850	1.311002
2402	0.470200	0.204417	0.200552	1.102395
2429	0.700631	0.285785	0.314983	1.558444
2458	0.614131	0.251264	0.275425	1.369366
2487	0.697135	0.293794	0.305206	1.592354
2514	0.616281	0.266858	0.263753	1.439992

[118 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

### Negative Binomial Regression Scatter plot FAW on Pelham-GFarm



### Generalized Linear Model Regression Results

```
=====
Dep. Variable:          trap_count    No. Observations:          94
Model:                  GLM           Df Residuals:                89
Model Family:           Poisson       Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                 IRLS          Log-Likelihood:            -1804.3
Date:                   Fri, 08 May 2020    Deviance:                  3367.0
Time:                   08:05:19           Pearson chi2:              5.05e+03
No. Iterations:         6                Covariance Type:          nonrobust
=====
```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	5.7795	0.328	17.642	0.000	5.137	6.422
tempf	0.1140	0.032	3.565	0.000	0.051	0.177
dwpf	-0.2757	0.010	-27.537	0.000	-0.295	-0.256
drct	-0.0087	0.001	-8.225	0.000	-0.011	-0.007
feel	0.0931	0.030	3.104	0.002	0.034	0.152

=====				
	mean	mean_se	mean_ci_lower	mean_ci_upper
1	10.315026	0.524590	9.336431	11.396192
12	6.682064	0.346052	6.037101	7.395930
23	21.805543	0.738105	20.405829	23.301268
34	6.527769	0.393002	5.801209	7.345325
46	6.111282	0.364082	5.437781	6.868201
60	18.230672	1.003674	16.365924	20.307891
74	11.169941	0.641568	9.980685	12.500902
87	26.575568	1.838761	23.205344	30.435266
101	8.506121	0.428826	7.705826	9.389531
115	9.425938	0.410380	8.654970	10.265582
128	9.184773	0.413032	8.409895	10.031047
140	11.493693	0.482428	10.586000	12.479215
152	18.803647	0.978311	16.980716	20.822276
164	16.313152	1.014738	14.440759	18.428319
176	52.426077	3.447247	46.086856	59.637253
189	6.359705	0.315019	5.771303	7.008096
201	7.291501	0.363525	6.612709	8.039971
213	9.117701	0.499268	8.189836	10.150688
227	13.891262	0.593759	12.774929	15.105146
241	6.577767	0.320951	5.977857	7.237881
255	12.186995	0.395969	11.435105	12.988323
269	14.045434	0.489421	13.118209	15.038197
283	10.861268	0.720872	9.536423	12.370167
297	25.410282	1.029106	23.471248	27.509506
311	9.664044	0.468833	8.787482	10.628043
325	17.097418	0.658302	15.854652	18.437598
339	11.783482	0.474501	10.889231	12.751172
352	10.526953	0.579319	9.450600	11.725894
360	10.930098	0.703418	9.634831	12.399496
374	10.808761	0.657383	9.594145	12.177147
...	...	...	...	...
1290	6.675315	0.330967	6.057153	7.356563
1315	11.947223	0.420924	11.150068	12.801369
1341	5.456068	0.316865	4.869065	6.113838
1365	15.834426	0.553370	14.786150	16.957019
1385	5.274947	0.346953	4.636940	6.000739
1405	4.188081	0.277642	3.677782	4.769186
1423	16.711511	1.102609	14.684335	19.018540
1438	58.818631	3.048192	53.137681	65.106932
1455	15.094893	0.625806	13.916845	16.372661
1474	7.297730	0.361293	6.622879	8.041345
1494	6.639161	0.352906	5.982289	7.368160
1517	6.428007	0.348249	5.780440	7.148120
1540	7.857668	0.362920	7.177604	8.602167
1560	17.749162	0.525573	16.748379	18.809746
1580	32.086123	1.522196	29.237178	35.212678



1682	5.625389	0.316859	5.037410	6.281998
1699	13.889111	0.953455	12.140636	15.889398
1718	5.479777	0.296913	4.927674	6.093738
1737	11.418306	0.393594	10.672358	12.216392
1758	19.122160	0.519623	18.130364	20.168211
1779	32.487258	1.228633	30.166264	34.986828
1800	46.243781	1.855292	42.746768	50.026877
1820	9.104285	0.477882	8.214222	10.090793
1840	16.002813	0.568921	14.925709	17.157646
1859	9.367801	0.470811	8.489021	10.337552
1878	17.260550	0.658297	16.017356	18.600235
1896	21.153000	1.375210	18.622296	24.027618
1914	18.174624	0.768835	16.728513	19.745745
1930	11.243910	0.719470	9.918616	12.746285
1944	30.150968	1.959746	26.544530	34.247390

[94 rows x 4 columns]

```
/anaconda3/lib/python3.6/site-packages/ipykernel_launcher.py:77: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

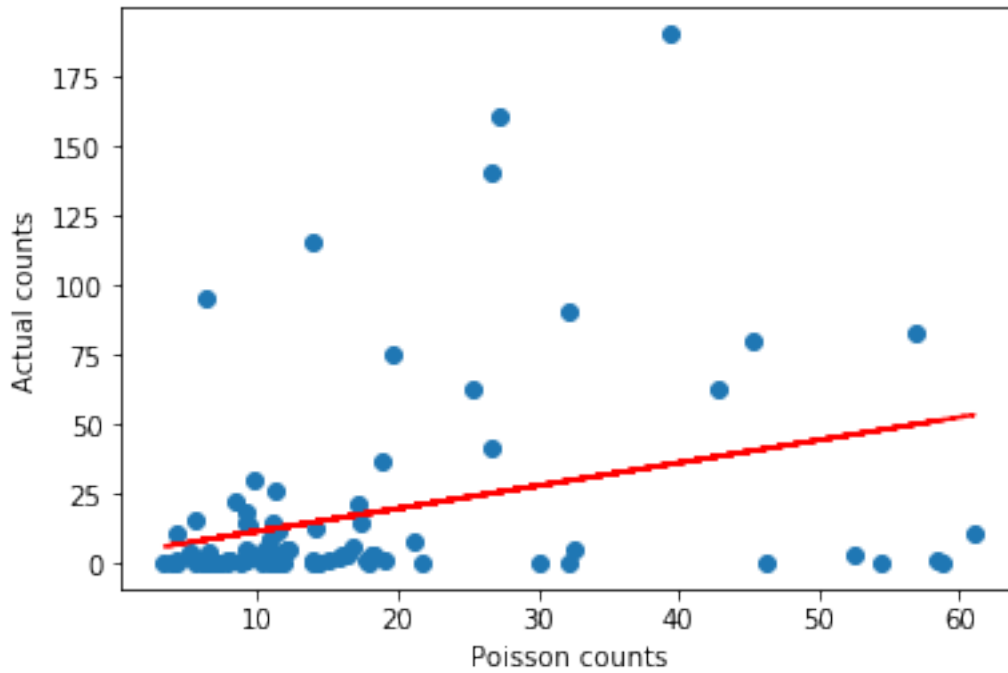
```
See the caveats in the documentation: http://pandas.pydata.org/pandas-docs/stable/indexing.html
/anaconda3/lib/python3.6/site-packages/ipykernel_launcher.py:78: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```

```
See the caveats in the documentation: http://pandas.pydata.org/pandas-docs/stable/indexing.html
/anaconda3/lib/python3.6/site-packages/pandas/core/frame.py:3694: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame
```

```
See the caveats in the documentation: http://pandas.pydata.org/pandas-docs/stable/indexing.html
errors=errors)
```

<Figure size 432x288 with 0 Axes>

# Poisson Regression Scatter plot FAW on Litchfield-WFarm



## Generalized Linear Model Regression Results

```
=====
Dep. Variable:          trap_count    No. Observations:          94
Model:                  GLM           Df Residuals:                89
Model Family:          NegativeBinomial    Df Model:                  4
Link Function:          log             Scale:                    1.0000
Method:                 IRLS            Log-Likelihood:            -342.39
Date:                   Fri, 08 May 2020    Deviance:                  305.96
Time:                   08:05:19           Pearson chi2:              452.
No. Iterations:         17                Covariance Type:          nonrobust
=====
```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	9.2921	1.463	6.350	0.000	6.424	12.160
tempf	-0.0443	0.141	-0.314	0.754	-0.321	0.232
dwpf	-0.3620	0.042	-8.586	0.000	-0.445	-0.279
drct	-0.0035	0.004	-0.788	0.431	-0.012	0.005
feel	0.2637	0.132	2.000	0.046	0.005	0.522

```
=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
1             4.926672  0.926942    3.407234    7.123695
12            3.311379  0.554832    2.384445    4.598651
23           21.427476  3.436197   15.648363   29.340881
```

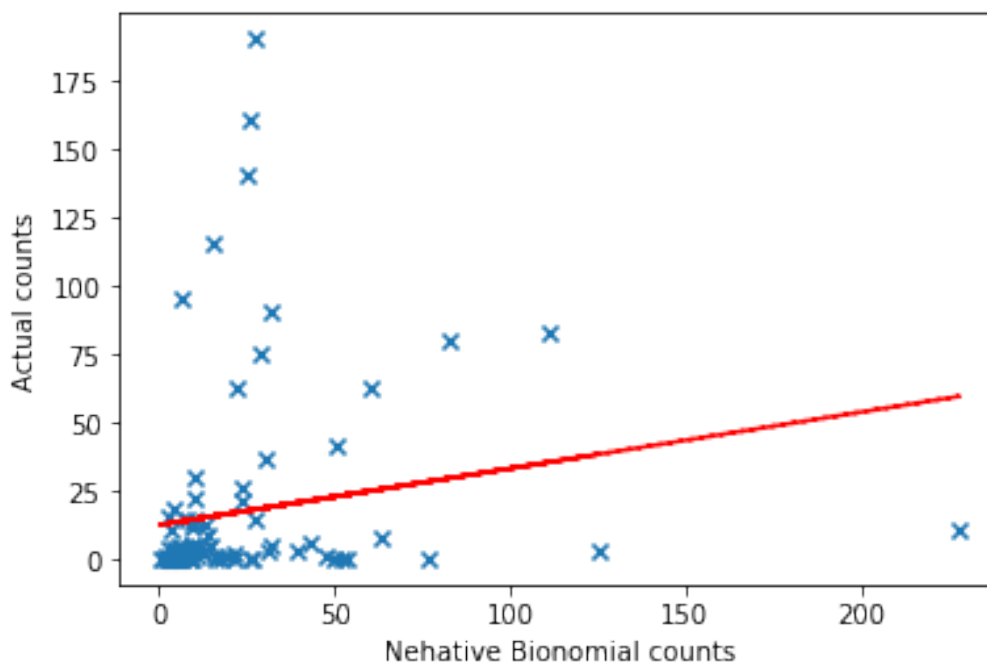
34	2.669045	0.562499	1.765899	4.034092
46	3.241518	0.651433	2.186182	4.806296
60	9.648379	2.237590	6.124197	15.200559
74	8.397579	1.837213	5.469267	12.893743
87	50.606349	15.475196	27.791460	92.150702
101	10.211645	1.740088	7.312216	14.260751
115	9.252269	1.393516	6.887250	12.429414
128	10.552264	1.591413	7.851883	14.181346
140	9.168822	1.423563	6.763242	12.430031
152	30.306804	6.926575	19.364188	47.433043
164	39.244553	9.976224	23.845055	64.589279
176	125.384562	39.145888	67.997559	231.203714
189	3.974132	0.612661	2.937780	5.376075
201	5.489137	0.882120	4.006024	7.521328
213	4.140521	0.827071	2.799157	6.124672
227	7.994695	1.327980	5.773122	11.071157
241	4.241732	0.632514	3.166757	5.681614
255	11.150212	1.143717	9.119527	13.633078
269	13.633823	1.690360	10.692598	17.384094
283	13.710851	3.528037	8.280102	22.703517
297	22.143154	4.147081	15.339888	31.963680
311	10.582879	1.921809	7.413598	15.107015
325	23.711471	3.819591	17.291858	32.514369
339	12.050033	1.678380	9.171265	15.832418
352	9.544922	2.090572	6.213529	14.662446
360	14.693972	3.960031	8.664431	24.919445
374	5.158069	1.226009	3.237182	8.218776
...	...	...	...	...
1290	3.731262	0.579002	2.752769	5.057568
1315	9.361288	1.079618	7.467380	11.735536
1341	4.787858	0.905605	3.304759	6.936538
1365	21.504720	2.914088	16.488765	28.046552
1385	2.650625	0.636537	1.655525	4.243859
1405	3.599120	0.806139	2.320290	5.582779
1423	42.908383	11.486960	25.390301	72.513097
1438	76.520828	21.472701	44.149101	132.628684
1455	11.085305	1.827754	8.024184	15.314204
1474	4.790754	0.760578	3.509681	6.539435
1494	3.214345	0.559599	2.285090	4.521491
1517	3.037852	0.540983	2.142811	4.306747
1540	4.779782	0.703677	3.581745	6.378544
1560	16.385870	2.059179	12.808573	20.962267
1580	25.904606	5.835911	16.657673	40.284655
1682	2.686300	0.490837	1.877690	3.843129
1699	8.713508	2.457025	5.013860	15.143069
1718	3.376648	0.574026	2.419817	4.711823
1737	8.677639	0.960116	6.985902	10.779054
1758	19.200273	2.267717	15.232570	24.201462

1779	32.212685	6.158356	22.146033	46.855212
1800	49.579053	11.017455	32.073345	76.639418
1820	4.346375	0.818514	3.004885	6.286754
1840	12.379295	1.760171	9.368420	16.357821
1859	5.889015	1.073642	4.119626	8.418361
1878	27.376079	4.230944	20.221759	37.061548
1896	63.564054	17.380524	37.193308	108.632150
1914	31.424126	5.612370	22.143081	44.595226
1930	23.880633	5.997484	14.597264	39.067915
1944	52.517273	15.622853	29.314769	94.084449

[94 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

Negative Binomial Regression Scatter plot FAW on Litchfield-WFarm



Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	147
Model:	GLM	Df Residuals:	142
Model Family:	Poisson	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -680.71  
Date: Fri, 08 May 2020 Deviance: 1187.1  
Time: 08:05:20 Pearson chi2: 2.61e+03  
No. Iterations: 8 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	2.2037	0.356	6.196	0.000	1.507	2.901
tempf	0.3007	0.028	10.688	0.000	0.246	0.356
dwpf	-0.2736	0.021	-13.124	0.000	-0.314	-0.233
drct	-0.0071	0.002	-3.275	0.001	-0.011	-0.003
feel	-0.0730	0.022	-3.288	0.001	-0.116	-0.029

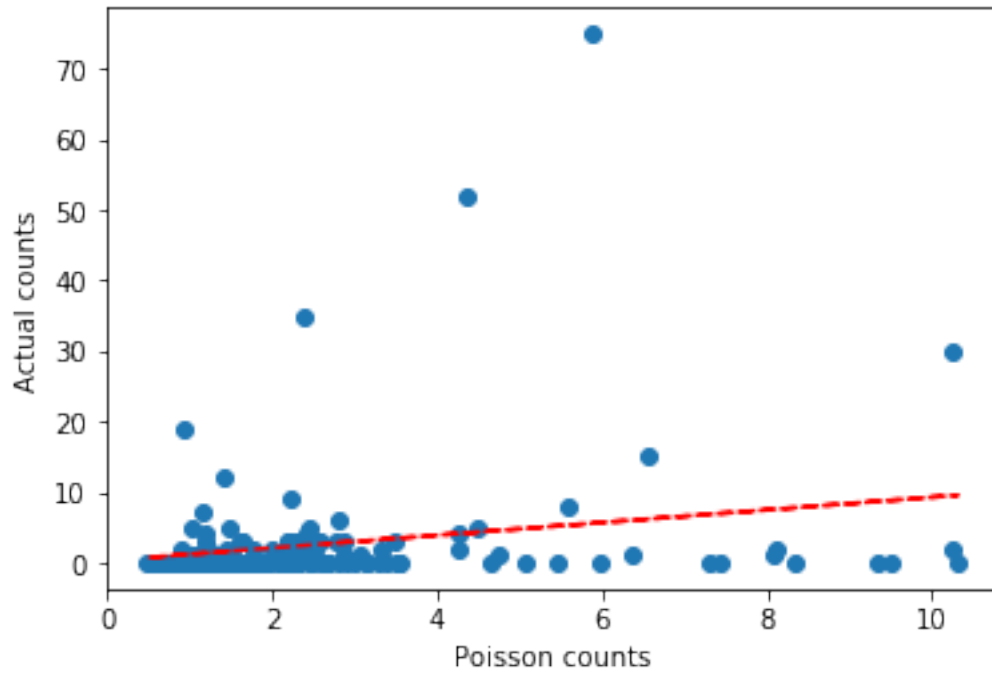
	mean	mean_se	mean_ci_lower	mean_ci_upper
2	1.492140	0.168533	1.195827	1.861875
13	0.978934	0.107264	0.789742	1.213450
24	3.526707	0.242611	3.081862	4.035762
35	0.890577	0.117738	0.687289	1.153993
47	0.889218	0.102276	0.709749	1.114069
61	2.504437	0.268023	2.030556	3.088910
75	1.480712	0.141375	1.228003	1.785425
88	4.483687	0.652561	3.370936	5.963759
102	1.181429	0.123878	0.961956	1.450975
116	1.211091	0.108618	1.015864	1.443836
129	1.266478	0.115507	1.059169	1.514363
141	1.589479	0.140188	1.337153	1.889420
153	2.215431	0.150092	1.939951	2.530031
165	2.324119	0.250848	1.880989	2.871644
177	6.361500	0.527978	5.406465	7.485239
188	0.885523	0.097988	0.712869	1.099994
200	1.127810	0.115898	0.922068	1.379458
212	1.260173	0.154496	0.991000	1.602459
226	2.063055	0.173837	1.748988	2.433520
240	0.949158	0.100526	0.771236	1.168125
254	1.756117	0.126348	1.525147	2.022066
268	1.868657	0.134393	1.622974	2.151532
282	1.780695	0.240881	1.365981	2.321317
296	3.481564	0.312807	2.919421	4.151949
310	1.183806	0.108869	0.988552	1.417626
324	2.307828	0.134989	2.057857	2.588163
338	1.793010	0.151566	1.519250	2.116099
351	1.260481	0.136576	1.019312	1.558712
359	1.248060	0.124358	1.026646	1.517225
373	1.457954	0.199847	1.114466	1.907309
...	...	...	...	...
1929	1.501156	0.167399	1.206439	1.867868
1943	3.371785	0.297448	2.836415	4.008207
1954	1.394256	0.140470	1.144418	1.698637

1976	1.595983	0.129535	1.361263	1.871176
2004	1.037688	0.106843	0.848057	1.269721
2033	1.319649	0.191552	0.992896	1.753935
2063	2.256738	0.169998	1.946978	2.615780
2094	2.122416	0.217804	1.735719	2.595264
2125	2.988516	0.189828	2.638688	3.384723
2155	1.988571	0.166803	1.687102	2.343909
2182	1.322416	0.190491	0.997136	1.753807
2207	2.196604	0.201156	1.835702	2.628460
2231	2.532618	0.281914	2.036196	3.150066
2252	1.011975	0.101194	0.831864	1.231083
2267	7.309707	0.608557	6.209185	8.605286
2279	1.181467	0.107403	0.988648	1.411892
2298	3.053096	0.450612	2.286178	4.077283
2320	3.530939	0.531515	2.628804	4.742664
2345	2.631176	0.374669	1.990409	3.478223
2371	2.469507	0.344503	1.878734	3.246049
2398	3.149341	0.489748	2.321940	4.271578
2425	2.684372	0.382335	2.030514	3.548782
2454	2.661283	0.380164	2.011394	3.521154
2483	2.882103	0.424392	2.159580	3.846358
2510	3.270733	0.495136	2.431011	4.400512
2538	2.576141	0.392483	1.911113	3.472584
2564	2.868702	0.429393	2.139321	3.846759
2586	3.308883	0.520672	2.430747	4.504256
2606	2.452458	0.382366	1.806715	3.328997
2624	2.634127	0.384004	1.979468	3.505299

[147 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

### Poisson Regression Scatter plot FAW on Litchfield-MFarm



### Generalized Linear Model Regression Results

```
=====
Dep. Variable:          trap_count    No. Observations:          147
Model:                  GLM           Df Residuals:              142
Model Family:          NegativeBinomial Df Model:                  4
Link Function:         log           Scale:                    1.0000
Method:                IRLS          Log-Likelihood:           -566.59
Date:                  Fri, 08 May 2020 Deviance:                948.52
Time:                  08:05:20        Pearson chi2:             2.26e+03
No. Iterations:        11              Covariance Type:         nonrobust
=====
```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	2.0160	0.383	5.269	0.000	1.266	2.766
tempf	0.3111	0.031	10.195	0.000	0.251	0.371
dwpf	-0.2759	0.023	-12.239	0.000	-0.320	-0.232
drct	-0.0062	0.002	-2.677	0.007	-0.011	-0.002
feel	-0.0801	0.024	-3.294	0.001	-0.128	-0.032

```
=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
2          1.432390  0.171378      1.132972      1.810936
13         0.954509  0.109335      0.762567      1.194763
24         3.630223  0.268589      3.140187      4.196730
=====
```

35	0.846501	0.118097	0.643983	1.112706
47	0.880335	0.105444	0.696135	1.113275
61	2.434342	0.279794	1.943335	3.049409
75	1.481406	0.147854	1.218201	1.801480
88	4.875999	0.758612	3.594454	6.614459
102	1.195063	0.130304	0.965117	1.479796
116	1.183042	0.110775	0.984686	1.421357
129	1.267782	0.119982	1.053143	1.526167
141	1.544146	0.143547	1.286941	1.852755
153	2.164490	0.155664	1.879920	2.492136
165	2.423703	0.275136	1.940224	3.027657
177	6.322281	0.581814	5.278872	7.571928
188	0.862162	0.099792	0.687172	1.081713
200	1.136411	0.121179	0.922082	1.400560
212	1.200786	0.155849	0.931084	1.548612
226	2.037604	0.181654	1.710939	2.426638
240	0.935489	0.103166	0.753647	1.161208
254	1.754986	0.130647	1.516726	2.030674
268	1.862054	0.139341	1.608035	2.156201
282	1.882950	0.267600	1.425175	2.487765
296	3.402770	0.331354	2.811541	4.118325
310	1.149827	0.110817	0.951911	1.388894
324	2.298942	0.140807	2.038887	2.592167
338	1.830350	0.160408	1.541475	2.173361
351	1.199603	0.137769	0.957813	1.502431
359	1.195782	0.126363	0.972080	1.470964
373	1.372491	0.200325	1.031027	1.827043
...	...	...	...	...
1929	1.539233	0.179788	1.224281	1.935208
1943	3.256475	0.311340	2.700023	3.927607
1954	1.354123	0.143464	1.100212	1.666631
1976	1.599939	0.134591	1.356744	1.886726
2004	1.016853	0.109415	0.823508	1.255593
2033	1.387924	0.211306	1.029850	1.870499
2063	2.264233	0.180845	1.936134	2.647931
2094	2.209496	0.237432	1.789877	2.727490
2125	3.065085	0.206117	2.686594	3.496899
2155	1.970129	0.174222	1.656614	2.342977
2182	1.382606	0.209114	1.027917	1.859685
2207	2.261928	0.216910	1.874355	2.729642
2231	2.662596	0.312048	2.116153	3.350144
2252	0.993765	0.103987	0.809496	1.219980
2267	7.380173	0.682679	6.156429	8.847167
2279	1.163935	0.110265	0.966697	1.401416
2298	2.912836	0.465456	2.129602	3.984131
2320	3.326767	0.543417	2.415358	4.582088
2345	2.502972	0.385882	1.850234	3.385988
2371	2.320081	0.350938	1.724842	3.120734

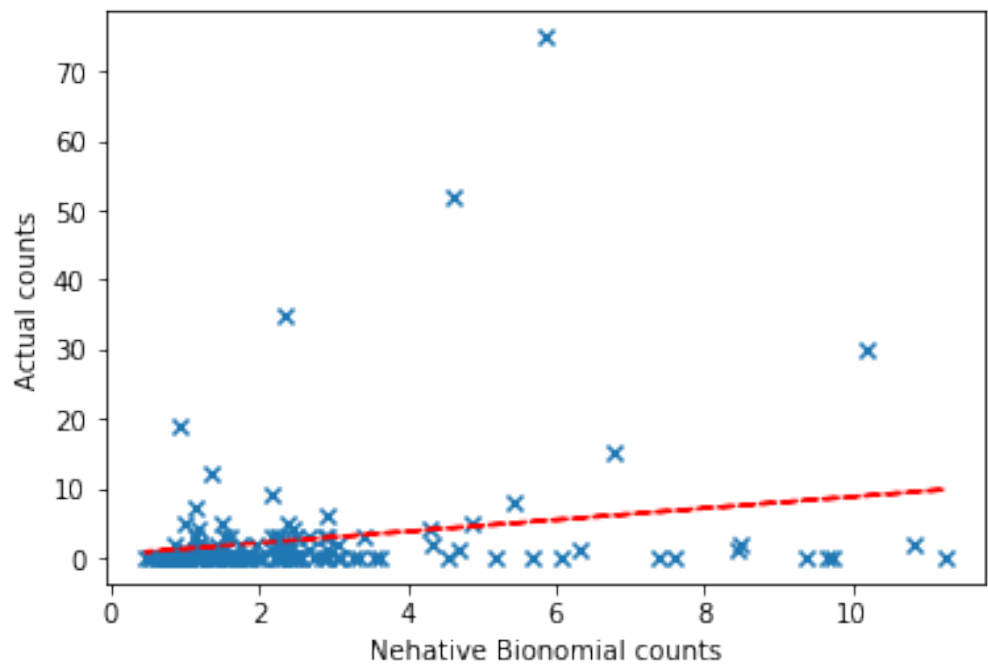


2398	2.904088	0.490216	2.086053	4.042911
2425	2.548613	0.393167	1.883612	3.448389
2454	2.503592	0.387851	1.847980	3.391796
2483	2.733226	0.436102	1.999224	3.736714
2510	3.065180	0.503582	2.221319	4.229617
2538	2.480910	0.408097	1.797185	3.424753
2564	2.663414	0.432775	1.936992	3.662263
2586	3.059419	0.522630	2.188925	4.276090
2606	2.374827	0.399276	1.708130	3.301741
2624	2.489805	0.393360	1.826776	3.393480

[147 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

Negative Binomial Regression Scatter plot FAW on Litchfield-MFarm



Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	57
Model:	GLM	Df Residuals:	52
Model Family:	Poisson	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -16.980  
Date: Fri, 08 May 2020 Deviance: 26.733  
Time: 08:05:20 Pearson chi2: 69.9  
No. Iterations: 7 Covariance Type: nonrobust

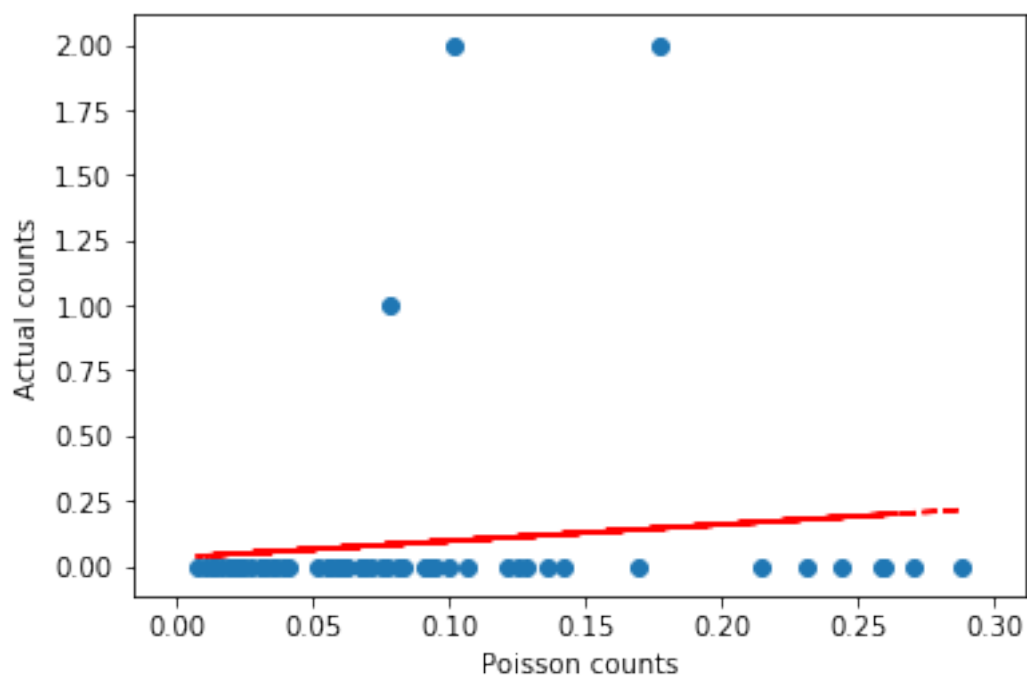
	coef	std err	z	P> z	[0.025	0.975]
Intercept	0.0500	8.539	0.006	0.995	-16.687	16.787
tempf	-1.5442	1.748	-0.883	0.377	-4.970	1.882
dwpf	0.2126	0.271	0.784	0.433	-0.319	0.744
drct	0.0381	0.026	1.485	0.137	-0.012	0.088
feel	1.2475	1.583	0.788	0.431	-1.856	4.351

	mean	mean_se	mean_ci_lower	mean_ci_upper
3	0.010175	0.016490	0.000425	0.243790
14	0.032547	0.033298	0.004382	0.241748
25	0.035983	0.048174	0.002609	0.496220
36	0.020694	0.026050	0.001755	0.243998
48	0.082962	0.075481	0.013945	0.493545
62	0.016550	0.030435	0.000450	0.608280
76	0.168990	0.263015	0.007999	3.569972
89	0.244039	0.308872	0.020423	2.916048
103	0.213943	0.141300	0.058630	0.780688
117	0.077985	0.053297	0.020430	0.297677
130	0.125511	0.072391	0.040526	0.388716
142	0.022654	0.026906	0.002209	0.232338
154	0.075144	0.078178	0.009779	0.577390
166	0.287944	0.273144	0.044860	1.848242
178	0.034546	0.055791	0.001458	0.818603
187	0.051204	0.041041	0.010643	0.246351
199	0.077219	0.062573	0.015775	0.377991
211	0.013335	0.019316	0.000780	0.228040
225	0.021829	0.030227	0.001447	0.329399
239	0.062171	0.045697	0.014721	0.262564
253	0.055405	0.038008	0.014442	0.212556
267	0.093145	0.081351	0.016817	0.515915
281	0.258807	0.247357	0.039759	1.684693
295	0.012997	0.021516	0.000507	0.333406
309	0.091078	0.075636	0.017887	0.463763
323	0.055554	0.045992	0.010966	0.281450
337	0.092159	0.058127	0.026771	0.317260
372	0.007491	0.013264	0.000233	0.240848
386	0.020603	0.028231	0.001405	0.302187
400	0.038448	0.041408	0.004657	0.317402
414	0.071123	0.085440	0.006753	0.749123
429	0.061543	0.063241	0.008213	0.461178
444	0.141420	0.147286	0.018365	1.088977
459	0.081137	0.059087	0.019469	0.338137

474	0.023060	0.028189	0.002100	0.253164
489	0.128598	0.082280	0.036696	0.450661
504	0.259470	0.210132	0.053057	1.268913
519	0.067562	0.047655	0.016955	0.269219
534	0.270371	0.194580	0.065974	1.108029
549	0.095149	0.086383	0.016055	0.563885
564	0.099356	0.097039	0.014650	0.673817
578	0.136386	0.182712	0.009873	1.884061
602	0.121038	0.057716	0.047537	0.308186
615	0.018860	0.027020	0.001138	0.312622
630	0.068439	0.056121	0.013719	0.341429
646	0.041119	0.043159	0.005255	0.321722
662	0.030783	0.040287	0.002368	0.400225
678	0.024055	0.027389	0.002582	0.224072
694	0.058181	0.072481	0.005062	0.668646
710	0.101407	0.054678	0.035246	0.291762
726	0.176795	0.120917	0.046270	0.675526
742	0.067889	0.046731	0.017615	0.261651
758	0.059908	0.076320	0.004933	0.727570
774	0.106401	0.063293	0.033159	0.341419
789	0.030662	0.040741	0.002268	0.414567
804	0.230816	0.267666	0.023778	2.240591
818	0.027361	0.089694	0.000044	16.886367

<Figure size 432x288 with 0 Axes>

# Poisson Regression Scatter plot FAW on Merrimack-TFarm



## Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          57
Model:                  GLM           Df Residuals:              52
Model Family:          NegativeBinomial  Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                 IRLS          Log-Likelihood:            -16.730
Date:                   Fri, 08 May 2020  Deviance:                  2.1422
Time:                   08:05:21         Pearson chi2:               3.20
No. Iterations:         34              Covariance Type:          nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	21.7674	38.058	0.572	0.567	-52.825	96.360
tempf	-7.8354	9.284	-0.844	0.399	-26.031	10.360
dwpf	0.9880	1.335	0.740	0.459	-1.629	3.605
drct	0.1330	0.138	0.962	0.336	-0.138	0.404
feel	6.3289	8.146	0.777	0.437	-9.638	22.296

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
3          0.000010   0.000092  2.547636e-13  4.150270e+02
14         0.000974   0.004915  4.922188e-08  1.926620e+01
25         0.000202   0.001490  1.059076e-10  3.851292e+02

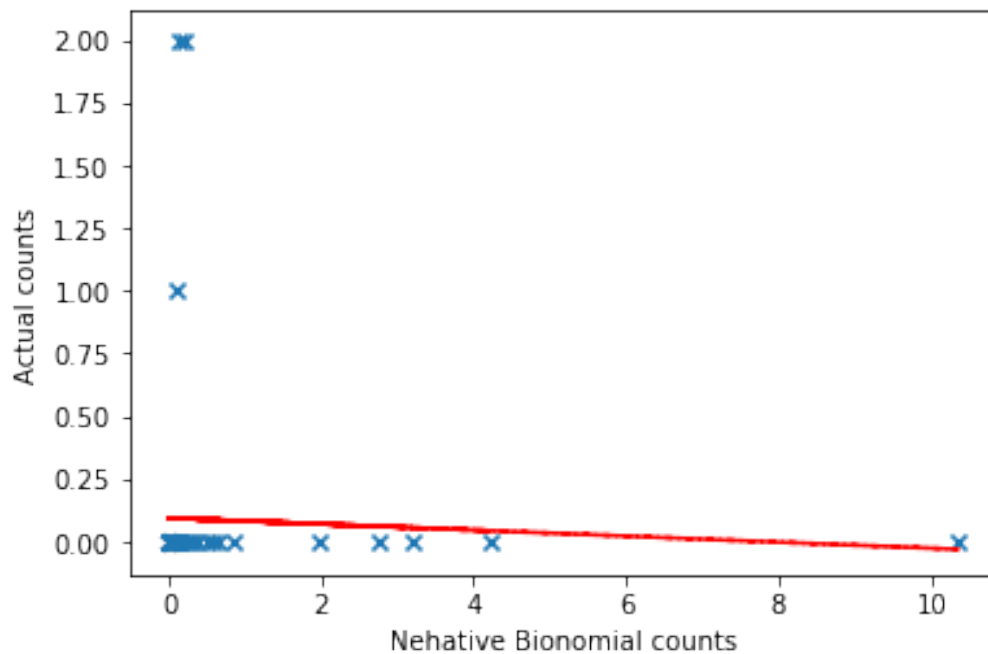
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36	0.000379	0.002367	1.807080e-09	7.935096e+01
48	0.035727	0.145357	1.229723e-05	1.037953e+02
62	0.000062	0.000596	4.753033e-13	8.218370e+03
76	0.840410	6.224097	4.173224e-07	1.692430e+06
89	0.152511	0.905706	1.343804e-06	1.730880e+04
103	1.971636	6.442667	3.261195e-03	1.192002e+03
117	0.095365	0.242522	6.526939e-04	1.393384e+01
130	0.277412	0.666496	2.500742e-03	3.077375e+01
142	0.000354	0.002178	2.029524e-09	6.167218e+01
154	0.134710	0.546163	4.767825e-05	3.806093e+02
166	3.191337	15.663384	2.119314e-04	4.805628e+04
178	0.002482	0.018103	1.538274e-09	4.005560e+03
187	0.010333	0.034593	1.460965e-05	7.308426e+00
199	0.014040	0.051095	1.121170e-05	1.758187e+01
211	0.000050	0.000385	1.357474e-11	1.832061e+02
225	0.000101	0.000760	3.768477e-11	2.690334e+02
239	0.013954	0.043329	3.173585e-05	6.135236e+00
253	0.005910	0.020848	5.873043e-06	5.947248e+00
267	0.082926	0.324716	3.851446e-05	1.785505e+02
281	0.522218	2.368495	7.198981e-05	3.788205e+03
295	0.000024	0.000218	5.355461e-13	1.097834e+03
309	0.289335	0.926136	5.454746e-04	1.534709e+02
323	0.010518	0.041607	4.515638e-06	2.449873e+01
337	0.022772	0.071388	4.885918e-05	1.061338e+01
372	0.000007	0.000066	5.176224e-14	9.107068e+02
386	0.000193	0.001388	1.401578e-10	2.644088e+02
400	0.000637	0.003582	1.048141e-08	3.875606e+01
414	0.026802	0.125064	2.859901e-06	2.511883e+02
429	0.011922	0.049358	3.567264e-06	3.984382e+01
444	0.656037	2.805826	1.501065e-04	2.867199e+03
459	0.037848	0.109557	1.300365e-04	1.101564e+01
474	0.000177	0.001194	3.169862e-10	9.874652e+01
489	0.064673	0.203713	1.347489e-04	3.103987e+01
504	2.752922	11.090606	1.024677e-03	7.396071e+03
519	0.043304	0.116403	2.230839e-04	8.405964e+00
534	4.232398	15.868856	2.723398e-03	6.577516e+03
549	0.361067	1.286055	3.355531e-04	3.885207e+02
564	0.592461	2.311805	2.826435e-04	1.241882e+03
578	0.149875	0.859679	1.964537e-06	1.143401e+04
602	0.230754	0.442963	5.359947e-03	9.934356e+00
615	0.000047	0.000380	6.389201e-12	3.479042e+02
630	0.039577	0.122915	8.991682e-05	1.741983e+01
646	0.002146	0.010211	1.908334e-07	2.412353e+01
662	0.000167	0.001220	1.029378e-10	2.716586e+02
678	0.000310	0.001845	2.634803e-09	3.642578e+01
694	0.012699	0.075291	1.140124e-07	1.414389e+03
710	0.134865	0.277646	2.385240e-03	7.625471e+00
726	0.218769	0.736686	2.976088e-04	1.608154e+02

742	0.032158	0.093033	1.108552e-04	9.328593e+00
758	0.009370	0.053908	1.188059e-07	7.390672e+02
774	0.108157	0.291355	5.508996e-04	2.123421e+01
789	0.007887	0.043956	1.421522e-07	4.375485e+02
804	10.346493	54.510341	3.390398e-04	3.157444e+05
818	0.000107	0.001781	7.508479e-19	1.528534e+10

<Figure size 432x288 with 0 Axes>

### Negative Binomial Regression Scatter plot FAW on Merrimack-TFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          143
Model:                  GLM           Df Residuals:                138
Model Family:           Poisson       Df Model:                    4
Link Function:          log           Scale:                      1.0000
Method:                 IRLS          Log-Likelihood:             -374.51
Date:                   Fri, 08 May 2020    Deviance:                   546.34
Time:                   08:05:21           Pearson chi2:                680.
No. Iterations:         6                Covariance Type:            nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
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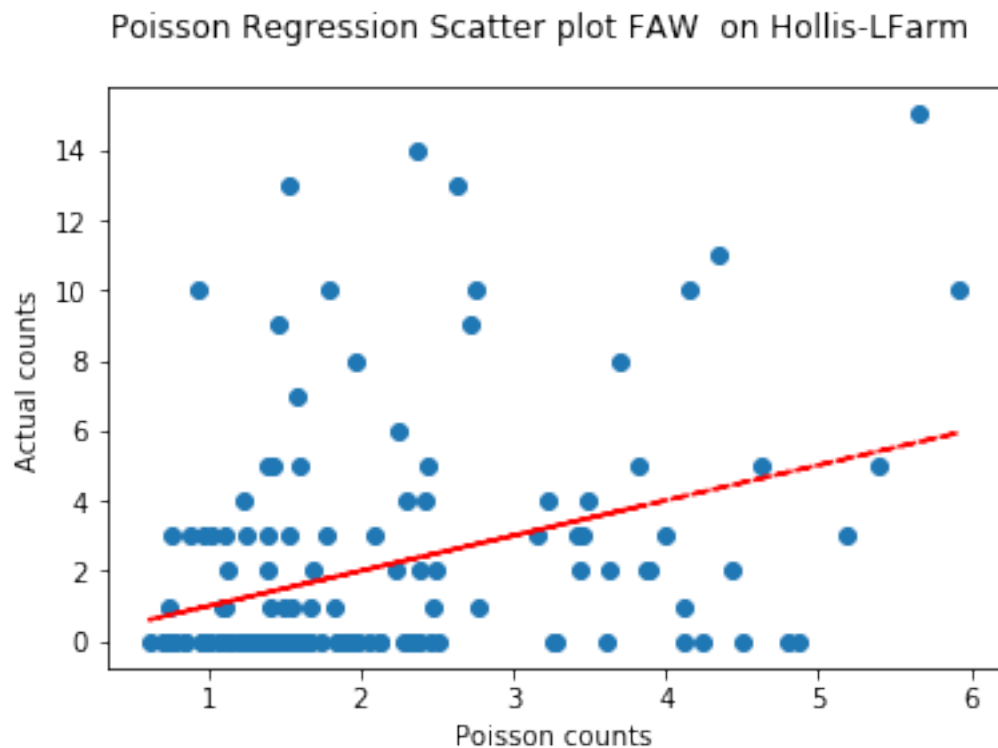
Intercept	-0.6836	0.398	-1.719	0.086	-1.463	0.096
tempf	0.0349	0.040	0.878	0.380	-0.043	0.113
dwpf	0.0052	0.027	0.196	0.844	-0.047	0.057
drct	0.0155	0.002	6.217	0.000	0.011	0.020
feel	-0.0472	0.035	-1.356	0.175	-0.115	0.021

	mean	mean_se	mean_ci_lower	mean_ci_upper
4	0.780022	0.107338	0.595627	1.021502
15	1.067589	0.121287	0.854477	1.333853
26	2.059081	0.190235	1.718037	2.467825
37	0.720135	0.107185	0.537924	0.964066
49	1.332950	0.147519	1.073026	1.655836
63	0.786498	0.120089	0.583082	1.060879
77	1.495563	0.154735	1.221060	1.831775
90	5.176608	0.805884	3.815328	7.023581
104	2.444577	0.223328	2.043813	2.923927
118	1.431716	0.129820	1.198601	1.710168
131	2.085618	0.167757	1.781427	2.441750
143	1.150859	0.119149	0.939501	1.409768
155	1.542368	0.128047	1.310755	1.814906
167	4.248523	0.422766	3.495714	5.163450
179	1.746019	0.230692	1.347674	2.262109
195	1.209509	0.135482	0.971097	1.506454
207	1.912273	0.173496	1.600745	2.284428
221	0.716818	0.104673	0.538410	0.954343
235	1.081437	0.119172	0.871366	1.342152
249	1.399419	0.142436	1.146331	1.708383
263	1.665420	0.119853	1.446328	1.917701
277	1.569070	0.125203	1.341903	1.834694
291	3.893725	0.485143	3.050063	4.970749
305	1.021426	0.138953	0.782367	1.333531
319	1.412021	0.133673	1.172897	1.699897
333	1.841716	0.123764	1.614439	2.100989
347	2.276558	0.168231	1.969596	2.631359
357	0.988874	0.123507	0.774157	1.263144
363	1.312153	0.144284	1.057758	1.627729
368	0.975754	0.134272	0.745088	1.277828
...	...	...	...	...
1935	3.619356	0.363852	2.972080	4.407599
1949	1.230878	0.152924	0.964854	1.570249
1963	0.932442	0.110200	0.739644	1.175495
1985	1.523293	0.122309	1.301483	1.782906
2013	1.249974	0.131199	1.017555	1.535481
2042	3.691897	0.490909	2.844893	4.791079
2073	1.537247	0.150222	1.269296	1.861763
2104	3.225765	0.298501	2.690702	3.867229
2135	1.966284	0.154506	1.685626	2.293673
2163	1.108223	0.115547	0.903397	1.359490

2189	4.336536	0.581180	3.334766	5.639238
2214	3.489747	0.282702	2.977410	4.090244
2238	4.148027	0.430574	3.384426	5.083913
2259	1.787853	0.172311	1.480109	2.159582
2273	2.127146	0.282084	1.640280	2.758522
2285	1.605951	0.141803	1.350742	1.909379
2306	4.507653	0.605687	3.463984	5.865772
2328	3.634609	0.510938	2.759303	4.787581
2354	4.122373	0.533002	3.199567	5.311332
2381	3.255678	0.420423	2.527676	4.193355
2408	2.391999	0.367249	1.770410	3.231826
2436	4.001366	0.518688	3.103623	5.158787
2465	3.434059	0.452945	2.651772	4.447125
2493	4.115072	0.552727	3.162613	5.354377
2521	3.419084	0.484507	2.589934	4.513681
2548	5.397686	0.748080	4.113744	7.082358
2573	2.757597	0.395472	2.081893	3.652609
2595	2.636406	0.404030	1.952384	3.560077
2615	5.918899	0.845708	4.473208	7.831822
2631	3.869551	0.515766	2.979925	5.024765

[143 rows x 4 columns]

<Figure size 432x288 with 0 Axes>





# Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          143
Model:                  GLM           Df Residuals:              138
Model Family:          NegativeBinomial    Df Model:                  4
Link Function:          log             Scale:                  1.0000
Method:                IRLS            Log-Likelihood:          -351.71
Date:                  Fri, 08 May 2020    Deviance:                487.60
Time:                  08:05:21           Pearson chi2:            616.
No. Iterations:        8                 Covariance Type:        nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-0.6225	0.425	-1.465	0.143	-1.455	0.210
tempf	0.0391	0.042	0.921	0.357	-0.044	0.122
dwpf	0.0018	0.028	0.064	0.949	-0.053	0.057
drct	0.0152	0.003	5.692	0.000	0.010	0.020
feel	-0.0488	0.037	-1.309	0.190	-0.122	0.024

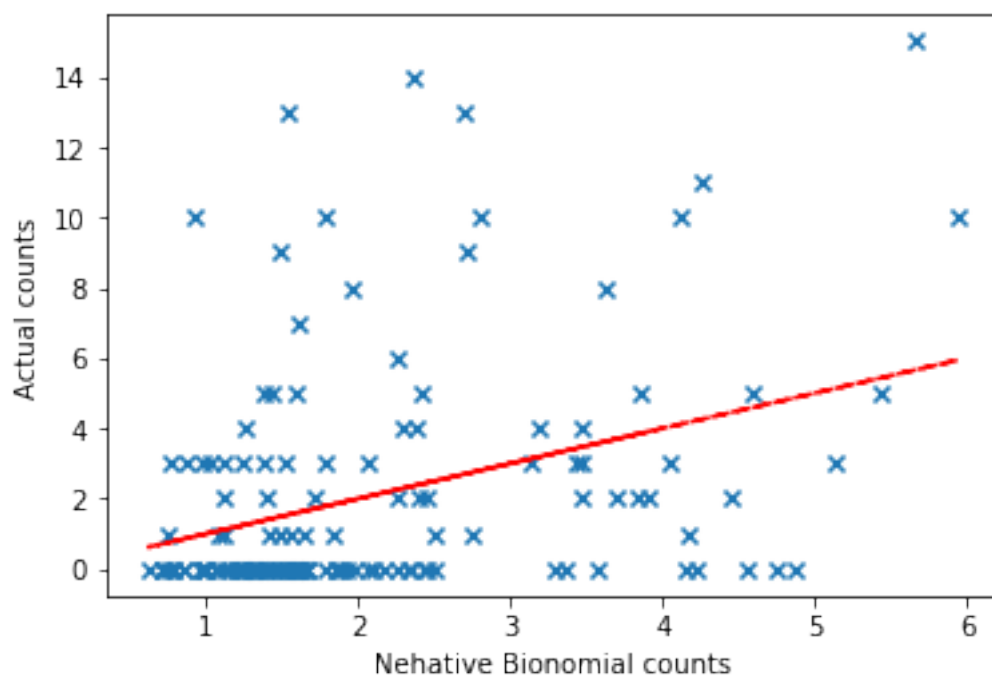
	mean	mean_se	mean_ci_lower	mean_ci_upper
4	0.784186	0.112743	0.591617	1.039435
15	1.062091	0.125752	0.842130	1.339506
26	2.060206	0.201793	1.700345	2.496228
37	0.719639	0.112114	0.530279	0.976617
49	1.318026	0.152904	1.049968	1.654520
63	0.792730	0.126466	0.579871	1.083727
77	1.483683	0.161858	1.198069	1.837386
90	5.125530	0.869471	3.675741	7.147147
104	2.416429	0.235788	1.995797	2.925714
118	1.428015	0.134925	1.186609	1.718532
131	2.069831	0.176082	1.751954	2.445385
143	1.155093	0.124535	0.935073	1.426883
155	1.551864	0.134229	1.309872	1.838564
167	4.213547	0.459617	3.402501	5.217921
179	1.777407	0.246134	1.354919	2.331635
195	1.202069	0.140538	0.955899	1.511633
207	1.891888	0.181455	1.567671	2.283158
221	0.719780	0.109961	0.533533	0.971042
235	1.083716	0.124203	0.865687	1.356657
249	1.387964	0.147602	1.126829	1.709616
263	1.661205	0.124545	1.434190	1.924155
277	1.565611	0.130250	1.330053	1.842889
291	3.830852	0.520280	2.935560	4.999192
305	1.034690	0.146811	0.783491	1.366426
319	1.409724	0.139298	1.161515	1.710974

333	1.846800	0.129452	1.609736	2.118777
347	2.259763	0.179074	1.934682	2.639467
357	0.993311	0.129952	0.768642	1.283647
363	1.315958	0.151954	1.049429	1.650177
368	0.971435	0.139964	0.732442	1.288411
...	...	...	...	...
1935	3.580057	0.390138	2.891545	4.432513
1949	1.249412	0.162480	0.968303	1.612130
1963	0.932838	0.114771	0.732958	1.187226
1985	1.517167	0.127034	1.287541	1.787744
2013	1.244405	0.136210	1.004132	1.542172
2042	3.620983	0.521947	2.729795	4.803116
2073	1.543915	0.158513	1.262499	1.888059
2104	3.193614	0.322748	2.619748	3.893186
2135	1.967927	0.163453	1.672282	2.315839
2163	1.111565	0.120450	0.898873	1.374584
2189	4.258681	0.618593	3.203569	5.661299
2214	3.467865	0.307745	2.914238	4.126666
2238	4.109537	0.467869	3.287638	5.136908
2259	1.776652	0.179932	1.456788	2.166747
2273	2.165981	0.302556	1.647229	2.848099
2285	1.598953	0.147575	1.334365	1.916007
2306	4.552408	0.668427	3.413971	6.070472
2328	3.692151	0.564584	2.736014	4.982422
2354	4.159566	0.587598	3.153578	5.486463
2381	3.291719	0.462844	2.498829	4.336196
2408	2.439731	0.404719	1.762539	3.377109
2436	4.040112	0.571947	3.061197	5.332065
2465	3.475230	0.499358	2.622248	4.605676
2493	4.160722	0.610166	3.121338	5.546215
2521	3.472302	0.535067	2.567148	4.696605
2548	5.426432	0.822697	4.031479	7.304060
2573	2.803556	0.435918	2.067083	3.802422
2595	2.688543	0.445847	1.942496	3.721121
2615	5.940293	0.927979	4.373560	8.068274
2631	3.911166	0.568891	2.941009	5.201351

[143 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot FAW on Hollis-LFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          113
Model:                  GLM           Df Residuals:                108
Model Family:           Poisson       Df Model:                   4
Link Function:          log           Scale:                     1.0000
Method:                 IRLS          Log-Likelihood:             -331.89
Date:                   Fri, 08 May 2020    Deviance:                   508.51
Time:                   08:05:21           Pearson chi2:               908.
No. Iterations:         6                Covariance Type:           nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	4.6283	1.138	4.068	0.000	2.398	6.858
tempf	-1.0695	0.201	-5.329	0.000	-1.463	-0.676
dwpf	-0.0867	0.026	-3.322	0.001	-0.138	-0.036
drct	0.0096	0.003	3.390	0.001	0.004	0.015
feel	1.0671	0.190	5.608	0.000	0.694	1.440

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
5            0.880597  0.138177      0.647460      1.197683
16           1.154713  0.145352      0.902250      1.477818
27           2.156695  0.239139      1.735425      2.680228

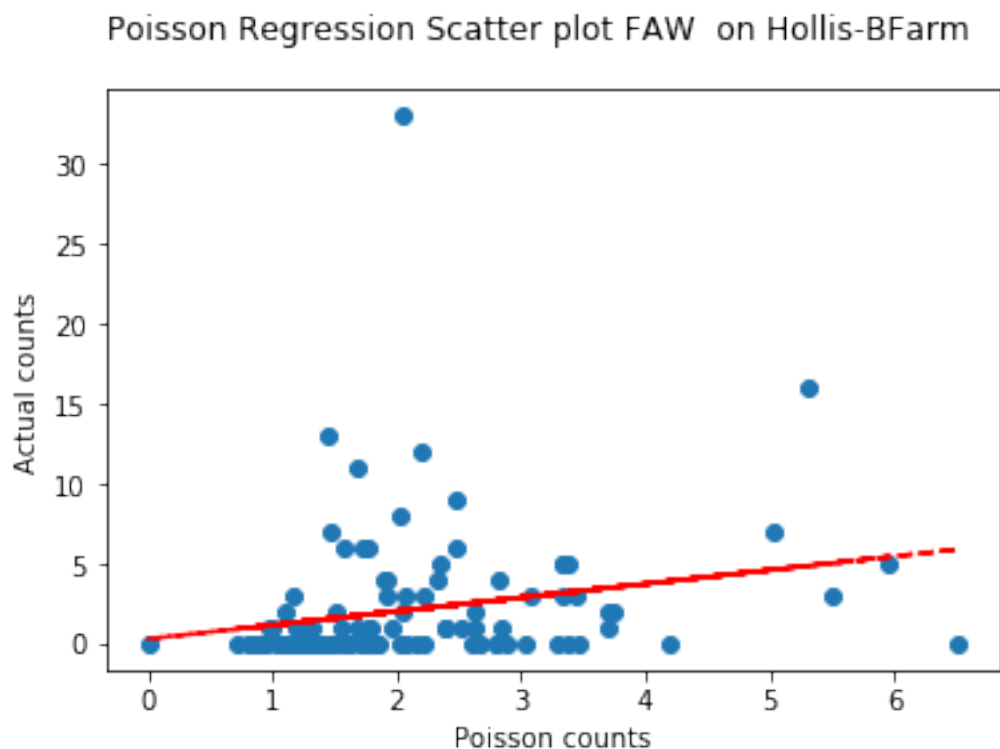
```

38	1.097652	0.164647	0.818060	1.472802
51	1.951536	0.235185	1.540976	2.471481
65	2.485106	0.403939	1.807121	3.417452
79	5.309406	0.983889	3.692404	7.634535
92	5.035445	0.945070	3.485631	7.274351
106	2.381356	0.268046	1.909910	2.969176
120	1.773605	0.183724	1.447714	2.172855
133	1.862418	0.190978	1.523324	2.276994
145	1.048205	0.134222	0.815550	1.347230
157	2.523286	0.337189	1.941867	3.278788
169	2.831712	0.427289	2.106724	3.806192
181	3.071011	0.483358	2.255835	4.180760
193	1.226703	0.146003	0.971469	1.548994
205	1.395568	0.178180	1.086609	1.792373
219	1.040827	0.155523	0.776586	1.394978
233	1.775543	0.195918	1.430235	2.204220
247	1.366983	0.153017	1.097696	1.702333
261	1.794851	0.137993	1.543781	2.086752
275	3.284199	0.337606	2.684902	4.017265
289	2.880703	0.472504	2.088725	3.972973
303	1.716996	0.211892	1.348105	2.186829
317	1.911733	0.232086	1.506921	2.425291
331	1.803184	0.166146	1.505255	2.160080
345	2.066374	0.198679	1.711462	2.494886
355	1.457993	0.211110	1.097756	1.936445
361	1.681481	0.273396	1.222624	2.312547
366	0.909732	0.137688	0.676215	1.223891
...	...	...	...	...
1272	1.113899	0.139895	0.870849	1.424782
1296	1.204658	0.144834	0.951755	1.524763
1321	2.040227	0.171066	1.731044	2.404633
1347	1.889485	0.243505	1.467729	2.432433
1370	2.038038	0.175531	1.721475	2.412815
1442	3.023892	0.548555	2.119105	4.314993
1459	2.806970	0.286492	2.298055	3.428587
1479	1.469772	0.169901	1.171801	1.843513
1500	1.257886	0.155706	0.986906	1.603269
1523	1.169344	0.150871	0.908067	1.505796
1545	1.218936	0.150521	0.956907	1.552717
1565	1.743754	0.177555	1.428279	2.128911
1586	1.320700	0.211037	0.965583	1.806421
1605	0.949253	0.138725	0.712831	1.264089
1622	3.454219	0.336449	2.853915	4.180794
1686	1.185847	0.154381	0.918786	1.530535
1703	6.509551	1.489304	4.157256	10.192843
1722	1.139741	0.153703	0.875014	1.484559
1742	1.345801	0.140204	1.097244	1.650662
1763	2.224582	0.169552	1.915896	2.583003

1784	1.611504	0.208714	1.250224	2.077183
1805	1.837760	0.288623	1.350848	2.500180
1825	1.144116	0.159493	0.870583	1.503592
1845	1.274308	0.145148	1.019342	1.593049
1864	1.387190	0.184166	1.069372	1.799464
1882	2.481373	0.214144	2.095235	2.938674
1900	5.945885	1.043575	4.215221	8.387116
1918	2.379466	0.223300	1.979697	2.859962
1934	2.813693	0.428994	2.086878	3.793642
1948	2.802296	0.495488	1.981567	3.962955

[113 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



#### Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	113
Model:	GLM	Df Residuals:	108
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -276.01  
Date: Fri, 08 May 2020 Deviance: 376.14  
Time: 08:05:22 Pearson chi2: 726.  
No. Iterations: 7 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	5.0303	1.322	3.804	0.000	2.439	7.622
tempf	-1.1301	0.239	-4.737	0.000	-1.598	-0.662
dwpf	-0.1010	0.030	-3.409	0.001	-0.159	-0.043
drct	0.0095	0.003	2.918	0.004	0.003	0.016
feel	1.1339	0.227	5.005	0.000	0.690	1.578

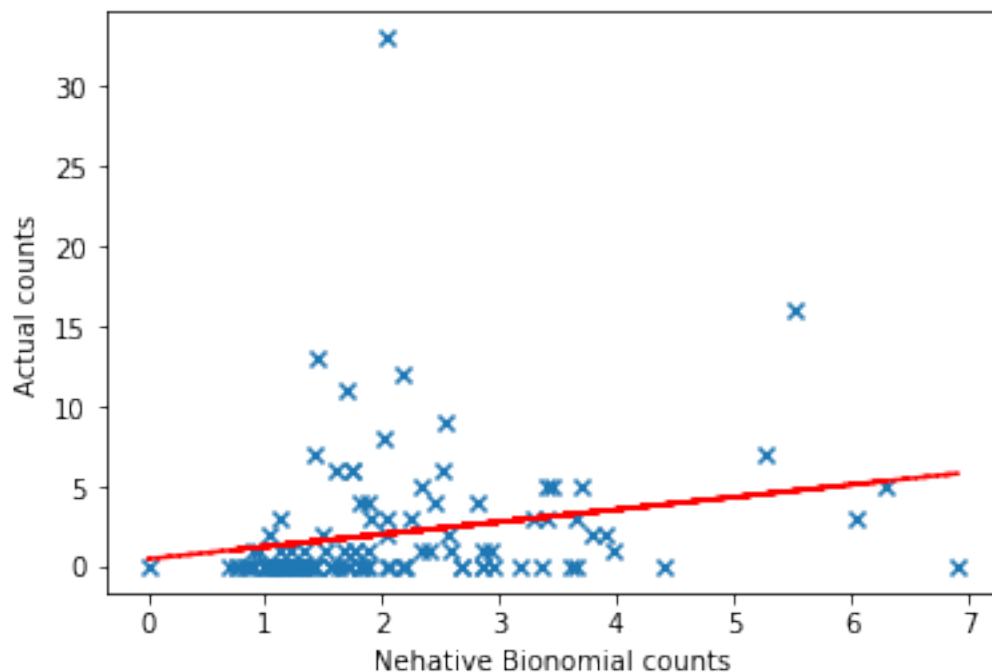
	mean	mean_se	mean_ci_lower	mean_ci_upper
5	0.836637	0.148081	0.591395	1.183576
16	1.091321	0.153507	0.828364	1.437750
27	2.167964	0.274947	1.690832	2.779736
38	1.041829	0.176520	0.747437	1.452172
51	1.884975	0.261591	1.436080	2.474189
65	2.546391	0.484525	1.753715	3.697353
79	5.532944	1.250395	3.552979	8.616285
92	5.261541	1.165934	3.407928	8.123355
106	2.341978	0.304333	1.815397	3.021302
120	1.740815	0.203484	1.384382	2.189019
133	1.817264	0.211427	1.446725	2.282705
145	1.006968	0.145055	0.759276	1.335463
157	2.593184	0.399168	1.917821	3.506376
169	2.854809	0.503966	2.019819	4.034981
181	3.295646	0.594191	2.314582	4.692547
193	1.162506	0.154173	0.896412	1.507587
205	1.324265	0.190834	0.998417	1.756460
219	0.996227	0.167820	0.716092	1.385952
233	1.758548	0.220566	1.375284	2.248619
247	1.299844	0.162237	1.017772	1.660092
261	1.765502	0.151351	1.492442	2.088521
275	3.364250	0.419381	2.634990	4.295339
289	2.847308	0.543653	1.958437	4.139609
303	1.742296	0.241699	1.327514	2.286675
317	1.890161	0.261310	1.441525	2.478423
331	1.799577	0.187492	1.467192	2.207264
345	2.032636	0.223760	1.638160	2.522104
355	1.432860	0.235004	1.038957	1.976105
361	1.666077	0.308729	1.158683	2.395662
366	0.847173	0.143936	0.607227	1.181933
...	...	...	...	...
1272	1.050235	0.147128	0.798071	1.382074
1296	1.139227	0.152770	0.875920	1.481686
1321	2.029504	0.194663	1.681688	2.449256

1347	1.812899	0.265420	1.360668	2.415433
1370	2.029935	0.200121	1.673272	2.462622
1442	3.184099	0.663155	2.116928	4.789243
1459	2.846275	0.345925	2.242978	3.611841
1479	1.401441	0.181902	1.086655	1.807415
1500	1.196969	0.166115	0.911913	1.571132
1523	1.103161	0.159310	0.831218	1.464073
1545	1.155256	0.159915	0.880748	1.515323
1565	1.726109	0.198654	1.377543	2.162874
1586	1.330177	0.239590	0.934527	1.893334
1605	0.893233	0.146543	0.647616	1.232004
1622	3.650169	0.417436	2.917218	4.567273
1686	1.118199	0.162989	0.840326	1.487958
1703	6.914324	1.923844	4.007846	11.928569
1722	1.065338	0.160921	0.792342	1.432395
1742	1.299953	0.151310	1.034786	1.633070
1763	2.242067	0.194636	1.891276	2.657923
1784	1.635690	0.237834	1.230081	2.175043
1805	1.886892	0.335643	1.331479	2.673992
1825	1.099827	0.172688	0.808489	1.496148
1845	1.249554	0.158919	0.973865	1.603287
1864	1.351977	0.202891	1.007464	1.814300
1882	2.505491	0.251650	2.057779	3.050612
1900	6.304391	1.319798	4.182613	9.502515
1918	2.408850	0.261328	1.947447	2.979572
1934	2.812868	0.498956	1.986828	3.982341
1948	2.958527	0.602127	1.985348	4.408739

[113 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot FAW on Hollis-BFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          149
Model:                  GLM           Df Residuals:              144
Model Family:           Poisson       Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                 IRLS          Log-Likelihood:            -436.30
Date:                   Fri, 08 May 2020    Deviance:                  744.33
Time:                   08:05:22           Pearson chi2:              1.53e+03
No. Iterations:         6                Covariance Type:          nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-1.3584	0.472	-2.876	0.004	-2.284	-0.433
tempf	0.1080	0.046	2.324	0.020	0.017	0.199
dwpf	-0.1018	0.026	-3.979	0.000	-0.152	-0.052
drct	0.0116	0.003	4.345	0.000	0.006	0.017
feel	-0.0136	0.043	-0.320	0.749	-0.097	0.070

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
6            0.651144  0.099559      0.482535      0.878668
17           0.749920  0.099148      0.578730      0.971749
28           2.229991  0.195935      1.877213      2.649065

```

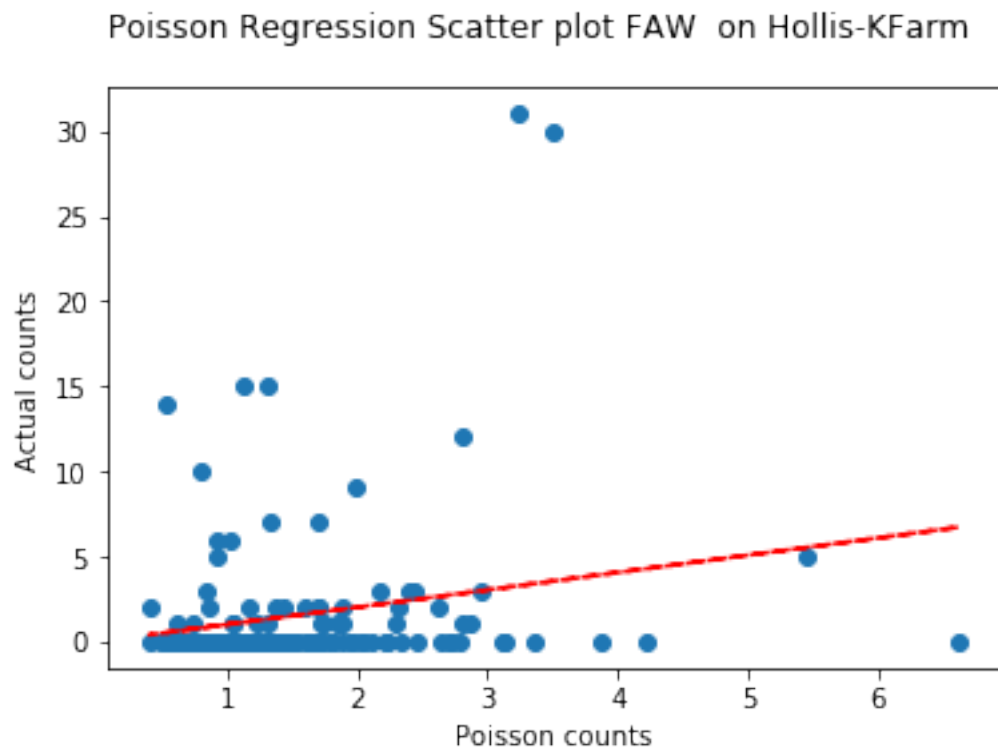


39	0.515153	0.087492	0.369292	0.718623
52	0.942881	0.122474	0.730957	1.216248
66	0.941364	0.148213	0.691417	1.281666
80	1.340906	0.158708	1.063288	1.691009
93	5.441610	0.913934	3.915305	7.562914
107	1.424041	0.152841	1.153888	1.757444
121	0.867489	0.093508	0.702283	1.071558
134	1.229586	0.118963	1.017196	1.486323
146	0.808984	0.095646	0.641657	1.019947
158	1.049498	0.101054	0.869003	1.267483
170	2.613328	0.304501	2.079760	3.283784
182	1.720463	0.215504	1.345936	2.199208
192	0.733177	0.095638	0.567774	0.946764
204	1.247000	0.134118	1.009992	1.539626
218	0.574948	0.094087	0.417190	0.792361
232	1.092132	0.127676	0.868490	1.373363
246	0.885358	0.105716	0.700619	1.118810
260	1.269244	0.104845	1.079523	1.492308
274	1.304730	0.114864	1.097952	1.550450
288	2.862014	0.407484	2.165113	3.783232
302	1.086617	0.145422	0.835911	1.412514
316	0.810317	0.091706	0.649116	1.011551
330	1.322354	0.101327	1.137950	1.536640
344	1.723180	0.148553	1.455291	2.040382
354	0.605583	0.087497	0.456235	0.803820
365	0.539264	0.085391	0.395381	0.735507
379	0.495864	0.092419	0.344125	0.714511
...	...	...	...	...
1933	1.883718	0.223963	1.492153	2.378037
1947	0.998314	0.131030	0.771874	1.291185
1960	0.789054	0.104597	0.608516	1.023155
1982	1.220308	0.114391	1.015495	1.466428
2010	0.795972	0.098208	0.624993	1.013725
2039	2.455702	0.373127	1.823230	3.307575
2069	1.173322	0.134571	0.937111	1.469073
2100	2.444696	0.257914	1.988034	3.006256
2131	1.874335	0.151864	1.599118	2.196919
2159	1.024268	0.117700	0.817714	1.282998
2186	2.400538	0.364693	1.782349	3.233140
2211	2.172258	0.210813	1.795990	2.627355
2235	2.955105	0.348634	2.345042	3.723875
2256	0.907437	0.104392	0.724259	1.136944
2270	2.031608	0.260351	1.580367	2.611690
2282	0.942690	0.099571	0.766411	1.159516
2302	1.472626	0.327165	0.952765	2.276142
2324	1.242560	0.282663	0.795576	1.940674
2350	1.310219	0.280469	0.861258	1.993216
2377	1.071187	0.227195	0.706852	1.623312

2404	0.851641	0.198570	0.539249	1.345005
2431	1.287706	0.276648	0.845174	1.961947
2460	1.116092	0.241808	0.729932	1.706546
2489	1.300664	0.288647	0.841906	2.009400
2516	1.153339	0.265077	0.735058	1.809639
2543	1.603025	0.359628	1.032711	2.488293
2569	0.929387	0.210294	0.596477	1.448105
2591	0.917343	0.216955	0.577058	1.458289
2611	1.687008	0.381932	1.082451	2.629215
2628	1.198066	0.263383	0.778669	1.843354

[149 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



# Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	149
Model:	GLM	Df Residuals:	144
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -284.70  
Date: Fri, 08 May 2020 Deviance: 400.40  
Time: 08:05:22 Pearson chi2: 940.  
No. Iterations: 10 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-1.0989	0.626	-1.755	0.079	-2.326	0.128
tempf	0.0940	0.066	1.416	0.157	-0.036	0.224
dwpf	-0.1074	0.035	-3.064	0.002	-0.176	-0.039
drct	0.0100	0.004	2.723	0.006	0.003	0.017
feel	0.0041	0.062	0.066	0.947	-0.117	0.125

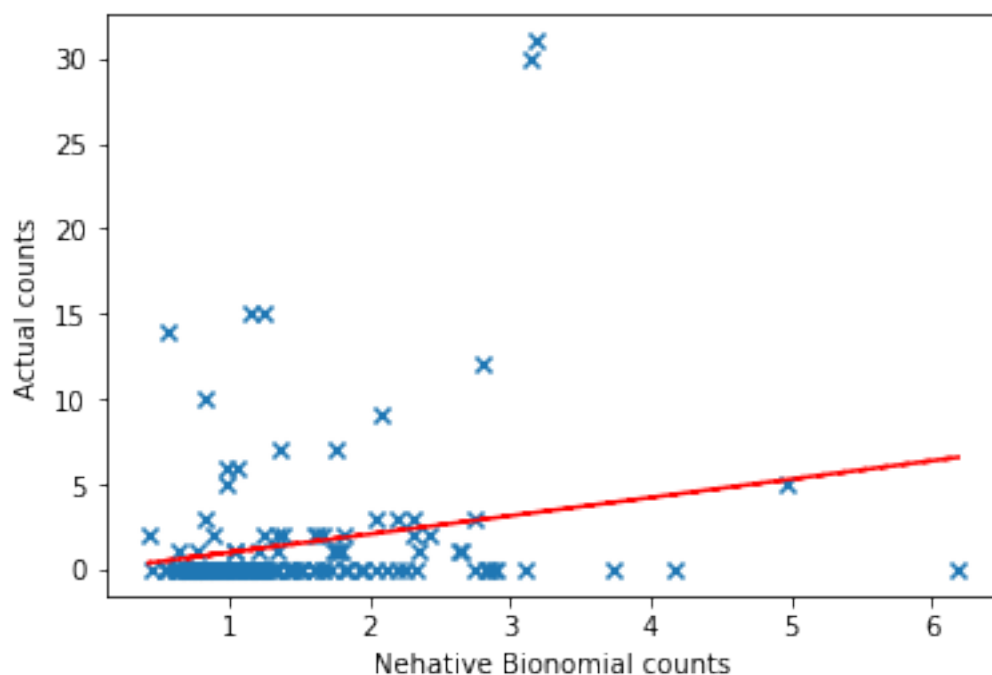
	mean	mean_se	mean_ci_lower	mean_ci_upper
6	0.694912	0.131210	0.479965	1.006121
17	0.772484	0.123200	0.565114	1.055951
28	2.203428	0.282322	1.714097	2.832449
39	0.551440	0.115658	0.365568	0.831817
52	0.952639	0.153086	0.695252	1.305311
66	1.020083	0.205309	0.687569	1.513402
80	1.365701	0.213517	1.005256	1.855388
93	4.968927	1.261648	3.020898	8.173144
107	1.373794	0.195319	1.039686	1.815269
121	0.882235	0.114792	0.683644	1.138515
134	1.204269	0.148236	0.946123	1.532850
146	0.837412	0.120835	0.631124	1.111128
158	1.078623	0.126628	0.856921	1.357684
170	2.423661	0.410363	1.739203	3.377486
182	1.778168	0.299734	1.277885	2.474310
192	0.748119	0.118903	0.547879	1.021544
204	1.218075	0.166720	0.931469	1.592868
218	0.618725	0.125359	0.415946	0.920361
232	1.138871	0.164784	0.857657	1.512290
246	0.890911	0.129640	0.669842	1.184940
260	1.271939	0.128158	1.044002	1.549643
274	1.325734	0.146307	1.067870	1.645865
288	2.639105	0.544344	1.761519	3.953904
302	1.155115	0.198115	0.825343	1.616649
316	0.827595	0.113914	0.631909	1.083880
330	1.324951	0.126226	1.099278	1.596954
344	1.674243	0.196468	1.330247	2.107196
354	0.639736	0.115026	0.449730	0.910017
365	0.559591	0.110258	0.380325	0.823353
379	0.542704	0.128086	0.341717	0.861904
...	...	...	...	...
1933	1.766718	0.291999	1.277858	2.442596
1947	1.058693	0.177035	0.762837	1.469293
1960	0.830844	0.133574	0.606279	1.138588

1982	1.219739	0.139084	0.975453	1.525203
2010	0.806300	0.121043	0.600776	1.082133
2039	2.263112	0.487020	1.484322	3.450516
2069	1.159003	0.175519	0.861348	1.559518
2100	2.312553	0.357636	1.707864	3.131339
2131	1.835237	0.205660	1.473347	2.286017
2159	1.050860	0.147070	0.798762	1.382524
2186	2.201782	0.473153	1.444957	3.355008
2211	2.054263	0.286230	1.563342	2.699342
2235	2.741834	0.479631	1.945987	3.863156
2256	0.902894	0.130070	0.680791	1.197456
2270	2.039022	0.363048	1.438353	2.890536
2282	0.943386	0.122142	0.731953	1.215894
2302	1.507284	0.419662	0.873376	2.601292
2324	1.297924	0.368664	0.743829	2.264777
2350	1.341520	0.359450	0.793459	2.268142
2377	1.119432	0.296592	0.665998	1.881580
2404	0.918874	0.269350	0.517301	1.632184
2431	1.323814	0.355750	0.781777	2.241667
2460	1.162964	0.314667	0.684312	1.976419
2489	1.337583	0.371088	0.776551	2.303941
2516	1.213735	0.348391	0.691504	2.130360
2543	1.605768	0.454589	0.921955	2.796762
2569	0.989099	0.280234	0.567643	1.723473
2591	0.984976	0.292288	0.550599	1.762043
2611	1.669831	0.478989	0.951714	2.929803
2628	1.235169	0.339437	0.720789	2.116630

[149 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot FAW on Hollis-KFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          138
Model:                  GLM           Df Residuals:                133
Model Family:           Poisson       Df Model:                    4
Link Function:          log           Scale:                      1.0000
Method:                  IRLS         Log-Likelihood:              -710.45
Date:                   Fri, 08 May 2020    Deviance:                   1194.3
Time:                   08:05:23           Pearson chi2:                1.73e+03
No. Iterations:         5                Covariance Type:            nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	1.9123	0.350	5.456	0.000	1.225	2.599
tempf	0.1220	0.034	3.643	0.000	0.056	0.188
dwpf	-0.1478	0.017	-8.682	0.000	-0.181	-0.114
drct	-0.0092	0.002	-4.849	0.000	-0.013	-0.005
feel	0.0136	0.030	0.448	0.654	-0.046	0.073

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
7          4.553291  0.365301      3.890768      5.328629
18         3.288940  0.237557      2.854793      3.789111
29         5.123520  0.324130      4.526044      5.799868

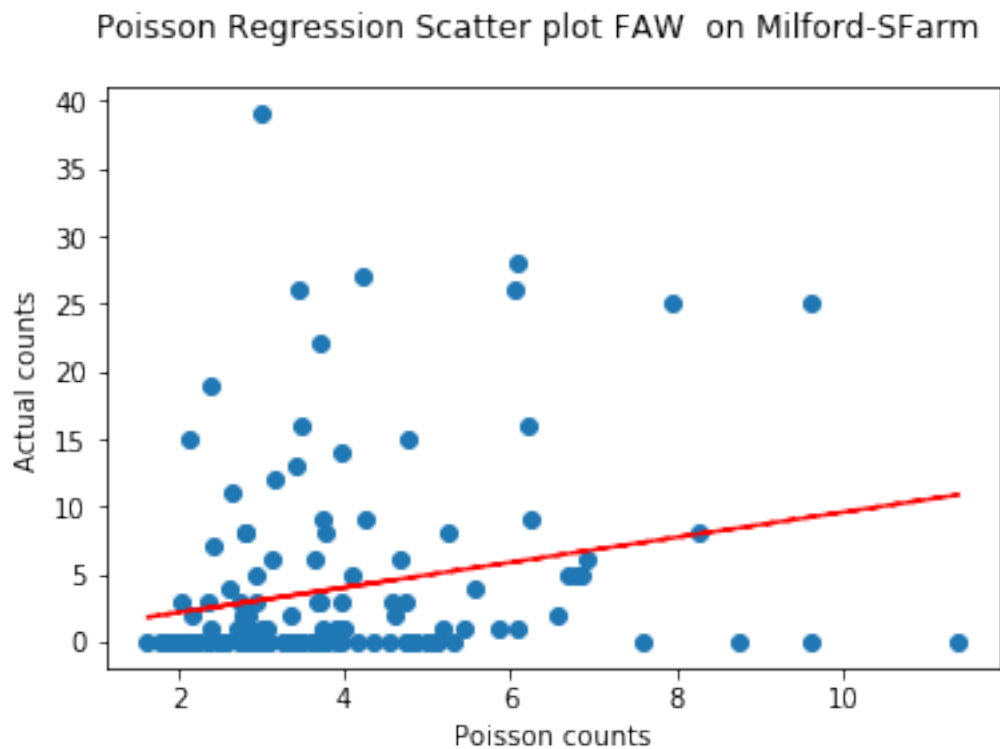
```

40	3.644348	0.334929	3.043627	4.363635
53	2.998808	0.241607	2.560762	3.511787
67	6.579753	0.562623	5.564483	7.780264
81	3.890762	0.301324	3.342817	4.528524
94	4.086967	0.558688	3.126381	5.342694
108	2.421917	0.196584	2.065705	2.839555
122	2.941120	0.180465	2.607856	3.316972
135	2.614389	0.177579	2.288514	2.986668
147	3.724367	0.231423	3.297319	4.206724
159	3.698797	0.213262	3.303564	4.141315
171	2.592842	0.260620	2.129204	3.157437
183	6.099861	0.502628	5.190164	7.169004
191	2.815719	0.206965	2.437940	3.252037
203	2.749394	0.204595	2.376266	3.181111
216	4.337082	0.377472	3.656912	5.143760
230	5.089078	0.310290	4.515854	5.735065
244	2.820460	0.199610	2.455154	3.240121
258	3.597427	0.176903	3.266889	3.961409
272	3.933343	0.202772	3.555337	4.351540
286	2.727869	0.321977	2.164482	3.437898
300	6.258567	0.449548	5.436679	7.204703
314	2.841274	0.185961	2.499207	3.230160
328	3.658994	0.177392	3.327321	4.023730
342	3.276913	0.219234	2.874203	3.736048
377	4.758512	0.491793	3.885970	5.826972
391	4.857399	0.354799	4.209490	5.605032
405	3.474697	0.213591	3.080303	3.919589
...	...	...	...	...
1857	3.750202	0.299861	3.206224	4.386473
1876	3.412251	0.202076	3.038310	3.832214
1894	2.818515	0.299600	2.288443	3.471368
1912	3.394682	0.188223	3.045111	3.784384
1928	2.161674	0.212070	1.783542	2.619974
1942	4.993226	0.396179	4.274094	5.833355
1953	4.260451	0.291526	3.725728	4.871917
1975	3.695904	0.205886	3.313623	4.122286
2003	3.009127	0.207475	2.628762	3.444528
2032	2.386855	0.293909	1.875046	3.038366
2062	3.970549	0.282897	3.453055	4.565598
2093	3.103625	0.278490	2.603099	3.700394
2124	4.577990	0.261427	4.093236	5.120153
2154	4.733989	0.283847	4.209104	5.324328
2181	2.041440	0.252184	1.602455	2.600683
2206	2.726319	0.230798	2.309499	3.218366
2230	2.923332	0.297271	2.395081	3.568092
2251	2.344283	0.174572	2.025926	2.712668
2266	5.872610	0.527581	4.924490	7.003273
2297	1.918391	0.362095	1.325175	2.777160

2319	2.198535	0.420646	1.511029	3.198851
2344	1.853339	0.336768	1.298029	2.646217
2370	1.994270	0.354635	1.407399	2.825860
2397	2.470623	0.469623	1.702188	3.585960
2424	1.895714	0.345267	1.326610	2.708961
2453	1.992538	0.363010	1.394218	2.847624
2482	1.900316	0.357460	1.314347	2.747526
2509	2.172020	0.418416	1.488981	3.168389
2537	1.629900	0.311153	1.121151	2.369508
2563	2.226596	0.416390	1.543335	3.212347

[138 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



#### Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	138
Model:	GLM	Df Residuals:	133
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -475.98  
Date: Fri, 08 May 2020 Deviance: 672.97  
Time: 08:05:23 Pearson chi2: 1.01e+03  
No. Iterations: 9 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	1.4569	0.472	3.086	0.002	0.532	2.382
tempf	0.1228	0.045	2.709	0.007	0.034	0.212
dwpf	-0.1495	0.024	-6.190	0.000	-0.197	-0.102
drct	-0.0080	0.003	-3.126	0.002	-0.013	-0.003
feel	0.0197	0.041	0.479	0.632	-0.061	0.100

	mean	mean_se	mean_ci_lower	mean_ci_upper
7	4.502488	0.492939	3.632970	5.580118
18	3.333711	0.313494	2.772574	4.008416
29	5.504700	0.492240	4.619741	6.559181
40	3.601143	0.442288	2.830720	4.581249
53	3.142166	0.325504	2.564786	3.849525
67	6.833826	0.835538	5.377640	8.684326
81	4.169642	0.426194	3.412671	5.094519
94	4.644830	0.853944	3.239500	6.659809
108	2.461938	0.255291	2.009147	3.016773
122	2.856169	0.226732	2.444627	3.336991
135	2.606616	0.224793	2.201253	3.086628
147	3.605082	0.300889	3.061059	4.245790
159	3.498751	0.271937	3.004375	4.074478
171	2.632066	0.344070	2.037163	3.400696
183	5.827254	0.695415	4.611933	7.362833
191	2.790443	0.266600	2.313924	3.365093
203	2.847586	0.269233	2.365907	3.427330
216	4.272264	0.504245	3.389945	5.384228
230	5.310458	0.453148	4.492601	6.277202
244	2.853389	0.258841	2.388611	3.408605
258	3.661528	0.230872	3.235871	4.143177
272	4.042980	0.275443	3.537613	4.620541
286	2.992172	0.460991	2.212307	4.046948
300	6.219682	0.654642	5.060302	7.644692
314	2.713381	0.231799	2.295061	3.207949
328	3.580876	0.229442	3.158269	4.060032
342	3.430229	0.293331	2.900907	4.056134
377	4.549742	0.643357	3.448438	6.002762
391	4.939454	0.496343	4.056445	6.014676
405	3.631114	0.284765	3.113764	4.234422
...	...	...	...	...
1857	3.617728	0.389649	2.929253	4.468018
1876	3.449263	0.263978	2.968810	4.007470
1894	2.898891	0.403107	2.207331	3.807117

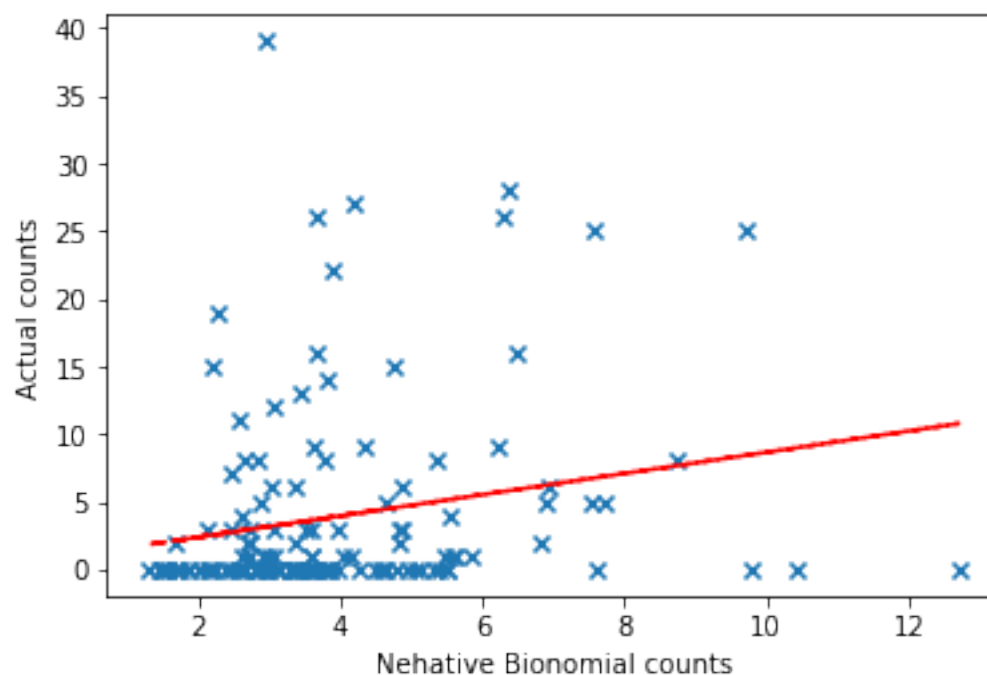


1912	3.353812	0.240893	2.913398	3.860802
1928	2.149383	0.272999	1.675716	2.756941
1942	4.644082	0.517686	3.732627	5.778102
1953	4.328652	0.398845	3.613453	5.185408
1975	3.840435	0.274916	3.337702	4.418890
2003	2.994984	0.267952	2.513275	3.569020
2032	2.611038	0.418636	1.906941	3.575106
2062	3.954074	0.378212	3.278131	4.769394
2093	3.300458	0.384752	2.626304	4.147663
2124	4.822440	0.376966	4.137415	5.620882
2154	4.873552	0.400349	4.148792	5.724922
2181	2.137492	0.344176	1.558997	2.930648
2206	2.736952	0.299171	2.209145	3.390864
2230	3.069321	0.407687	2.365812	3.982028
2251	2.249023	0.217358	1.860927	2.718057
2266	5.621413	0.719426	4.374306	7.224070
2297	1.501295	0.372551	0.923076	2.441711
2319	1.682152	0.424422	1.025886	2.758233
2344	1.452520	0.347262	0.909119	2.320723
2370	1.553191	0.364089	0.981052	2.458996
2397	1.861740	0.469115	1.136151	3.050718
2424	1.482958	0.355415	0.927096	2.372101
2453	1.541437	0.370190	0.962724	2.468024
2482	1.470246	0.364092	0.904895	2.388811
2509	1.656272	0.420844	1.006582	2.725300
2537	1.286759	0.322821	0.786953	2.103999
2563	1.690245	0.418040	1.040941	2.744565

[138 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot FAW on Milford-SFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          141
Model:                  GLM           Df Residuals:              136
Model Family:           Poisson       Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                  IRLS         Log-Likelihood:            -271.35
Date:                   Fri, 08 May 2020    Deviance:                  435.65
Time:                   08:05:23          Pearson chi2:              716.
No. Iterations:         6                Covariance Type:          nonrobust
=====

```

```

=====
              coef      std err          z      P>|z|      [0.025      0.975]
-----
Intercept    -0.6185      0.628     -0.985     0.325     -1.849      0.612
tempf        -0.5310      0.180     -2.954     0.003     -0.883     -0.179
dwpf          0.0826      0.043      1.925     0.054     -0.002      0.167
drct          0.0119      0.004      2.827     0.005      0.004      0.020
feel          0.4441      0.175      2.545     0.011      0.102      0.786
=====

```

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
8             0.550075  0.106666      0.376152      0.804415
19            0.814784  0.120008      0.610480      1.087462
30            0.751331  0.121811      0.546800      1.032365
=====

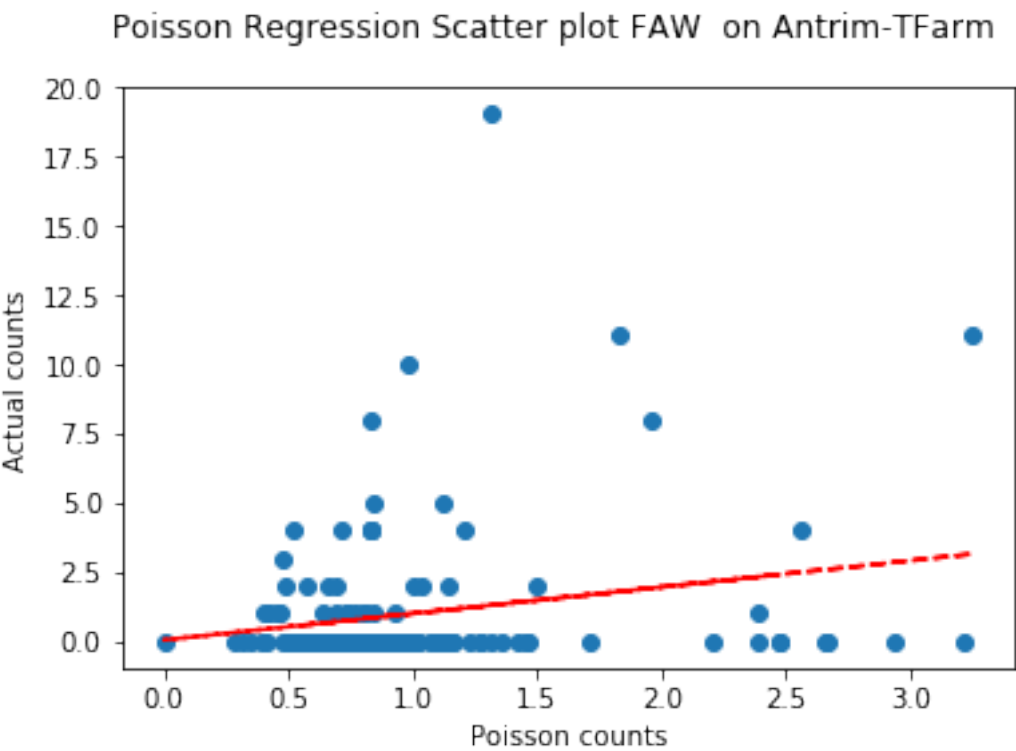
```

41	0.737575	0.152393	0.491967	1.105799
54	1.158252	0.214204	0.806092	1.664263
68	0.728110	0.196023	0.429571	1.234124
82	1.456290	0.403288	0.846303	2.505935
95	1.233359	0.358951	0.697205	2.181820
109	1.142347	0.159648	0.868638	1.502302
123	0.835783	0.105513	0.652580	1.070417
136	0.941933	0.122033	0.730705	1.214223
148	0.581988	0.102827	0.411644	0.822822
160	0.702723	0.103894	0.525943	0.938923
172	0.993885	0.218650	0.645768	1.529664
184	0.499801	0.128078	0.302462	0.825895
196	0.845999	0.124844	0.633516	1.129749
208	0.951259	0.122669	0.738810	1.224800
222	0.616901	0.124811	0.414955	0.917128
236	0.742121	0.127284	0.530252	1.038645
250	0.917172	0.121046	0.708127	1.187928
264	0.812533	0.081366	0.667732	0.988735
278	1.007663	0.139314	0.768481	1.321289
292	1.313064	0.287594	0.854774	2.017067
306	0.519289	0.108810	0.344391	0.783008
320	0.835181	0.114837	0.637884	1.093504
334	0.674157	0.102069	0.501057	0.907058
348	0.951921	0.113386	0.753724	1.202235
369	0.745326	0.146390	0.507179	1.095295
383	0.480083	0.119927	0.294227	0.783339
397	0.734108	0.143150	0.500931	1.075827
...	...	...	...	...
1921	0.778849	0.111912	0.587686	1.032195
1936	1.115169	0.221761	0.755217	1.646681
1964	0.768225	0.129823	0.551624	1.069878
1986	0.726784	0.081319	0.583667	0.904994
2014	0.682534	0.109725	0.498062	0.935329
2043	1.416511	0.320597	0.909010	2.207350
2074	0.317830	0.114846	0.156537	0.645314
2105	1.131579	0.187447	0.817867	1.565623
2136	0.532827	0.099924	0.368940	0.769514
2164	0.488691	0.083839	0.349143	0.684014
2190	1.494945	0.338426	0.959246	2.329809
2215	0.969329	0.175102	0.680312	1.381130
2239	1.064763	0.214028	0.718048	1.578894
2260	0.917786	0.145381	0.672834	1.251916
2274	0.348995	0.128722	0.169382	0.719073
2286	0.786618	0.115930	0.589272	1.050054
2307	2.937616	0.534096	2.057006	4.195217
2329	2.203623	0.392997	1.553577	3.125661
2355	2.660329	0.444476	1.917433	3.691054
2382	2.475454	0.419073	1.776453	3.449498

2409	1.711093	0.350583	1.145176	2.556671
2437	2.661856	0.448335	1.913450	3.702984
2466	2.389338	0.400677	1.720031	3.319088
2494	2.562013	0.436281	1.834981	3.577098
2522	2.386009	0.435014	1.669100	3.410844
2549	3.250047	0.616442	2.240994	4.713445
2574	1.961716	0.363229	1.364673	2.819965
2596	1.831753	0.369476	1.233600	2.719941
2616	3.216661	0.625517	2.197249	4.709028
2632	2.476229	0.416269	1.781142	3.442572

[141 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



Generalized Linear Model Regression Results

=====			
Dep. Variable:	trap_count	No. Observations:	141
Model:	GLM	Df Residuals:	136
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -215.53  
Date: Fri, 08 May 2020 Deviance: 297.15  
Time: 08:05:24 Pearson chi2: 519.  
No. Iterations: 8 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-0.5431	0.737	-0.737	0.461	-1.987	0.901
tempf	-0.5660	0.207	-2.729	0.006	-0.972	-0.160
dwpf	0.0804	0.048	1.663	0.096	-0.014	0.175
drct	0.0117	0.005	2.384	0.017	0.002	0.021
feel	0.4802	0.202	2.380	0.017	0.085	0.876

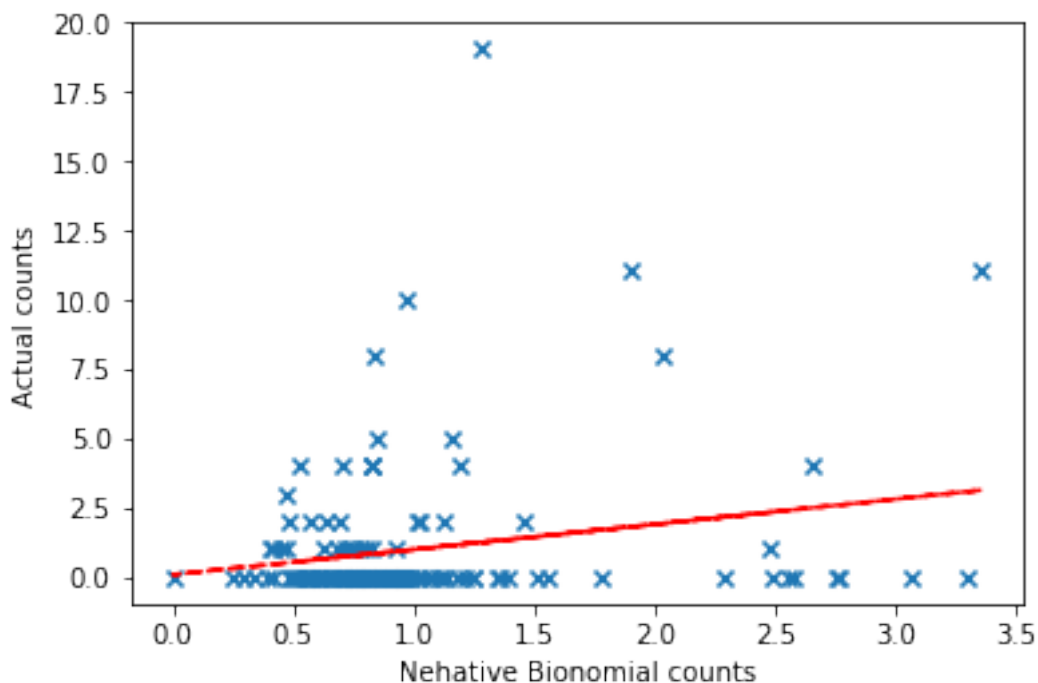
	mean	mean_se	mean_ci_lower	mean_ci_upper
8	0.552592	0.121492	0.359138	0.850253
19	0.817403	0.136958	0.588593	1.135161
30	0.747706	0.136876	0.522287	1.070416
41	0.750300	0.176553	0.473085	1.189955
54	1.175314	0.251072	0.773249	1.786440
68	0.760227	0.233307	0.416597	1.387299
82	1.517901	0.487112	0.809251	2.847107
95	1.213623	0.411756	0.624150	2.359817
109	1.122632	0.184773	0.813091	1.550014
123	0.829028	0.118815	0.626003	1.097898
136	0.922537	0.138497	0.687379	1.238146
148	0.573612	0.114667	0.387668	0.848743
160	0.696579	0.116043	0.502537	0.965545
172	0.951823	0.243931	0.575987	1.572897
184	0.494214	0.141615	0.281843	0.866611
196	0.841429	0.141180	0.605617	1.169060
208	0.935126	0.140803	0.696152	1.256135
222	0.625473	0.143893	0.398461	0.981819
236	0.755932	0.146883	0.516521	1.106309
250	0.911885	0.137824	0.678091	1.226288
264	0.806386	0.091456	0.645661	1.007120
278	1.023270	0.162795	0.749152	1.397688
292	1.284570	0.333303	0.772501	2.136073
306	0.523827	0.122840	0.330809	0.829466
320	0.828217	0.129443	0.609690	1.125069
334	0.659890	0.112555	0.472373	0.921844
348	0.938845	0.131154	0.713975	1.234537
369	0.739176	0.165032	0.477204	1.144964
383	0.483683	0.137821	0.276706	0.845478
397	0.752927	0.166957	0.487533	1.162791
...	...	...	...	...
1921	0.760503	0.124252	0.552117	1.047542
1936	1.073919	0.249882	0.680631	1.694457
1964	0.782249	0.150218	0.536890	1.139736

1986	0.717311	0.091352	0.558862	0.920684
2014	0.669315	0.122530	0.467522	0.958205
2043	1.386046	0.371693	0.819432	2.344459
2074	0.296487	0.122763	0.131691	0.667503
2105	1.112506	0.217758	0.758039	1.632727
2136	0.514726	0.109215	0.339600	0.780161
2164	0.480167	0.092959	0.328551	0.701749
2190	1.452546	0.389113	0.859226	2.455573
2215	0.936377	0.196886	0.620117	1.413929
2239	1.030359	0.242752	0.649301	1.635050
2260	0.898952	0.163249	0.629737	1.283259
2274	0.332637	0.138618	0.146979	0.752812
2286	0.770378	0.129528	0.554098	1.071077
2307	3.060029	0.743254	1.900974	4.925778
2329	2.283975	0.538497	1.438806	3.625606
2355	2.752924	0.617943	1.773074	4.274266
2382	2.580541	0.581903	1.658700	4.014705
2409	1.778791	0.461356	1.069924	2.957308
2437	2.761463	0.624799	1.772349	4.302583
2466	2.480589	0.555993	1.598705	3.848939
2494	2.650162	0.606052	1.692837	4.148866
2522	2.492353	0.602857	1.551381	4.004059
2549	3.356668	0.841985	2.053020	5.488118
2574	2.037305	0.489163	1.272565	3.261610
2596	1.905290	0.491358	1.149326	3.158486
2616	3.295226	0.838954	2.000654	5.427484
2632	2.557496	0.575963	1.644823	3.976588

[141 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot FAW on Antrim-TFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          134
Model:                  GLM           Df Residuals:                129
Model Family:           Poisson       Df Model:                   4
Link Function:          log           Scale:                     1.0000
Method:                 IRLS          Log-Likelihood:             -445.49
Date:                   Fri, 08 May 2020    Deviance:                  737.87
Time:                   08:05:24           Pearson chi2:              1.16e+03
No. Iterations:         5                 Covariance Type:          nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	1.2172	0.446	2.732	0.006	0.344	2.090
tempf	-0.1471	0.093	-1.578	0.115	-0.330	0.036
dwpf	-0.0242	0.026	-0.929	0.353	-0.075	0.027
drct	-0.0040	0.003	-1.439	0.150	-0.009	0.001
feel	0.1665	0.091	1.824	0.068	-0.012	0.345

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
9          2.323820  0.269987    1.850581    2.918079
20         2.149882  0.206586    1.780825    2.595422
31         1.983196  0.209977    1.611543    2.440558

```

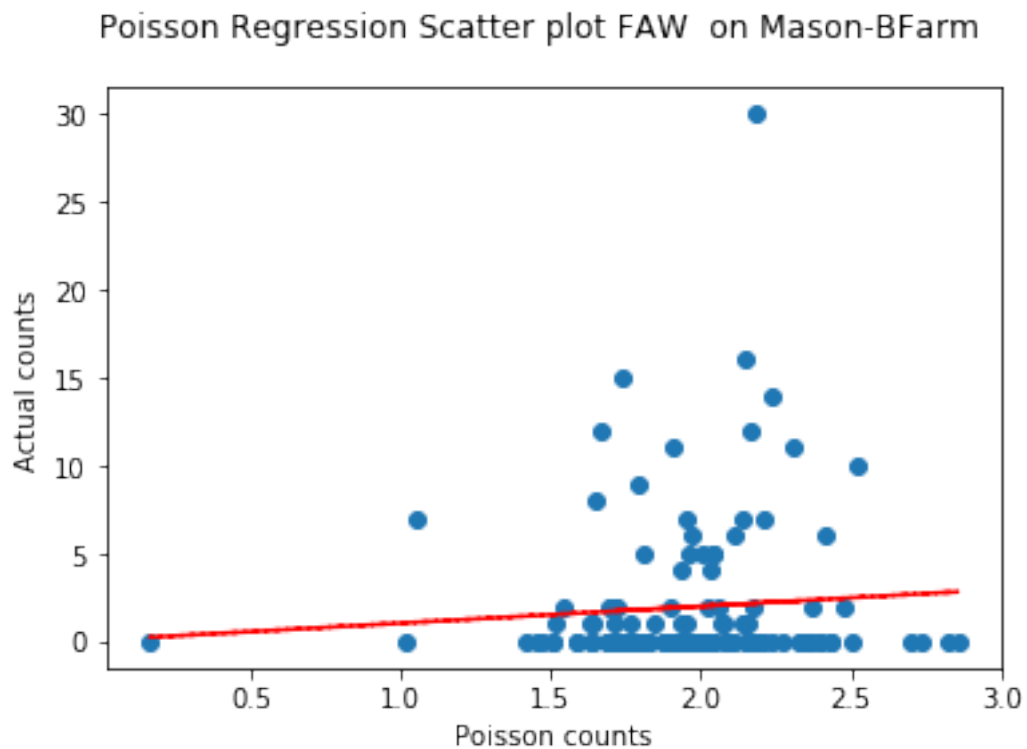
42	2.431636	0.317950	1.881911	3.141940
55	2.178610	0.254724	1.732433	2.739697
69	2.856045	0.436409	2.116899	3.853276
83	2.475213	0.390112	1.817426	3.371074
96	1.633338	0.347526	1.076380	2.478486
110	1.702070	0.182552	1.379379	2.100251
124	1.937406	0.157072	1.652765	2.271069
137	1.723874	0.157470	1.441290	2.061863
149	1.984409	0.193990	1.638401	2.403488
161	1.949135	0.158045	1.662733	2.284868
173	1.416348	0.214448	1.052665	1.905680
185	1.987049	0.267950	1.525547	2.588164
198	2.001879	0.195871	1.652545	2.425060
210	1.786846	0.173457	1.477261	2.161310
224	2.436684	0.304386	1.907519	3.112645
238	2.394710	0.237658	1.971411	2.908900
252	1.962081	0.179572	1.639888	2.347577
266	1.944492	0.129966	1.705742	2.216658
280	2.188217	0.188024	1.849056	2.589587
294	1.590941	0.267761	1.143915	2.212658
308	2.348826	0.269049	1.876502	2.940036
322	1.930230	0.168484	1.626711	2.290381
336	1.802310	0.145287	1.538908	2.110796
350	1.799969	0.166863	1.500915	2.158609
428	1.819077	0.262982	1.370230	2.414952
443	1.889747	0.228495	1.491016	2.395109
458	1.748371	0.245003	1.328474	2.300987
...	...	...	...	...
1923	1.712913	0.147334	1.447172	2.027451
1938	1.456692	0.203600	1.107635	1.915750
1950	2.155466	0.249571	1.717848	2.704566
1968	2.395798	0.242572	1.964567	2.921686
1990	1.929422	0.144849	1.665422	2.235270
2018	1.885087	0.187824	1.550674	2.291618
2047	1.584003	0.272336	1.130863	2.218718
2078	1.509653	0.278825	1.051151	2.168151
2109	1.684914	0.217863	1.307722	2.170902
2140	1.730956	0.183959	1.405477	2.131809
2168	2.021773	0.191921	1.678534	2.435199
2194	1.475356	0.253110	1.054062	2.065037
2219	1.517645	0.189601	1.188034	1.938704
2243	1.507976	0.225629	1.124694	2.021876
2262	1.738737	0.178860	1.421257	2.127136
2276	1.639779	0.303338	1.141101	2.356386
2288	1.793734	0.163915	1.499595	2.145568
2311	1.936345	0.388429	1.306870	2.869017
2333	1.973076	0.387672	1.342452	2.899939
2359	1.898533	0.359426	1.309998	2.751475



2386	2.038961	0.380710	1.414082	2.939973
2413	2.139093	0.427062	1.446407	3.163507
2441	1.931395	0.367484	1.330191	2.804324
2470	1.986697	0.374505	1.373014	2.874674
2498	1.898315	0.368409	1.297700	2.776912
2526	2.056221	0.412457	1.387802	3.046577
2553	1.792912	0.366351	1.201242	2.676008
2577	2.069284	0.400850	1.415566	3.024894
2599	2.109459	0.427396	1.418110	3.137851
2618	1.697723	0.349188	1.134466	2.540635

[134 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



# Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	134
Model:	GLM	Df Residuals:	129
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -338.04  
Date: Fri, 08 May 2020 Deviance: 489.88  
Time: 08:05:24 Pearson chi2: 803.  
No. Iterations: 7 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	1.2323	0.532	2.315	0.021	0.189	2.275
tempf	-0.1497	0.107	-1.398	0.162	-0.360	0.060
dwpf	-0.0300	0.031	-0.959	0.338	-0.091	0.031
drct	-0.0040	0.003	-1.221	0.222	-0.011	0.002
feel	0.1740	0.105	1.660	0.097	-0.031	0.379

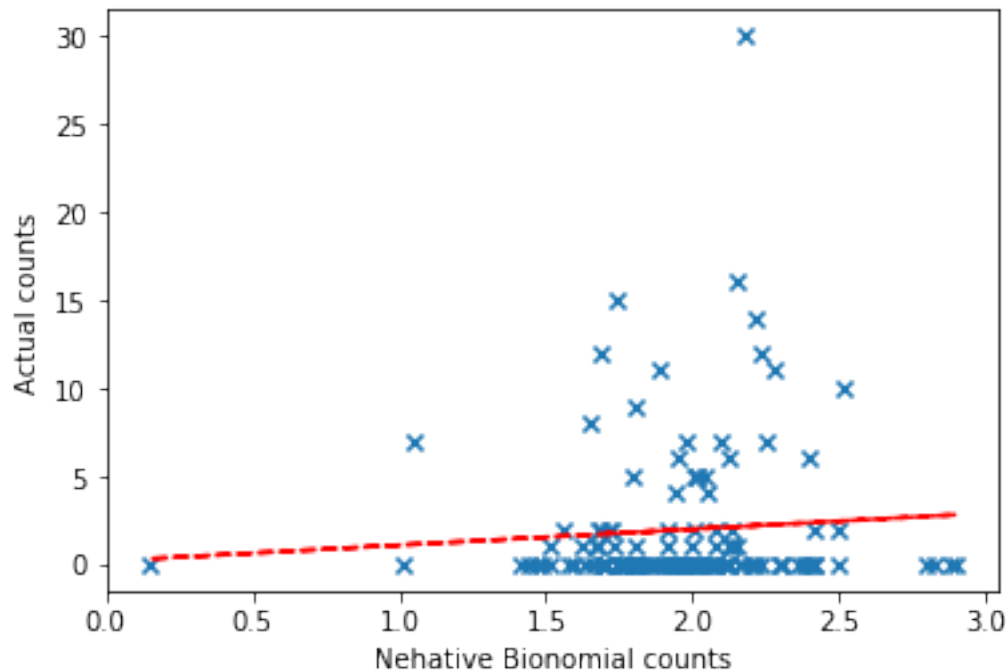
	mean	mean_se	mean_ci_lower	mean_ci_upper
9	2.306625	0.324773	1.750361	3.039670
20	2.122846	0.246827	1.690237	2.666178
31	2.016240	0.254485	1.574365	2.582136
42	2.396363	0.378549	1.758287	3.265994
55	2.159996	0.300659	1.644259	2.837497
69	2.898470	0.530867	2.024265	4.150210
83	2.498915	0.461853	1.739527	3.589813
96	1.677052	0.422275	1.023805	2.747106
110	1.685647	0.213496	1.315096	2.160607
124	1.913446	0.186107	1.581342	2.315295
137	1.704714	0.183328	1.380740	2.104705
149	1.964366	0.228959	1.563182	2.468510
161	1.944537	0.187476	1.609722	2.348993
173	1.415771	0.249730	1.001955	2.000497
185	2.023654	0.324298	1.478183	2.770411
198	1.967417	0.232037	1.561370	2.479060
210	1.767946	0.203419	1.411010	2.215174
224	2.414736	0.365446	1.794935	3.248557
238	2.411476	0.289492	1.905892	3.051178
252	1.934502	0.212711	1.559459	2.399741
266	1.941216	0.154810	1.660318	2.269636
280	2.199958	0.225525	1.799512	2.689514
294	1.597192	0.317196	1.082211	2.357232
308	2.375533	0.330072	1.809213	3.119122
322	1.903367	0.199159	1.550447	2.336620
336	1.799247	0.168719	1.497173	2.162269
350	1.800822	0.196699	1.453773	2.230720
428	1.764474	0.305863	1.256214	2.478374
443	1.846351	0.267851	1.389409	2.453569
458	1.699755	0.284935	1.223762	2.360891
...	...	...	...	...
1923	1.713796	0.170626	1.409980	2.083076
1938	1.443058	0.235942	1.047396	1.988183
1950	2.167995	0.301254	1.651124	2.846670

1968	2.388880	0.292843	1.878665	3.037663
1990	1.921619	0.172042	1.612351	2.290208
2018	1.852631	0.220125	1.467748	2.338442
2047	1.580614	0.321054	1.061524	2.353542
2078	1.489135	0.315641	0.982905	2.256092
2109	1.694421	0.257946	1.257305	2.283505
2140	1.739198	0.214409	1.365881	2.214550
2168	2.015404	0.228416	1.613953	2.516710
2194	1.467095	0.296974	0.986632	2.181531
2219	1.516056	0.220338	1.140263	2.015699
2243	1.516514	0.265922	1.075443	2.138482
2262	1.706853	0.208136	1.344000	2.167670
2276	1.661384	0.356777	1.090628	2.530830
2288	1.767040	0.190999	1.429685	2.183999
2311	1.955529	0.465697	1.226184	3.118694
2333	1.990802	0.466085	1.258187	3.150001
2359	1.908177	0.429521	1.227488	2.966334
2386	2.047278	0.454468	1.325017	3.163241
2413	2.148634	0.512203	1.346630	3.428283
2441	1.942619	0.439364	1.247012	3.026249
2470	1.995382	0.447728	1.285381	3.097565
2498	1.909578	0.441039	1.214347	3.002840
2526	2.074541	0.495283	1.299282	3.312384
2553	1.803722	0.437659	1.121069	2.902063
2577	2.076766	0.479916	1.320337	3.266555
2599	2.121679	0.513074	1.320804	3.408168
2618	1.704153	0.416603	1.055410	2.751669

[134 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

# Negative Binomial Regression Scatter plot FAW on Mason-BFarm



## Generalized Linear Model Regression Results

```
=====
Dep. Variable:          trap_count    No. Observations:          69
Model:                  GLM           Df Residuals:              64
Model Family:           Poisson       Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                 IRLS          Log-Likelihood:            -40.180
Date:                   Fri, 08 May 2020    Deviance:                  60.103
Time:                   08:05:24           Pearson chi2:              133.
No. Iterations:         6                Covariance Type:          nonrobust
=====
```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-1.4603	2.198	-0.664	0.506	-5.768	2.847
tempf	0.5849	0.466	1.254	0.210	-0.329	1.499
dwpf	0.0254	0.140	0.182	0.856	-0.249	0.300
drct	-0.0065	0.013	-0.487	0.626	-0.033	0.020
feel	-0.5973	0.460	-1.300	0.194	-1.498	0.303

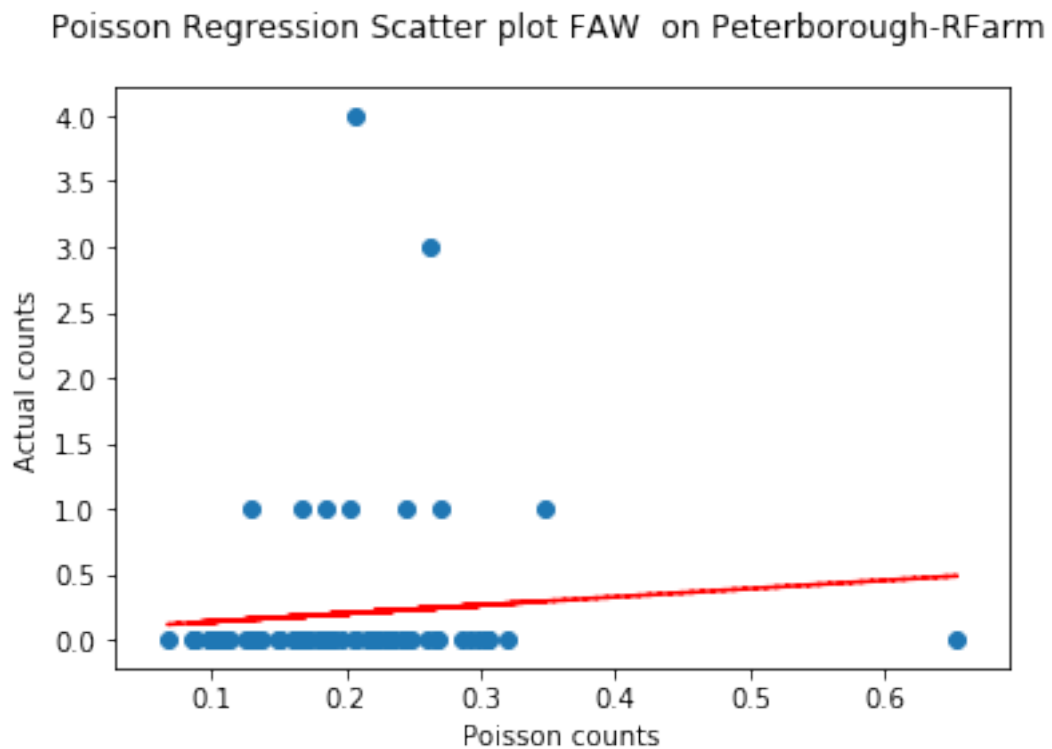
```
=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
10    0.267321  0.138890    0.096556    0.740094
21    0.217679  0.085184    0.101092    0.468724
32    0.168030  0.093260    0.056618    0.498678
=====
```

43	0.221010	0.123104	0.074180	0.658470
56	0.150065	0.082355	0.051185	0.439963
70	0.130552	0.113303	0.023826	0.715355
84	0.088269	0.072924	0.017482	0.445692
97	0.113985	0.108788	0.017557	0.740016
370	0.298183	0.146309	0.113979	0.780083
384	0.305439	0.207097	0.080869	1.153629
398	0.172263	0.102340	0.053765	0.551928
412	0.207356	0.070075	0.106919	0.402140
426	0.267538	0.167217	0.078590	0.910760
441	0.242520	0.122117	0.090394	0.650665
456	0.248299	0.155122	0.072978	0.844802
471	0.235461	0.094271	0.107430	0.516075
486	0.232454	0.096330	0.103180	0.523695
501	0.167140	0.084194	0.062273	0.448601
516	0.160503	0.094027	0.050912	0.505991
531	0.260421	0.090830	0.131460	0.515893
546	0.190880	0.093210	0.073300	0.497069
561	0.285847	0.130178	0.117081	0.697879
576	0.262652	0.097542	0.126843	0.543870
590	0.184002	0.143668	0.039830	0.850035
599	0.347750	0.204110	0.110068	1.098690
626	0.223843	0.106762	0.087895	0.570067
642	0.242145	0.108232	0.100835	0.581485
658	0.216729	0.097142	0.090031	0.521726
674	0.185271	0.094035	0.068513	0.501001
690	0.219546	0.088860	0.099312	0.485339
...	...	...	...	...
1483	0.197911	0.075568	0.093639	0.418293
1505	0.207856	0.090693	0.088382	0.488835
1528	0.207312	0.084595	0.093172	0.461276
1689	0.216618	0.096740	0.090272	0.519797
1707	0.068022	0.073772	0.008119	0.569903
1726	0.242971	0.102350	0.106413	0.554776
1746	0.230378	0.067232	0.130027	0.408177
1767	0.179013	0.078994	0.075383	0.425107
1788	0.233697	0.162244	0.059939	0.911172
1965	0.184124	0.091209	0.069735	0.486149
1987	0.232209	0.072346	0.126090	0.427639
2015	0.303746	0.114303	0.145276	0.635077
2044	0.151922	0.117483	0.033372	0.691614
2075	0.653417	0.561942	0.121102	3.525557
2106	0.161378	0.091794	0.052926	0.492063
2137	0.292147	0.145454	0.110105	0.775169
2165	0.304702	0.132113	0.130260	0.712754
2191	0.168889	0.130881	0.036979	0.771334
2216	0.229705	0.126485	0.078067	0.675892
2240	0.189722	0.123646	0.052889	0.680559

2308	0.086186	0.084866	0.012511	0.593742
2330	0.110055	0.107800	0.016138	0.750536
2356	0.100217	0.093690	0.016039	0.626188
2383	0.101239	0.093851	0.016453	0.622926
2410	0.133731	0.133593	0.018876	0.947443
2438	0.097974	0.092102	0.015521	0.618438
2467	0.106973	0.100224	0.017052	0.671079
2495	0.103586	0.099516	0.015760	0.680856
2523	0.099930	0.099797	0.014113	0.707555
2550	0.088420	0.088159	0.012527	0.624083

[69 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



#### Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	69
Model:	GLM	Df Residuals:	64
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000

```

Method:                IRLS    Log-Likelihood:        -38.988
Date:                  Fri, 08 May 2020    Deviance:        9.8065
Time:                  08:05:25    Pearson chi2:        18.5
No. Iterations:        15    Covariance Type:        nonrobust

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-1.3106	6.189	-0.212	0.832	-13.441	10.820
tempf	1.3797	1.444	0.956	0.339	-1.450	4.209
dwpf	-0.0281	0.369	-0.076	0.939	-0.751	0.695
drct	-0.0233	0.036	-0.640	0.522	-0.095	0.048
feel	-1.3166	1.398	-0.942	0.346	-4.057	1.424

	mean	mean_se	mean_ci_lower	mean_ci_upper
10	0.583325	0.834830	0.035295	9.640806
21	0.285657	0.297299	0.037149	2.196529
32	0.176201	0.241747	0.011972	2.593306
43	0.345621	0.511135	0.019044	6.272406
56	0.114503	0.168439	0.006407	2.046310
70	0.153588	0.340857	0.001983	11.896595
84	0.039606	0.089247	0.000478	3.279580
97	0.050818	0.124661	0.000415	6.224197
370	0.490713	0.679999	0.032455	7.419391
384	0.829285	1.565513	0.020503	33.542041
398	0.227871	0.345934	0.011627	4.465876
412	0.243448	0.213808	0.043535	1.361359
426	0.313149	0.532051	0.011208	8.749278
441	0.277966	0.381217	0.018906	4.086710
456	0.232733	0.394159	0.008419	6.433662
471	0.250305	0.276263	0.028774	2.177436
486	0.368553	0.417857	0.039942	3.400735
501	0.121401	0.156409	0.009718	1.516624
516	0.092405	0.144984	0.004267	2.000941
531	0.328752	0.334322	0.044796	2.412644
546	0.129263	0.169651	0.009870	1.692916
561	0.357192	0.468619	0.027300	4.673474
576	0.316761	0.352548	0.035757	2.806083
590	0.156783	0.327307	0.002620	9.382101
599	0.506200	0.922746	0.014213	18.028855
626	0.361601	0.460273	0.029837	4.382317
642	0.280852	0.344088	0.025446	3.099793
658	0.259191	0.311934	0.024502	2.741779
674	0.221986	0.282610	0.018309	2.691474
690	0.320801	0.342633	0.039546	2.602346
...	...	...	...	...
1483	0.194647	0.195743	0.027118	1.397145
1505	0.265435	0.306144	0.027683	2.545101
1528	0.257864	0.277609	0.031262	2.127011

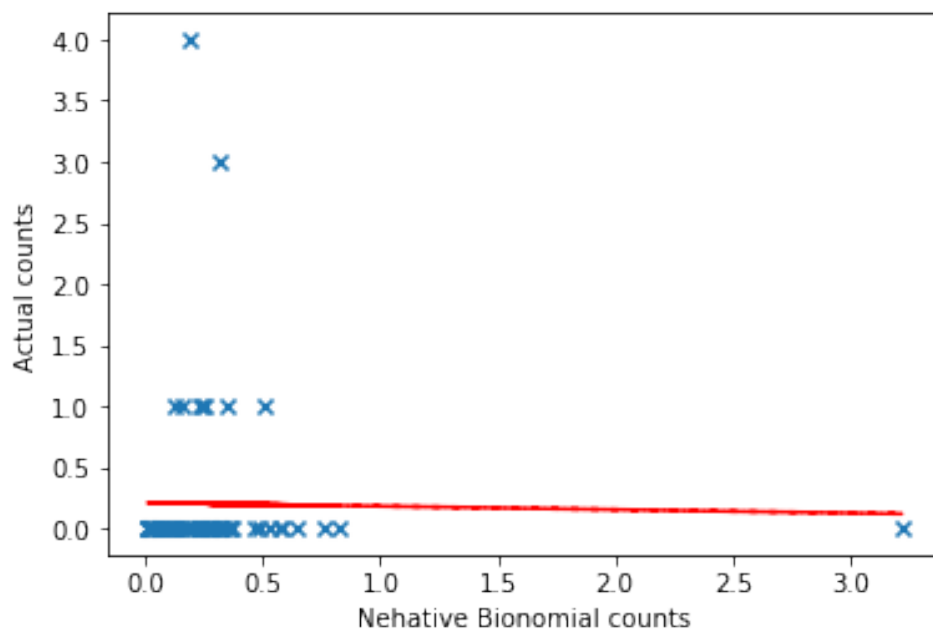
1689	0.269347	0.322093	0.025848	2.806754
1707	0.028206	0.083205	0.000087	9.148313
1726	0.280403	0.325293	0.028861	2.724291
1746	0.312512	0.251948	0.064361	1.517423
1767	0.193338	0.210545	0.022875	1.634091
1788	0.469250	0.877497	0.012013	18.329485
1965	0.237845	0.301735	0.019790	2.858557
1987	0.322963	0.276042	0.060480	1.724607
2015	0.527302	0.600884	0.056504	4.920868
2044	0.076868	0.157723	0.001378	4.288478
2075	3.220285	8.962704	0.013767	753.286287
2106	0.101443	0.149464	0.005650	1.821250
2137	0.568943	0.845944	0.030863	10.488030
2165	0.757356	0.993079	0.057965	9.895397
2191	0.077822	0.161091	0.001346	4.498777
2216	0.183349	0.281627	0.009033	3.721684
2240	0.125853	0.218099	0.004215	3.758103
2308	0.009366	0.028985	0.000022	4.035497
2330	0.018241	0.055495	0.000047	7.090065
2356	0.013414	0.039285	0.000043	4.173279
2383	0.015426	0.044847	0.000052	4.600900
2410	0.034373	0.104848	0.000087	13.572457
2438	0.013001	0.038339	0.000040	4.209168
2467	0.016908	0.049522	0.000054	5.262305
2495	0.014315	0.042978	0.000040	5.143853
2523	0.014807	0.046120	0.000033	6.633212
2550	0.008628	0.026858	0.000019	3.851218

[69 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



## Negative Binomial Regression Scatter plot FAW on Peterborough-RFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          112
Model:                  GLM           Df Residuals:              107
Model Family:           Poisson       Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                  IRLS         Log-Likelihood:            -496.71
Date:                   Fri, 08 May 2020    Deviance:                  752.09
Time:                   08:05:25           Pearson chi2:              867.
No. Iterations:         5                Covariance Type:          nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	0.0603	0.308	0.196	0.845	-0.544	0.665
tempf	0.0047	0.076	0.062	0.950	-0.144	0.153
dwpf	-0.0761	0.020	-3.841	0.000	-0.115	-0.037
drct	0.0093	0.002	5.146	0.000	0.006	0.013
feel	0.0675	0.076	0.894	0.371	-0.081	0.216

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
50      3.639681  0.362381      2.994431      4.423971
64      3.723476  0.493634      2.871454      4.828311
78      5.027999  0.666652      3.877360      6.520100
91     13.162123  1.557207     10.438078     16.597067
=====

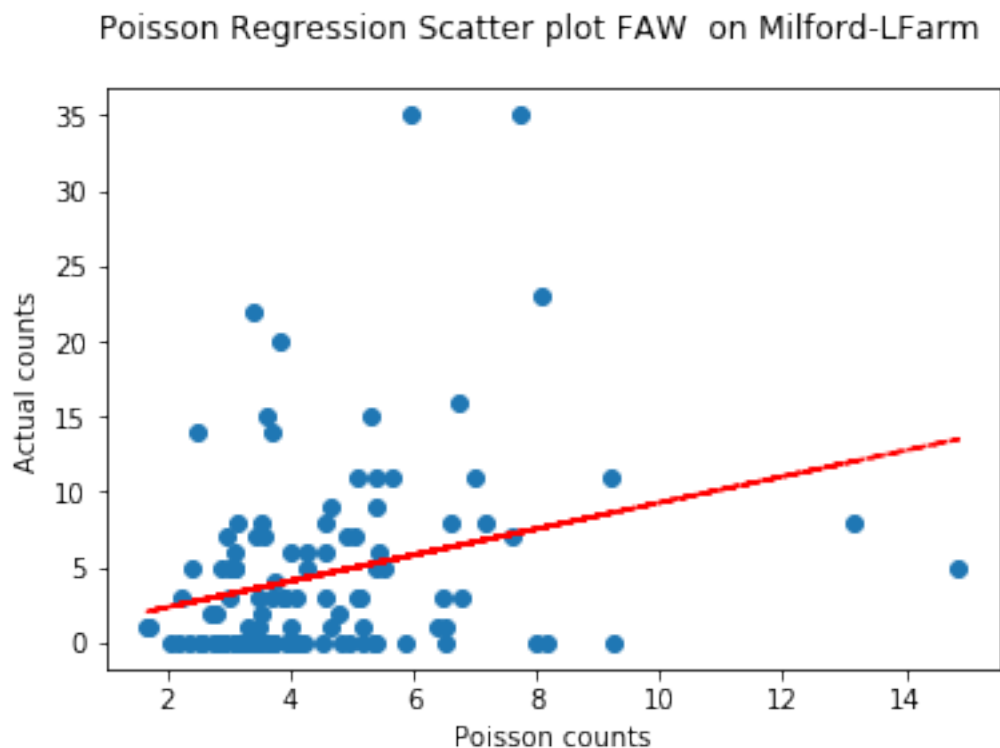
```

105	4.563482	0.323866	3.970887	5.244514
119	3.093693	0.212430	2.704140	3.539365
132	3.996727	0.261197	3.516220	4.542897
144	2.868343	0.232036	2.447782	3.361162
156	3.463111	0.222616	3.053159	3.928109
168	6.768930	0.582076	5.719041	8.011555
180	4.919431	0.487076	4.051695	5.973006
217	2.375933	0.247144	1.937727	2.913237
231	4.002374	0.357010	3.360399	4.766992
245	3.255382	0.253093	2.795275	3.791224
259	4.218839	0.221874	3.805635	4.676907
273	4.530782	0.333845	3.921512	5.234713
287	7.984355	0.753625	6.635855	9.606889
301	3.745603	0.348805	3.120718	4.495614
315	2.907770	0.211567	2.521316	3.353458
329	4.107528	0.242672	3.658404	4.611788
343	5.350973	0.300928	4.792509	5.974514
378	2.049924	0.242227	1.626135	2.584158
392	3.134178	0.318383	2.568355	3.824655
406	4.114101	0.266165	3.624147	4.670292
420	2.546197	0.298845	2.022960	3.204769
435	2.858748	0.285282	2.350889	3.476319
450	2.841196	0.314602	2.286908	3.529830
465	3.411883	0.268479	2.924244	3.980840
480	3.978449	0.257594	3.504297	4.516757
495	6.507399	0.406891	5.756838	7.355816
...	...	...	...	...
1898	8.096680	0.646328	6.924026	9.467935
1916	4.845901	0.259852	4.362450	5.382928
1932	5.324400	0.459543	4.495774	6.305752
1946	3.327039	0.297331	2.792465	3.963949
1959	3.101965	0.284268	2.591981	3.712292
1981	4.108532	0.248057	3.650013	4.624650
2009	2.883679	0.243385	2.444019	3.402429
2038	7.149802	0.727668	5.856840	8.728199
2068	3.439554	0.505492	2.578730	4.587735
2099	6.984237	0.488139	6.090139	8.009599
2130	5.418865	0.381334	4.720716	6.220263
2158	3.519799	0.280571	3.010695	4.114992
2185	6.751790	0.678077	5.545407	8.220617
2210	5.947976	0.420350	5.178618	6.831634
2234	7.728190	0.602547	6.633028	9.004170
2255	3.115138	0.251958	2.658462	3.650262
2269	5.176662	0.705012	3.963914	6.760445
2281	3.229543	0.238566	2.794235	3.732667
2349	3.989222	0.575701	3.006408	5.293325
2376	3.462651	0.499762	2.609488	4.594752
2403	2.814257	0.424900	2.093380	3.783374

2430	3.950096	0.575692	2.968605	5.256091
2459	3.522970	0.509671	2.653169	4.677921
2488	3.924212	0.580463	2.936595	5.243978
2515	3.606429	0.559213	2.661277	4.887251
2542	4.660694	0.714865	3.450577	6.295198
2568	3.023813	0.446089	2.264546	4.037650
2590	2.971492	0.457333	2.197702	4.017724
2610	4.784186	0.725700	3.553789	6.440572
2627	3.678389	0.534369	2.766951	4.890056

[112 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



#### Generalized Linear Model Regression Results

```
=====
Dep. Variable:          trap_count    No. Observations:          112
Model:                  GLM           Df Residuals:              107
Model Family:          NegativeBinomial Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                 IRLS          Log-Likelihood:          -333.90
=====
```

Date: Fri, 08 May 2020 Deviance: 356.47  
Time: 08:05:25 Pearson chi2: 371.  
No. Iterations: 9 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	0.1717	0.475	0.362	0.718	-0.759	1.103
tempf	0.0120	0.120	0.100	0.921	-0.223	0.247
dwpf	-0.1179	0.032	-3.723	0.000	-0.180	-0.056
drct	0.0085	0.003	2.937	0.003	0.003	0.014
feel	0.0965	0.120	0.803	0.422	-0.139	0.332

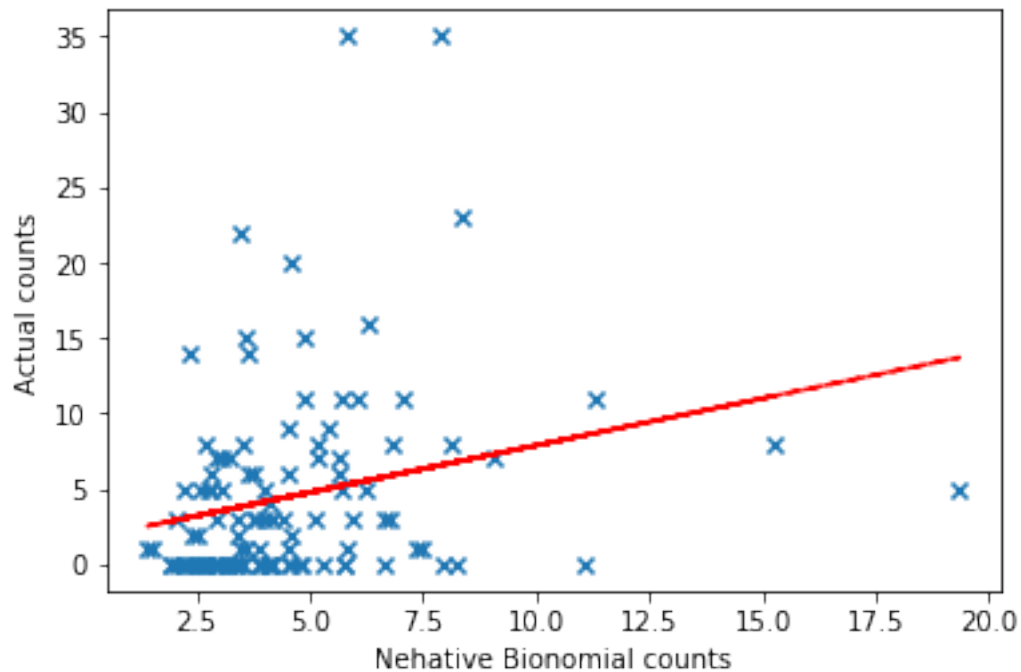
	mean	mean_se	mean_ci_lower	mean_ci_upper
50	3.367305	0.513402	2.497483	4.540067
64	4.101965	0.836366	2.750660	6.117118
78	5.184319	1.102375	3.417396	7.864808
91	15.265835	3.250643	10.057019	23.172443
105	4.191637	0.467824	3.368077	5.216573
119	2.831546	0.285369	2.324008	3.449924
132	3.667875	0.366185	3.016019	4.460617
144	2.709836	0.324336	2.143206	3.426274
156	3.412916	0.321998	2.836726	4.106139
168	6.647587	0.946943	5.028183	8.788545
180	5.637045	0.871534	4.163405	7.632281
217	2.255830	0.344914	1.671701	3.044065
231	4.185543	0.566567	3.210190	5.457237
245	2.934215	0.337967	2.341259	3.677345
259	4.149308	0.324091	3.560334	4.835713
273	4.621486	0.532877	3.686671	5.793337
287	7.967787	1.288784	5.803051	10.940043
301	4.095608	0.571377	3.115785	5.383557
315	2.634067	0.284122	2.132123	3.254177
329	4.073202	0.363650	3.419335	4.852104
343	5.298796	0.490277	4.419966	6.352366
378	1.951488	0.344781	1.380317	2.759006
392	3.162185	0.477660	2.351854	4.251717
406	3.959157	0.382086	3.276845	4.783541
420	2.053865	0.369007	1.444245	2.920806
435	2.422534	0.365033	1.803055	3.254850
450	2.313521	0.394207	1.656666	3.230814
465	3.027168	0.358099	2.400731	3.817065
480	4.126852	0.392560	3.424914	4.972653
495	6.656467	0.727734	5.372595	8.247141
...	...	...	...	...
1898	8.362862	1.164939	6.364778	10.988200
1916	4.843101	0.411595	4.099996	5.720890
1932	4.903617	0.679144	3.737888	6.432900
1946	3.493891	0.466218	2.689842	4.538287

1959	3.035790	0.409691	2.330230	3.954982
1981	3.999352	0.355039	3.360663	4.759423
2009	2.579590	0.323377	2.017643	3.298050
2038	6.833160	1.158334	4.901498	9.526082
2068	3.263437	0.748551	2.081761	5.115870
2099	7.096402	0.867465	5.584538	9.017564
2130	5.667460	0.632354	4.554225	7.052813
2158	3.510142	0.406686	2.797076	4.404992
2185	6.290292	1.039136	4.550458	8.695339
2210	5.824132	0.679706	4.633313	7.321007
2234	7.873405	1.064620	6.040396	10.262656
2255	2.727753	0.337111	2.140961	3.475372
2269	5.828037	1.256765	3.819163	8.893575
2281	2.914718	0.323209	2.345351	3.622306
2349	3.879668	0.817446	2.567121	5.863308
2376	3.357116	0.706014	2.223082	5.069640
2403	2.782073	0.615427	1.803320	4.292044
2430	3.859961	0.820810	2.544352	5.855832
2459	3.427462	0.721970	2.268158	5.179312
2488	3.844206	0.828889	2.519243	5.866014
2515	3.614084	0.815247	2.322674	5.623518
2542	4.518652	1.019983	2.903150	7.033126
2568	2.954064	0.636074	1.937037	4.505074
2590	2.953744	0.664537	1.900502	4.590683
2610	4.572868	1.024334	2.947931	7.093489
2627	3.550369	0.752066	2.344042	5.377513

[112 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

# Negative Binomial Regression Scatter plot FAW on Milford-LFarm



## Generalized Linear Model Regression Results

```
=====
Dep. Variable:          trap_count    No. Observations:          126
Model:                  GLM           Df Residuals:              121
Model Family:           Poisson       Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                 IRLS          Log-Likelihood:            -285.36
Date:                   Fri, 08 May 2020    Deviance:                  468.90
Time:                   08:05:26           Pearson chi2:              762.
No. Iterations:         6                 Covariance Type:          nonrobust
=====
```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-2.5735	0.668	-3.852	0.000	-3.883	-1.264
tempf	0.0677	0.053	1.269	0.204	-0.037	0.172
dwpf	-0.0376	0.031	-1.192	0.233	-0.099	0.024
drct	0.0139	0.003	4.028	0.000	0.007	0.021
feel	-0.0162	0.047	-0.344	0.731	-0.108	0.076

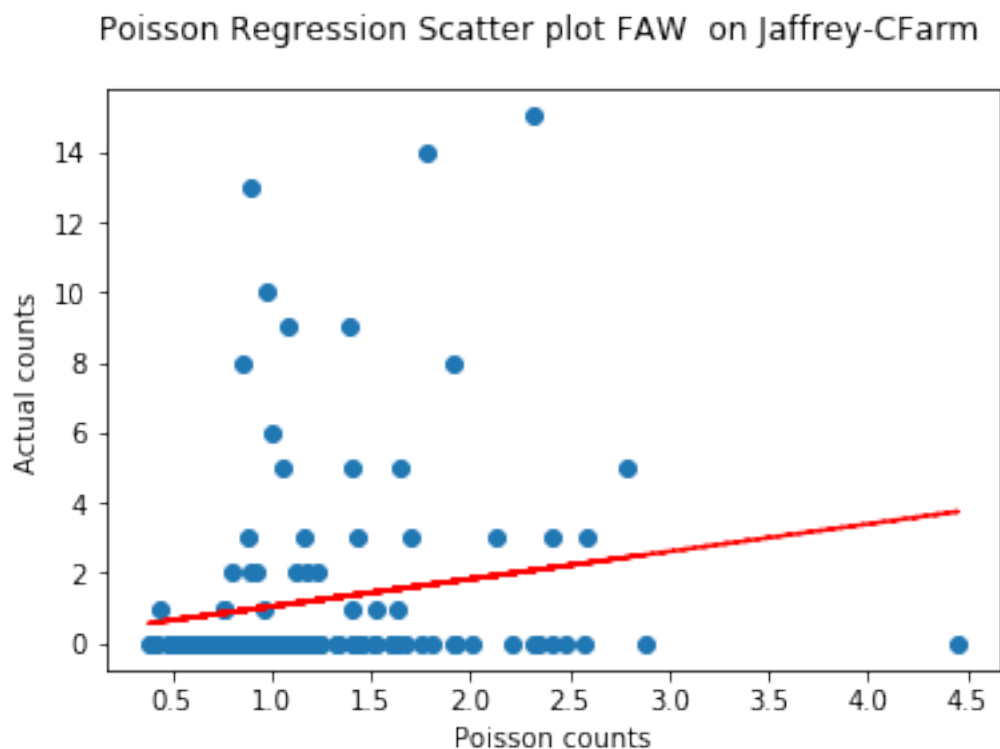
```
=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
111    1.411237    0.175293      1.106294      1.800237
125    0.829967    0.099681      0.655888      1.050250
138    1.183582    0.128314      0.957014      1.463789
=====
```

150	0.742647	0.100931	0.568981	0.969319
162	0.824999	0.101783	0.647795	1.050677
174	2.124427	0.325604	1.573190	2.868815
186	1.056017	0.182221	0.752995	1.480983
197	0.794502	0.113799	0.600032	1.052000
209	1.323197	0.158492	1.046329	1.673327
223	0.587798	0.112813	0.403517	0.856238
237	1.041506	0.142318	0.796799	1.361366
251	0.962215	0.125186	0.745641	1.241696
265	1.182266	0.106354	0.991158	1.410222
279	1.197775	0.116776	0.989437	1.449982
293	2.792738	0.505267	1.958976	3.981356
307	0.855087	0.141789	0.617825	1.183465
321	0.759179	0.098154	0.589241	0.978129
335	1.082925	0.101011	0.901990	1.300156
349	1.629627	0.162957	1.339587	1.982464
358	0.555694	0.095273	0.397099	0.777629
364	0.598205	0.096814	0.435603	0.821504
371	0.599291	0.106600	0.422891	0.849270
385	0.476074	0.106635	0.306913	0.738471
399	0.776292	0.128153	0.561702	1.072864
413	1.239686	0.136547	0.998976	1.538396
427	0.833829	0.158790	0.574088	1.211088
442	0.905549	0.149224	0.655607	1.250777
457	0.917018	0.164009	0.645863	1.302013
472	1.044121	0.135320	0.809904	1.346072
487	1.012058	0.115048	0.809922	1.264642
...	...	...	...	...
1849	0.850602	0.114386	0.653522	1.107115
1868	0.585085	0.102297	0.415330	0.824223
1886	1.524040	0.136119	1.279299	1.815603
1904	2.416092	0.396014	1.752248	3.331435
1966	0.803206	0.122061	0.596311	1.081885
1988	1.222317	0.125919	0.998841	1.495793
2016	0.845063	0.113650	0.649252	1.099928
2045	2.577327	0.491401	1.773686	3.745090
2076	1.062928	0.134989	0.828712	1.363339
2107	2.203985	0.291964	1.700001	2.857381
2138	1.642422	0.158774	1.358934	1.985048
2166	0.995285	0.131848	0.767691	1.290353
2192	2.315675	0.443155	1.591408	3.369562
2217	1.778687	0.226198	1.386280	2.282170
2241	2.471553	0.378923	1.830076	3.337881
2261	0.878191	0.115010	0.679381	1.135178
2275	1.228508	0.215480	0.871118	1.732522
2287	0.918512	0.106553	0.731713	1.152999
2309	0.662535	0.232140	0.333399	1.316600
2331	0.534363	0.192986	0.263284	1.084547

2357	0.622253	0.210333	0.320808	1.206950
2384	0.520302	0.173376	0.270780	0.999755
2411	0.382441	0.139007	0.187575	0.779746
2439	0.607139	0.205954	0.312279	1.180410
2468	0.525608	0.179773	0.268861	1.027535
2496	0.591715	0.208048	0.297050	1.178683
2524	0.501764	0.182196	0.246275	1.022304
2551	0.754239	0.264693	0.379130	1.500479
2575	0.426074	0.151386	0.212349	0.854910
2597	0.399954	0.148271	0.193398	0.827118

[126 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



#### Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	126
Model:	GLM	Df Residuals:	121
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000



Method: IRLS Log-Likelihood: -212.05  
Date: Fri, 08 May 2020 Deviance: 290.74  
Time: 08:05:26 Pearson chi2: 509.  
No. Iterations: 9 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-2.9216	0.844	-3.460	0.001	-4.577	-1.267
tempf	0.1049	0.068	1.554	0.120	-0.027	0.237
dwpf	-0.0720	0.040	-1.823	0.068	-0.150	0.005
drct	0.0139	0.004	3.154	0.002	0.005	0.023
feel	-0.0179	0.060	-0.299	0.765	-0.135	0.099

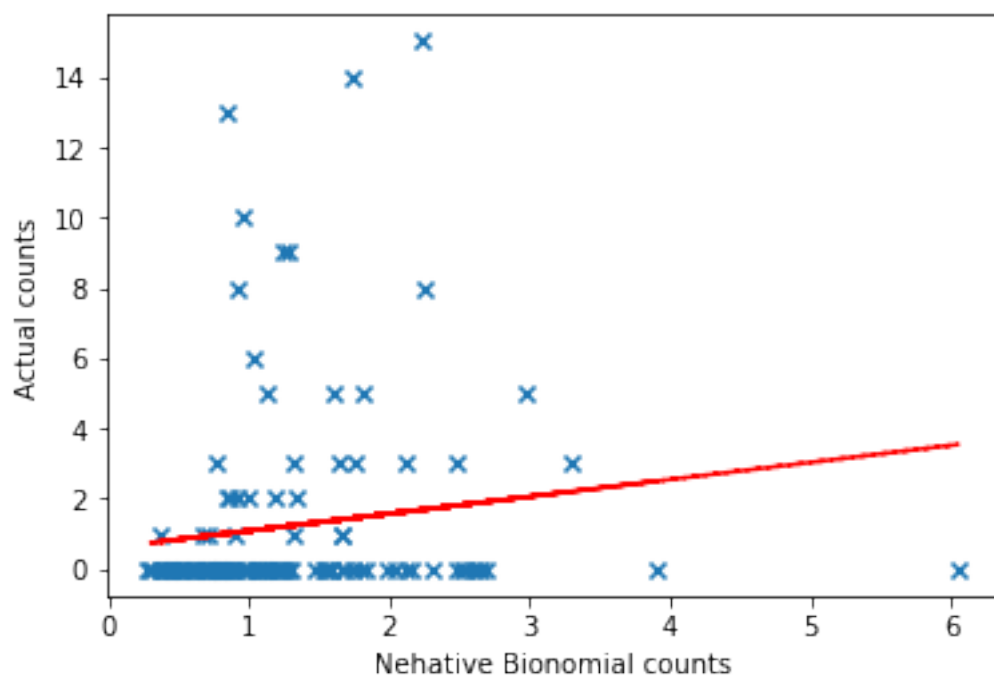
	mean	mean_se	mean_ci_lower	mean_ci_upper
111	1.322719	0.212041	0.966083	1.811011
125	0.752640	0.110247	0.564811	1.002932
138	1.099199	0.150744	0.840123	1.438169
150	0.698779	0.114856	0.506327	0.964383
162	0.775631	0.116253	0.578197	1.040481
174	2.110849	0.432691	1.412454	3.154569
186	1.132640	0.240041	0.747646	1.715884
197	0.716401	0.125525	0.508173	1.009951
209	1.274040	0.192758	0.947107	1.713828
223	0.558933	0.131043	0.353015	0.884965
237	1.108311	0.181984	0.803332	1.529072
251	0.892123	0.142311	0.652592	1.219573
265	1.179514	0.129507	0.951138	1.462726
279	1.219328	0.145135	0.965613	1.539707
293	2.962837	0.717213	1.843562	4.761655
307	0.914193	0.182807	0.617770	1.352848
321	0.673023	0.106665	0.493317	0.918193
335	1.060184	0.120781	0.848025	1.325422
349	1.667282	0.218995	1.288858	2.156814
358	0.489138	0.103244	0.323419	0.739770
364	0.507700	0.101948	0.342517	0.752544
371	0.514537	0.113039	0.334515	0.791438
385	0.446816	0.123350	0.260101	0.767566
399	0.785506	0.156499	0.531572	1.160746
413	1.246874	0.169030	0.955941	1.626351
427	0.708512	0.167841	0.445353	1.127171
442	0.804437	0.164087	0.539345	1.199825
457	0.774278	0.173172	0.499483	1.200255
472	0.955897	0.153772	0.697400	1.310210
487	1.047849	0.141791	0.803743	1.366094
...	...	...	...	...
1849	0.860842	0.138437	0.628112	1.179804
1868	0.535584	0.114487	0.352269	0.814295
1886	1.541916	0.181943	1.223547	1.943124

1904	2.479549	0.547277	1.608787	3.821615
1966	0.794446	0.145513	0.554825	1.137555
1988	1.241514	0.156207	0.970184	1.588728
2016	0.780200	0.127918	0.565779	1.075884
2045	2.636101	0.664271	1.608674	4.319726
2076	1.071071	0.166947	0.789118	1.453765
2107	2.314152	0.414693	1.628762	3.287957
2138	1.811112	0.224241	1.420871	2.308532
2166	1.038679	0.164972	0.760827	1.418001
2192	2.232369	0.563612	1.361010	3.661600
2217	1.744067	0.295917	1.250661	2.432131
2241	2.586034	0.536666	1.721825	3.884002
2261	0.762211	0.124466	0.553450	1.049718
2275	1.335697	0.290881	0.871641	2.046812
2287	0.834783	0.119081	0.631176	1.104069
2309	0.490355	0.216976	0.205999	1.167229
2331	0.394753	0.179624	0.161809	0.963047
2357	0.455123	0.194310	0.197114	1.050847
2384	0.378079	0.158938	0.165864	0.861812
2411	0.277988	0.127231	0.113355	0.681725
2439	0.444537	0.190400	0.192012	1.029168
2468	0.381467	0.164585	0.163758	0.888610
2496	0.430635	0.191118	0.180444	1.027723
2524	0.366507	0.167693	0.149493	0.898553
2551	0.549546	0.244123	0.230079	1.312596
2575	0.307418	0.137636	0.127830	0.739311
2597	0.289864	0.135316	0.116100	0.723698

[126 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot FAW on Jaffrey-CFarm



### Generalized Linear Model Regression Results

```
=====
Dep. Variable:          trap_count    No. Observations:          114
Model:                  GLM           Df Residuals:              109
Model Family:           Poisson       Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                 IRLS          Log-Likelihood:            -443.97
Date:                   Fri, 08 May 2020    Deviance:                  764.37
Time:                   08:05:26           Pearson chi2:              1.44e+03
No. Iterations:         6                Covariance Type:          nonrobust
=====
```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	8.1784	1.111	7.363	0.000	6.001	10.355
tempf	-0.6472	0.206	-3.141	0.002	-1.051	-0.243
dwpf	-0.2034	0.025	-8.149	0.000	-0.252	-0.154
drct	-0.0194	0.003	-6.974	0.000	-0.025	-0.014
feel	0.7418	0.197	3.769	0.000	0.356	1.128

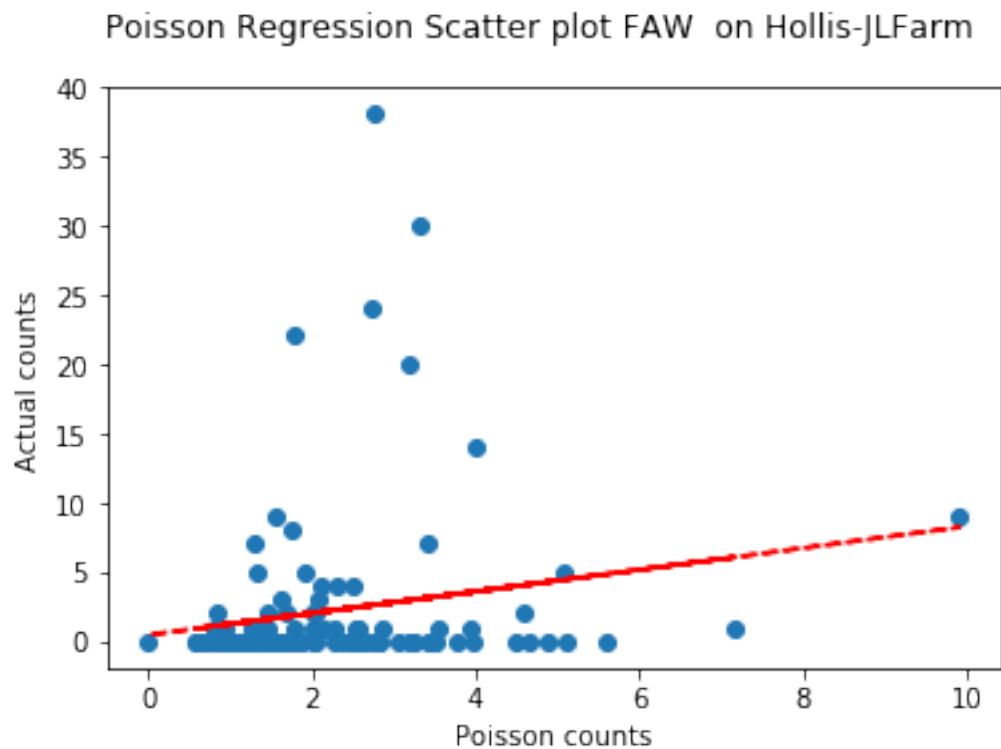
```
=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
194    1.484851    0.157348    1.206374    1.827612
206    0.905495    0.119381    0.699299    1.172490
220    2.821900    0.344052    2.222089    3.583619
=====
```

234	2.561173	0.268190	2.085961	3.144644
248	1.278357	0.137551	1.035291	1.578489
262	1.743416	0.134194	1.499279	2.027308
276	2.799092	0.339385	2.207042	3.549962
290	0.679713	0.128487	0.469270	0.984530
304	4.591075	0.440204	3.804513	5.540254
318	2.493980	0.274853	2.009486	3.095287
332	2.266697	0.199660	1.907286	2.693834
346	1.210138	0.134805	0.972779	1.505413
356	3.475960	0.421492	2.740682	4.408499
362	3.209035	0.467898	2.411370	4.270562
367	1.574026	0.202370	1.223416	2.025113
381	3.507009	0.508467	2.639519	4.659605
395	3.248058	0.383189	2.577528	4.093023
409	1.134257	0.139525	0.891262	1.443503
423	0.688269	0.120139	0.488854	0.969030
438	0.843419	0.126996	0.627879	1.132951
453	0.815662	0.125388	0.603475	1.102456
468	1.065093	0.126618	0.843718	1.344553
483	2.648779	0.189536	2.302168	3.047574
498	1.214773	0.153702	0.947970	1.556666
513	0.961034	0.143677	0.716939	1.288236
528	1.720207	0.167309	1.421648	2.081467
543	1.492423	0.206181	1.138405	1.956532
558	1.816834	0.220025	1.432951	2.303557
573	2.869075	0.361040	2.241961	3.671604
587	3.761790	0.660405	2.666619	5.306744
...	...	...	...	...
1624	3.543517	0.372425	2.883852	4.354077
1640	1.449536	0.177677	1.139969	1.843168
1655	2.036471	0.268304	1.573015	2.636474
1667	5.584810	0.971620	3.971187	7.854102
1704	3.964961	1.070738	2.335456	6.731410
1723	1.007331	0.129619	0.782787	1.296285
1743	1.548425	0.145551	1.287886	1.861670
1764	2.143905	0.173416	1.829589	2.512219
1785	3.919911	0.401960	3.206205	4.792490
1806	3.317380	0.455305	2.534948	4.341314
1826	2.758858	0.316980	2.202572	3.455640
1846	2.730061	0.233288	2.309063	3.227816
1865	3.190966	0.351982	2.570572	3.961089
1883	1.770736	0.179033	1.452419	2.158817
1901	1.731812	0.338939	1.180073	2.541513
1919	2.098098	0.214891	1.716501	2.564528
1962	2.545186	0.269263	2.068561	3.131631
1984	1.145929	0.151106	0.884943	1.483884
2012	1.126952	0.162491	0.849521	1.494984
2041	0.576889	0.113356	0.392496	0.847908

2072	0.575308	0.216836	0.274840	1.204264
2103	1.131397	0.161392	0.855445	1.496366
2134	0.926764	0.198782	0.608688	1.411053
2162	1.225154	0.243783	0.829502	1.809524
2188	0.788482	0.152624	0.539544	1.152276
2213	1.392271	0.205149	1.043039	1.858433
2237	1.034229	0.170101	0.749235	1.427628
2258	1.680173	0.205128	1.322615	2.134395
2272	3.178417	0.643941	2.136776	4.727839
2284	1.483933	0.154222	1.210461	1.819188

[114 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



#### Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	114
Model:	GLM	Df Residuals:	109
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -407.81  
Date: Fri, 08 May 2020 Deviance: 686.81  
Time: 08:05:27 Pearson chi2: 1.35e+03  
No. Iterations: 7 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	8.4483	1.158	7.293	0.000	6.178	10.719
tempf	-0.6811	0.213	-3.199	0.001	-1.098	-0.264
dwpf	-0.2094	0.026	-8.014	0.000	-0.261	-0.158
drct	-0.0198	0.003	-6.861	0.000	-0.026	-0.014
feel	0.7775	0.203	3.821	0.000	0.379	1.176

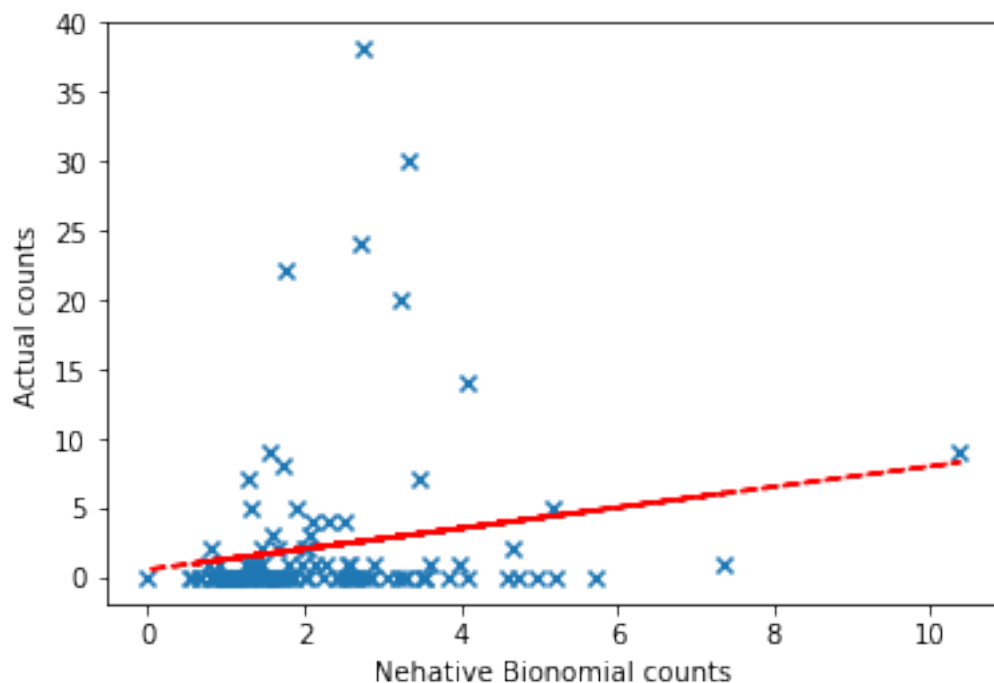
	mean	mean_se	mean_ci_lower	mean_ci_upper
194	1.465435	0.160300	1.182649	1.815838
206	0.880497	0.120032	0.674046	1.150181
220	2.830118	0.357579	2.209312	3.625367
234	2.571146	0.278749	2.078952	3.179868
248	1.256997	0.139658	1.011025	1.562812
262	1.731556	0.136850	1.483076	2.021667
276	2.840076	0.355107	2.222801	3.628768
290	0.659403	0.128817	0.449640	0.967022
304	4.680544	0.471519	3.841900	5.702253
318	2.511390	0.286227	2.008638	3.139980
332	2.267362	0.206559	1.896599	2.710604
346	1.190320	0.136508	0.950707	1.490324
356	3.523802	0.444260	2.752309	4.511551
362	3.251471	0.492734	2.415947	4.375952
367	1.552201	0.206291	1.196249	2.014069
381	3.528229	0.530897	2.627093	4.738470
395	3.286635	0.401697	2.586523	4.176250
409	1.108279	0.141051	0.863608	1.422270
423	0.662247	0.119995	0.464289	0.944610
438	0.817103	0.127599	0.601663	1.109687
453	0.792277	0.126101	0.579960	1.082322
468	1.041440	0.127860	0.818711	1.324763
483	2.655927	0.197279	2.296095	3.072148
498	1.197598	0.155990	0.927769	1.545901
513	0.943686	0.145569	0.697469	1.276823
528	1.707523	0.171102	1.403047	2.078074
543	1.485705	0.211251	1.124348	1.963199
558	1.808868	0.226136	1.415773	2.311108
573	2.903660	0.378698	2.248699	3.749388
587	3.851248	0.703564	2.692154	5.509384
...	...	...	...	...
1624	3.608010	0.395471	2.910504	4.472673
1640	1.438798	0.181399	1.123784	1.842115
1655	2.045169	0.278125	1.566654	2.669839

1667	5.723745	1.037664	4.012038	8.165739
1704	4.097771	1.142788	2.372271	7.078337
1723	0.981895	0.130724	0.756381	1.274646
1743	1.527146	0.147977	1.262994	1.846545
1764	2.143467	0.178688	1.820360	2.523924
1785	3.968404	0.426050	3.215366	4.897804
1806	3.339189	0.476737	2.524147	4.417407
1826	2.768141	0.329482	2.192163	3.495454
1846	2.734815	0.242624	2.298329	3.254196
1865	3.224586	0.368763	2.577096	4.034756
1883	1.764063	0.183462	1.438764	2.162912
1901	1.741136	0.351530	1.172135	2.586354
1919	2.100191	0.222073	1.707076	2.583833
1962	2.555178	0.279627	2.061910	3.166451
1984	1.117485	0.152385	0.855398	1.459873
2012	1.096540	0.163467	0.818713	1.468647
2041	0.556901	0.113244	0.373842	0.829598
2072	0.538666	0.209800	0.251069	1.155701
2103	1.115072	0.163782	0.836139	1.487056
2134	0.892302	0.197810	0.577848	1.377876
2162	1.187508	0.244470	0.793234	1.777755
2188	0.771687	0.154066	0.521795	1.141254
2213	1.380060	0.209502	1.024896	1.858302
2237	1.015908	0.172113	0.728862	1.415999
2258	1.671559	0.210459	1.306022	2.139405
2272	3.183294	0.669819	2.107509	4.808215
2284	1.464397	0.156745	1.187268	1.806214

[114 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot FAW on Hollis-JLFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          124
Model:                  GLM           Df Residuals:                119
Model Family:           Poisson       Df Model:                   4
Link Function:          log           Scale:                     1.0000
Method:                 IRLS          Log-Likelihood:             -132.53
Date:                   Fri, 08 May 2020    Deviance:                   183.19
Time:                   08:05:27           Pearson chi2:               251.
No. Iterations:         6                Covariance Type:           nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-0.0874	0.904	-0.097	0.923	-1.860	1.685
tempf	0.0860	0.131	0.658	0.511	-0.170	0.342
dwpf	-0.1944	0.048	-4.074	0.000	-0.288	-0.101
drct	-0.0060	0.005	-1.109	0.268	-0.017	0.005
feel	0.0845	0.124	0.683	0.495	-0.158	0.327

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
214    0.430422    0.113786    0.256372    0.722633
228    0.630869    0.115669    0.440425    0.903662
242    0.313881    0.068609    0.204507    0.481751

```

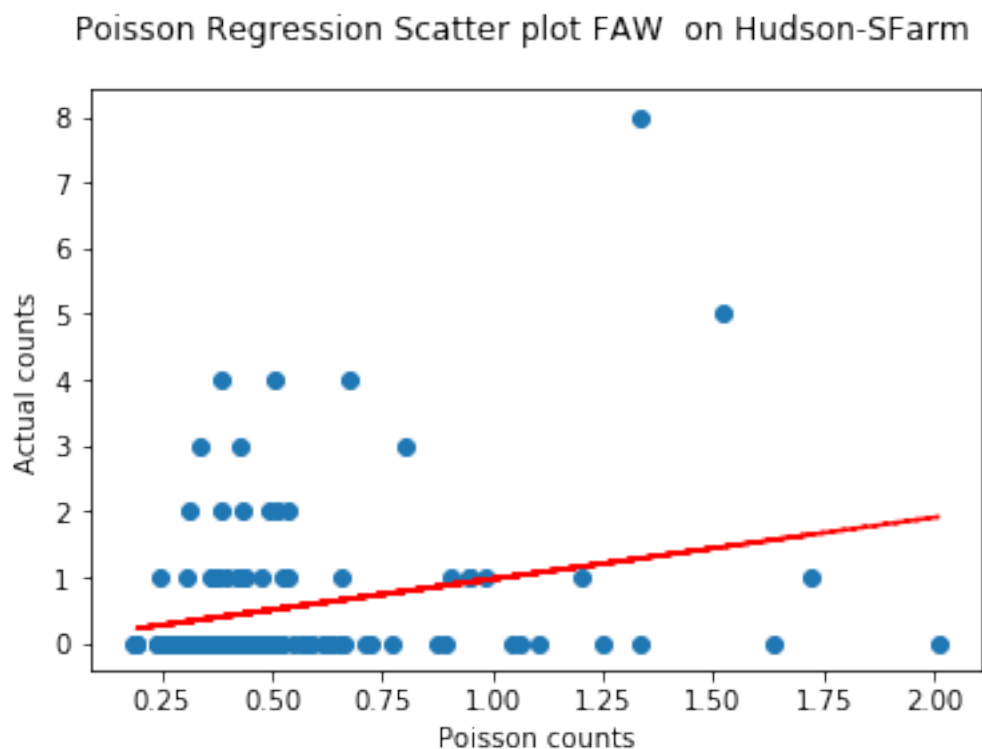


256	0.462710	0.069276	0.345040	0.620511
270	0.533675	0.086001	0.389141	0.731891
284	0.444128	0.147097	0.232053	0.850020
298	0.800765	0.165411	0.534165	1.200423
312	0.323715	0.063343	0.220599	0.475032
326	0.486028	0.070850	0.365240	0.646761
340	0.459649	0.088336	0.315385	0.669903
353	0.349545	0.084194	0.218010	0.560442
375	0.451542	0.139996	0.245919	0.829095
389	0.547236	0.122768	0.352545	0.849446
403	0.421794	0.078332	0.293105	0.606987
417	0.190765	0.060916	0.102021	0.356705
432	0.238216	0.066099	0.138289	0.410353
447	0.193782	0.059689	0.105956	0.354408
462	0.288755	0.066151	0.184301	0.452408
477	0.612868	0.089362	0.460524	0.815606
492	0.519676	0.113398	0.338839	0.797025
507	0.315533	0.088193	0.182444	0.545708
522	0.306566	0.063363	0.204453	0.459680
537	0.424896	0.095218	0.273861	0.659227
552	0.252393	0.060412	0.157883	0.403477
567	0.319606	0.064380	0.215353	0.474327
581	1.064546	0.269757	0.647842	1.749281
605	0.379664	0.068116	0.267107	0.539653
618	0.710443	0.102081	0.536072	0.941532
634	0.253498	0.064593	0.153845	0.417703
650	0.290098	0.074120	0.175817	0.478661
...	...	...	...	...
1897	0.512735	0.147249	0.292040	0.900210
1915	0.487721	0.075683	0.359819	0.661088
1931	0.317814	0.087208	0.185612	0.544179
1945	0.654945	0.143555	0.426220	1.006414
1957	0.472960	0.100620	0.311698	0.717653
1979	0.450013	0.076303	0.322773	0.627411
2007	0.315433	0.069102	0.205321	0.484597
2036	0.365054	0.127604	0.184001	0.724259
2066	0.437973	0.119543	0.256517	0.747789
2097	0.494516	0.123724	0.302843	0.807502
2128	0.628705	0.106271	0.451406	0.875643
2157	0.533316	0.099623	0.369811	0.769111
2184	0.320640	0.111605	0.162084	0.634300
2209	0.424251	0.099247	0.268223	0.671041
2233	0.495380	0.138839	0.286006	0.858029
2254	0.271552	0.059708	0.176479	0.417842
2300	0.404299	0.168218	0.178871	0.913828
2322	0.436261	0.182020	0.192576	0.988303
2347	0.364867	0.144867	0.167561	0.794506
2374	0.368245	0.143511	0.171558	0.790429

2401	0.425711	0.179884	0.185969	0.974517
2428	0.373346	0.148708	0.171028	0.814996
2457	0.374015	0.148521	0.171742	0.814516
2486	0.378265	0.154899	0.169524	0.844039
2513	0.426547	0.180036	0.186506	0.975531
2541	0.346217	0.146640	0.150946	0.794097
2567	0.394513	0.161902	0.176499	0.881821
2589	0.430334	0.184912	0.185375	0.998991
2609	0.323484	0.138403	0.139851	0.748240
2626	0.356922	0.144100	0.161777	0.787461

[124 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



Generalized Linear Model Regression Results			
=====			
Dep. Variable:	trap_count	No. Observations:	124
Model:	GLM	Df Residuals:	119
Model Family:	NegativeBinomial	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -115.25  
Date: Fri, 08 May 2020 Deviance: 104.35  
Time: 08:05:27 Pearson chi2: 142.  
No. Iterations: 7 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	0.2767	1.204	0.230	0.818	-2.083	2.636
tempf	0.0599	0.184	0.325	0.745	-0.301	0.421
dwpf	-0.2120	0.069	-3.085	0.002	-0.347	-0.077
drct	-0.0087	0.007	-1.172	0.241	-0.023	0.006
feel	0.1247	0.175	0.712	0.477	-0.219	0.468

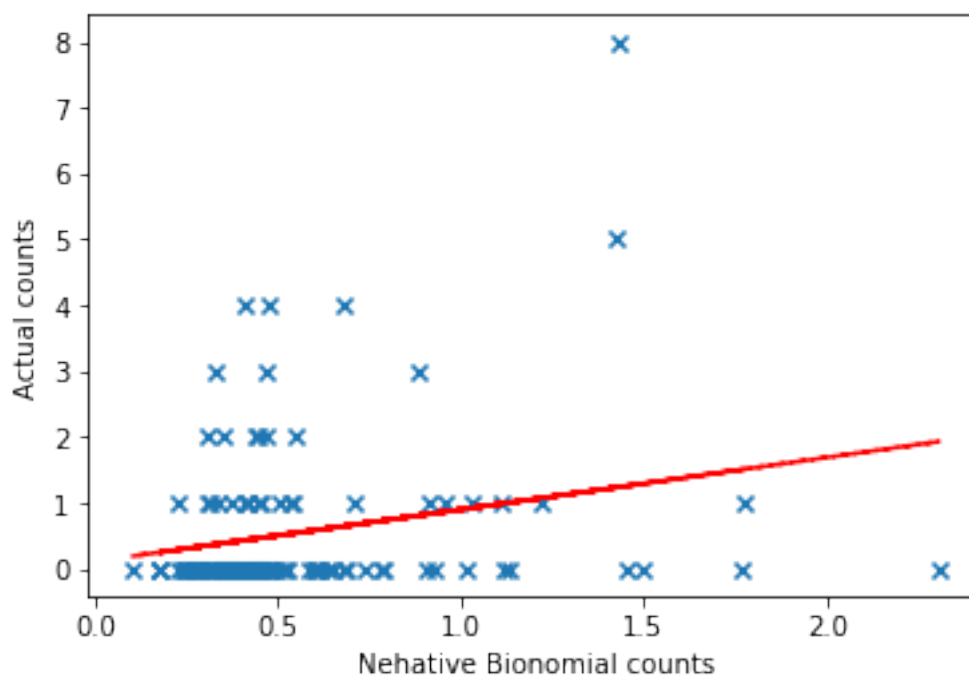
	mean	mean_se	mean_ci_lower	mean_ci_upper
214	0.474564	0.162574	0.242490	0.928744
228	0.678373	0.167578	0.418020	1.100880
242	0.306658	0.084439	0.178762	0.526061
256	0.456296	0.086540	0.314638	0.661733
270	0.544691	0.116226	0.358527	0.827521
284	0.385865	0.172773	0.160437	0.928037
298	0.887430	0.259912	0.499842	1.575561
312	0.320927	0.079551	0.197428	0.521677
326	0.475480	0.091482	0.326108	0.693269
340	0.432519	0.109400	0.263455	0.710077
353	0.366135	0.114524	0.198332	0.675911
375	0.509366	0.208660	0.228212	1.136900
389	0.604654	0.178171	0.339380	1.077276
403	0.413566	0.096664	0.261572	0.653879
417	0.178658	0.074616	0.078799	0.405064
432	0.227359	0.081151	0.112952	0.457647
447	0.177954	0.072048	0.080479	0.393487
462	0.273526	0.079899	0.154296	0.484887
477	0.637897	0.126887	0.431952	0.942034
492	0.481466	0.142497	0.269550	0.859985
507	0.286307	0.105128	0.139406	0.588006
522	0.300570	0.078733	0.179877	0.502245
537	0.383692	0.114641	0.213628	0.689140
552	0.244694	0.075927	0.133200	0.449515
567	0.318001	0.081661	0.192240	0.526032
581	1.014148	0.380878	0.485758	2.117300
605	0.361303	0.082413	0.231053	0.564976
618	0.741425	0.153555	0.494057	1.112647
634	0.247800	0.080912	0.130667	0.469934
650	0.288734	0.093415	0.153146	0.544365
...	...	...	...	...
1897	0.449461	0.176081	0.208557	0.968634
1915	0.462739	0.095844	0.308342	0.694449
1931	0.274436	0.100390	0.133989	0.562100

1945	0.707781	0.212051	0.393441	1.273263
1957	0.508375	0.138755	0.297754	0.867981
1979	0.442583	0.094578	0.291137	0.672811
2007	0.309859	0.086129	0.179705	0.534276
2036	0.314278	0.147230	0.125473	0.787187
2066	0.414353	0.155729	0.198362	0.865531
2097	0.447740	0.151854	0.230322	0.870397
2128	0.604811	0.143795	0.379529	0.963816
2157	0.549598	0.133968	0.340847	0.886198
2184	0.270023	0.126068	0.108142	0.674232
2209	0.376448	0.118293	0.203342	0.696920
2233	0.432323	0.165242	0.204391	0.914437
2254	0.255807	0.072724	0.146528	0.446584
2300	0.395348	0.206321	0.142155	1.099506
2322	0.440101	0.229924	0.158072	1.225322
2347	0.355188	0.176728	0.133947	0.941852
2374	0.370870	0.181079	0.142436	0.965661
2401	0.451337	0.241083	0.158427	1.285796
2428	0.366234	0.182725	0.137743	0.973754
2457	0.374379	0.186116	0.141303	0.991910
2486	0.370516	0.189936	0.135662	1.011941
2513	0.435564	0.230257	0.154551	1.227531
2541	0.324842	0.173539	0.114009	0.925560
2567	0.408245	0.210632	0.148507	1.122261
2589	0.452562	0.245172	0.156511	1.308612
2609	0.296581	0.160636	0.102591	0.857387
2626	0.350020	0.176980	0.129928	0.942943

[124 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot FAW on Hudson-SFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          55
Model:                  GLM          Df Residuals:              50
Model Family:           Poisson      Df Model:                  4
Link Function:           log         Scale:                    1.0000
Method:                  IRLS        Log-Likelihood:          -60.862
Date:                   Fri, 08 May 2020    Deviance:                89.568
Time:                   08:05:27          Pearson chi2:            128.
No. Iterations:         6              Covariance Type:        nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-2.1420	1.576	-1.359	0.174	-5.232	0.947
tempf	0.0721	0.140	0.516	0.606	-0.202	0.346
dwpf	-0.1358	0.071	-1.914	0.056	-0.275	0.003
drct	0.0018	0.009	0.200	0.842	-0.015	0.019
feel	0.0645	0.125	0.516	0.606	-0.181	0.310

```

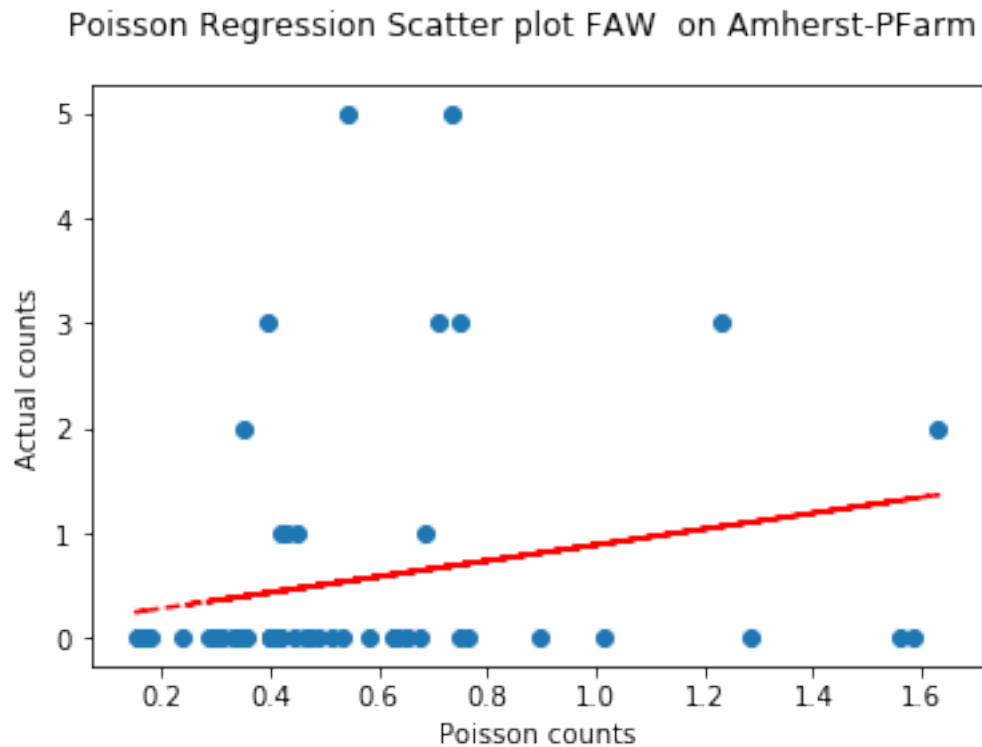
=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
851    0.685499    0.236613    0.348497    1.348388
871    0.421382    0.172581    0.188825    0.940357
892    0.475521    0.133074    0.274765    0.822959

```

914	1.631295	0.792811	0.629285	4.228801
936	0.763331	0.377711	0.289416	2.013278
958	0.748609	0.150927	0.504247	1.111389
980	0.732129	0.150051	0.489927	1.094064
1002	0.540413	0.154581	0.308493	0.946686
1023	1.230296	0.363018	0.690000	2.193665
1044	0.710381	0.213300	0.394374	1.279599
1065	0.392594	0.102983	0.234780	0.656487
1084	0.896751	0.234133	0.537565	1.495934
1131	0.239146	0.455706	0.005710	10.015514
1149	1.287478	0.410564	0.689129	2.405357
1169	1.582981	0.605597	0.747883	3.350563
1191	0.513486	0.151731	0.287743	0.916331
1214	0.413924	0.116683	0.238216	0.719233
1239	0.352225	0.108004	0.193114	0.642432
1264	0.295063	0.105308	0.146595	0.593895
1288	0.339647	0.114130	0.175794	0.656224
1313	0.430776	0.108368	0.263100	0.705315
1339	0.286030	0.123122	0.123030	0.664985
1436	1.560131	0.535249	0.796401	3.056263
1453	0.652552	0.154211	0.410639	1.036980
1472	0.400801	0.132515	0.209652	0.766227
1492	0.331224	0.121241	0.161639	0.678729
1515	0.355877	0.125120	0.178663	0.708870
1538	0.399988	0.120166	0.221985	0.720724
1558	0.629063	0.123967	0.427514	0.925631
1578	0.650178	0.249718	0.306271	1.380253
1679	0.299822	0.116298	0.140182	0.641264
1696	0.748334	0.265433	0.373401	1.499739
1715	0.297661	0.112409	0.141995	0.623979
1734	0.444654	0.105641	0.279121	0.708354
1755	0.627565	0.119114	0.432611	0.910373
1776	0.675819	0.198243	0.380313	1.200936
1797	1.016606	0.288393	0.583018	1.772651
1817	0.349167	0.139537	0.159540	0.764182
1837	0.447251	0.123814	0.259963	0.769471
1952	0.419010	0.137996	0.219731	0.799019
1974	0.465076	0.119951	0.280534	0.771016
2002	0.309236	0.103206	0.160770	0.594806
2031	0.532126	0.297500	0.177879	1.591853
2061	0.399450	0.129565	0.211528	0.754323
2092	0.582322	0.232978	0.265834	1.275605
2123	0.630513	0.142765	0.404537	0.982719
2153	0.488334	0.134622	0.284486	0.838249
2296	0.179195	0.153277	0.033515	0.958109
2318	0.170602	0.147644	0.031285	0.930329
2343	0.166767	0.137437	0.033160	0.838704
2369	0.159822	0.127986	0.033265	0.767862

2396	0.152097	0.129868	0.028532	0.810804
2423	0.167633	0.138271	0.033285	0.844242
2452	0.158819	0.130552	0.031710	0.795433
2481	0.163349	0.139209	0.030740	0.868017

<Figure size 432x288 with 0 Axes>



#### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          55
Model:                  GLM           Df Residuals:              50
Model Family:          NegativeBinomial Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                IRLS          Log-Likelihood:            -47.677
Date:                  Fri, 08 May 2020 Deviance:                  35.159
Time:                  08:05:28       Pearson chi2:              51.3
No. Iterations:        12            Covariance Type:          nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-1.8081	2.662	-0.679	0.497	-7.025	3.409

tempf	0.1055	0.250	0.422	0.673	-0.384	0.595
dwpf	-0.2450	0.125	-1.956	0.050	-0.491	0.000
drct	-0.0063	0.016	-0.407	0.684	-0.037	0.024
feel	0.1329	0.227	0.587	0.558	-0.311	0.577

=====

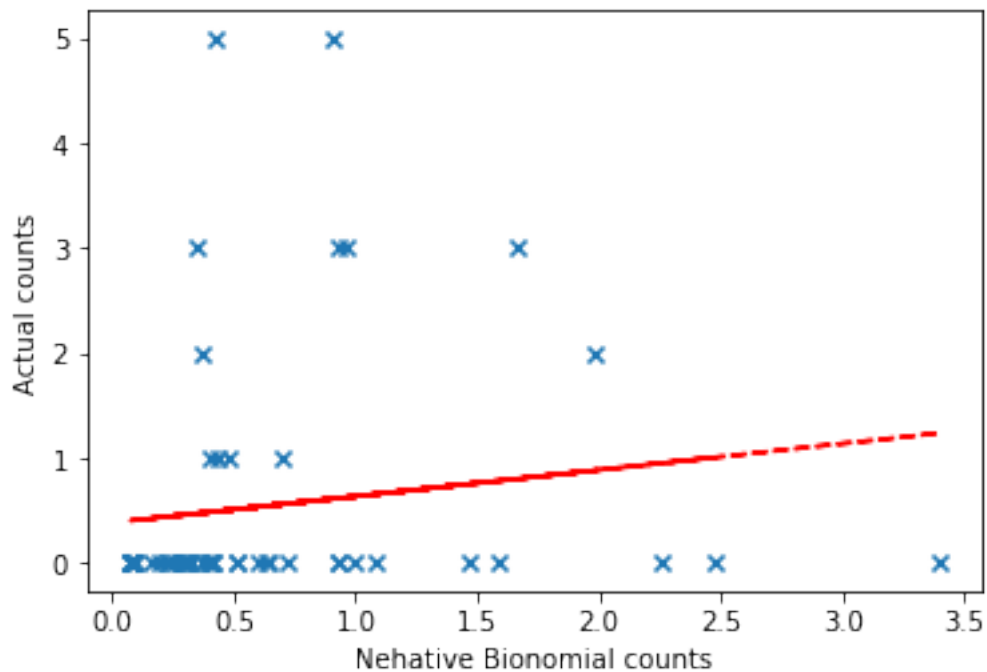
	mean	mean_se	mean_ci_lower	mean_ci_upper
851	0.700056	0.412604	0.220519	2.222388
871	0.510461	0.346925	0.134728	1.934043
892	0.414255	0.185664	0.172096	0.997161
914	1.987680	1.924675	0.297938	13.260716
936	1.467298	1.265503	0.270633	7.955278
958	0.932845	0.346668	0.450279	1.932578
980	0.901962	0.337972	0.432750	1.879921
1002	0.428167	0.216423	0.158987	1.153097
1023	1.664722	0.996600	0.514948	5.381714
1044	0.966053	0.510095	0.343203	2.719267
1065	0.351465	0.146134	0.155584	0.793960
1084	1.080971	0.556693	0.393959	2.966040
1131	0.090507	0.312109	0.000105	77.985865
1149	2.253943	1.405484	0.663991	7.651100
1169	3.395945	2.498451	0.803005	14.361616
1191	0.403363	0.204743	0.149154	1.090830
1214	0.368498	0.162848	0.154978	0.876194
1239	0.290879	0.141238	0.112307	0.753387
1264	0.222879	0.128146	0.072222	0.687817
1288	0.265342	0.142101	0.092887	0.757980
1313	0.403191	0.158707	0.186404	0.872101
1339	0.159709	0.114882	0.038998	0.654061
1436	2.478209	1.754042	0.618969	9.922166
1453	0.717023	0.286253	0.327878	1.568027
1472	0.297881	0.160223	0.103801	0.854838
1492	0.285484	0.167947	0.090122	0.904344
1515	0.298799	0.167231	0.099766	0.894903
1538	0.320164	0.153104	0.125407	0.817377
1558	0.629020	0.219768	0.317154	1.247552
1578	0.996837	0.659595	0.272517	3.646315
1679	0.236661	0.148321	0.069288	0.808338
1696	0.932965	0.569676	0.281913	3.087562
1715	0.195431	0.120138	0.058578	0.652011
1734	0.389927	0.146153	0.187040	0.812888
1755	0.642629	0.215492	0.333064	1.239918
1776	0.931491	0.474039	0.343557	2.525563
1797	1.585656	0.858143	0.548967	4.580067
1817	0.364487	0.240369	0.100078	1.327471
1837	0.478051	0.213925	0.198868	1.149165
1952	0.438096	0.231754	0.155340	1.235540
1974	0.402428	0.165698	0.179560	0.901918
2002	0.230128	0.123523	0.080368	0.658959



2031	0.309382	0.306842	0.044288	2.161261
2061	0.329746	0.182478	0.111463	0.975498
2092	0.412058	0.298082	0.099816	1.701043
2123	0.602552	0.246397	0.270345	1.342980
2153	0.516067	0.226924	0.217980	1.221784
2296	0.083579	0.114718	0.005672	1.231482
2318	0.088282	0.121971	0.005886	1.324038
2343	0.075964	0.100417	0.005694	1.013484
2369	0.079293	0.101576	0.006439	0.976438
2396	0.089285	0.122204	0.006106	1.305630
2423	0.078065	0.103191	0.005852	1.041439
2452	0.077633	0.102040	0.005905	1.020604
2481	0.075327	0.102799	0.005192	1.092911

<Figure size 432x288 with 0 Axes>

Negative Binomial Regression Scatter plot FAW on Amherst-PFarm



# Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	77
Model:	GLM	Df Residuals:	72
Model Family:	Poisson	Df Model:	4

Link Function: log Scale: 1.0000  
 Method: IRLS Log-Likelihood: -250.67  
 Date: Fri, 08 May 2020 Deviance: 403.69  
 Time: 08:05:28 Pearson chi2: 508.  
 No. Iterations: 6 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	1.4520	0.527	2.753	0.006	0.418	2.486
tempf	-0.0196	0.067	-0.292	0.770	-0.151	0.112
dwpf	-0.0125	0.041	-0.308	0.758	-0.092	0.067
drct	0.0036	0.004	1.003	0.316	-0.003	0.011
feel	0.0087	0.058	0.149	0.881	-0.105	0.123

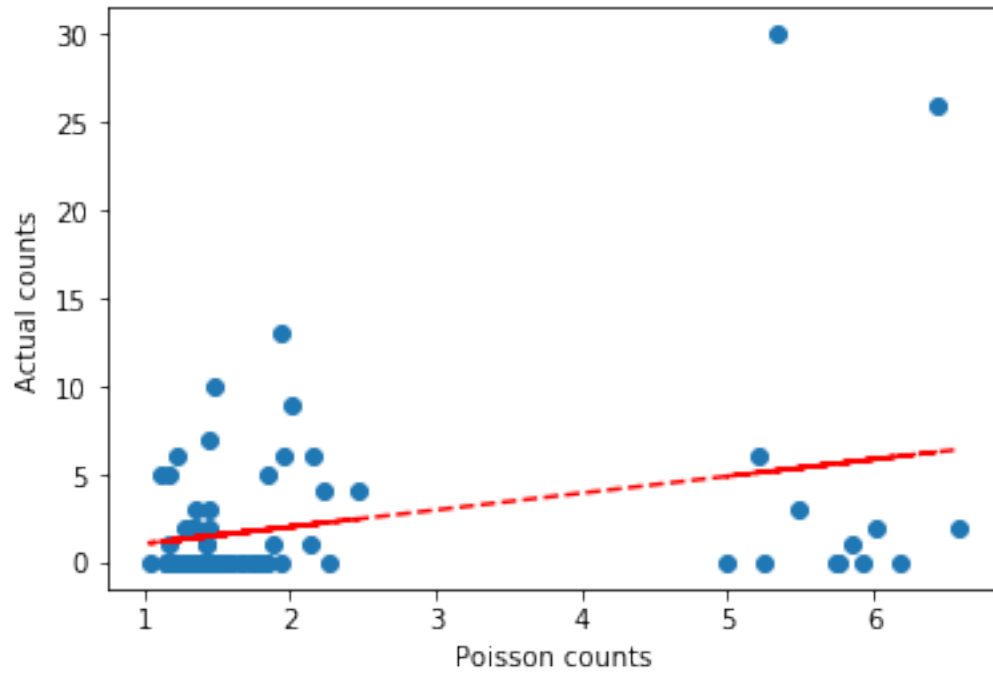
	mean	mean_se	mean_ci_lower	mean_ci_upper
859	1.223508	0.199309	0.889092	1.683709
879	1.034447	0.204588	0.702041	1.524245
900	1.291106	0.166180	1.003235	1.661580
922	1.934607	0.569128	1.086886	3.443511
944	1.148718	0.302616	0.685448	1.925096
966	1.436645	0.215160	1.071194	1.926772
988	1.435824	0.213591	1.072699	1.921873
1010	1.659783	0.197837	1.313992	2.096574
1031	1.429571	0.294519	0.954644	2.140768
1052	1.615311	0.299745	1.122802	2.323856
1073	1.744899	0.183024	1.420650	2.143154
1092	1.830775	0.338498	1.274246	2.630368
1108	1.683512	0.305949	1.179032	2.403849
1147	1.212537	1.054616	0.220472	6.668623
1166	1.383552	0.343140	0.850914	2.249599
1188	1.210362	0.340445	0.697418	2.100569
1211	1.510051	0.185662	1.186685	1.921532
1236	1.260463	0.171332	0.965669	1.645251
1261	1.286214	0.189188	0.964076	1.715993
1285	1.276353	0.222660	0.906732	1.796648
1310	1.259839	0.202888	0.918830	1.727407
1336	1.366740	0.170629	1.070085	1.745634
1361	1.579579	0.299352	1.089499	2.290108
1381	1.782850	0.182010	1.459541	2.177777
1401	1.210438	0.299627	0.745143	1.966282
1450	1.560482	0.412477	0.929530	2.619716
1469	1.296300	0.173119	0.997767	1.684155
1489	1.358852	0.197847	1.021499	1.807615
1512	1.159888	0.209338	0.814311	1.652121
1535	1.164381	0.198241	0.834016	1.625610
...	...	...	...	...
1873	1.249166	0.233774	0.865611	1.802675
1891	1.890577	0.199472	1.537395	2.324896

1909	2.469301	0.450239	1.727311	3.530021
1926	1.951306	0.185238	1.620020	2.350338
1940	2.268522	0.376776	1.638204	3.141362
1970	1.148043	0.188197	0.832573	1.583048
1992	1.326838	0.157441	1.051514	1.674251
2020	1.315399	0.208551	0.964057	1.794784
2049	1.746484	0.380714	1.139232	2.677423
2080	1.419535	0.207720	1.065591	1.891045
2111	1.841884	0.292444	1.349315	2.514266
2142	1.460909	0.175418	1.154558	1.848548
2170	1.166669	0.160941	0.890277	1.528870
2196	2.142327	0.468235	1.395866	3.287969
2221	2.225813	0.312109	1.690951	2.929855
2245	2.149488	0.384812	1.513383	3.052960
2264	1.761020	0.265393	1.310644	2.366158
2313	6.180565	0.750511	4.871538	7.841340
2335	5.930927	0.737774	4.647698	7.568455
2361	5.762826	0.659588	4.604799	7.212078
2388	5.240373	0.590823	4.201399	6.536279
2415	4.995039	0.753278	3.716835	6.712811
2443	5.736841	0.651828	4.591536	7.167828
2472	5.487681	0.625688	4.388717	6.861833
2500	6.017093	0.704971	4.782542	7.570327
2528	5.848416	0.728227	4.581938	7.464956
2555	6.447654	0.881952	4.931385	8.430135
2579	5.217301	0.688469	4.028304	6.757243
2601	5.337163	0.780917	4.006502	7.109772
2620	6.585828	0.976598	4.924788	8.807105

[77 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

# Poisson Regression Scatter plot FAW on Concord-AFarm



## Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          77
Model:                  GLM           Df Residuals:              72
Model Family:          NegativeBinomial Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                 IRLS          Log-Likelihood:            -184.88
Date:                   Fri, 08 May 2020 Deviance:                  251.20
Time:                   08:05:28       Pearson chi2:              310.
No. Iterations:         6              Covariance Type:          nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	1.4164	0.658	2.152	0.031	0.127	2.706
tempf	-0.0329	0.080	-0.410	0.682	-0.190	0.124
dwpf	-0.0108	0.047	-0.227	0.820	-0.104	0.082
drct	0.0042	0.004	0.938	0.348	-0.005	0.013
feel	0.0200	0.070	0.286	0.775	-0.117	0.157

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
859    1.227832    0.236068      0.842332      1.789757
879    1.002450    0.233380      0.635178      1.582087
900    1.278932    0.190372      0.955309      1.712185

```

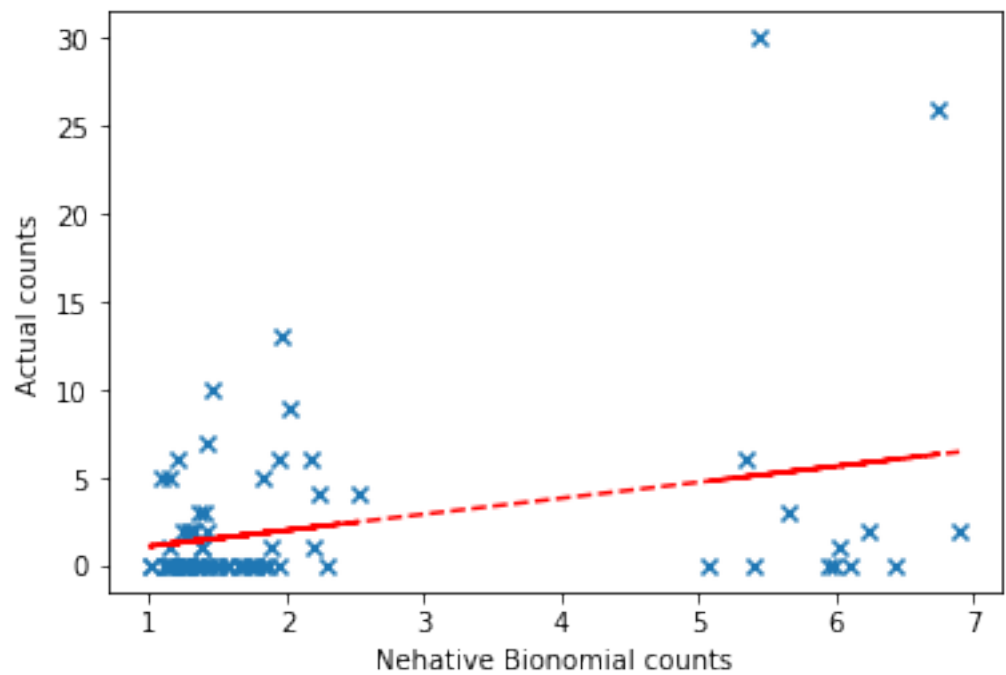
922	1.947477	0.673469	0.988811	3.835585
944	1.106063	0.347754	0.597249	2.048349
966	1.410884	0.245920	1.002594	1.985444
988	1.407530	0.243955	1.002135	1.976920
1010	1.658616	0.235315	1.255979	2.190329
1031	1.427003	0.343757	0.889970	2.288097
1052	1.580211	0.345384	1.029602	2.425273
1073	1.721168	0.212673	1.350971	2.192807
1092	1.817768	0.391521	1.191796	2.772523
1108	1.690690	0.364959	1.107441	2.581116
1147	1.007271	1.057567	0.128659	7.885894
1166	1.353821	0.391322	0.768283	2.385620
1188	1.189536	0.390678	0.624911	2.264314
1211	1.504337	0.218894	1.131066	2.000793
1236	1.241304	0.193871	0.913976	1.685860
1261	1.263776	0.213613	0.907389	1.760137
1285	1.255178	0.251750	0.847189	1.859647
1310	1.242417	0.229972	0.864390	1.785768
1336	1.349561	0.193779	1.018525	1.788190
1361	1.582338	0.351205	1.024171	2.444703
1381	1.774226	0.214673	1.399645	2.249055
1401	1.174665	0.338113	0.668199	2.065009
1450	1.548876	0.476237	0.847804	2.829682
1469	1.288187	0.199745	0.950589	1.745682
1489	1.350641	0.228579	0.969359	1.881894
1512	1.139423	0.236961	0.757992	1.712796
1535	1.146285	0.224568	0.780789	1.682872
...	...	...	...	...
1873	1.218944	0.266261	0.794421	1.870324
1891	1.887215	0.237987	1.473942	2.416363
1909	2.515500	0.561547	1.624077	3.896207
1926	1.941558	0.220133	1.554681	2.424708
1940	2.291122	0.464453	1.539905	3.408807
1970	1.125647	0.214070	0.775399	1.634102
1992	1.308596	0.179172	1.000597	1.711401
2020	1.290023	0.235384	0.902159	1.844641
2049	1.776049	0.472423	1.054479	2.991382
2080	1.369729	0.237904	0.974522	1.925206
2111	1.859780	0.358417	1.274729	2.713346
2142	1.435906	0.202144	1.089671	1.892154
2170	1.133571	0.182145	0.827324	1.553179
2196	2.186492	0.584563	1.294725	3.692480
2221	2.240177	0.384321	1.600485	3.135544
2245	2.175295	0.475412	1.417384	3.338481
2264	1.749675	0.306500	1.241217	2.466419
2313	6.434447	1.144499	4.540540	9.118324
2335	6.108905	1.111230	4.276879	8.725689
2361	5.973760	1.008648	4.290674	8.317064

2388	5.402410	0.893982	3.905998	7.472106
2415	5.077529	1.055871	3.377888	7.632372
2443	5.944615	0.999732	4.275366	8.265594
2472	5.656988	0.953144	4.065993	7.870528
2500	6.231727	1.082485	4.433533	8.759248
2528	6.030684	1.099223	4.219068	8.620185
2555	6.746080	1.306515	4.615292	9.860612
2579	5.333167	1.001208	3.691366	7.705188
2601	5.443482	1.114196	3.644594	8.130260
2620	6.897099	1.419297	4.607917	10.323531

[77 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

Negative Binomial Regression Scatter plot FAW on Concord-AFarm



Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	73
Model:	GLM	Df Residuals:	68
Model Family:	Poisson	Df Model:	4
Link Function:	log	Scale:	1.0000

Method: IRLS Log-Likelihood: -50.659  
Date: Fri, 08 May 2020 Deviance: 69.729  
Time: 08:05:29 Pearson chi2: 115.  
No. Iterations: 6 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	0.1524	1.477	0.103	0.918	-2.742	3.047
tempf	-0.4336	0.510	-0.850	0.395	-1.433	0.566
dwpf	-0.0162	0.106	-0.153	0.878	-0.223	0.191
drct	-0.0036	0.010	-0.348	0.728	-0.024	0.017
feel	0.4278	0.492	0.869	0.385	-0.537	1.393

	mean	mean_se	mean_ci_lower	mean_ci_upper
864	0.308205	0.221167	0.075513	1.257938
885	0.276795	0.134448	0.106832	0.717158
906	0.222704	0.075137	0.114959	0.431431
928	0.158525	0.130004	0.031772	0.790961
950	0.294052	0.195795	0.079735	1.084425
972	0.208607	0.084556	0.094256	0.461690
994	0.197447	0.085217	0.084737	0.460071
1015	0.194244	0.070239	0.095621	0.394588
1036	0.228870	0.134909	0.072085	0.726665
1057	0.232308	0.120872	0.083787	0.644097
1076	0.245352	0.078147	0.131424	0.458042
1094	0.209690	0.108534	0.076033	0.578298
1110	0.186982	0.097076	0.067589	0.517272
1167	0.203581	0.131989	0.057131	0.725441
1189	0.291288	0.228776	0.062488	1.357848
1212	0.187597	0.067975	0.092214	0.381642
1237	0.230861	0.076251	0.120839	0.441057
1262	0.220895	0.080550	0.108092	0.451417
1286	0.232166	0.099501	0.100229	0.537779
1311	0.230743	0.091703	0.105887	0.502824
1337	0.262529	0.081562	0.142800	0.482642
1362	0.214151	0.108485	0.079344	0.577995
1382	0.187012	0.073508	0.086555	0.404061
1402	0.243887	0.156032	0.069601	0.854602
1420	0.211982	0.126585	0.065766	0.683275
1430	0.179694	0.110797	0.053665	0.601690
1451	0.199714	0.138826	0.051135	0.780009
1470	0.278124	0.126536	0.114018	0.678428
1490	0.213693	0.082016	0.100715	0.453403
1513	0.265244	0.120959	0.108511	0.648364
...	...	...	...	...
1795	0.227427	0.110885	0.087463	0.591368
1815	0.208262	0.119894	0.067388	0.643632
1835	0.282374	0.133938	0.111449	0.715439

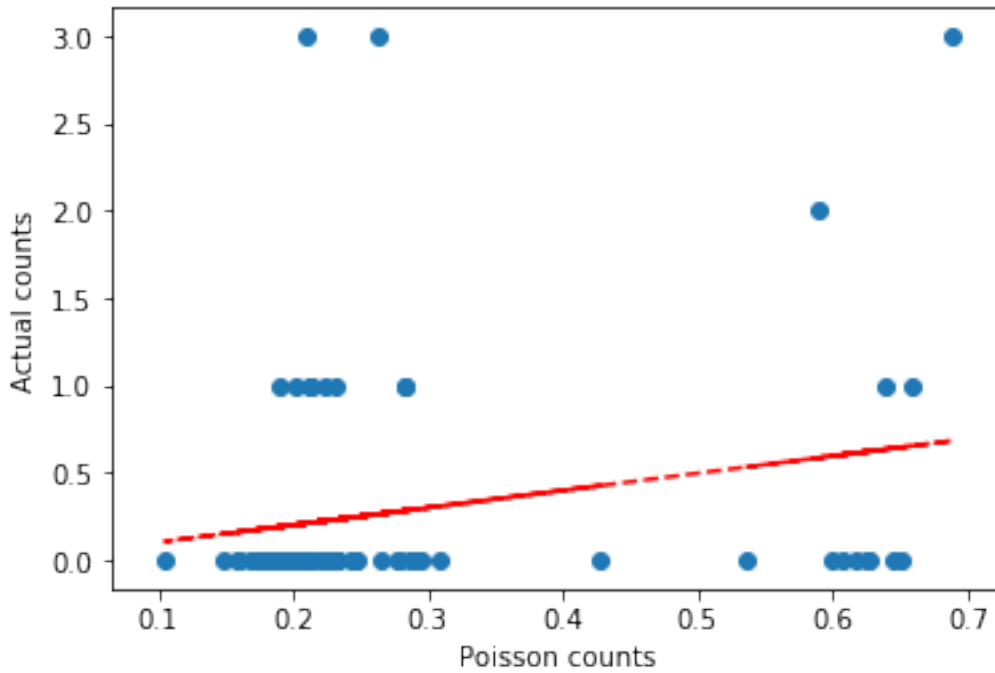
1855	0.229808	0.085335	0.110990	0.475821
1874	0.282844	0.127742	0.116712	0.685456
1892	0.190159	0.076190	0.086711	0.417024
1910	0.188555	0.108544	0.061015	0.582698
1971	0.286673	0.124593	0.122303	0.671946
1993	0.195225	0.062907	0.103814	0.367127
2021	0.193365	0.087677	0.079509	0.470259
2050	0.173412	0.111065	0.049421	0.608478
2081	0.104582	0.106228	0.014284	0.765696
2112	0.188392	0.089942	0.073906	0.480220
2143	0.147354	0.077715	0.052413	0.414274
2171	0.182145	0.076577	0.079902	0.415220
2197	0.173584	0.113552	0.048160	0.625652
2222	0.168493	0.094874	0.055885	0.508010
2246	0.161063	0.096542	0.049748	0.521449
2336	0.624563	0.240204	0.293906	1.327224
2362	0.598417	0.222723	0.288534	1.241110
2389	0.650687	0.241186	0.314676	1.345492
2416	0.645341	0.282393	0.273725	1.521473
2444	0.617323	0.230410	0.297036	1.282967
2473	0.627452	0.226456	0.309293	1.272890
2501	0.607243	0.227279	0.291591	1.264592
2529	0.688870	0.269293	0.320174	1.482137
2556	0.589837	0.261419	0.247443	1.406012
2580	0.638230	0.250212	0.295986	1.376203
2602	0.658359	0.283140	0.283392	1.529460
2621	0.535400	0.248722	0.215401	1.330784

[73 rows x 4 columns]

<Figure size 432x288 with 0 Axes>



Poisson Regression Scatter plot FAW on Weare-IFarm



#### Generalized Linear Model Regression Results

```
=====
Dep. Variable:          trap_count    No. Observations:          73
Model:                  GLM           Df Residuals:              68
Model Family:          NegativeBinomial Df Model:                  4
Link Function:         log           Scale:                    1.0000
Method:                IRLS          Log-Likelihood:           -56.326
Date:                  Fri, 08 May 2020 Deviance:                 13.058
Time:                  08:05:29        Pearson chi2:              17.2
No. Iterations:        27             Covariance Type:         nonrobust
=====
```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-0.0731	4.056	-0.018	0.986	-8.024	7.877
tempf	-0.9489	1.370	-0.693	0.488	-3.633	1.736
dwpf	-0.0346	0.260	-0.133	0.894	-0.545	0.475
drct	-0.0017	0.027	-0.062	0.950	-0.054	0.051
feel	0.9580	1.326	0.723	0.470	-1.641	3.557

```
=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
864    0.623784    1.228901      0.013125      29.645875
885    0.315021    0.401824      0.025858       3.837841
906    0.246755    0.212642      0.045576       1.335962
=====
```

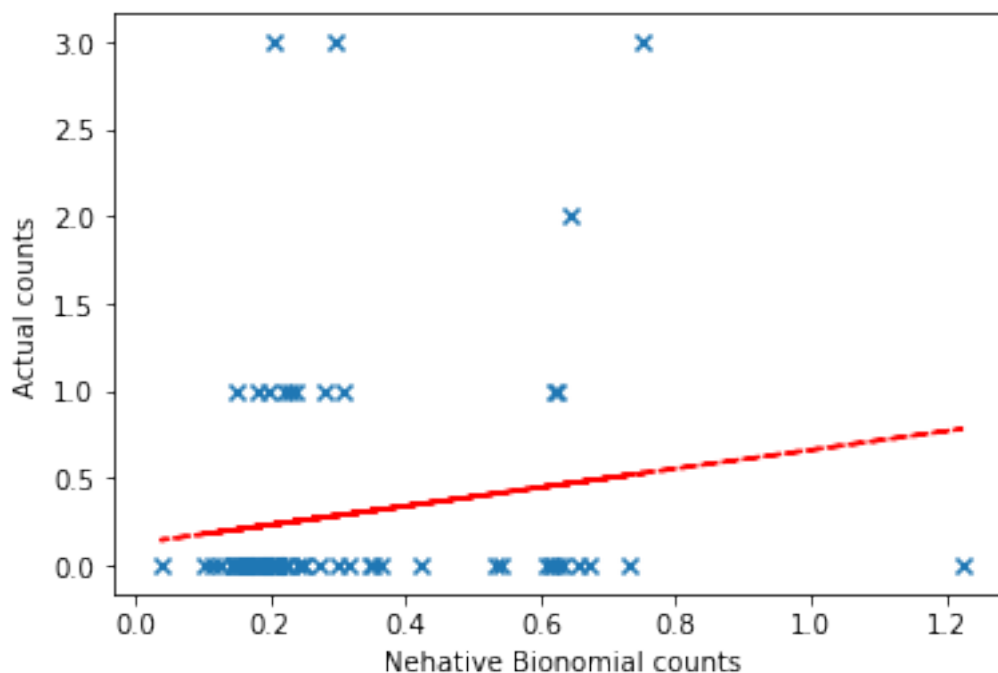
928	0.168256	0.329009	0.003644	7.769927
950	0.350697	0.600524	0.012228	10.057845
972	0.202593	0.198666	0.029643	1.384604
994	0.177466	0.186001	0.022750	1.384369
1015	0.183004	0.155549	0.034590	0.968196
1036	0.348181	0.521536	0.018484	6.558577
1057	0.209882	0.272676	0.016448	2.678210
1076	0.206498	0.169355	0.041383	1.030412
1094	0.205783	0.253091	0.018473	2.292417
1110	0.156429	0.196658	0.013311	1.838333
1167	0.221614	0.348357	0.010176	4.826254
1189	0.539331	1.083700	0.010508	27.682763
1212	0.174986	0.150389	0.032468	0.943093
1237	0.238469	0.200125	0.046036	1.235283
1262	0.200111	0.182136	0.033614	1.191279
1286	0.212438	0.227172	0.026121	1.727712
1311	0.229661	0.229037	0.032523	1.621726
1337	0.297153	0.241925	0.060253	1.465484
1362	0.196885	0.244453	0.017273	2.244229
1382	0.146573	0.136694	0.023563	0.911765
1402	0.180139	0.292733	0.007454	4.353570
1420	0.180212	0.263108	0.010305	3.151618
1430	0.159481	0.238623	0.008494	2.994463
1451	0.249461	0.417552	0.009381	6.633722
1470	0.424061	0.524675	0.037520	4.792786
1490	0.218997	0.209196	0.033677	1.424114
1513	0.299002	0.351457	0.029864	2.993683
...	...	...	...	...
1795	0.207996	0.255398	0.018744	2.308040
1815	0.207960	0.291272	0.013359	3.237302
1835	0.309550	0.382432	0.027486	3.486133
1855	0.201192	0.192215	0.030931	1.308673
1874	0.281456	0.328847	0.028503	2.779297
1892	0.151016	0.143219	0.023538	0.968900
1910	0.164750	0.228990	0.010807	2.511478
1971	0.362496	0.418330	0.037757	3.480259
1993	0.177036	0.138081	0.038385	0.816513
2021	0.144280	0.162861	0.015790	1.318350
2050	0.180467	0.287936	0.007912	4.116175
2081	0.037461	0.099738	0.000203	6.915758
2112	0.187343	0.216029	0.019548	1.795453
2143	0.101290	0.130668	0.008081	1.269539
2171	0.142645	0.152923	0.017447	1.166247
2197	0.151240	0.242180	0.006556	3.488952
2222	0.115095	0.156898	0.007956	1.665013
2246	0.127203	0.182319	0.007664	2.111135
2336	0.616425	0.890153	0.036366	10.448736
2362	0.632594	0.874922	0.042058	9.514742

2389	0.730457	1.010277	0.048565	10.986769
2416	0.607307	0.927480	0.030440	12.116156
2444	0.670020	0.933822	0.043626	10.290276
2473	0.656146	0.900744	0.044513	9.671910
2501	0.616191	0.868711	0.038876	9.766684
2529	0.751322	1.107826	0.041757	13.518388
2556	0.642822	0.984145	0.031983	12.919934
2580	0.618590	0.889981	0.036877	10.376432
2602	0.625993	0.959632	0.031024	12.631065
2621	0.531907	0.823121	0.025622	11.042371

[73 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

Negative Binomial Regression Scatter plot FAW on Weare-IFarm



Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	53
Model:	GLM	Df Residuals:	48
Model Family:	Poisson	Df Model:	4
Link Function:	log	Scale:	1.0000

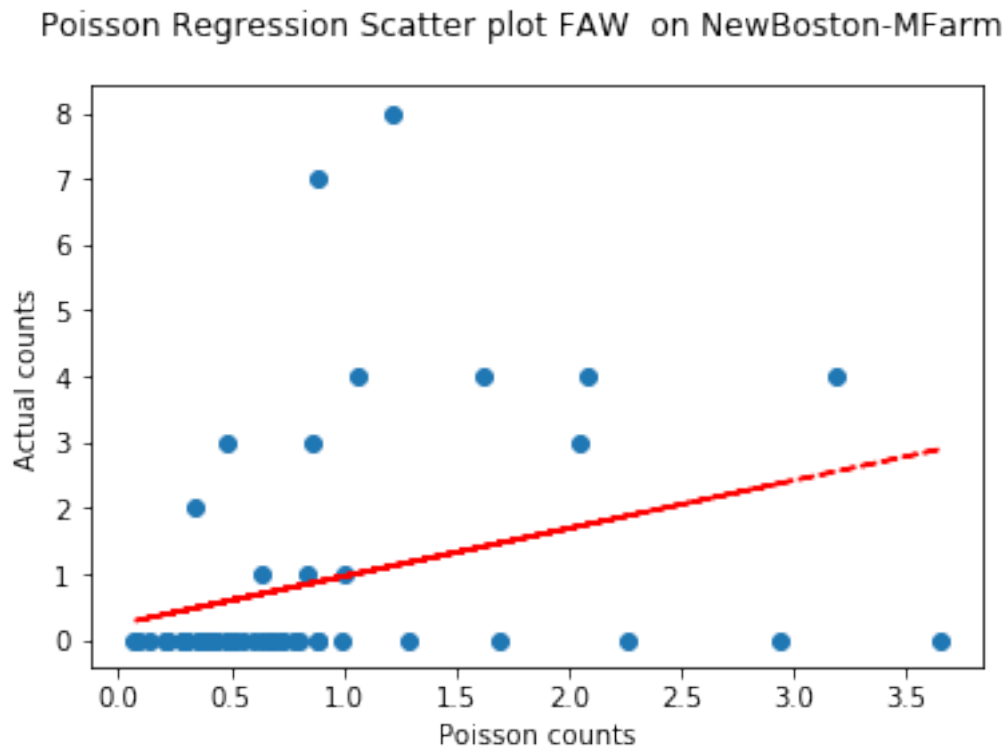
Method: IRLS Log-Likelihood: -75.694  
Date: Fri, 08 May 2020 Deviance: 112.99  
Time: 08:05:29 Pearson chi2: 150.  
No. Iterations: 6 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	13.0573	2.601	5.021	0.000	7.960	18.155
tempf	-0.1021	0.241	-0.423	0.672	-0.575	0.371
dwpf	-0.2072	0.061	-3.397	0.001	-0.327	-0.088
drct	-0.0348	0.008	-4.591	0.000	-0.050	-0.020
feel	0.1388	0.228	0.609	0.543	-0.308	0.586

	mean	mean_se	mean_ci_lower	mean_ci_upper
865	0.139853	0.073838	0.049690	0.393621
886	0.997473	0.297882	0.555522	1.791023
907	0.302625	0.093964	0.164668	0.556159
929	0.204839	0.115614	0.067761	0.619216
951	2.938837	1.032007	1.476611	5.849044
973	0.839944	0.181946	0.549371	1.284208
995	0.858611	0.186927	0.560380	1.315558
1016	0.421069	0.116599	0.244706	0.724538
1037	0.203234	0.097489	0.079375	0.520363
1058	3.187213	0.897148	1.835743	5.533631
1077	3.658258	1.118268	2.009446	6.659972
1095	1.290455	0.380395	0.724151	2.299623
1111	0.335838	0.119707	0.167003	0.675360
1148	0.060792	0.211070	0.000067	54.855022
1168	0.683679	0.256853	0.327387	1.427719
1190	0.484000	0.238429	0.184299	1.271060
1213	0.292885	0.090241	0.160115	0.535750
1238	0.506843	0.123897	0.313906	0.818368
1263	0.667149	0.149361	0.430186	1.034641
1287	0.724659	0.182984	0.441770	1.188696
1312	0.487096	0.131955	0.286433	0.828336
1338	0.890646	0.169757	0.613007	1.294030
1363	0.428276	0.144361	0.221210	0.829167
1383	0.886055	0.207440	0.559991	1.401977
1403	2.258431	0.830105	1.098856	4.641657
1421	0.484882	0.181844	0.232495	1.011253
1452	0.356417	0.164786	0.144017	0.882072
1471	0.362576	0.121237	0.188268	0.698266
1491	0.295556	0.093505	0.158981	0.549459
1514	0.602122	0.172871	0.343006	1.056980
1537	0.406667	0.127261	0.220225	0.750949
1695	0.554908	0.168034	0.306524	1.004561
1714	0.224067	0.126813	0.073897	0.679400
1733	0.428530	0.127286	0.239414	0.767032

1754	0.630855	0.121975	0.431869	0.921526
1775	0.633527	0.134266	0.418184	0.959763
1796	2.087744	0.470527	1.342261	3.247264
1816	1.062110	0.309754	0.599687	1.881109
1836	1.217479	0.327512	0.718590	2.062728
1856	1.628155	0.284637	1.155811	2.293530
1875	2.054967	0.542241	1.225180	3.446751
1893	0.998912	0.263052	0.596174	1.673715
1911	0.776977	0.361592	0.312085	1.934387
1927	1.689152	0.491366	0.955121	2.987300
1941	0.885042	0.374653	0.386043	2.029044
1972	0.736684	0.194908	0.438607	1.237336
1994	0.374559	0.100533	0.221337	0.633850
2022	0.674714	0.167421	0.414865	1.097320
2051	0.094136	0.051216	0.032408	0.273438
2082	0.803470	0.345743	0.345690	1.867461
2113	0.285104	0.108459	0.135267	0.600920
2144	0.381038	0.118933	0.206672	0.702511
2172	0.520891	0.151297	0.294788	0.920417

<Figure size 432x288 with 0 Axes>



# Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          53
Model:                  GLM           Df Residuals:                48
Model Family:          NegativeBinomial    Df Model:                  4
Link Function:          log            Scale:                    1.0000
Method:                 IRLS           Log-Likelihood:            -56.892
Date:                   Fri, 08 May 2020    Deviance:                 54.370
Time:                   08:05:30           Pearson chi2:              66.5
No. Iterations:         13                Covariance Type:          nonrobust
=====

```

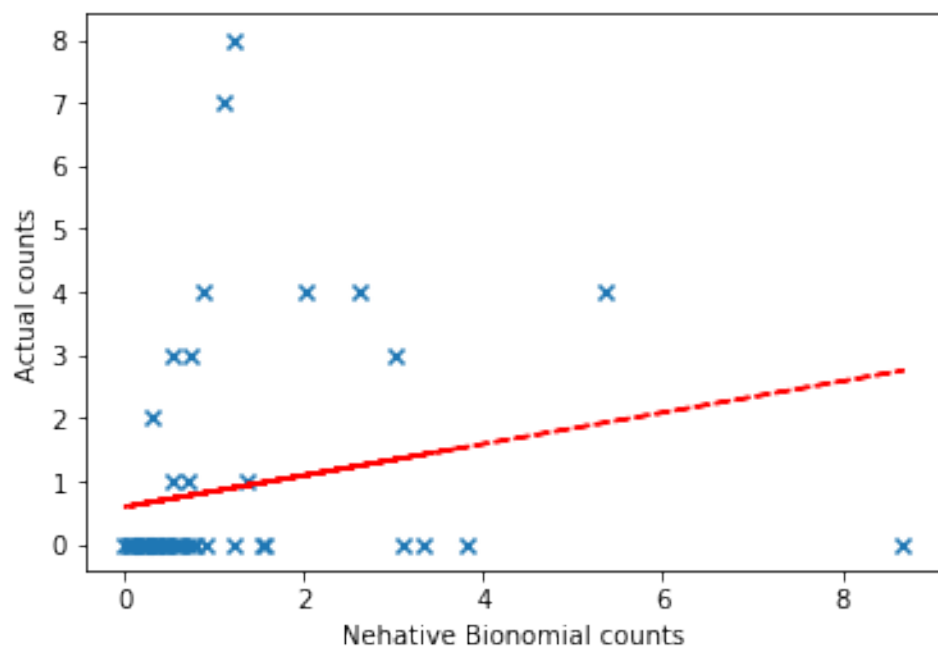
	coef	std err	z	P> z	[0.025	0.975]
Intercept	20.2126	4.531	4.461	0.000	11.331	29.094
tempf	-0.2330	0.471	-0.494	0.621	-1.157	0.691
dwpf	-0.2594	0.099	-2.633	0.008	-0.453	-0.066
drct	-0.0461	0.012	-3.769	0.000	-0.070	-0.022
feel	0.2257	0.450	0.502	0.616	-0.656	1.107

	mean	mean_se	mean_ci_lower	mean_ci_upper
865	0.051296	0.043750	9.640432e-03	0.272939
886	0.798952	0.368451	3.235741e-01	1.972731
907	0.176339	0.081318	7.141974e-02	0.435389
929	0.098069	0.086169	1.752339e-02	0.548841
951	3.341838	2.014341	1.025443e+00	10.890792
973	0.704156	0.245269	3.557803e-01	1.393657
995	0.727339	0.258949	3.619842e-01	1.461449
1016	0.344060	0.134161	1.602216e-01	0.738833
1037	0.080960	0.061799	1.813539e-02	0.361424
1058	5.346899	2.702680	1.985399e+00	14.399787
1077	8.675746	4.713685	2.991121e+00	25.163994
1095	1.559392	0.731500	6.218168e-01	3.910643
1111	0.300958	0.152450	1.115145e-01	0.812232
1148	0.011238	0.076975	1.660822e-08	7604.094533
1168	0.419489	0.256858	1.263340e-01	1.392904
1190	0.216835	0.175110	4.453687e-02	1.055694
1213	0.189740	0.085532	7.842458e-02	0.459057
1238	0.374032	0.132798	1.865063e-01	0.750109
1263	0.591762	0.192803	3.124754e-01	1.120671
1287	0.704467	0.261579	3.402489e-01	1.458562
1312	0.378397	0.148478	1.753670e-01	0.816485
1338	0.898870	0.268583	5.004467e-01	1.614494
1363	0.420752	0.203231	1.632603e-01	1.084357
1383	1.099387	0.367593	5.708752e-01	2.117192
1403	3.814348	2.301750	1.168871e+00	12.447263
1421	0.547680	0.299378	1.876003e-01	1.598893
1452	0.177666	0.130822	4.196012e-02	0.752270
1471	0.209465	0.111080	7.408253e-02	0.592251

1491	0.190009	0.087726	7.687450e-02	0.469642
1514	0.478627	0.204778	2.069262e-01	1.107082
1537	0.267785	0.123797	1.082125e-01	0.662667
1695	0.445730	0.199863	1.850962e-01	1.073363
1714	0.093615	0.090474	1.408340e-02	0.622276
1733	0.353351	0.151672	1.523484e-01	0.819551
1754	0.547532	0.150916	3.190013e-01	0.939779
1775	0.530476	0.166419	2.868342e-01	0.981072
1796	2.617413	1.060246	1.183240e+00	5.789909
1816	0.888895	0.429624	3.447024e-01	2.292221
1836	1.217906	0.516535	5.304006e-01	2.796555
1856	2.016991	0.621046	1.103095e+00	3.688034
1875	3.023138	1.360874	1.251086e+00	7.305145
1893	1.378606	0.524083	6.544128e-01	2.904212
1911	1.218756	0.823808	3.240067e-01	4.584366
1927	3.098441	1.403117	1.275498e+00	7.526733
1941	1.551630	0.951690	4.663425e-01	5.162635
1972	0.584630	0.239570	2.618632e-01	1.305230
1994	0.243498	0.097514	1.110740e-01	0.533799
2022	0.634980	0.240976	3.018055e-01	1.335959
2051	0.043818	0.036033	8.743616e-03	0.219591
2082	0.755945	0.623569	1.500881e-01	3.807455
2113	0.215258	0.117886	7.358640e-02	0.629680
2144	0.241315	0.126328	8.649329e-02	0.673264
2172	0.330699	0.157730	1.298502e-01	0.842214

<Figure size 432x288 with 0 Axes>

## Negative Binomial Regression Scatter plot FAW on NewBoston-MFarm



### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          56
Model:                  GLM          Df Residuals:                51
Model Family:           Poisson      Df Model:                    4
Link Function:           log          Scale:                      1.0000
Method:                  IRLS         Log-Likelihood:            -83.837
Date:                    Fri, 08 May 2020    Deviance:                  136.55
Time:                    08:05:30           Pearson chi2:              258.
No. Iterations:          6               Covariance Type:          nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-1.8301	1.275	-1.436	0.151	-4.328	0.668
tempf	-0.5822	0.479	-1.217	0.224	-1.520	0.356
dwpf	0.1300	0.088	1.474	0.141	-0.043	0.303
drct	0.0062	0.008	0.759	0.448	-0.010	0.022
feel	0.4795	0.463	1.037	0.300	-0.427	1.386

```

=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
1180  0.549765    0.428051      0.119516      2.528883
1202  0.725195    0.168989      0.459307      1.145003
1227  0.892526    0.185932      0.593332      1.342591
1252  0.845744    0.181511      0.555336      1.288017
=====

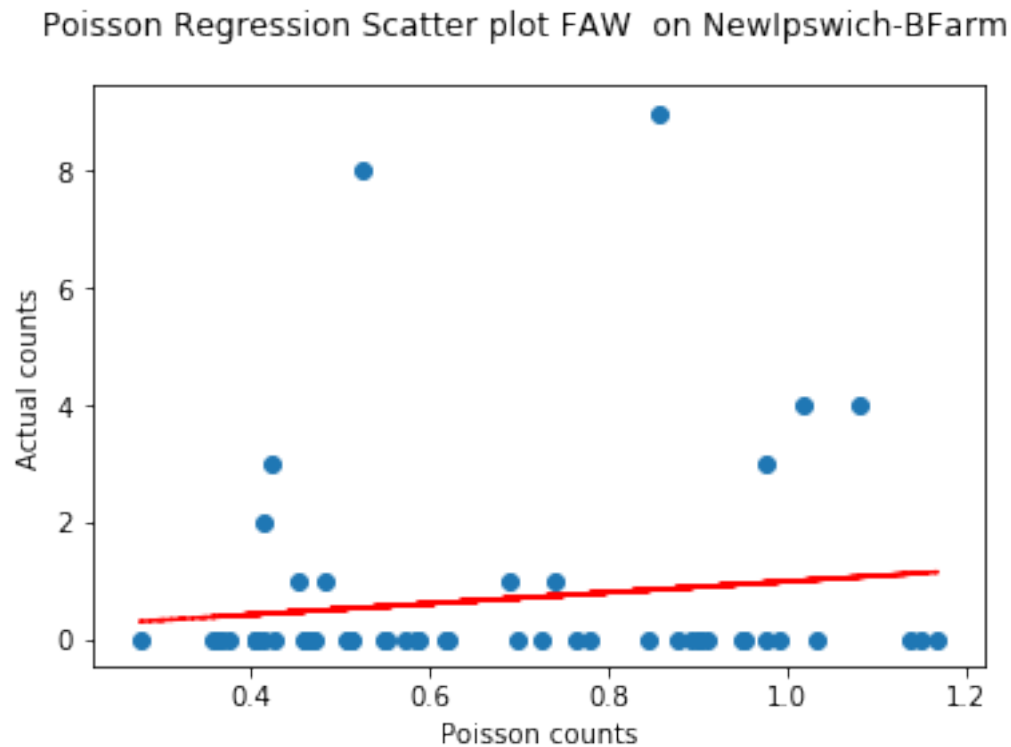
```



1277	0.976259	0.249537	0.591553	1.611151
1301	1.018008	0.240704	0.640454	1.618133
1327	0.856005	0.197911	0.544096	1.346719
1353	1.080974	0.344459	0.578862	2.018626
1376	0.523712	0.148216	0.300742	0.911993
1395	0.901104	0.414440	0.365836	2.219544
1415	1.167937	0.456233	0.543142	2.511458
1465	0.974771	0.436224	0.405487	2.343299
1485	0.990966	0.237151	0.619947	1.584027
1507	1.150960	0.348225	0.636104	2.082536
1530	1.137357	0.320218	0.655005	1.974917
1551	0.901462	0.181540	0.607477	1.337721
1571	0.586358	0.159092	0.344519	0.997959
1592	0.414549	0.210307	0.153372	1.120479
1610	0.910955	0.300304	0.477409	1.738213
1627	0.404335	0.162130	0.184259	0.887269
1643	0.617368	0.166441	0.363967	1.047192
1748	0.696644	0.136683	0.474246	1.023335
1769	0.619618	0.170578	0.361237	1.062811
1790	0.405249	0.186194	0.164677	0.997266
1810	0.355680	0.196181	0.120661	1.048465
1830	0.951081	0.307561	0.504610	1.792583
1850	0.571342	0.174880	0.313586	1.040966
1869	0.876371	0.264259	0.485310	1.582550
1887	0.510924	0.147198	0.290485	0.898648
1905	0.513967	0.205702	0.234565	1.126177
1922	0.459254	0.153706	0.238323	0.884990
1937	0.550319	0.226528	0.245603	1.233090
1967	1.033483	0.340480	0.541846	1.971200
1989	0.741134	0.147914	0.501204	1.095918
2017	0.764984	0.228931	0.425520	1.375259
2046	0.948439	0.433880	0.386912	2.324910
2077	0.275577	0.251591	0.046039	1.649515
2108	0.689456	0.234005	0.354490	1.340939
2139	0.425398	0.184944	0.181439	0.997378
2167	0.583156	0.195968	0.301815	1.126752
2193	0.779350	0.335706	0.335025	1.812961
2218	0.467875	0.184554	0.215960	1.013648
2242	0.509356	0.208142	0.228659	1.134629
2310	0.462669	0.206520	0.192896	1.109733
2332	0.367204	0.161539	0.155042	0.869690
2358	0.465080	0.191502	0.207508	1.042365
2385	0.505027	0.209955	0.223586	1.140736
2412	0.373488	0.178078	0.146699	0.950882
2440	0.469539	0.195277	0.207809	1.060912
2469	0.454005	0.187545	0.202040	1.020198
2497	0.422548	0.178127	0.184947	0.965392
2525	0.414285	0.184152	0.173354	0.990065

2552	0.482703	0.217760	0.199380	1.168634
2576	0.403959	0.179015	0.169483	0.962826
2598	0.364329	0.173706	0.143105	0.927539
2617	0.460199	0.207337	0.190303	1.112871

<Figure size 432x288 with 0 Axes>



#### Generalized Linear Model Regression Results

```

=====
Dep. Variable:          trap_count    No. Observations:          56
Model:                  GLM           Df Residuals:              51
Model Family:           NegativeBinomial    Df Model:                  4
Link Function:          log             Scale:                   1.0000
Method:                 IRLS           Log-Likelihood:           -61.240
Date:                   Fri, 08 May 2020    Deviance:                 76.111
Time:                   08:05:30          Pearson chi2:             158.
No. Iterations:         8                Covariance Type:         nonrobust
=====

```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	-1.8277	1.622	-1.127	0.260	-5.007	1.352

tempf	-0.6085	0.601	-1.013	0.311	-1.786	0.568
dwpf	0.1328	0.113	1.177	0.239	-0.088	0.354
drct	0.0060	0.011	0.569	0.569	-0.015	0.027
feel	0.5036	0.582	0.866	0.387	-0.636	1.644

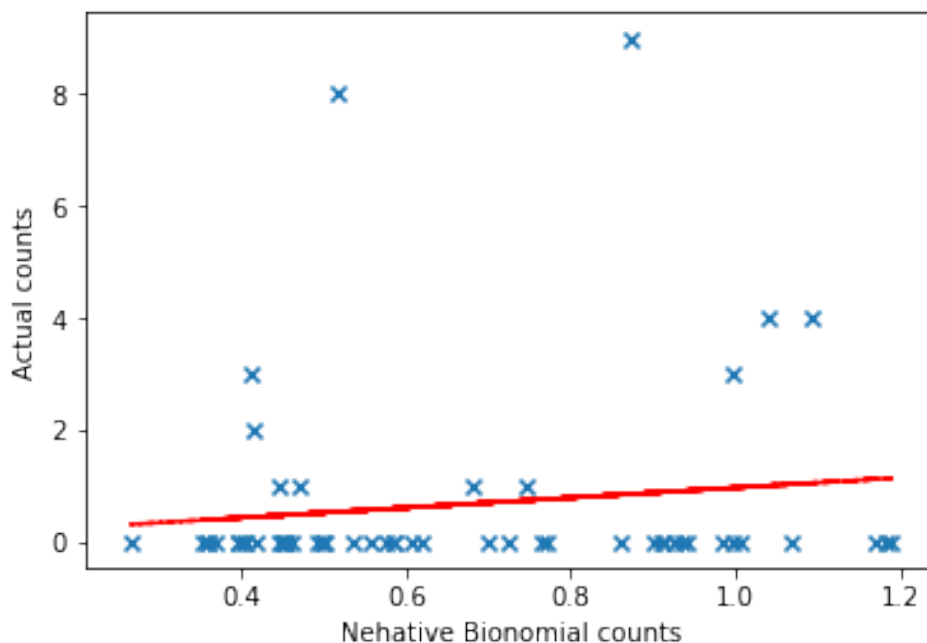
=====

	mean	mean_se	mean_ci_lower	mean_ci_upper
1180	0.557570	0.553186	0.079761	3.897695
1202	0.723208	0.218474	0.400058	1.307383
1227	0.908993	0.258292	0.520822	1.586468
1252	0.858987	0.249190	0.486469	1.516765
1277	0.997157	0.349108	0.502059	1.980488
1301	1.040171	0.340107	0.548007	1.974348
1327	0.872122	0.269717	0.475697	1.598912
1353	1.091989	0.467533	0.471822	2.527309
1376	0.515576	0.179349	0.260731	1.019515
1395	0.925063	0.560993	0.281819	3.036493
1415	1.181519	0.614405	0.426388	3.273981
1465	0.997883	0.578829	0.320136	3.110461
1485	1.004704	0.328114	0.529730	1.905555
1507	1.189560	0.491199	0.529546	2.672200
1530	1.171078	0.451645	0.549928	2.493823
1551	0.913820	0.252165	0.532078	1.569445
1571	0.584286	0.197190	0.301547	1.132131
1592	0.416163	0.262944	0.120628	1.435748
1610	0.933922	0.412345	0.393087	2.218876
1627	0.397222	0.196925	0.150331	1.049591
1643	0.608081	0.208830	0.310197	1.192024
1748	0.700074	0.175407	0.428422	1.143975
1769	0.619902	0.215224	0.313902	1.224201
1790	0.403730	0.229081	0.132773	1.227645
1810	0.351300	0.240576	0.091783	1.344605
1830	0.983852	0.427334	0.419964	2.304874
1850	0.575352	0.219765	0.272147	1.216365
1869	0.901174	0.364750	0.407648	1.992196
1887	0.501709	0.178278	0.250025	1.006746
1905	0.498080	0.256294	0.181678	1.365513
1922	0.449815	0.184238	0.201555	1.003861
1937	0.534746	0.279755	0.191795	1.490935
1967	1.068637	0.469753	0.451500	2.529313
1989	0.745316	0.192258	0.449540	1.235696
2017	0.771337	0.299399	0.360451	1.650603
2046	0.940795	0.565413	0.289686	3.055363
2077	0.265328	0.300471	0.028830	2.441892
2108	0.680407	0.300427	0.286371	1.616620
2139	0.416649	0.220645	0.147571	1.176361
2167	0.585784	0.243306	0.259531	1.322162
2193	0.764171	0.431028	0.252972	2.308385
2218	0.453414	0.224079	0.172119	1.194432

2242	0.493553	0.257215	0.177718	1.370685
2310	0.452933	0.244204	0.157434	1.303074
2332	0.358223	0.189773	0.126830	1.011783
2358	0.455435	0.225813	0.172340	1.203559
2385	0.499152	0.250008	0.187023	1.332200
2412	0.368031	0.214249	0.117586	1.151891
2440	0.460519	0.230519	0.172650	1.228364
2469	0.446341	0.221641	0.168649	1.181276
2497	0.412569	0.209114	0.152777	1.114131
2525	0.406870	0.217567	0.142656	1.160438
2552	0.470248	0.258062	0.160401	1.378629
2576	0.397642	0.213475	0.138843	1.138837
2598	0.358035	0.207675	0.114867	1.115980
2617	0.445888	0.245587	0.151496	1.312358

<Figure size 432x288 with 0 Axes>

Negative Binomial Regression Scatter plot FAW on Newlpswich-BFarm



Generalized Linear Model Regression Results

Dep. Variable:	trap_count	No. Observations:	62
Model:	GLM	Df Residuals:	57
Model Family:	Poisson	Df Model:	4

Link Function: log Scale: 1.0000  
 Method: IRLS Log-Likelihood: -128.99  
 Date: Fri, 08 May 2020 Deviance: 196.35  
 Time: 08:05:30 Pearson chi2: 261.  
 No. Iterations: 5 Covariance Type: nonrobust

	coef	std err	z	P> z	[0.025	0.975]
Intercept	1.2642	0.801	1.579	0.114	-0.305	2.834
tempf	0.0878	0.201	0.438	0.662	-0.305	0.481
dwpf	-0.1598	0.057	-2.783	0.005	-0.272	-0.047
drct	-0.0109	0.005	-2.076	0.038	-0.021	-0.001
feel	0.0555	0.204	0.272	0.786	-0.345	0.456

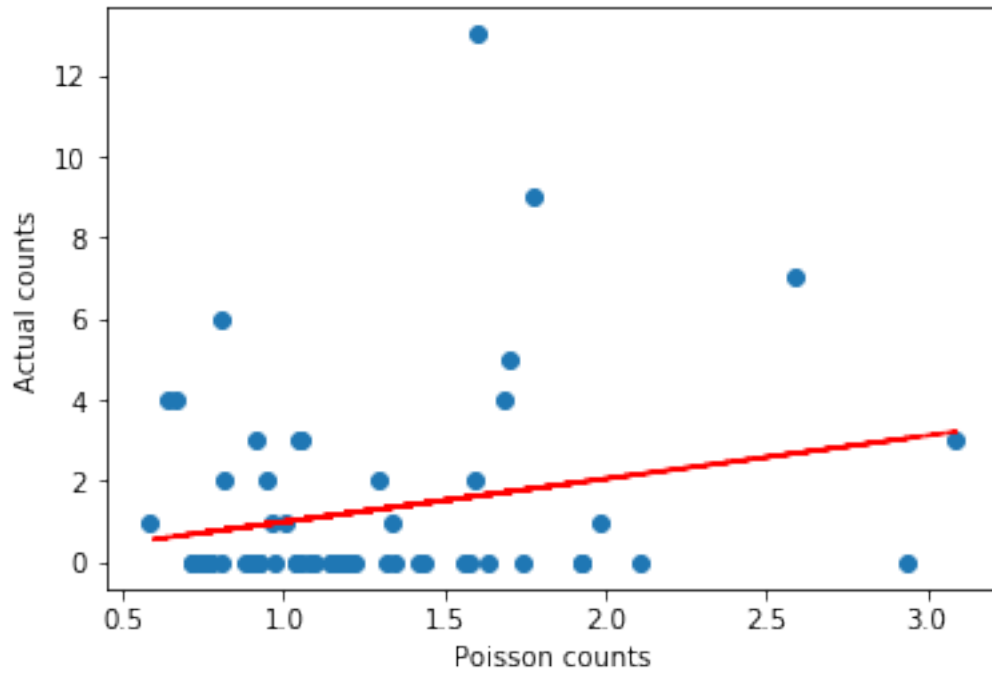
	mean	mean_se	mean_ci_lower	mean_ci_upper
1204	1.163866	0.211072	0.815707	1.660626
1229	1.319628	0.206991	0.970366	1.794600
1254	1.203290	0.207426	0.858298	1.686951
1279	1.054441	0.224726	0.694403	1.601154
1303	1.095525	0.211540	0.750343	1.599500
1329	1.437313	0.217351	1.068642	1.933173
1355	0.719053	0.185882	0.433228	1.193452
1466	1.743452	0.427731	1.077903	2.819943
1486	1.036795	0.195930	0.715872	1.501585
1509	1.223115	0.267489	0.796735	1.877676
1532	1.180774	0.243097	0.788718	1.767713
1553	1.148135	0.192034	0.827224	1.593538
1573	1.634668	0.265927	1.188384	2.248550
1594	2.939213	0.769432	1.759552	4.909755
1612	1.149552	0.293599	0.696834	1.896391
1629	1.983164	0.445049	1.277430	3.078790
1645	0.926556	0.190578	0.619147	1.386597
1658	0.922026	0.171247	0.640694	1.326892
1669	1.563662	0.538222	0.796442	3.069952
1692	1.084327	0.254935	0.683966	1.719038
1710	1.922338	0.890138	0.775678	4.764073
1729	0.877588	0.201338	0.559765	1.375863
1750	1.341642	0.177927	1.034550	1.739890
1771	1.686246	0.282691	1.214007	2.342182
1792	2.589458	0.584003	1.664319	4.028850
1812	3.089985	0.933170	1.709601	5.584931
1832	1.599931	0.372076	1.014257	2.523797
1852	1.774712	0.278947	1.304178	2.415008
1871	1.417134	0.317879	0.913014	2.199605
1889	1.185719	0.209611	0.838507	1.676707
...	...	...	...	...
1939	0.715176	0.209383	0.402908	1.269463
1951	1.925091	0.388563	1.296116	2.859294

1969	1.597636	0.332951	1.061904	2.403644
1991	1.297889	0.190275	0.973752	1.729924
2019	1.058478	0.227288	0.694868	1.612356
2048	0.774406	0.264007	0.396991	1.510626
2079	1.336470	0.521468	0.622063	2.871335
2110	1.047367	0.271843	0.629754	1.741916
2141	1.573635	0.322858	1.052605	2.352570
2169	1.698266	0.286957	1.219488	2.365014
2195	0.661594	0.226639	0.338064	1.294743
2220	0.916350	0.234998	0.554334	1.514788
2244	0.965928	0.290987	0.535204	1.743291
2263	0.818775	0.188714	0.521167	1.286331
2277	2.111749	0.775107	1.028521	4.335824
2289	0.969456	0.194381	0.654422	1.436146
2312	0.771258	0.240352	0.418730	1.420579
2334	0.899569	0.269612	0.499941	1.618639
2360	0.738051	0.214750	0.417267	1.305448
2387	0.810738	0.232820	0.461787	1.423378
2414	1.037130	0.323805	0.562442	1.912444
2442	0.759422	0.221863	0.428358	1.346355
2471	0.807902	0.232472	0.459650	1.420004
2499	0.762371	0.226105	0.426300	1.363380
2527	0.898584	0.275932	0.492240	1.640365
2554	0.636851	0.204888	0.338992	1.196427
2578	0.921554	0.275015	0.513453	1.654020
2600	1.007511	0.316529	0.544287	1.864968
2619	0.584891	0.191955	0.307411	1.112834
2633	0.745616	0.217727	0.420684	1.321522

[62 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

# Poisson Regression Scatter plot FAW on Milford-MFarm



## Generalized Linear Model Regression Results

```
=====
Dep. Variable:          trap_count    No. Observations:          62
Model:                  GLM          Df Residuals:              57
Model Family:          NegativeBinomial  Df Model:                  4
Link Function:          log           Scale:                    1.0000
Method:                 IRLS          Log-Likelihood:           -98.898
Date:                   Fri, 08 May 2020  Deviance:                112.79
Time:                   08:05:31         Pearson chi2:             152.
No. Iterations:         10              Covariance Type:         nonrobust
=====
```

	coef	std err	z	P> z	[0.025	0.975]
Intercept	1.0648	1.062	1.003	0.316	-1.016	3.146
tempf	0.0893	0.284	0.314	0.753	-0.468	0.646
dwpf	-0.1698	0.084	-2.030	0.042	-0.334	-0.006
drct	-0.0090	0.007	-1.277	0.202	-0.023	0.005
feel	0.0624	0.288	0.216	0.829	-0.503	0.628

```
=====
              mean    mean_se  mean_ci_lower  mean_ci_upper
1204  1.202178  0.278423      0.763540      1.892807
1229  1.261353  0.269871      0.829314      1.918465
1254  1.131006  0.263287      0.716661      1.784908
=====
```

1279	0.971847	0.281927	0.550388	1.716037
1303	1.029717	0.268783	0.617351	1.717527
1329	1.387613	0.295534	0.914070	2.106479
1355	0.706405	0.243625	0.359328	1.388724
1466	1.765250	0.625754	0.881187	3.536260
1486	1.020691	0.253222	0.627655	1.659845
1509	1.118318	0.336630	0.619929	2.017387
1532	1.098253	0.309368	0.632305	1.907560
1553	1.111984	0.245771	0.721050	1.714871
1573	1.686473	0.391410	1.070103	2.657865
1594	2.817208	1.108990	1.302401	6.093869
1612	1.018001	0.356548	0.512414	2.022440
1629	2.128126	0.707525	1.109184	4.083110
1645	0.971888	0.251081	0.585752	1.612570
1658	0.942353	0.223277	0.592289	1.499316
1669	1.323201	0.622387	0.526321	3.326600
1692	0.987486	0.318862	0.524416	1.859459
1710	1.941219	1.289358	0.528088	7.135804
1729	0.832632	0.256690	0.455029	1.523588
1750	1.316344	0.234916	0.927818	1.867565
1771	1.737501	0.423138	1.078028	2.800402
1792	2.567957	0.889072	1.302828	5.061610
1812	3.248808	1.495556	1.317899	8.008777
1832	1.428172	0.458716	0.760996	2.680270
1852	1.685280	0.386512	1.075109	2.641748
1871	1.268337	0.390568	0.693614	2.319270
1889	1.248089	0.285235	0.797469	1.953336
...	...	...	...	...
1939	0.767202	0.288139	0.367471	1.601756
1951	1.845793	0.543086	1.036895	3.285724
1969	1.480876	0.434772	0.832940	2.632836
1991	1.278518	0.246906	0.875636	1.866767
2019	0.987829	0.286885	0.559083	1.745368
2048	0.856771	0.374728	0.363557	2.019096
2079	1.290016	0.704267	0.442479	3.760944
2110	1.150763	0.383416	0.598934	2.211021
2141	1.628295	0.461490	0.934300	2.837787
2169	1.612355	0.384975	1.009771	2.574532
2195	0.735944	0.321052	0.312977	1.730525
2220	0.995103	0.325676	0.523948	1.889940
2244	1.091533	0.419669	0.513771	2.319019
2263	0.790150	0.245145	0.430152	1.451431
2277	2.203722	1.180938	0.770926	6.299432
2289	0.932859	0.250410	0.551221	1.578726
2312	0.839579	0.317688	0.399922	1.762574
2334	0.949966	0.346572	0.464695	1.941994
2360	0.788773	0.277241	0.396067	1.570853
2387	0.840139	0.293326	0.423802	1.665480

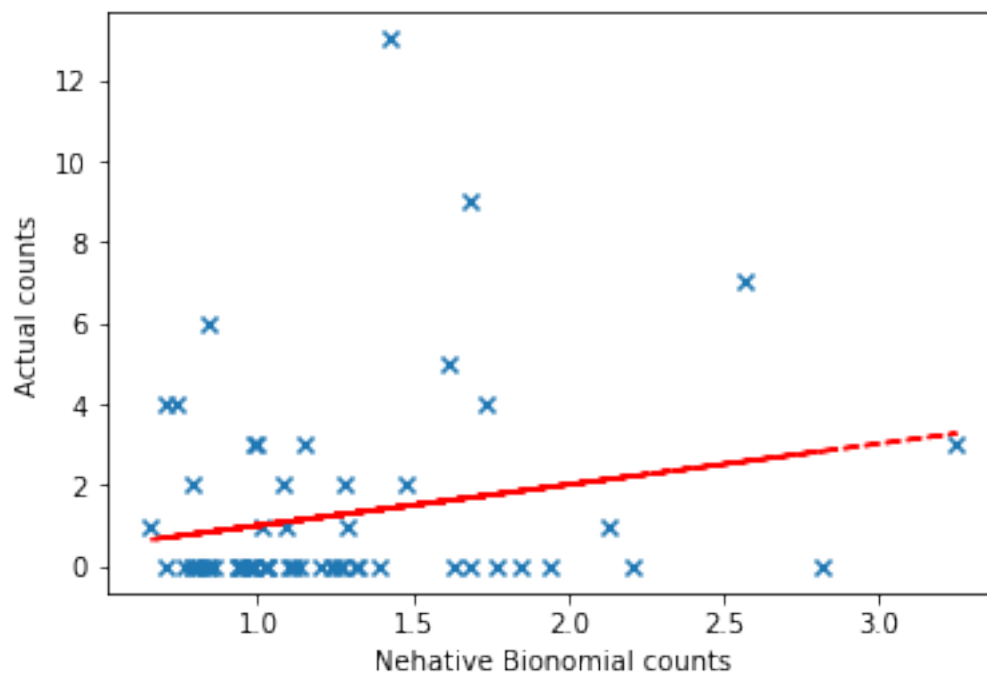


2414	1.031754	0.401702	0.481028	2.213003
2442	0.809477	0.285825	0.405178	1.617194
2471	0.842094	0.293542	0.425249	1.667545
2499	0.814051	0.291505	0.403499	1.642329
2527	0.941091	0.351591	0.452505	1.957221
2554	0.704530	0.275790	0.327111	1.517415
2578	0.931950	0.342019	0.453950	1.913274
2600	1.015417	0.395428	0.473332	2.178328
2619	0.652124	0.261420	0.297239	1.430721
2633	0.786739	0.277974	0.393623	1.572466

[62 rows x 4 columns]

<Figure size 432x288 with 0 Axes>

Negative Binomial Regression Scatter plot FAW on Milford-MFarm



```
In [115]: print ("total farms ", farm_count)
```

```
total farms  21
```

```
In [116]: len(all_FAW_FARMS_DataFrame)
```

```
Out[116]: 21
```

```
In [117]: len(compute_FAW_FARMS)
```

```
Out[117]: 21
```

```
In [118]: #all the farms used for predictions  
compute_FAW_FARMS
```

```
Out[118]: ['Pelham-G',  
           'Litchfield-W',  
           'Litchfield-M',  
           'Merrimack-T',  
           'Hollis-L',  
           'Hollis-B',  
           'Hollis-K',  
           'Milford-S',  
           'Antrim-T',  
           'Mason-B',  
           'Peterborough-R',  
           'Milford-L',  
           'Jaffrey-C',  
           'Hollis-JL',  
           'Hudson-S',  
           'Amherst-P',  
           'Concord-A',  
           'Weare-I',  
           'NewBoston-M',  
           'NewIpswich-B',  
           'Milford-M']
```

```
In [119]: all_FAW_FARMS_DataFrame[13].head()
```

```
Out[119]:
```

	farm	trap_count	year	date	tempf	dwpf	\
194	Hollis-JL	0	2007	2007-07-09	66.428494	61.414903	
206	Hollis-JL	0	2007	2007-07-16	67.757217	60.901565	
220	Hollis-JL	0	2007	2007-07-23	71.214553	64.778979	
234	Hollis-JL	0	2007	2007-07-30	74.360971	64.758058	
248	Hollis-JL	0	2007	2007-08-06	67.766345	61.987550	

	drct	feel	regression_count	poisson_count	NB_count	\
194	88.803089	66.624054	1	1	1	
206	118.956522	67.763739	2	1	1	
220	58.978723	71.808383	1	1	1	
234	88.689320	75.193447	2	2	2	
248	99.236948	68.019076	1	1	1	

	poisson_count_farm	NB_count_farm
194	1	1

206	0	0
220	2	2
234	2	2
248	1	1

```
In [120]: df_FAW_final['poisson_count_farm'] = 0
df_FAW_final['NB_count_farm'] = 0
```

```
In [121]: #combining all the pest counts for final data frame
count = 0
for df_Farm in all_FAW_FARMS_DataFrame:
    #print (df_Farm.head())
    #print(count)

    #getting all poisson regression count
    df_FAW_final.loc[df_FAW_final.farm == compute_FAW_FARMS[count], ['poisson_count_']

    #getting all negative binomial regression count
    df_FAW_final.loc[df_FAW_final.farm == compute_FAW_FARMS[count], ['NB_count_farm']]

    count = count + 1
```

```
In [122]: print(count)
```

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```
In [123]: df_FAW_final.head(20)
```

```
Out[123]:
```

	farm	trap_count	year	date	tempf	dwpf	\
0	Pelham-G	0	2006	2006-06-19	70.977613	63.913169	
1	Litchfield-W	0	2006	2006-06-19	70.977613	63.913169	
2	Litchfield-M	0	2006	2006-06-19	70.977613	63.913169	
3	Merrimack-T	0	2006	2006-06-19	70.977613	63.913169	
4	Hollis-L	0	2006	2006-06-19	70.977613	63.913169	
5	Hollis-B	0	2006	2006-06-19	70.977613	63.913169	
6	Hollis-K	0	2006	2006-06-19	70.977613	63.913169	
7	Milford-S	0	2006	2006-06-19	70.977613	63.913169	
8	Antrim-T	0	2006	2006-06-19	70.977613	63.913169	
9	Mason-B	0	2006	2006-06-19	70.977613	63.913169	
10	Peterborough-R	0	2006	2006-06-19	70.977613	63.913169	
11	Pelham-G	0	2006	2006-06-26	71.243468	65.095887	
12	Litchfield-W	0	2006	2006-06-26	71.243468	65.095887	
13	Litchfield-M	0	2006	2006-06-26	71.243468	65.095887	
14	Merrimack-T	0	2006	2006-06-26	71.243468	65.095887	
15	Hollis-L	0	2006	2006-06-26	71.243468	65.095887	
16	Hollis-B	0	2006	2006-06-26	71.243468	65.095887	
17	Hollis-K	0	2006	2006-06-26	71.243468	65.095887	
18	Milford-S	0	2006	2006-06-26	71.243468	65.095887	

```
19          Antrim-T          0  2006  2006-06-26  71.243468  65.095887
```

	drct	feel	regression_count	poisson_count	NB_count	\
0	63.703704	71.301399	1	1	1	
1	63.703704	71.301399	1	1	1	
2	63.703704	71.301399	1	1	1	
3	63.703704	71.301399	1	1	1	
4	63.703704	71.301399	1	1	1	
5	63.703704	71.301399	1	1	1	
6	63.703704	71.301399	1	1	1	
7	63.703704	71.301399	1	1	1	
8	63.703704	71.301399	1	1	1	
9	63.703704	71.301399	1	1	1	
10	63.703704	71.301399	1	1	1	
11	84.233871	71.733347	1	1	1	
12	84.233871	71.733347	1	1	1	
13	84.233871	71.733347	1	1	1	
14	84.233871	71.733347	1	1	1	
15	84.233871	71.733347	1	1	1	
16	84.233871	71.733347	1	1	1	
17	84.233871	71.733347	1	1	1	
18	84.233871	71.733347	1	1	1	
19	84.233871	71.733347	1	1	1	

	poisson_count_farm	NB_count_farm
0	0	0
1	10	4
2	1	1
3	0	0
4	0	0
5	0	0
6	0	0
7	4	4
8	0	0
9	2	2
10	0	0
11	0	0
12	6	3
13	0	0
14	0	0
15	1	1
16	1	1
17	0	0
18	3	3
19	0	0

```
In [124]: #writing into the csv file
df_FAW_final.to_csv("FAW_predicted_count.csv", index = False, sep = ',')
```