2021 NOAA HPP Projects

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Humpback Whale Acoustics

- Automatic detectors can process large amounts of data
- Humpback whales are difficult to classify via detectors
- Large vocal range
- GPL Detector shows potential
- Create dataset of manual detections to compare GPL performance

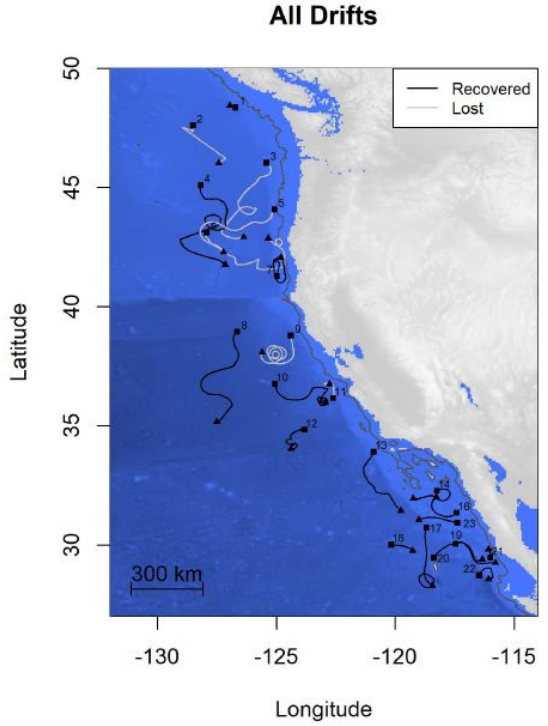
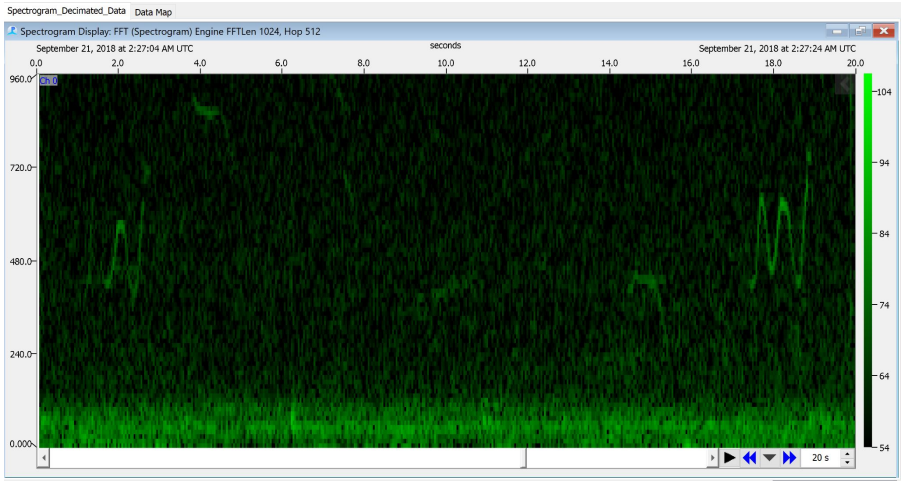


Figure 1. Locations of DASBR deployments (black squares), retrievals or last known location (black triangles), and buoy drifts (recovered = black lines, lost = gray lines).

Img: simonis et all CCES2018

Humpback Whale Acoustics



- 10 days of audio files from Monterey, CA
- Manually go through and annotate files for low frequency calls
- 150Hz-1KHz
- Identify humpbacks or unique sounds when possible
- 7000+ sounds manually boxed

PAMGUARD Viewer - Humpback_Annotation_CCES2018_Drift10_2018920-2018929.sqlite3

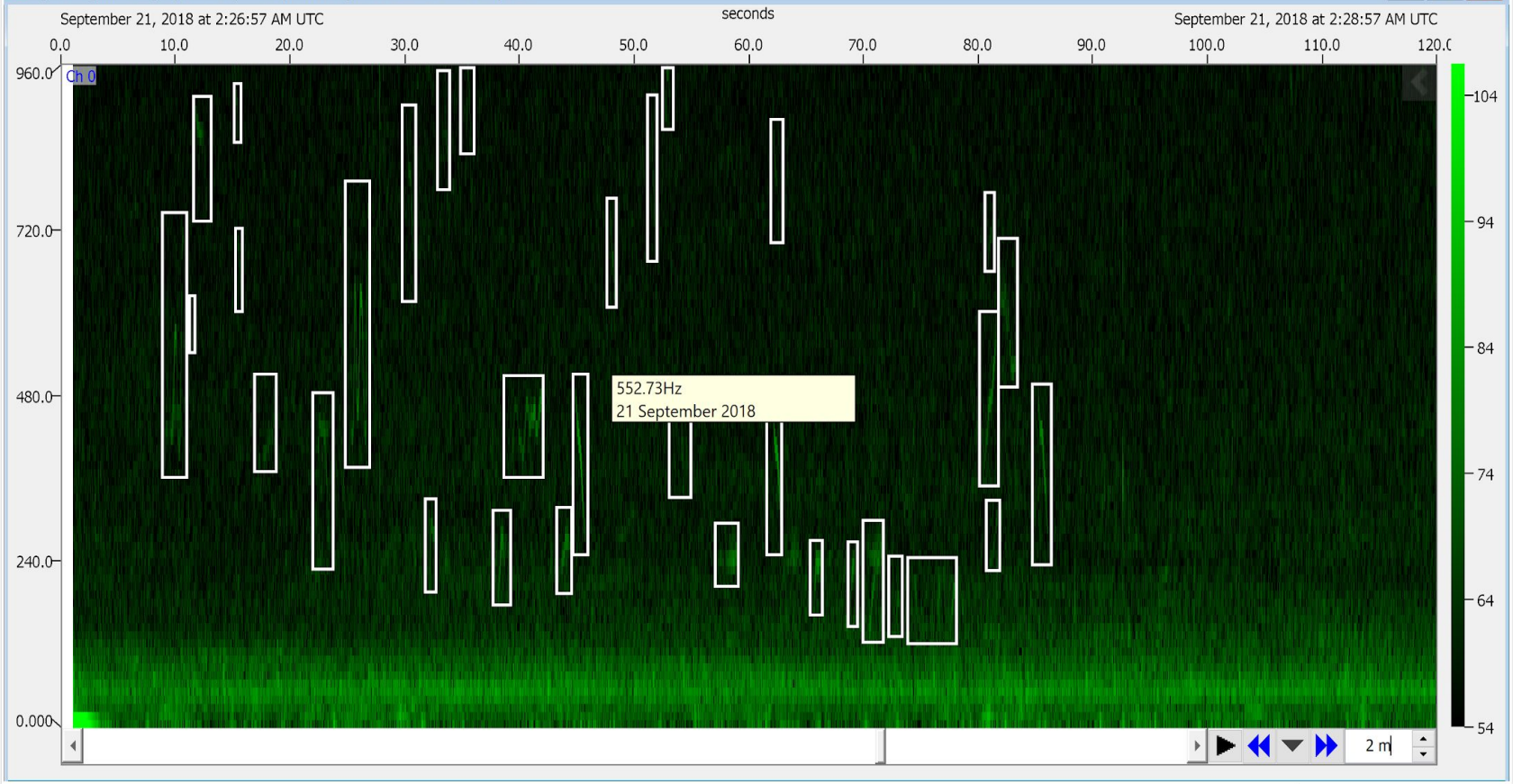
File Settings Display Spectrogram_Decimated_Data Help

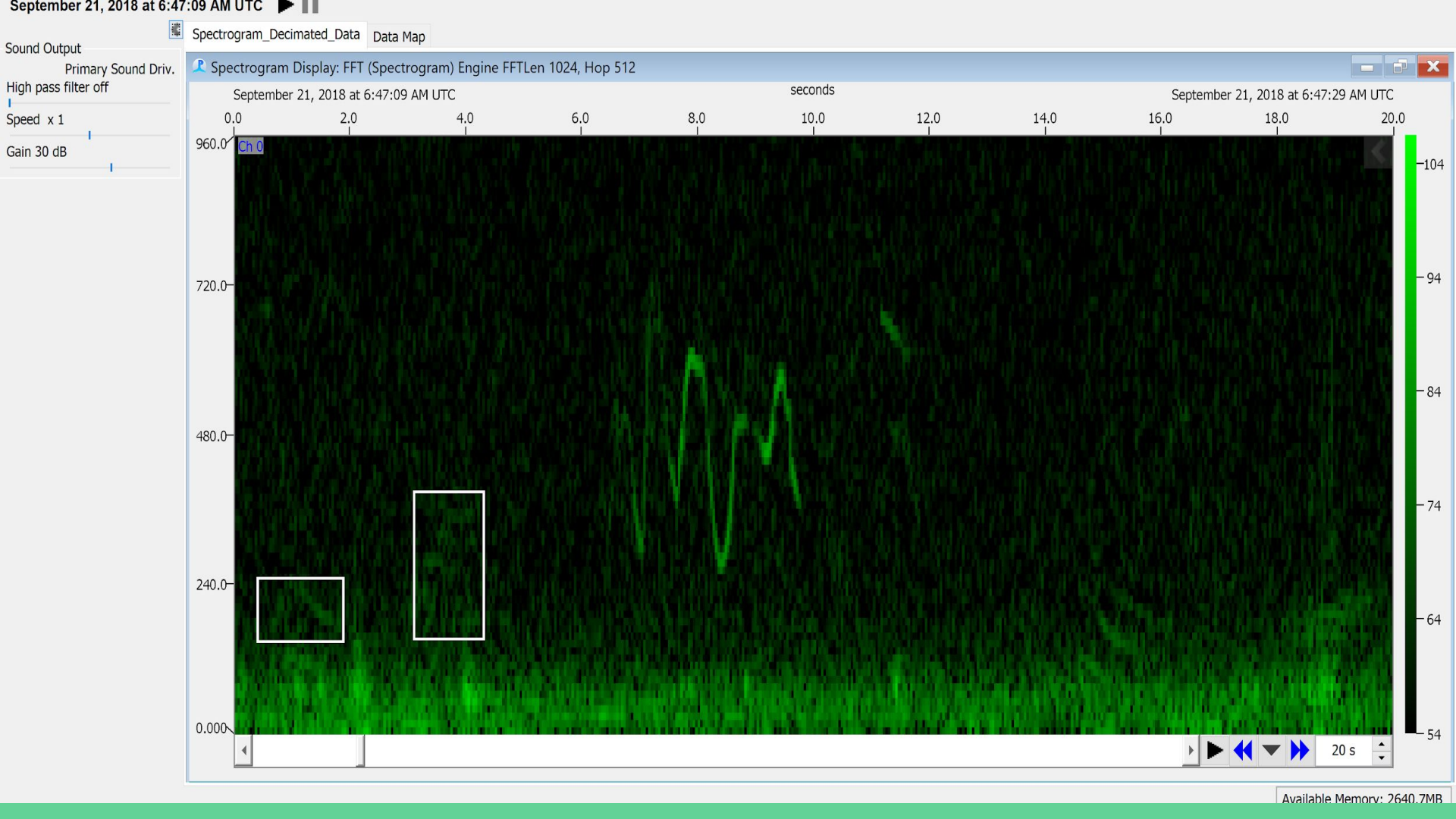
September 21, 2018 at 2:26:57 AM UTC

Sound Output
adphones (Bose NC 700 HP S...
High pass filter off
Speed x 1
Gain 30 dB

Spectrogram_Decimated_Data | Data Map

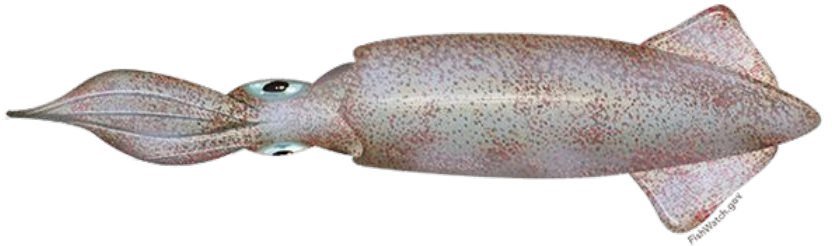
Spectrogram Display: FFT (Spectrogram) Engine FFTLen 1024, Hop 512




September 21, 2018 at 6:47:09 AM UTC
Spectrogram_Decimated_Data
Data Map
Sound Output
Primary Sound Driv.
High pass filter off
Speed x 1
Gain 30 dB
Spectrogram Display: FFT (Spectrogram) Engine FFTLen 1024, Hop 512
September 21, 2018 at 6:47:09 AM UTC
seconds
September 21, 2018 at 6:47:29 AM UTC
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
18.0
20.0
960.0
720.0
480.0
240.0
0.000
Ch 0
104
94
84
74
64
54
20 s
Available Memory: 2640.7MB

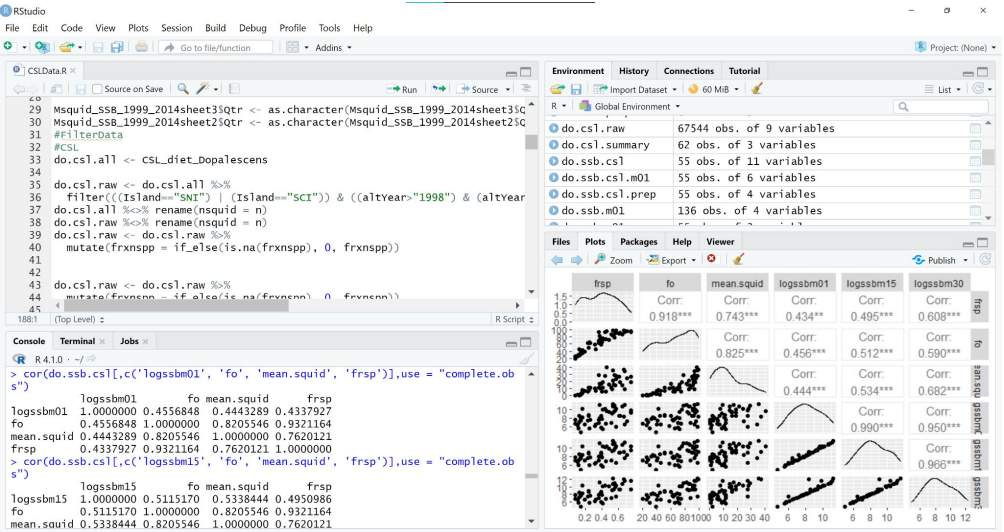
California Sea Lion & Market Squid

- Determine if California Sea Lion diet data is useful in determining Market Squid stock
- Squid fishery not active constantly
- Population affected by environmental factors
  - El Nino
  - La Nina



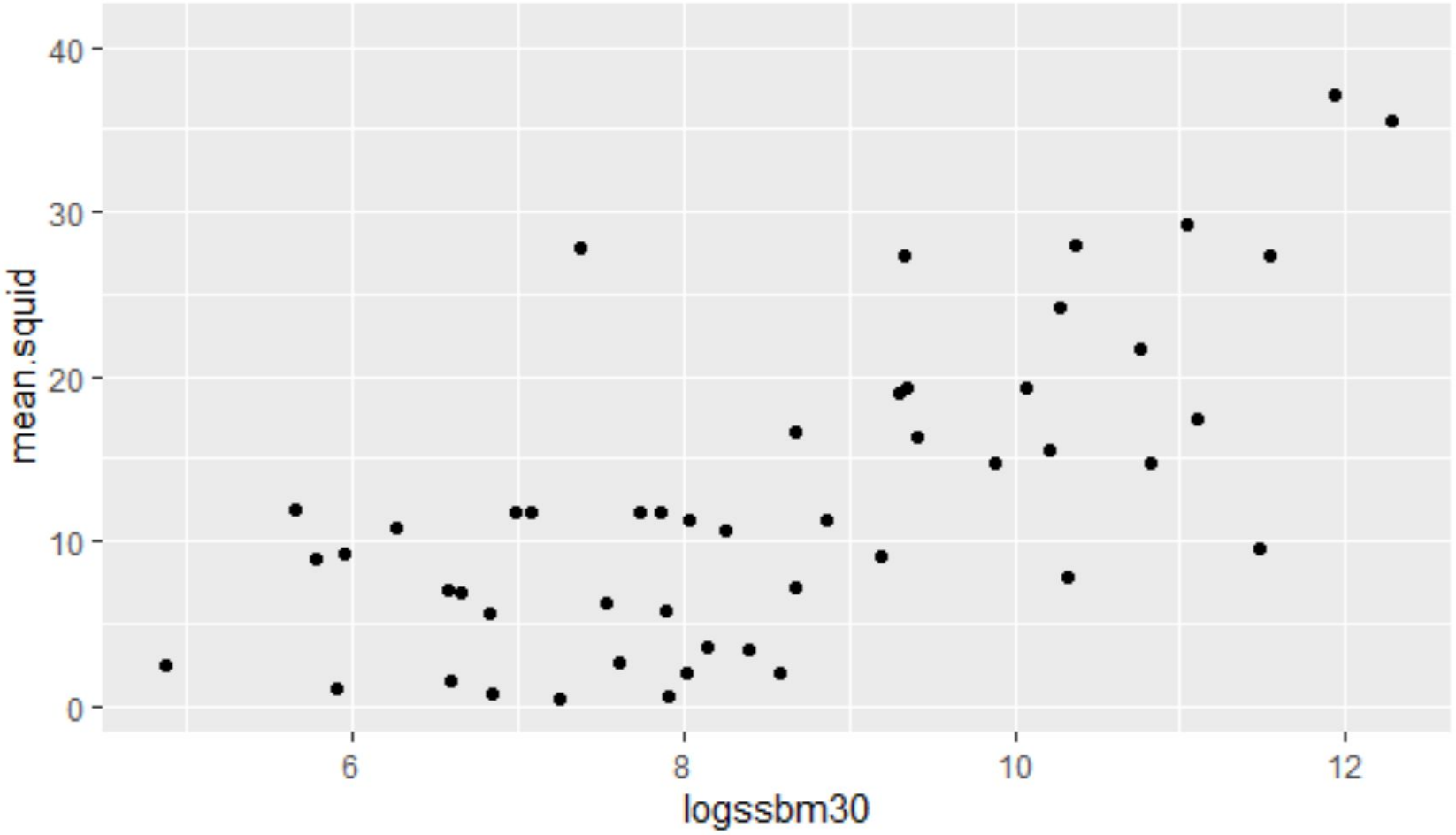
Imgs: noaa.gov

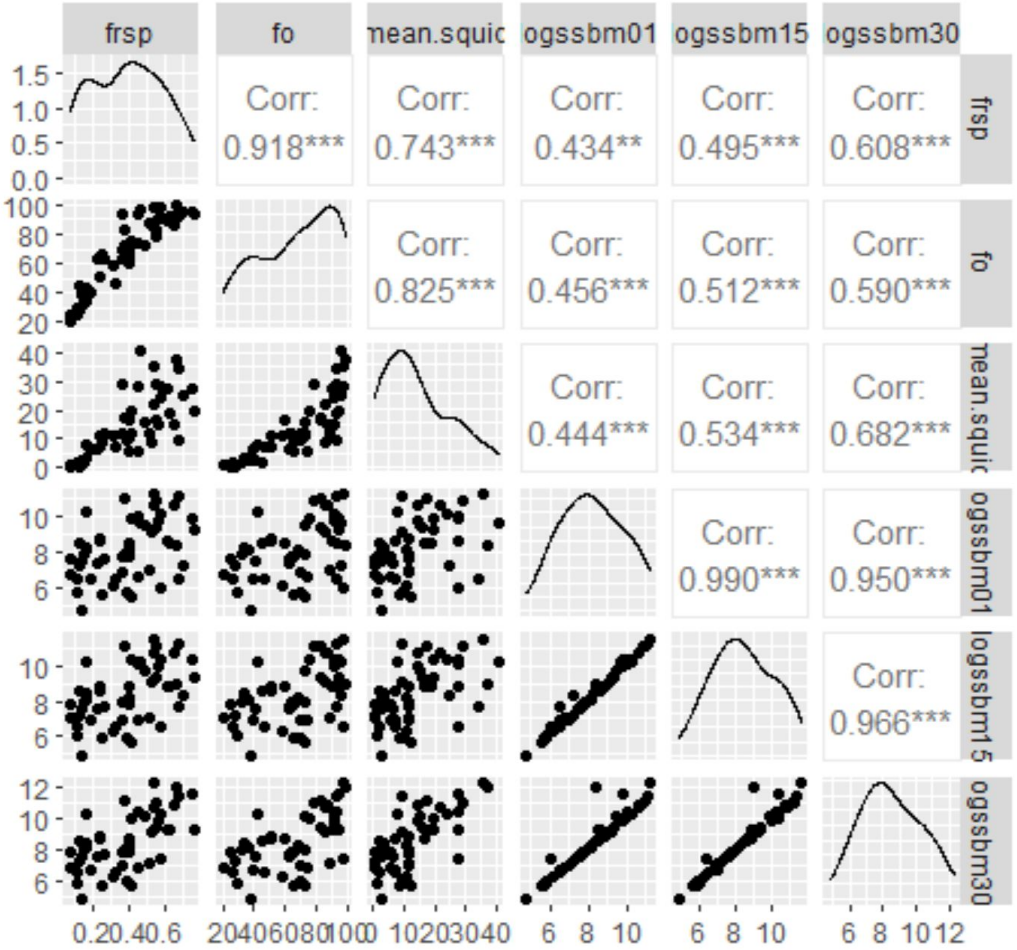
California Sea Lion and Market Squid



- Looked for patterns with SSB total and CSL diet data
- Frequency of occurrence, fraction of species, and mean number of squid per scat
- Calculated correlation and created linear models

SSB Total and Mean Squid from CSL Scat Analysis Linear Model Values for diff. Mortality rates (M)				
	Coefficients	Intercepts	R Squared	P-Value
M=0.01	2.809312	-9.243479	0.1974	0.0009672
M=0.15	3.344764	-14.35458	0.285	4.589e-05
M=0.30	3.504013	-17.26447	0.4651	6.839e-08


40
30
20
10
0
mean.squid
6
8
10
12
logssbm30


frsp
fo
mean.squic
ogssbm01
ogssbm15
ogssbm30
Corr:
0.918***
Corr:
0.743***
Corr:
0.434**
Corr:
0.495***
Corr:
0.608***
Corr:
0.825***
Corr:
0.456***
Corr:
0.512***
Corr:
0.590***
Corr:
0.444***
Corr:
0.534***
Corr:
0.682***
Corr:
0.990***
Corr:
0.950***
Corr:
0.966***

Thank you!

Thank you to Steve Copps, Abbie Moyer, and the Hollings Prep Program!

If you have any questions, or would like to know more about anything, feel free to contact me at mphilipp@ucsd.edu