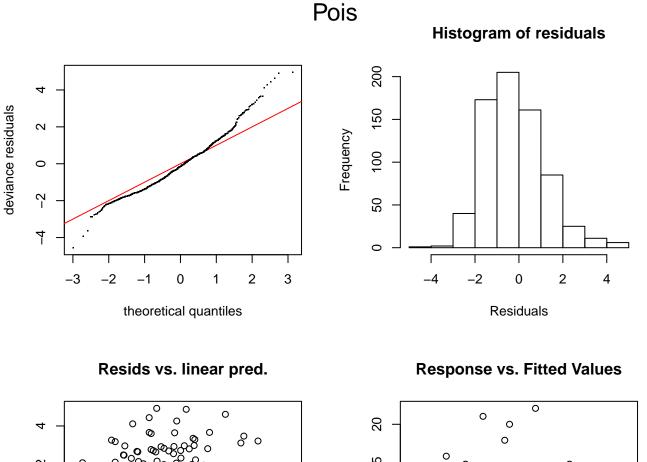
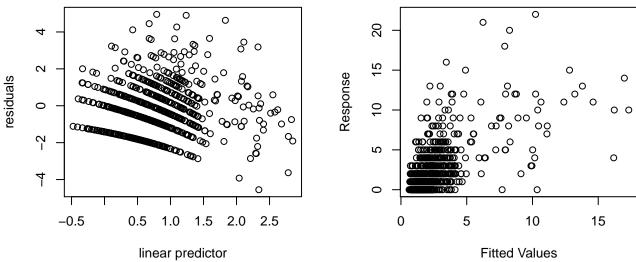
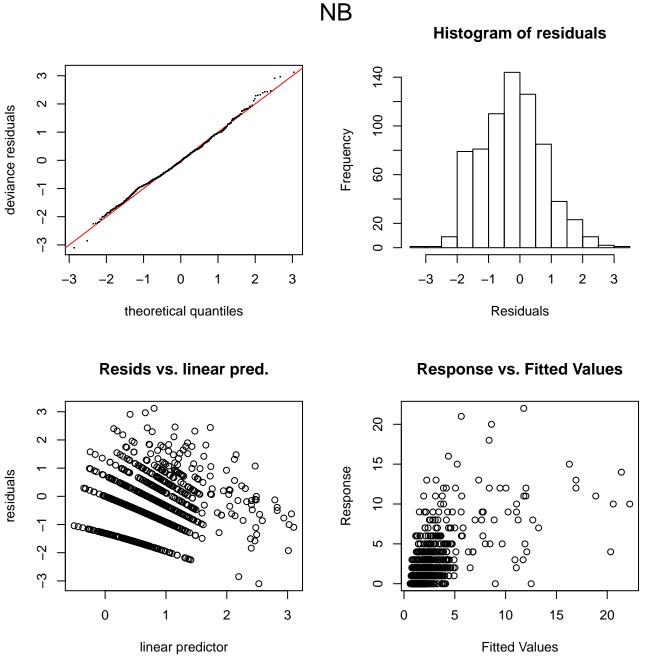
### Sandbar shark

	Log.Like	AIC.c	AIC.delta	AIC.w	AIC.Ev.ratio
Pois	-1484	3006	228	3.09e-50	3.23e+49
NB	-1383	2804	26	2.21e-06	4.53e+05
ZIP	-1424	2931	154	4.20e-34	2.38e+33
ZINB	-1352	2778	0	1.00e+00	1.00e+00

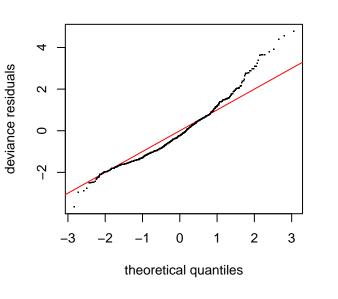


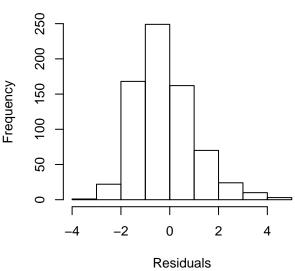




## ZIP counts part

### Histogram of residuals



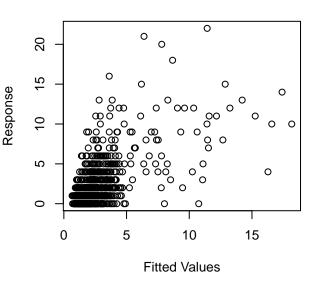


### Resids vs. linear pred.

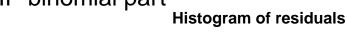
-0.5 0.5 1.0 1.5 2.0 2.5 3.0 linear predictor

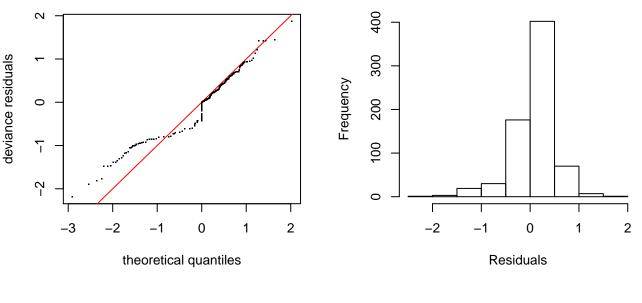
residuals

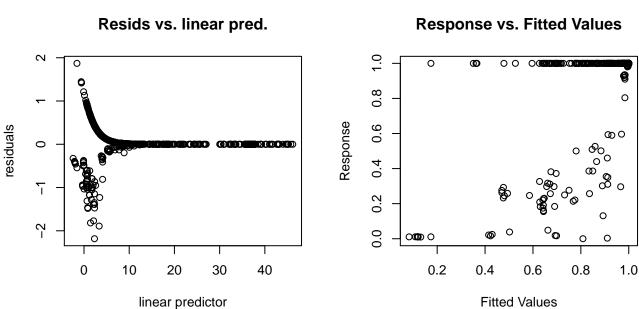
### Response vs. Fitted Values



# ZIP binomial part

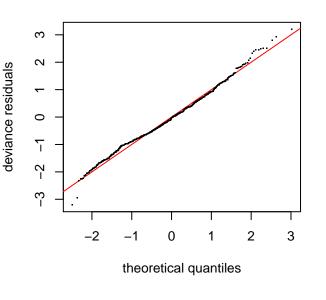


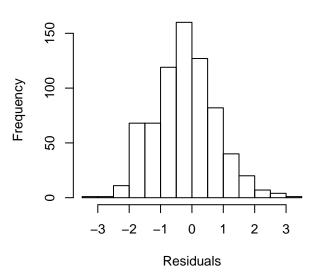




# ZINB counts part

### Histogram of residuals



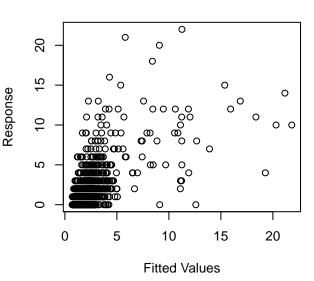


Resids vs. linear pred.

-0.5 0.5 1.0 1.5 2.0 2.5 3.0 linear predictor

residuals

Response vs. Fitted Values



#### ZINB binomial part Histogram of residuals 500 Frequency 300 100 0 -2 -1 0 -1.5 -1.0 -0.50.0 0.5 1 1.0 1.5 theoretical quantiles Residuals Resids vs. linear pred. Response vs. Fitted Values 0 00 B 0.8 0 Response 9.0 0 0 0 0.4 0.2 0 0 **000**000 0.0 100 200 300 0.0 0.2 0.6 8.0 0 0.4 1.0 Fitted Values linear predictor

1.0

0.5

0.0

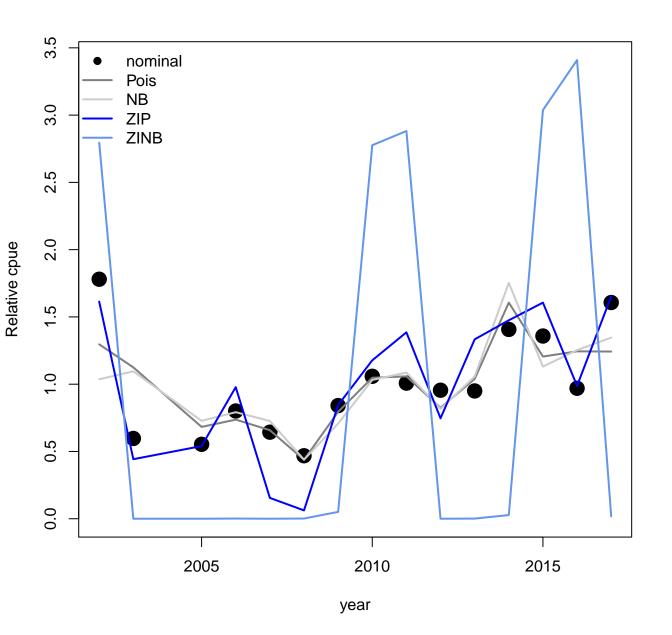
-1.0

0.5

0.0

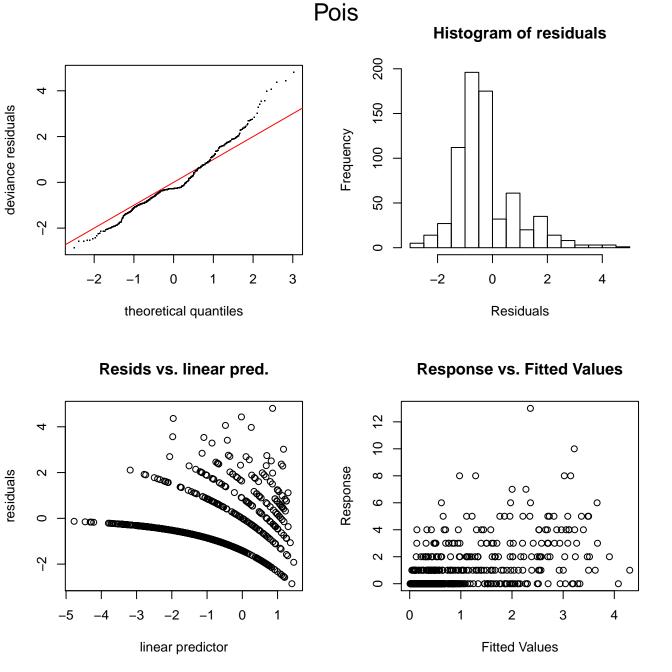
residuals

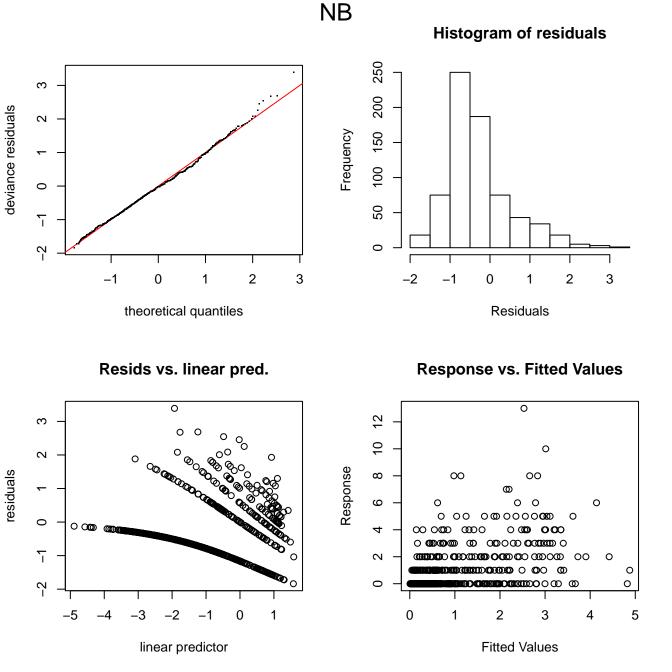
deviance residuals



### Milk shark

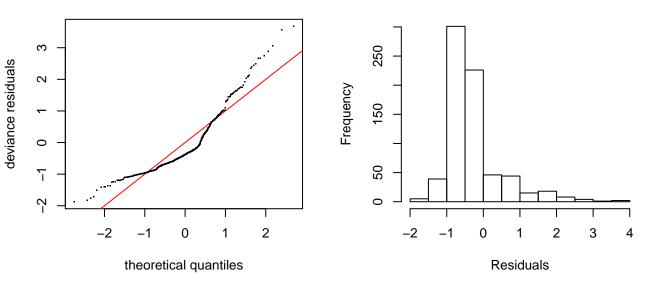
	Log.Like	AIC.c	AIC.delta	AIC.w	AIC.Ev.ratio
Pois	-769	1576	136	2.82e-30	3.54e+29
NB	-708	1455	14	7.84e-04	1.27e+03
ZIP	-754	1574	133	1.07e-29	9.32e+28
ZINB	-682	1440	0	9.99e-01	1.00e+00



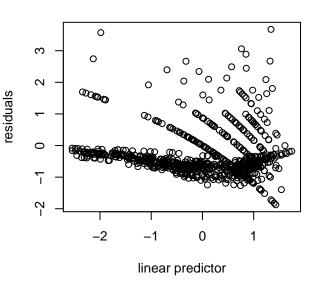


## ZIP counts part

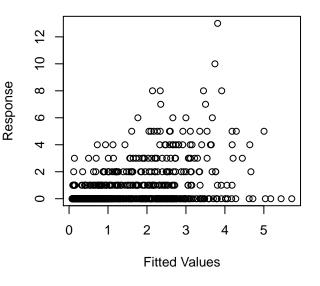
### Histogram of residuals





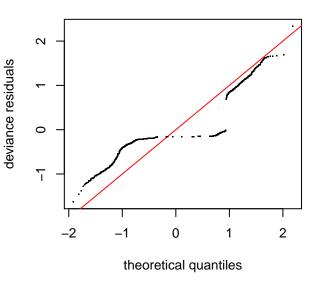


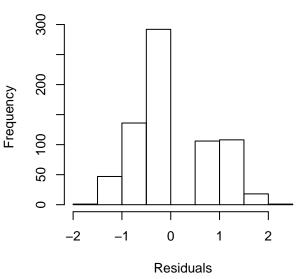
### Response vs. Fitted Values



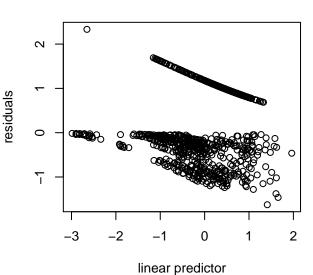
# ZIP binomial part

### Histogram of residuals

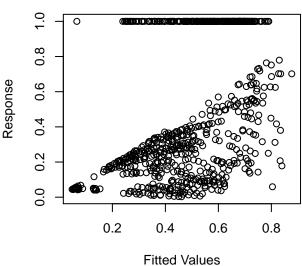




Resids vs. linear pred.

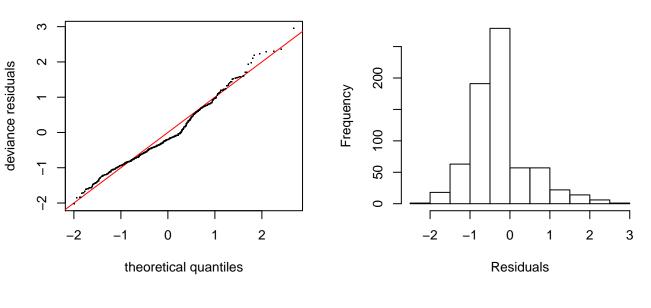


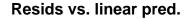
# Response vs. Fitted Values

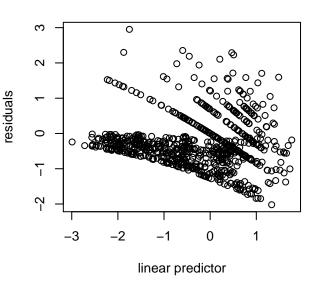


## ZINB counts part

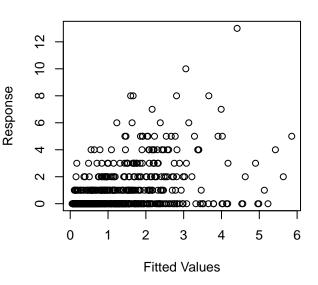
### Histogram of residuals



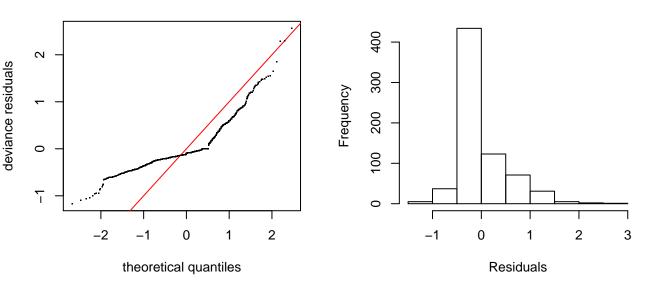


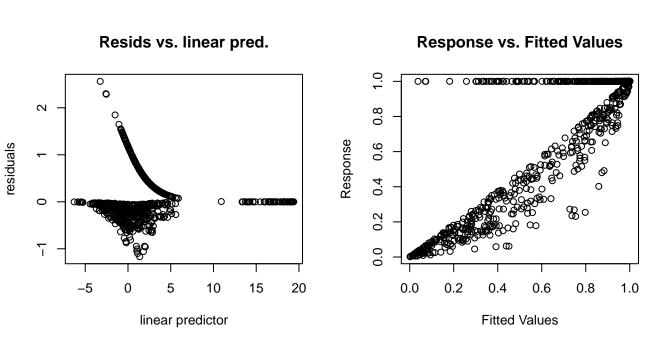


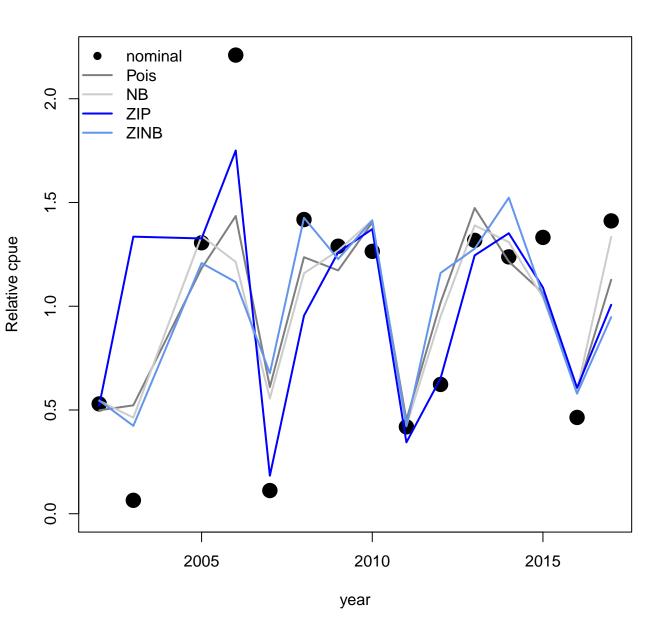
Response vs. Fitted Values



# ZINB binomial part Histogram of residuals



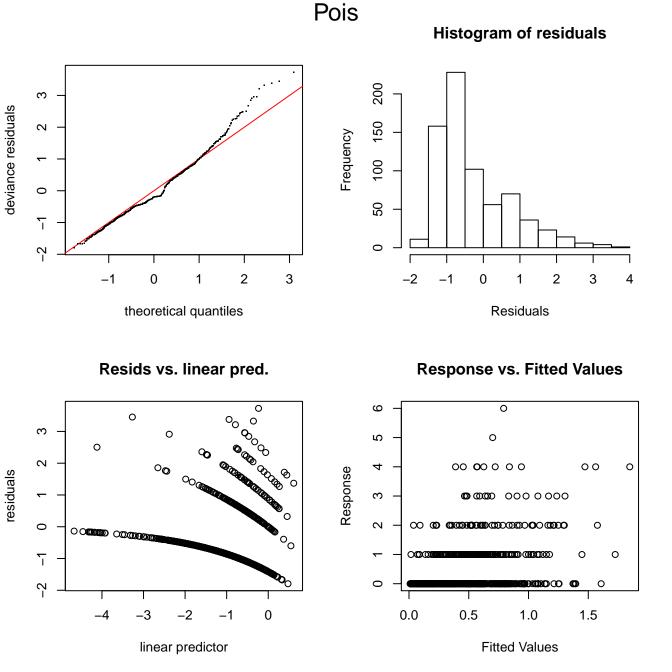


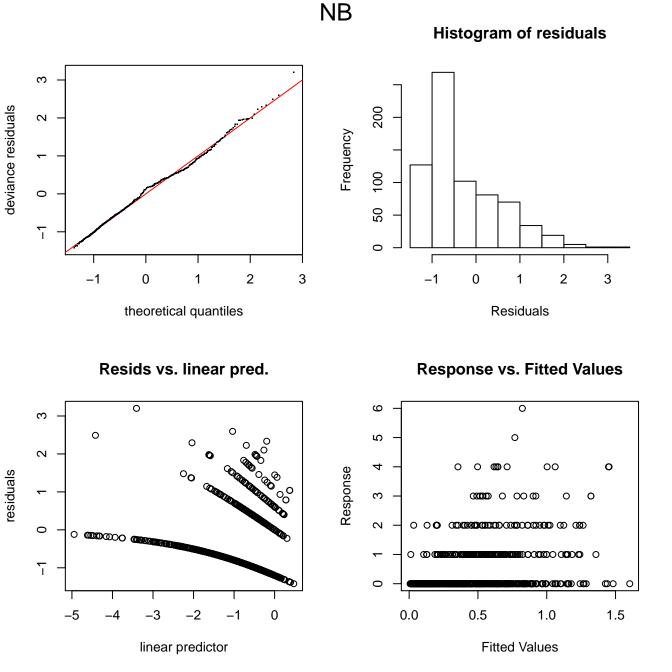


# Spot-tail shark

	Log.Like	AIC.c	AIC.delta	AIC.w	AIC.Ev.ratio
Pois	-627	1291	25	3.55e-06	2.82e+05
NB	-616	1266	0	1.00e+00	1.00e+00
ZIP	-644	1348	82	1.47e-18	6.80e+17
ZINB	-624	1316	50	1.67e-11	5.99e+10

 $\label{eq:best_AIC.w} Best.AIC.w= NB \\ Catch.Target \sim c("year", "s(Mid.Lat,k=3)", "s(BOTDEPTH,k=3)") + offset(log.Ef) \\$ 





#### ZIP counts part Histogram of residuals 400 300 Frequency 200 100 0 2 3 -2 0 -1 0 2 3 theoretical quantiles Residuals Resids vs. linear pred. Response vs. Fitted Values 0 0 9 0 0 2 0 ത്രതാ 0 4 Response က 000000യ ഠയ $\sim$ $\infty$ 0 0 -2 0.5 2.5 -1 0 0.0 1.0 1.5 2.0 3.0

Fitted Values

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0

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-3

linear predictor

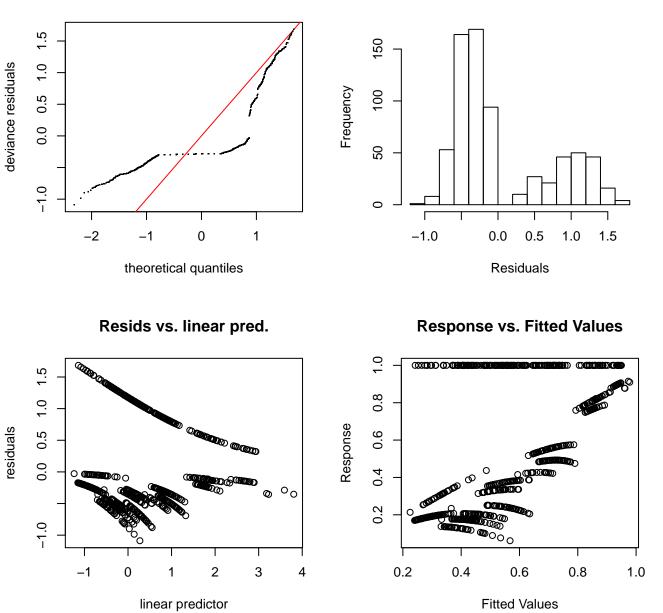
residuals

-2

deviance residuals

# ZIP binomial part

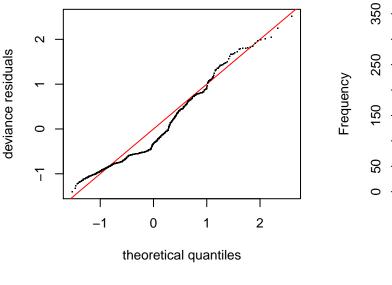
### Histogram of residuals

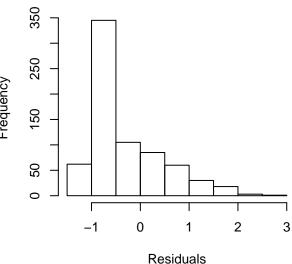


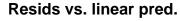
# ZINB counts part

Response

### Histogram of residuals

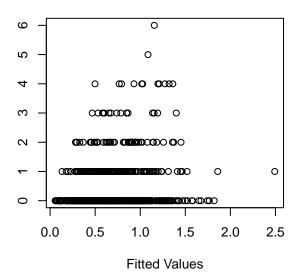




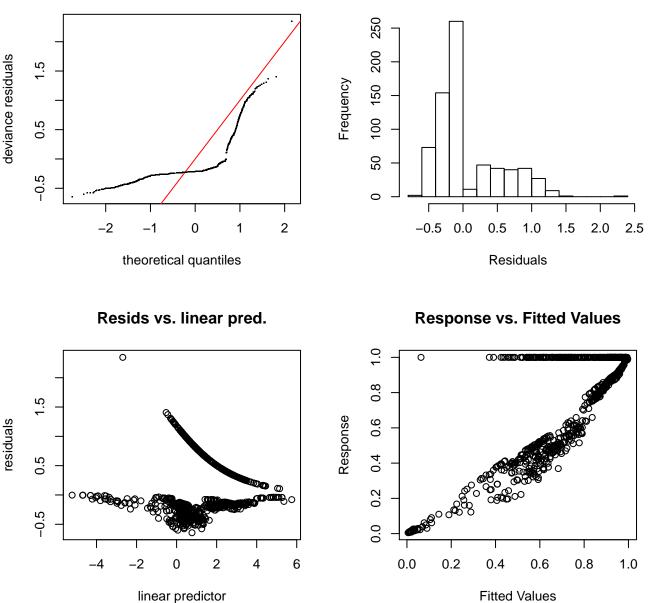


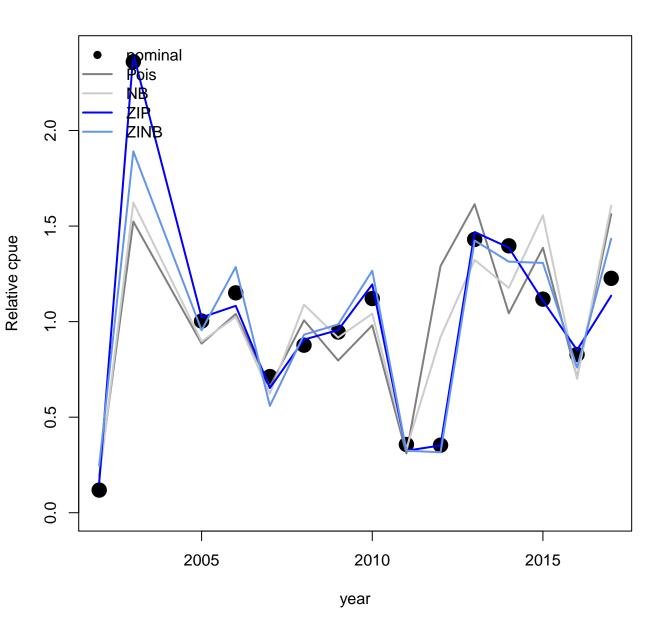
residuals

### Response vs. Fitted Values



# ZINB binomial part Histogram of residuals

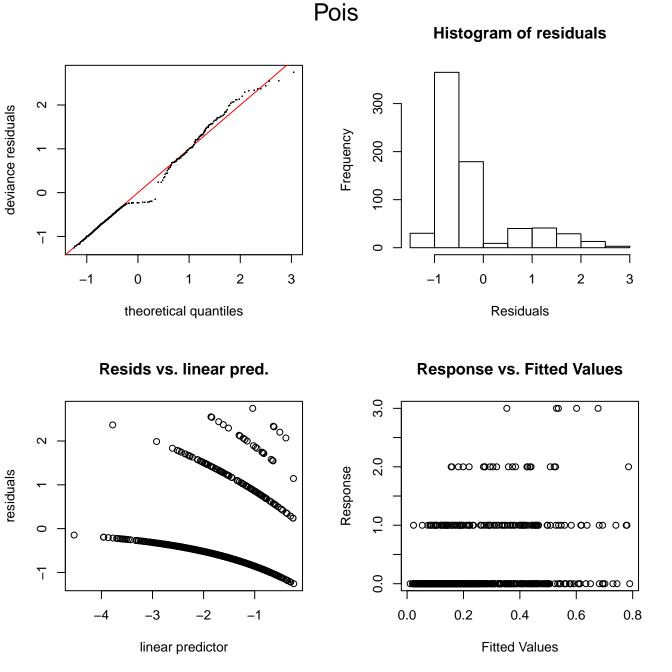


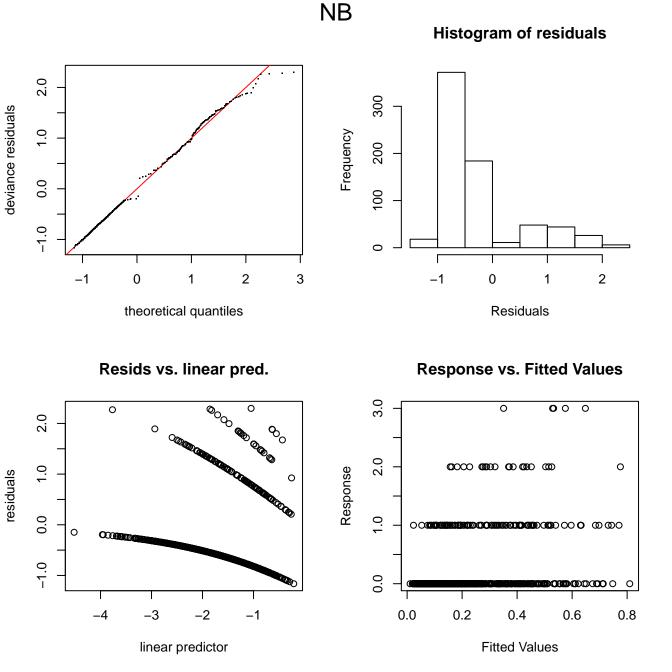


# Tiger shark

	Log.Like	AIC.c	AIC.delta	AIC.w	AIC.Ev.ratio
Pois	-399	829	3	2.17e-01	3.61e+00
NB	-397	827	0	7.83e-01	1.00e+00
ZIP	-394	854	27	8.77e-07	8.93e+05
ZINB	-394	856	29	3.26e-07	2.41e+06

 $\label{eq:best_AIC.w} Best.AIC.w= NB \\ Catch.Target \sim c("year", "s(Mid.Lat,k=3)", "s(BOTDEPTH,k=3)") + offset(log.Ef) \\$ 





ZIP counts part Histogram of residuals 300  $\alpha$ deviance residuals 200 Frequency 0 100 20 T 0 -1 2 3 -2 -1 0 2 0 1 theoretical quantiles Residuals Resids vs. linear pred. Response vs. Fitted Values 3.0 0 0 ത  $\alpha$ 2.0 0 Response residuals 0 0. 0 0 7 0.0 -3 -2 0.0 0.5 1.5 2.0 -1 0 1.0 2.5 linear predictor Fitted Values

ZIP binomial part Histogram of residuals 350 2.0 1.5 250 1.0 Frequency 0.5 150 0.0 50 -1.0 0 -2 2 -1.00.5 1.5 0 0.0 1.0 2.0 theoretical quantiles Residuals Resids vs. linear pred. Response vs. Fitted Values 2.0 1.5 0.8 1.0 Response 9.0 0.5 0.4 0.0 0.2 00 -1.0 0.0

deviance residuals

-5

0

5

linear predictor

10

15

0.0

0.2

0.4

0.6

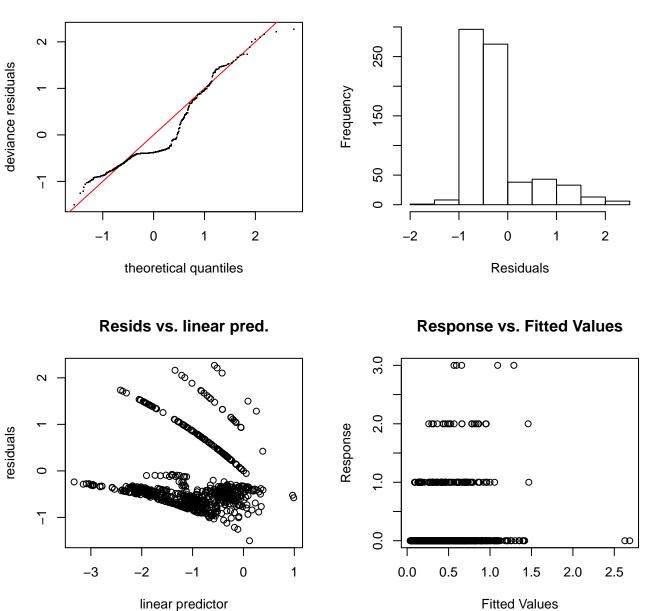
Fitted Values

8.0

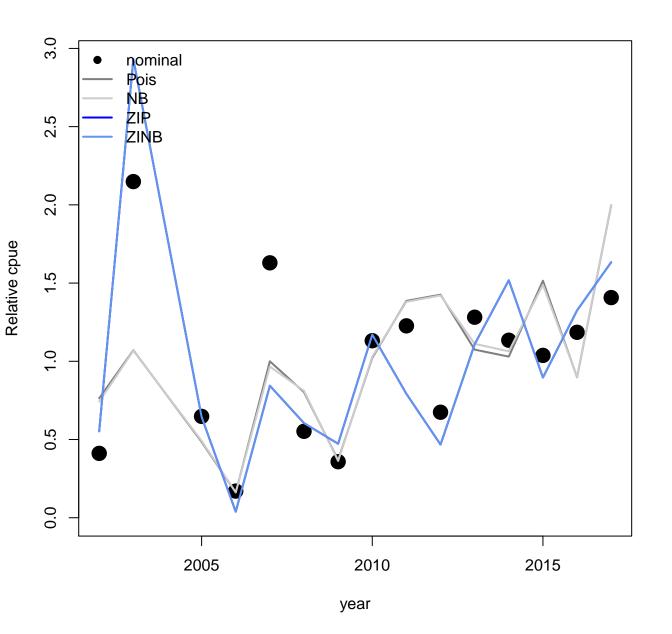
1.0

## ZINB counts part

### Histogram of residuals



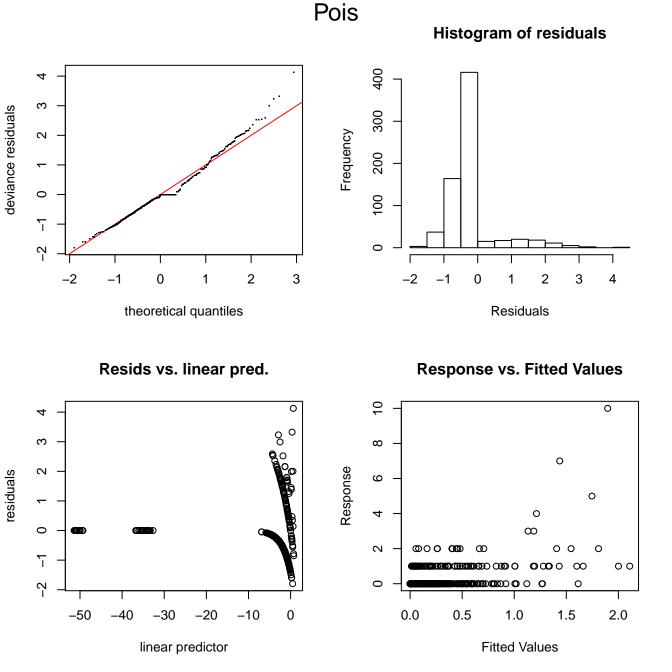
#### ZINB binomial part Histogram of residuals 350 2.0 1.5 deviance residuals 250 1.0 Frequency 0.5 150 0.0 50 -1.0 0 -2 2 -1.00.0 0.5 1.5 0 1.0 2.0 theoretical quantiles Residuals Resids vs. linear pred. Response vs. Fitted Values 2.0 1.5 0.8 1.0 Response 9.0 0.5 0.4 0.0 0.2 00 -1.0 0.0 -5 0 5 15 0.0 0.2 8.0 10 0.4 0.6 1.0 linear predictor Fitted Values

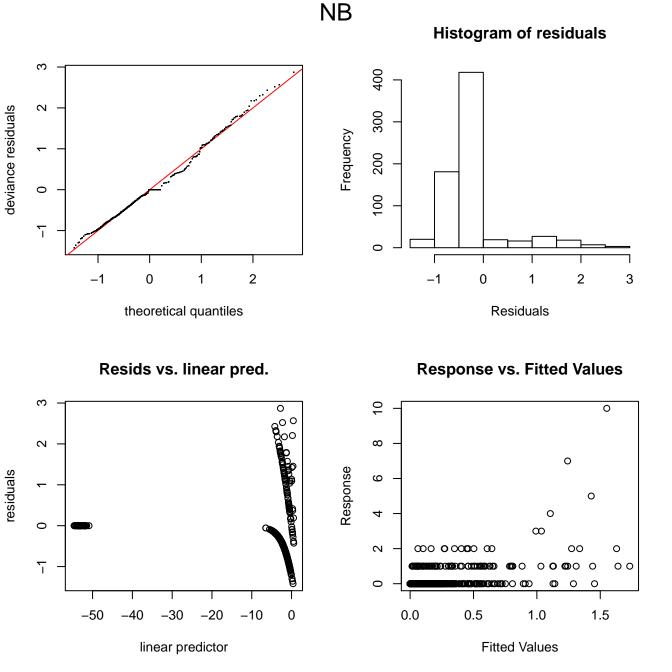


# Blacktip sharks

	Log.Like	AIC.c	AIC.delta	AIC.w	AIC.Ev.ratio
Pois	-310	659	12	2.18e-03	4.58e+02
NB	-304	646	0	9.98e-01	1.00e+00
ZIP	-327	732	86	2.19e-19	4.56e+18
ZINB	-300	687	41	1.21e-09	8.27e+08

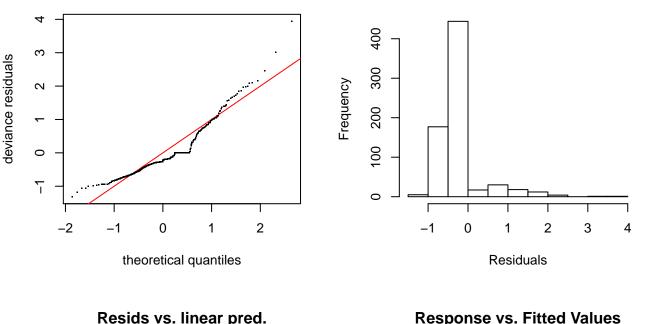
 $\label{eq:best_AIC.w} Best.AIC.w= NB \\ Catch.Target \sim c("year", "s(Mid.Lat,k=3)", "s(BOTDEPTH,k=3)") + offset(log.Ef) \\$ 

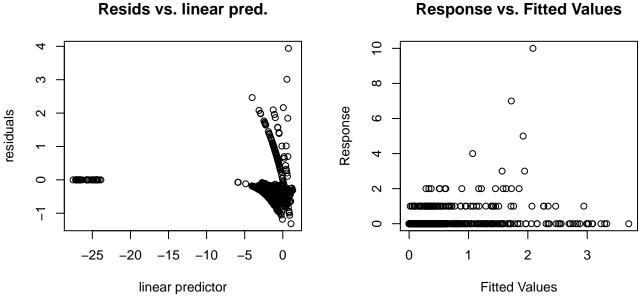


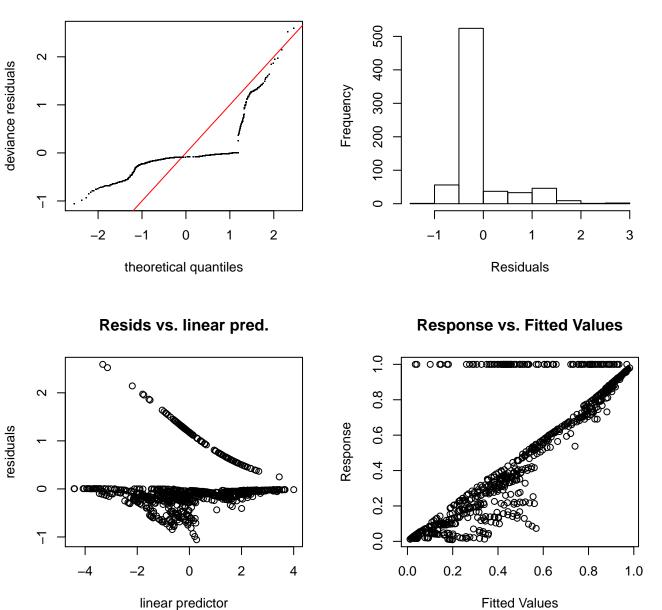


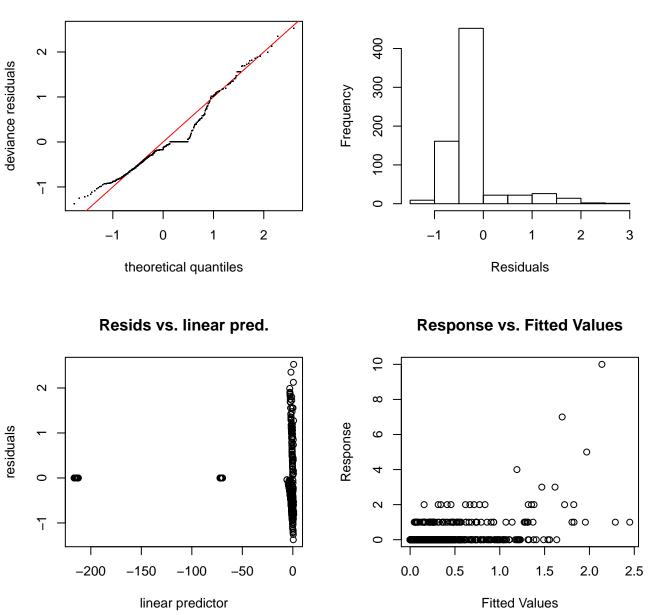
## ZIP counts part

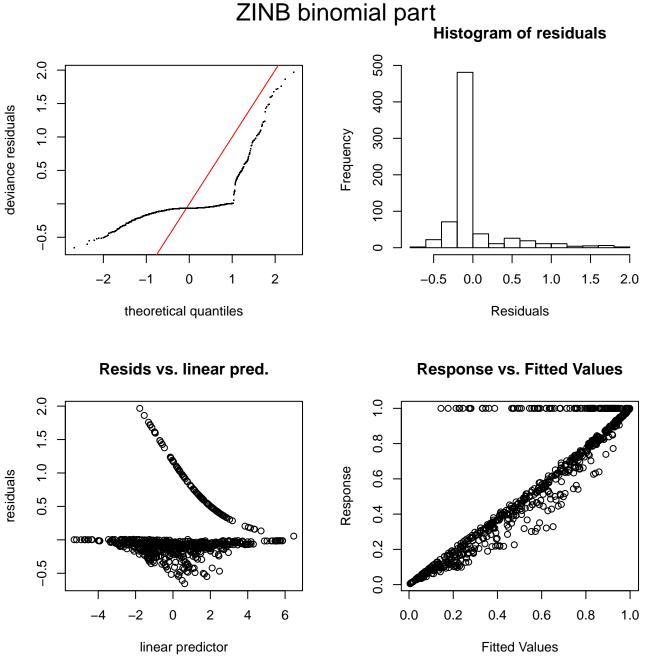
### Histogram of residuals

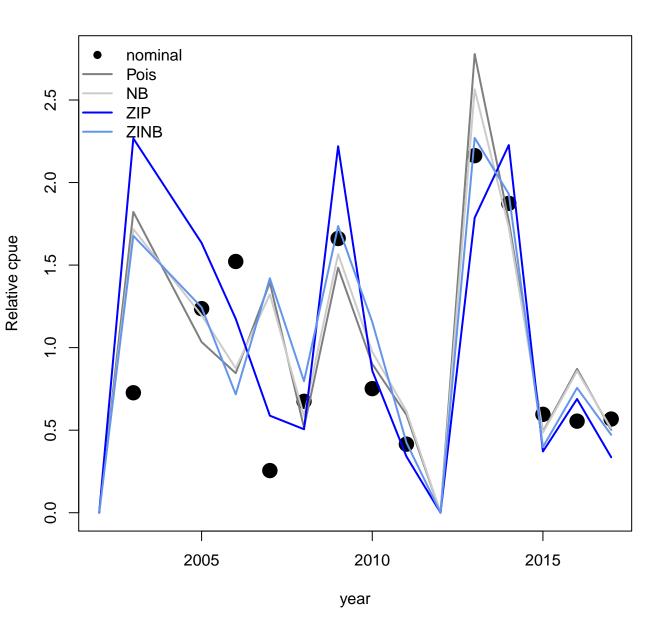






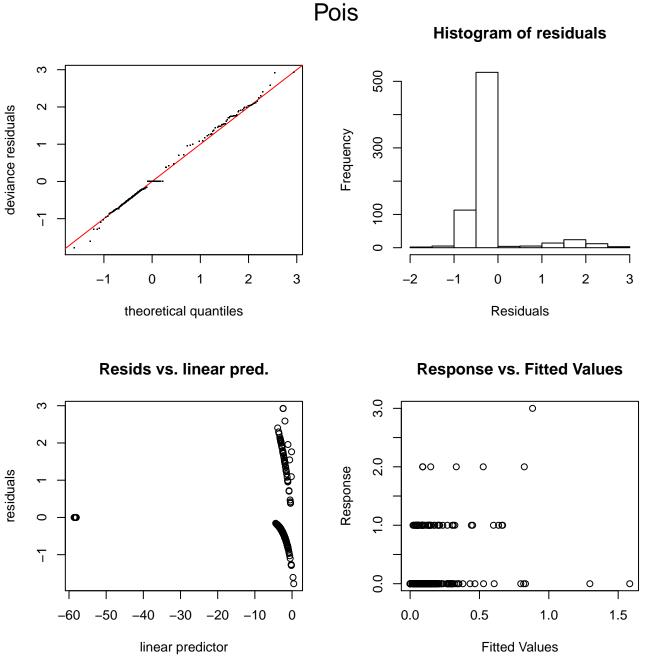


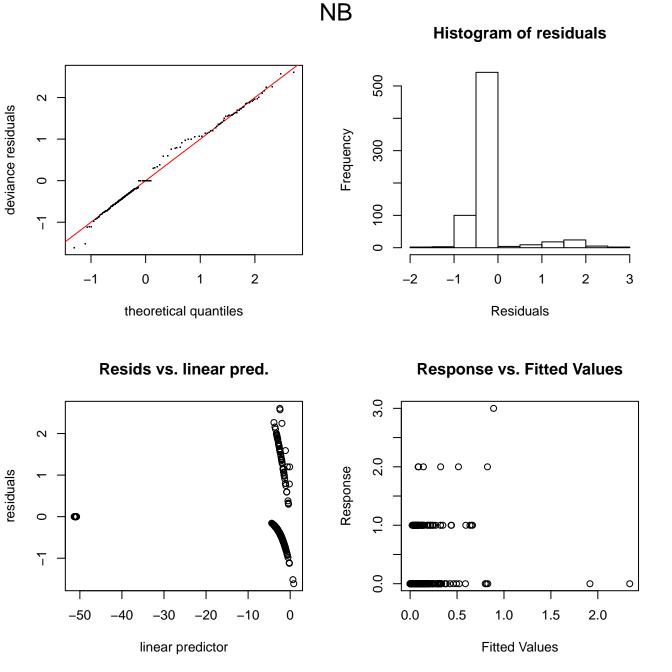


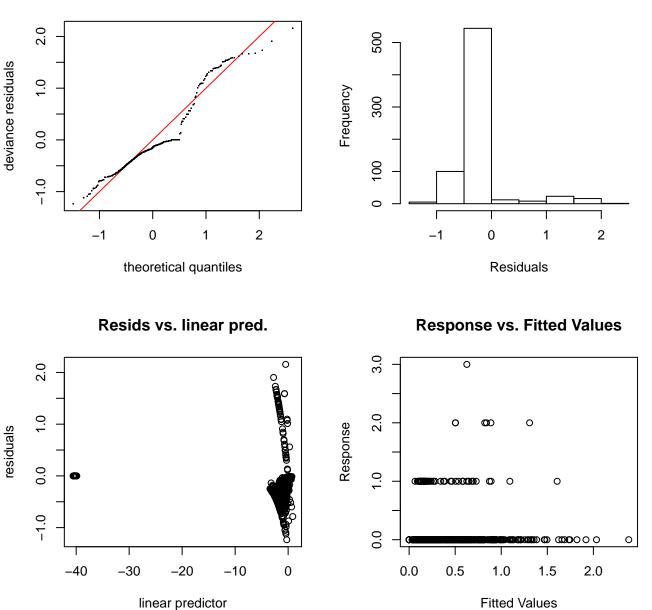


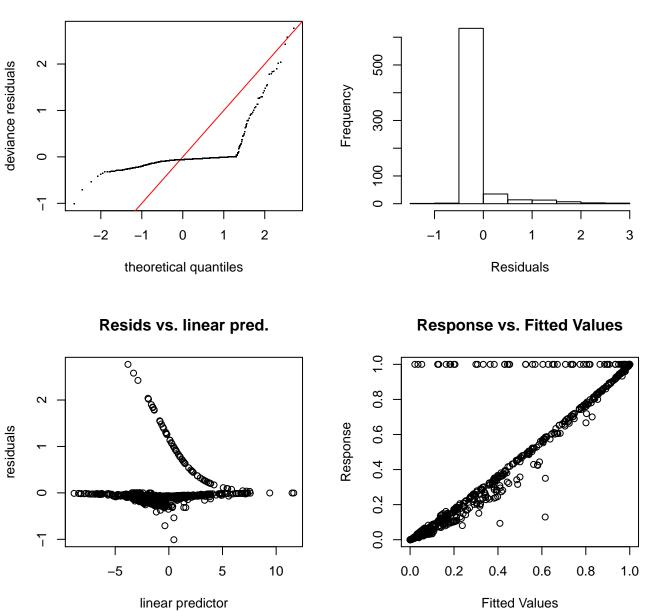
## Scalloped hammerhead

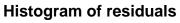
	Log.Like	AIC.c	AIC.delta	AIC.w	AIC.Ev.ratio
Pois	-213	458	0	4.44e-01	1.24e+00
NB	-213	458	0	5.53e-01	1.00e+00
ZIP	-200	469	11	2.67e-03	2.07e+02
ZINB	-204	474	16	1.56e-04	3.54e+03



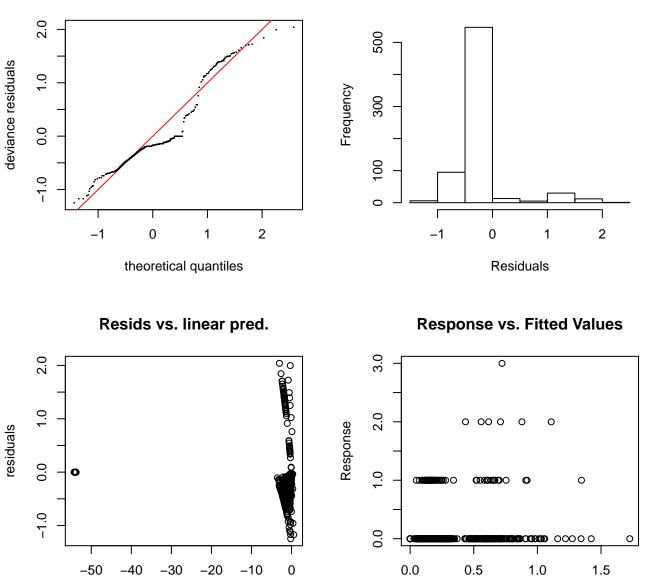






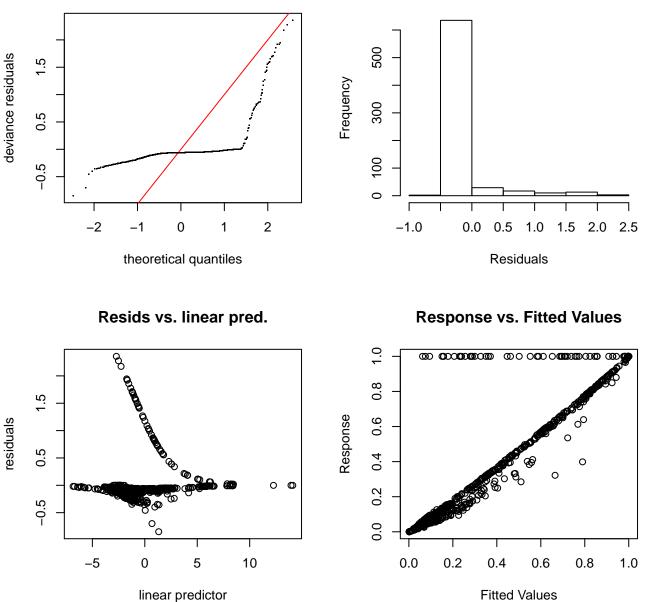


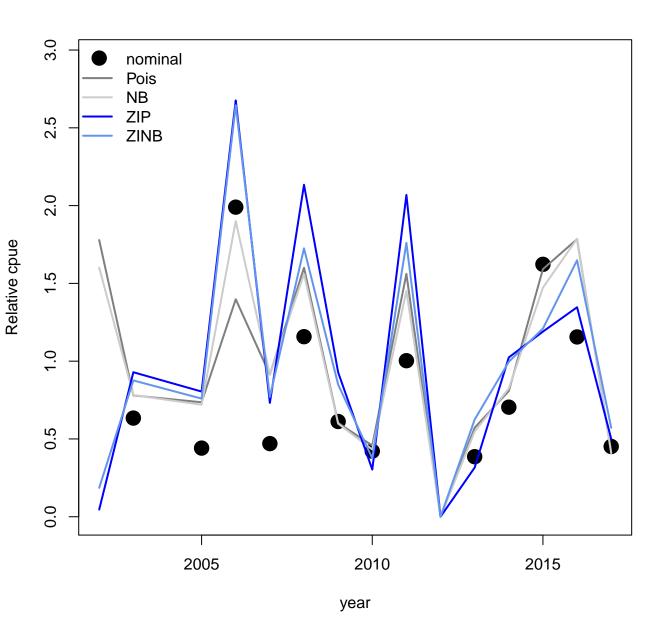
Fitted Values



linear predictor

# ZINB binomial part Histogram of residuals

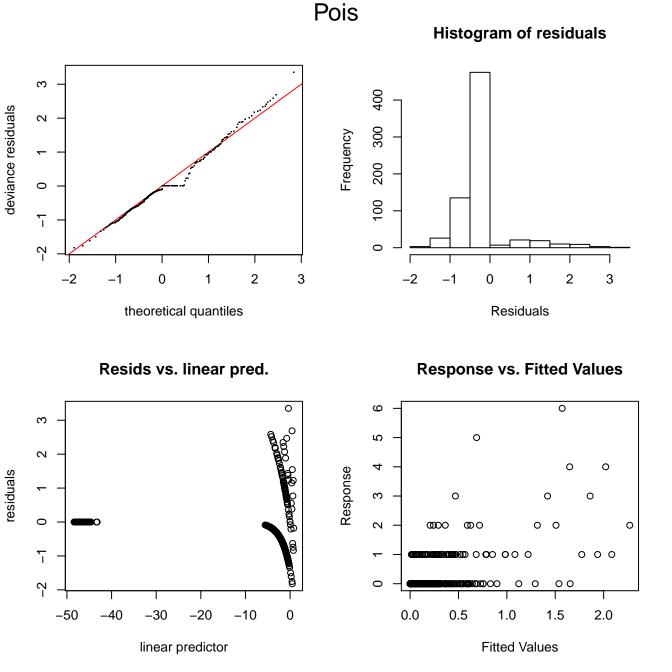


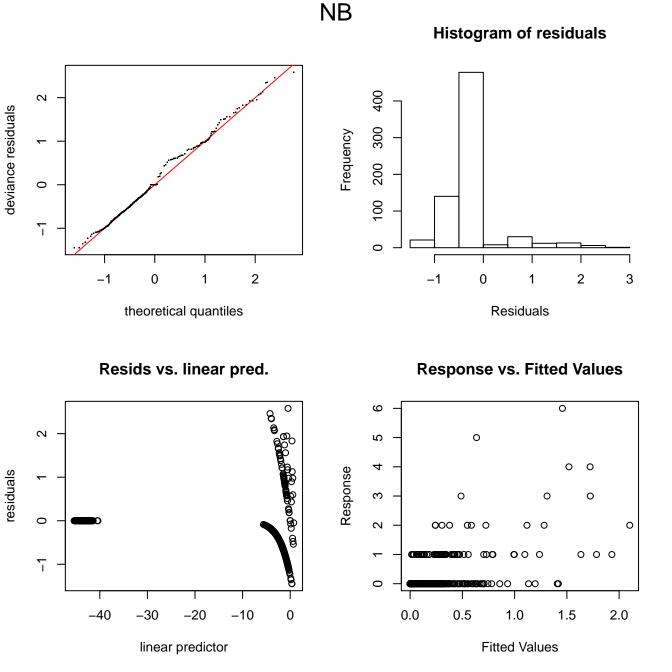


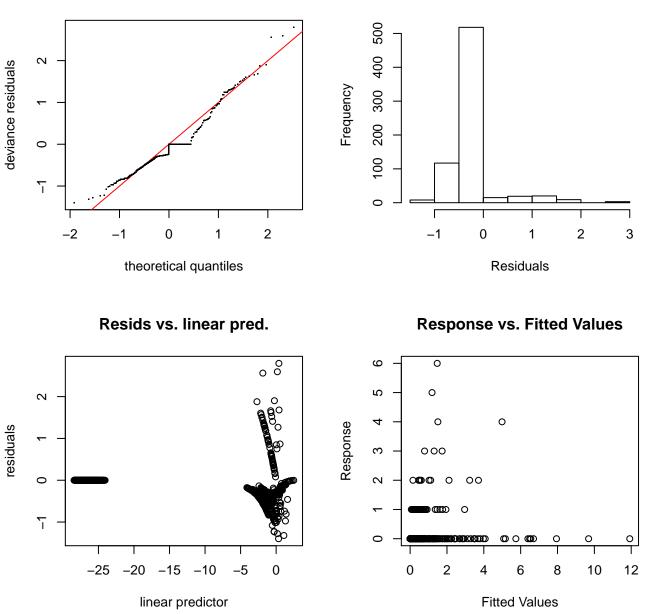
## Dusky shark

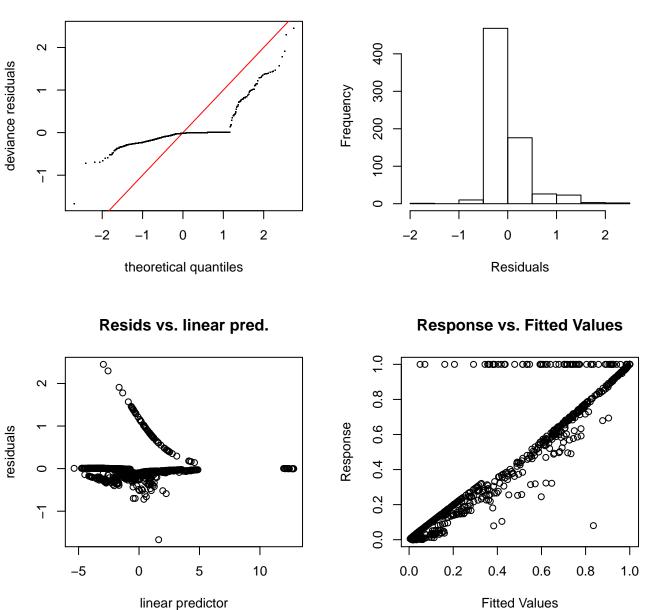
	Log.Like	AIC.c	AIC.delta	AIC.w	AIC.Ev.ratio
Pois	-223	485	4	1.45e-01	5.89e+00
NB	-221	482	0	8.55e-01	1.00e+00
ZIP	-225	515	33	4.61e-08	1.86e+07
ZINB	-223	515	33	6.31e-08	1.36e+07

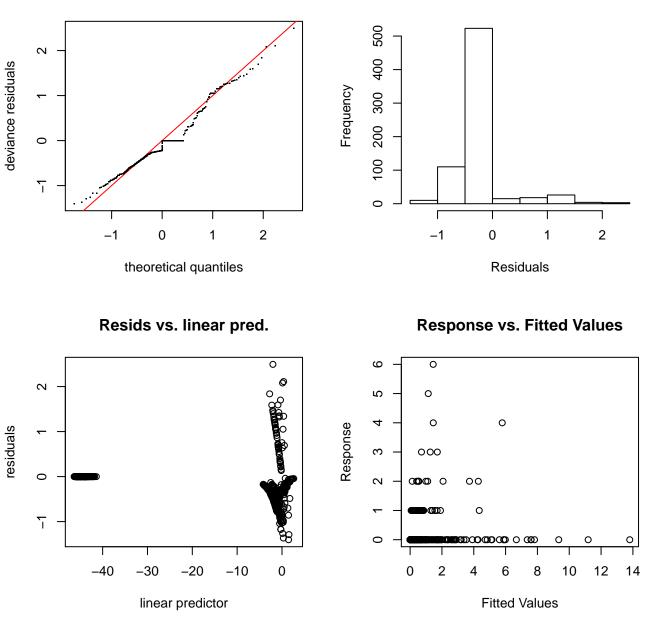
 $\label{eq:best_AIC.w} Best.AIC.w= NB \\ Catch.Target \sim c("year", "s(Mid.Lat,k=3)", "s(BOTDEPTH,k=3)") + offset(log.Ef) \\$ 



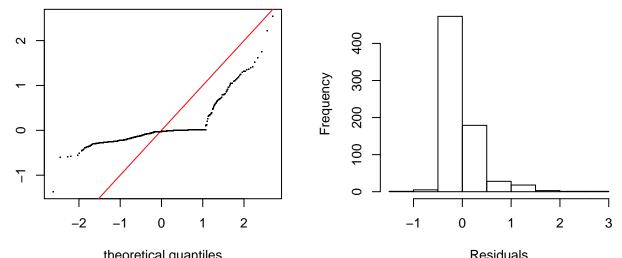




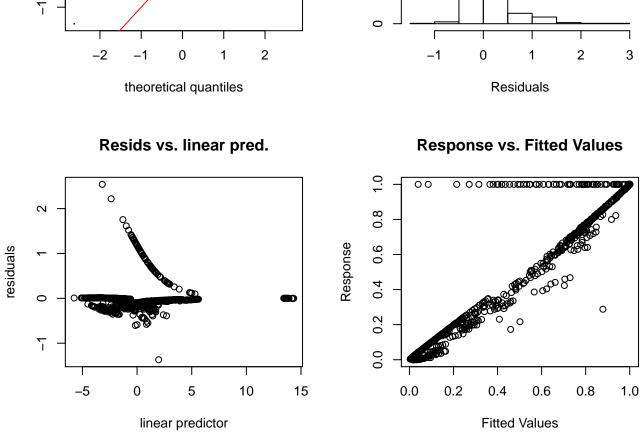


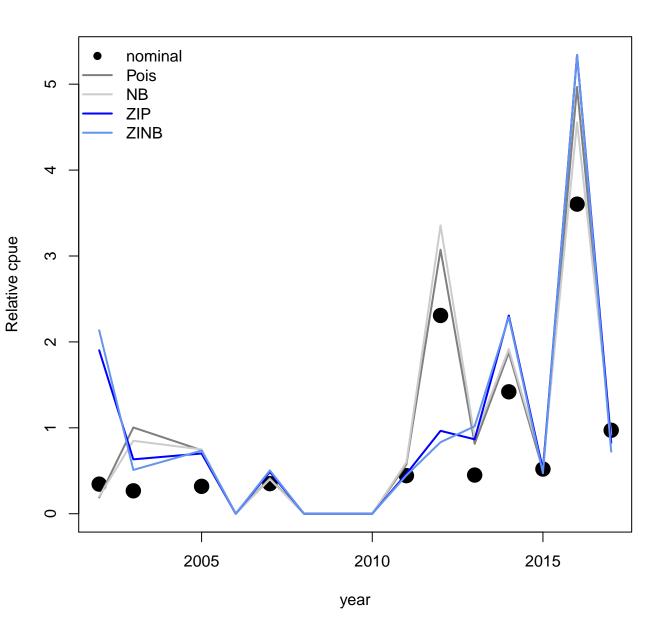


## ZINB binomial part Histogram of residuals



deviance residuals

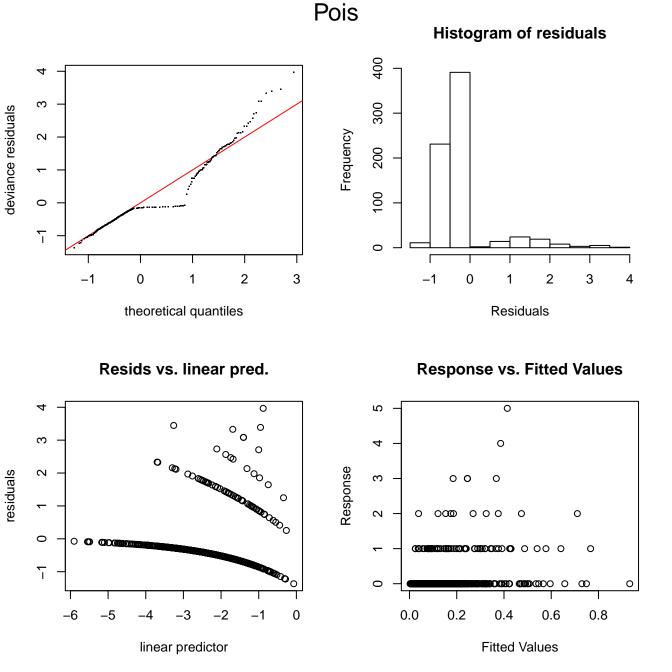


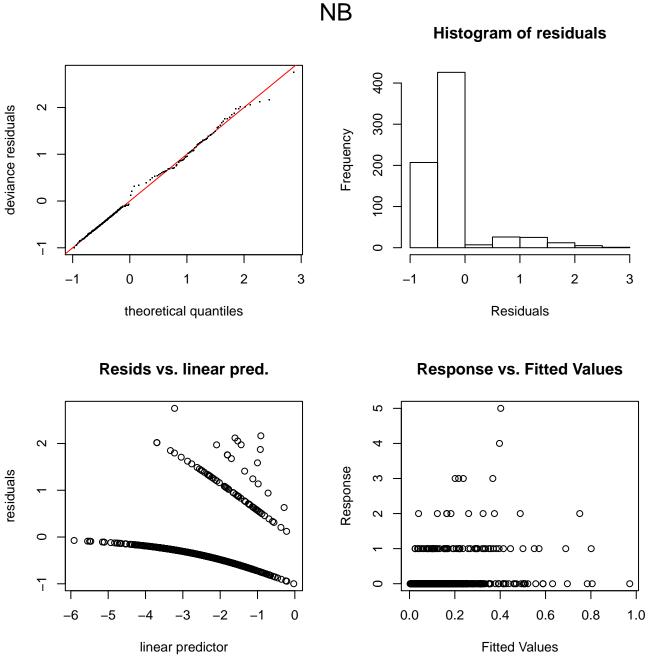


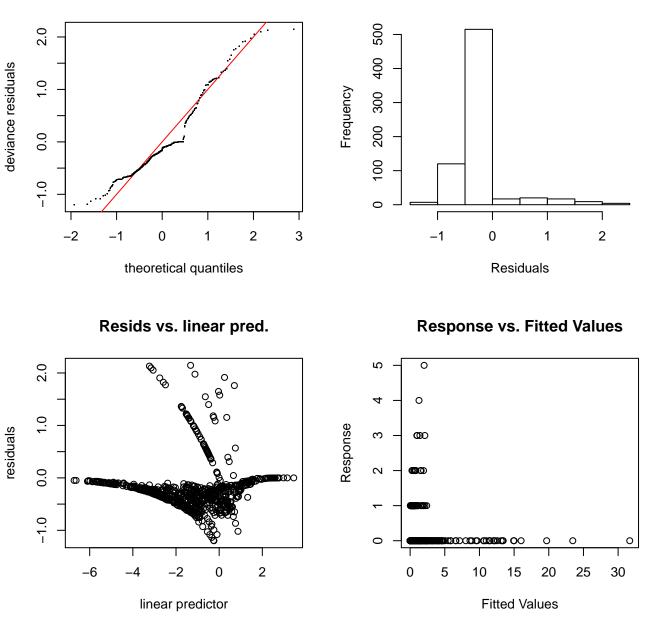
## Sliteye shark

	Log.Like	AIC.c	AIC.delta	AIC.w	AIC.Ev.ratio
Pois	-283	600	23	8.85e-06	8.29e+04
NB	-272	577	0	7.34e-01	1.00e+00
ZIP	-249	580	2	2.17e-01	3.39e+00
ZINB	-249	583	5	4.99e-02	1.47e+01

 $\label{eq:best_AIC.w} Best.AIC.w= NB \\ Catch.Target \sim c("year", "s(Mid.Lat,k=3)", "s(BOTDEPTH,k=3)") + offset(log.Ef) \\$ 

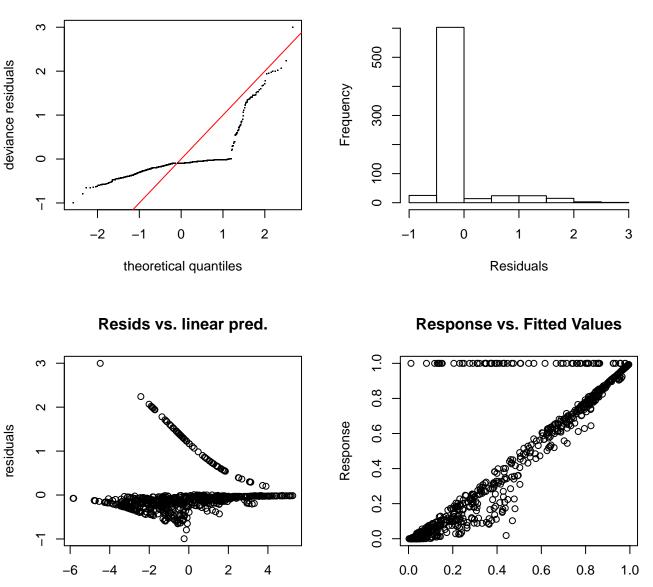




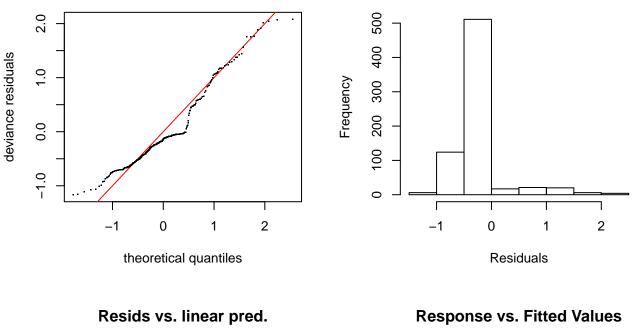


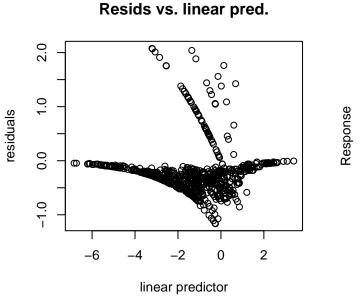
#### Histogram of residuals

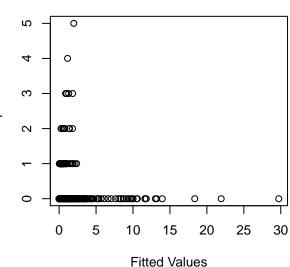
Fitted Values



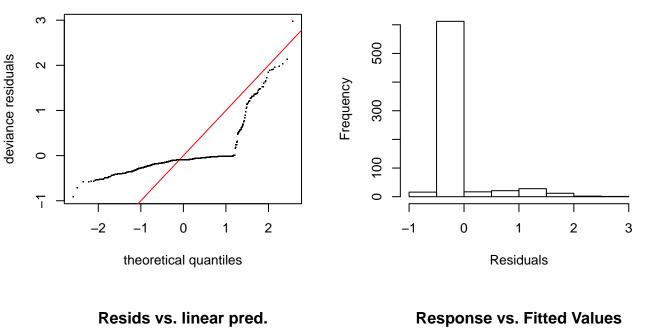
linear predictor

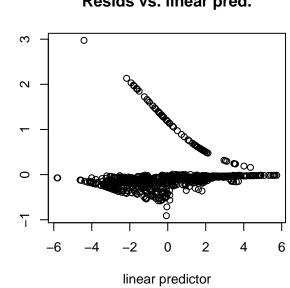






#### Histogram of residuals





residuals

