**BIOL 5504:** **Quantitative Methods in Ecology and Evolution**

**Spring 2022**

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**Results**

Based on the hypothesis that fish catch depends on interaction between boat length and effort, taking account and controlling the distribution of my boat identification.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | Estimate | SE | z- value | P -value |
| Intercept |  |  |  |  |
| Effort  Boat Length |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Generalized linear mixed model fit by maximum likelihood (Laplace Approximation) ['glmerMod']

Family: Negative Binomial(27916.36) ( log )

Formula: catdat$catch1 ~ length + effort + (1 | catdat$boat)

Data: train.scaled

AIC BIC logLik deviance df.resid

2326449688 2326449746 -1163224839 2326449678 799045

Scaled residuals:

Min 1Q Median 3Q Max

-92.4 -25.2 -20.5 -15.9 5225.6

Random effects:

Groups Name Variance Std.Dev.

catdat$boat (Intercept) 0.4382 0.662

Number of obs: 799050, groups: catdat$boat, 2923

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) 6.015e+00 2.328e-03 2584 <2e-16 \*\*\*

length 4.137e-01 2.999e-03 138 <2e-16 \*\*\*

effort 8.112e-02 3.936e-05 2061 <2e-16 \*\*\*

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Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Correlation of Fixed Effects:

(Intr) length

length 0.062

effort 0.000 -0.001

optimizer (Nelder\_Mead) convergence code: 0 (OK)

Model failed to converge with max|grad| = 0.0105395 (tol = 0.002, component 1)

Model is nearly unidentifiable: very large eigenvalue