# Predicting relative abundance of sharks by region using iNaturalist observations

## Regions

Hawaii, Bahamas – regions that are richer in social media presence than average, especially for underwater photography and other ocean-going tourism

## Data

* iNaturalist shark observations and iNaturalist total observation effort (total posts)

**Bahamas –** [19.7121, -80.0365, 27.3775, -69.7489]

* total shark observations: 672
* total observations: 38,640
* time range: 1983-2024
* mean shark observations: 5.05
* mean total posts: 243
* mean sightings per unit effort SPUE: 0.19

**Hawaii –** [16.5, -179.5, 29.5, -152.5]

* total shark observations: 609
* total observations: 87,816
* time range: 1999-2024
* mean shark observations: 4.22
* mean total posts: 504
* mean sightings per unit effort SPUE: 0.06

## Model choice and assumptions

**Zero-truncated negative binomial**

* with a ZTNB, we assume that instances where shark observations > 0 are approximately correct, because social network logging is uncertain to capture shark absence
* If a user sighted a shark, we do not count other observations by the same user as zeros (by month) because they are recording other animals in addition to a shark meaning a shark is not absent. Only observations by users who have not recorded a shark in the same month are counted as an absence

A screenshot of a computer code

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**Bahamas Hawaii**

**A graph with a red line

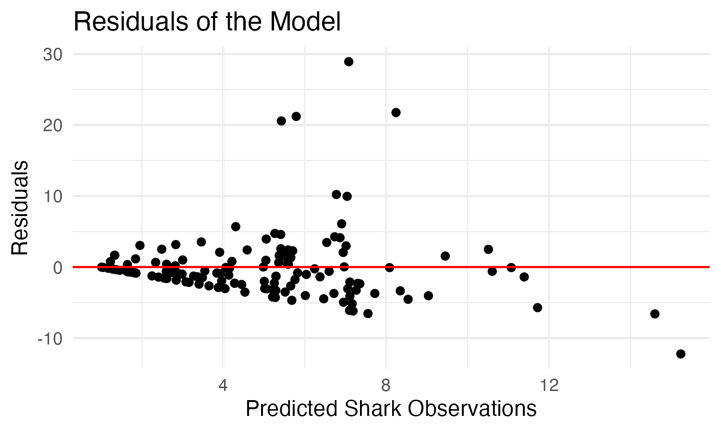
Description automatically generatedA graph with red dots and blue line

Description automatically generatedA graph with a red line

Description automatically generated**

**A screenshot of a computer code

Description automatically generatedA screenshot of a computer code

Description automatically generatedA graph with a line going up

Description automatically generatedA graph with a red line

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