Effect of Species Distribution on Demography Inference in Philippine Fishes

Philippine PIRE Project 2022
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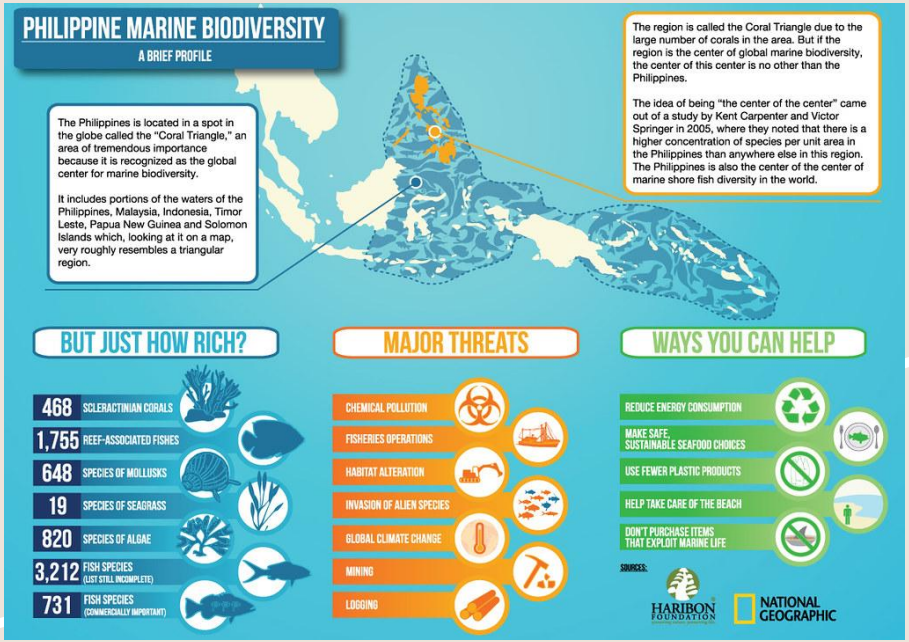
Background



Pacana 2015

- **Philippine Biodiversity**
  - PIRE Project
- **Distribution**
  - Geographical range
  - Seasons, breeding range, resources, **human interference**
- **Population Levels**
  - Effective population (N_E)
  - Maximum (N_{max})
  - Minimum (N_{min})
  - Average (N_0)

Ostorhinchus chrysopomus

Luna and Valdestamon

Fraser 2012

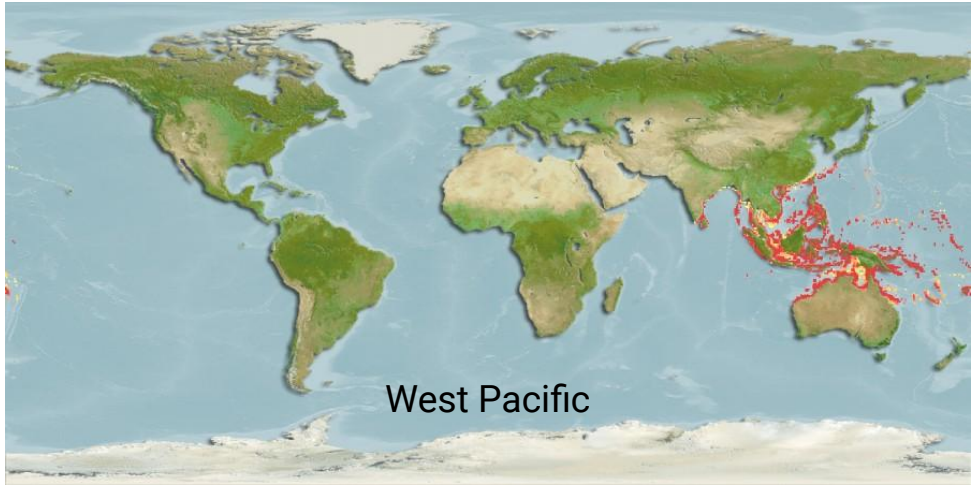
Aquamaps

- **Spotted Gill Cardinalfish**
  - **Habitat**
    - Coral reefs
    - Depth: 2-25m
  - **Mating**
    - Mouthbrooders
  - **Short Distribution**
    - West Pacific

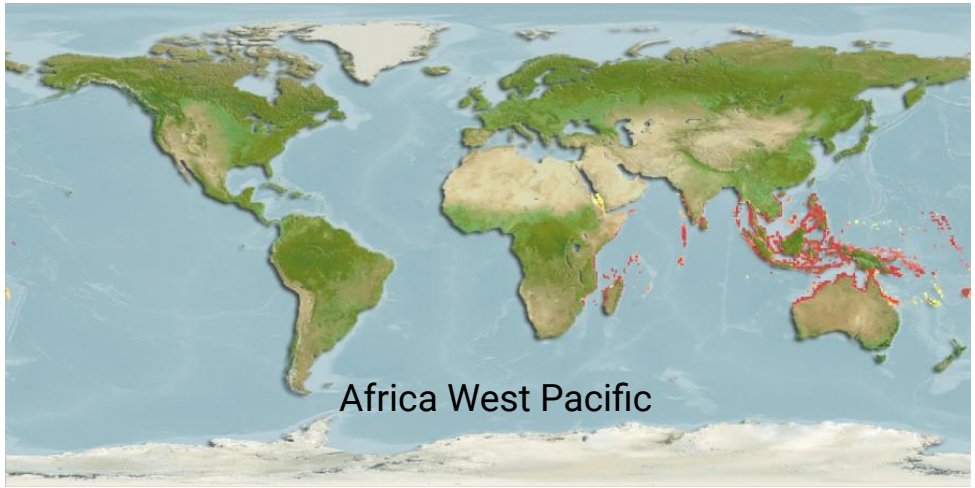
Other Fishes

- Determine if there is a pattern in the population history of different species with larger distributions

Distribution	West Pacific	Africa West Pacific
# of species	5	14



Aquamaps



Aquamaps

Objective and Hypotheses

Null: Species distribution has no effect on population history.

Alternative: Species distribution does have an effect on population history

Goal: Assess whether species distribution can be associated with population historical trends

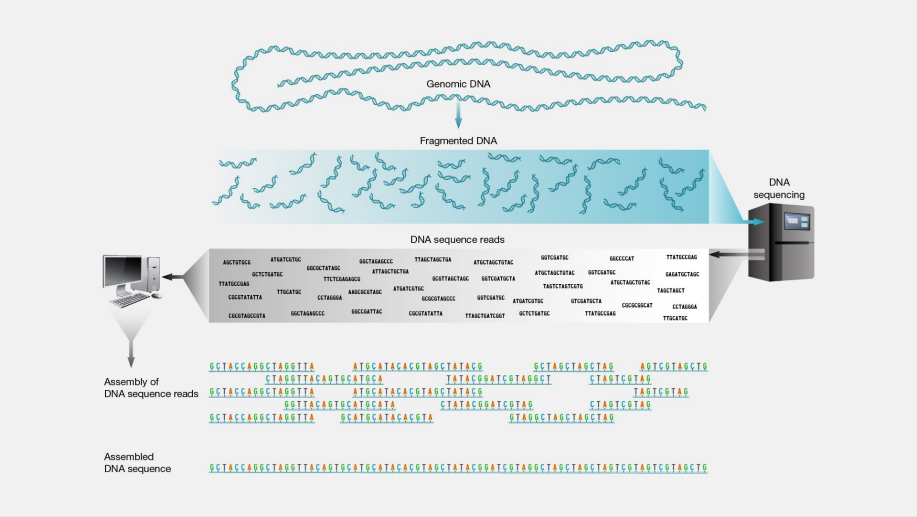
1. The distribution of *O. chrysopomus* has an effect on its population history.

2. Fish species with larger distributions (Africa West Pacific) will have a larger population than those with shorter distributions (West Pacific).

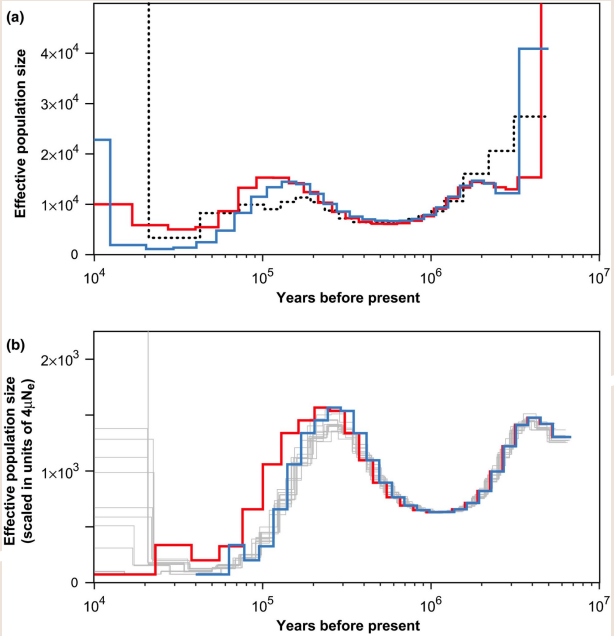
3. Fish species with shorter distributions will be more susceptible to human pressures.

Methods

- PIRE Shotgun Sequencing Libraries (**SSL**) Pipeline
  - Genome assembly



Researchgate



- Pairwise Sequentially Markovian Coalescent (**PSMC**)
  - **Coalescent** simulation (Mather et. al 2019)
  - Direct empirical analysis

References

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Acknowledgements

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