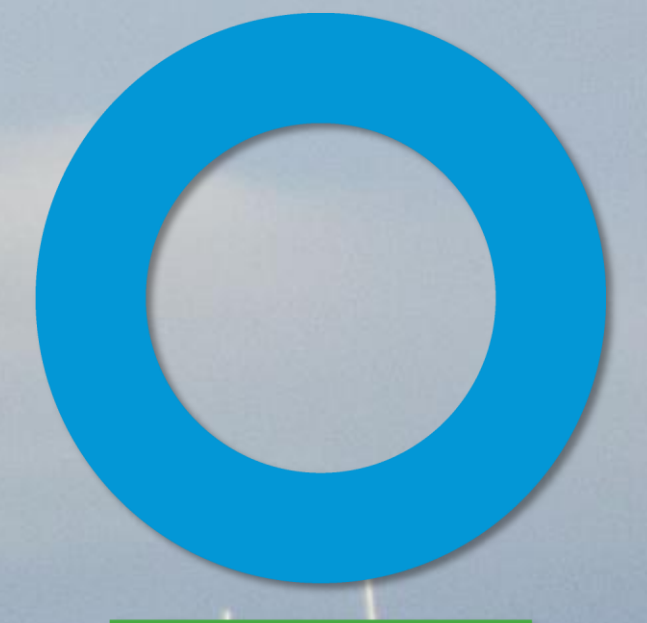


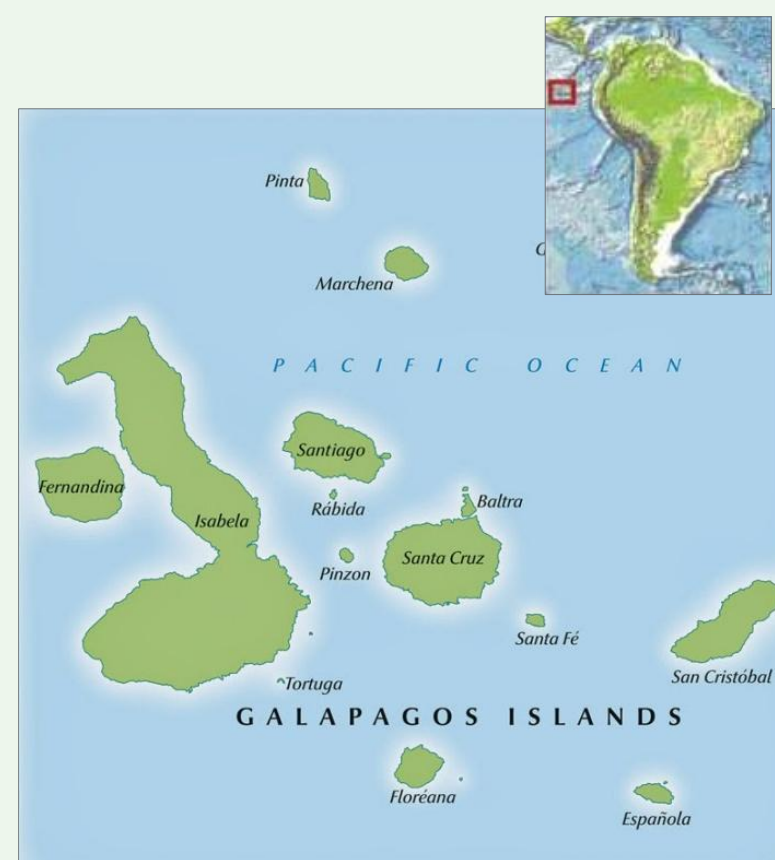
Exploring Innovative Management Strategies for the Red Spiny Lobster in the Galápagos Islands

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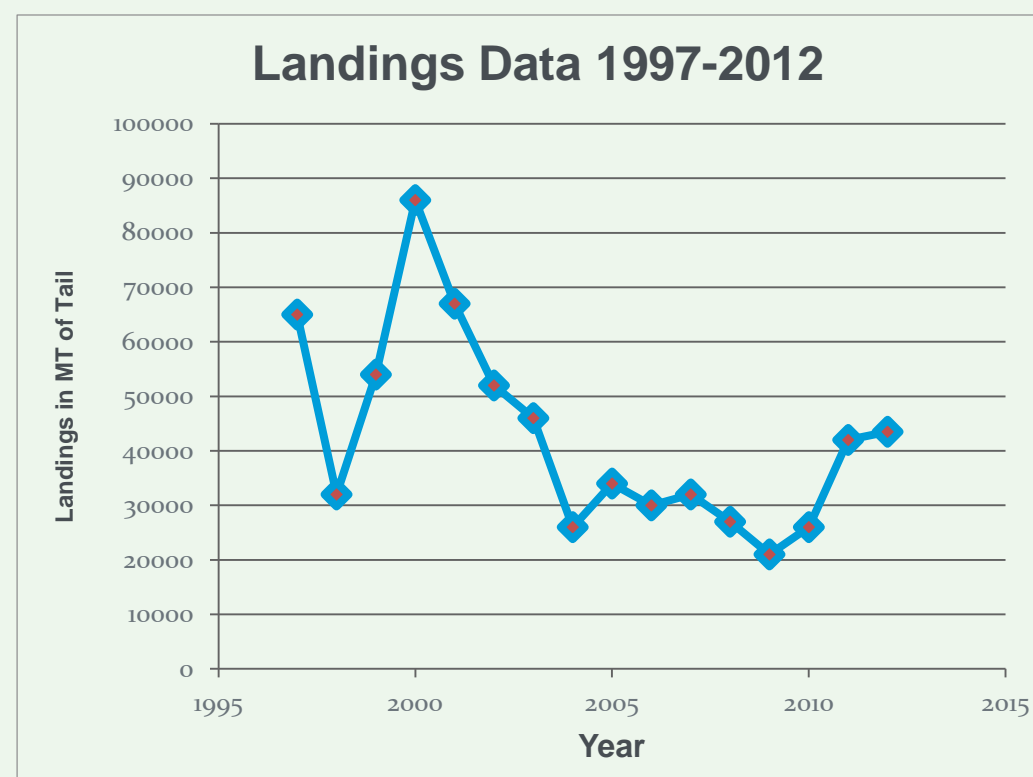


Background

- Islands are valued for unique and abundant biodiversity.
- Lobster are the most important species harvested in Galápagos, and fishermen rely on the stability of this resource for their income.
- Lobster play an integral role in the health of the marine ecosystem.



Problem Statement



Lobster landings have been declining over the past decade.

If the lobster stock crashes, fishermen will lose their income, and the prized marine ecosystem of the Galápagos archipelago could be at risk.

Project Objectives

- Determine the status of the lobster stock
- Assess feasibility of two management solutions that could:
 - Ensure the stability of the lobster population
 - Maintain income for fishermen

Methods

Decline in landings, uncertainty in fishery

Data-Poor Assessments (DPAs)

- Criteria analysis to compare multiple models
- Run best models with data from Galápagos National Park (GNP) to determine if overfishing is occurring

Found overfishing

Territorial Use Rights Fishery (TURF)

- Develop a framework to assess feasibility
- Apply framework to Galápagos lobster fishery

Information from: case studies, empirical studies, interviews, and surveys

Market-Based Solution

- Evaluate current local demand for lobster
- Project potential local demand and methods to achieve it

Information from: surveys with tourists, restaurants, and tourism operators

Data-Poor Assessments

Questions

Is overfishing occurring?

What is the best model for GNP to use to monitor the lobster stock on an annual basis?

Data-Poor Assessments (DPAs)

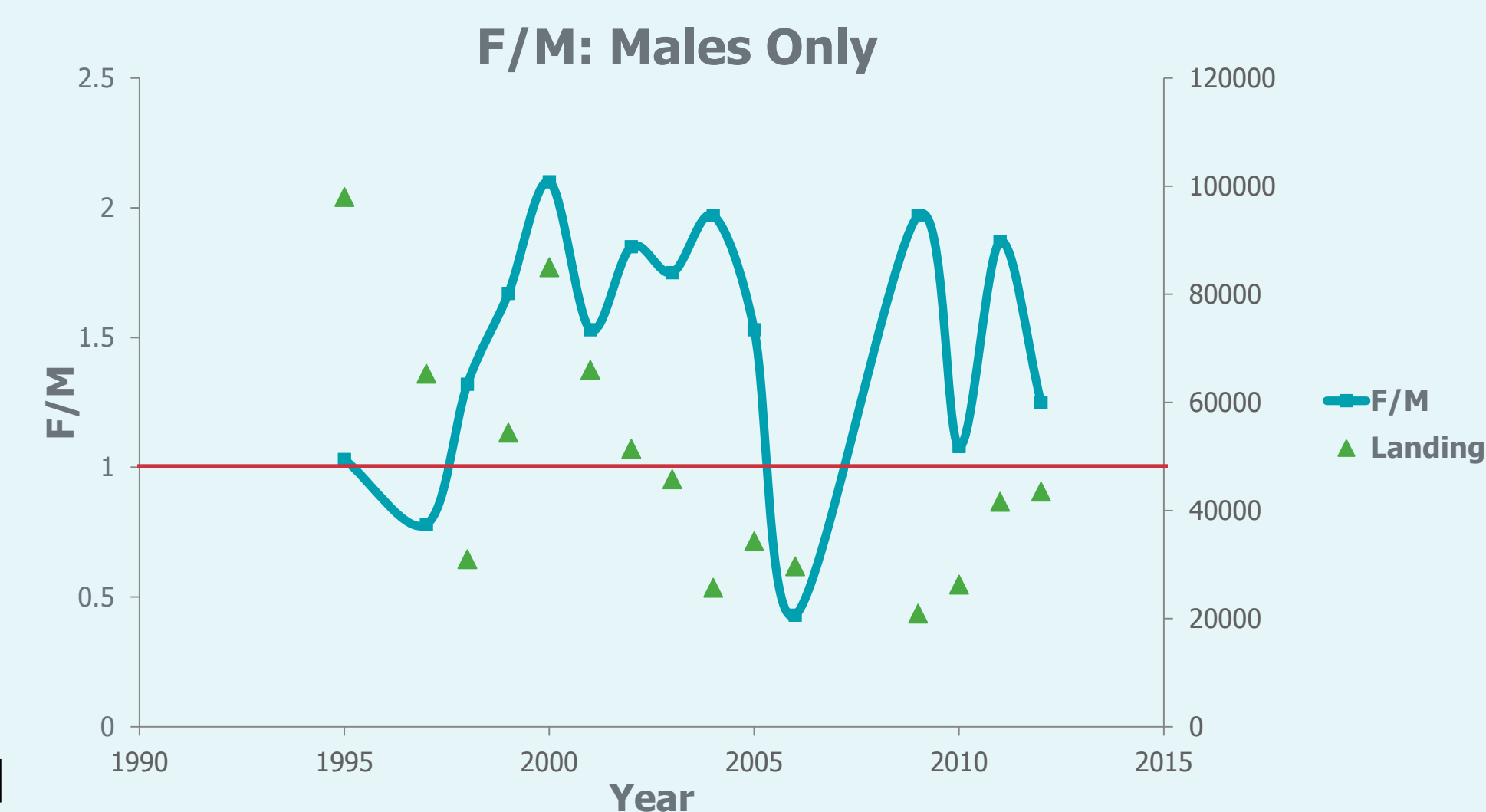
The GNP criteria for a usable tool:

- Easy to use
- Cost-effective
- Able to be performed annually
- Facilitate efficient data collection

Data-poor assessments use minimal data, already recorded by the GNP, and provide indicators of the health of the stock.

Analysis of indicators reveals whether fishing pressure should be reduced or if it can be increased.

Results



This graph shows the ratio of F/M from the assessment:

F = fishing mortality
M = natural mortality

Many fisheries are managed at or below a F/M of 1, corresponding to a sustainable amount of fishing (shown by the red line).

The average F/M over the last 4 years in the Galápagos lobster fishery is 1.5.

Discussion

Data-poor assessments are a valuable tool for the lobster fishery and the Galápagos National Park. The specific DPA used in our analysis, Catch Curve, indicates overfishing is likely occurring in most years.

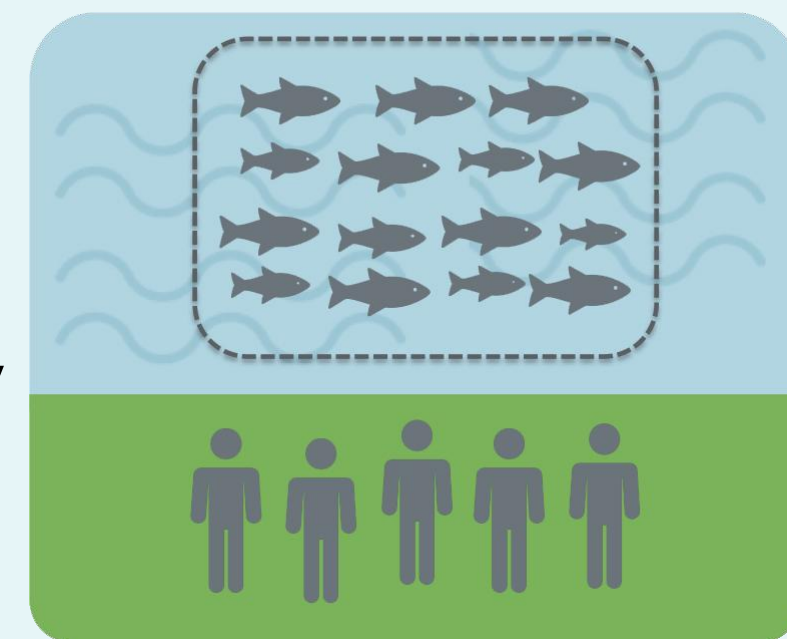
TURF

Question

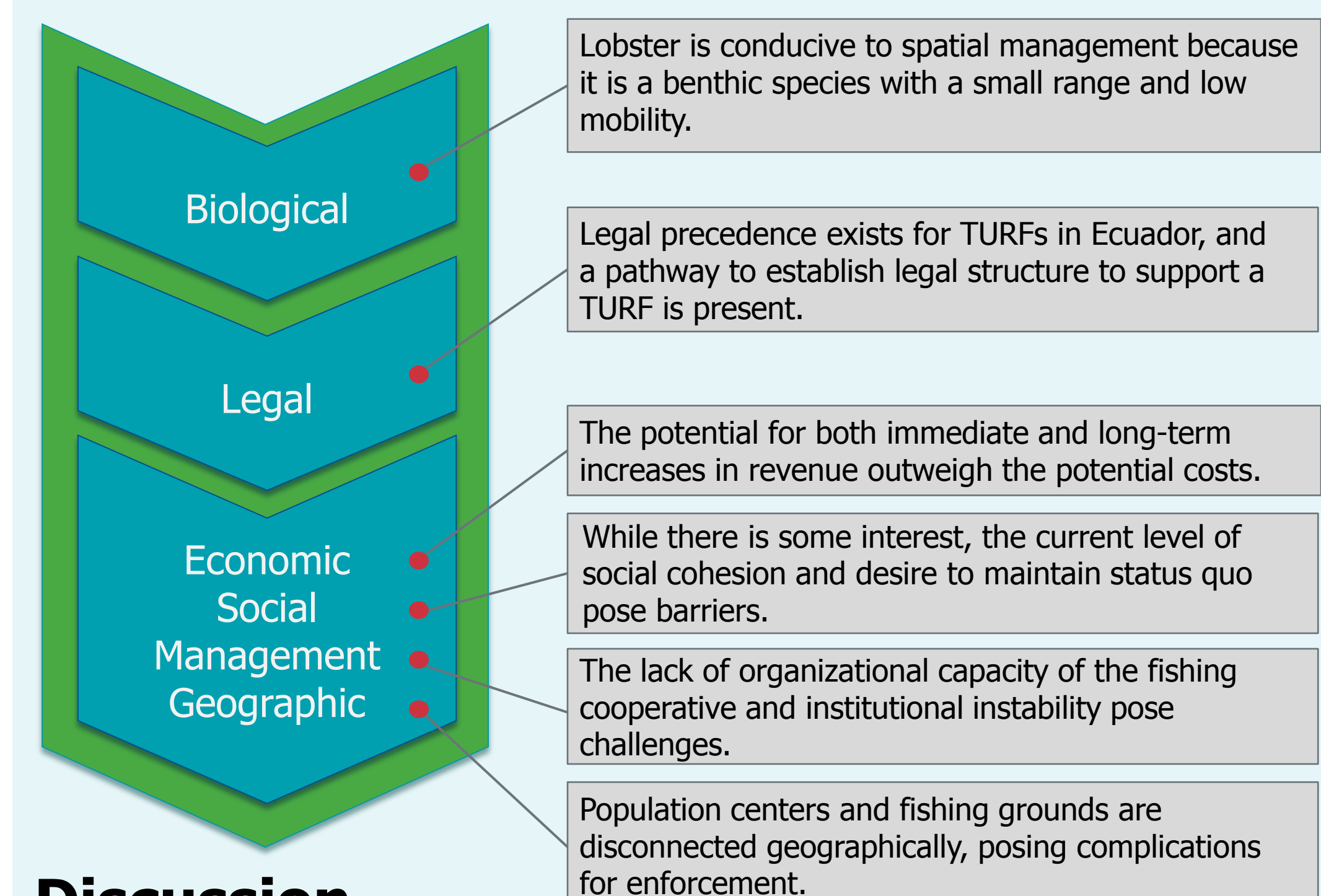
Is a TURF for the Galápagos lobster fishery feasible to implement?

What is a TURF?

Territorial Use Rights Fisheries (TURFs) give exclusive access to marine resources within a specific area to select fishermen. By assigning property rights to a resource, fishermen are incentivized to be good stewards of it.



Results



Discussion

Barriers to the implementation of a TURF exist; however there is enough support for a small-scale TURF, which could prove its effectiveness and eventually overturn the existing barriers.

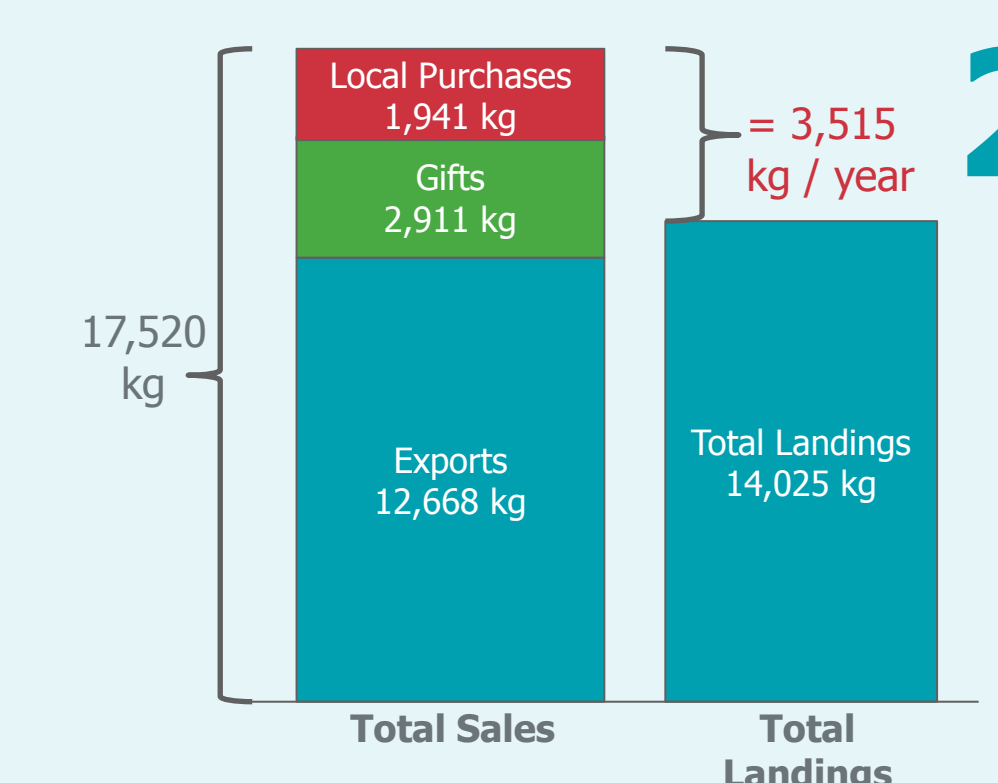
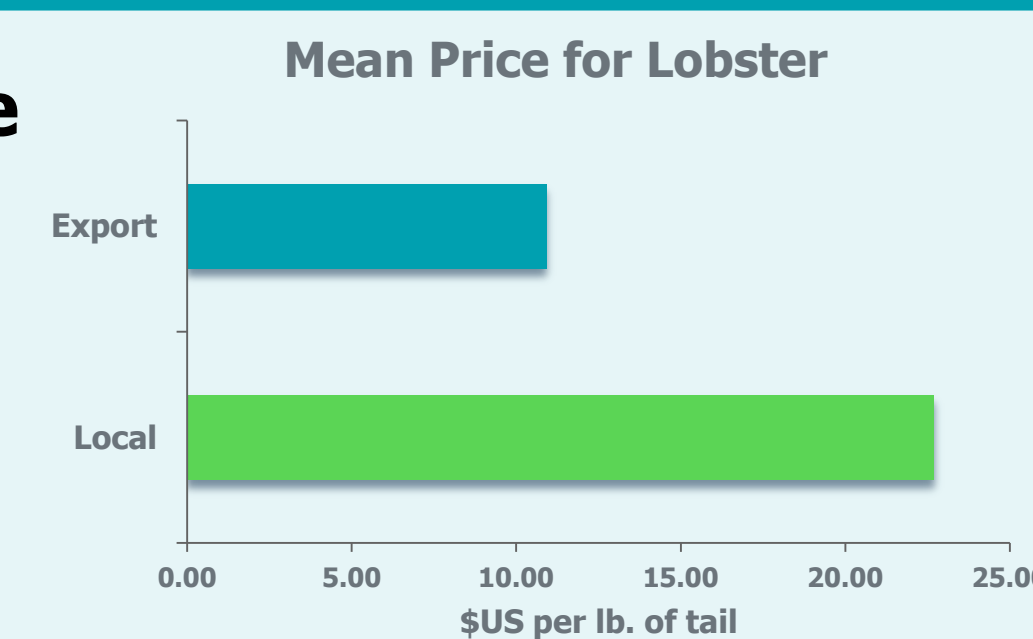
Market

Question

Can the local lobster market be enhanced to offset the lost income fishermen will experience if the annual lobster quota is lowered in order to reduce fishing pressure?

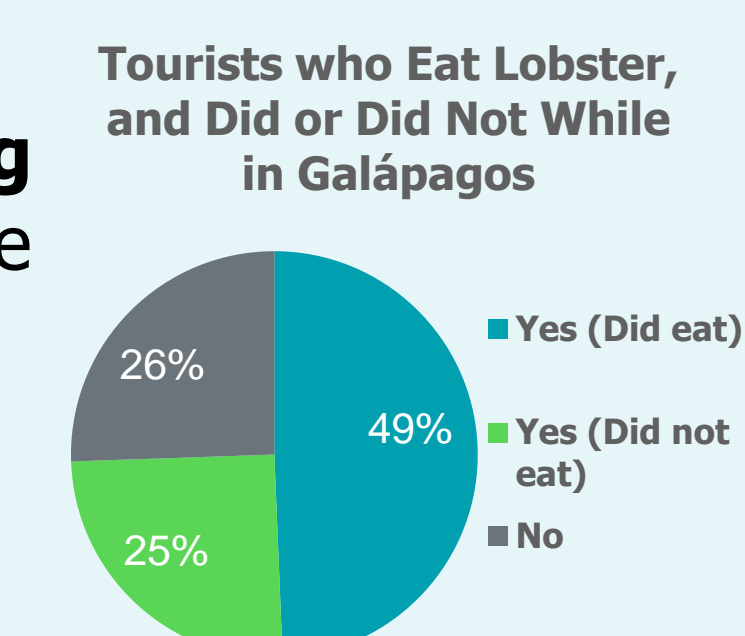
Results

- Local vs. Export Price:** Fishermen receive double the price when they sell lobster locally instead of exporting it.



- Discrepancy in Sales:** Lobster sales and landings are documented in different databases. The total amount of lobster sales was larger than the total reported landings.

- Social & Educational Marketing:** Campaigns can be used to increase the amount of people who eat lobster when visiting the Galápagos, as well as how many lobsters they eat.



Discussion

Shifts in the sales of lobster to the local market could offset the short-term loss of income fishermen would experience if the GNP reduces the quota in response to overfishing.

Conclusions

- According to the assessment, overfishing is occurring, and the actual amount of lobster landed is 25% higher than the reported landings.
- A TURF for the lobster fishery is feasible and could be beneficial, but some barriers currently exist.
- Increasing the amount of people eating lobster or the number of lobsters eaten could absorb more of the total landings locally, which yields increased revenue for fishermen.



Overall Recommendations

- GNP should reduce the lobster quota to address overfishing, taking the amount of unreported catch into consideration.
- A small-scale, pilot TURF project should be implemented.
- A marketing campaign directed at tourists should be developed to increase local lobster demand.
- GNP should use the DPA each year to determine the status of the fishery and adjust the quota accordingly.
- Monitoring and enforcement should be improved.



Future Work

- Convert data-poor assessment into an easy-to-use format
- Create standardized data collection sheet for GNP
- Develop marketing campaign to promote local lobster demand

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For more information email: galapagos@lists.bren.ucsb.edu or visit <http://www2.bren.ucsb.edu/~galapagos/index.html> (a pdf of this poster is located there)