POSITIVE EFFECTS OF COMMUNITY-LED MARINE RESERVES ON THE GREEN ABALONE
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Dr. Jeremie Bauer

Dr. Rodrigo Beas
Dr. Julio Lorda
Dr. Alicia Abadía-Cardoso
Dr. Luis Malpica-Cruz
Dr. Ricardo Searcy-Bernal
Acknowledgements
Outline

- Mexican fisheries & impacts
- Establishment of marine reserves at Guadalupe Island, Mexico
- Abalone population monitoring
- Positive effects on population parameters
Abalone fishery in the BC Peninsula

3000 t - 50°S - 70°S

90%

300 t - 2017

(Morales-Bojórquez et al., 2008; Cook, 2019)
Multiple Stressors

FISHERIES

ENVIROMENTAL FACTORS
2009 – Mass Mortality
Vulnerable ecosystems
HOW CAN WE IMPROVE THE ABALONE CONSERVATION AND PRODUCTION IN BAJA CALIFORNIA?

In the context of overfishing and environmental factors
Guadalupe Island Abalone Project

241 km
150 mi
• Biosphere reserve
• No poaching
• Abalone subspecies
  • *Haliotis fulgens guadalupensis* (Gutierrez-Gonzalez *et al.*, 2007)
• The investment stays in the system

Super sexy for conservation!
Abuloneros y Langosteros
Stored in a warehouse
Market presentation
WHAT IS THE GREEN ABALONE POPULATION STRUCTURE AT GUADALUPE ISLAND?
9 – MARINE RESERVES
Population Monitoring

- Monitoring 2020-21
- 188 transects - 60 m²
- 33 sites
- 11,280 m²
- 2327 green abalones
- Shell length
WHAT ARE THE EFFECTS OF THE MARINE RESERVES ON THE GREEN ABALONE?

Size – Density – Aggregations – Egg production
Results - Fishing Areas

One-Way ANOVA, P < 0.001
Mean Density
0.21 ind x m²

TRIPLED!

0.6 ind x m²

RECRUITMENT AREA

MARINE RESERVES
Aggregations are important MRs. Fished areas

One-way ANOVA, P < 0.01
High densities of male and female abalone help to ensure successful reproduction.
One-way ANOVA, $P < 0.01$

**Egg production**

**Fished areas**
Reproductive potential

Micheli et al., 2012
Conclusions

• Guadalupe Island is a phenomenal natural laboratory
• Green abalone population seems to be healthy
• Marine reserves had short term positive effects
• We have to continue developing social-ecological projects to maintain a sustainable abalone production
• Marine reserves are a promising tool for conservation
• Replicate and develop adaptation climate change
Questions?

jeremie.bauer@uabc.edu.mx