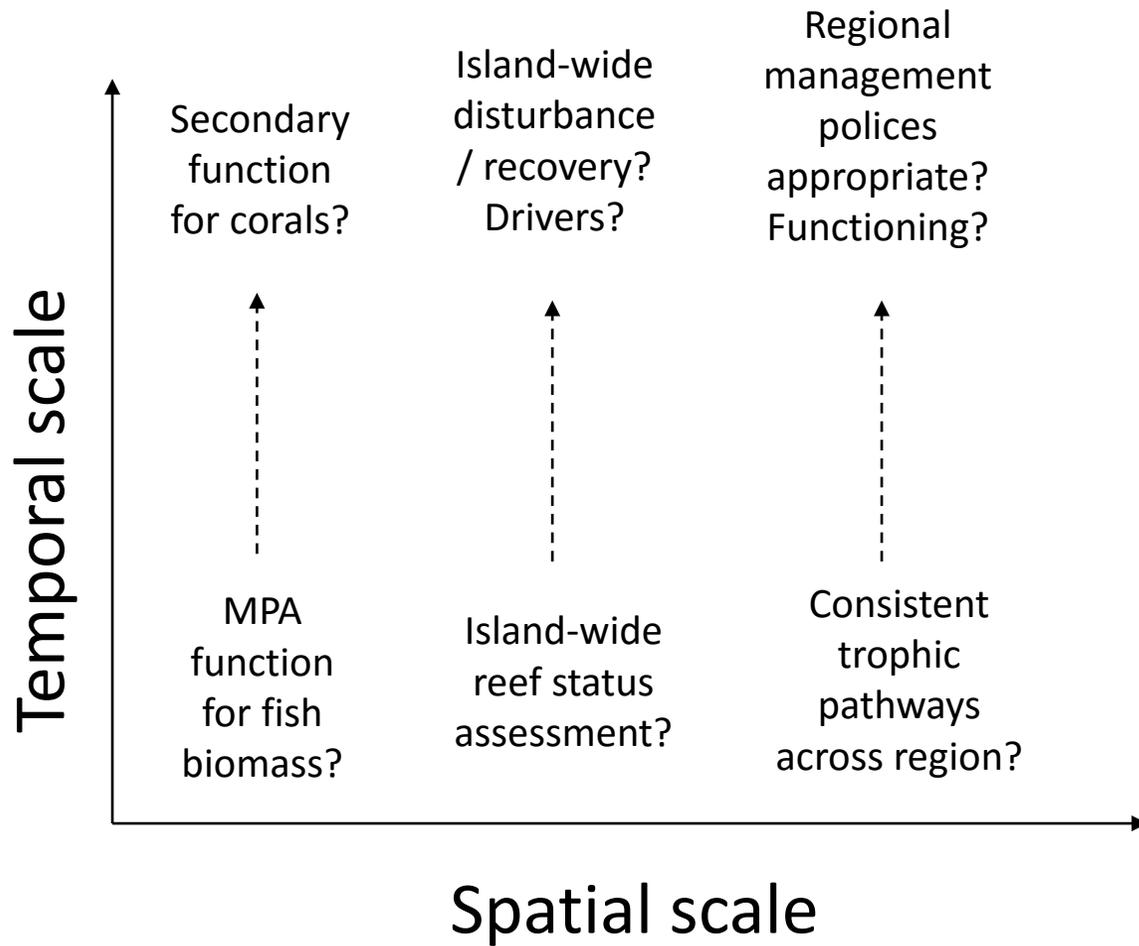


# Micronesia Challenge Measures: Translating Science to Management

36<sup>th</sup> Meeting of the US Coral Reef Task Force  
Tumon, Guam  
23 September 2016

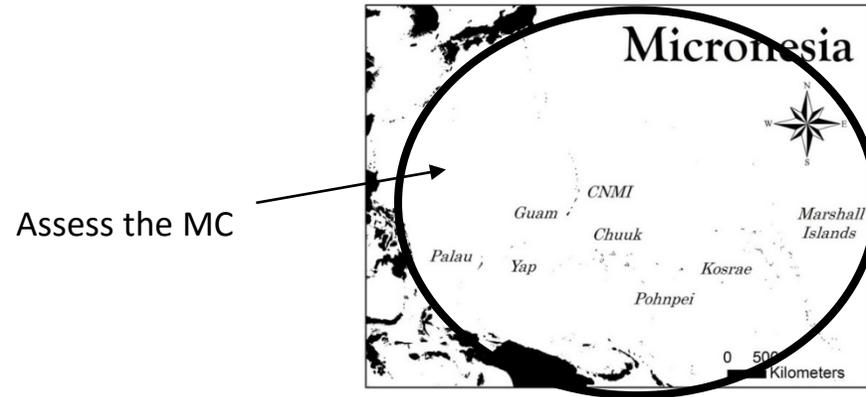


# Question-driven monitoring



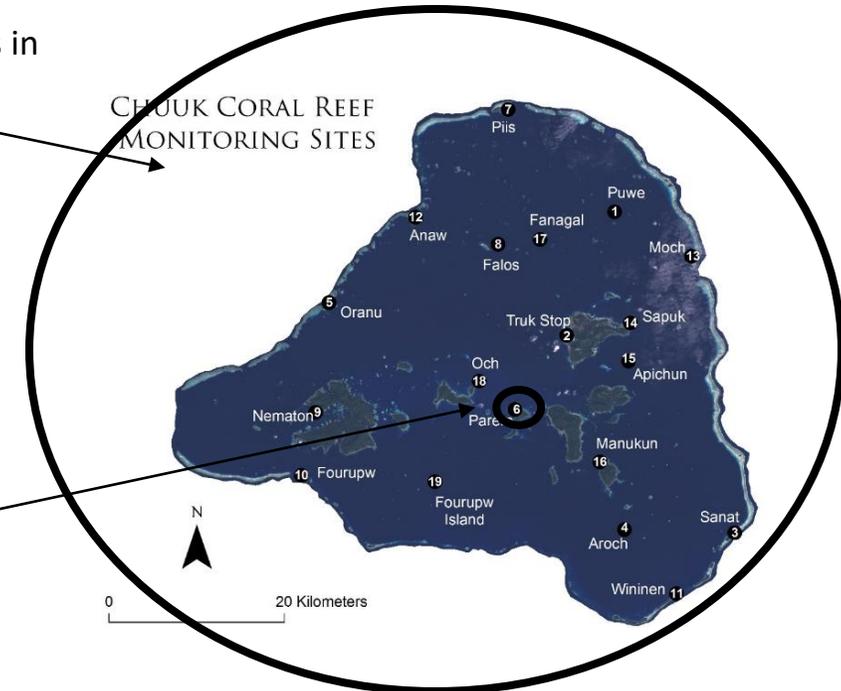
# Monitoring designs inform across scale

- Site-based
- Ability to scale up data analysis to islands/regions



Status of reefs in Chuuk State

CHUUK CORAL REEF MONITORING SITES



MPA functioning in Chuuk, FSM?

# Science – Translation – Management

- Communities / local governments - useful for securing buy-in
- Donors / grantors - useful for securing funding
- Scientists - useful for application to other systems



# Communities / Local Governments

- Pohnpei and Palau - Seasonal and size restrictions for sale
- Yap - Several new community based MPA's



# Donors / Grantors

- Laolao Bay, CNMI - ARRA grant and watershed restoration
- Chuuk Citizen Scientist / Monitoring Trip



# Scientists

- Results in peer-reviewed publications
- Shared in international forums

RESEARCH ARTICLE

## The Micronesia Challenge: Assessing the Relative Contribution of Stressors on Coral Reefs to Facilitate Science-to-Management Feedback

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**Data Availability Statement:** Supplemental information includes our data table that served as our inputs to the analyses (S2 Table).

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### Abstract

Fishing and pollution are chronic stressors that can prolong recovery of coral reefs and contribute to ecosystem decline. While this premise is generally accepted, management interventions are complicated because the contributions from individual stressors are difficult to distinguish. The present study examined the extent to which fishing pressure and pollution predicted progress towards the Micronesia Challenge, an international conservation strategy initiated by the political leaders of 6 nations to conserve at least 30% of marine resources by 2020. The analyses were rooted in a defined measure of coral-reef-ecosystem condition, comprised of biological metrics that described functional processes on coral reefs. We report that only 42% of the major reef habitats exceeded the ecosystem-condition threshold established by the Micronesia Challenge. Fishing pressure acting alone on outer reefs, or in combination with pollution in some lagoons, best predicted both the decline and variance in ecosystem condition. High variances among ecosystem-condition scores reflected the large gaps between the best and worst reefs, and suggested that the current scores were unlikely to remain stable through time because of low redundancy. Accounting for the presence of marine protected area (MPA) networks in statistical models did little to improve the models' predictive capabilities, suggesting limited efficacy of MPAs when grouped together across the region. Yet, localized benefits of MPAs existed and are expected to increase over time. Sensitivity analyses suggested that (i) grazing by large



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