

**Proposal #:** 20PIR019-014

**Project Title:** Determining Patterns and Drivers of Life-History Variation to Inform Present and Future Fishery Management in the U.S. Pacific

**Applicant:** University of Guam

**Priority Addressed** Priority #2 – Science or Technology that Promotes Sustainable U.S. Seafood Production and Harvesting

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**Abstract:** Coral reef-associated fisheries in the U.S. Pacific Islands are economically and culturally important, in addition to providing nutritional benefits to communities. As human pressure on coastal fisheries has increased over previous decades, sound management actions have been impeded by a severe lack of biological information for harvested tropical species. Moreover, increasing temperatures associated with climate change are expected to influence biological traits of species, although the magnitude of this influence is poorly understood. Environmentally driven changes in the biology of harvested species has emerged as a major concern for fisheries sustainability and has been consistently recognized as a priority area for U.S.-affiliated Pacific Islands. This project will deliver an integrated series of studies and outreach opportunities rooted in fundamental life-history research to (1) determine robust measures of life-history traits for commercially important species in populated and unpopulated U.S. Pacific Islands, (2) to generalize relationships between environmental factors and fish biological traits to better inform management, and (3) to project and forecast fishery yield across space and time under projected future climate variability. To achieve this, we will use and build upon three existing data sets at different spatial and temporal scales spanning U.S.-affiliated and other islands of the tropical Pacific.

**Summary of potential commercial benefits to the fishing community of the research results:** Life-history traits of commercially-harvested species serve as foundations to predict and interpret population dynamics, and ultimately guide management and policy through stock assessments. This project will derive biological characteristics of harvested stocks in the inhabited Mariana Islands, thereby enhancing the likelihood for sustainable management. This project will further develop an intuitive biological framework to provide the most informative and robust baseline for evaluating and predicting present and future stock status in coral reef fisheries based on species' biology. It will build capacity for fisheries research within U.S. Territories through collaboration, student mentorship, and formal training workshops.

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