

Proposed SEDAR Methods and Procedures Workshop: Best Practices for Developing Indices of Relative Abundance and Size Composition from Reef Fish Stereo-Video Survey Data

Objective: To streamline future reef-fish assessments by defining best practices for generating indices of relative abundance and size composition that incorporate data from multiple surveys and account for survey changes through time.

Problem Description: Over the past two decades, there has been a dramatic increase in the availability of fishery-independent reef fish stereo-video survey data in the Gulf of Mexico. Initiated as primarily a shelf-break survey in 1992 by NMFS – Pascagoula, survey efforts utilizing stereo-baited remote underwater video (S-BRUV) have subsequently expanded to include the northeastern Gulf of Mexico (2006; NMFS – Panama City), the West Florida Shelf (2010; FWRI), and offshore waters along the Florida Gulf coast including artificial reef habitats (2014; FWRI). Beginning in 2020, these efforts have been integrated into a Gulf-wide survey (Gulf Fishery Independent Survey of Habitat and Ecosystem Resources, or G-FISHER) under a new stratified-random survey design incorporating both artificial and natural reef habitats. Increased availability of fishery-independent reef fish survey data has long been a need in the Gulf; nevertheless, the expansion and modification of survey efforts has provided a unique challenge in terms of generating indices of relative abundance and size composition as stock assessment inputs. For some species (e.g., Red Grouper, Gray Snapper, Vermilion Snapper), eastern Gulf indices generated by combining data across all surveys have been utilized, whereas for others (e.g., Red Snapper), the combined index has been rejected in favor of a NMFS – Pascagoula index. Despite extensive discussion at each reef fish data workshop, no clear guidance has emerged as to why or when combining data may or may not be appropriate. These challenges will only increase as efforts emerge to incorporate data from the western Gulf as a Gulf-wide index, incorporate data from artificial reefs, or incorporate data from the new survey design. Because data from these S-BRUV surveys are critical inputs for most reef fish assessments in the Gulf of Mexico, we propose to convene a SEDAR Methods and Procedures Workshop to provide recommendations on how to most appropriately analyze S-BRUV survey data and make full use of available data to best characterize population trends through time. During this workshop, we propose to explore various analytical approaches to combine data and generate representative time series of relative abundance and size composition; these approaches will then be applied to various case studies (e.g., Gulf-wide versus regional submodels; species with varying importance of artificial reef habitats). Time would also be devoted to analyses and discussions addressing issues specific to the South Atlantic or the Caribbean as well. Workshop outcomes would include best practices recommendations or possibly an analytical decision tree that provides guidance as to which analytical approaches may be most appropriate given a particular scenario.