

Project Report 31097

Improvement of commercial fisheries dockside sampling and biosample collection in the U.S. Caribbean

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Introduction

Many species of reef fish contribute to healthy reef ecosystems; in particular, herbivorous fish may play a role in preventing algae from overgrowing corals. Prevention of overfishing of key species relies on sound management strategies based on rigorous science. While the continental U.S. has had an intense length and age commercial fishery dockside sampling program that has provided age structures to production aging labs for decades in support of stock assessments, generally in the U.S. Caribbean commercial collections have been limited to only length data and for some herbivorous species such as parrotfish even the length sampling has been minimal in recent years. Plans are underway to begin the routine collection of age structures from fish during the TIP interview process in the U.S. Caribbean; however, the Territorial sampling staff of the Puerto Rico Department of Natural and Environmental Resources (PR DRNA) and the Virgin Islands Department of Planning and Natural Resources (VI DPNR) report little experience with removal of the age structures and what training that has been provided to them locally has been through academia whose experience with structure removal does not consider the appearance of the specimen post-removal. Currently, fish to be sampled must be purchased at \$4-\$8/lb which limits each program's capability to obtain samples to determine whether aging is feasible (or for routine aging). Sample collection will likely only be palatable to the local fishing industry if the removal techniques leave the specimen in fully salable condition. In addition to actual sample collection, both PR DRNA and VI DPNR utilize the SEFSC's TIP system to guide sampling strategies, data recording/coding, and data entry of commercial dockside biosampling activities; but have never received in person TIP training. Automated quality control checks run on Caribbean TIP data indicate larger deviations from standard protocols than are found in TIP data collected continentally. As part of a two year effort to standardize TIP practices and coding across the southeast region, SEFSC has built capacity to provide training. Under this project, SEFSC sent experienced samplers and TIP training staff to the U.S. Caribbean to provide training to Territorial sampling staff to increase standardized compliance with the TIP system protocols and increase throughput in biosampling from the US Caribbean using methods that would preserve the salability of fishers' catches.

Methods

SEFSC planned to arrange two, 2 day site visits with both PR and VI for a total of 4 visits. The objective of having two visits to each Territory was to increase opportunities for existing territorial staff to receive training and have their questions answered. Arrangements were attempted be made prior to each visit to have a number of whole fish, representing multiple species, purchased and available for the training. The training team brought all field sampling tools and all necessary handouts and presentations. During each site visit, the intention was to do one day of lab/classroom instruction, and one day of field work. The lab classroom day consisted of demonstration of the “through the gills” method of otolith removal on lutjanids and serranids, as well as testing these methods on scarids, acanthurids and other locally important species. Using SEFSC-supplied video equipment, the demonstrations and extraction testing was captured for use by local samplers who could not attend or for the samplers in attendance to review later and to help train any new hires in the future. Local sampling staff will then practice the methods in the classroom. Also during this session a, presentation on sampling methodology (first and second stage sample selection) and TIP standard codes and methods was given by the standardization specialist. During the field day portion of each site visit, SEFSC staff planned to accompany local samplers to commercial fishing industry landing/vending locations in an effort to understand the local samplers’ situations and challenges during actual TIP sampling events.

Site visits were initially planned for Summer/Fall of 2016, but postponed due to staff safety concerns regarding the Zika virus. It was decided that the spring season (2017) would be the most mosquito-free. Of the initial four visits proposed, three were conducted. It was determined that Puerto Rico DNER could get a substantial portion of their sampling staff together for a single visit. Two staff from the Southeast Fisheries Science Center Miami Laboratory went on each trip; Sarah Beggerly was an expert on the Trip Interview Program (TIP) data entry program and TIP standardized coding and protocols, Edwin Pulido was an experienced TIP sampler (over 13 years’ experience) who is also fluent in Spanish. Ms. Beggerly and Mr. Pulido went on all three site visits.

Report of Site visits

Puerto Rico: March 6-10, 2017

On Tuesday, March 7th, SEFSC Staff were shown some sampling site around Mayaguez; however, due to rough weather were only able to witness sampling for one very small landing. SEFSC Staff visited several fish markets but were only able to obtain snappers and a few grunts for otolith extraction demonstrations.

Otolith extraction training took place on Wednesday, March 8th. This training was done twice, one for a team of visiting scientists (Steve Smith's project group) and the other for the TIP samplers. Each group consisted of about six people. The hidden cut technique was demonstrated and participants were able to practice on 2 to 3 fish each using snappers and grunts. SEFSC Staff was able to attempt removing otoliths from parrotfish and triggerfish using some frozen specimens and with the assistance of a graduate student who was familiar with the species. The hidden cut method, however, did not seem effective on these species.

Presentations on TIP standardizations, the new TIPS, and the eTIP system (a tablet based electronic data collection system being developed by the SEFSC) were given on Thursday March 9th. The Standardization presentation focused on areas such as coding the Information Source, Landing Type, Random samples, and when to use Full Catch. Agents were interested and asked multiple questions for clarification and understanding. The Introduction to TIPS presentation was the same one given via webinar in February; however, agents were able to ask specific questions concerning how to enter their data. Having Mr. Pulido present was extremely helpful when questions were asked. Though all samplers understood English quite well their ability to speak it varied greatly.

St Thomas: April 3-7, 2017

Upon arrival at the St Thomas office on Tuesday, April 4th, SEFSC Staff was able to observe sampling that had already begun. Many interviews in St Thomas are done by appointment at the dock or by fisherman stopping by to have their catch sampled. Sampling on the island is rarely done by a single sampler and is often three samplers together, one writing one measuring and weighing and the other presorting the fish for measuring and aiding the fisherman in repacking the catch. Mr. Pulido was able to demonstrate the removal of otoliths using the hidden cut method to the fisherman to see if this was something he would be willing to allow the samplers to do while sampling. He and another fisherman that arrived later and was also shown the technique were comfortable with the otolith being removed in this way. After this SEFSC Staff was shown the most common landing areas for fisherman where we were able to talk with a boat captain and his son and again demo the otolith extraction technique. This was once again met with approval by the both the captain and son as the fish were not visibly altered.

Otolith extraction training was held on Wednesday April 5th with about 5 or 6 people including all TIP samplers and a colleague who was interested in the technique to remove otoliths for a current project. Samplers were able to practice the technique on several snappers before moving on the extracting otoliths from frozen heads. This allowed the samplers to practice on different species of snapper as well as hind and other reef fish.

Presentations on TIP standardizations, the new TIPS, and eTIP were given on Thursday April 6th. The standardizations presentation once again focused on specific areas such as Information Source, Landing Type, and Sample Method. Many questions were asked regarding specific situations encountered on St Thomas and how to code those situations. The TIPS introduction presentation went quickly as USVI sampling Staff had been using the system and had found it relatively simple to adjust from the TIPOL system (the legacy system that TIPS replaced). The TIPS system was opened to a live demonstration to clarify some questions and explain some features that maybe helpful for them. The eTIP system was met with enthusiasm as the group is looking to limit the amount of data entry time required after samples are taken. Often the entire landing is sampled and this makes for a lot of data entry for each interview.

St Croix: June 5-8, 2017

The trip to St Croix was a day shorter than the previous trips and we did not interact with any fishermen, witness sampling, or visit any of the docks. It is our understanding that samplers often meet fisherman at the dock for samples though sometimes the fisherman are nor receptive to sampling that day due to time or other issues they often arrange for sampling the next day or within the next few days.

Otolith extraction training was done on Tuesday, June 6th, for 5 people, 4 TIP samplers and an interested intern at the office. Demonstration and practice of the hidden cut technique was done using previously frozen fish heads from another project that required otolith collection. Using these specimens, the samplers were able to practice removal on multiple fish species including snappers and hinds.

Presentations were done on Wednesday, unlike Puerto Rico and St Thomas the focus of these presentations were on entering data in the TIPS system. This was because, other than one individual, most of the samplers were not overly familiar with the TIPOL system and the coding practices before the standardizations that were implemented in January 2014. This meant that less time was spent going over changes and ensuring that samplers understood what needed to change and more time was spent in showing the current TIPS system and where to find the coding options and definitions. Time was spent in the TIPS program showing them around the system, places where they may find trouble when entering data as the Caribbean data collection methods differ from those on the continent.

Project Summary

In total, 15 samplers from PR and USVI were trained, as well 8 associated staff (academics, special project staff, etc.). Feedback from all three site lead staff was very positive; we believe

a significant increase in data consistency and adherence to standardized protocols was realized. We were also able to demonstrate to local sampling staff, and in some cases industry, that age structures can be removed from many common species of commercially-landed fish without altering the outward appearance of the fish and lowering the catch's value. This is a step forward in eventual implementation of routine collection of age structures by U.S. Caribbean TIP samplers. However, SEFSC Staff report that otolith extraction techniques for certain species such as parrotfish and tangs was difficult and potentially impossible using the hidden cut (under the gills) method, so alternative sampling methods for these species (for example, purchasing random fish from industry, or fishery-independent sampling) may be necessary.