

**Report of the
Caribbean Fishery Management Council's
Scientific and Statistical Committee
Meeting held March 14 - 15, 2012
San Juan, Puerto Rico**

1. SSC Review of Fishery Monitoring Program:

Bob Trumble of MRAG Americas summarized the findings in the report entitled "Guiding Principles for Development of Effective Monitoring Programs" (Zollett et al. 2011). The report is based on two workshops convened by MRAG Americas and the Environmental Defense Fund in 2010. The working group included US and international fisheries management experts with contributions from NOAA Fisheries experts.

The Preface of the report provided the rationale for producing the report:

Monitoring is an essential component of successful fisheries management. Reliable monitoring and reporting can support and improve the management of a fishery by providing verifiable information on fishing activities and assessing the performance and success of fisheries management plans. Despite the importance, fishery managers and stakeholders have often struggled in developing and implementing effective monitoring programs. The challenge is, in part, due to lack of information and peer-to-peer learning on successful monitoring programs in other fisheries.

The Monitoring Guiding Principles provide guidance for fishery managers and other stakeholders on planning, developing, and implementing monitoring programs. They draw upon the expertise of over two dozen national and international monitoring experts, including government employees, fishing industry representatives, academics and 3rd party monitoring company employees. By outlining key components to consider and providing concise recommendations, the Guiding Principles can expedite and improve the design of monitoring programs.

The findings of the report and the status of monitoring in the US Caribbean were discussed by the SSC and the following recommendations made:

Recommended Actions to increase timely reporting of catches by fishers

The SSC discussed the importance of promoting timely reporting of catches by fishers. The SSC recommended that the CFMC write a letter to the USVI DPNR Commissioner and the PR DNER Secretary to explain the importance of timeliness in the annual monitoring of ACLs and the impact on fishers if the ACL is exceeded. The letter should provide a detailed information that will provide the Commissioner and Secretary with the background to understand the rationale behind management by ACLs and the benefits to fishers of timely and accurately reporting their catches and assisting local fisheries staff with port sampling. The SSC agreed that

licensed commercial fishers should be required to report/submit trip tickets on at least a monthly basis.

The SSC also recommended conducting more outreach to fishers. Specifically:

- The SSC recommended that the Council identify the outreach and education needs of the commercial fishers and prioritize and develop a strategy for a continued outreach program.
- The SSC recommended that the CFMC provide outreach to fishers on how timely reporting is used to manage fisheries.

The SSC also recommended that the CFMC research the feasibility and effectiveness of providing dealers and/or fishers with electronic reporting mechanisms/equipment.

Information needed on the status of monitoring programs at each SSC and/or CFMC meeting

SSC recommended that the CFMC requests projections of present year calendar landings based on historical /previous fishing year catches. The SSC should review the methodology used by the SEFSC for providing the statistical probability of landings exceeding ACL.

Validation of trip tickets

The SSC recommended that the SEFSC move forward with the validation of trip tickets and evaluate the data being reported on the new trip ticket forms.

Implementing stratified random sampling in TIP (Trip Interview Program)

The SSC recommended that the SEFSC provide local agencies with the appropriate sampling method for collecting data for stock assessments, especially for species that will be assessed in SEDARs in the next several years. The SEFSC needs to assist local agencies by providing detailed sampling methodology appropriate to each jurisdiction and following up with the local agency on implementation to ensure problems with obtaining samples according to the appropriate sampling method are addressed. Stratified random sampling of fisher catches was a recommendation of the Data Improvement meeting. It is important for SERO and the SEFSC to not only provide the sampling methodology but also provide guidance on how to implement the stratified random sampling program given the local sampling constraints.

Monitoring ACLs:

The SSC had the following questions regarding the action to be taken if ACLs are exceeded:

- If a determination is made that the ACL has been exceeded and the upcoming season is shortened by x number of months but the data show that the season can be re-opened in subsequent years, what is the approach for reopening the closed season?
- How quickly can this be done?
- Can this be done through a Framework approach? If so, what is the mechanism?

The SSC recommended developing methods for re-expanding the fishing season if: (a) additional data show that the average catch actually did not exceed the ACL; (b) subsequent landings years indicate that the average catch is now below the ACL.

The SSC also recommended considering other possible actions if ACL is exceeded or is projected to be exceeded in a given year. These actions include consideration of trip and size limits. See Subheading 5. for further information.

2. Research Needs Sub-Committee:

The SSC recommended that Drs. Richard Appeldorn and Reni Garcia-Sais represent the SSC on an Ad Hoc Research Committee that will meet to discuss research needs in the US Caribbean to address fisheries management. The Committee will review research recommendations listed in the various US Caribbean SEDARs and prioritize research goals and objectives based on these recommendations and other factors. The Ad hoc Committee will develop a 5- yr research plan that will be reviewed by the CFMC's SSC and be available for public comment.

3. Deepwater Queen Conch Assessment

Dr. Jorge Garcia Sais made a presentation on the abundance and reproductive activities of deepwater conch (depth: 30 - 50 m) off the west coast of Puerto Rico. He found that conch at these depths were able to reproduce and in some locations were fairly abundant (estimated population size of 10,000 individuals). Only adult conch were present; there was no sign of juvenile recruitment at these depths.

Queen conch research recommendations

The SSC reviewed deep water queen conch assessment information presented by SSC member Dr. Reni Garcia. The Committee noted that the information is relevant to management of the fishery for this species and the Agency's response to a recent petition to list queen conch under provisions of the Endangered Species Act.

The existence of a dense deep conch population, below the depths of commercial fishing, suggests first and foremost that the population could serve as an important protected spawning stock that would remain in place even if the current ban on conch fishing within federal waters were to be lifted. The potential value of additional research on the connectivity between deep water and shallow water populations of queen conch was highlighted.

Unknowns at present are:

- (1) the extent of deep conch throughout the shelf edge, beyond Abrir la Sierra,
- (2) the extent of reproduction (frequency and seasonal duration) in deep water relative to conch on the platform,
- (3) whether the transport of larvae at the immediate shelf edge would be different than for those spawned on the platform,

- (4) the fraction of the whole population represented by the deep stock, and
- (5) the potential stability of the deep stock.

The fourth question could be answered by comparing the population estimates reported by Dr. Garcia to the 5-year surveys conducted by SEAMAP (next one is scheduled for summer 2012). The answer to the fifth question would be function of the gain (immigration) and loss (mortality + (emigration?)) from the old population. These could be assessed through conventional and acoustic tagging of both deep and shallow conch to assess connectivity and by measuring the relative age structure of the deep conch (given that past lip-thickness measurements were not suitable for this). Genetic analysis of shallow and deepwater conch populations may also provide information on connectivity.

Petition to list Queen Conch

SSC's role in the development of the scientific basis for the ESA listing decision for queen conch

With respect the petition to list queen conch under the ESA, the SSC understands that the Agency's decision will take account of legal and policy-considerations. However, the decision should be underpinned by the best available scientific information on queen conch.

The SSC expressed concern about the process for assembling the best available scientific information. It is not aware of the process the Agency will use to assemble scientific information in the case of the queen conch listing decision. It notes that Sissenwine and Rothschild (2011, Building Capacity of the NMFS Science Enterprise. pp. 123, prepared for the National Marine Fisheries Service, http://www.nmfs.noaa.gov/publicreview/new_england_phase1/docs/07_sciencerept.pdf and http://www.nmfs.noaa.gov/publicreview/new_england_phase1/docs/08_sciencerept_appendix.pdf) found that "***Quality assurance processes for scientific input to Endangered Species Act are evolving, but they are still incomplete, inconsistent, and lack adequate transparency***" (finding 10, page 19). This is in stark contrast to the scientific basis for fishery management where the processes for assembling information are well documented, transparent, inclusive (i.e., taking account of all scientific viewpoints), and result a standalone scientific products that are clearly distinguishable from legal and policy considerations.

While the ESA listing decision for Queen Conch is not a fishery management decision, it will have profound effect on fishery management and the fishery. It should be based on scientific information that is objective, transparent, inclusive, quality assured (e.g., independent peer review) and distinguishable from non-scientific considerations. The CFMC's SSC should have a role in the process since (a) it is an established authoritative source of scientific information about the Queen Conch species and fishery, and (b) there are individual members of the SSC that are nationally and internationally known scientific experts on queen conch.

The SSC recommends that the Caribbean Fishery Management Council ask the National Marine Fishery Service for a description of the process the Agency will use to assemble scientific information to support its listing decision. The description should include consideration of (1)

mechanisms for achieving objectivity, transparency, inclusiveness, quality assurance, and producing a scientific product that is distinguishable from non-scientific considerations, and (2) the role the CFMC's SSC can play in the process.

4. Review of SEDAR 26 for Queen and Silk Snappers and Redtail Parrotfish

Dr. Todd Gedamke made a presentation before a joint meeting of the SSC and AP, which summarized the supporting documentation and conclusions of SEDAR 26 in relation to queen snapper, silk snapper, and redbtail parrotfish. While numerous modeling techniques were applied the primary conclusions of the assessment and of the review panel were based on an evaluation of the length structure. Studies conducted recently in Puerto Rico by DNER staff and others provided confidence in length at maturity estimates and that the majority of individuals being harvested of all three species were mature animals. The following statement was included in the summary statements for all three species:

Data limitations in the US Caribbean preclude the use of advanced quantitative analyses that provide measures of uncertainty. However, the following conclusions can be made based on the data-poor methodologies used in this assessment, the fundamental principles of population dynamics, and an overall interpretation of the raw data.

The primary conclusion for all three species was: “Given the available information for all three islands there is no evidence to suggest that overfishing is occurring on...[silk snapper, queen snapper, redbtail parrotfish]...in the US Caribbean. The full assessment reports and more details on the analyses and basis for conclusions can be found on the SEDAR website at: http://www.sefsc.noaa.gov/sedar/Sedar_Workshops.jsp?WorkshopNum=26

SSC Recommendation

The SSC endorsed the results from SEDAR 26 and agrees with the Center for Independent Experts (CIE) consensus.

5. Discussion of Options Paper on Parrotfish Size and Trip Limits

Accountability Measures:

SSC was presented options under consideration by the SERO for accountability measures for exceeding the ACL for parrotfish species and other species. It expressed concern about options that would automatically result in additional restrictions on the fishery without considering the reason the ACL was exceeded. There are three distinct reasons ACLs may be exceeded:

1. Excess fishing mortality relative to the fishing mortality associated with the ACL,
2. Inaccuracy in the original estimation of the catch, e.g. changes in methodology or reporting behavior, and

3. Setting the ACL too low relative to the size of the fish stock (either resulting from stock assessment uncertainty or growth in the stock since the most recent stock assessment and ACL determination).

Additional restrictions on the fishery for reason 1 are appropriate to address a potential problem of overfishing, but they are not for reasons 2 and 3. Additional restrictions when number 3 is the reason an ACL is exceeded results in a perverse feedback system. When the stock increases, additional restrictions will result in a reduction in F, which will probably result in recurring cycle of future stock growth, ACL overruns, and restrictions on the fishery.

One of the options for an accountability measure for parrotfish under consideration by the SERO is to increase the minimum size allowed to be landed when an ACL is exceeded. The expected outcome of this method is an increase in yield per recruit, which will make future overruns of the ACL more likely, thus resulting in the similar perverse feedback mechanism as described above,

The SSC recommended that a scientific process be established to evaluate the reason or reasons an ACL is exceeded or projected to be exceeded, and to advise on the appropriateness of applying accountability measures, revising the ACL or other actions.

The SSC recommended that the CFMC consider using trip limits or size restrictions to reduce catches if ACL is exceeded or to do in-season management.

6. Data Needs and Recommendations on Study Design to Determine the Status of Parrotfish Populations on St. Croix

Relationship between the reef fish fishery for grazing species and endangered species of corals:

The relationship between fishing on coral reef grazers and endangered species of corals was discussed during the SSC's joint session with the AP. Some AP members expressed their view that the negative impact on corals from fishing grazers is exaggerated. The SSC noted that there are almost certainly many factors (e.g., fishing, eutrophication, sedimentation from coastal development, diseases, die-off of sea urchins, climate change, etc.) responsible for the poor state of some coral species. While the role of fishing grazers is reported in several peer reviewed scientific publications, there is ambiguity.

The SSC recommends that an objective, transparent, inclusive, quality assured (e.g. independent peer review) scientific process similar the one discussed above for queen conch be established to produce an authoritative view on the relationship between the reef fish fishery and listed endangered species.

Research recommendations of the SSC related to upcoming SEDARs

Regionally specific data on age and growth of fisheries species are crucial to successful US Caribbean benchmark assessments. The SSC recommended that research efforts focus on obtaining these data, particularly for species scheduled to be assessed in upcoming SEDARs, e.g. queen triggerfish and blue tang in SEDAR 30 and the species listed below as candidate species for future SEDARs.

The SSC recommended that the following species be considered for future assessments in order of priority:

1. White grunt - Important fisheries species with abundant TIP data on this species.
2. Stoplight parrotfish - The redbtail and stoplight parrotfish are by far the most common species recorded in TIP data. They are the primary species targeted by fishers in the US Virgin Islands. Redtail parrotfish was recently assessed. However, there has been no benchmark assessment for stoplight parrotfish.
3. Parrotfish in general on St. Croix - Important because of the continuing concern (Earthjustice lawsuit) about parrotfish catches in general, but especially on St. Croix, and the impact of the St. Croix ACL, in particular, on endangered *Acropora* corals.
4. Doctorfish - This is a targeted surgeonfish species in the USVI with fairly abundant TIP data. It is also a herbivore.
5. Yellowtail snapper - This is a highly targeted snapper in the US Caribbean. An earlier SEDAR addressing this species was unsuccessful for a number of reasons, including limited TIP data. The paucity of TIP data was a function of the fact that port agents must specifically target yellowtail snapper fishers because catch is primarily by hand lining at night in spring on specific lunar phase(s). Research is currently being conducted on this species by the St. Thomas Fishermen's Association and presumably port agents have been focusing some of their effort on gathering data on yellowtail snapper.