



## **American Samoa Fishery Ecosystem**

### **Plan Team Meeting**

Monday, March 7, 2011

DMWR Conference Room

9 a.m. – 4 p.m.

## **DRAFT REPORT**

### **1. Welcome and Introductions**

Plan team member and participants in attendance: (DMWR) Nonu TuiSamoa, Lucy Jacob, Doug Fenner, Ben Carroll, Kitara Vaiau, George, (NPAS) Peter Craig, Tim Clarke, (FWS) Frank Pendleton, (SeaGrant) Ephraim Temple, (CRAG) Alice Lawrence, Hideyo Hattori, Roy Morioka, (NMFS) Dave Hamm, Michael Quach

### **2. Status of Fishery Monitoring Programs and Research Projects**

#### **A. DMWR**

##### **i) Coral Reef Fisheries**

Plan Team member Benjamin Carroll from DMWR provided an overview of the trends of the coral reef fisheries of American Samoa. Changes in effort are primarily responsible for changes in catches due to effects of hurricanes and emergence then banning of the scuba spear fishery. The shore-based fishery remains at low levels, but catches from the boat-based fishery has increased after the initial decrease with the scuba-spear ban. The overall trend showed decreased participation in the fishery because people are going to the store now instead of fishing for their protein. He described the changes in the boat-based and shore-based fisheries.

There was a brief discussion about CPUE because it mirrored catch, which is unexpected. Usually CPUE goes up while catch goes down, but this could be a non-equilibrium fishery in which fishermen became more skilled or changed fishing methods. It was also pointed out that if fishermen are switching to a spear gun instead of the traditional spear method, it could increase catch significantly.

The total expanded catch for 2010 for crustaceans was three times larger than any other year on record, which could either be true or could be a problem with the dataset. Because these figures (all species) are preliminary, it is still unclear if worry is warranted for the highest catch levels in history of parrotfish and surgeonfish.

##### **ii) Bottomfish**

Plan Team member Nonu TuiSamoa described the bottomfish fishery that now includes 16 boats, which is five fewer than 2009. Total landings were 15,923 lbs, which is 78% less than 2009 landings. CPUE is 7 lbs/hour in 2010 which decreased from 9.3 lbs/hour in 2009. Estimated revenue was \$42,283. Estimated number of fishing trips taken was 142 and 2010 fishing effort was more than 50% lower than 2009 effort. The highest landings were of the humpback snapper.

The Plan Team had a discussion about why there was a decrease in the bottomfish fishery in late 2009, which could be attributed to natural disasters (tsunami, hurricane), but also some fishers have sold their boats after seeking employment elsewhere.

### **iii) Crustacean Fisheries**

There was no report for the crustacean fisheries. One PT member commented that there is not a real fishery for crustaceans in American Samoa. It is more opportunistic/incidental from the gleaning fishery.

### **iv) Coral Reef Habitat Status**

Plan Team member Douglas Fenner described the status of the coral reef habitat. Fenner compared different program data and found similar amounts of corals across studies regardless of different sites and methods. Fenner then discussed mean benthic cover by depth where coral cover is relatively high and is independent of depth on the slope. The outer reef slope has more coral cover than the inner reef flat. The most common corals are encrusting. With respect to coral cover, Tutuila had an increase of 1% while all others had a decrease of 3% (Pacific) to 9% (Caribbean) since 2006. Coral cover is approximately 30% on slopes, which is an average coral cover elsewhere. There is very little recently-dead coral.

Doug Fenner suggested that there is a need to better monitor the effects of major events such as tsunamis and hurricanes, which has variable levels of impact. Sediment however, has done damage near stream mouths, although there is little to no impact of sedimentation away from the stream mouths. Habitat quality outside the harbor provides little support for suggesting the lower biomass or low large fish abundances are due to poor habitat quality. Algae may be an issue for some places due to people dumping their untreated water into streams with high-phosphate laundry detergent which was banned a couple years ago.

Council staff asked if anyone is keeping long term records of salinity, pH, and temperatures to monitor potential impacts of climate change. Fenner commented that there are historical satellite records and temperatures from ocean buoys that show a slight overall temperature increase over time. There are no baseline pHs as a function for ocean acidification. National Parks of American Samoa offered a 12-year record of temperatures, but a recommendation should be made regarding in-water sampling for pH, temperature, and salinity. This could be part of the ongoing coral reef monitoring, PacIOOS, or CRED data collection. It was also suggested EPA could monitor those factors.

## **B. PIFSC/WPacFIN**

### **i) Report on PIFSC bio-sampling program**

The goal of the PIFSC biosampling program is to enhance life history information and conduct a full census of the catch on a higher taxonomic resolution while minimizing the impact to the fisheries caused by necessary data collection by reducing the number of fish that must be kept for research. The BioSampling strategy differs by island jurisdiction. In Guam, the sampling is done at the Fisherman Coop, in Saipan it is conducted at the fish market and in American Samoa done by contracting 10 fishermen to provide access to the catch and allow acquisition of some fish for life history studies.

### **C. PIRO Administrative Activities**

Pacific Island Regional Office - Sustainable Fishery staff Bailey presented administrative actions completed or in progress. Amendment 1 to all FEPs established requirements and procedures for CDPs. Secretarial review should begin soon for Amendment 3 to the Pelagic FEP that would prohibit purse seine fishing in the EEZ within 75 nm of shore around American Samoa. PIRO has updated and translated the protected species workshop materials for longline fishermen into several languages. Lastly, there are plans to collect additional information about turtles on Ofu because green sea turtles have been found in the hawksbill sea turtle nesting area on Ofu to enhance knowledge of stock structure in the South Pacific and increase knowledge of turtles that may interact with the longline fishery.

Bailey provided clarification on the number of sea turtles killed in the American Samoa longline fishery in American Samoa annually. Bailey responded that 1-5 sea turtle interactions are observed in the longline fishery annually with an expansion to about 33 turtles annually; the estimated mortality rate is 92% mortality rate.

### **D. Coral Reef Funded Projects**

#### **i) Humphead wrasse characterization**

Council staff provided a presentation about the characterization of humphead wrasse distribution and abundance in American Samoa around Tutuila. Using a double observer approach with a roving snorkel method, the researchers gathered information about sightings, lengths, visibility, time of sighting, bottom substrate, and more. While humphead wrasse is an Indo-Pacific species, the Samoa archipelago is at the edge of its distribution. Even in undisturbed areas, there are very few ever seen. 58 surveys were conducted in 39 villages, and the wrasse was found only in 9 villages. Juveniles were found associated with branching corals on sandy substrates making up only 1.06% of the total reef flat habitats. It was determined that there is a 61% chance of viewing this species compared to other species. There are management implications, including integrated coastal zone management or fishery regulations and MPA designs around areas of wrasse distribution. However, there must be balance between reality and conservation. It's not culturally important nor do many people catch it, therefore there would be a higher abundance suspected, but because it's on the edge of species distribution and there is not much juvenile habitat, its abundance appears to be low.

#### **ii) Larval pathways**

Phil Wiles from the American Samoa Environmental Protection Agency provided an overview of the larval pathway research conducted collaboratively between ASEPA and DMWR. The general coastal circulation around Tutuila is driven by the tide and wind depending on the location. Seven locations were selected based on the head land features, protected area status and specific water quality interest. Two sites were elaborated on: Amanave where wind driven circulation is more predominant where the circulation flows from north to south at the western point of Tutuila and eddies are formed in Amanave which has implications on larval retention. The channel between Auasi and Aunuu Island is dominated by tidal driven currents. Ebb tide had a general NW to SE flow and reverses during flood tide. An interesting feature found in this area is the opposite flow in proximity to the coast relative to the middle section of the channel. This creates a slick which has implications on larval retention and fish activities. The direct utility of this study is for the design of the MPA network in American Samoa.

## **E. Coral Reef Funded Projects**

### **i) Update on the Two Samoa Initiative**

Hideyo Hattori from the Coral Reef Advisory Group provided a background on the Two Samoa Initiative and an update on recent developments on the series of meetings held in Apia and Pago Pago. This initiative is an overarching effort to better collaborate on various issues utilizing a regional approach to management. The environmental collaboration aims to enhance the science and management between American Samoa and Samoa. The environmental management at this stage focused mostly on coral reef conservation efforts. Due to non-formalized nature of involvement of pertinent personnel, progress was slow. Thus developing the governance structure was the aim in the November meeting in Apia resulting in an MOU. The follow up meeting held in Pago-Pago in January 2011 established the governance structure by setting the secretariat roles responsibilities; drafted a strategic plan (used LAS as a template); adopted a scope of work for the coordinator position; reviewed the feedback on the NOAA CRCP Int'l grant application.

At USCRTF meeting in February 2011, the Governor requested USCRTF recognition of the 2 Samoa Initiative as official body for coral reef management similar to the Coral Triangle and Micronesia Challenge.

### **ii) Coastal Management Program**

No representative was sent for the meeting

### **iii) Update on aquaculture activities in American Samoa**

Ephraim Temple from the SeaGrant Program of the University of Hawaii based on the American Samoa Community College provided an update on the status of the various aquaculture activities occurring in American Samoa. There has been no significant progress in aquaculture over a period of 10 years. The 10 local inland tilapia farms produce an estimated 9000 pound per year. A giant clam hatchery still persists until the presents in the village of Alao. A moi rearing project is ongoing in the village of Maloata. An integrated piggery-tilapia project is being tested to use piggery waste to feed tilapia. No marine aquaculture within territorial and federal waters currently exists and it would take a huge funding capital to initiate such project. The biggest hindrance to the development of tilapia farms is the demand of cultured fish where reef fishes are more preferred by majority of the locals and the inconsistent supply of fish feed.

## **3. Annual Fishery Report**

Council staff presented a draft outline of the FEP annual report. The plan team membership and outline was reviewed. Various sections of the module have been assigned to the different plan team members and local agency staff. The report outline is as follows:

- 1) General introduction of the American Samoa Fishery
  - a. Description of the boat-based data collection system
  - b. Description of the shore-based data collection system
  - c. Description of the underwater census system
- 2) Chapter of the American Samoa Fishery
  - a. Fishery performance and metrics

- i. Boat-based Fishery
  1. Bottomfishing metrics
    - a. Catch
    - b. Effort
    - c. CPUE
    - d. Revenue
    - e. Fishery independent data (if available)
  2. Trolling metrics
    - a. Catch
    - b. Effort
    - c. CPUE
    - d. Revenue
    - e. Fishery independent data (if available)
  3. Spearfishing metrics
    - a. Catch
    - b. Effort
    - c. CPUE
    - d. Revenue
    - e. Fishery independent data (if available)
- ii. Shore-based Fishery
  1. Rod and reel metrics
    - a. Catch
    - b. Effort
    - c. CPUE
    - d. Revenue
    - e. Fishery independent data (if available)
  2. Shoreline spearfishing metrics
    - a. Catch
    - b. Effort
    - c. CPUE
    - d. Revenue
    - e. Fishery independent data (if available)
  3. Throw net metrics
    - a. Catch
    - b. Effort
    - c. CPUE
    - d. Revenue
    - e. Fishery independent data (if available)
  4. Gleaning metrics
    - a. Catch

- b. Effort
      - c. CPUE
      - d. Revenue
      - e. Fishery independent data (if available)
    - iii. OTHER GEAR TYPE metrics
      - 1. Catch
      - 2. Effort
      - 3. CPUE
      - 4. Revenue
      - 5. Fishery independent data (if available)
  - b. Description of any bycatch in all fishery
  - c. Description of protected species interaction in all fishery
  - d. Description on non-commercial fishery (recreational fishery)
  - e. Description on ecosystem components/habitat in all fishery
    - i. Bottomfish habitat status
    - ii. Coral reef habitat status
  - f. Status of ecosystem research
    - i. Local agencies
    - ii. Federal agencies
    - iii. Educational institutions (ASCC)
  - g. Status of stock assessments
    - i. Bottomfish
  - h. Fishing community
    - i. Community demonstration projects
    - ii. Outreach and education
  - i. Administration and enforcement actions
    - i. Administrative actions
    - ii. Enforcement actions
    - iii. Plan Team recommendation
- 3) General Conclusion for the American Samoa Archipelago

Various sections of the module have been assigned to the different plan team members and local agency staff:

- a. Introductions – Council staff
- b. Bottomfish/Crustacean – Nonu TuiSamoa, Kit Vaiau and George
- c. Troll fishery – Nonu TuiSamoa, Kit Vaiau and George
- d. Coral reef fishery – Ben Carroll
- e. Coral reef habitat – Doug Fenner
- f. Fishery independent data section – Domingo Ochavillo
- g. By catch information – Nonu TuiSamoa, Kit Vaiau and George

- h. Protected species – Council staff
- i. Non-commercial fishery – Council staff
- j. Status of research
  - i. Local – Lucy Jacob
  - ii. Federal – Council staff
  - iii. ASCC – Lucy Jacob and Ephraim Temple
- k. Admin actions – Council and PIRO staff and others as needed

#### **4. Improving data collection for stock assessments**

Council staff provided an update on the recommendations from the 2009 Fishery Data Workshop. Some of the projects identified in the workshop had been funded primarily those related to data collection, life history, and habitat related research. Staff also briefed the members on the importance of aligning projects with the MSA five year research priority for the WP region and the Marine Conservation Plan.

#### **Plan Team Recommendations:**

1. The Plan Team recommends the Council requests the local and federal agencies to collect environmental data in American Samoa (i.e. pH) through adding sensors to existing offshore buoys.
2. The Plan Team recommends the Council support the local aquaculture development including assisting the acquisition of protein-rich fish meal for the tilapia production in Tutuila from the canneries.
3. The Plan Team approved the report structure for the Archipelagic Ecosystem Fishery Annual Report and the assignment of the point persons to various report sections. The Plan Team agreed to finalize the report modules for review at the General Plan Team Meeting.
4. The Plan Team recommends the Council provide funding to improve fishery data collection:
  - i) hire a data manager to ensure the quality, data processing and integration of fishery data collection programs;
  - ii) increase data collection coverage throughout American Samoa;
  - iii) conduct data validation of the creel surveys on the appropriateness to new management mandates like ACLs;
  - iv) conduct baseline data collection as related to MPA establishment;
  - v) explore options for incentives to encourage participation in the data collection program (i.e. subsidize cost of ice, mementos etc.)
5. The Plan Team recommends that the Council work with DMWR to conduct a survey of the fishing community to gather anecdotal evidence of ciguatera toxin in various fishing areas.