

FLORIDA KEYS NATIONAL MARINE SANCTUARY ADVISORY COUNCIL

**Hyatt Place
1996 Overseas Highway
Marathon, FL 33050
Tuesday, October 17, 2017**

FINAL NOTES

***SANCTUARY ADVISORY COUNCIL MISSION STATEMENT
(adopted unanimously, December 6, 2005)***

**I. CALL TO ORDER
PLEDGE OF ALLEGIANCE
CHAIRPERSON'S COMMENTS**

Chairperson Popham called the meeting to order and explained that the meeting will be focused on post hurricane Irma information exchange.

II. FKNMS SUPERINTENDENT'S STATEMENT— HURRICANE IRMA RESPONSE AND RECOVERY

Sanctuary Superintendent Sarah Fangman acknowledged that a lot has happened since the advisory council meeting in August. At that meeting, council members generously provided her with updates, ideas, thoughts and concerns. She came away with the sense that this group of people has a tremendous amount of experience, a lifetime here in the Keys and a lot of passion and commitment. When people feel that way about a place, community or environment, it hurts a lot when that place is harmed. She wants this meeting after the hurricane to allow everyone to reconnect and talk about their experiences and the work that has been done so far. She thinks what has been so far is pretty amazing and impressive and while there is still much work to be done sees progress every day. Superintendent Fangman explained that in her view the advisory council exists because there is a sanctuary; but the council does not exist to serve the sanctuary. The council exists to serve the community and the community just went through something powerful. This is why she wants to have a conversation on how this council and sanctuary can come together to serve the community. Superintendent Fangman thanked everyone for taking the time to be here.

III. AGENCY UPDATES

**Joint Incident Command (Unified Command) Report
United States Coast Guard (USCG), Quinten Long**

USCG operations are currently based at the main conference room in Hyatt Place in Marathon. Because of Hurricane Irma, USCG is operating under the Emergency Support Framework (ESF) #10 of the Stafford Act. A Unified Command, which consists of EPA, DEP, FWC, is directing the removal of vessels from local waters. NOAA is providing environmental expertise to Unified Command, which is based in Miami. Unified Command has found that all vessels sunk or displaced pose a threat to the environment and that all vessels should be removed. Teams are assessing and removing vessels from Ramrod Key to Key Largo. A sticker system is in place to identify the vessel and its priority for removal. Vessels with an obvious sheen are deemed priority 1 vessels no matter where they are located. EPA is overseeing the removal of vessels from all canals and is working closely with Monroe County. USCG is giving marinas and private owners a chance to use their

insurance to remove the vessel (so long as it is not posing an immediate pollution threat). In advance of the removal, Unified Command provides a grid package to field teams to guide the process. A Natural Resource Advisor (NRA) is on the team and is responsible for environmental consultation. NOAA staff are serving as NRAs. Vessels are being staged at two locations in Marathon; large commercial cranes are used to remove them from the water at the staging area. Recovered vessels are transferred to FWC, which is responsible for managing each vessel until it is returned to its owner or disposed of. Contractors hired by FWC and/or USCG may be involved in vessel recovery; private insurance companies also contract for vessel removal. Parties interested in finding out the status of their vessel can contact Unified Command at 305-985-3744. Best Management Practices are in place for operating in the sensitive environment of the Florida Keys. Original estimates of vessels in need of salvage ranged from 1300 to 1600, but the number was probably higher by 600. At this time, 900 vessels are still in need of salvage.

Note: Under the Stafford Act, ESF-10 funds can be used in state waters, but not on federal lands (and waters). USCG is permitted to conduct assessments on federal lands. A 100-yard no entry zone is in place around each salvage vessel and any vessels assisting in recovery. Because full vessel recovery is expected to take months, these zones are now in place beyond the original December 1 deadline. A vessel involved in recovery that transits a federal channel will need to show proof that its bilge pump system is in order. For waterways issues/questions, contact Sector Key West at SKWwaterways@uscg.mil.

US Navy, Edward Barham

The Navy has salvaged 79 vessels from NAS Key West property. They are temporarily being stored at Truman Annex. The Navy is working to identify each vessel owner through vessel registration numbers. The salvage phase of the project is complete and the response team is transitioning to the vessel owner or representative retrieval phase. The established process for retrieval will be socialized to the public in the coming days. All identified vessel owners will receive a letter, via certified mail, notifying them that they have 45 days to claim their vessel. The Navy will work to contact all known vessel owners. If you feel that your vessel may be at Truman Annex and have questions, please call [\(904\) 625-6221](tel:9046256221) for further information.

Monroe County Marine Resources, Rich Jones

Monroe County Marine Resources has been identifying sites for storage and staging of vessels salvaged by USCG and EPA. Sites from Stock Island to Harry Harris Park in Key Largo (which is closed) were used. Sites are managed by FWC and are very secure. Additional sites are needed as more vessels are salvaged. Monroe County is coordinating with FEMA and DEP on marine debris. Marine debris is considered anything below the high tide mark and is a huge issue with this storm. DEP is expected to take the lead on removing marine debris along shorelines and in canals where debris is intermingled with salvage vessels.

Channel markers belong to either Monroe County (usually wooden) or the USCG (usually steel beamed). Generally, markers seemed to have held up fairly well with estimates of about 10% damage. Missing/damaged marker can be reported by calling Rich Jones at 305 289-2805. Downed or missing markers can also be reported to USCG Command Center Aids to Navigation at 305 292-8727. Mr. Jones introduced Captain Bill Kelly, Florida Keys Commercial Fishermen's Association, who reported on trap removal by commercial fishermen.

Captain Kelly explained that there are 465,000 lobster traps in the State of Florida with 350,000 of those located in Monroe County. About 43% of traps (153,500) were displaced during the storm. Last week, 17,500 had been recovered; more are being recovered every day.

Shelly Krueger, Florida Sea Grant, and Harry Crissy, UF/IFAS Extension Monroe County economic resource development agent, have been assisting lobster fishermen retrieve their lost traps using data collected from aerial surveys. Three flights traps have been flown throughout the region to collect GPS locations of missing traps. Sea Grant (Harry Crissy) has created maps that show the location of traps, sometimes in clusters. These GPS maps are viewable on navigation screens and have been provided to fishermen to aid retrieval. They expect recovery of traps to continue for the next 6 to 7 months. Maps have also been provided to law enforcement. Captain Kelly explained that FWC organizes regular trap cleanups at the end of each year. Commercial fishing is the second largest industry in the Keys next to tourism. It brings in 900 million to the economy and supports 4500 jobs in Monroe County.

NOAA FKNMS, Beth Dieveney

NOAA Response Activities: Hurricane Irma

Information and On-Line Tools:

- Center for Operational Oceanographic Products and Services
 - Issued Storm QuickLook, which provides a synopsis of near real-time oceanographic and meteorological observations at locations affected by the storm postings every six hours.
- Environmental Response Management Application (ERMA): on line tool where all data is compiled and can be viewed
- National Environmental Sciences and Data Service
 - Satellites provide data on radiosondes, rainfall amounts and wind speeds. Our satellite operations team also provides hurricane position and intensity estimates to the National Hurricane Center.
- Office of Coastal Management
 - Digital Coast platform provides coastal communities with information and resources including LIDAR, elevation, and land cover data; risk and vulnerability assessments; and projected sea level rise imagery.

On the Ground Response

- Office of Coast Survey
 - Navigation Response Teams surveyed port of Key West, Miami and Tampa (work closely with USCG and ACOE)
- National Geodetic Survey (all Irma response)
 - Aerial Imagery –Florida Keys, Naples, Fort Myers, Jacksonville, Savannah, Charleston, and Tampa.
 - Flight Hours: 75.7hrs; Total Images: 23915; Total km2: 5865
 - Campaign Days 9/11/2017 - 9/18/2017
- Provided underlying elevation models and sea level rise data, which was used to develop storm surge forecast maps.
- Office of Response and Restoration
 - Scientific Support Coordinators (SSCs) were embedded with USCG Incident Command Centers to assist with assessments of marine debris, oil and chemical discharges after the Hurricane and staff continue to support efforts to assess environmental impacts in the region.

Site Specific Activities - Florida Keys National Marine Sanctuary

- Assess and address damage to facilities and vessels

- Marker and mooring buoy
 - Civil Air Patrol took aerial imagery to help FKNMS locate buoys missing or displaced due to Hurricane Irma.
- Support Joint Incident Command
 - Provide staff support to the Joint Incident Command (ESF-10)
 - Staff serve as Natural Resource Advisors during derelict vessel removal (ESF-10)
- Multi-agency/partner Rapid Reef Assessment and Triage Coral Restoration activities
 - Partners in this effort include several branches of NOAA: Office of National Marine Sanctuaries, NOAA Fisheries Southeast Regional Office, Habitat Conservation, Restoration Center, and National Centers for Coastal Ocean Science and the Coral Reef Conservation Program. Additionally, Florida Department of Environmental Protection, Florida Fish and Wildlife Conservation Commission, National Park Service, Nova Southeastern University, Coral Restoration Foundation, The Nature Conservancy and Florida Aquarium Center for Conservation are also working on this effort with funding from the National Fish and Wildlife Foundation.
 - Rapid Reef Assessment at approximately 50-70 sites to assess the condition of the reef, extent and severity of damage, disease characterization, and identify candidate areas for potential triage /emergency stabilization. The SE Florida region (Martin through Miami-Dade) assessment was conducted by day boat operations. The Biscayne through Key West region was conducted via a 12-day cruise on the M/V Shear Water (live-aboard dive vessel). Full data set collection and analysis will be conducted after all sites have been visited.
 - Emergency Coral Stabilization – a team of NOAA NMFS, FKNMS and CRF divers are conducting emergency triage and stabilization of corals at sites that have been identified as priority for triage.
- Other Environmental Assessment Work
 - Water Quality Protection Program – coral reef monitoring, seagrass monitoring, and water quality monitoring – all work was in progress pre-storm; efforts are underway to complete survey work and potentially revisit sites sampled in advance of storm
- Permitting and Environmental Assessment
 - Working to streamline hurricane response permitting while also ensuring natural resources are not further impacted during response efforts
 - Reviewed response vessel access to Key West Harbor to support FEMA workers
 - Review and provide consultation and letters of authorization for emergency response activities permitted by ACOE.
 - Review and provide authorization letters for coordinated recovery efforts (e.g., USF-10 response, pending request to bring large barges through the ATBA to collect debris and ship out of the Keys)
 - Review and issue permits for priority scientific research related to Hurricane Irma (e.g., Kenkel and Matz NSF-funded study of storm-generated coral fragments)

Announcements/Requests

- Buoys: Report damaged or missing line, missing buoys and found buoys to 305-852-7717 from Key Largo to Marathon and 305-809-4727 for Marathon through Key West and the Dry Tortugas.
- Marine Observations: If you are on or in the water and have post hurricane observations to share, please use the Mote Marine Laboratory's on-line reporting tool (Community-Based C-OCEAN. This will help us, with our partners, keep all observations in one place.
- Maritime Heritage: Shipwrecks and other cultural resources may have shifted during the storm and become unstable. Wrecks or new parts of old wrecks may be visible that contain important information about Florida's maritime history and are protected under state and federal law.

- To report changes in the sanctuary's cultural resources, contact the Florida Public Archaeology Network. Send GPS coordinates and photographs to Associate Director Dr. Della Scott-Ireton at dscottireton@uwf.edu or SE/SW Region Director Sara Ayers-Rigsby at sayersrigsby@fau.edu.

NOAA Fisheries, Heather Blough

NOAA Fisheries is:

- Participating in the rapid reef assessment and emergency restoration effort being conducted by staff across NOAA in collaboration with the state and other partners;
- Providing other federal agencies technical guidance, best management practices, and recommendations, to address protected species and habitat consultation requirements for response and restoration activities;
- Coordinating the response to marine mammal and sea turtle stranding events; post-storm events to date have involved:
 - Rescue and release of a bottlenose dolphin trapped in a salt pond near Sugarloaf Key
 - Euthanasia and necropsy of a pygmy sperm whale stranded in Lower Matecumbe Key (mm 76);
- Providing reporting and recordkeeping allowances to affected dealers and fishermen:
 - Through the end of the month, federal dealers in affected areas are released from the weekly trip ticket reporting requirement
 - Through the end of the month, Individual Fishing Quota program participants who don't have access to electronic reporting are authorized to use paper forms for basic required functions
 - Because of technical difficulties related to the storm, the expiration date of any fishing permits that expired while awaiting renewal in the Southeast Region Permits Office is extended through the end of the month;
- In terms of monetary relief, the agency administers fishery disaster assistance under two different statutes if the Secretary of Commerce makes a disaster determination
 - Governor Scott submitted a written request for a disaster determination on October 2
 - The agency began working with FWC last week to evaluate the impacts of the storm on fishing-related businesses, and expects that work to continue through early November
 - If the Secretary declares a disaster and Congress appropriates funds, they will work with the state to develop a spend plan consistent with the conditions of the appropriation
 - It will take some time to get any related funds to affected fishermen because they have to work through the Congressional budget and federal grants processes
 - If the Secretary makes a disaster determination but Congress does not appropriate funds, then small fishing-related businesses may qualify for certain Small Business Administration loans, which can in certain cases help address economic injury and physical damage.

Florida DEP, Joanna Walczak

- The Governor and Secretary send their thoughts and well wishes to the Monroe County communities.
- DEP is helping with the rapid assessment of the reefs. Any Marine Debris or major hurricane-related damage can be reported to Mote Marine Lab's C-OCEAN program

(www.mote.org/cocean); this information helps Manager's prioritize debris removal activities.

State Parks

- Florida Keys Overseas Heritage Trail, Windley Key Geological State Park and San Pedro Underwater Archaeological Preserve State Park are open.
- Curry Hammock and Indian Key are open with limited access (Indian is only accessible by kayak because the dock is damaged).
- Pennekamp and Ft. Zachary Taylor are open with limited access and facilities (Pennekamp's Visitor Center, campground and trails are closed; Ft. Zach beach is open from the Concession to the Jetty).
- Dagny Johnson Botanical State Park is partially open, and Lignumvitae Key will be open soon.
- Bahia Honda and Long Key State Parks are still closed likely through mid-November, with camp grounds closed indefinitely. Both will need new management plans.
- Park Biologists have also been inventorying some of the imperiled species and restoration projects after the storm. Some populations fared quite well, while others were heavily impacted by storm surge and fallen branches.

South Regulatory District

- Regarding Environmental Resource Permit authorizations for repair and replacement of docks, a DEP Emergency Final Order (<http://www.dep.state.fl.us/mainpage/em/2017/Irma.htm>) was issued for Irma that allows property owners to repair and replace what was legally authorized at the site immediately before the storm. The South Regulatory District can provide additional information and guidance if there are any questions: Megan Mills [ERP Program Administrator at the District Office; (239) 344-5670] or Liz Yongue [Environmental Specialist at the Marathon Office; at (305) 289-7079].

FWC Florida Fish and Wildlife Research Institute (FWRI), John Hunt

FWRI has been assessing the resources and its underwater nurseries to see the damage and what has changed/not changed since the storm. Approximately 200 acoustic receivers (for fish movement studies) need to be assessed for damage. FWRI scientists will also be examining the 80 receivers that are part of the Bonefish Tarpon Trust studies. Coral nurseries (middle Keys) and shallow water habitat (seagrass) areas are being assessed (seining) for juvenile snapper and grouper abundance. This will provide information as to whether habitat has changed or been lost due to the storm and/or will provide information about recruitment of young fish, which is important for conducting stock assessments. FWRI will be sampling for juvenile spiny lobsters at 48 permanent sites and assessing hardbottom sponge community.

The FWRI sponge nurseries were impacted by the storm. The Burnt Point nursery, which was very shallow and near shore, was almost completely wiped out (200 of 1300 sponges were left alive.) This mortality is thought to be due to the extended time the water was out of the bay (the bay bottom was exposed) and the sponges were exposed in this site. At the Rachel Key sponge nursery, survival was 70%. This higher survival rate is attributed to the deeper depth of this site, which probably stayed wet for the most part during the storm (as opposed to what happened at Burnt Point). They are still in the process of assessing the Sandfly Key nursery, which experienced a cyanobacterial bloom last fall. In the near future, they will be assessing known conch aggregations to determine impacts, if any, from the storm.

Dry Tortugas National Park, Meaghan Johnson

The park is open and the ferry is operating intermittently. The fort's mote had a 40-foot breach, which makes it impossible to walk all the way around the fort as in the past. Park engineers are assessing the damage. They had tree damage and 2 to 3 feet of sand in the campground area, but no flooding. The park's regular supply ship left to give aid in Puerto Rico and USVI. For natural resources, they observed breakage of elkhorn coral, but not in the coral nursery managed by TNC. Science teams are conducting disturbance response monitoring survey and have seen very little damage, especially in the deeper sites.

Everglades National Park, Chris Kavanagh

The East Everglades and Shark Valley of Everglades National Park are closed due to high water. Pumps in the water management system are operating at full capacity. Key Largo Ranger Station/Florida Bay Interagency Science Center experienced minimal damage from the storm and has been operational since early October. Flamingo probably experienced a 5-foot storm surge and the visitor center there is closed. The main road in the park is clear and the ramp is open to Florida Bay. Care should be taken as there may be submerged debris. The Gulf Coast Center experienced a storm surge and damage to boats and facilities.

The natural resource assessment of Florida Bay identified 52 displaced vessels; five have been removed so far; three are reduced to wreckage only. Marine debris is still present and hazardous. Boundary and channel markers are damaged. The park will contract for replacement of these items. Water quality immediately after Hurricane Irma showed green water in the Eastern Bay; tea colored water in the central/north bay and sediment-laden water in the western bay. High volumes of freshwater are moving through the system from the north. The eastern bay is still green. Water quality measurements, including chlorophyll-a are being collected and were quite high in some locations. Of the 17 hydrological stations in the bay, one was completely lost. Seagrass meadows seem to do all right with only small scale losses observed. Some small-scale fish kills have been reported. They have resumed surveying anglers for catch information at the Flamingo boat ramp.

US Fish and Wildlife Service, National Wildlife Refuges, Dan Clark

The National Wildlife Refuges in the Keys have 10 staff, with one person located in Key Largo where damage to the Crocodile Lake NWR was minimal. About one third of staff were made homeless by the storm, but have found housing at this time. All staff evacuated for the storm. Refuge quarters were damaged; one was made uninhabitable. The refuge dock and vehicles were destroyed. Currently, the refuges are closed, but people can still fish in the backcountry. Due to storm damage, the refuge visitor center on Big Pine Key is closed, but the new nature center on Big Pine Key was not damaged. The National Guard used the nature center for distribution of food after the storm.

Hurricane Irma damaged many trees in the pine rockland habitat, which is a focus area for management. Because the freshwater wetlands were and still are inundated with salt water, supplemental water is being provided for key deer. Marsh rabbits depend on these freshwater wetlands; about 18% of the marsh rabbit habitat is within refuge boundaries. Rain is beginning to make a difference and bring back the wetlands in some core habitat areas. They are interested in finding out how this saltwater will affect the wetlands in the long term.

Refuge managers and biologists are interested in impacts to coastal berms and mangrove islands. Some refuge islands have been dramatically changed. These islands are important for nesting birds; and populations of eagles, frigates and other birds are of concern. A full assessment of the islands

and bird populations has not yet been done. Refuge staff are watching for invasive species because the hurricane created a perturbation in the natural system.

The key deer population, which has been assessed using standard techniques, consists of about 960 individuals. Last year, they lost about 15% to screwworm; the losses from Irma were about the same. The deer are doing well. They survived the hurricane and are now in the rutting season. The refuge knows of only 21 deaths from the hurricane. The tree cactus population on Long Beach Road was badly hit by the storm; FWS works with Fairchild Tropical Gardens on tree cactus issues. They have other species to assess including endangered butterflies.

Although not officially in the Unified Command, FWS has been coordinating with the ESF-10 group. Refuge waters are state submerged lands and are covered by the state ESF-10 effort. Vessels above the high water mark are the responsibility of the refuge. Most islands are designated wilderness, which makes it challenging to bring in cranes and other equipment. Similar to NOAA, they have applied for grants to aid with post-assessment survey work. In Marquesas and in Key West NWR, they are working to remove debris that could entangle sea turtles.

Advisory Council Discussion (after agency reports):

Several advisory council members spoke about the marine debris issue. Elena Rodriguez reported that dive operators in the Upper Keys were bringing back debris on every dive trip with the help of staff and divers.

Vice Chair Barras announced that the Tourist Development Council released \$1,000,000 of emergency funds to be used to repair tourist facilities. This funding opportunity is open to non-profit organizations.

Break

IV. COMMUNITY RESILIENCE, LIVELIHOODS, ECONOMIC AND ENVIRONMENTAL RECOVERY

**Advisory Council Discussion
Housing/Accommodations**

Chair Popham led a discussion about hurricane related issues. He expressed concerns for the people from the different agencies (law enforcement, FWC scientists, etc.) who were displaced from their homes by the hurricane. He has reached out to the National Marine Sanctuary Foundation to raise funds for housing. Even before the storm, there was an affordable housing issue and now it is greatly compounded. At his marina, they were able to get the live-aboard folks back on their boats. He expects to lose many people in the county who cannot afford to survive here now because of the storm.

Mayor Neugent acknowledged Chair Popham and Sanctuary Superintendent Fangman for having this meeting. He was in the Emergency Operations Center just prior to and after the storm. He observed that after the storm, staff from Monroe County and other agencies worked 24 hours a day 7 days a week, some even knowing that their houses had been destroyed completely or were uninhabitable. He cannot say enough about the people at the county, state and federal levels who worked in the Emergency Operations Center and stated that he is so proud to be able to work with the County staff and different municipalities that have cooperated and collaborated. He expected a long protracted recovery period. People throughout the Keys have been impacted by the storm, with the greatest

impacts being felt by Big Pine, the Torches, Ramrod and Cudjoe Keys. He feels that some people will move away because of the loss of housing. At this time, people who were displaced are using about 1,000 hotel/motel rooms.

Some ideas to address the housing issue were to bring in temporary mobile homes or refurbished cruise ship and/or seek assistance from organizations such as Habitat for Humanity. Mayor Neugent indicated that tax base could be reduced in the county and municipalities and this could pose some budget issues for the county. In addition, revenue is lost because some resorts and facilities are not operational. Chairperson Popham added that it will take months to remove the debris from the Keys. Andy Newman emphasized that housing is a real issue and there is a real need to get tourism reestablished. Tourism is what drives the Keys economy. Money has been freed up for post-hurricane advertising to get tourists back. This hurricane is a very unusual one because of its severity. Tourism recovery is going to take some time. In August, the TDC hired a new director, Jessica Bennett.

Marine Debris

Mayor Neugent explained that Monroe County is very concerned about marine debris. At this time, they have already removed more debris than was generated by Hurricane Wilma and so much more still needs to be done. Debris cleanup costs for the county are mounting and are not fully covered by state or federal entities. Vice Chair Barras asked who is responsible for cleaning up the marine debris trapped in the mangroves. Joanna Walczak, DEP, explained that a long-term solution is needed for this debris and DEP is considering this need. FDOT has responsibility to cover the highway debris. It may take a long time to get to the debris in the mangroves since it is of lower priority than vessels in the water and is difficult to reach. Chris Bergh suggested that it would be best to get any debris out of the mangroves at this time and placed up by the road so that it can be picked up with the other debris removal efforts, rather than waiting until a later time.

Lisa Mongelia would like to see a coordinated approach to cleaning up underwater debris that utilizes volunteer divers. She is willing to help with this effort. PADI has training in marine debris removal. Project Aware also provides guidance on this issue. Diver volunteers are a potential resource to help with debris removal. Bob Smith added that divers love to help and that training is not an obstacle, but is seen as beneficial. Elena Rodriguez explained that diver operators in the Upper Keys are actively engaged in removing debris on regular dive trips. It was noted that on the oceanside of the Lower Keys from Bahia Honda to Key West has the most submerged debris, including trap debris and lines. Deputy Superintendent Lisa Symons introduced Eric Raslich as the sanctuary's point person for marine clean-ups, including the International Coastal Cleanup. (Note: Divers and others will need training in Hazwoper (offered by the USCG) if they are dealing with hazardous wastes of any kind.)

Ms. Krueger stated Florida Sea Grant is considering working with partners to apply for a NOAA marine debris grant. She is willing to help with the writing of the grant and to coordinate with others. There are many challenges associated with removal and disposal. The county can be of assistance in guiding removal efforts. Superintendent Fangman supports having volunteers help with removal of marine debris. John Hunt commented that divers could help in offshore areas, but canals are not suitable because they may encounter poor/unhealthy water quality. Some larger debris items and things like trap rope are a big issue. This kind of debris is a long-term issue that needs a different level of organization. It goes beyond dive shop volunteer assistance. Mr. Hunt fully supports the concept of a large NOAA marine debris grant application for several reasons, but also because such a project will allow for cleanup of marine habitats in places that might be missed because they are not dive sites.

Mayor Neugent explained that FEMA pays for debris removal from the county for the first thirty days after the storm. That time has already passed and removal is continuing. A request for an extension was made by the county to cover 100% of the costs, but that decision is yet to be made. Typically, costs are shared 75% by the state and 25% by the county. Monroe County's portion could be a large number.

Note: Chris Bergh pointed out that highway that connects the entire keys was breached in two places, which slowed recovery somewhat (Sea Oats beach in Lower Matecumbe and Scout Key). Mangroves and other natural resources could be used to help enhance the protection of this valuable asset. Andy Newman noted that FDOT did a great job getting the highway open again after the storm.

Water Quality

Concerns were expressed for the water quality in nearshore waters, especially whether it was safe for swimming. Water quality issues may hinder efforts by divers and snorkelers to clean-up debris near shore. Joanna Walczak stated that they are working on this throughout Florida, but are limited somewhat by staff and time. Regular testing of selected beaches takes place and some advisories have been issued. Any announcements about beaches, etc. for posting on keysrecovery.org can be sent to Andy Newman at buck@newmanpr.com or asheley@newmanpr.com. Shelly Krueger manages the Florida Keys Water Watch program, which engages volunteers in collecting data from canals and nearshore waters. This program does not including testing to see if the water is safe for swimming.

DEIS/Management Plan

Superintendent Fangman asked the advisory council for input on DEIS/management plan. Dave Vaughan stated that it is an important time to address shallow water habitat, coral reef restoration and managing the protected areas. He thinks that things should move forward with the DEIS at this time. Chris Bergh expressed that he fully supports moving forward, but he feels it is also important to take into consideration the information from the studies being conducted after the hurricane. Some valuable information is expected to surface and should be considered when planning for the future. Vice Chair Barras agrees with Chris and feels that once the data comes in, the process should move forward.

V. PUBLIC COMMENT

Pete Frezza, on behalf of Richard Grathwhol, flats fishing guide and former SAC member Richard asks for a comprehensive assessment of the reef area due to hurricane Irma so that there is a baseline for future storms and action needed to follow. The assessment will tell you if action is needed in areas of the reef system and if so action to follow could be an emergency closure or action through adaptive management if areas have been damaged and the need is there to close off user group activity in said area. I look back to after Hurricane Donna and I remember a lot of sand build up on the reef was washed away and there was a good current flow afterward and the reef was scrubbed off so to speak and new growth showed up afterward--Mother Nature at work. The inshore waters might have some of the grass grow up that has been a bother on sand where tarpon are fished also some edges and contours might have changed. I think in the lower keys backcountry some of the areas that have become stagnated due to excessive sea grass growth over the years might have been flushed out also.

Kimberly Matthews, Monroe County Strategic Director of Planning

Ms. Matthews introduced herself as the new director of planning for the county. She offered her services and county resources to everyone regarding county related issues. She knows that people already know commissioners and other people in government, but if there is ever a project or issue where help is needed, please feel free to reach out to her. Ms. Matthews works closely with the commissioners. Her contact information is: Matthews-kimberly@monroecounty-fl.gov, 305 587-3683.

Dottie Moses, President of Island of Key Largo Federation of Homeowners Associations

Ms. Moses explained that the federation membership consists of over 20 subdivisions that represent almost 2800 property owners. She is here today on behalf of property owners on Buttonwood Bay, on the bayside of Key Largo and east side of Florida Bay. This area, including Tarpon Basin, has been opaque green since the storm. She has lived on the bay for 35 years and has never seen it this color for so long. Some people talked about how the water left the bay for 10 hours or so and that may have caused this. Other people point to the freshwater coming into the bay through the water management system. Some of the long-time homeowners saw similar things in 1989 and 1990s with releases of freshwater through the C-111 canal. At that time, freshwater created fish kills and seagrass die-offs. On behalf of concerned residents, she is asking for someone to look into the health of the bay in this area, which is part of the sanctuary. This area is where some resorts are operating and poor water quality could potentially have an impact on them. As part of the Biscayne Bay Water Watch, Ms. Moses regularly collects water samples from Barnes Sound. After the hurricane, she collected a water sample to obtain a chlorophyll-a values (an algal bloom indicator). During processing, the filter she was only able to filter half the water that she normally does before the filter became completely clogged. She saw lots of dead loggerhead sponges and baitfish in the bay, although not as many as in the early 1990s.

Allison Estape

Ms. Estape thanked everyone/agency people who has helped with recovery. She was impressed to see how quickly everyone responded and with such professionalism. As a diver, she is big into conservation and trying to protect the reefs, so the program to remove the underwater debris is very important and dear to her heart. She sees work done where people go, but there are many areas where the trash is not visible and may not be being addressed. She considers it to be both a long-term issue as well as a short term tourist issue. Can we get funds from TDC or whomever to pay dive operators to take volunteers out for free to start collecting and removing this stuff? Divers love to get into the water and have a lot of enthusiasm and energy. There is a need to keep dive operators employed with cash coming in. If the dive community can work in some way with agencies to generate some money to help finance this, it would be great. This would include working with the fishermen, too. Lobster boats will be needed to pull out some of the heavier items. She is now working with Lisa (Mongelia) and would be very happy to help coordinate volunteers.

Barry Wray, Florida Keys Environmental Coalition (FKEC.org)

Mr. Wray agreed with Allison's comments about the agencies doing a wonderful job after the storm. Mr. Wray stated that there a lot of solutions here and he is directing his comments at George (Mayor Neugent) because he is a leader. There should be a task for these cleanups. He has spoken about this before and there has been momentum for doing cleanups around the Keys before the hurricane. Now, it is even more important and the TDC can play a very important role in this. It is about developing a program, developing enthusiasm and having the proper training and having ideas like Allison just put forward that incentivize debris removal. A work force is important, but a task force to develop these ideas in order to create a cohesive program that takes a long-term approach is also needed. As John said, this is not a one-time event. Once we are in the habit of doing this and draw people in to do

these things, then it is a program. This can be a helpful way to bring people back. What the keys are going through after the storm is crazy and hurts all of us. At the break, he was talking with Harry Crissy. They discussed the idea of incentivizing people for trap removal after the season is over. A key thing needed is forming this task force. He wants to see action, action and action. That is exactly what Sarah is saying is needed. Let us do this now. If we wait, it will still be there, so let us get it done.

Note: Chairperson Popham pointed out that lobster traps are private property and state law prohibits touching/moving them.

Dave Vaughan, Mote Marine Laboratory, Summerland Key

Dr. Vaughan shared a slide presentation with the audience. Mote maintains coral nurseries in sanctuary waters in the Lower Keys near where the hurricane made landfall (oceanside). Mote's newly built category 5 building for growing nursery corals was not damaged in the storm, but the breezeways on the property were damaged. Before the storm, they brought 16,000 of the nursery grown corals inside the category 5 building. Mote Marine Laboratory has housing for about 40 people on Summerland Key and has been providing housing for national park conservation association and others coming down to work. If people from NOAA or other places need housing, they should contact him.

At the facility, most of the raceways were tossed, shuffled, and turned by the storm. They had about 5,000 corals in outside tanks that were rescued when they moved them to the deeper shark tank during the eye.

One of Mote's underwater coral nurseries did not fare well, but the other one did. Dr. Vaughan showed before and after photos of the nurseries and coral out-planting sites. Coral trees were ripped apart and five trees ended up near Miami. At the Looe Key nursery, all bottom modules were lost. Not one organism was left at the NOAA coral rescue nursery at Looe Key. A nearby seagrass bed was buried in sand. The sand key nursery was just far enough away to survive well (95% survival). The out-plant site at American shoals had staghorn coral, sponges and soft corals before the storm. The storm scrubbed the site clean. The Sand Key outplant site near Key West experienced less damage. Here, the staghorn coral tips were broken off and the bottom algae was removed. The inshore outplanting site at Fort Zachary Taylor did fine; but in the same area just inside the jetties, sponge skeletons accumulated in large piles. He thinks that the sponges removed from hard bottom habitats by the storm accumulated there. At Cook Island (inshore near Looe), larger coral heads seemed to be sand blasted, but sea fans seemed to remain. At Looe Key, some elkhorn is still there, but outer tips were impacted and algae is taking over now. Other elkhorn corals were more significantly impacted. Some corals were overturned and there may be an opportunity to reattach these corals. A lot of entanglement damage was observed (trap line, traps), especially in inshore areas. This is the time to remove this debris, as it will be more difficult later and require more training on behalf of the diver. In general, the degree of damage seemed to be related to how far from shore (inshore vs. offshore) and how far away from the eye (closer to Key West). There also seemed to be differences depending on species. The more delicate branching corals were made to break during storms, but the massive star coral colonies were not. In general, they fared much better than branching corals. In restoration, they should consider more species than staghorn and elkhorn corals. A place like American Shoals that is completely denuded could be re-populated soon so that it would not take one hundred years for it to return to its former state.

Miranda Murphy, owner operator of Aquaventure Ecotours (Marathon)

Ms. Murphy thanked everyone for ongoing efforts. She traveled by boat about six miles from Curry Hammock to Key Colony Beach recently and did not see any sponge tissue anywhere in places that are usually heavily populated. She thinks that is something that should be considered important. People are replanting corals and if filtration of the water is not going on, how long is that coral really going to last? That is a big concern. It is just not looking good for the sponges and bottom-dwelling life. She is concerned about the sponges and micro-pollutants and *E.coli*. Maybe micro-pollutants and excess nutrients are affecting the sponges.

Ms. Murphy explained that she has not observed a lot of water quality sampling taking place in Marathon. She cannot find information on this anywhere online. As far as she knows, Sombrero Beach is the only place where water testing is taking place. More sampling would be super helpful to people. She proposes that agencies use people like her who are dive instructors and are on the reef or mangroves to take water samples. People are here and want to do something and some people are out of work. That could be a really good connection to keep divers here doing something and that would provide data. Once the dive operators are back in operation, customers could become part of the process. They could be made aware of the issues. People want to be involved; they want to help. This would be one more thing they could bring to tourists as part of their normal operations.

The reef is the lifeblood here, but the supporting habitats such as the sponges and mangroves do the filtration and are important and deserve to be addressed. She has seen studies where sponges are used for remediation for pollution, especially when there is *E.coli* present. She has not heard this mentioned very much and thinks it is a big issue. It is really important to find out the where this *E. coli* and pollutants are coming from. This is not new because of the storm, but was happening continually before as well. She would like to be part of the process and would like to see sponges regrown and out-planted. Other people have touched on the importance of retaining workers here. At this time, when dive folks and others are out of work, maybe there is something they can do as far as citizen science, etc. She would like to see water quality data throughout the Keys. If water quality testing does occur, the dive operators would like to know this information so that they know whether the waters are safe for swimming.

Discussion (advisory council)

Andy Newman asked why the sanctuary was not assessing artificial reefs after the storm. Superintendent Fangman introduced Maritime Heritage Team Lead Brenda Altmeier to comment on fieldwork taking place. Ms. Altmeier explained that staff are busy conducting rapid assessments on the natural resources, and working with the USCG (as Natural Resource Advisors) on vessel removal. Mooring buoys and coral restoration are also a focus at this time. In the field, sanctuary staff will use photography to document the resources. Last year, a photo-mosaic of the City of Washington shipwreck site was created and can be used for comparison purposes. Shipwreck materials are constantly decomposing and are difficult, if not impossible, to repair. The sanctuary is concerned about any new artifacts that were uncovered by the storm and are now threatened (potential of removal without permission). Assessments on cultural resources will be taking place in the future to understand the impacts of the storm on them. Dive shops and chambers of commerce are providing reports on the condition of different sites.

Note: The permittee for each artificial reef/wreck is responsible for that artificial reef. FKNMS manages natural and cultural/historic resources, in conjunction with the State of Florida in state waters.

Artificial Reef Comments

Bob Smith stated that the newspaper reported the Vandenberg wreck had been moved from its original position on the seafloor. Don Kincaid stated that he is getting conflicting information, but the Vandenberg may have shifted significantly and may have settled further into the seafloor. Up-to-date information is not available yet. Elena Rodriguez reported on the condition of the Spiegel Grove, which has a gash at 150 feet and other damage. The Duane's smokestack landed in the sand nearby. Two sections of the Northern Lights wreck in 185 feet collapsed. She understands that the Eagle sustained some damage as well.

Deputy Superintendent Lisa Symons asked everyone to reach out to Brenda with information, questions or concerns about cultural resources.

Mimi Stafford inquired about grant funds from TDC and other sources that could be used to capitalize on the fact that there are passionate people in the community who are in need of work and want to help. She thinks that a task force should be created with the idea of getting people out in the resources as part of recovery.

VI. FKNMS ADVISORY COUNCIL CHAIR CLOSING REMARKS

Chairperson Popham thanked the agencies for their reports and everyone else for contributing valuable ideas and support. The next meeting will be the second Tuesday in December 12.

Meeting Adjourned.