Marine and Coastal Zone Advocacy Council (MACZAC) / Ke Kahu O Na Kumu Wai

MINUTES

Thursday, May 10, 2018: 9:30 am – 12:30 pm
Office of Planning Conference Room
235 South Beretania Street, 6th Floor, Honolulu, Hawai'i 96813

ATTENDANCE

- Members Present: Phil Fernandez, Jim Coon, Rich Brunner, Kimbal Thompson, Robert Nishimoto, Donna Brown, Sue Sakai
- Members Absent: Nick Palumbo
- Office of Planning/Coastal Zone Management (OP/CZM) Staff Present: Justine Nihipali (OP/CZM), Melanie Lander (OP/CZM), Lisa Webster (OP/CZM)
- Others Present: Douglas Tom (member of the public)

DISTRIBUTED MATERIAL

- MACZAC Meeting Agenda for May 10, 2018
- Minutes from February 8, 2018 MACZAC Meeting [Draft]
- MACZAC Hotspots 5/2018
- Articles:
  - "Experts: Think Twice Before Rebuilding In Kauai's Flood Zone" – [http://www.civilbeat.org/2018/05/experts-think-twice-before-rebuilding-in-kauais-flood-zone/]
  - "Hawaii Passes Bill Banning Sunscreen That Can Harm Coral Reefs" – [https://www.nytimes.com/2018/05/03/travel/hawaii-sunscreen-ban.html]
  - "History Made with Islandwide SMA Boundary on Lānai" – [http://mauinow.com/2018/04/03/history-made-with-islandwide-sma-boundary-on-lanai/]
  - "Old Tappan Zee Bridge Gets New Life as Artificial Reef" – [https://www.nytimes.com/2018/04/29/nyregion/tappan-zee-bridge-artificial-reef.html]

I. Call to Order

MACZAC Chair, Kimbal Thompson, called the meeting to order at 9:42 am and welcomed everyone.

II. Approval of February 8, 2018 Meeting Minutes

The February 8, 2018 Meeting Minutes were unanimously approved by all members present.

III. Hawai'i Coastal Zone Management (CZM) Program Report

Justine Nihipali, CZM Manager, provided a verbal CZM Program Report highlighting the following:

Community Stewardship Directory Update

CZM hired two part-time student assistants to work on the Community Stewardship Directory update, as well as other projects. The students suggested sharing the directory with University of Hawai'i department heads to help students find internships and volunteer opportunities with stewardship projects. One of the students just graduated, so there is only one student assistant remaining. CZM will be recruiting a graduate student intern to help Ms. Melanie Lander, ORMP Coordinator, with the ORMP update. There will also be a consultant hired to help with the update.

Updating of the Historical Shoreline Change Database
UH SOEST's Hawai'i Coastal Geology Group has been contracted to work on updating the Historical Shoreline Change Database for Kauai, Maui, and Oahu, and the work has already begun. This work is a direct metric from the ORMP, and is being done with grant funds received by CZM.

Legislation
Three measures that CZM was tracking passed:

- HB2182, introduced by Representative Chris Lee, repeals the existing Carbon Farming Task Force effective July 1, 2018, and renames it to the Greenhouse Gas Sequestration Task Force. The bill provides $180,000 and expands the mandate to include urban tree canopy as a way to mitigate heat impacts from climate change effects. The Greenhouse Gas Sequestration Task Force will continue to look at mitigative measures in sequestering carbon in agricultural, aquacultural, and agroforestry practices. OP is the lead to coordinate these efforts, with a number of other agencies involved in the work.
- HB1986 has OP looking into establishing a carbon registry to allow for outside investment into the State, allows for creation of a fund for mitigation and sequestration of greenhouse gases.
- HB2106 related to the environment, tasks the Environmental Council for the Office of Environmental Quality Control to integrate sea level rise into the rules for EAs and EISs in the Chapter 343 process in Title 11-200. The Environmental Council currently has their Public Notice out for the draft rules for the Chapter 91 process.
- A House Concurrent Resolution passed that encourages agencies to work together to explore technologies for in-water hull de-fouling.

Collaborative Efforts

- The next Climate Commission meeting is scheduled for May 22, 2018. Anu Hittle is the new coordinator for the Commission, and is working with Sam Lemmo.
- Ms. Lander has started to convene a coordinators' hui to make sure all coordinators within Hawaii's state agencies know what work is being done in different areas.

Hawai'i CZM Funding
OP/CZM received an increase in funding of approximately $150,000 from Congress this year which will be put towards getting the Coastal Nonpoint Pollution Control Program approved.

ORMP Update
Ms. Lander is working on ORMP outreach materials, but will wait until after the November election to meet with lawmakers and agency heads to increase understanding and awareness of the ORMP. Public scoping sessions are anticipated to be held in the summer of 2019.

IV. Presentation: Overview of Coral Reef Ecology

Donna Brown, MACZAC Member and UH Maui College Lecturer & MOP Coordinator

Ms. Donna Brown, MACZAC member, provided the group with an overview of coral reef ecology and their importance to Hawai'i. Coral reefs are complex systems based on coral, a tiny organism. Coral reefs are very old systems, first appearing over 230 million years ago. The first coral ancestors appeared even earlier, over 400 million years ago. In the Kumulipo, the 18th-century Hawaiian chant telling the creation story of the world, the coral polyp is the first organism created. There are different types of corals. Reef-building corals need to live in warm water.

For Hawai'i, the islands form over the hotspot located where the Big Island is. The pacific plate is moving northwest, and as the islands move away from the hotspot they sink and move into cooler water. Young islands have fringing reefs that form around them. The only barrier reef we have is off

of Anini Beach on Kauai, and in Kāne‘ohe Bay on Oahu. As the island starts to sink, the reef has to grow to keep up with the sinking of the island. An atoll appears when the original island has completely sunk below the water, and all that is left is a reef. Charles Darwin came up with this theory of evolution from fringe reef to barrier reef to atoll to seamount, but he was never able to prove his theory. Later studies of atoll cores confirmed that they were made of volcanic rock, proving Darwin's theory correct.

Branching corals grow in the calmer water inside the lagoon. The more sturdy corals like the cauliflower corals grow where the waves break. More delicate corals, like the finger corals, live in deeper waters.

Phytoplankton is the base of the food chain in the ocean. There isn't much phytoplankton in the areas where corals are prevalent. Productivity can be measured in grams of carbon per square meter per year. Using this measure, coral reefs are the most productive places on earth. How can they be so productive living in waters without nutrients? The secret is the ultimate symbiosis between the coral animal and the photosynthesizing dinoflagellate known as zooxanthella. Up to a million cells of this dinoflagellate live inside the coral, giving it its' color. The zooxanthellae become less productive when the water is too warm. When they become less productive, the coral expels the zooxanthellae.

The zooxanthellae provide food, oxygen, hormones, and color, which probably acts as a sunscreen for the coral. The coral provides CO_2, nitrogen waste, and a place to be in the light. Corals need to be in sunlight, in clean, clear, water. They need to be in shallow water with hard substrates to settle on. They need waves or currents to move things around, salty sea water, and temperatures of at least 68^{o}F. In areas where fresh water enters the ocean, there are usually natural channels because the reefs prefer higher levels of salinity.

Corals are simple animals. They are radially symmetrical and have three layers; the outer epidermis, the inner gastrodermis, which includes the stomach, and the mesoglea, the jelly-like substance found between the two dermal layers. Corals form a calcium carbonate skeleton at the lower portion of the polyp, closest to the substrate.

Corals do not rely solely on zooxanthellae for food. They are also predators. They belong to the same phylum as jellyfish and sea anemones, with all having the identifying feature of tentacles with stinging cells called nematocysts. The nematocyst has a spring-coiled barb with a trigger thread. The barb contains venom, and some corals can cause a painful sting. Corals use their nematocysts to feed on zooplankton and bring them into their stomachs. Coral colonies are many identical individuals connected to each other. When one coral polyp feeds, the nutrients are shared with the colony.

Corals can reproduce in different ways, including both sexual and asexual reproduction. Asexual reproduction includes both budding and fission. Fission is when one polyp splits in two, and budding is when a small polyp grows off of the side of a larger polyp. Sexual reproduction is accomplished through spawning or brooding. Brooding is achieved when a coral polyp containing an egg takes sperm from the surrounding water and brings it to the egg, and eventually releases a larva. The most common form of sexual reproduction is broadcast spawning, where male and female gametes are released into the water at the same time.

Spawning occurs in the summer, the night after a new moon, between 8 and 9 pm. The eggs and sperm combine to make bundles, which float because they contain oil. There are often zooxanthellae included in the bundles, to help the new corals survive. After several hours the bundles break apart. The fertilized eggs develop into small larvae called planula. Planula are free swimming, and navigate through the water until they reach a hard substrate where they anchor and grow into polyps. Many corals only spawn once a year.

Fishing, especially of herbivorous species, has a negative impact on reefs because the herbivores keep the algae from overgrowing. Parrotfish are especially important, because they scrape away algae and leave a bare substrate for coral to grow on. Nutrient enrichment, often from sewage, is detrimental to reefs. Increased ocean temperatures of only a few degrees can lead to coral bleaching. Tourists often trample on the coral, and many sunscreens negatively impact coral health.

Coral reefs are sometimes referred to as the rain forests of the sea, but Ms. Brown suggested that we might want to call rain forests the coral reefs of the land, because coral reefs are the more diverse environments.

V. Guest Presentation: Update on DLNR-DAR's Artificial Reef Project

Paul Murakawa, DLNR-DAR Aquatic Biologist

Mr. Paul Murakawa, DLNR-DAR Aquatic Biologist, provided a short presentation about DLNR-DAR's Artificial Reef Project. There are a variety of different types of artificial reefs. Artificial reefs can be used as fish aggregating devices, either for fishing or for tourist activities like submarine tours. Another use of artificial reefs is as memorial parks. This is popular in Florida. Sometimes artificial reefs are a secondary benefit of other projects like wind farms or seawater air conditioning pipelines.

The DLNR-DAR Artificial Reef Project is federally funded through taxes on fishing gear and motorboat fuel. The purpose of this project is to create fishing opportunities for the general public. The first artificial reef was the Maunalua Bay Artificial Reef Project, which was created in 1961, using abandoned cars as the material. There were almost 1,600 cars dumped in the bay. The problem with this was that the cars rusted away. The next material used was large culvert pipes, which acted like bulldozers during big storms. The next material used was tire modules, made of tires encased in concrete. The fish didn't seem to like the tire modules enough to stick around at these sites, probably because there weren't enough hiding spaces. The current material being used is the z-module, which is a concrete structure 4' x 8', with legs on opposing sides. The concrete is allowed to cure for 6-8 months, and is then dumped off of a barge with a forklift. The modules, which are dumped in large numbers, land haphazardly on the sea floor, creating many different-sized hiding areas.

There are positive and negative aspects to artificial reefs. The positive aspects include enhanced habitat, and taking pressure off of the natural reef by bringing divers to the artificial reef. The negative aspects include acting as a fish aggregating structure, taking fish away from the natural reef. Over time, Mr. Murakawa feels that the artificial reef acts as a positive production unit for the area.

In Maunalua Bay, pre- and post-deployment surveys were done for an artificial reef project that was deployed in 2007. The pre-deployment survey, done in 2005, found that the area was mostly flat limestone, with a few live cauliflower corals. There were about 5 grams per meter^2 of fish found in the area during the pre-deployment survey. This is about 1/90th of a pound per meter^2, or one 3" fish. There were approximately 7 species of fish found, including trigger fish, lizard fish, a few damsels around the coral, and a few other species of cryptic fish. The post-deployment survey, done in 2010, found 100 grams of fish per meter^2, which is about a quarter pound of fish per meter^2. There were almost 30 species of fish found during the post-deployment survey, including snappers, damsels, and soldier fish. Over time the fish population increases, and then plateaus. Once the population has plateaued, it has been found to fluctuate over time, just as it would in a natural reef.

The z-modules were first used at the Waiʻanae artificial reef in 1993, and photos from 2014 show significant coral growth after 21 years. Mr. Murakawa would like to see the Waiʻanae artificial reef in another 20-50 years to see if it looks similar to natural reef. The artificial reefs are being deployed to create additional fishing opportunities, but a side benefit is providing a hard substrate to allow coral growth.

It costs the State very little to run this project. There is a 3 to 1 match of federal funding to State dollars spent, as well as to donations received. The concrete for the z-modules is donated by Ameron, and for every $300,000 the project receives in donated concrete, $900,000 will be matched by federal grant funds.

There are several challenges for the Artificial Reef Project. The biggest challenge is the permitting process. An Army Corps permit is required, which is obtained by going through NOAA. Part of the process includes getting an Essential Fish Habitat (EFH) consultation. A State of Hawai‘i (Department of Health) Water Quality Certification Permit is also required. It's very difficult to get through the permitting process. In 2004 it took 8-10 months to get a permit to establish a new artificial reef site, now it takes 3-4 years to get the same permit. Another challenge to the Artificial Reef Project is the change in leadership that occurs every 4 years. Going forward, Mr. Murakawa would like to see an improved permitting process, possibly through a blanket permit. In addition, it would be beneficial to have artificial reefs accepted as a compensatory mitigation for reef destruction due to construction or other projects.

Ms. Sue Sakai, MACZAC member, noted that MACZAC wrote a white paper a number of years ago identifying beneficial uses of artificial reefs and fishponds. For beneficial uses, a general permit would make it easier to get projects approved. Mr. Murakawa confirmed that an EA/EIS is required for each project, because the Chapter 343 process is triggered for each project. There is currently no programmatic permit for this project.

Dr. Robert Nishimoto, MACZAC member, suggested repackaging the project as a restorative effort, rather than just a fishing opportunity, to bring in more funders. Mr. Jim Coon, MACZAC member, noted that the sites could be used for multiple purposes including a fishing site and a snorkel/dive site, and possibly as a coastal erosion mitigation effort, using artificial barrier reef to dampen wave action near vulnerable shoreline structures. Mr. Murakawa noted that there is currently a requirement of a 40-foot depth clearance.

Ms. Lander asked if there were impediments to working with DOBOR to use derelict vessels as artificial reefs. Mr. Murakawa noted that vessels are now considered solid waste. Ms. Lander suggested that it might be possible to have the vessel thoroughly cleaned and then certified. Mr. Rich Brunner, MACZAC member, asked if DAR had considered working with the United States Department of Transportation Maritime Administration (MARAD) to use stricken vessels. Mr. Murakawa noted that the current Chair of DLNR is comfortable with concrete modules, but not with vessels.

Dr. Nishimoto asked Mr. Murakawa what he sees as DAR's role in the State. Mr. Murakawa stated that he feels that DAR does its best to protect and enhance aquatic resources with the tools available.

Dr. Nishimoto suggested inviting DAR Administrator, Bruce Anderson, to discuss artificial reefs. Mr. Coon made a motion to establish an Artificial Reef Working Group, to advocate for more artificial reef, and Ms. Sakai seconded. The motion was approved by all members present. Members of the Working Group are: Mr. Phil Fernandez, MACZAC member, Dr. Nishimoto, Mr. Brunner, and Mr. Coon.

VI. Reports from MACZAC Working Groups

- Legislative Working Group
  No Report.

- Executive Working Group
  No Report.

- Retreat Working Group
  Mr. Fernandez noted that MACZAC's focus this year is on coral.

VII. Discussion Highlighting Critical Marine and Coastal Hotspot Issues, By Island

- East Hawai'i Island – Dr. Robert Nishimoto, MACZAC member, discussed the following East Hawai'i Island hotspot:
  - Hāmākua Coast
    Dr. Nishimoto noted that there is a draft Community Development Plan for Hāmākua that has a large section about building setbacks. New development will require a licensed civil engineer to determine how stable the ground is in areas being proposed for development. Dr. Nishimoto shared photos of Hāmākua Coast with the group, which depict large landslides leading to loss of public coastal resources and opihi habitat, as well as loss of land in developed cliff-side lots. Dr. Nishimoto is concerned that no one is fighting for the shared public trust resources in the area.

VIII. Public Input

No public input was given.

IX. New Business

- MACZAC members are interested in meeting with Bethany Morrison, Hawai'i Island long-term planner, at the upcoming MACZAC meeting, to learn about coastal issues on the Big Island.
- MACZAC members are also interested in hearing from Dolan Eversole and Bradley Romine [of Sea Grant] about Statewide coastal erosion issues at an upcoming MACZAC meeting.
- The next MACZAC Quarterly Meeting will be tentatively held in Hilo, HI on Friday, September 28, in the afternoon, at the end of the upcoming Hawai'i Congress of Planning Officials Conference (September 26-28, 2018).

X. Adjournment

Chair Thompson adjourned the meeting at 12:28 pm.