

State of Hawai'i
DEPARTMENT OF LAND AND NATURAL RESOURCES
Division of Aquatic Resources
Honolulu, Hawai'i 96813

May 10, 2024

Board of Land and Natural Resources
State of Hawai'i
Honolulu, Hawai'i

NON-ACTION ITEM:
BRIEFING ON PROPOSED ADOPTION OF A NEW CHAPTER,
CHAPTER 13-48.5, HAWAII ADMINISTRATIVE RULES,
"MAUNALUA BAY FISHERIES MANAGEMENT AREA, O'AHU"

Submitted for your review is a proposal to adopt chapter 13-48.5, Hawaii Administrative Rules (HAR), to designate the Maunalua Bay Fisheries Management Area, O'ahu (Maunalua Bay FMA), to create long-term sustainable fishing within Maunalua Bay.

HISTORY OF MAUNALUA BAY

Maunalua Bay and its surrounding lands, located on the southeast coast of Oahu, has long held an important and significant place in Hawaiian history. According to one legend, Maunalua was one of the first settlements when settlers arrived in Hawai'i around the 12th century. Native Hawaiians originally lived there by fishing and cultivating sweet potatoes (*'uala*) along the coastal plains at a place called Ke-kula-O Kamauwai. Maunalua Bay was famous for having the largest Native Hawaiian fishpond (*loko i'a*) on O'ahu. The 523-acre fishpond, traditionally known as *Keahupua-O-Maunalua* or *Kuapā* Fishpond, had a 5,000 foot long wall (*kuapā*) which originally spanned from Kuli'ou'ou headland to what is now Portlock.

Kuapā Fishpond was used primarily to raise mullet (*'anae*) and was also home to a multitude of endemic or indigenous waterbirds. In some traditional accounts, this fishpond was said to have been built by the Menehune, a legendary race of small people, and the pond was connected through an underground tunnel to *Ka`elepulu* fishpond in Kailua. Whether or not this underground tunnel exists, there are historical accounts of large schools of mullet disappearing from *Kuapā* Fishpond only to appear *en masse* in *Ka`elepulu* the next day. Similarly, there are accounts of large schools of *awa* disappearing from *Ka`elepulu* and appearing in *Kuapā* Fishpond seemingly overnight. *Kuapā* Fishpond and its surrounding area continued to be important for fishing and agriculture until the 1950s when the fishpond was filled for housing development in what is now Hawaii Kai.

In territorial and early statehood times, Maunalua Bay was governed by fishing rules enforced by a Konohiki regime. The lands surrounding the Bay were rural and lightly

developed with healthy, intact watersheds, extensive fishponds, fresh water input from multiple sources (streams, springs), and a vibrant fishery supported by healthy coral reefs. After the 1950's, Maunalua Bay and its surroundings transitioned from a rural area to a heavily developed suburban area which is now home to approximately 60,000 residents, seven major commercial centers, and fifteen school campuses.

Associated with this growth were major changes to the ecology of Maunalua Bay, such as: loss of fish ponds due to fill for housing developments; loss of natural streams to cement for flood control; loss of fishponds to hardening for development; loss of natural shoreline to hardening for protection; and dredging of the Bay's seafloor for beach development and fill. What is more difficult to understand is how these changes directly affected Maunalua Bay, such as: the deepening of the Hawaii Kai Marina and how it affected the circulation in the bay; the loss of springs for highway development and how it affected the estuarine environment; the hardening of the streams and how it affected the anadromous fish populations; the on-site disposal systems and how they affected water quality in the Bay; and how the increasing human population and access to modern fishing technologies shifted fish populations in the Bay.

The Bay has also retreated from the vigorous enforcement of fishing rules under a Konohiki regime to little to no enforcement. As a result of these changes, Maunalua Bay is threatened by land-based pollution, overfishing, invasive species, and climate change. These threats have reduced the benefits that Maunalua Bay has provided to the community.

THE MAUNALUA BAY NEARSHORE ENVIRONMENT: FISHERY AND NON-FISHERY USES

As mentioned in the previous section, Maunalua Bay has historically been an important place for fishing, fish rearing, and gathering throughout Hawaiian history. Besides fishing and gathering, Maunalua Bay is also an important area for non-fishery related recreational activities such as surfing, snorkeling, jet skiing, parasailing, SCUBA diving, paddleboarding, boating, and canoeing. Unfortunately, despite the numerous recreational activities that Maunalua Bay provides, the quality and quantity of the living marine resources in Maunalua Bay has declined significantly over the past 100 years.

Various fish biomass surveys have been conducted in Maunalua Bay over the past few years and have all converged on a similar finding: total fish biomass in Maunalua Bay is significantly lower than other comparable sites on Oahu.¹ "Target fish," or fish preferred by fishers, were rare at Maunalua Bay survey sites. "Prime spawners," or target fish that are greater than 70% of their maximum size, were seldom encountered during surveys, and their mean biomass was only 7% of the average for other Marine Life Conservation Districts (MLCDs) on Oahu. "Non-target fish" were also depleted in Maunalua Bay, but to a lesser extent than target fish and prime spawners. Overall, these surveys

¹ *Assessment of Fish in Maunalua Bay, O'ahu; Findings from Three Years of Marine Surveys (2009-2012)*, Dr. Dwayne Minton et al., The Nature Conservancy, 2014

concluded that the Maunalua Bay reef assemblage is in poor condition and is among the most adversely impacted in the entire state.

PURPOSE AND OVERVIEW OF PROPOSED RULES

The purpose of the proposed Maunalua Bay Fisheries Management Area rules is, in essence, to increase the biomass of Maunalua Bay's nearshore fisheries over time so that sustainable fishing practices are more productive (higher catch) while critically important marine life is protected. From the Purpose section of the proposed rules, the Maunalua Bay Fisheries Management Area rules aim to:

1. Create long-term sustainable fishing within Maunalua Bay;
2. Protect ecologically critical and socially important marine life while minimizing impacts to sustainable fishing practices;
3. Conduct data collection and monitoring to inform fisheries management; and
4. Develop an inclusive, transparent, adaptive stakeholder-endorsed and science-based decision-making process

Although there are many potential ways to achieve these goals, community stakeholders have identified two avenues for fisheries management that they hope will fulfil the purpose of the proposed Maunalua Bay FMA:

1. Making unlawful the taking/possession of five species of marine organisms while inside the Maunalua Bay FMA: *alakuma* ("7-11 crab"), horned helmet, Triton's trumpet, *ula* (spiny lobster), and *ula pāpapa* (slipper lobster); and
2. Between the hours of 6:00pm and 6:00am, making unlawful the use/possession of spears while diving, the possession of both diving equipment and a spear at the same time, and the possession of both diving equipment and any specimen of speared aquatic life at the same time. (Possession of this gear is allowed while onboard a vessel in active transit through the FMA).

Penalties for violating the proposed rules include administrative penalties provided by Hawaii Revised Statutes (HRS) 187A-12.5 and criminal penalties as provided by HRS 188-70. Along with these penalties, the proposed rules include an asset forfeiture provision which states that any equipment, article, instrument, aircraft, vehicle, vessel, business record, or natural resource used in violation of these rules may be seized and subject to forfeiture as provided by HRS 199-7 and HRS 712A.

The boundaries of the Maunalua Bay Fisheries Management Area are:

1. A straight line extending from the southern tip of Kawaihoa Point (Spitting Caves) at 21.25918°N, -157.70718°W westward to the Diamond Head buoy at approximately 21.24679°N, -157.81571°W;
2. A straight line extending from the Diamond Head buoy shoreward to the Diamond Head Lighthouse at 21.25523°N, -157.80967°W; and

3. A line drawn along the shoreline between the Diamond Head lighthouse and Kawaihoa Point.

The duration of the Maunalua Bay Fisheries Management Area, as proposed, is from the date of filing to June 30, 2036.

The most recent version of the Maunalua Bay Management Plan (Draft) is attached as Exhibit A.

A detailed timeline of the Maunalua Bay Fisheries Management Area Meeting History is attached as Exhibit B.

The proposed rules drafted in Ramseyer format are not attached as an exhibit to this submittal because they are pending review by the Attorney General's Office.

Respectfully submitted,



BRIAN J. NEILSON, Administrator
Division of Aquatic Resources

APPROVED FOR SUBMITTAL



DAWN N. S. CHANG, Chairperson
Board of Land and Natural Resources

Attachments:

- Exhibit A – Maunalua Bay Management Plan (Draft)
- Exhibit B – Maunalua Bay Fisheries Management Area Meeting History

Maunalua Bay

Fishery Management Area

Management Plan

2024

DRAFT DOCUMENT

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PROPOSED MANAGEMENT STRATEGY (VISION, GOALS AND OBJECTIVES)

VISION: MAUNALUA BAY FISH POPULATIONS AND OTHER MARINE LIFE ARE HEALTHY, AND DATA-BASED FISHING RULES AND PRACTICES ARE IN PLACE TO ENSURE LONG-TERM SUSTAINABLE FISHING.

THE SUCCESS OF THE FOLLOWING PLAN IS DEPENDENT UPON RESOURCES, BOTH PEOPLE AND MONIES, AS WELL AS BUY-IN BY STAKEHOLDERS AND GOVERNMENT. ACCORDINGLY, THE FOLLOWING IS AN ASPIRATIONAL PLAN AND PROVIDES BASIS FOR ESTABLISHING A “SUNSET” CONTINGENCY TO COMPEL EFFECTIVE STAKEHOLDER AND GOVERNMENT ENGAGEMENT.

This management plan for the Maunalua Bay Fisheries Management Area (MB FMA) is structured within HOLOMUA’s four pillars plus a “Compliance and Enforcement” pillar. While structured within HOLUMUA’s framework, the rules and format of the MB FMA are independent of the broader HOLOMUA structural and process provisions.

The goals and objectives cited herein are elements creating and maintaining an area within which there is sustainable fishing. Achieving the cited goals and objectives will NOT be a panacea for fully addressing declining marine life / fish biomass. It is recognized that a host of non-fishing activities and conditions, such as degraded water quality and invasive species, contribute to the health and population of bay fish. Additionally, permanent changes have altered the bay, such as a reduction in freshwater flow, human population growth, and increased bay use. These alterations led to changes in ecology and may not be reversible.

To create a comprehensive program for improving fish populations, those issues will need to be addressed, and are being actively tackled by other organizations (e.g. Malama Maunalua) and working groups in the region. While it is anticipated that communication will occur between those groups and the MB FMA’s Advisory Panel, their work is outside the scope of this plan. The purpose of this plan is to create the infrastructure for a collaborative stakeholder body (Advisory Panel) with some initial rules to improve the management of fisheries for long-term sustainable fishing. Many of the specific components necessary for creating improved management, such as stakeholder engagement, new rules, and monitoring protocols, are left for the Advisory Panel to establish.



PLACE-BASED PLANNING for this FMA means the continuous collaboration of Maunalua Bay (MB) stakeholders, the state, non-governmental organizations, and other interested parties. Collaboration requires listening and seeking to understand all concerns, respecting existing data (including empirical knowledge), empowering stakeholders, and

employing timely and responsive data-based decision-making processes. Stakeholders are all users, as well as non-users interested in the well-being of MB.

Goal 1: Implement an effective FMA decision-making framework

- Objective 1.1: Within one year of the establishment of the FMA, establish an Advisory Panel as detailed in Appendix A.
- Objective 1.2: Establish through the Advisory Panel a methodology for the continued involvement of stakeholders in management decisions and outcomes.
- Objective 1.3: Establish the Advisory Panel as a recognized communication link between the public and the government.
- Objective 1.4: Create a protocol for responding to inquiries from the public or government.
- Objective 1.5: The Advisory Panel utilizes adaptive management to the maximum extent possible. See Appendix B.
- Objective 1.6: Within six months of the establishment of the Advisory Panel, it shall create an operating procedure for the body, including a schedule, roles, responsibilities, and any other actions necessary for its effective operation.

Goal 2: Metrics are in place that facilitate the evaluation of the success / merits of the FMA.

- Objective 2.1: No later than two years after the establishment of the FMA, the Advisory Panel shall establish a minimum of four metrics measuring the success and merits of the FMA. The metrics shall cover ecosystem and social factors. (Note: As stated, this document is, in part, to provide the basic foundation for the Advisory Panel and FMA. The efficacy of the overall FMA is left to the Panel to determine.)
- Objective 2.2: At the end of the fourth year after the establishment of the FMA, no additional metrics will be introduced into the evaluation process.
- Objective 2.3: The Advisory Panel will annually evaluate how well the FMA is meeting its metrics. At year five a comprehensive evaluation and update will be given to the DLNR. In year 10, the Advisory Panel will provide a review of the success of the FMA, utilizing the metrics previously established, and make a recommendation to the DLNR on whether the FMA should be extended beyond 10 years, or allowed to sunset. The evaluation tool and process to be used is provided for in Appendix C.

Objective 2.4:

Should the Advisory Panel recommend extension of the FMA to DLNR, the recommendation shall specify the time period of the recommended extension as well as cite specific goals and objectives to be achieved during the recommended period of extension¹.

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¹ It is imperative that the Advisory Panel conduct an evaluation and forward any related recommendation to the DLNR in a timely manner. That is, in sufficient time for the Land Board to act to extend the existence of the FMA before the disestablishment deadline of the FMA, if that be the case. There are no provisions herein that allow for extension of the FMA based on a need for more time to come to a decision on whether or not an extension is warranted.



PONO PRACTICES encourages responsible behavior through education and outreach, strengthened enforcement, and local partnerships to encourage sustainable behaviors and practices.

In the Hawaiian language, “pono” means “necessary” or “righteousness.” Commonly, the term pono means “the right thing” or “do the right thing.” In the context of the MB FMA, pono practices encourages responsible behavior that facilitates and reinforces sustainable fishing.

One method of instilling pono practices is via education and outreach.

One data element absent in the State of Hawaii is recreational, non-commercial, and subsistence fishing harvest data. Gathering and analyzing this data are requisite to measuring the impact of pono practices.

Goal 3: All stakeholders are aware of and understand the FMA rules.

- Objective 3.1: Within 6 months of the establishment of the FMA, identify the groups of stakeholders for engagement, and how best to communicate to them.
- Objective 3.2: Design an educational campaign within 12 months after passage of the FMA for informing the public, including focusing on how to directly reach various groups, specifically.
- Objective 3.3: Every year do an assessment of how well stakeholders and the public are aware of the rules of the FMA and determine if new measures need to be undertaken to improve compliance with the rules.
- Objective 3.4: Determine what existing compliance initiatives, such as Makai Watch, exist and if/how they can be implemented in Maunalua Bay.
- Objective 3.5: Work with DOCARE to assess the effectiveness of the DLNR TIP app/line as it pertains to the MB FMA

Goal 4: One hundred percent of the fishers of Maunalua Bay clearly understand the purpose and value of the FMA.

- Objective 4.1: Develop and implement a plan to educate Maunalua Bay fishers (and other Maunalua Bay users) of the reasons leading to the establishment of the FMA. This includes reaching fishers who may live outside of the region, or may not have English or Hawaiian as a first language.
- Objective 4.2: Develop and implement a plan that ensures fishers (and other Maunalua Bay users) are readily aware of rules, prohibitions, laws, and best management practices pertaining to fishing within Maunalua Bay. This includes reaching fishers who may live outside

of the region, or may not have English or Hawaiian as a first language.

Objective 4.3: Promote the use of various technology and media platforms in pursuing Objectives 3.1 and 3.2 above.

Objective 4.4: Develop and implement methodology that measures the effectiveness of outreach and education initiatives.

Goal 5: Data on the number of fishers, type of fishing, and harvest within the MB FMA is collected through, in part, MB fisher engagement in the data collection process, and is analyzed for inclusion in the overall understanding of fisheries in MB.

Objective 5.1: No-later-than four years after the establishment of the FMA, develop and implement a plan that promotes the reporting of usable harvest data from non-commercial fishers. Ensure that data collected can be used for fish population assessments, as much as possible.

Objective 5.2: Collected data (including empirical data) is regularly analyzed, interpreted (and, as warranted, attendant recommendations are forwarded to the DLNR), and openly shared.

Goal 6: Data on the potential impact of fish populations from MB users is incorporated into an understanding of impacts on fish populations.

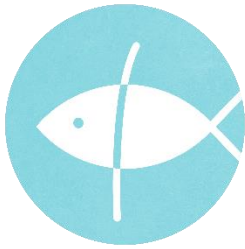
Objective 6.1: Practices that take place in MB are identified, including their location, frequency, etc.

Objective 6.2: The practices identified in 6.1 are assessed as to their impact on fishery populations, and appropriate management schemes are drafted based on the impact.

Goal 7: Effective rules are established based on an understanding of the data, which includes, as best as can be ascertained, the vulnerability of the resource, and the impact of the practice. (The initial rules include: 1) No spearfishing while diving between the hours of 6:00 p.m. and 6:00 a.m., and 2) No take of five specified invertebrate species. See Appendix D.)²

Objective 7.1: Rules as outlined in Appendix D are formally established with the establishment of the FMA.

² It is noted that DOCARE data has indicated the greatest number of violations occurred at night from spearfishing, with many of the fish targeted by nighttime spearfishing as important for ecosystem health. Long-time fishermen describe a dearth of invertebrate species in the bay.



MONITORING measures and documents current conditions, tracks fish and benthic response following implementation of new management approaches, and uses data to identify areas where management actions need to be further adapted. Monitoring provides a way to measure the changes occurring and if implemented actions are effective.

Goal 8: Monitoring plans implemented that track fish abundance, biomass, and species diversity in Maunalua Bay

- Objective 8.1 Within one year of the establishment of the FMA, the Advisory Panel shall identify which species and habitat are of greatest importance in tracking population changes.
- Objective 8.2 Work with organizations and individuals currently monitoring the bay (see Appendix E for DAR’s existing surveys) to determine what is currently being done, and what is needed to ascertain the desired information on select species and habitat identified in Objective 6.1. Work with relevant organizations and individuals to establish monitoring protocols and methodologies for covering the gap between what is done, and what is needed.
- Objective 8.3 Establish a monitoring plan for the select species and habitat, and identify what organizations or individuals are best suited to implement each portion of the plan. Monitoring can include citizen science data.
- Objective 8.4 Guide management considerations based on traditional and cultural empirical data collection, and combine with agency-collected and citizen science-collected data.
- Objective 8.5 Develop a plan for data entry, quality control, analysis and summary and make data summaries available to the public.
- Objective 8.6 Process the collected data, and produce regular reporting on the FMA conditions that is assessable to the public.

Goal 9: The Advisory Panel will create and implement a process for conducting regular creel surveys, with data summaries of catch and fishing effort made available to the public.

- Objective 9.1 Establish a monitoring plan for regular creel surveys for the MB FMA
- Objective 9.2 Develop a plan for data entry, quality control, analysis and summary of creel survey data.
- Objective 9.3 Develop a timeline and outreach plan for providing updated creel survey results to the public and/or interested stakeholders.



PROTECTION AND RESTORATION

Improved reef restoration and resilience, both resistance to and recovery from disturbance, requires a multi-faceted approach. To ensure robust recovery of fish populations, improved habitat and marine conditions, including better water quality, are necessary. Significant work is taking place in the region to address these issues, including efforts to reduce urban runoff and pollution. In a place as heavily utilized and developed as Maunalua Bay, restoration is going to require resources and partnerships.

Goal 10: Increase healthy habitat for fish species

- Objective 10.1 Establish partnerships to coordinate data collection for restoration needs.
- Objective 10.2: Identify the key organizations in the region working on restoration.
- Objective 10.3: Determine, in partnership with restoration organizations, what data may be needed for improved restoration that fits within the scope of the FMA's data collection protocol.
- Objective 10.4: Support efforts to expand habitat restoration in Maunalua Bay.
- Objective 10.5: Support collaborations and work by partners to address threats to the marine environment.

COMPLIANCE AND ENFORCEMENT A key to the effectiveness of the FMA is compliance and enforcement of the rules.

Goal 11: Implement methods for improving enforcement of FMA rules.

- Objective 11.1: Within 12 months after the establishment of the FMA, work with DOCARE to determine the best options for effective enforcement

of the FMA rules in Maunalua Bay, including reviewing what methods have been effective around the state.

Objective 11.2: Within 12 months of the establishment of the FMA, identify what enforcement mechanisms have been used for fishing rules around the world, how they might work in Maunalua Bay, and what is needed to implement them. Work towards implementing ones deemed feasible.

Objective 11.3: Determine which methods identified in Objective 10.1 and 10.2 are best for MB, and implement enforcement methodologies tailored to MB's unique geography, stakeholders, and issues.

Objective 11.4: Annually, the Advisory Panel will review enforcement effectiveness and make suggestions for improving enforcement efficiency.

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APPENDIX A

Advisory panel

Establishment of an advisory panel is essential to ensure continued involvement of stakeholders in:

1. The management of the proposed FMA;
2. Maintaining a level of oversight of the processes implemented to attain goal(s), achievement and public understanding thereof, and;
3. Providing a recognized and established communication link between the public and government.

The Panel acts as a subject matter expert to the Land Board and DLNR. It will review the effectiveness of the FMA, and review data on fish population and rule effectiveness. As data becomes available that indicates a need to change the rules governing fishing in Maunalua Bay, the Panel will make recommendations to the DLNR on what should be modified. In keeping with place-based planning, the Advisory Panel will provide input to DLNR to promote the practice of adaptive management, to the maximum extent possible.

The Panel will also review and make recommendations on improved fishery monitoring, and other issues impacting fishing that need to be addressed.

Recommendations forwarded to the DLNR by the Advisory Panel will be based on the “best available data (to include empirical knowledge)” and be forwarded on a consensus basis by the Panel. The public will make suggestions to the bodies recommended below for consideration.

Composition of the Advisory Panel:

REPRESENTATION	NOMINATION BY:
DLNR	DLNR
Shore Fisherman*	HFACT
Spear Fisherman*	HFACT
Boat Fisherman*	HFACT
Government Scientist	DLNR
Non-government Scientist	Conservation International or Malama Maunalua
Community Organization	Conservation International or Malama Maunalua
Cultural Practitioner	KUA

*HFACT may elect to have one or two fishermen represent multiple fishermen positions

- Nominations to the Chair are to be acted upon within 30 days of submission of the nomination to the Panel's Chair. After 30 days, the nomination may be decided by consensus of Panel members.
- Fishermen's initial representatives' first term to be for three years. Subsequent nominees' terms are to be for two years.
- Government and non-government scientists' terms to be for three years.
- Community organization representative's term to be for two years.
- All selectees are eligible for re-nomination/re-selection.

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APPENDIX B

Adaptive Management

The practice of adaptive management reinforces place-based planning and lends to timely information-based decision making. HRS §183D-3 provides for the employment of the adaptive management process in Administrative Rule modification. The process of adaptive management provides for implementation of a strategy(ies), followed by close monitoring of the impact of the implemented strategy(ies), and adaptation of the strategy based upon results of the monitoring; uncertainties are recognized and accepted.

For the MB FMA, adaptive management encompasses the above and results in implementation of Rule modification by the Land Board based on Advisory Panel recommendation directed to the Land Board and absent public “scoping session(s).” Key is timeliness and responsiveness to recognized change as the result of data capturing and analysis thereof and empirical knowledge.

APPENDIX C

Evaluation Tool / Process

When evaluating the achievement of a cited objective, implemented initiative, or Rule, the following weighting scale / point system will be used:

<u>Number of Points</u>	<u>Evaluation</u>
1	No action taken to implement an initiative to achieve the objective The initiative implemented to achieve the objective failed; i.e., no follow-through or follow-on action. No monitoring of results of the implemented initiative.
2	The implemented initiative shows promise in objective achievement; but, requires improved attention
3	The implemented initiative is satisfying the need(s) of objective achievement and requires minor improvement modification
4	The implemented initiative is effective and worthy of continuing

Each member of the Advisory Panel is to evaluate individually. Subsequently, Panel members will share and discuss their (individual) evaluation(s) for the purpose of determining a Panel score on each item on a consensus basis.

APPENDIX D

Fishing rules for Maunalua Bay Fisheries Management Area

(in addition to extant rules)

SPECIES	PROPOSED RULE
`alākūma “7-11 crab” <i>Carpilius maculatus</i>	Prohibit take
“Slipper lobster” <i>Scyllarides squammosus</i> or <i>S. haani</i>	Prohibit take
`ūla “Spiny lobster” <i>Panulirus penicillatus</i> or <i>P. marginatus</i>	Prohibit take
“Horned helmet” <i>Cassis cornuta</i>	Prohibit take
“Triton’s trumpet” <i>Charonia tritonis</i>	Prohibit take
All Species	No spearfishing while diving between the hours of 6:00 p.m. and 6:00 a.m.

APPENDIX E

Current DAR Monitoring

DAR Monitoring

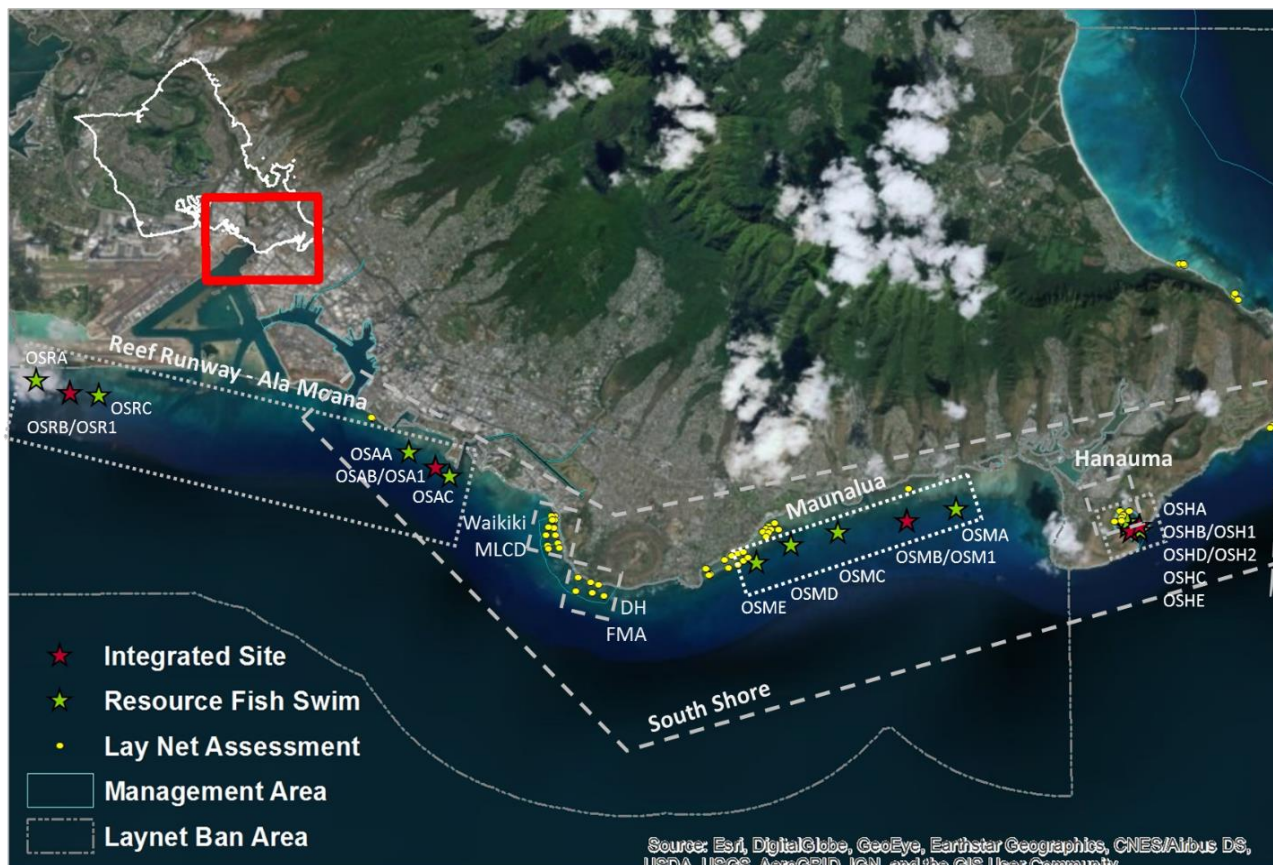


Figure 1: Map of DAR survey sites including fixed transects, resource fish swims and lay net assessments. .

DAR Monitoring Summaries

DAR has one long-term monitoring site with fixed transect lines in Maunaloa Bay (see the red star OSMB/OSM1, “Integrated Site” in Figure 4). The habitat surrounding the site is primarily pavement and not aggregate reef (see benthic structure section and/or Appendix A). This site has been consistently monitored from one to four times per year from 2007 to 2019, using the same methodology. These data were compiled and summarized to examine changes in total fish and herbivorous fish biomass (the numerical density of fish with the sizes of fish) and abundance (numerical count of individual fish) over the years the surveys were conducted. No significant trends or differences in biomass or abundance among years were found.

Maunalua Bay Fisheries Management Area Proposal Meeting History

2017

MAY, 2017

Maunalua Bay herbivore preserve proposal introduced to Hawaii Kai Marina Association

OCT, 2017

Maunalua Bay herbivore preserve proposal introduced to Waiialae-Kahala Neighborhood Board

DEC, 2017

Maunalua Bay herbivore preserve proposal introduced to Kuliouou-Kalani Iki Neighborhood Board

2018

FEB, 2018

Maunalua Bay herbivore preserve proposal introduced to Hawaii Kai Marina Neighborhood Board

FEB, 2018

Author of Maunalua Bay herbivore preserve proposal consults with fishing community

MAR, 2018

Fishermen, proposal authors, commercial operators, conservationists, and public (hereinafter “stakeholders”) meet on proposal, and redesign process and substance

JUL 17, 2018, TUE

11am – 12:30pm

Stakeholder meeting at Conservation International offices

SEP 4, 2018, TUE

1 – 2pm

Stakeholder meeting on Management Plan Needs

DEC 10, 2018, MON

1 – 3pm

Stakeholder meeting with DLNR

2019

JAN 10, 2019, THU

1 – 2:15pm

Stakeholder meeting with DLNR

APR 15, 2019, MON

1 – 3pm

Stakeholder meeting with DLNR

JUN 21, 2019, FRI

3 – 4pm

Stakeholder meeting at Conservation International

OCT 15, 2019, TUE

5 – 7:30pm

Stakeholder meeting at Conservation International

MAR 3, 2020, TUE

2 – 3pm

Stakeholder meeting at Conservation International

APR 4, 2019, THU

6 – 10pm

Public listening session

MAY 9, 2019, THU

6 – 7:45pm

Stakeholder Meeting

JUN 7, 2019, FRI

1 – 3pm

Stakeholder meeting with DLNR

JUN 18, 2019, TUE

5:30 – 7:30pm

Public meeting

JUL 12, 2019, FRI

1 – 2pm

Meeting with DAR on fisheries

AUG 23, 2019, FRI

5 – 7pm

Signing Party for formal FMA request

AUG 27, 2019, TUE

1 – 2:30pm

Stakeholder meeting with DLNR

NOV 21, 2019, THU

2 – 3pm

Stakeholder meeting with DLNR

2020

FEB 25, 2020, TUE

1 – 2pm

Stakeholder meeting with DLNR

JUL 13 2020, MON

3 – 4pm

Stakeholder Meeting

JUL 20, 2020, MON

3 – 4:15pm

Stakeholder Meeting

AUG 5, 2020, WED

6:30 – 9:45pm

Public listening session

AUG 12, 2020, WED

4 – 5pm

Stakeholder Meeting

OCT 8, 2020, THU

6 – 8pm

Public listening session

OCT 12, 2020, MON

6 – 7pm

Stakeholder meeting

OCT 19, 2020, MON

6 – 7pm

Stakeholder meeting

OCT 21, 2020, WED

6 – 7pm

Stakeholder meeting

OCT 23, 2020, FRI

1 – 2pm

Presentation on FMA

OCT 26, 2020, MON

6 – 7pm

Stakeholder meeting

OCT 28, 2020, WED

7 – 8pm

Public listening session

NOV 4, 2020, WED

6 – 7pm

Stakeholder meeting

NOV 12, 2020, THU

7 – 8:30pm

Public listening session

NOV 16, 2020, MON

6 – 7:30pm

Stakeholder meeting

NOV 19, 2020, THU

7 – 8:30pm

Public listening session

NOV 23, 2020, MON

7 – 8:30pm

Public listening sessions

NOV 30, 2020, MON

6 – 8pm

Stakeholder meeting

DEC 7, 2020, MON

6 – 7pm

Stakeholder meeting

DEC 14, 2020, MON

6 – 7pm

Stakeholder meeting

DEC 16, 2020, WED

7 – 8:30pm

Public listening session

2021

JAN 14, 2021, THU

7 – 9pm

Public listening session

JAN 31, 2020, FRI

1 – 2pm

Stakeholder meeting with DLNR

FEB 1, 2021, MON

6 – 7pm

Stakeholder meeting

FEB 8, 2021, MON

6 – 7pm

Stakeholder meeting

FEB 15, 2021, MON

6 – 7pm

Stakeholder meeting

FEB 17, 2021, WED

7 – 9pm

Public listening session

FEB 18, 2021, THU

Presentation to Waiialae-Kahala Neighborhood Board

FEB 22, 2021, MON

6 – 7pm

Stakeholder meeting

FEB 23, 2021, TUE

Presentation to Hawaii Kai Neighborhood Board

MAR 1, 2021, MON

6 – 7pm

Stakeholder meeting

MAR 8, 2021, MON

6 – 7pm

Stakeholder meeting

MAR 14, 2021, SUN

4 – 7pm
Public listening session

MAR 15, 2021, MON
6 – 7pm
Stakeholder meeting

MAR 22, 2021, MON
6 – 7pm
Stakeholder meeting

MAR 29, 2021, MON
6 – 7pm
Stakeholder meeting

MAR 31, 2021, WED
6 – 8pm
Public listening session

APR 1, 2021 THU
Presentation to Kuliouou Neighborhood Board

APR 5, 2021, MON
6 – 7pm
Stakeholder meeting

APR 12, 2021, MON
6 – 7pm
Stakeholder meeting

April 15, 2021
11am – 12pm
Stakeholder meeting with DLNR

APR 19, 2021, MON
6 – 7pm
Stakeholder meeting

APR 26, 2021, MON
6 – 7pm
Stakeholder meeting

APR 30, 2021, FRI
9 – 10am
Stakeholder meeting with DOCARE

MAY 3, 2021, MON

6 – 7pm

Stakeholder meeting

MAY 7, 2021, FRI

1 – 2pm

Stakeholder meeting at Conservation International

MAY 10, 2021, MON

6 – 7pm

Stakeholder meeting

MAY 13, 2021, THU

1 – 2pm

Meeting with DLNR on rule making.

MAY 17, 2021, MON

6 – 7pm

Stakeholder meeting

MAY 24, 2021, MON

6 – 7pm

Stakeholder meeting

MAY 25, 2021, TUE

2 – 3pm

Stakeholder meeting with DLNR

MAY 31, 2021, MON

6 – 7pm

Stakeholder meeting

JUN 7, 2021, MON

6 – 7pm

Stakeholder meeting

JUN 8, 2021, TUE

2 – 3pm

Stakeholder meeting with DLNR

JUN 14, 2021, MON

6 – 7pm

Stakeholder meeting

JUN 21, 2021, MON

6 – 7pm

Stakeholder meeting

JUN 22, 2021, TUE

2 – 3pm

Stakeholder meeting with DLNR

JUN 28, 2021, MON

6 – 7pm

Stakeholder meeting

JUL 5, 2021, MON

6 – 7pm

Stakeholder meeting

JUL 6, 2021, TUE

2 – 3pm

Stakeholder meeting with DLNR

JUL 12, 2021, MON

6 – 7pm

Stakeholder meeting

JUL 19, 2021, MON

6 – 7pm

Stakeholder meeting

JUL 20, 2021, TUE

2 – 3pm

Stakeholder meeting with DLNR

JUL 26, 2021, MON

6 – 7pm

Stakeholder meeting

AUG 2, 2021, MON

6 – 7pm

Stakeholder meeting

AUG 3, 2021, TUE

2 – 3pm

Stakeholder meeting with DLNR

AUG 9, 2021, MON

6 – 7pm

Stakeholder meeting

AUG 16, 2021, MON

6 – 7pm

Stakeholder meeting

AUG 16, 2021

7 – 8pm

Public listening session

AUG 17, 2021, TUE

2 – 3pm

Stakeholder meeting with DLNR

AUG 23, 2021, MON

6 – 7pm

Stakeholder meeting

AUG 23, 2021

7 – 8pm

Public listening session

AUG 30, 2021, MON

6 – 7pm

Stakeholder meeting

AUG 30, 2021

7 – 8pm

Public listening session

AUG 31, 2021, TUE

2 – 3pm

Stakeholder meeting with DLNR

SEP 6, 2021, MON

6 – 7pm

Stakeholder meeting

SEP 13, 2021, MON

6 – 7pm

Stakeholder meeting

Monday, September 13, 2021

7 – 8pm

Public listening session

SEP 14, 2021, TUE

12 – 1pm

Stakeholder meeting

Tuesday, September 14, 2021

2 – 3pm

Stakeholder meeting with DLNR

SEP 20, 2021, MON

6 – 7pm

Stakeholder meeting

SEP 27, 2021, MON

6 – 7pm

Stakeholder meeting

SEP 28, 2021, TUE

2 – 3pm

Stakeholder meeting with DLNR

OCT 4, 2021, MON

6 – 7pm

Stakeholder meeting

OCT 11, 2021, MON

6 – 7pm

Stakeholder meeting

OCT 12, 2021, TUE

2 – 3pm

Stakeholder meeting with DLNR

OCT 18, 2021, MON

6 – 7pm

Stakeholder meeting

OCT 25, 2021, MON

6 – 7pm

Stakeholder meeting

OCT 26, 2021, TUE

2 – 3pm

Stakeholder meeting with DLNR

NOV 1, 2021, MON

6 – 7pm

Stakeholder meeting

NOV 4, 2021, THU

2 – 3pm

Stakeholder meeting with DLNR

NOV 8, 2021, MON

6 – 7pm

Stakeholder meeting

NOV 9, 2021, TUE

2 – 3pm

Stakeholder meeting with DLNR

NOV 15, 2021, MON

6 – 7pm

Fisheries Call

<https://us02web.zoom.us/j/85789797544>

Doug Harper, Accepted

NOV 22, 2021, MON

6 – 7pm

Stakeholder meeting

NOV 23, 2021, TUE

2 – 3pm

Stakeholder meeting with DLNR

NOV 29, 2021, MON

6 – 7pm

Stakeholder meeting

DEC 6, 2021 MON

6-7PM

Stakeholder meeting

DEC 6, 2021 MON

6-7PM

Stakeholder meeting with DLNR

2022

JAN 17, 2022, MON

7 – 9pm

Stakeholder meeting

JAN 18, 2022, TUE

1 – 2pm

Stakeholder meeting with DLNR

JAN 20, 2022, THU

6 – 7pm

Public listening session

JAN 24, 2022, MON

6 – 7pm

Stakeholder meeting

JAN 31, 2022, MON

6 – 7pm

Stakeholder meeting

FEB 1, 2022, TUE

1 - 2pm

Stakeholder meeting with DLNR

FEB 7, 2022, MON

6 – 7pm

Stakeholder meeting

FEB 10, 2022, THU

6 – 7pm

Public listening session

FEB 15, 2022, TUE

1 – 2pm

Meeting with DLNR

FEB 21, 2022, MON

6 – 7pm

Stakeholder meeting

FEB 28, 2022, MON

6 – 7pm

Stakeholder meeting

MAR 7, 2022, MON

4 – 5pm

Public listening session

MAR 8, 2022, TUE

4 – 5pm

Public listening session

MAR 14, 2022, MON

6 – 7pm

Stakeholder meeting

MAR 15, 2022, TUE

1 – 2pm

Stakeholder meeting with DLNR

MAR 21, 2022, MON

6 – 7pm

Stakeholder meeting

MAR 28, 2021, MON

6 – 7pm

Stakeholder meeting

APR 4, 2022 MON

6 – 7pm

Stakeholder meeting

APR 12, 2022, TUE

1 - 2pm

Stakeholder meeting with DLNR

APR 18, 2022 MON

6 – 7pm

Stakeholder meeting

APR 25, 2022 MON

6 – 7pm

Stakeholder meeting

April 26, 2022 TUE

11am – 12pm

Stakeholder meeting with DLNR

MAY 2, 202, MON

6 – 7pm

Stakeholder meeting

MAY 9, 2022, MON

6 – 7pm

Stakeholder meeting

MAY 11, 2022, WED

12 – 1pm

Stakeholder meeting with public

MAY 16, 2022, MON

6 – 7pm

Stakeholder meeting

MAY 23, 2022, MON

6 – 7pm

Stakeholder meeting

MAY 24, 2022, MON

1 – 2pm

Meeting with DLNR on rule making.

MAY 30, 2022, MON

6 – 7pm

Stakeholder meeting

JUN 6, 2022, MON

6 – 7pm

Stakeholder meeting

JUN 13, 2022, MON

6 – 7pm

Stakeholder meeting

JUN 20, 2022, MON

6 – 7pm

Stakeholder meeting

JUN 21, 2022, TUE

2 – 3pm

Stakeholder meeting with DLNR

JUN 27, 2022, MON

6 – 7pm

Stakeholder meeting

JUL 11, 2022, MON

6 – 7pm

Stakeholder meeting

JUL 18, 2022, MON

6 – 7pm
Stakeholder meeting

AUG 1, 2022, MON

6 – 7pm
Stakeholder meeting

AUG 2, 2022, TUE

2 – 3pm
Stakeholder meeting with DLNR

AUG 8, 2022, MON

6 – 7pm
Stakeholder meeting

AUG 12, 2022 FRI

3 – 4pm
Stakeholder call

AUG 22, 2022, MON

6 – 7pm
Stakeholder meeting

AUG 29, 2022, MON

6 – 7pm
Stakeholder meeting

AUG 30, 2022, TUE

2 – 3pm
Stakeholder meeting with DLNR

SEP 12, 2022, MON

6 – 7pm
Stakeholder meeting

SEP 13, 2022, TUE

2 – 3pm
Stakeholder meeting with DLNR

SEP 19, 2022, MON

6 – 7pm
Stakeholder meeting

SEP 26, 2022, MON

6 – 7pm
Stakeholder meeting

SEP 27, 2022, TUE

2 – 3pm

Stakeholder meeting with DLNR

OCT 2, 2022, MON

6 – 7pm

Stakeholder meeting

OCT 10, 2022, MON

6 – 7pm

Stakeholder meeting

OCT 11, 2022, TUE

2 – 3pm

Stakeholder meeting with DLNR

OCT 17, 2022, MON

6 – 7pm

Stakeholder meeting

OCT 24, 2022, MON

6 – 7pm

Stakeholder meeting

NOV 7, 2022, MON

6 – 7pm

Stakeholder meeting

NOV 14, 2022, MON

6 – 7pm

Stakeholder meeting

NOV 21, 2022, MON

6 – 7pm

Stakeholder meeting

NOV 22, 2022, TUE

2 – 3pm

Stakeholder meeting with DLNR

NOV 28, 2022, MON

6 – 7pm

Stakeholder meeting

DEC 5, 2022 MON

6-7PM
Stakeholder meeting

DEC 6, 2022 TUE
1 - 2PM
Stakeholder meeting with DLNR

DEC 12, 2022 MON
6 - 7PM
Stakeholder meeting

DEC 19, 2022 MON
6 - 7PM
Stakeholder meeting

2023

JAN 16, 2023, MON
7 – 9pm
Stakeholder meeting

JAN 17, 2023, TUE
1 – 2pm
Stakeholder meeting with DLNR

JAN 23, 2023, MON
6 – 7pm
Stakeholder meeting

JAN 30, 2023, MON
6 – 7pm
Stakeholder meeting

MAY 11, 2023, THU
1 – 2pm
Stakeholder meeting

MAY 16, 2023, TUE
2 – 3pm
Stakeholder meeting with DLNR

MAY 22, 2023, MON
6 – 7pm
Stakeholder meeting

JUL 11, 2023, TUE

6 – 7pm

Stakeholder meeting with DLNR

JUL 25, 2023, TUE

6 – 7pm

Stakeholder meeting with DLNR

AUG 15, 2023, TUE

2 - 3pm

Stakeholder meeting with DLNR

SEP 1, 2023, FRI

8 – 9am

Stakeholder breakfast with DLNR

OCT 26, 2023, THU

6 – 7pm

Stakeholder meeting with public

OCT 30, 2023, MON

6 – 7pm

Stakeholder meeting

DEC 5, 2023 MON

6-7PM

Stakeholder meeting

DEC 12, 2023 TUE

6 - 7PM

Stakeholder meeting with DLNR