

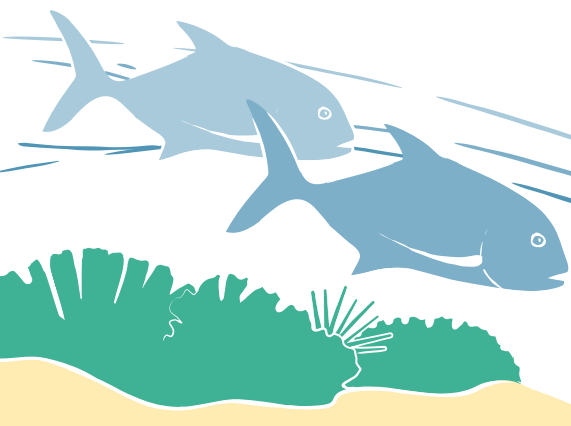
Holomua: Marine 30x30



Honokōhau, Hawai'i Island
Photo: Jeff Milisen

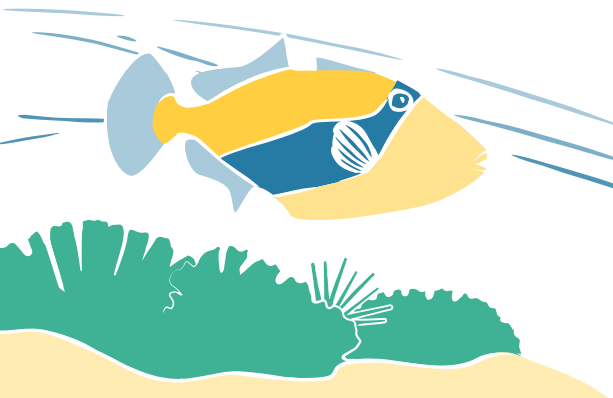
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List of abbreviations

BLNR	Board of Land and Natural Resources
CBSFA	Community-Based Subsistence Fishing Area
CI	Conservation International
DAR	Division of Aquatic Resources
DLNR	Department of Land and Natural Resources
DOCARE	Division of Conservation and Resources Enforcement
FMA	Fisheries Management Area
HARPS	Hawai'i Administrative Rule Processing System
HIMARC	Hawai'i Monitoring and Reporting Collaborative
HMRFS	Hawai'i Marine Recreational Fishing Survey
MLCD	Marine Life Conservation District
MMA	Marine Management Area
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
SBRRB	Small Business Regulatory Review Board
TNC	The Nature Conservancy
IUCN	International Union for Conservation of Nature



Message from the Department of Land and Natural Resources

On September 1, 2016, at the International Union for Conservation of Nature World Conservation Congress in Hawai'i, Governor David Ige announced the Sustainable Hawai'i Initiative, including a commitment to effectively manage Hawai'i's nearshore waters by 2030. Now known as *Holomua: Marine 30x30*, the goal is to effectively manage Hawai'i's nearshore waters, with at least 30% established as marine management areas. This initiative aims to focus on a broad range of marine management measures to sustain, conserve, and enhance our marine resources so that our communities can continue to benefit from abundant nearshore waters now and in the future. The Department of Land and Natural Resources has been invigorated through this initiative to establish new strategic directions in the way we manage our oceans to address local and global impacts to our nearshore resources.

The mission of the Department of Land and Natural Resources is to “enhance, protect, conserve and manage Hawai'i's unique and limited natural, cultural and historic resources held in public trust for current and future generations of the people of Hawai'i nei, and its visitors, in partnership with others from the public and private sectors.” Working together—and informed by local knowledge and the best readily available science—we can respond to climate change threats, restore our fisheries, and ensure the health of nearshore ecosystems and all they provide.

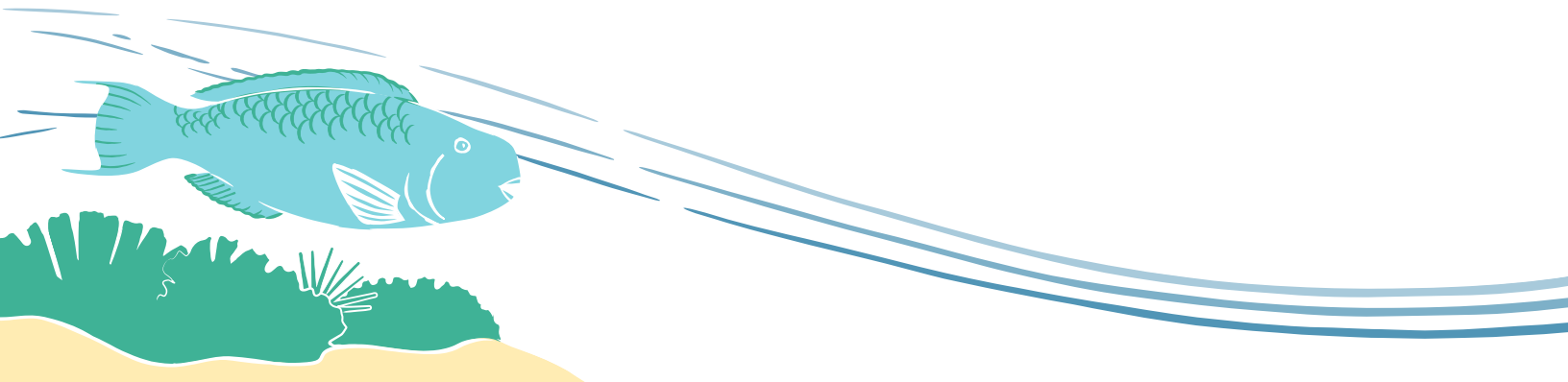
We have set the course to ensuring the sustainability of our nearshore waters through *Holomua: Marine 30x30*. The Department of Land and Natural Resources plans to take a multi-faceted approach. We will:

- Convene stakeholders to work together with managers to create a cohesive, ecologically-connected network of marine management areas.
- Establish clear and comprehensive statewide fisheries rules to address the actual threats and challenges facing our nearshore today.
- Expand our enforcement and outreach capacity, increasing our ability to serve the people of Hawai'i and our marine resources.
- Build on existing strategies to prevent further damage to fragile nearshore ecosystems and expand efforts to restore and enhance areas in need.
- Standardize our monitoring practices and expand the ways we can track critical ocean metrics over time.

Ultimately, achieving these goals will be a collaborative journey and require a balanced approach, recognizing the economic, social, and ecological roles of ocean resources. The outcome is up to all of us as Hawai'i residents and resource stewards. Collectively, we share the kuleana to care for the ocean and its inhabitants in a sustainable way. Effective management of nearshore waters will allow the people of Hawai'i and our visitors the ability to enjoy the ocean and its resources, support our livelihoods, and feed our families for years to come.

Sincerely,

Suzanne D. Case, Chair
Department of Land and Natural Resources





Akule swimming across the reefscape

Photo: Jeff Milisen

Executive Summary

Life in Hawai‘i has always been deeply linked with the ocean, which is central to our livelihoods, culture, health, and island lifestyle. For centuries, Native Hawaiian management practices ensured continued abundance for Hawai‘i’s people. However, in recent years, it has become apparent that both local and global impacts are affecting the health and resilience of Hawai‘i’s nearshore marine ecosystems. In response to the decline in nearshore resources, Governor David Ige announced the Sustainable Hawai‘i Initiative at the 2016 International Union for Conservation of Nature World Conservation Congress, which includes *Holomua: Marine 30x30*, coordinated by the Department of Land and Natural Resources (DLNR).

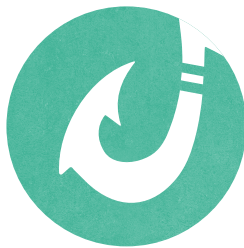
The goal of Holomua: Marine 30x30 is “to effectively manage Hawai‘i’s nearshore waters with at least 30% established as marine management areas by 2030.”

As the State agency tasked with managing, conserving, and restoring Hawai'i's aquatic resources and ecosystems for present and future generations, the DLNR Division of Aquatic Resources (DAR) is leading this marine initiative as part of a comprehensive strategy focused on our nearshore waters. Effective management will be assessed by measuring progress against ecological, social and cultural goals. Ultimate success, however, relies on the involvement of individuals and communities across the state

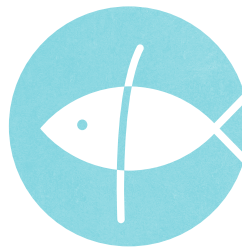
Building on Hawai'i's rich and effective traditional management practices and knowledge, along with guidance from today's fishers, cultural and scientific experts and community leaders, DAR has outlined a path built on four pillars:



**PLACE-BASED
PLANNING**



PONO PRACTICES



MONITORING

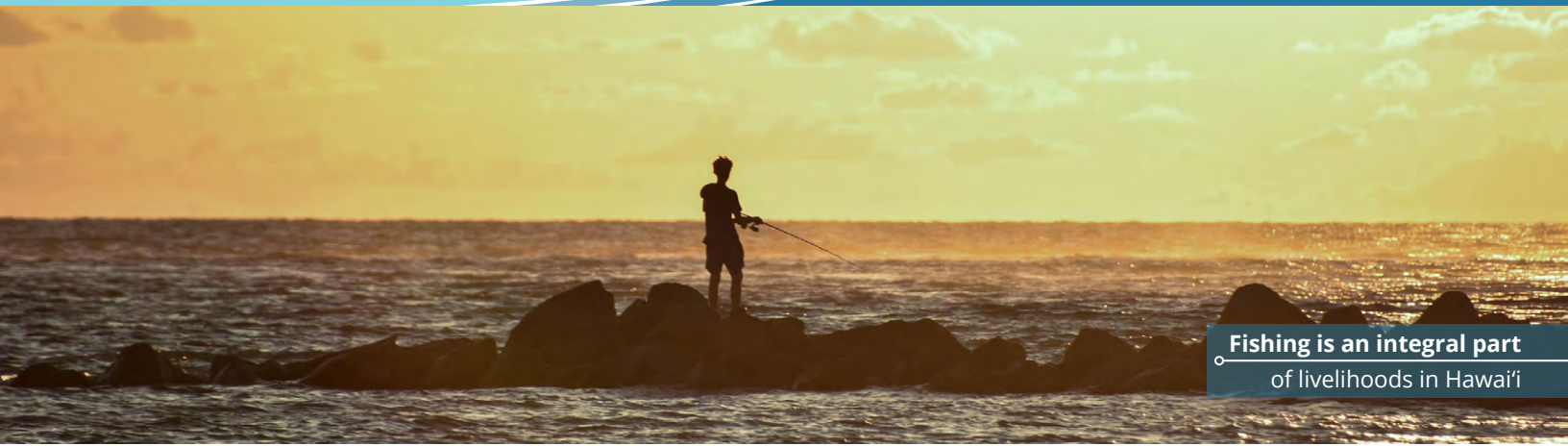


**PROTECTION AND
RESTORATION**

Holomua: Marine 30x30 outlines how DAR plans to work in partnership with communities to operationalize these pillars and achieve shared nearshore management goals.

- *Place-based planning* aims to partner with communities and stakeholders to build a cohesive, ecologically-connected network of areas for improved marine management.
- *Pono Practices* encourages responsible behavior guided by Hawaiian values and perspectives through education and outreach, rules, strengthened enforcement, and local partnerships to encourage sustainable behaviors and practices in nearshore waters.
- *Monitoring* measures and documents current conditions, tracks progress following implementation of new management approaches, and uses data to identify areas where management actions need to be further adapted.
- *Protection and Restoration* builds on existing strategies to prevent damage to fragile nearshore ecosystems from invasive species, disease, and environmental damage events and expands efforts to restore and enhance impacted areas.

***Holomua: Marine 30x30* creates an opportunity for Hawai'i residents to work with DAR and its partners to achieve our shared vision of a healthy nearshore ecosystem with abundant resources, which allows the people of Hawai'i to enjoy our coastal waters, support our local livelihoods, and feed our families.**



Introduction

Hawai'i's nearshore marine habitats are home to thousands of species of fish, algae, coral, and invertebrates, many of which are found nowhere else in the world. To properly steward these resources so that they can be used and enjoyed by future generations, ***Holomua: Marine 30x30* establishes a goal to effectively manage Hawai'i's nearshore waters, with at least 30% established as marine management areas by 2030.**

Why are our nearshore marine resources important?

Nearshore refers to the marine area from the high tide line to a depth of 164 feet (50m), which includes most of the accessible reefs and the resources, including fish, that live there. Hawai'i's residents depend on the nearshore environment to support their livelihoods and put locally-sourced food on the table. From the Hawaiian worldview, the ocean is the source of all life and its ancestral nature is represented in many oli (chants) and mele (songs).¹ Within the nearshore environment, our commercial and non-commercial fisheries are valued between \$10 million and \$16 million on an annual basis. Subsistence and "recreational" fishers, share much of the fish they catch among families and communities, providing over 7 million local meals each year.² Our coral reefs are a local and international treasure, providing cultural, economic, and recreational opportunities to residents and 10 million visitors annually.³ They drive both our local and tourism economies, generating more than \$360 million each year,⁴ and providing \$835 million in coastal flood protection annually.⁵ Hawai'i's people have vital ties to their ocean.

1 Beckwith, Martha Warren. [1951] 1972. The Kumulipo. University of Hawai'i Press.

2 Grafeld, S., Oleson, K., Teneva, L., & Kittinger, J. N. (2017). Follow that fish: Uncovering the hidden blue economy in coral reef fisheries. PLoS one, 12(8), e0182104. <https://doi.org/10.1371/journal.pone.0182104>.

3 Hawai'i Tourism Authority, "2017 Annual Visitor Research Report," 2017 Annual Visitor Research Report, 2017, <http://files.hawaii.gov/dbedt/visitor/visitor-research/2017-annual-visitor.pdf>.

4 Cesar, H.S.J.S.J., & Beukering, P. (2004). Economic Valuation of the Coral Reefs of Hawai'i. Pacific Science 58(2), 231-242. doi:10.1353/psc.2004.0014.

5 Storlazzi, C.D., Reguero, B.G., Cole, A.D., Lowe, E., Shope, J.B., Gibbs, A.E., Nickel, B.A., McCall, R.T., van Dongeren, A.R., and Beck, M.W., 2019, Rigorously valuing the role of U.S. coral reefs in coastal hazard risk reduction: U.S. Geological Survey Open-File Report 2019-1027, 42 p., <https://doi.org/10.3133/ofr20191027>.

What is Holomua: Marine 30x30?

Holomua: Marine 30x30 is a part of the Sustainable Hawai'i Initiative, a statewide effort to improve Hawai'i's sustainability and resilience. *Holomua: Marine 30x30* is being led by the State of Hawai'i's Department of Land and Natural Resources (DLNR) Division of Aquatic Resources (DAR) whose mission is to work with the people of Hawai'i to manage, conserve and restore the state's unique aquatic resources and ecosystems for present and future generations.



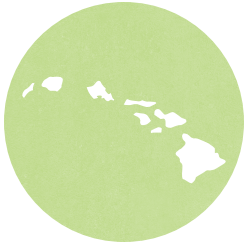
DAR currently works to improve conditions in the state's aquatic environments by using tools including fisheries management, permits, marine management areas, education, environmental response, invasive species control, and restoration.

DAR has identified four pillars to support effective management, as well as a course of action that addresses the challenges and opportunities associated with each component. The four pillars of *Holomua: Marine 30x30* are: 1) Place-based planning, 2) Pono practices, 3) Monitoring, and 4) Protection and Restoration.

DAR staff are actively working across the state on all four pillars. *Holomua: Marine 30x30* creates partnership opportunities for communities and DAR to effectively manage marine resources.

Together with community members, local, state and federal government agencies, and other stakeholders we hope to usher in a new era of participatory and place-based adaptive management that is scientifically and culturally-informed.

In outlining a path to effective management for Hawai'i's nearshore waters, it is our intention that *Holomua: Marine 30x30* serve as an invitation and call to action for Hawai'i residents to work with DAR to achieve our shared vision of a healthy nearshore ecosystem with abundant resources, which allows the people of Hawai'i to enjoy our coastal waters, support our local livelihoods, and feed our families. ***Holomua: Marine 30x30* is a once-in-generation opportunity to come together, address the threats affecting our nearshore ecosystems, and accept the challenge to care for the resources that sustain us.**



Place-based planning

What is place-based planning?

Place-based planning describes a process that brings together the values, users, experiences, activities, and science associated with a specific geographic location. Place-based planning aims to balance the needs of a local community with the health and long-term sustainability of the nearshore ocean environment.

Each of the main Hawaiian Islands is home to unique marine species and habitats. These differences influence how communities interact with and use marine resources, as well as the desired management goals for each place. Successful place-based planning in Hawai'i must take into consideration both the obvious and nuanced differences in each place by engaging with community members who live, work, and play in these areas.



Holomua: Marine 30x30 will use place-based planning to build a cohesive, ecologically-connected network of MMAs encompassing 30% of nearshore waters. This network will be designed in an open and transparent public process that takes into consideration human activities in nearshore waters to achieve ecological, cultural, and social objectives. Each MMA will have an adaptive management plan developed in consultation with local communities. This plan will chart the goals and objectives for the area, which reflect the unique aspects, ecology, and stories of that place, and be re-evaluated at set intervals to ensure actions are effectively addressing the goals.



School of manini, an important herbivore species

Photo: Jeff Milisen

What is a Marine Management Area?

A MMA is a designated area of ocean and shoreline with specific rules that define how people can use it. Each MMA has its own set of rules which may include fishing regulations, such as restrictions on gear type, size and catch limits, or take of particular species. Rules may also limit or prohibit other activities, such as ocean-based tours, anchoring, vessel transit, and other recreational, commercial, or extractive activities. Management areas may include any type of habitat (e.g., coral reefs, estuaries, anchialine ponds, etc.), as well as any type of marine life (e.g., mammals, fishes, invertebrates, algae, etc.).

Two of the main types of MMAs⁶ in the nearshore area of the main Hawaiian Islands that DAR manages include: Marine Life Conservation Districts (MLCD) and Fisheries Management Areas (FMA). MLCDs were designed to conserve and replenish marine resources by limiting fishing and other consumptive uses. FMAs include regulations for specific extractive uses and are typically defined by these uses. One type of FMA is Community-Based Subsistence Fishing Areas (CBSFA). These areas have regulations promoting traditional Hawaiian fishing practices for subsistence consumption, community sharing, and restoring fisheries for future generations to continue living off the resources.

FMAs may also regulate certain extractive uses, such as the Kahekili Herbivore FMA which prohibits take of specific herbivore species such as rudderfish (nenu), parrotfish (uhu), surgeonfish, and sea urchins to promote reef resilience and control the growth of algae that can smother reefs and limit their ability to regrow.

⁶ Other MMAs contributing to 30x30 include Fish Replenishment Areas (FRA), Netting Restricted Areas (NRA), Limu Management Areas (LMA), Public Fishing Areas (PFAs), Harbors, Canals, Natural Area Reserves and Wildlife Sanctuaries managed by the Division of Forestry and Wildlife, and Kaho'olawe Island managed by the Kaho'olawe Island Reserve Commission.

Why are Marine Management Areas important?

In order to sustain the productivity and ecosystem services of a marine environment, the health and function of at least 30% of these ecosystems must be protected.⁷ 90% mortality of some reefs in West Hawai'i occurred following major bleaching events.⁸ To this end, *Holomua: Marine 30x30* aims to help protect and restore our nearshore waters by establishing 30% of Hawai'i's nearshore waters as marine management areas by 2030. Reaching this goal is critical to reversing declines as well as sustaining healthy reefs, livelihoods, and communities across our island state.

Ecological protection is not a novel concept in the Hawaiian Islands. An intimate understanding of biological and ecological connectivity between marine habitats allowed Native Hawaiians to manage marine ecosystems to ensure continued abundance of resources to sustain the people of Hawai'i for centuries. Many communities across the state still use fishing practices based on traditional knowledge passed from generation to generation, to maintain the health and abundance of nearshore ecosystems and resources.

An ecologically-connected network of marine management areas will help to:

- Enhance the productivity of nearshore fisheries and improve fishing opportunities.
- Replenish fish populations outside their boundaries by spillover of fish swimming out or by seeding of baby fish drifting out after fish spawn inside the MMA.
- Sustain the marine resources on which our rich cultural heritage and traditional Hawaiian practices are built.
- Restore and maintain resources that support our island economy.
- Increase coastal and reef resilience to climate change and local stressors.
- Protect and restore the unique natural diversity and abundance of our oceans.

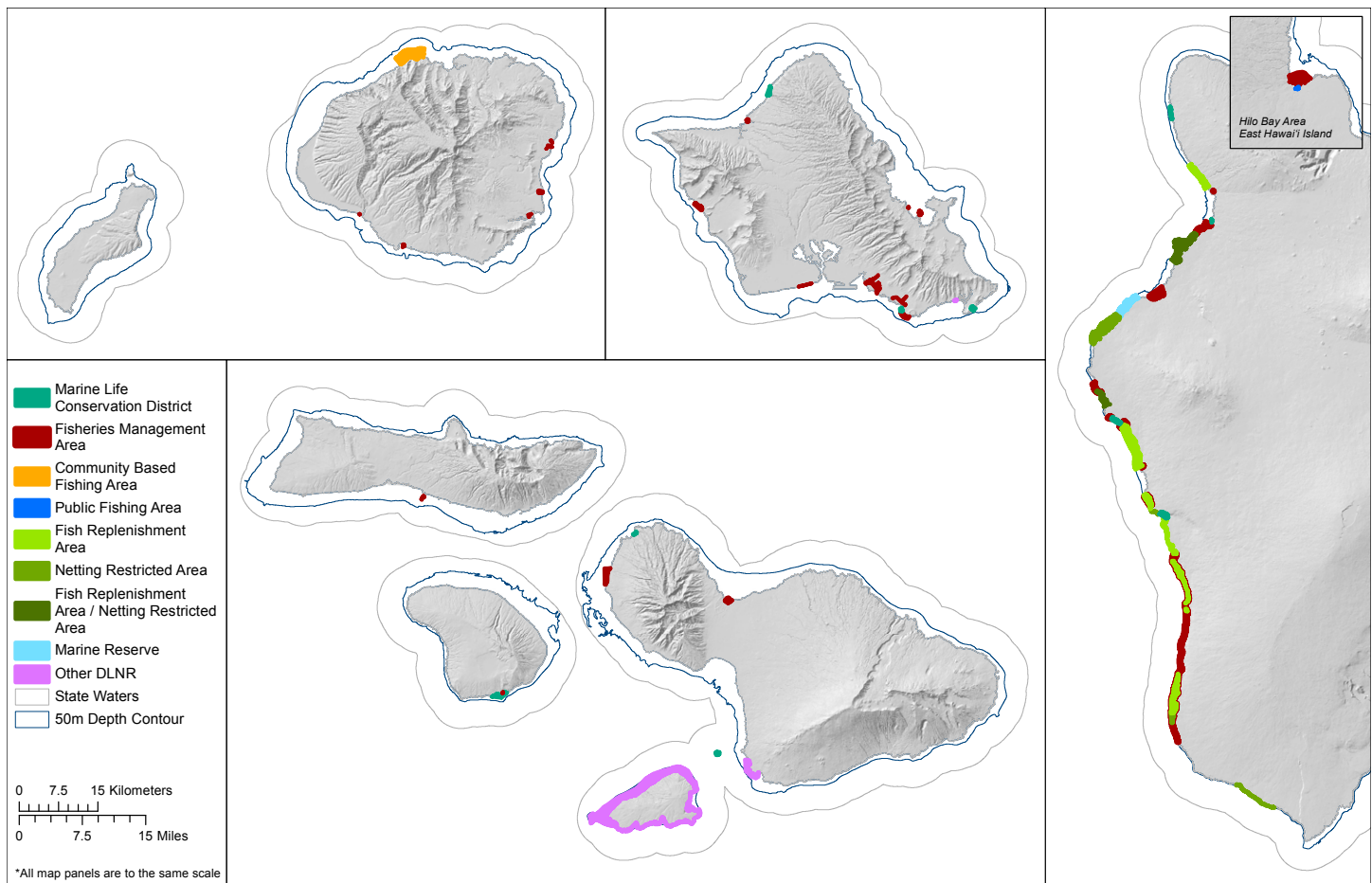
Where are we now?

In Hawai'i, we have many nearshore MMAs spread across the main Hawaiian Islands forming the basis of an MMA network. These MMAs encompass 6% of nearshore waters to 164 ft (50m) depth and will be counted toward our 30% goal. These MMAs feature a range of management approaches and levels of use. Through *Holomua: Marine 30x30*, DAR is working to evaluate our existing MMAs and collect public input on how these areas are—or are not—working. This public input will be incorporated into management plans that will guide the Division's actions and establish clear classifications for existing and new MMAs.

7 O'Leary BC, Winther-Jansen M, Bainbridge JM, Aitken J, Hawkins JP, Roberts CM (2016) Effective Coverage Targets for Ocean Protection Conservation Biology: Conservation Letters. . 9(6), 398-404. doi: 10.1111/conl.12247

8 Kramer KL, Cotton SP, Lamson MR, Walsh WJ (2016) Bleaching and catastrophic mortality of reef-building corals along west Hawai'i island: findings and future directions. Proceedings of the 13th International Coral Reef Symposium, Honolulu: 219-230.

DAR is also working to compile the best readily available scientific knowledge of Hawai'i's nearshore waters and develop the necessary tools to build an ecologically-connected network of MMAs. These tools include a management plan guide that outlines the essential components of management plans and establishes a process framework aimed at streamlining their creation. In consultation with ecological, social and cultural experts, DAR is developing ecological and socio-cultural design principles to provide a guidance framework for the creation of new MMAs, and a tool for evaluating existing MMAs. These design principles will act as 'rules of thumb' to ensure that all MMAs meet the ecological and socio-cultural goals of the initiative and contribute meaningfully to the overall network.



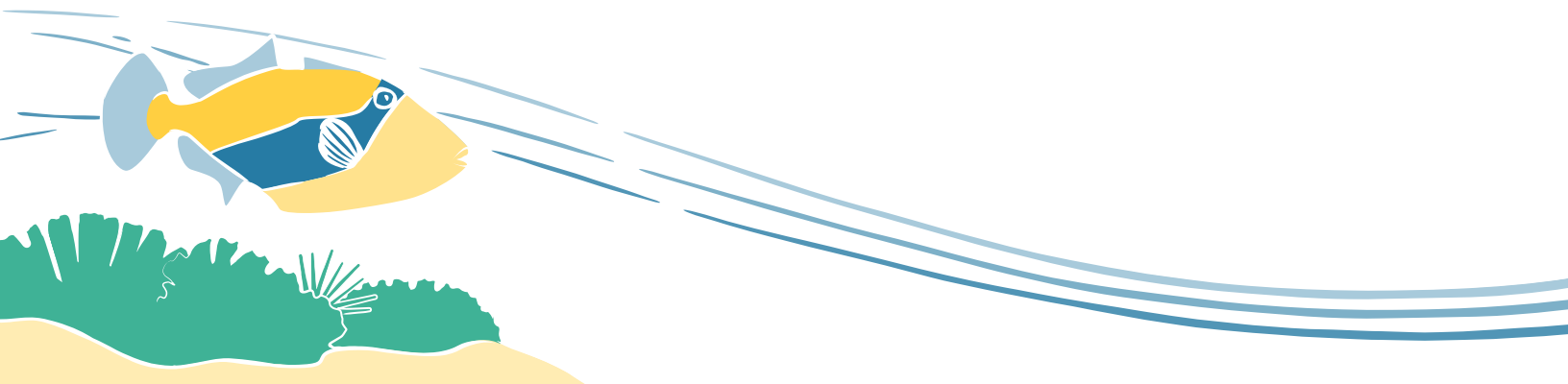
Existing marine management areas in the main Hawaiian Islands encompass 6% of nearshore waters.

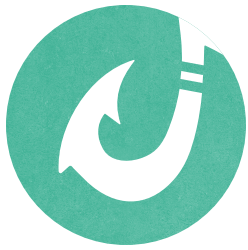
What are the next steps?

DAR invites partners and stakeholders across the state to help assess and improve the existing MMAs around each of the main Hawaiian Islands, and to work with us to identify and create new areas for this MMA network.

Starting in 2020, DAR will initiate a variety of opportunities for communities and stakeholders to learn about *Holomua: Marine 30x30*; to ask questions, discuss important themes related to marine management, and share ideas and feedback regarding nearshore threats and concerns, guiding the direction of this important work. Through these talk story sessions, DAR will seek input to create a transparent and inclusive public process to move the initiative forward. This process will shape how DAR works with communities, fishers, cultural experts, scientists and other stakeholders to discuss the current state of the nearshore environment; the effectiveness of existing management areas and related management strategies; statewide rules; and how to co-create a cohesive network of marine management areas.

Existing MMAs will be evaluated in consultation with stakeholders and scientific and cultural experts. Management plans will be drafted for existing and new MMAs to help ensure that proposed management actions for each MMA address local threats and priorities, incorporate local users' goals and needs, and monitor the effectiveness of these measures over time. Following the evaluation of existing areas, new MMAs will be designed with community input and the best readily available science and will be classified in a way that is easy to understand to help promote compliance with management changes.





Pono Practices

What are Pono Practices?

Pono Practices refer to the set of tools used to manage human activities in ways that ensure abundance for present and future generations. In ‘Ōlelo Hawai‘i, one of the meanings of pono is “righteousness.” Pono practices call upon people to do what they feel is proper and morally correct regarding marine resource use. Pono also means “balance” and refers to finding the balance in our relationships with other things, places, and people to promote sustainable use and stewardship for future generations.



A throw-net fisherman, one of many types of fishing practices in Hawai‘i

Many of our kūpuna (elders) tell stories of pono fishing practices from generations ago. Rules based on traditional ecological knowledge were codified in kapu (prohibitions) and kānāwai (laws and regulations) through social institutions in Hawai‘i for almost a millenia. Profound knowledge gained from lifetimes of observation was passed through families, creating the notion of kuleana (responsibility), to take only what is needed in order to ensure that people could rely on these resources for generations to come. This sense of kuleana and knowledge inspired fishers to follow customary rules that were shared from one generation to the next. As our islands’ populations have grown and changed, , resource use and governance guided by traditional knowledge was overrun by an influx of detrimental impacts (both social and ecological in nature) causing nearshore resources to noticeably decline. Too many of us are simply unaware of how our actions negatively impact the nearshore environment.

All people in Hawai‘i, regardless of how often we interact with the ocean, have a role to play in protecting our marine resources. *Holomua: Marine 30x30* encourages the public to understand we all have an impact on nearshore waters and accept it is our responsibility to minimize these impacts. We need to be pono about how we use our marine resources, only then can we continue to enjoy them for years to come.



Why are Pono Practices important?

The goal of the *Pono Practices* pillar is to increase responsible behavior to minimize the impact of human activities in our nearshore waters through a mix of education and outreach, strengthened enforcement, and improved regulations.

EDUCATION AND OUTREACH: Education and outreach programs encourage people to make responsible decisions by improving awareness of our unique resources and how best to care for them.

ENFORCEMENT: Promoting compliance and upholding conservation rules are essential to increase management effectiveness and improve the overall health of nearshore environments. The Division of Conservation and Resources Enforcement (DOCARE) is the law enforcement agency of DLNR. DOCARE is responsible for enforcing regulations that serve to protect, conserve, and manage Hawai'i's unique and limited natural, cultural, and historical resources.

STATEWIDE RULES: Rules aimed at mitigating the impacts of human activities provide clear standards and instructions concerning what can and cannot be done in marine spaces to address the threats and challenges facing our nearshore waters today.

Where are we now?

EDUCATION AND OUTREACH: DOCARE staff, along with DAR education specialists, and partner organizations work across the state to promote awareness of fishing rules and management programs. Their work supports management efforts, builds and strengthens relationships with communities, and increases compliance with rules to protect Hawai'i's resources.

Programs like DOCARE's Makai Watch offer a collaborative opportunity for residents and community-based organizations to be involved with marine resource management by promoting rule compliance through education and careful observations. Makai Watch volunteers are specially trained to identify and report natural resource rule violations to DOCARE. There are currently eight Makai Watch programs statewide. We hope to increase participation in this important program through *Holomua: Marine 30x30*.

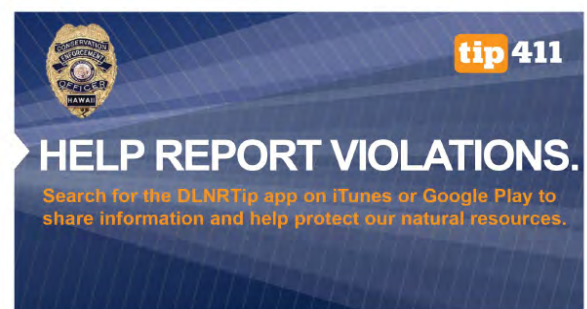


DOCARE officers patrol nearshore waters

Photo: Dan Dennison

ENFORCEMENT: DOCARE officers patrol state lands and waters, providing information about natural resource regulations, issuing warnings and citations for violations, and pursuing appropriate penalties in cooperation with prosecutors. Officers patrol up to three nautical miles offshore and, given the number of Hawai'i residents and visitors that use nearshore waters, allocate most of their time to enforcing rules for aquatic resources.

DOCARE also responds to 'DLNR Tip App' reports from the public, where people can report perceived rule violations from their smartphones. The app can be found in both the Google Play Store and the Apple App Store by searching DLNRTip. The tip app has been updated to streamline the reporting process. Working together with DLNR, communities can increase protection of their natural resources.



DOCARE is working to increase its enforcement capacity by filling officer vacancies through its Academy and Field Training Program. It is also providing updated training on marine rules, and ensuring it has enough vessels, vehicles, and equipment to carry out enforcement responsibilities. The DOCARE training academy graduated its first class of officers in 2018 and 12 more officers in 2020.

STATEWIDE RULES: Existing statutes and administrative rules regulate the take of nearly 40 species of nearshore fishes and invertebrates in different places throughout the state. These rules include minimum sizes, closed seasons, bag limits, seasonal restrictions, gear restrictions, and permits. For a full list of current statewide fishing rules, see <http://dlnr.hawaii.gov/dar/fishing/fishing-regulations>. These rules were developed to ensure that highly valued marine species can survive and reproduce, replenishing the population. Some rules are informed by traditional Hawaiian management practices. See Table 1 for examples of existing statewide fisheries rules and their purpose.

Type	What is it?	Why?	Example
Size limits	The minimum or maximum size a species must be for a fisher to keep it.	To ensure marine life can reproduce and protects individuals with highest potential to reproduce to maintain healthy population levels.	If a fisher catches an 8" kumu (White Saddle Goatfish), they must release it because it likely has not had a chance to reproduce yet.
Closed and Open Seasons	The time of year when it is legal (open) or illegal (closed) to fish for certain species.	To protect animals during vulnerable life stages (usually spawning seasons) or to allow for a rest period from human activities.	A fisher cannot take 'ama'ama (Striped Mullet) in their peak spawning season between December and March, to allow as many individuals as possible to reproduce.
Bag limits	The maximum number of a certain species that fishers can keep per day.	To prevent overharvesting from the population by individuals without restricting certain gear types for fishing.	A fisher can take no more than 15 moi per day, ensuring that one fisher cannot remove more than the population can replenish.
Gear and Fishing Method Restrictions	Certain types of fishing methods or gear types have additional rules or are illegal.	To reduce catching certain species, prevent over-take of juvenile fish, and prevent damage to habitat.	A fisher must use a throw net with a mesh size of at least 2 inches to avoid catching smaller juvenile fish, allowing them to grow and later reproduce, so the population can grow.

Table 1. Examples of existing statewide fisheries rules and their purpose.

What are the next steps?

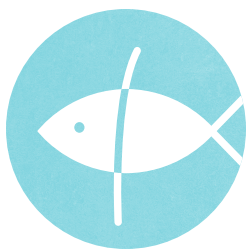
EDUCATION AND OUTREACH: Through *Holomua: Marine 30x30*, DAR will increase its education and outreach about management efforts, about what we understand about our ocean from the latest science, and about what we can do together to ensure its sustainability.

ENFORCEMENT: Through *Holomua: Marine 30x30*, DOCARE plans to increase its capacity by establishing Marine Enforcement Units, with specific training and equipment for marine patrols. DOCARE also plans to expand the Makai Watch program to include other interested communities around the state. Additionally, DOCARE will work to expand analysis of enforcement data to help strategically deploy enforcement resources. The data will help to direct efforts of new recruits as they transition into DOCARE service.

STATEWIDE RULES: Hawai'i's statewide rules for fishing and other nearshore activities must be updated to address today's resource uses and environmental conditions, including:

- **New Threats:** Our state faces new threats and challenges (e.g., climate change, coral bleaching, land-based sources of pollution, increased demand from a growing population and tourism industry) that are impacting our nearshore waters. Statewide rules must be re-evaluated to address these contemporary threats.
- **Need for increased enforcement:** Some rules, such as size restrictions, bag limits, and seasonal closures, are difficult to enforce and prosecute if violations occur. DOCARE also needs high-quality data and up-to-date technology to identify places and times where they are more likely to encounter violations so that they can deploy officers and resources accordingly. Substantial support for a range of actions to expand authority, provide new tools, and increase capacity for officers, is essential for nearshore enforcement success.
- **Insufficient protections:** Our marine species and fisheries need more protection than is currently provided from a broad range of human activities. Planning for statewide fishing rules will occur through several rounds of public scoping meetings, inviting fishers and other stakeholders to collaboratively participate in their design. Updated statewide rules will help achieve better management both inside and outside of the network of marine management areas.

Throughout *Holomua: Marine 30x30*, communities will be invited to provide local knowledge and share priorities to help create statewide rules for fisheries and other nearshore ocean uses.



Monitoring

What is monitoring?

Monitoring refers to the observation and collection of information and measurements to detect changes and progress of something over time. Many types of monitoring are needed to understand ecosystems and the impacts of changing conditions on those ecosystems. Specific measurements or observations that reflect the components and condition of an ecosystem are called indicators. A broad range of indicators are used by DAR to track and measure the status of nearshore resources.

There are many different methods used for monitoring the nearshore environment. Some methods are designed to observe and record long-term information and trends, while other methods help to capture the impacts of a distinct event, such as coral bleaching or unintentional vessel grounding.

Even with the range of existing monitoring, there is a need for increased monitoring to make informed management decisions. *Holomua: Marine 30x30* aims to expand DAR's current monitoring efforts and partnerships. A comprehensive monitoring program that includes biological and social indicators collected by DAR and a range of partners will measure how management actions meet ecological goals, as well contribute to the well-being of the people using marine resources. *Holomua: Marine 30x30* will utilize a comprehensive approach to data collection by integrating traditional observation practices (kilo) and fisher-dependent surveys to DAR's existing monitoring program.



Why is monitoring important?

Routine monitoring allows managers to see how the health of a nearshore ecosystem or resource changes over time. Many of our marine ecosystems and resources have been on the decline due to human-induced impacts such as overfishing, introduction of invasive species, land-based pollution, and habitat degradation. Long-term monitoring projects allow us to track reef health and fish populations, and see how these change over years, and even decades, to inform management actions. Monitoring also helps to evaluate the effectiveness of rules and management efforts around the state. All of this information is important to be able to make informed management decisions.

For example, monitoring in Kahekili, Maui identified a long-term decline in coral cover, changes in reef complexity (habitat), fewer herbivorous fish and overgrowth of invasive algae. To address these concerns, the Kahekili Herbivore Fisheries Management Area was created in 2009. The rules for this area prohibit feeding fish and the killing or removing of important herbivore species, including parrotfish, surgeonfish, chubs and sea urchins. Herbivores play a critical role in marine ecosystems by feeding on algae, thus providing conditions for coral to thrive. It was the first time in Hawai'i where fisheries management was used as a tool to control invasive algae and improve overall reef resilience and recovery. Fishing for other species is still allowed.

Seven years after the MMA was established, monitoring shows significant increases in biomass (more fish and larger fish) for parrotfishes and surgeonfishes in the Kahekili FMA. Parrotfish biomass increased by 331% and surgeonfish biomass by 71%. Algae, that can smother reefs, was almost completely removed due to an increased presence of herbivore species. Long term monitoring at this site is helping DAR to assess the effectiveness of the 2009 rules on an ongoing basis.

Holomua 30x30 acknowledges that relevant information necessary for effective management goes beyond scientific data and seeks to incorporate multiple sources of ecological knowledge into the decision-making process. For example, combined long-term observations and traditional knowledge by kūpuna (elders), and monitoring efforts by community members and partner organizations documented a decline in once-abundant marine resources in Hā'ena on Kaua'i Island due to overharvesting, coastal development, recreational overuse, and pollution. In response to this decline, the community and various stakeholders established a CBSFA, merging the best readily available science with Hawaiian traditional practices, to restore the nearshore environment. The rules in place prioritize subsistence harvesting and cultural fishing practices. Ongoing monitoring of this place will inform a long-term management to ensure that the area can provide fish for the community for future generations.



DAR staff monitoring the 2014 coral bleaching event

Photo: Catlin Seaview Survey

Where we are now?

DAR's current monitoring programs include:

- Status of reef fish populations (e.g., are there more and bigger fish or fewer and smaller fish?)
- Fishery catch and effort information through commercial marine license fishing reports
- Recreational fishery catch and effort data through shoreline Hawai'i Marine Recreational Fishing Surveys and creel surveys
- Status of mobile invertebrates (such as urchins and sea cucumbers)
- Health of corals (health, impacts of bleaching events and unintentional ship groundings, reef habitat/structure mapping)
- Status of aquatic invasive species (AIS) (how can we prevent, detect, rapidly respond and manage these threats to our aquatic resources)

DAR maintains partnerships with agencies and organizations such as the National Oceanic and Atmospheric Administration (NOAA), the National Park Service (NPS), The Nature Conservancy (TNC), Conservation International (CI), Arizona State University, and the University of Hawai'i. To fully harness the collective understanding of data from across these organizations, the Hawai'i Monitoring and Reporting Collaborative (HIMARC) was formed in 2016.

DAR and HIMARC work together to maintain a common database of underwater data that is used to examine the condition and trends of ecological indicators. The combined data provides a comprehensive view of the current condition of Hawai'i's nearshore ecosystems and what reefs should look like that can be used to evaluate the health of the nearshore environment and inform management decisions. Additionally, the combined data can be used to inform future monitoring, and to evaluate conditions as they change due to natural drivers, human impacts, and management actions.

DAR participates in the Hawai'i Marine Recreational Fishing Survey (HMRFS), a program implemented by NOAA fisheries to gather non-commercial fishing data from fishers. Most non-commercial fishing in Hawai'i occurs recreationally or for subsistence. The total number of non-commercial fishers largely outweigh the number of licensed commercial fishers and HMRFS provides a voice for these fishers. HMRFS informs estimates of total catch and effort by species, fishing mode, and fishing area.

The largest and oldest dataset in DLNR-DAR's fisheries data collection is the commercial fishing report. These reports have been collected, processed, and archived continuously since 1948. Fishery managers rely on the data to make recommendations and render decisions to maintain sustainable fisheries. Fishers who complete and submit accurate commercial fishing reports on a timely basis are critical partners in fisheries management with a common goal of making sure that we have fish for future generations.

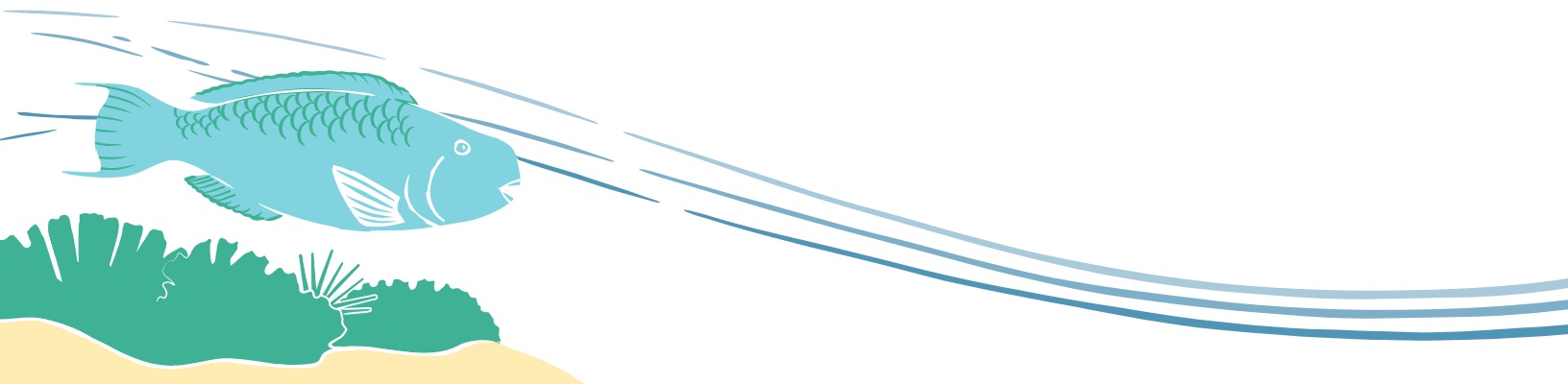
In addition, DAR relies on a growing number of community-based monitoring programs that provide valuable information about water quality, reef health, and resource status. DAR looks to community members who document their observations and catch in log books, record spawning events and seasons, and observe moon phases, tidal changes, movement patterns, and migrations of marine species. DAR works with fishers who participate in biosampling with scientists to provide information on age, size, growth, and sexual maturity of their catch. DAR staff liaise with community representatives to learn about community monitoring interests and priorities, assist and advise when needed, and offer guidance about how to ensure data are captured in ways most useful to state managers. *Holomua: Marine 30x30* will establish and assist with the co-creation of place-based, community-driven monitoring efforts in new and existing marine management areas.

What are the next steps?

Through *Holomua: Marine 30x30*, DAR plans to increase monitoring capacity, as well as and grow and strengthen community monitoring partnerships. Increased capacity will help to:

- set clear and meaningful reef health indicators
- increase monitoring coverage in areas currently lacking data
- ensure that data is available to evaluate MMAs and rules
- make informed and adaptive management decisions

Holomua: Marine 30x30 strives to strengthen monitoring efforts that not only encompass the biological conditions of nearshore waters, but their social and cultural value to users as well. Through expanded partnerships with government agencies, non-government organizations, and community organizations, DAR aims to foster long-term collaborative monitoring programs informed by ecological and socio-cultural criteria. Monitoring programs will be guided by indicators aligned with specific social, cultural, and ecological goals of individual MMAs and the connected network of MMAs. These partnerships will help ensure that we collectively take action toward effective statewide and place-based management of Hawai'i's nearshore waters and establish successful marine management areas around each island.





Protection and Restoration

What is Protection and Restoration?

This pillar is focused on protecting Hawai'i's nearshore marine ecosystems by preventing further damage and restoring degraded habitats and fisheries. Healthy and functioning ecosystems provide direct benefits to people, these benefits are referred to as ecosystem services. Some examples of ecosystem services provided by a healthy nearshore environment include shoreline protection from the damaging effects of waves and storms, as well as jobs and food.



Honokōhau, Hawai'i Island

Photo: Nathan Hayes

The protection component of this pillar refers to preventing further degradation of nearshore ecosystems by reducing and eliminating threats such as invasive species introduction, degraded water quality, disease, and environmental damage. The restoration component of this pillar refers to active rebuilding and replenishing actions to help improve nearshore habitats toward a healthier condition.

Our nearshore waters face many threats that cause loss of habitat, impair ecosystem function, and jeopardize nearshore species. Global threats include warming ocean temperature, changing ocean chemistry, sea level rise, increased frequency and intensity of storms, and altered ocean circulation patterns. Local threats include physical damage or destruction of reefs, overfishing, pollution, coastal development, invasive species, disease, and overuse and damage by visitors and residents.

Not all threats affecting the nearshore environment come from the ocean. Many threats to nearshore marine ecosystems come from land-based sources, such as sediment and pollution that enter the ocean from streams and run-off. Protecting nearshore marine resources requires that we manage our places from mauka to makai. Better management of the shoreline and adjacent mauka land activities can help reduce sewage inputs, erosion, sedimentation, and land-based pollutants on nearshore reefs, and can improve water quality for people, fish and corals.



Kohanaiki, Hawai'i Island

Photo: Nathan Hayes

Why is protection and restoration important?

Healthy marine ecosystems provide many benefits and essential services to the communities of Hawai'i. For example, healthy coral reefs help protect our shoreline from storms, by acting as a natural barrier between large waves and coastal homes, roads, schools and businesses. Coral reefs are degraded by poor water quality—through pollution and sedimentation—and changing ocean conditions, like warming seas and ocean acidification. By preventing pollution, nutrient inputs, run-off and sedimentation and creating MMAs in strategic locations to manage the impacts, we can help protect coral reefs and the essential benefits and services they provide.

Protection strategies work hand in hand with restoration to improve nearshore ecosystem function. Although it is best to minimize or prevent damage from occurring, restoration projects focus on speeding up the recovery process once damage is done.

Forest and wetland restoration efforts can reduce damage to nearshore habitats by minimizing or eliminating sedimentation and land-based sources of pollution. These restoration approaches can improve nearshore water quality preserving ecosystem function and protecting valued species. Better water quality leads to increased availability of marine resources that support the health and well-being of the people that use these ecosystems as a resource.

Where are we now?

DAR leads multiple restoration projects and programs throughout the state and collaborates with partner agencies and organizations on restoration efforts. These protection and restoration projects range from outplanting rare corals, restoring ship grounding sites, and native sea urchin biocontrol to control invasive species in state waters. Here are some examples of DAR's restoration activities.

Coral restoration

DAR's coral nurseries are state-of-the-art facilities recognized globally for pushing the front lines of coral restoration technology. As a result, the nursery can grow approximately 220 large module pyramids of coral each year for out-planting to speed recovery in areas where a reef has been damaged or destroyed. A vital part of Hawai'i's coral nursery is its Rare Hawaiian Coral Ark, which banks 50 species of rare corals. The Ark not only houses specimens that contain critical genetic information about coral species found nowhere else on earth, but also keeps them safe from natural and man-made disasters. The coral ark can help restore rare corals after bleaching or other devastating events.

Watershed protection and restoration

DAR is contributing to multiple projects involving watershed restoration throughout the state, including in places like He'eia, Honouliuli, Kohala, and West Maui. Wetlands serve as the last stop before water enters the coastal marine ecosystem. Functioning wetlands act as natural filters and fish nurseries that improve water quality, increase fish biomass, and support ecosystem resilience in connected nearshore habitats. Some of the projects include: removal of invasive fish species like tilapia from streams and estuaries; ungulate removal and protective fencing to prevent mauka degradation; collaborative monitoring of anchialine ponds to protect the rare and endemic species that live there; and monitoring fish communities after invasive plant removal.. DAR works in partnership with conservation and community organizations to support and advance these restoration efforts. Expansion of these partnerships will increase the effectiveness and success of MMAs.

Coral bleaching response

Bleaching occurs when corals are stressed, often from extreme heat waves that last for several weeks or even months. Hawai'i has experienced multiple bleaching events over the last five years, which has resulted in widespread coral mortality throughout the state. DAR has created a [coral bleaching recovery plan](#) to address the increasing frequency of these events. The plan details actions for DAR to mitigate damage and promote recovery from the effects of bleaching events.

Aquatic invasive species (AIS)

A major threat to biodiversity in Hawai'i is invasive species, where species have evolved in isolation causing Hawai'i to have a high rate in endemism but also be extremely susceptible to invasion. Competition, predation and habitat shifts caused by invasive species can add stress to ecosystems already encountering other negative variables. The major vector for marine introductions is shipping, with an island chain reliant on the daily ship arrivals. In addition, aquarium releases, aquaculture, and aquatic plant sales pose a risk. DAR prevents species introductions primarily by conducting ballast water risk assessments on commercial vessel arrivals and supporting modern best practices to manage ballast water and hull fouling. The team is also working with other agencies and partners to drive policy directives regarding ballast water, hull fouling, and high-risk imports.



Native sea urchin outplanting
to control invasive seaweed

Once established, the effort and cost to manage AIS exponentially increases, thus prevention is key. Eradicating and controlling new introductions (early detection and rapid response) will help control spread of non-native species to sensitive habitats. Controlling existing populations is also part of AIS management where feasible. Controlling invasive species typically requires their direct removal. One of DAR's most successful AIS control projects is managing invasive algae that was smothering coral reefs in Kāne'ohe Bay, by manually removing the algae and then outplanting native sea urchins for herbivore pressure. The native sea urchins are produced at DAR's Ānuenue Fisheries Research Center, minimizing pressure on already existing urchin populations.

What are the next steps?

Through *Holomua: Marine 30x30*, DAR aims to apply scientific and cultural knowledge to inform actions to protect our nearshore waters from further harm and enhance habitat recovery. Many of the threats to the ocean are results of, or intensified by, land-based actions. To help address these threats, as part of *Holomua: Marine 30x30*, DAR will coordinate with other government agencies, and other land-management organizations to revitalize a mauka to makai connection where possible and restore streams and wetlands. This type of management will bolster the success of community and agency efforts to protect and restore nearshore waters.

The ecologically-connected network of MMAs throughout the main Hawaiian Islands, is a central feature of *Holomua: Marine 30x30*, and is a restoration effort. The creation of such a network will help restore our fisheries by providing carefully managed places where fish can grow and reproduce, and habitat is well-protected.

DAR invests significant resources into restoration, but efforts must increase to keep pace with growing threats, including climate change. *Holomua: Marine 30x30* will expand, support, and strengthen DAR efforts to restore marine ecosystems, like estuaries and coral reefs. This work will require collaborations with communities and partner organizations to create and broaden restoration actions to effectively manage, replenish and protect our nearshore marine resources.

Public Participation: How can you get involved?

Rules that regulate human activities in nearshore state waters are adopted, amended, and repealed through the administrative rulemaking process set forth in Hawai'i Revised Statutes (HRS) Chapter 91-3. The "Chapter 91 process" requires DAR to seek public input and participation on any proposed rule change. Public input opportunities include public scoping meetings, public hearings, and BLNR meetings.

Public Scoping

Public scoping is an important opportunity for communities and interest groups to engage in meaningful discussions with DAR regarding new rule ideas or proposals. In communities throughout the main Hawaiian Islands, scoping can range from small talk story sessions to larger public meetings.

Although public scoping is not a legal requirement of the administrative rule making process, DAR chooses to create public scoping opportunities throughout planning processes to include the ideas, concerns and feedback of communities and interest groups. **Public scoping meetings are an ideal opportunity for communities and interest groups to be involved in the early stages of rulemaking and provide input before rules are put into a formal proposed rule.**

Public Testimony and Hearings

Throughout the administrative rulemaking process, there are opportunities for interested parties to provide testimony on proposed rules. Testimony can take no position, be in support or opposition of proposed rules. Chapter 91 provides a multi-step process that includes notice and hearing requirements. DAR aims to ensure all interested individuals and groups are provided the opportunity to provide testimony, share data, personal views, and organizational positions orally and in writing. Notice for public hearings is published at least 30 days in advance.



Chapter 91-3

DAR begins the formal Chapter 91 process by submitting a proposed rule package that proceeds through the steps below to the Board of Land and Natural Resources. The first half of the process is designed to elicit public input. The second half of the process ensures the proposed rules comply with all applicable State and Federal laws.

The steps in the Chapter 91-3 rulemaking process include:

1. Attorney General's office reviews the proposed rule package to ensure that the proposed rules fall within the statutory authority of the state agency and are consistent with all other existing state and federal laws.
2. DAR requests that the Chair of the BLNR approve the proposed rules to be presented at a bi-monthly meeting of the BLNR. At this meeting, DAR staff presents the proposed rule package. **The BLNR receives written and oral public testimony on the proposed rules.** The BLNR will either approve the proposed rules for public hearing or require changes to the proposed rules. If substantial changes are required, the process must begin from step one for the revised rule package.
3. If rules are anticipated to affect small businesses, DAR prepares a small business impact statement (in accordance with Hawai'i Revised Statute 201M). The Small Business Regulatory Review Board (SBRRB) reviews the proposed rules to determine the impact on small businesses. The SBRRB makes a recommendation to the governor to approve or deny the request for a public hearing.
4. Following BLNR approval for public hearing, and review by the SBRRB if necessary, the proposed rules are submitted to the Governor for final approval. The Governor decides whether DAR may hold public hearings on the proposed rules.
5. Once allowed, **DAR holds one or more public hearings to collect testimony in support or opposition of the proposed rules.** Testimony can be submitted orally or in writing (via email or written letter). DAR compiles and analyzes the testimony for any necessary adjustments to the rule and develops a final rule proposal for the BLNR to consider.
6. Attorney General's office reviews the final rule package to ensure that the proposed rules fall within the statutory authority of the state agency and follow other existing state and federal laws.

7. DAR requests that the Chair of the BLNR accept the proposed rules to be presented at a bi-monthly meeting of the BLNR. At this meeting, DAR staff presents the final rule package, including a summary of the testimonies received through the public hearing process and any changes to the proposed rules. **The BLNR accepts both written and oral public testimony in support or opposition of the final rule package for consideration.** The BLNR will approve or deny the final rule package.
8. If the rules will affect small businesses, the SBRRB reviews the final rule package and makes a final recommendation to the governor to approve or deny the rules.
9. If approved by the BLNR the proposal is sent to the governor for review and approval.
10. If approved by the Governor, the rule is filed with the Office of the Lieutenant Governor, and 10 days later the rule goes into effect.

How to get involved

DAR will seek input via multiple channels throughout the 30x30 process.

To submit comments, ask questions, or get involved please contact DAR
by email at Marine30x30@hawaii.gov or by phone at 808-587-0100.

Sign up to receive additional information and 30x30 news on DAR's website:

<https://dlnr.hawaii.gov/dar/30x30>



CONTACT US

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