

**From:** Denise Antolini  
**To:** [DLNR.BLNR.Testimony](#)  
**Subject:** [EXTERNAL] August 14 BLNR Agenda - Request to testify in support of Item F-2  
**Date:** Wednesday, August 12, 2020 1:21:58 PM

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Dear BLNR,

I would like to provide testimony **in Support** of  
Item F-2: F. DAR 2. Request for Approval to Hold a Public Meeting and  
Hearing to Amend and Compile Chapter 13-34, Hawaii Administrative  
Rules, **Pupukea Marine Life Conservation District.**"

Thank you,

Denise Antolini  
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Delivered by electronic mail to: [blnr.testimony@hawaii.gov](mailto:blnr.testimony@hawaii.gov)

August 13, 2020

Chairperson Suzanne D. Case and  
Members of the Board of Land and Natural Resources  
1151 Punchbowl Street  
Honolulu, Hawai‘i 96813



**Re: In Support** of agenda Item F-2: F. DAR2. Request for Approval to Hold a Public Meeting and Hearing to Amend and Compile Chapter 13-34, Hawai‘i Administrative Rules, **Pūpūkea Marine Life Conservation District**.

Aloha Chair Case and Members of the Board:

Mahalo for the opportunity to provide testimony **in strong support of a public meeting and hearing** to amend the rules **for the Pūpūkea Marine Life Conservation District (MLCD)**. In my home community of Pūpūkea, the MLCD is where I fostered my passion for coastal ecology and marine conservation which led me to pursue a career in marine resource management in Hawai‘i.

I would like to familiarize you with the name of a special place within the MLCD—**Kapo‘o**. Commonly referred to as the tidepools at Pūpūkea (and as the “Old Quarry” on paper), Kapo‘o is the birthplace of my interests in marine life. As a child, I perused Kapo‘o for sea cucumbers to rehome in *safer* areas of the tidepools and away from people, and I now realize these actions in my youth spoke to the deep sense of stewardship I have for all ocean resources to this day.

During my graduate studies at Scripps Institution of Oceanography in Spring 2020, I created a GIS-based **Story Map about Kapo‘o** that illustrates the challenges due to the lack of administrative rules and continuing threats. I recommended best management practices for users of the tidepools until rules can be amended and; therefore, enforced by DOCARE. I am excited to share this Story Map with you and I hope you will take a few moments to review this compelling story: [Kapo‘o: the Piko of Pūpūkea](#).

Since graduation from Scripps, I have taken on the role of Mālama Pūpūkea-Waimea’s Marine Science Coordinator. In the past few months, I have been able to study, *kilo* (observe), and admire the ecological diversity and richness of an area often overlooked next to the popular Shark’s Cove. From my extensive research and literature review, I concluded that **Kapo‘o’s unique habitat functions as a *pu‘uhonua***, or marine life nursery, that **strengthens Pūpūkea’s marine resiliency** and will help the State **achieve its [Marine 30x30 Initiative](#)** with Kapo‘o’s inclusion of the MLCD rules. The pressures of heavy, unregulated visitation and fishing threatens this goal and the success of the Pūpūkea MLCD.

I am grateful to Kapo‘o for nurturing my lifelong dedication to protect marine resources in my community, and the first step to protecting this area is to hold a public meeting and hearing to amend HAR §13-34. Voicing my support for DLNR’s submittal for the rule amendments is one way for me to give back to this **culturally, biologically, and economically important coastline**, and I kindly ask for your approval.

Thank you for this opportunity to comment and for your thoughtful consideration on this agenda item that will lead to effective management of Hawai‘i’s nearshore waters. Mahalo nui.

Respectfully,

A handwritten signature in black ink that reads "Keelan Barcina". The signature is written in a cursive, flowing style.

Keelan Barcina  
Marine Science Coordinator  
Mālama Pūpūkea-Waimea  
[kbarcina@ucsd.edu](mailto:kbarcina@ucsd.edu)

**From:** Anne Chung  
**To:** [DLNR.BLNR.Testimony](#)  
**Subject:** [EXTERNAL] Testimony in Support of Item F-2  
**Date:** Tuesday, August 11, 2020 11:48:58 AM

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**Testimony in Support of Item F-2: F. DAR 2. Request for Approval to Hold a Public Meeting and Hearing to Amend and Compile Chapter 13-34, Hawaii Administrative Rules, **Pupukea Marine Life Conservation District**"**

Aloha,

I am a resident of the North Shore and have extensive experience in the Pupukea tidepools (Kapo‘o). I know the area **merits the same protections** as the surrounding Marine Life Conservation District (MLCD) and I am in **strong support of DAR** holding a public meeting and hearing to amend the rules as described in the Board submittal. I previously led a research effort as a Master’s student to map the **biodiversity** and physical properties of Kapo‘o and documented an area rich with juvenile and adult fishes, corals, and invertebrates. I also observed the area’s value as an **educational tool** as the calm, shallow waters create a unique classroom and source of inspiration for residents and visitors alike. The tidepools have become a venue for additional graduate research, citizen science monitoring, summer nature programs, and keiki science and culture education for the **local community**. Kapo‘o also faces pressures from dramatic increases in human use, land-based pollution, and illegal fishing activity. Tidepool-like systems like Kapo‘o are relatively rare on O‘ahu and in Hawai‘i in general and there is much more to learn about the ecological role and connection the tidepools may play in relation to surrounding waters. Kapo‘o became a part of the MLCD in 2009 through Executive Orders; however, administrative rules have not been amended to prohibit fishing. **These additional protections are essential**; they will create consistent and **clear rules** and improve understanding of the prohibitions, benefit the rich but vulnerable **tidepool ecosystem**, and ensure plentiful resources for the **enjoyment of the public**.

Mahalo for your time on this issue,

Anne Chung, Ph.D.

[Dr.anne.e.chung@gmail.com](mailto:Dr.anne.e.chung@gmail.com)

DAVID Y. IGE  
GOVERNOR OF  
HAWAII



**STATE OF HAWAII**  
**DEPARTMENT OF LAND AND NATURAL RESOURCES**

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

SUZANNE D. CASE  
CHAIRPERSON  
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FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
KAHOOLAWE ISLAND RESERVE COMMISSION  
LAND  
STATE PARKS

August 10, 2020

RE: Letter of Support for Approval to Hold a Public Meeting and Hearing to Amend and Compile Chapter 13-34, Hawaii Administrative Rules, Pūpūkea Marine Life Conservation District.

Dear Board Members,

On behalf of the Department of Land and Natural Resources, Division of Conservation and Resources Enforcement (DOCARE), I would like to submit this letter of support for the Approval to Hold a Public Meeting and Hearing to Amend and Compile Chapter 13-34, Hawaii Administrative Rules, Pūpūkea Marine Life Conservation District.

The community has observed several fishermen that are well-aware of the lack of unenforceable rules in Kapoʻo and plan to fish there until administrative protections can expressly include the tide pools. These revised rules will directly reduce impacts to Kapoʻo from visitations and fishing pressure because DOCARE can the legally address violations such as illegal gear possession (e.g. fishing poles, hand nets, spears) and the collection of marine life and geological features (e.g. sand, shells).

We will continue to work closely with the Division of Aquatic Resources to align our initiatives and perspectives towards compliance and enforceability.

If you have any questions, please contact me at (808) 587-0066 or Jason.K.Redulla@hawaii.gov.

Sincerely,

A handwritten signature in black ink that reads "Jason K. Redulla".

Jason K. Redulla  
Enforcement Chief

DATE: August 13, 2020

TO: Suzanne Case, Chair &  
Members of the Board  
Board of Land & Natural Resources  
1151 Punchbowl Street Room 330  
Honolulu, HI 96813

FROM: J. Whitney Goodell

RE: TESTIMONY IN SUPPORT OF Item F-2: F. DAR 2. Request for Approval to Hold a Public Meeting and Hearing to Amend and Compile Chapter 13-34, Hawaii Administrative Rules, **Pūpūkea Marine Life Conservation District**.

BLNR Agenda - August 14, 2020 9 A.M.

Aloha Chair Case and Members of the Board of Land & Natural Resources,

I am testifying in **strong support** of the submitted request by the Division of Aquatic Resources (DAR) to hold a public hearing to amend the rules for Pūpūkea MLCD.

I am a marine researcher, and have extensive experience studying the marine ecosystems of Hawai'i's nearshore areas and elsewhere across the world. Hawai'i's marine resources are unique and fragile, and are in decline, particularly on O'ahu. The State of Hawai'i has examples of strongly protected marine life conservation districts (MLCDs), such as Pūpūkea, which have been shown to be effective at conserving biodiversity and benefiting adjacent fisheries. **We must ensure that MLCDs continue to protect the health of our nearshore ecosystems**, and that this protection extends to vital parts of the ecosystem.

The tidepools at Pūpūkea represent an extension of the important marine ecosystem already protected by the Pūpūkea MLCD, and **warrant the same level of protection**. They are a unique environment with high diversity of organisms, many of which are endemic to Hawai'i. Many of the organisms found in these tidepools also have **important cultural, recreational, and food value**. In addition to high level of marine abundance and diversity, and unique geophysical conditions, this area provides a natural classroom for Hawai'i's residents and visitors alike. The tidepool ecosystem at Pūpūkea is relatively rare on O'ahu, and on any given day, it is evident that the tidepools serve as not only a recreational space, but an **educational space** as well. Children and adults alike can be observed exploring the tidepools, asking questions, seeking answers, and learning to appreciate Hawai'i's natural resources that are quite literally at their fingertips.

However, these public resources are threatened by multiple stressors such as over-harvesting, coastal pollution, and heavy human use. The amendment of HAR §13-34 to include the tidepools in the Pūpūkea MLCD and clarify appropriate use will ensure that this area is

protected with enforceable rules. Such protection will help Hawai'i move into a future that provides a healthy society for us and the next generations.

I appreciate your time on this matter. Thank you for considering my testimony.

A handwritten signature in black ink that reads "J. Whitney Goodell". The signature is written in a cursive, flowing style.

J. Whitney Goodell  
Honolulu, HI 96816

Testimony in Support of Item F-2: F. DAR 2. Request for Approval to Hold a Public Meeting and Hearing to Amend and Compile Chapter 13-34, Hawaii Administrative Rules, Pūpūkea Marine Life Conservation District

I am a professor of Biology at University of Hawaii at Manoa, specializing in coral reef ecosystems, and I am testifying on my own behalf. I am in **strong support of a public hearing** to amend the rules for Pūpūkea MLCD.

I recently completed (7/15/20) an environmental survey of the corals and invertebrates in Pūpūkea tidepools at the request of Malama Pūpūkea Waimea. A total of **51 species** in six invertebrate phyla were identified. **Two endemic species**, the seastar *Mithrodia fisheri* and the blackfoot 'opihi *Cellana exarata*, were among these. The tidepools represent a **unique environment** supporting a high diversity of organisms with **important cultural, recreational, and food value**. However, **over-harvesting and coastal runoff currently threaten these public resources**.

During the surveys on July 15, I observed a number of families using the area as a natural classroom. There is no better way for children (or adults!) to learn to appreciate our environmental resources than through **first-hand experiences**. It follows that the organisms in the tidepools deserve the same level of protection as the surrounding MLCD so that this special place is **protected in perpetuity**.

Amending HAR §13-34 to **include the tidepools in the Pūpūkea MLCD** and **clarify appropriate use** will ensure that this area is **truly protected with enforceable rules**.



Cynthia L. Hunter, Ph. D.



August 10, 2020

**ATTN:** Board of Land and Natural Resources.  
[blnr.testimony@hawaii.gov](mailto:blnr.testimony@hawaii.gov)

**SUBJECT:** **BLNR Agenda - August 14, 2020 9 A.M.: Testimony in Support of Item F-2: F. DAR 2. Request for Approval to Hold a Public Meeting and Hearing to Amend and Compile Chapter 13-34, Hawaii Administrative Rules, Pūpūkea Marine Life Conservation District**

Aloha esteemed members of Board of Land and Natural Resources,

Kua'āina Ulu 'Auamo (KUA) submits this letter in support of Item F-2 Request for Approval to Hold a Public Meeting and Hearing to Amend and Compile Chapter 13-34, Hawaii Administrative Rules, Pūpūkea Marine Life Conservation District

KUA works to empower communities to improve their quality of life through caring for their environmental heritage together. We employ a community-driven approach that currently supports a network of more than 30 mālama 'āina community groups collectively referred to as E Alu Pū (moving forward together), 38 fishpond projects and practitioners called the Hui Mālama Loko I'a, and a growing hui of Limu practitioners all from across our state. KUA was called into existence by the E Alu Pū Network and Mālama Pūpūkea Waimea (MPW) is a cherished and highly active member. MPW leaders also serve on the E Alu Pū Council, participate in the Limu Hui, and have played a larger role in improving the way we mālama Hawai'i's nearshore environment through education observation and outreach.

The Kapo'o tidepool ecosystem (Kapo'o) is a celebrated and well-known resource for the community of the Pūpūkea-Waimea and to the resource users and tourists who flock there for its beauty and marine life. Kapo'o became a part of the Pūpūkea Marine Life Conservation District (MLCD) in 2009 through Executive Orders. However, the MLCD administrative rules have yet to be amended to expressly include the tidepools so fishing restrictions can be legally enforced by the Division of Conservation and Resource Enforcement (DOCARE).

Its been a long time coming and we encourage you to have a hearing and move this matter forward. Mahalo for this opportunity to testify.

Pūpūkahi i holomua e ho'okanaka  
 (Let's unite to better the human condition)

Kevin K.J. Chang  
 Co-Director

Miwa Tamanaha  
 Co-Director



August 13, 2020

Suzanne Case, Chair &  
Members of the Board  
Board of Land & Natural Resources  
1151 Punchbowl Street Room 330  
Honolulu, Hawaii 96813

Submitted by email to: [blnr.testimony@hawaii.gov](mailto:blnr.testimony@hawaii.gov)

**RE: Testimony in Support of Item F-2: F. DAR 2. Request for Approval to Hold a Public Meeting and Hearing to Amend and Compile Chapter 13-34, Hawaii Administrative Rules, Pūpūkea Marine Life Conservation District.**

Aloha Chair Case and Distinguished Members of the Board,

The Center for Biological Diversity (Center) writes this testimony in **strong support** for the submittal by the Division of Aquatic Resources (DAR) to Request Approval to Hold a Public Meeting and Hearing to Amend and Compile Chapter 13-34, Hawaii Administrative Rules, Pūpūkea Marine Life Conservation District.

The Center is a non-profit 501(c)(3) membership corporation dedicated to the protection of native, threatened, and endangered species and the habitats they depend on to survive. Through science, policy, and environmental law, the Center is actively involved in species and habitat protection issues throughout Hawai'i. The Center has more than 67,000 members throughout the United States, including Hawai'i, with a direct interest in conserving fragile and impacted coral reef ecosystems and the marine species that depend on them. **The Center's members and staff have researched, studied, observed, and now seek further protection for the Sharks Cove Tidepools, otherwise known as Kapo'o, which deserves the full protection afforded by the State's Marine Life Conservation District (MLCD) designation.**

The Center is in full support of the proposed rule package, which among other important changes, would afford the same level of protection for Kapo'o as the rest of the MLCD. This would allow the State Division of Conservation and Resources Enforcement (DOCARE) to enforce much needed protections for the myriad of marine life that depend on the Pūpūkea MLCD. Western science, indigenous knowledge, and community observations all support a finding that Kapo'o has a high level of marine abundance and diversity and unique geophysical conditions that make this a special area that is vital to the health of the entire MLCD.

The Center humbly requests that this Board move this rules package forward to the public meeting and hearing stage.

Mahalo for your consideration,

/s/ Maxx Phillips

Maxx Phillips, Esq.

Hawaii Director, Center for Biological Diversity

1188 Bishop Street, Suite 2412

Honolulu, Hawaii 96813

(808) 284-0007

[MPhillips@biologicaldiversity.org](mailto:MPhillips@biologicaldiversity.org)



By email to: [blnr.testimony@hawaii.gov](mailto:blnr.testimony@hawaii.gov)  
August 13, 2020

Suzanne Case, Chair &  
Members of the Board  
Board of Land & Natural Resources  
1151 Punchbowl Street Room 330  
Honolulu, Hawaii 96813

Re: Testimony in **Support** of Item F-2: F. DAR 2. Request for Approval to Hold a Public Meeting and Hearing to Amend and Compile Chapter 13-34, Hawaii Administrative Rules, **Pūpūkea Marine Life Conservation District**"

**Mālama Pūpūkea-Waimea**  
Post Office Box 188  
Hale'iwa, HI 96712

**Board of Directors**

*Denise Antolini  
Anne Chung  
John Cutting  
Bob Leinau  
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Educational Programs &  
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**Federal Nonprofit Organization**  
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Aloha Chair Case & Members of the Board,

Mālama Pūpūkea-Waimea (MPW) is a Hawai'i non-profit organization founded on the North Shore of O'ahu in 2005. Our mission is "working to replenish and sustain the natural and cultural resources of the Pūpūkea and Waimea ahupua'a for present and future generations through active community stewardship, education, and partnerships." For sixteen years, we have focused our stewardship and education efforts on the Pūpūkea Marine Life Conservation District (MLCD), one of only three MLCDs on O'ahu.

We appreciate the opportunity to express our **strong support** for the submittal by the Division of Aquatic Resources (DAR) to Request Approval to Hold a Public Meeting and Hearing to Amend and Compile Chapter 13-34, Hawaii Administrative Rules, **Pūpūkea Marine Life Conservation District**.

**Kapo'o** (the Sharks Cove Tidepools) **deserves the full protection afforded by the State's MLCD designation**. Executive Orders in 2009 formally returned this area to State jurisdiction from its 1956 City Park designation that pre-dated the creation of the MLCD in 1983. MPW has long supported a concomitant amendment to the Hawai'i Administrative Rules (HAR) in order to implement this jurisdictional realignment of the MLCD boundaries. The proposed rule package, which also includes a handful of other changes that are essential "housekeeping" (e.g., coordinates) and modernization of the MLCD rules (e.g., ban on fish feeding, inspection), provides vital tools to allow the State Division of Conservation and Resources Enforcement (DOCARE) to enforce the protections of the MLCD in this "nursery" for marine life of the MLCD and the North Shore.

MPW BLNR Testimony

August 13, 2020

Page 2

Currently, DOCARE is unable to enforce the MLCD rules in the tidepools. Thus, to the direct detriment of thriving marine life and public understanding of what it means to have a protected area, fishing and take of marine life is (painfully) *tolerated* even if *actually illegal* -- why? because **State enforcement cannot be effective without clear administrative rules** for DOCARE to use for education, intervention, and citation. This rule change simply makes sense – it would harmonize the Executive Orders and the H.A.R. to provide the same level of protection for Kapo’o with the rest of the MLCD.

As you will see from other testimony in support, highly credible scientific surveys and invaluable cultural/community observation (kilo) supports this final step in protection of Kapo’o. MPW has initiated several scientific surveys of the tidepools, as recently as this summer, particularly by Dr. Alan Friedlander, Dr. Cynthia Hunter, and Whitney Goodell, which have found that Kapo’o has a high level of marine abundance and diversity, unique geophysical conditions, and indications that this special area acts as a pu’uhonua for the entire MLCD.

We also attach for your review a report prepared for MPW by Keelan Barcina (MAS, Scripps Institution of Oceanography) that provides a compelling science and policy guide to the need to protect Kapo’o as part of the MLCD through the administrative rules change.

In addition to strong scientific, ecological, and cultural justification, we believe that there is strong and diverse community support for this long overdue rules update. We greatly appreciate your moving this rules package forward to the public meeting and hearing stage. Your decision will contribute to the State’s important 30x30 goal and strengthen the long-lasting legacy of DLNR and its community partners to ensure healthy marine ecosystems for Hawai’i, for present and future generations.

Mahalo nui.

Best regards,



Denise Antolini  
President, MPW

Attachment: Barcina, Keelan - *Background on Kapo’o* (Pūpūkea Tidepools) (August 2020)

# Background on Kapo’o (Pūpūkea Tidepools)

Prepared by Keelan Barcina—Mālama Pūpūkea-Waimea

August 2020



Photo: Mālama Pūpūkea-Waimea

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## Introduction

The coastal waters of Hawaii are known for their impressive coral reefs and other marine habitats that host a unique assemblage of native and endemic marine life. These nearshore natural resources have played important roles in the former and current lifestyle of people of in Hawai'i in several ways, including food provisions, supporting the economy and by providing recreational activities such as snorkeling and SCUBA diving that are enjoyed among residents and tourists.<sup>1</sup>

Under increasing pressure from Hawai'i's growing population and influx of visitors, reef-associated fish have drastically declined over the last one-hundred years due to unsustainable fishing techniques, habitat destruction, and the loss of traditional management practices.<sup>2</sup> Other anthropogenic threats to nearshore environments exacerbated by human presence include erosion, pollution, and coastal development on a local scale; and globally, climate change is now having an effect on reef communities.<sup>3</sup> There is great economic value in protecting nearshore marine resources, such as coral reefs with an estimated \$10 billion value, for future generations to enjoy because they inherently attain value from the rich biodiversity, conservation activities, and a number of ecosystem services they provide.<sup>4</sup>

Marine Managed Areas (MMAs) are recommended as a part of an ecosystem-based approach to deliver key conservation benefits through protection measures that conserve biodiversity, properly manage fisheries to restore and preserve ecosystem function,<sup>5</sup> and to preserve historical and cultural resources.<sup>6</sup> Existing MMAs in Hawaii are individually small, as well as few and far between, with a total area that covers 5% of State waters.<sup>7</sup> In 2016, the State Department of Land and Natural Resources (DLNR), Division of Aquatic Resources (DAR) made a commitment to protect 30% of nearshore waters by 2030 through adaptive management approaches and stakeholder engagement in their [Marine 30x30 Initiative](#) (30x30). However, it is also important to strengthen the ecological resiliency of protected areas that currently exist to achieve the 30x30 target.<sup>8</sup>

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<sup>1</sup> Cesar, H. and van Beukering, P. (2004). Economic Valuation of the Coral Reefs of Hawai'i. *Pacific Science*, Volume 58: 231-242.

<sup>2</sup> Friedlander, A.M *et al.* (2018). Human-induced gradients of reef fish declines in the Hawaiian Archipelago viewed through the lens of traditional management boundaries. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 28(1), pp.146-157.

<sup>3</sup> Hughes, T.P. *et al.* (2017). Coral reefs in the Anthropocene. *Nature*, 546(7656), pp.82-90.

<sup>4</sup> Cesar, H. and van Beukering, P. (2004). Economic Valuation of the Coral Reefs of Hawai'i. *Pacific Science*, Volume 58: 231-242.

<sup>5</sup> Friedlander, A.M. *et al.* (2019) Characteristic of effective marine protected areas in Hawaii. *Aquatic Conserv: Mar Freshw Ecosyst.*, 29: 103-117.

<sup>6</sup> States of Hawaii. (2020, February 13). *Marine Managed Areas*. State of Hawaii Division of Aquatic Resources. <https://dlnr.hawaii.gov/dar/marine-managed-areas/about-marine-managed-areas/>

<sup>7</sup> State of Hawai'i. (June 2020). Marine Managed Areas Dashboard. <https://dashboard.hawaii.gov/en/stat/goals/5xhf-begg/4s33-f5iv/ydtj-mhwg>

<sup>8</sup> State of Hawaii Division of Aquatic Resources. (2016). *World Conservation Congress Legacy Commitment: Hawai'i 30 by 30 Oceans Target*. [https://dlnr.hawaii.gov/dar/files/2016/08/30x30\\_Effective\\_Mar\\_Mgmt.pdf](https://dlnr.hawaii.gov/dar/files/2016/08/30x30_Effective_Mar_Mgmt.pdf)

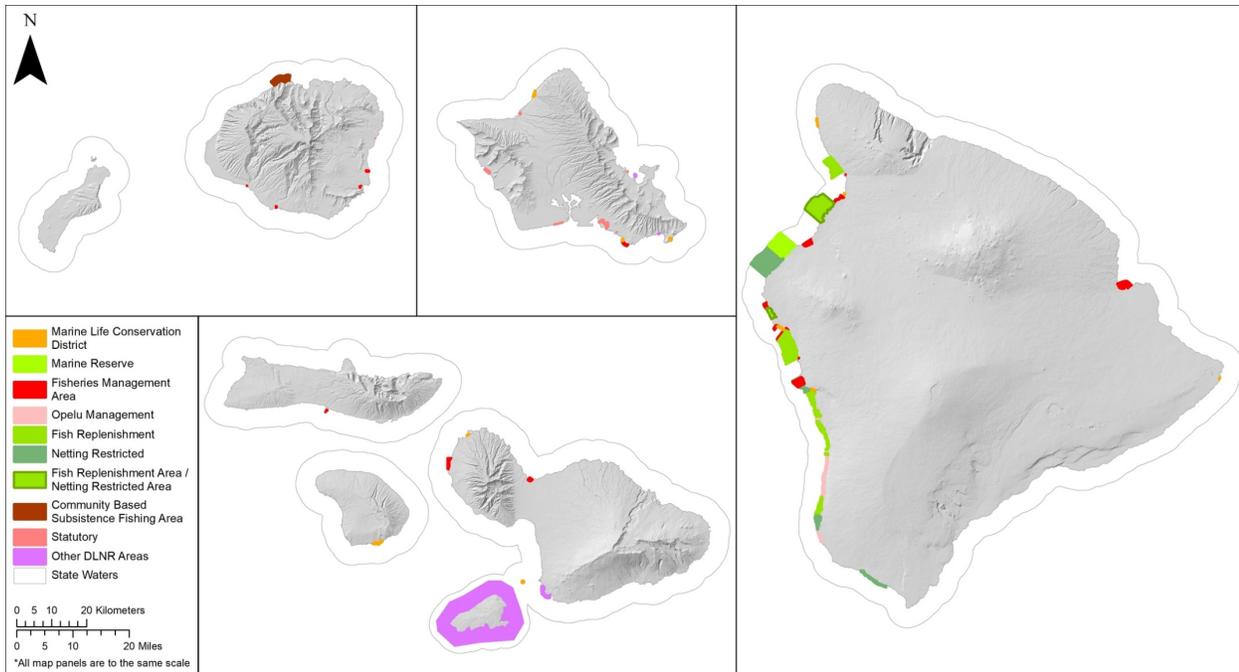


Image 1. Marine managed areas within Hawai'i State waters (0-3nm). See "Characteristic of effective marine protected areas in Hawai'i" by Alan M. Friedlander et al. (2019) for detailed map.

The Pūpūkea Marine Life Conservation District (MLCD) was established in 1983 and Kapoʻo, commonly referred to as the tide pools at Pūpūkea, became a part of the MLCD in 2009 through Executive Orders. However, the administrative rules of the MLCD have not yet been amended to expressly include the tidepools so that fishing restrictions can be legally enforced by the State of Hawai'i's Division of Conservation and Resource Enforcement (DOCARE). Potential threats to Kapoʻo's ecological resiliency include fishing, trampling of coral and disturbance of wildlife by swimmers and snorkelers, erosion and pollution exacerbated by coastal development. A 2019 study conducted in the Pūpūkea MLCD underscored the doubling of human use in the area from 2010-2019 and partially attributed the increase in human use to significant declines in species richness, biomass, and abundance. In Kapoʻo, specifically, shore-based human use during the same period had tripled.<sup>9</sup> It has been over 10 years since Kapoʻo officially became a part of the Pūpūkea MLCD, and it has also been this long that the tidepools have gone unprotected in the face of increasing human pressures. MPW is a community nonprofit based on the North Shore of Oʻahu, aiming to address this timely marine issue in their mission is to replenish and sustain the natural and cultural resources of Pūpūkea through public outreach, education, and advocacy. MPW is currently garnering support to urge the Board of Land and Natural Resources to begin the rule changing process to include the tidepools, thus making MLCD rules enforceable at Kapoʻo.

<sup>9</sup> Seascope Solutions LLC. (2019). Pūpūkea-Waimea MLCD Coral and Fish Assessment: 2010-2019.

## Marine Life Conservation Districts in Hawai'i

There are 11 MLCDs statewide and three on the island of Oahu, of which all, vary in habitat composition, size, and levels of protection. The Wai'ōpae Tidepools MLCD was covered by a lava flow during the 2018 eruptions on Hawai'i Island. MLCDs were initially designated to offer public interaction opportunities and conserve biodiversity,<sup>10</sup> and these locations were selected based on a 15 criteria including accessibility to the area, high biological diversity, and exposure to winds and seasonal surf.<sup>11</sup> Assessments of MLCDs have proven effective in Hawai'i with fish biomass 2.6 times greater than in open areas and greater abundance of apex predators; however, studies suggest MMAs in the State can potentially be more effective through the implementation of a statewide network.<sup>12</sup> A network of smaller MMAs are found to be more useful than increasing the size of an individual MMA that can often result in high socio-economic costs that hinders implementation.<sup>13</sup>

The Pūpūkea MLCD, in the coastal waters of the North Shore of Oahu, was established in 1983 to protect the natural and cultural marine resources that exist in this area. The Pūpūkea MLCD partially lends its uniqueness to a tidepool-like ecosystem—*Kapo'o*—and a freshwater input from Waimea River that sets Pūpūkea apart from other MLCDs in the State. These features make the Pūpūkea MLCD an important conservation area that could potentially offer valuable insight into the interconnectedness of marine and terrestrial ecosystems in Hawai'i. Additionally, the Pūpūkea MLCD is part of the Hawaiian Islands Humpback Whale National Marine Sanctuary, and is the second most popular snorkelling destination after the world famous Hanauma Bay in East Honolulu.

Prohibited activities in the Pūpūkea MLCD include: 1) catching, taking, killing, possessing, or removing any finfish, crustacean, mollusk, including sea shell and *opihī* (limpet), live coral, or other marine life, or eggs; 2) taking, altering, defacing, destroying, possessing, or removing sand, coral, rock, or other geologic feature, or specimen; and 3) possessing in the water, any spear, trap, net, crowbar or other device that may be used for the taking, injuring, or killing of marine life, or the altering of a geological feature. Limited fishing activities are permitted in Waimea Bay only, by shore casting during certain months for *akule* (big eye scad) and *ōpelu* (mackerel scad) under Hawaii Administrative Rules (HAR) Section 13-34. Additionally, a two-pound daily limit of *limu lipe'epe'e* (*Chondrophyucus spp.*) and *limu kohu* (*Asparagopsis taxiformis*) may be harvested given that they holdfast be left behind. *Kapo'o* does not enjoy these protections rules despite its inclusion to the Pūpūkea MLCD over 10 years ago; therefore, these prohibitions cannot be legally enforced by DOCARE. Restrictions on boating and water vessel operations also exist in within the MLCD under HAR Section 13-256-63.

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<sup>10</sup> Friedlander, A.M. *et al.* (2007) Coupling ecology and GIS to evaluate efficacy of marine protected areas in Hawai'i. *Ecological Applications*. 17(3), pp. 715-730.

<sup>11</sup> Kimmerer, W.J. and W.W. Durbin. (1975). The Potential for Additional Marine Conservation Districts on Oahu and Hawaii. University of Hawaii Sea Grant.

<sup>12</sup> Friedlander, A.M. *et al.* (2019) Characteristic of effective marine protected areas in Hawaii. *Aquatic Conserv: Mar Freshw Ecosyst.*, 29: 103-117.

<sup>13</sup> Aburto-Oropeza, O. *et al.* (2011). Large recovery of fish biomass in a no-take marine reserve. *PLoS ONE*, 6, e23601.

## Pūpūkea MLCD Legislative History

In the early 1970s, the North Shore neighborhood board was approached by divers who reported a decline in fish numbers and expressed interest in better management of the area's marine resources through the implementation of a MLCD. A study in 1975 conducted by the DLNR evaluated Pūpūkea as a potential MLCD, and ranked it as the second most suitable and publicly accepted site after Kahe Beach Park on West O'ahu.<sup>14</sup> The Pūpūkea MLCD was established in 1983, and was followed by years of management issues due to increasing human use and legal loopholes that made enforcement challenging. A community task force sought to address these concerns by proposing amendments that subsequently led to two rule revisions in 2002 and 2003 to further restrict fishing by limiting capture methods and target species, and to expand its boundaries.

In June 2009, Governor Linda Lingle signed two Executive Orders transferring Kapo'o (what was then known as the "Old Quarry") back to the State from the City & County of Honolulu, and designating the Pūpūkea MLCD and Kapo'o under the control and management of DAR. DAR and DOCARE enforce the rules of the MLCD implemented under Hawaii Administrative Rules Section 13-34. These rules, however, have not yet been amended to include Kapo'o since the jurisdictional transfer to the State. Though the tidepools have technically been a part of the MLCD for over 10 years, the lack of administrative protections over Kapo'o serves as a loophole in MLCD protections that restricts DOCARE action.

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<sup>14</sup> Kimmerer, W.J. and W.W. Durbin. (1975). The Potential for Additional Marine Conservation Districts on Oahu and Hawaii. University of Hawaii Sea Grant.

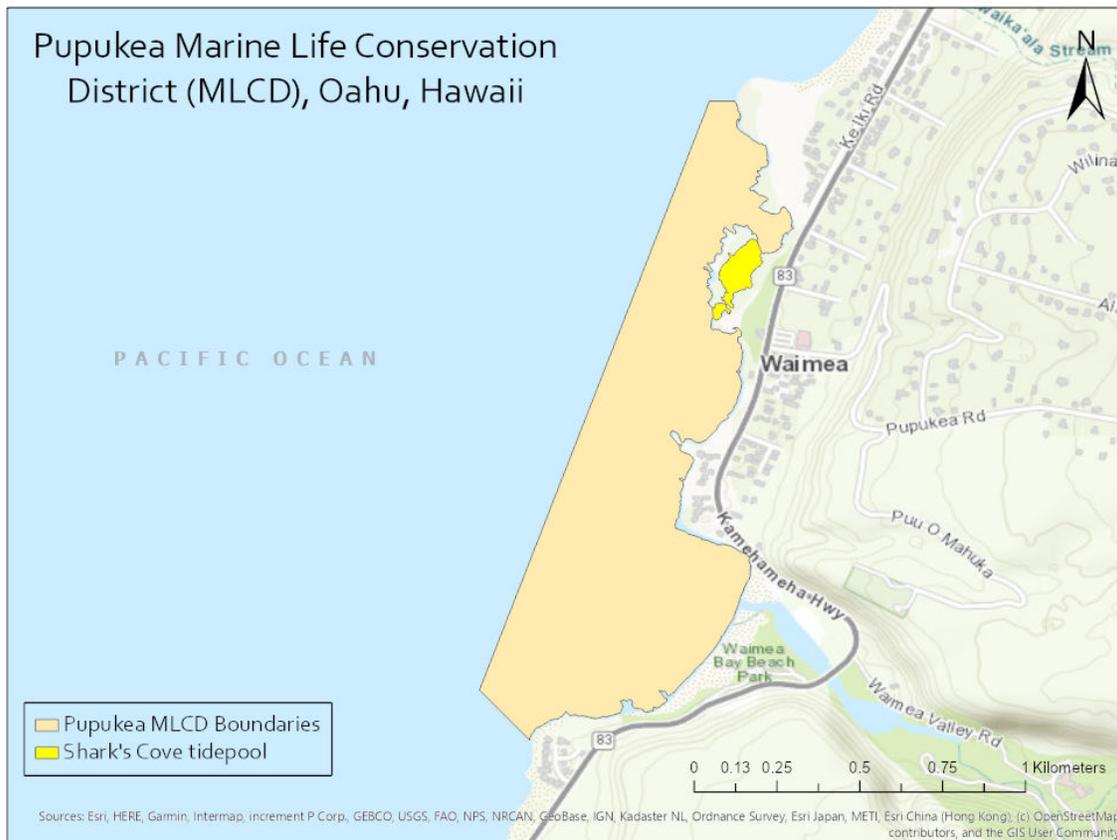


Image 2. Map illustrating the boundaries of the Pūpūkea Marine Life Conservation District, O'ahu, Hawai'i and Kapo'o in yellow.

## Kapo'o Research and Tide Pools in Hawai'i

There have been several assessments on Kapo'o's ecological and environmental characteristics some of which include Kimmerer and Durbin (1975), Rosinski (2012), and most recently by Dr. Alan Friedlander and Dr. Cynthia Hunter from the University of Hawai'i at Mānoa on July 15, 2020 (internal report pending). Preliminary comparisons between subsequent assessments revealed an increase in the number of fish species observed in Kapo'o from 37 taxa in 1975 to over 50 in 2020. Abundance, species richness, biomass, and frequency across these assessments have not yet been compared. In June 2020, MPW began collecting information on Kapo'o through weekly, quantitative fish and invertebrate surveys on mask/snorkel, bi-monthly salinity measurements, and afternoon recreational human use censuses at Pūpūkea Beach Park and the adjacent shoreline which is comprised of *Kalua o māua* (Three Tables), Kapo'o, and Shark's Cove. Additionally, MPW has weekly photo documentation of in-water *kilo* (to observe) surveys at Kapo'o since March 2020.



Image 3. School of āholehole in Kapoʻo. Photo: Whitney Goodell.

There is limited research that explores the role of tidepools as an important nursery habitat for reef-associated fish in Hawaiʻi; however, it is known that juvenile fish recruitment is an important factor contributing to adult fish abundance in coastal Hawaiian waters.<sup>15</sup> Therefore, it is imperative to understand this habitat's potential function to elucidate best management practices and designating areas for protection.

Nursery habitats in the Caribbean can be characterized by seagrass meadows and mangrove forests that provide an abundance of food and structural refuge for juvenile fish, and contributes to survivorship to adulthood.<sup>16</sup> These habitats are less common in Hawaiʻi, but research has shown that juvenile reef fish are often associated with semi-sheltered backreef habitat, coral patch-reefs, and in protected lagoons<sup>17</sup> similar to that of Kapoʻo. Oʻahu's tidepool fish assemblage represents high endemism and low species richness, which is facilitated by a combination of harsh environmental conditions, substrate, and the isolated nature of intertidal zones in Hawaiʻi.<sup>18</sup>

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<sup>15</sup> Walsh, W. (1984) Aspects of nocturnal shelter, habitat space, and juvenile recruitment in Hawaiian coral reef fishes. Dissertation at the University of Hawaii at Mānoa, Department of Zoology.

<sup>16</sup> Iglesias, I.S. (2012) Are Rocky Intertidal Pools a Nursery Habitat for Juvenile Reef Fish? An Investigation of the Spatial and Temporal Abundance Patterns of Juvenile Fishes Utilizing Basalt Tidepools on the Island of Oahu and a comparative growth analysis of the endemic *Kuhlia xenura*. Master's Thesis at the University of Hawaii at Mānoa, Department of Zoology.

<sup>17</sup> DeMartini, E. (2009) Influences of wind-wave exposure on the distribution and density of recruit reef fishes at Kure and Pearl and Hermes Atolls, Northwestern Hawaiian Islands. *Environmental Biology of Fishes* 85: 319-332.

<sup>18</sup> Cox, T.E. *et al.* (2011) Spatial and vertical patterns in the tidepool fish assemblage on the island of Oahu. *Environmental Biology of Fishes*. 90 (4): 329-342.

Additionally, the early life stages of nearshore fishes are often subject to intense predation pressures and are found to seek refuge in rugose coral and perhaps within the structural complexity of Kapo’o. The protected, soft bottom environment that can be found in tidepools offers ideal habitat for species important for recreational fishing and consumption, such as *āholehole*, *Kuhlia xenura* and *Kuhlia sandvicensis*, that have been confirmed to exclusively utilize tidepools as juveniles.<sup>19</sup> Understanding utilization patterns by marine life in tidepools can also inform us about the importance of protecting such areas to ensure juvenile recruitment to adulthood and spillover into open areas, and highlights the need for continued research to inform conservation efforts.

## Status of Kapo’o and Need for Rule Change

Since the increased protections and a boundary expansion in 2003, significant increases in fish biomass and resource fish abundance is more readily observed in the Pūpūkea MLCD<sup>20</sup> as well as outside its boundaries due to spillover—emigration of adult and juvenile fish to unprotected areas.<sup>21</sup> The effectiveness of the Pūpūkea MLCD has shown to be successful in reef surveys conducted over the last decade with an increase in fish biomass and biological diversity.<sup>22</sup> However, a 2019 assessment of the Pūpūkea MLCD’s coral and fish assemblages from 2010-2019 found that species abundance, biomass, and species richness had significantly declined.<sup>23</sup> This report noted the tripling of shore-based human use at Kapo’o, and suggested human-disturbance may be a contributing factor to fish declines in addition to illegal fishing and land-based runoff exacerbated by coastal development.

The number of annual visitors to O’ahu has increased by nearly 50-percent from 2010-2019,<sup>24</sup> and human use data collected from recent years by MPW confirms this increase at Kapo’o by, both, local residents and tourists. MPW also reports year-round use of the tidepools that, historically, had minimal human use during the winter months.<sup>25</sup> On average, MPW performs 90 educational interventions a year at Kapo’o and adjacent areas thwarting MLCD rule violations and providing educational outreach to thousands of people visiting MPW’s Saturday outreach tent at Pūpūkea Beach Park neighboring Kapo’o.<sup>26</sup> Poaching within the Pūpūkea MLCD and Kapo’o has also been of great concern in recent years. It is not yet known how many of the violations reported to the DOCARE are related to poaching, but observations from community members report frequent disregard of fishing restrictions in the early morning and after dark hours. It is likely that many fishermen are unaware that the Pūpūkea

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<sup>19</sup> McRae, M. *et al.* (2011) Habitats used by juvenile flagtails (*Kuhlia* spp.; Perciformes: Kuhliidae) on the Island of Hawaii. *Pacific Science*. 65 (4): 441-450.

<sup>20</sup> Friedlander, A.M. *et al.* (2019).

<sup>21</sup> Stamoulis, K.A. and Friedlander, A.M. (2013) A seascape approach to investigating fish spillover across a marine protected area boundary in Hawai’i. *Fisheries Research*, 144, pp.2-14.

<sup>22</sup> Rosinski, A.E. (2012) Creating Comprehensive Protected Areas: The Ecology of the Pūpūkea Tide Pools and Their Value to the Pūpūkea Marine Life Conservation District. *University of Miami Rosenstiel School of Marine and Atmospheric Science, Internship Report*.

<sup>23</sup> Seascape Solutions LLC. (2019). *Pūpūkea-Waimea MLCD Coral and Fish Assessment: 2010-2019*.

<sup>24</sup> State of Hawai’i. (May 2020). DBEDT Quarterly Tourism Forecast. Department of Business, Economic Development & Tourism. <https://dbedt.hawaii.gov/visitor/tourism-forecast/>

<sup>25</sup> Yagodich, Jennifer. (Director of Educational Programs, Mālama Pūpūkea-Waimea), in discussion with author. January 2020.

<sup>26</sup> Yagodich, Jennifer (Director of Educational Programs, Mālama Pūpūkea-Waimea), in discussion with author. May 2020.

MLCD exists; however, several fishermen that are well-aware of the lack of unenforceable rules in Kapoʻo and plan to fish there until administrative protections can expressly include the tide pools.<sup>27</sup>

Increasing numbers of annual visitors to Oʻahu and to Kapoʻo, fishing pressures, in addition to coastal development in the area, underscores the need for comprehensive administrative rules to protect the tidepools. Revised rules will directly reduce impacts to Kapoʻo from visitation and fishing pressure because DOCARE can then legally address violations such as illegal gear possession (*e.g.* fishing poles, hand nets, spears) and the collection of marine life and geological features (*e.g.* sand, shells). Until administrative rules can be amended, educational outreach to inform the public about the existence of the Pūpūkea MLCD and its prohibitions is necessary to ensure that Kapoʻo's ecological resiliency in the face of poaching and potentially heavy human use.

## Conclusions

There have been several studies done at Kapoʻo to assess the biological and environmental characteristics of the tidepools, and despite the limited amount of research there is an endless amount of information around the role of tidepools in Hawaiʻi that suggests Kapoʻo functions as a marine life nursery. Research detailing impacts on coastal ecosystems from recreational activities, unsustainable fishing practices, and coastal development; and the efficacy of MMAs in Hawaiʻi contributing to the spillover of marine species into open areas; provides supporting information for the administrative protection of Kapoʻo. The lack of enforceable administrative protections threatens Kapoʻo's resiliency to recover from the stresses of illegal fishing and potentially heavy human use. Without a full understanding of the magnitude of recreational impacts in Kapoʻo we could potentially lose these resources before fully understanding its ecological role in the Pūpūkea MLCD and achieving Hawaiʻi's marine resiliency goals.

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<sup>27</sup> Yagodich, Jennifer. (Director of Educational Programs, Mālama Pūpūkea-Waimea, in discussion with author. January 2020.

8 August 11, 2020

Testimony **in Support** of Item F-2: F. DAR 2. Request for Approval to Hold a Public Meeting and Hearing to Amend and Compile Chapter 13-34, Hawaii Administrative Rules, **Pūpūkea Marine Life Conservation District"**

I am chief scientist for National Geographic Pristine Seas Program and a researcher at the Hawai‘i Institute of Marine Biology who has been working in the Pūpūkea Marine Life Conservation District (MLCD) for more than 20 years and am **in strong support** of a public meeting and hearing to amend the rules for the Pūpūkea MLCD as indicated in the Board submittal from DAR. **Marine resources in Hawai‘i are in poor condition today** compared to the past<sup>1,2,3,4</sup> and nowhere is this more evident than on O‘ahu, where marine resource health is significantly lower than elsewhere around the state<sup>4,5</sup>. Strongly protected MLCDs, like Pūpūkea, have been shown to effectively **conserve biodiversity and support adjacent fisheries** through “spillover” yet account for **less than 1% of State waters**<sup>6,7</sup>.

The Pūpūkea MLCD was created in 1983 and in 2002 was expanded from an exceedingly small area (0.11 km<sup>2</sup>) with few restrictions to 0.71 km<sup>2</sup> and restrictions on harvest were greatly increased through a largely **community-driven process**. Since that time, highly prized species such as omilu, uhu, and surgeonfishes (e.g., manini, kala, kole) have **increased dramatically**<sup>7</sup>. However, illegal fishing, excessive visitation, and land-based pollution **threaten this inimitable and irreplaceable area**. The Pūpūkea tidepool-like ecosystem (Kapo‘o) are an important **nursery habitat (pu‘uhonua)** for a number of important resources species such as ‘ama‘ama, aholehole, nenu, ‘iao, and nehu owing to its shelter from high wave energy and abundant small-scale habitat. During recent surveys, we observed over 50 fish species in the tidepools of which one-third are endemic to Hawai‘i and therefore **found nowhere else on Earth**.

Kapo‘o became a part of the MLCD in 2009 through Executive Orders; however, administrative rules have not been amended to prohibit fishing. The tidepools represent a unique environment that harbors a **high diversity** and is important to the life cycles of numerous species with **high cultural, recreational, and food value**. This nearshore habitat is critical to the function of the entire MLCD as it provides important connectivity among habitats. Activities such as fish feeding has disruptive effects on the natural dynamics of nearshore ecosystems and is already prohibited in numerous other marine managed areas around Hawai‘i, and this should include the Pūpūkea MLCD. Other activities on both land and in the sea can be highly deleterious to the tidepools and therefore the entire ecosystem. Owing to the **sensitive nature** of these tidepools, it is essential that they are afforded the greatest degree of protection possible.



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