

# Improving the Communication of Fishing Rules and Regulations in Maunalua Bay, O‘ahu

Hi‘ilei Casco, Siena Schaar, and Samantha Alvarado

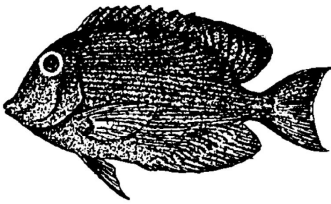
The aim of this project was to increase the communication and compliance of Hawai‘i State fishing rules and regulations in Maunalua Bay. Our group employed a mixed-methods approach to develop multi-generational, site-specific educational materials to be used by fishers at all levels of experience.

These 5 products were created to help stewardship organizations like Malama Maunalua and Conservation International educate the public on the importance of fishing rules and regulations related to the most popular species and practices present in the Bay. We hope that the public can use our resources to improve the sustainability and responsibility of their current fishing regimes.

## ‘O Wai Kēia ‘Ia?

‘O wai kēia i‘a?  
What is this fish?

He Kōle kēia.  
This is a Kōle.



Goldring Surgeonfish  
*Ctenochaetus strigosus*

He i‘a ‘ele‘ele kēia. He maka melemele kō kōle. Ho‘oono kēia i‘a.  
This is a black fish. Kōle has a yellow eye. Kōle is good to eat.

Developed by Casco, H., Schaar, S., and Alvarado, S. 2019.

This bilingual book (‘Olelo Hawai‘i and English) was developed to provide a fun and easy way for youth to learn. This resource is intended to educate future fishers and bay users on simple fish facts in order to encourage an interest in responsible and sustainable fishery use in the future. It can be utilized as a read-along, coloring book, or fact sheets.

## Pono Fishing Calendar

### January

#### Limu Gathering

It is prohibited to take the holdfast of any limu, the part attaching to a rock or other surface. It is also prohibited to take limu when covered with reproductive nodes or bumps. One pound per person per day for home consumption. These rules protect limu re-growth.



Limu  
Seaweed

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

This fishing calendar was developed to provide information on spawning seasons and provide best practices for harvesting other marine species. This information is intended to encourage sustainable fishing practices during spawning seasons when species are most vulnerable. This calendar can be used to track your fishing behavior and observations, such as catch, location, size, and time of day.

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## Maunalua Bay

### Fishing Rules and Regulations - Gear Restrictions

This document provides information on the most relevant fishing rules and regulations for Maunalua Bay as well as the scientific reasonings behind them.

**Consequences and Fines:** §13-75-2 Penalty. A person violating any provision shall be subject to administrative penalties as provided under chapter 187A, HRS, as amended, in addition to any other penalty as provided by law.

#### THROWNETS

Regulation	Reasoning
<ul style="list-style-type: none"> <li>Minimum size 2 inch stretched mesh.</li> <li>Possession of thrownets with mesh size less than 2 inches in or near the water where fish may be taken is unlawful.</li> <li>Unlawful to sell thrownets with mesh size less than 2 inches.</li> </ul>	Any mesh size less than 2 inches increases the chance of catching fish that are below spawning age. Catching underage fish severely harms the total school size by not allowing the stock to replenish itself, which leaves fishers with less fish to catch in future seasons.

#### GILL, DRAW, DRAG, SEINE, OR OTHER NETS

Regulation	Reasoning
Minimum size for nets generally 2 inch stretched mesh.	Any mesh size less than 2 inches increases the chance of catching fish that are below spawning age. Catching underage fish severely harms the total school size by not allowing the stock to replenish itself, which leaves fishers with less fish to catch in future seasons.
<ul style="list-style-type: none"> <li>Unlawful to leave any gill net unattended without visually inspecting the net every two hours and releasing or removing any undersized, illegal or unwanted catch.</li> <li>Unlawful to leave any gill net in the water for a period of more than four hours in any twenty-four hour period.</li> </ul>	Leaving gill nets unattended for over 2 hours, or for a period of more than four hours in a twenty-four hour period, increases the risk of catching undersized, illegal, or unwanted catch such as sea turtles and marine mammals.

Developed by Casco, H., Schaar, S., and Alvarado, S. 2019.

## Maunalua Bay Rules and Regulations

This document was developed to provide information on the most relevant Hawai‘i fishing regulations to Maunalua Bay, as well as scientific reasonings behind those regulations. It is intended that these reasonings encourage community compliance to adhere to State rules and regulations to support the sustainable and pono use of Maunalua Bay’s fishery resources in perpetuity. Regulations are quoted verbatim for the public’s reference and then organized based on rule type.

## Kole

**Golding Surgeonfish**  
*Ctenochaetus strigosus*

**Rules/Special Restrictions:** None  
**Peak spawning season:** March-June  
**Size at maturity:** Males ~4", Females ~3.3"



**Description:** Dark brown with about 35 light blue horizontal lines extending into the fins, small blue spots on the head, bright yellow ring around the eye; single retractable caudal spine on each side.

The Kole or Goldring Surgeonfish are common to Hawaii’s reefs. Kole are detritivores, meaning they consume decomposing plant and animal materials and are key to nutrient cycling. ‘Kole’, which means raw in Hawaiian, reflects the manner in which Hawaiians preferred to consume this fish species. A 2014 report found that all Kole sampled in the Maunalua Bay area reached the smallest size at maturity compared to other locations sampled.

While no regulations exist for the management of Kole, best harvesting practices should consider respecting peak spawning season (March-June) and should account for size at spawning maturity. An example of proposed fishing rules for a subsistence fishing area on Maui, proposed sustainable harvest of Kole as: a bag limit of 20 individuals per day, and a minimum fork length of 5 inches.

Developed by Casco, H., Schaar, S., and Alvarado, S. 2019.

## Lawai‘a in Training Handbook

This document was developed to provide information on the top 15 significant fished species in Maunalua Bay, as well as the reasonings behind rules and best practices. This information is intended to educate users about responsible and sustainable use of Maunalua Bay’s fishery resources. The purpose of this resource is for it to aid the education of next generation fishers who are still new to fishing in the Bay.

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While no regulations exist for the management of Kole, best harvesting practices should consider limiting harvest during peak spawning season (March-June) and should account for size at spawning maturity. An example of proposed fishing rules for a subsistence fishing area on Maui, proposed sustainable harvest of Kole as: a bag limit of 20 individuals per day, and a minimum fork length of 5 inches.

## ‘Ō‘io

**Bonefish**  
*Albulia glossodonta, A. virgata*

**Rules/Special Restrictions:** Min. size 14"  
**Peak spawning season:** November-April  
**Size at Maturity:** 14" - 19" (species dependent), 3.6-4.2 years

‘Ō‘io or bonefish, are present in two species (*A. glossodonta* and *A. virgata*) in Hawaii and are often difficult for fishermen to tell apart, and therefore are regulated similarly although *A. virgata* is endemic. The minimum size requirement of 14" imposed by the state generally aligns with estimates for ‘Ō‘io size at maturity, which ranges from 14" - 19" depending on species. Fish are full grown at an estimated 24" - 28". It should be noted that neither of the two species are considered common in Hawaii due to overfishing and habitat degradation. ‘Ō‘io are typically found in shallow lagoons and they typically feed on sand dwelling organisms meaning that Maunalua may provide suitable habitat for the species.

When fishing for this species, it should be noted that they exhibit K fecundity meaning that they take longer to reach sexual maturity, have longer reproductive cycles, and have less offspring. This results in this species being more vulnerable. This species was historically caught in two ways, by net (especially throw net or gerald) and also by hook and line. Catching by hook and line results in less take of the species and can be considered a more sustainable way to take this fish.

Developed by Casco, H., Schaar, S., and Alvarado, S. 2019.

## Experienced Fisher Handbook

Similarly to the lawai‘a in training handbook, this document was also developed to provide information on these top 15 species as well as the ecological and cultural reasonings behind rules, regulations, and best practices. This information is intended to educate users about responsible and sustainable use of Maunalua Bay’s fishery resources. This product is ideal for experienced fishermen who are looking to refine and their craft as fishermen and stewards.