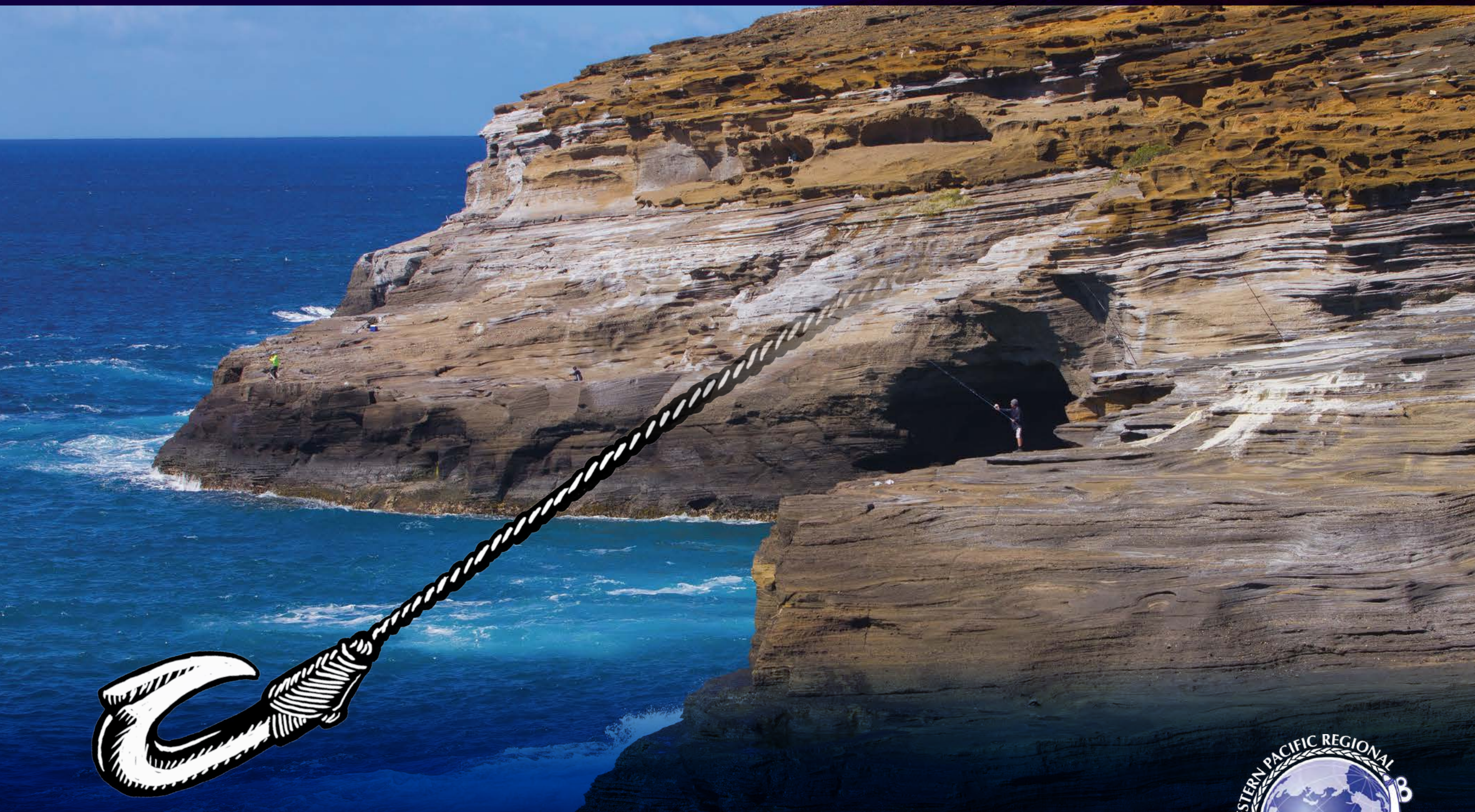


# 2021



## Kaulana Mahina • Hawai'i Lunar Calendar



# Hawai'i Fishing Spots

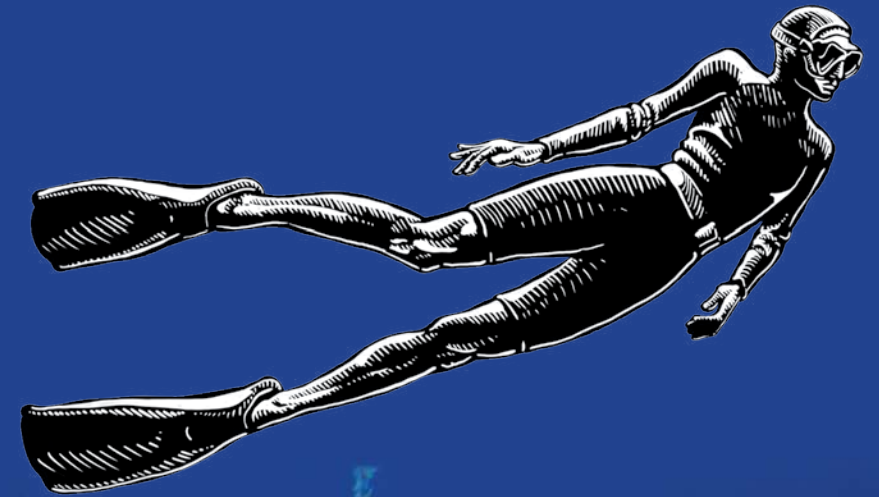




Since 1980, almost all of the black coral harvested around the Hawaiian Islands was taken by hand from a coral bed in the **Au'au Channel** at depths of 200+ feet. The channel is located between the islands of Maui and Lāna'i.

This has always been a high risk fishery that requires substantial skill and focus. With each descent, divers knew there was a high chance it could be their last. Ensuring that they took their time and used their expertise allowed them to continue to fish and tell their stories.

Currently, the harvest of precious corals in the U.S. Exclusive Economic Zone (3-200 miles offshore) is regulated through annual catch limits developed by the Council.



This species of black coral (*Antipathes griggsi*) can be found growing up to about 360 feet deep in the Au'au Channel between Lāna'i and Maui. Photo taken with the Hawai'i Undersea Research Laboratory's Pisces submersible. Photo: Sam Kahng, University of Hawai'i.

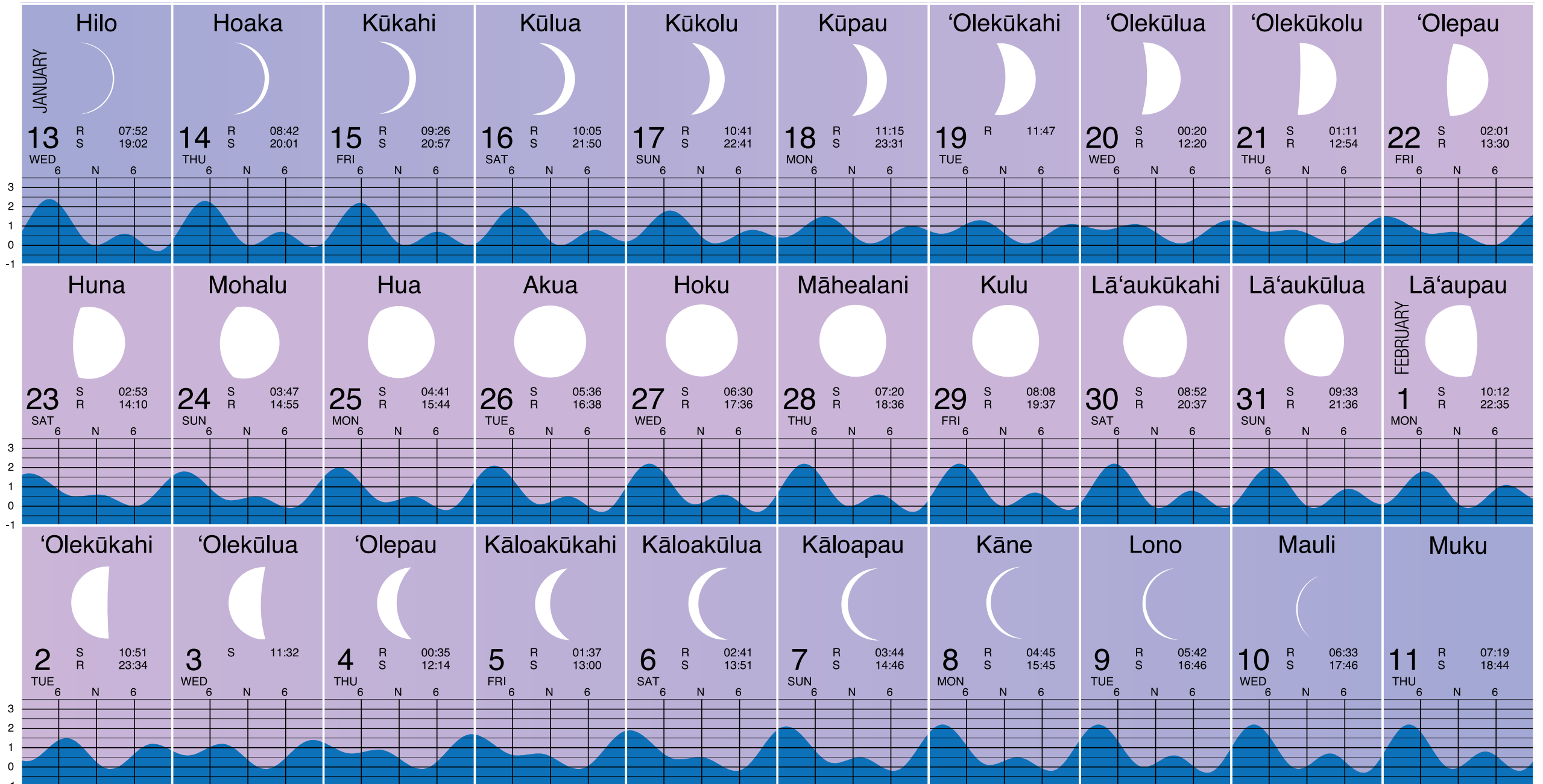
Au'au Channel

# Black Coral Grounds



# Kā'eolo

'Ianauli 13 - Pepeluāli 11, 2021



OBSERVATIONS

ho'onui (waxing) \_\_\_\_\_

poepoe (full moon) \_\_\_\_\_

emi (waning) \_\_\_\_\_



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# Penguin Bank



**Penguin Bank**, or “The Bottomfish Grounds,” is a submerged shield volcano with reef habitat west of Moloka‘i in the main Hawaiian Islands (MHI). This large area supports coral and coralline algae at an average depth of 165 feet.

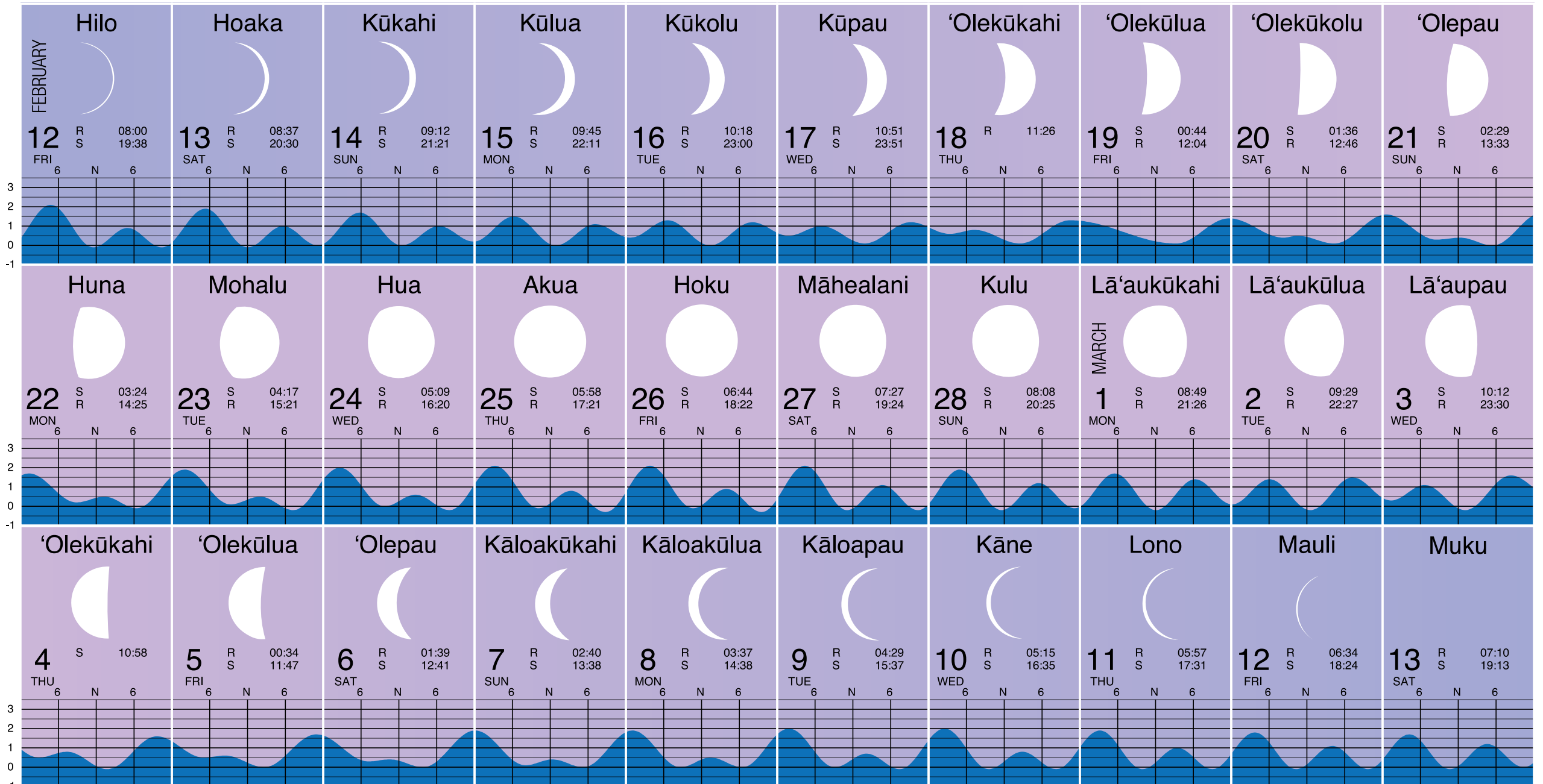
Historically, **Penguin Bank** has been a popular location to fish for bottomfish, including **uku** (grey snapper) and the Deep 7 bottomfish species (six snappers and one grouper). It is particularly important for the MHI catch of uku, one of few bottomfish species available in substantial quantities during summer months.

Managing the bottomfish fishery has been difficult due to insufficient fishery data. However, with cooperation between state and federal management agencies and fishermen, the Deep 7 bottomfish annual catch limit increased from 178,000 pounds for the 2007-2008 fishing year to 492,000 pounds for the 2020-2021 fishing year.



# Kaulua

Pepeluali 12 - Malaki 13, 2021



OBSERVATIONS  
 ho'onui (waxing)  
 poepoe (full moon)  
 emi (waning)



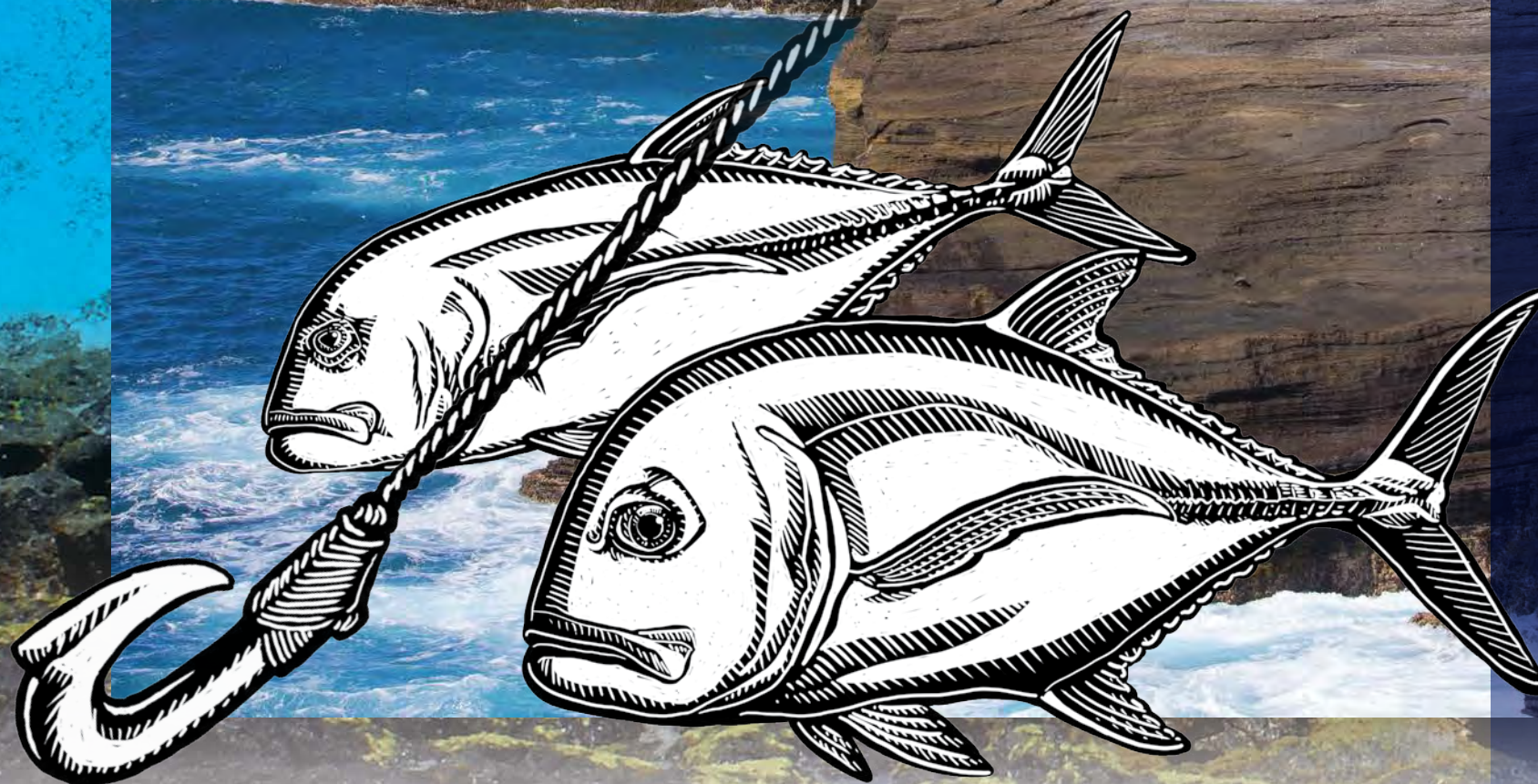
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# Bamboo Ridge

**Bamboo Ridge** is a well-known shorecasting spot on the southeast shore of O'ahu. The name originated from the bamboo fishing poles that lined the ridge. People who fish this area target **ulua** (giant trevally) using the slide bait method.

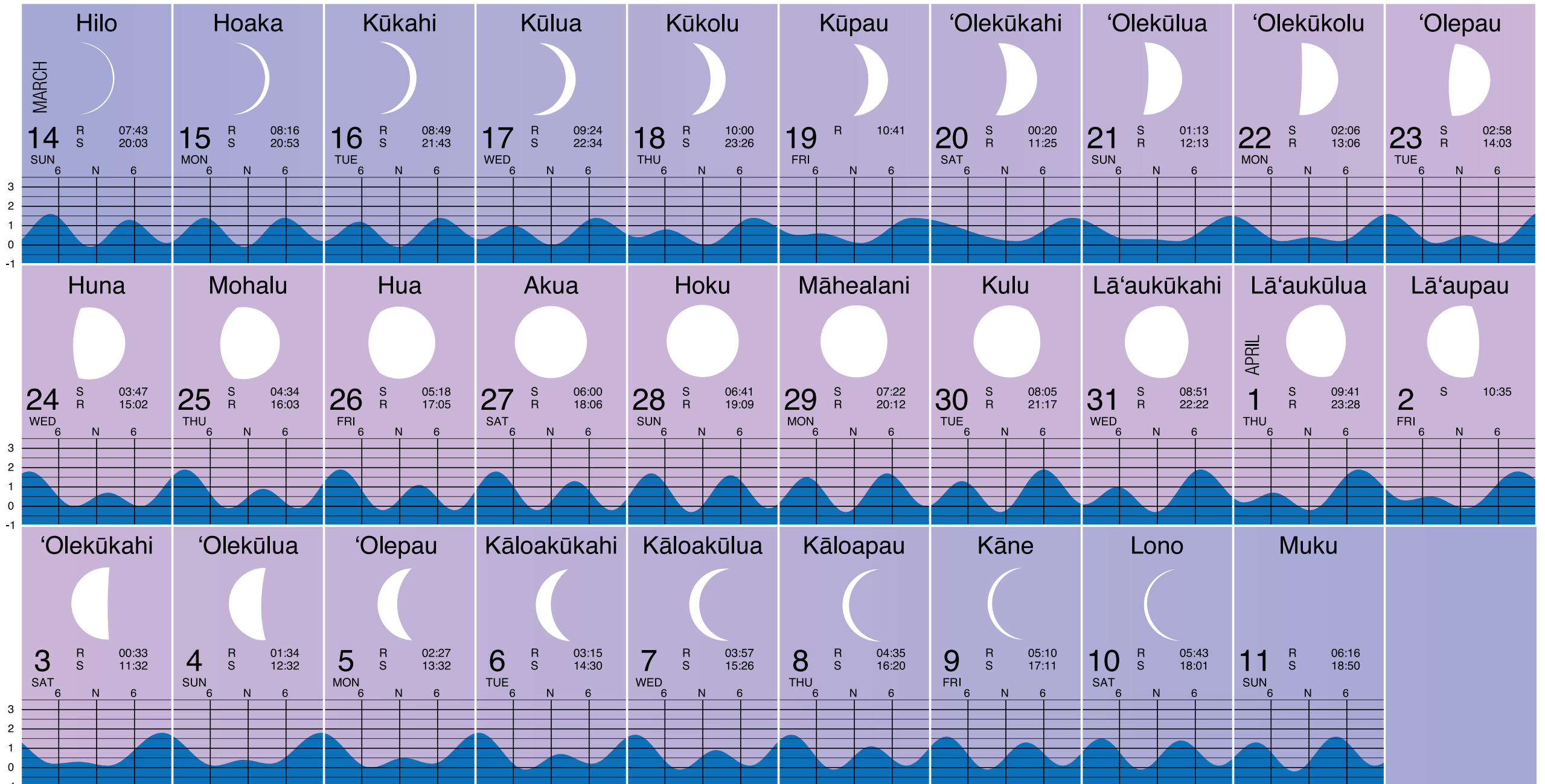
Casting an ulua pole requires a unique set of skills and timing, but some fishermen solve the casting problem with exotic tricks such as using trash bags, kites or drones.





# Nana

Malaki 14 - 'Apelila 11, 2021



OBSERVATIONS  
 ho'onui (waxing) \_\_\_\_\_  
 poepoe (full moon) \_\_\_\_\_  
 emi (waning) \_\_\_\_\_



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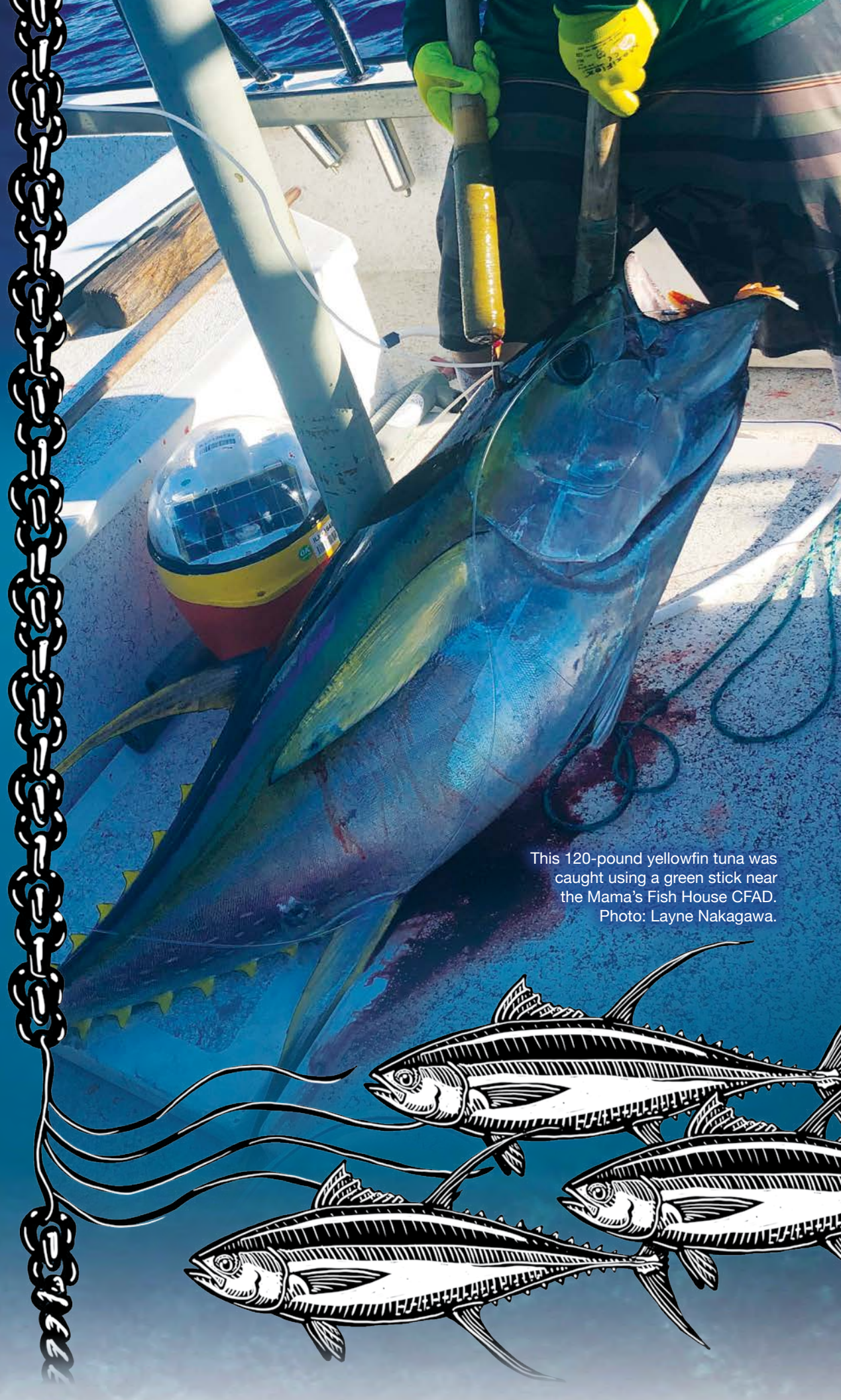


# Maui

## Community Fish Aggregating Devices

In 2011, a project was piloted off Maui to help understand the effectiveness of **community fish aggregating devices (CFADs)**. The primary objectives of this data collection program were to provide data on species composition harvested near the CFADs, the amount of effort to catch the fish and the number of fishermen using the devices.

In 2013, Maui fishermen requested assistance in redeploying two CFADs off of Kahului Harbor. The Western Pacific Fishery Management Council, Mama's Fish House restaurant and fishermen worked together to redeploy the CFADs and Mama's Fish House has continued to collect data useful for management measures.



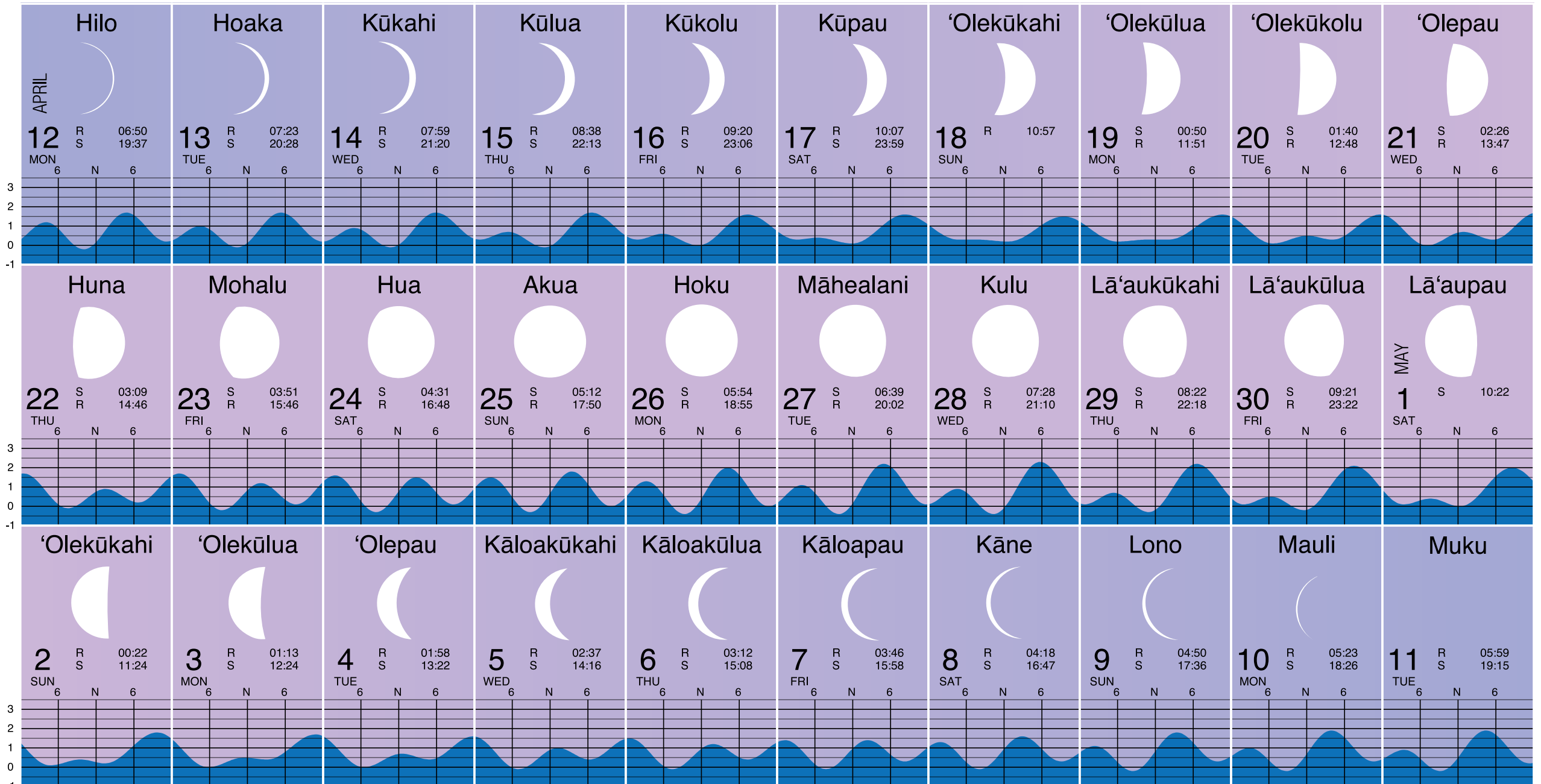
This 120-pound yellowfin tuna was caught using a green stick near the Mama's Fish House CFAD. Photo: Layne Nakagawa.





# Welo

'Apelila 12 - Mei 11, 2021



OBSERVATIONS  
 ho'onui (waxing)  
 poepoe (full moon)  
 emi (waning)



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**Waiāhole Stream** is one of the many streams on the windward side of O‘ahu that input fresh water into **Kāne‘ohe Bay**. This fresh-water supply helps to support the **nehu** (Hawaiian anchovy) stock that was historically used to help fishermen catch larger game outside of the bay, primarily for the **aku** (skipjack tuna) boat fishery. In the past, dozens of aku boats would set their nets in the shallows of **Kāne‘ohe Bay**.

The Japanese technique of catching with pole-and-line and live bait resembled the aku fishing method traditionally used by Hawaiians. The modern fishing method uses live bait from a fishing vessel to simulate a surface school of fish in a feeding frenzy. He‘eia Kea Boat Harbor on the windward (east) side of O‘ahu was homeport for more than 20 boats. The Hawai‘i skipjack tuna fishery originally supplied only the local markets with fresh and dried tuna, which then extended over into the local cannery before World War II. The aku boat fishery was once the largest commercial fishery in Hawai‘i with landings exceeding 5.5 million pounds annually from 1937 to 1973.



# Kāne‘ohe

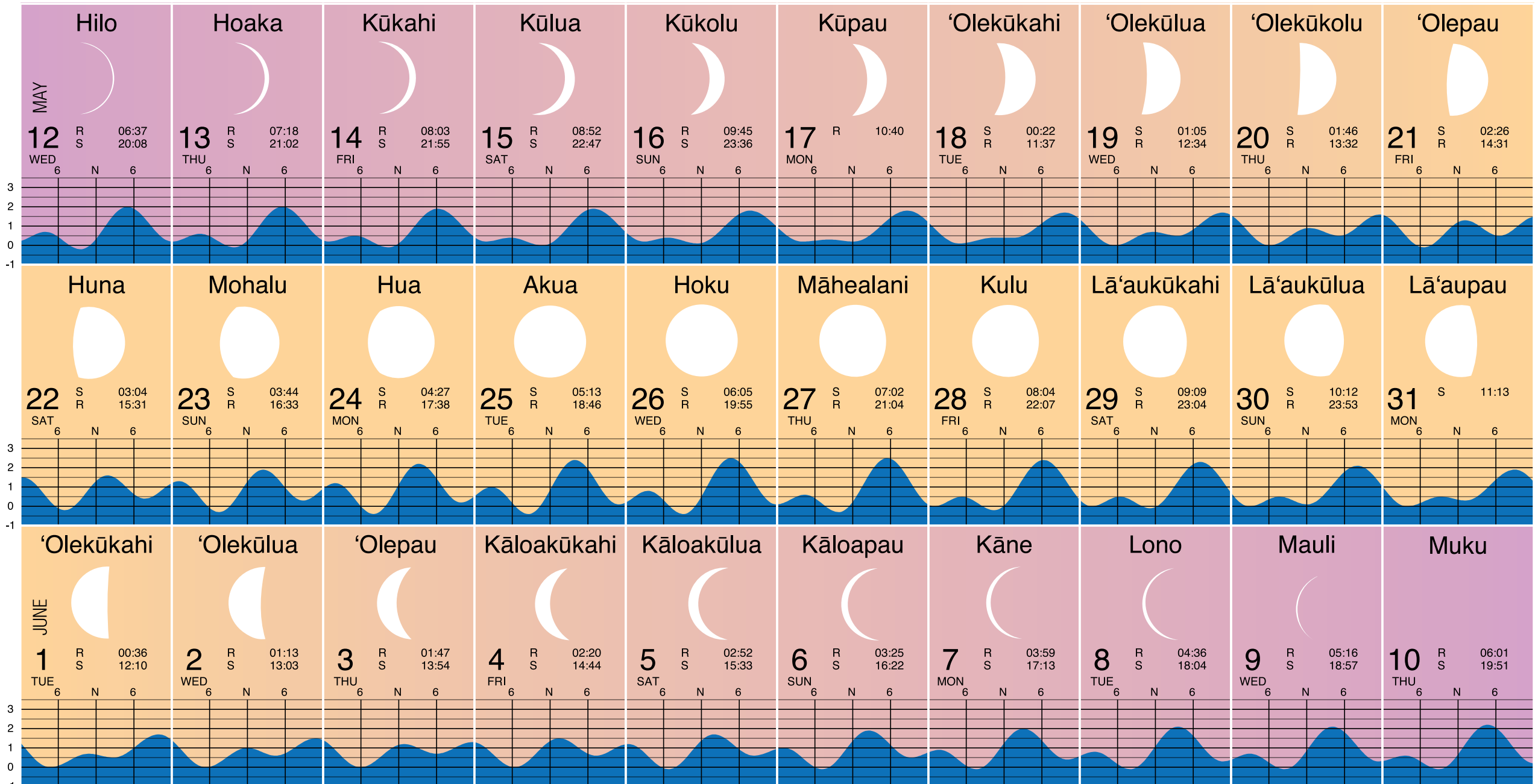
# Bay

School of nehu.  
Photo: James Watt, NOAA.



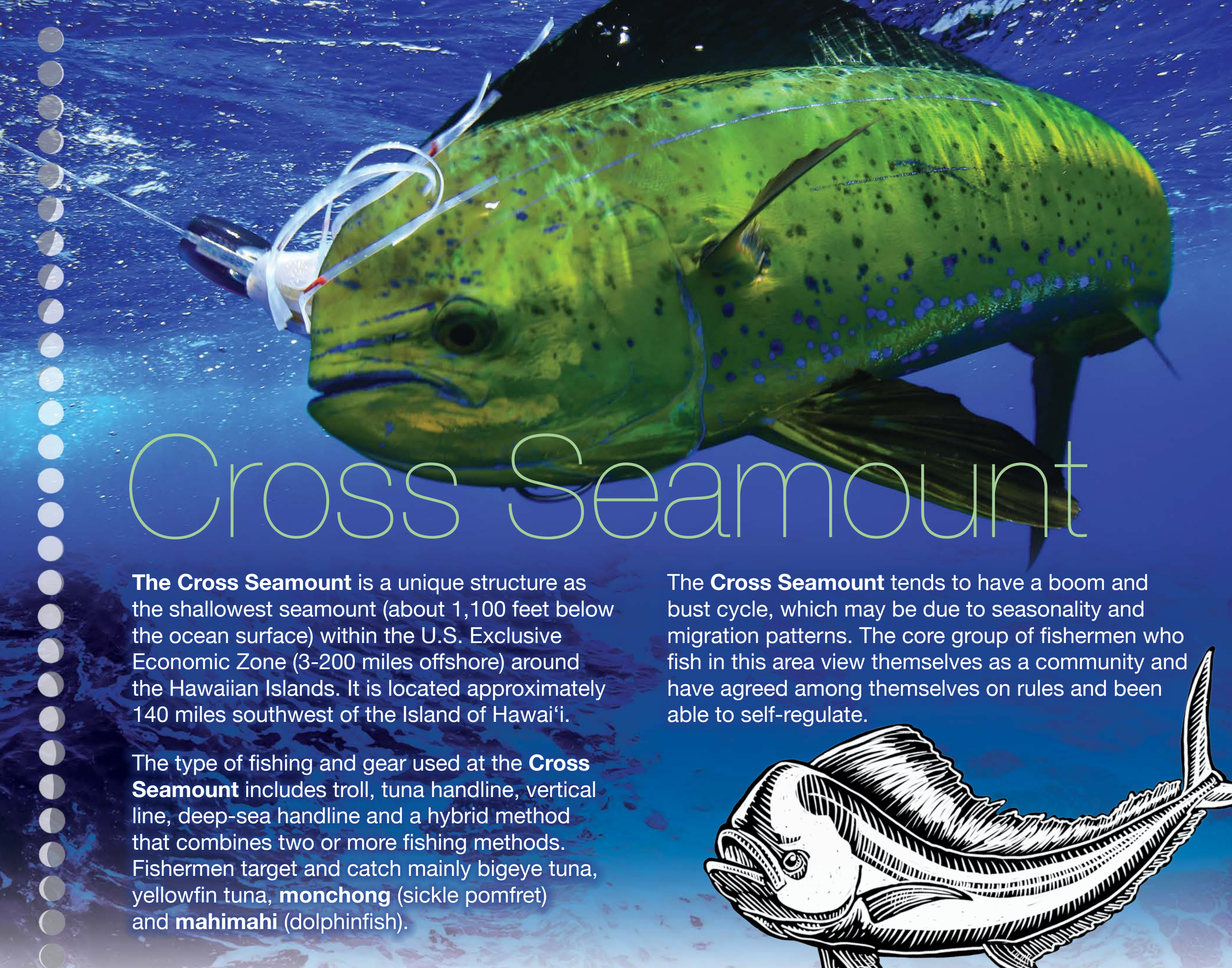
# Ikiiki

Mei 12 - Iune 10, 2021



OBSERVATIONS  
 ho'onui (waxing)  
 poepoe (full moon)  
 emi (waning)





# Cross Seamount

The **Cross Seamount** is a unique structure as the shallowest seamount (about 1,100 feet below the ocean surface) within the U.S. Exclusive Economic Zone (3-200 miles offshore) around the Hawaiian Islands. It is located approximately 140 miles southwest of the Island of Hawai'i.

The type of fishing and gear used at the **Cross Seamount** includes troll, tuna handline, vertical line, deep-sea handline and a hybrid method that combines two or more fishing methods. Fishermen target and catch mainly bigeye tuna, yellowfin tuna, **monchong** (sickle pomfret) and **mahimahi** (dolphinfish).

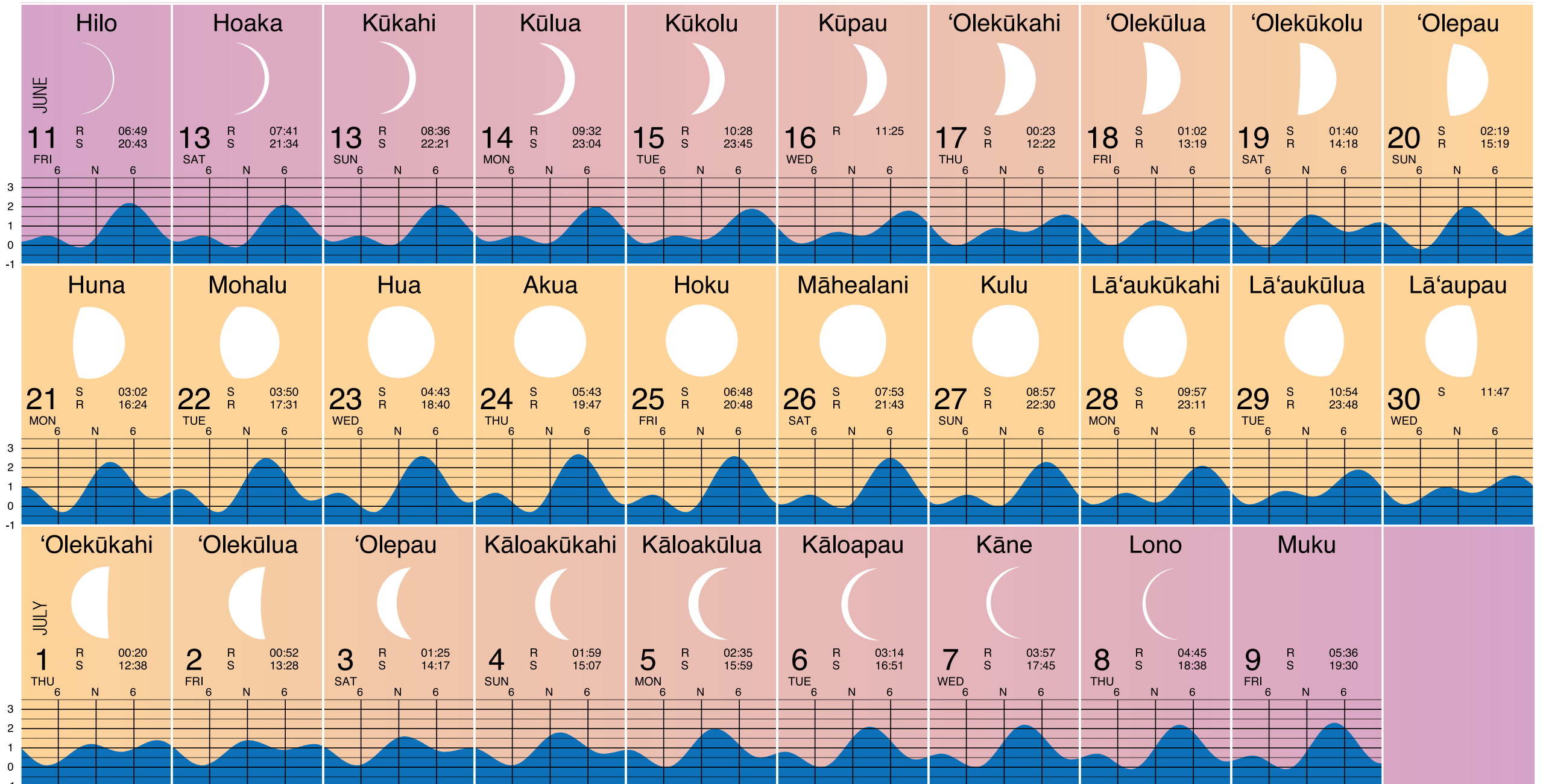
The **Cross Seamount** tends to have a boom and bust cycle, which may be due to seasonality and migration patterns. The core group of fishermen who fish in this area view themselves as a community and have agreed among themselves on rules and been able to self-regulate.





# Ka'aona

June 11 - Iulai 9, 2021



OBSERVATIONS  
 ho'onui (waxing)  
 poepoe (full moon)  
 emi (waning)



In order to meet the growing consumer demand for fresh local fish, Hawai'i-based aquaculture companies have worked to successfully and sustainably raise and harvest species like Hawaiian kampachi (amberjack or **kahala**) in state and federal waters.

These aquaculture cages also act as exceptionally good fish aggregating devices, increasing catch rates of 'ōpelu (mackerel scad), tuna, ono (wahoo) and marlin.

# The Cage

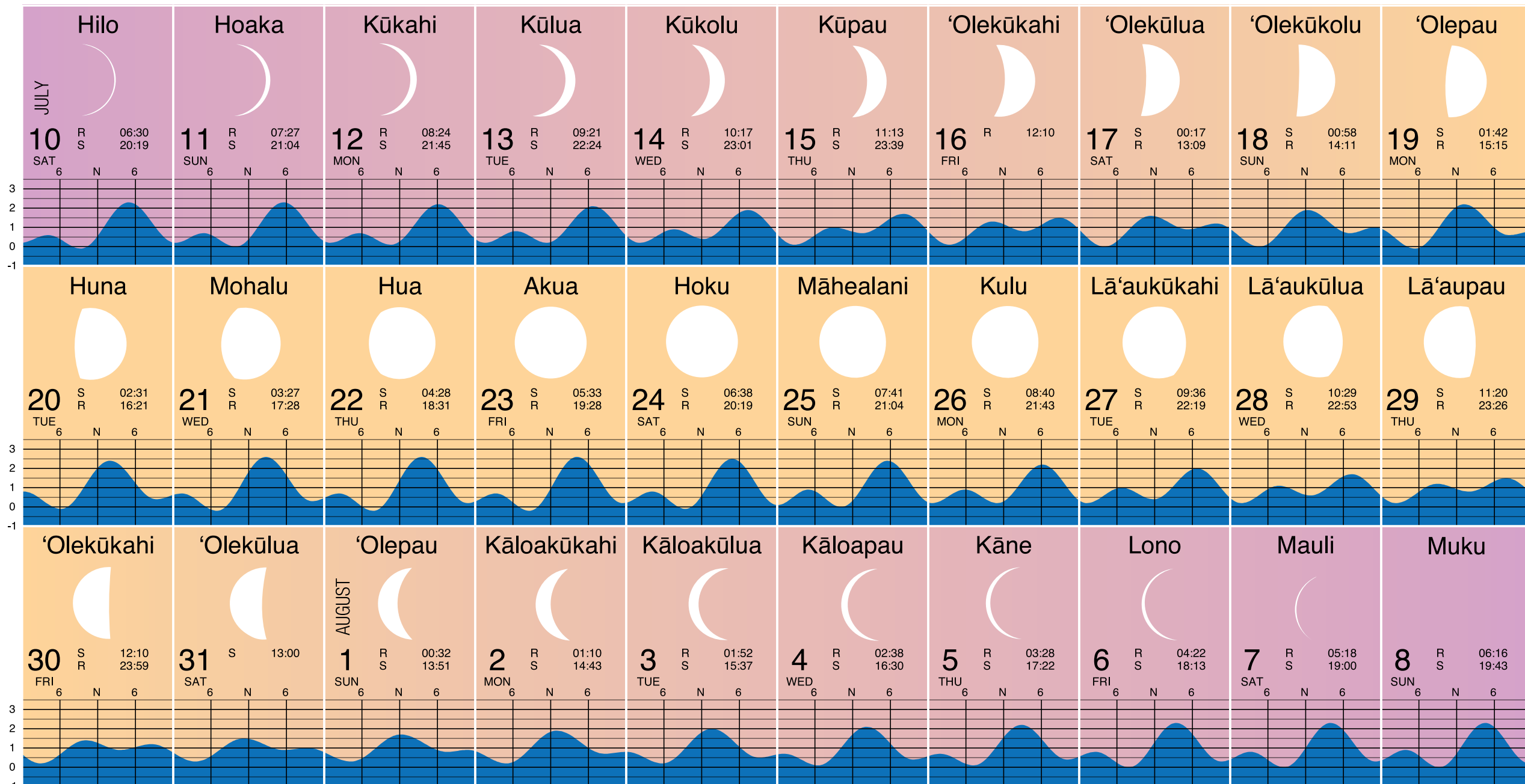


Offshore aquaculture of Hawaiian kampachi in an Aquapod net pen. Ocean Era's second aquaculture trial featuring about 2,000 kampachi in a copper-alloy cage moored in 6,000 feet of water. Photo: Jeff Milisen and Ocean Era, Inc.



# Hinaia'ele'ele

Iulai 10 - 'Akukake 8, 2021



OBSERVATIONS  
 ho'onui (waxing)  
 poepoe (full moon)  
 emi (waning)



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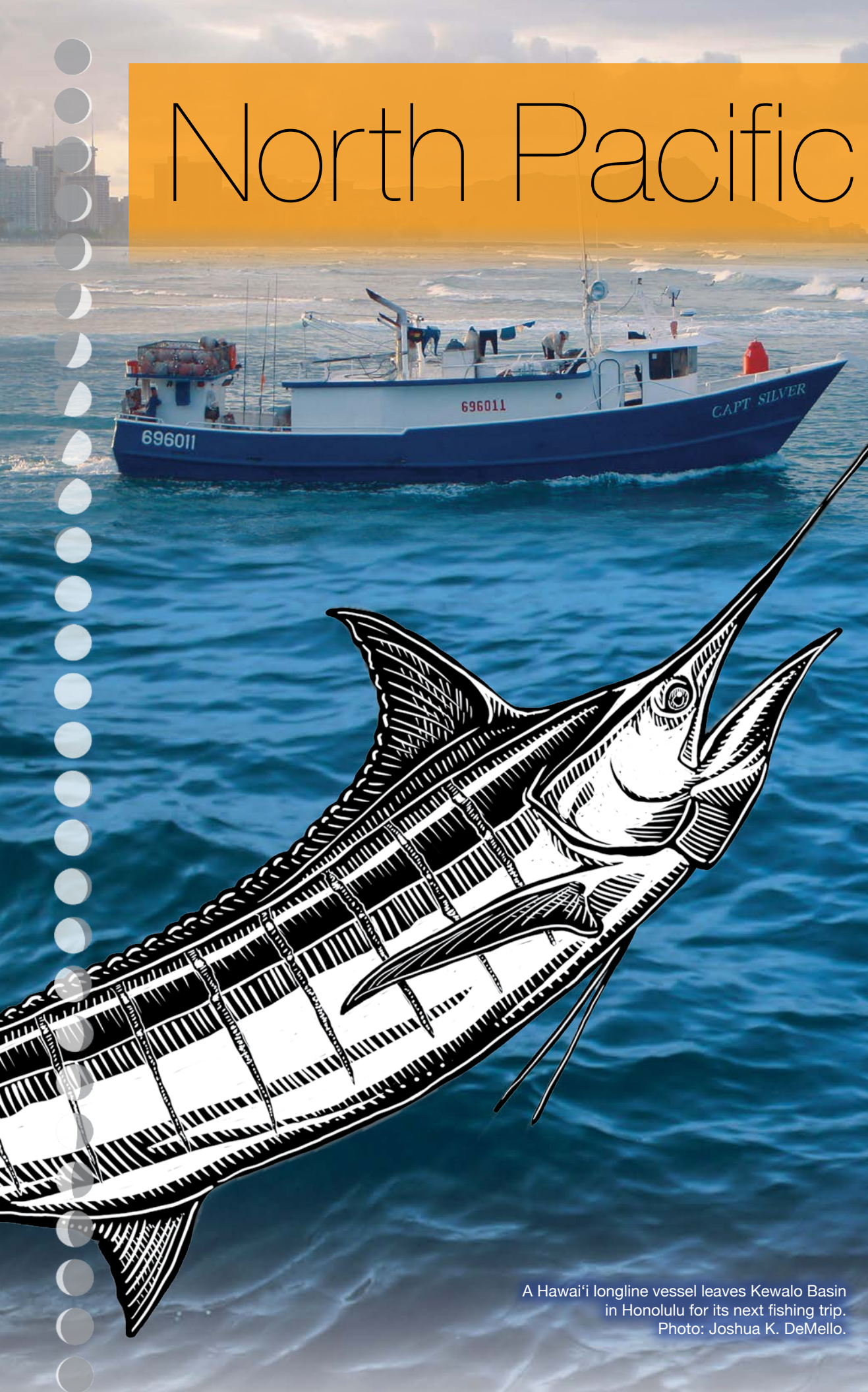
# North Pacific Transition Zone

**The North Pacific Transition Zone** supports a productive marine food chain due to changes in nutrient levels. Animals found in this transition zone include swordfish, tuna, albatross, whales and sea turtles. The North Pacific plays an important role for the shallow-set longline fishery due to this environment and makes it ideal to target swordfish.

The Hawai'i-based longline fishery is a limited-entry fishery with a hard cap of 164 permits. The fishery operates in two distinct modes: the deep-set longline targets bigeye and yellowfin tuna, and the shallow-set longline targets swordfish or mixed tuna species.

It is important to note that the shallow-set longline fishery has 100% federal observer coverage with the purpose of documenting total catch and bycatch. The sets from these boats are buoyed to the surface with four large circle hooks between floats and are relatively shallow (about 100-300 feet). These sets use light sticks to attract swordfish that are primarily targeted at night.

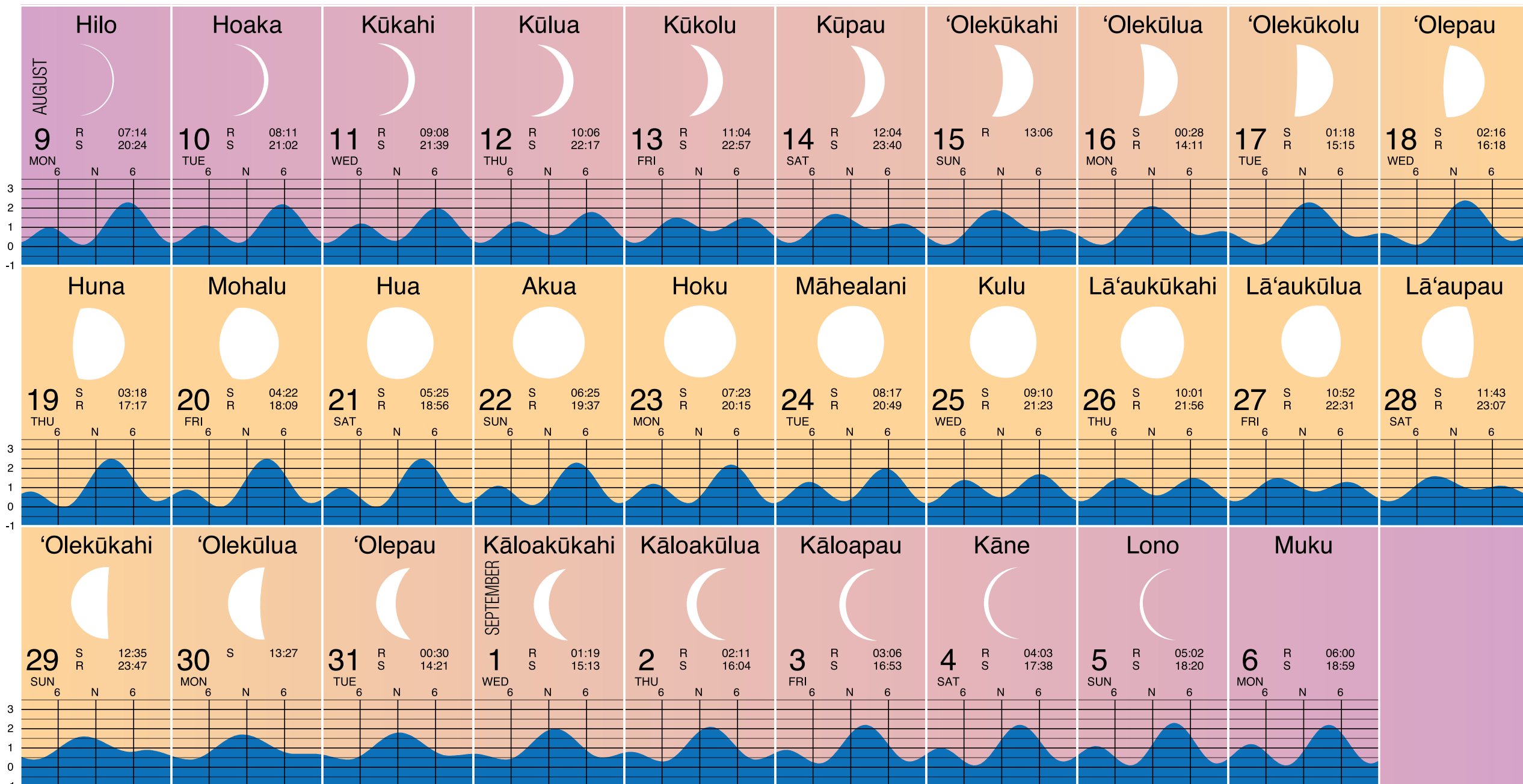
A Hawai'i longline vessel leaves Kewalo Basin in Honolulu for its next fishing trip.  
Photo: Joshua K. DeMello.





# Mahoe Mua

'Akukake 9 - Kepakemape 6, 2021



OBSERVATIONS  
 ho'onui (waxing)  
 poepoe (full moon)  
 emi (waning)

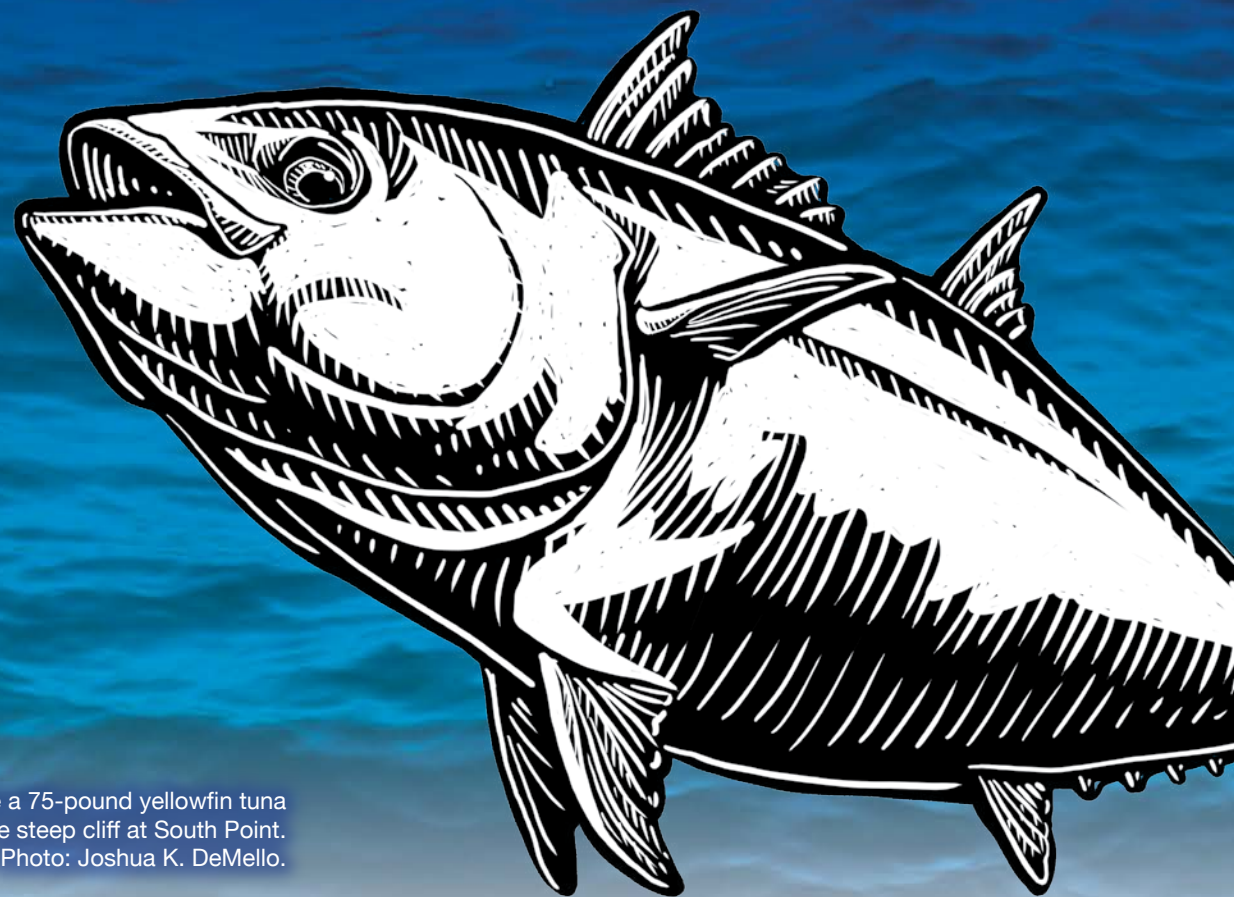


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# South Point

**South Point, or Ka Lae**, located on the Island of Hawai'i is the southernmost edge of the United States. Other than its beautiful scenery, it is also known as one of the few fishing spots where fishermen catch large pelagic fish from the shore. Fish caught include **ulua**, bigeye and yellowfin tuna, **mahimahi** and even marlin. Anchors do not work very well at this location since the ocean bottom drops off quickly to great depths, which are ideal for pelagic fish.



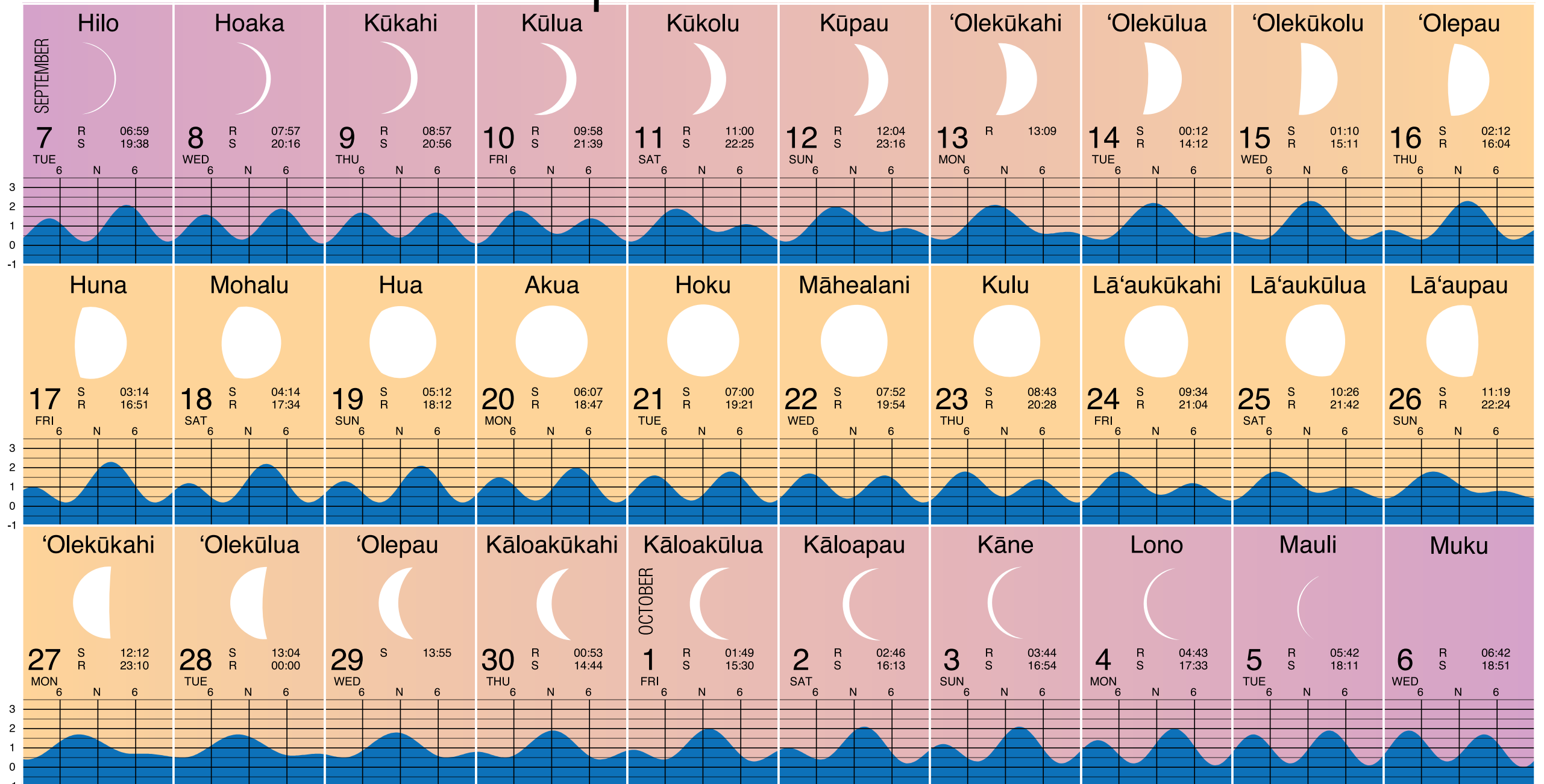
Fishermen gaff and scale a 75-pound yellowfin tuna up the steep cliff at South Point.  
Photo: Joshua K. DeMello.





# Mahoe Hope

Kepakemape 7 - 'Okakopa 6, 2021



OBSERVATIONS  
 ho'onui (waxing) \_\_\_\_\_  
 poepoe (full moon) \_\_\_\_\_  
 emi (waning) \_\_\_\_\_

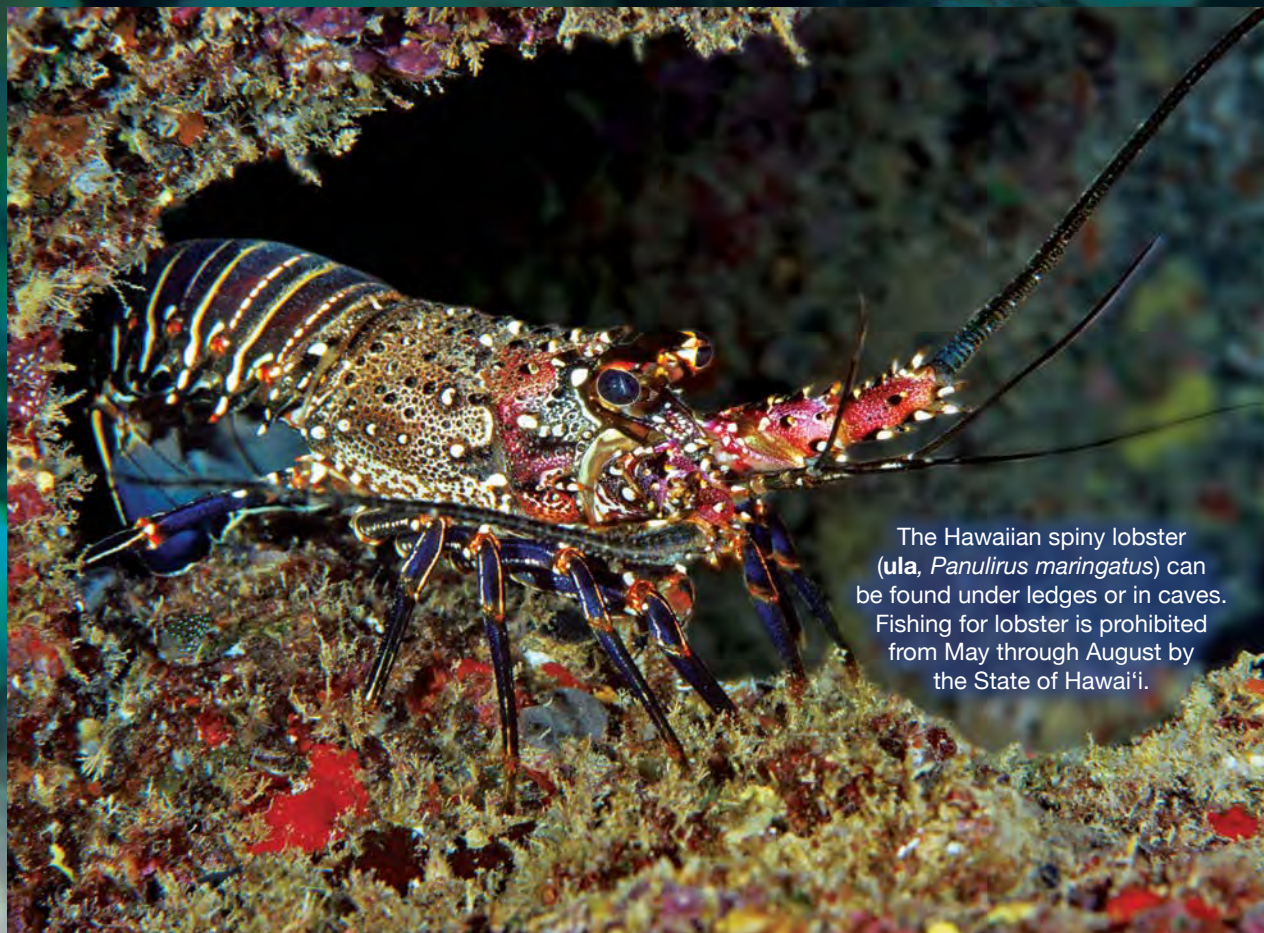
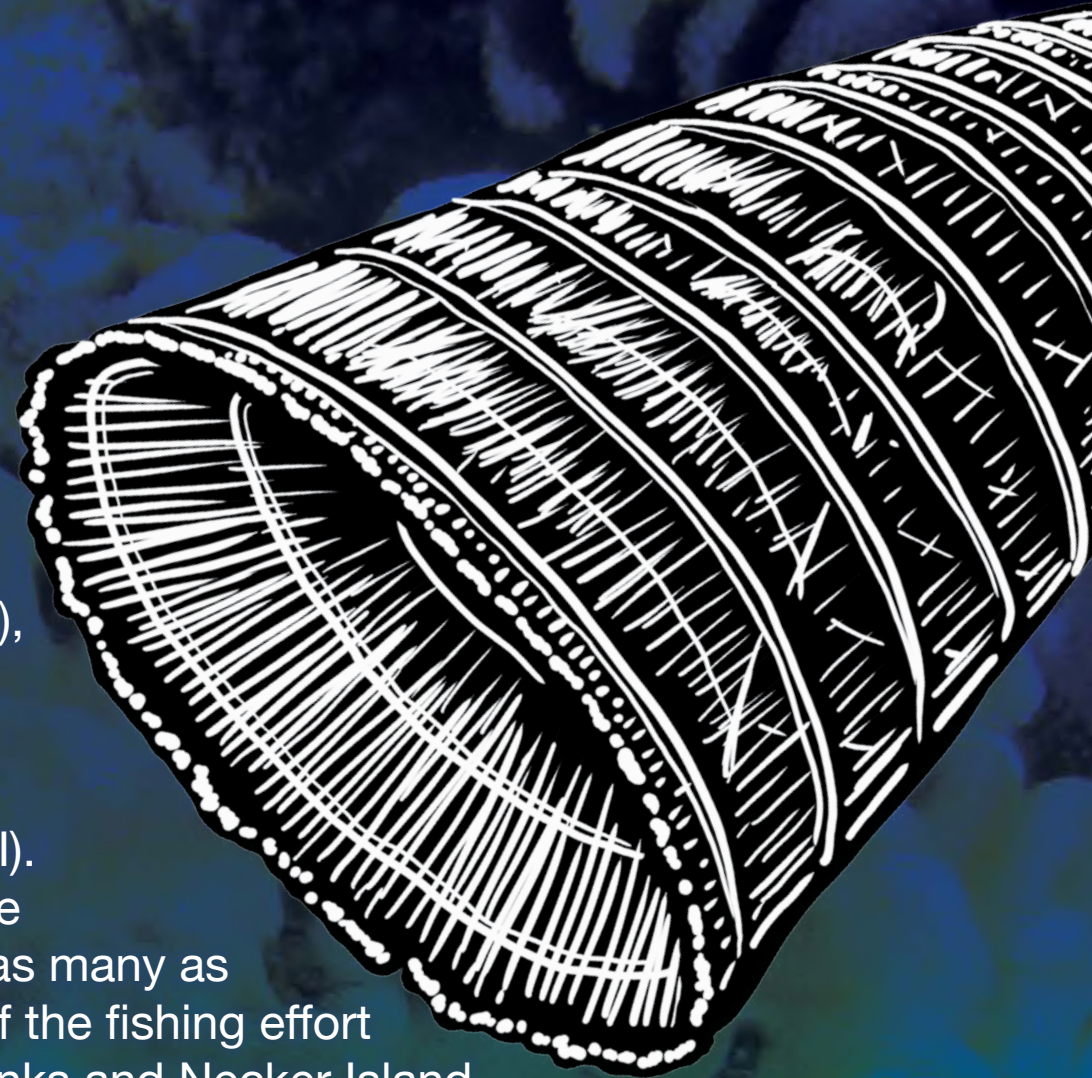


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# Maro Reef

In the late 1970s, the National Marine Fisheries Service (NMFS), U.S. Fish & Wildlife Service, Hawai'i Department of Aquatic Resources and University of Hawai'i Sea Grant Program joined in a cooperative agreement to conduct a 5-year assessment of the resources around the Northwestern Hawaiian Islands (NWHI). The survey showed that **Maro Reef** and Necker Island had large enough stocks of lobster to support commercial fishing. While as many as 16 banks within the NWHI were fished each year, the majority of the fishing effort was done near **Maro Reef**, Gardner Pinnacles, St. Rogatien Banks and Necker Island.



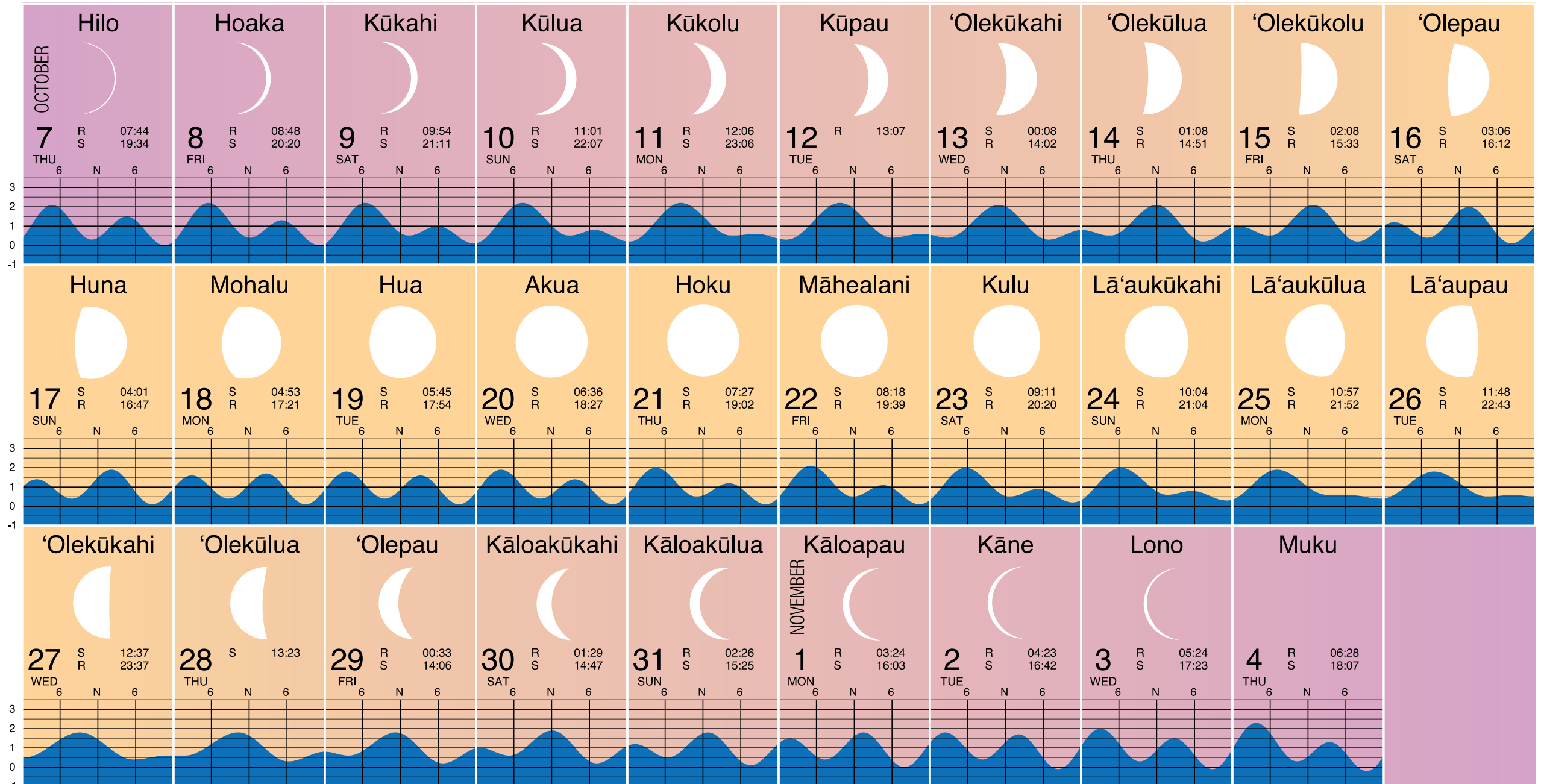
The Hawaiian spiny lobster (*ula*, *Panulirus meringatus*) can be found under ledges or in caves. Fishing for lobster is prohibited from May through August by the State of Hawai'i.

In the mid-1980s, the NWHI lobster fishery was described as Hawai'i's most lucrative fishery with a boom and bust cycle. All of the participants used plastic, dome-shaped, single-chambered traps. From 2001 to 2005, NMFS did not issue harvest guidelines for the NWHI lobster fishery due to a U.S. District Court order to keep the fishery closed until an environmental impact statement and biological opinion were prepared. The designation of the Papahānaumokuākea Marine National Monument in 2006 closed the fishery, and NMFS has annually set the NWHI lobster harvest guidelines as zero.



# 'Ikuwā

'Okakopa 7 - Nowemapa 4, 2021



OBSERVATIONS  
 ho'onui (waxing) \_\_\_\_\_  
 poepoe (full moon) \_\_\_\_\_  
 emi (waning) \_\_\_\_\_



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Photo: Kevin Hibbard

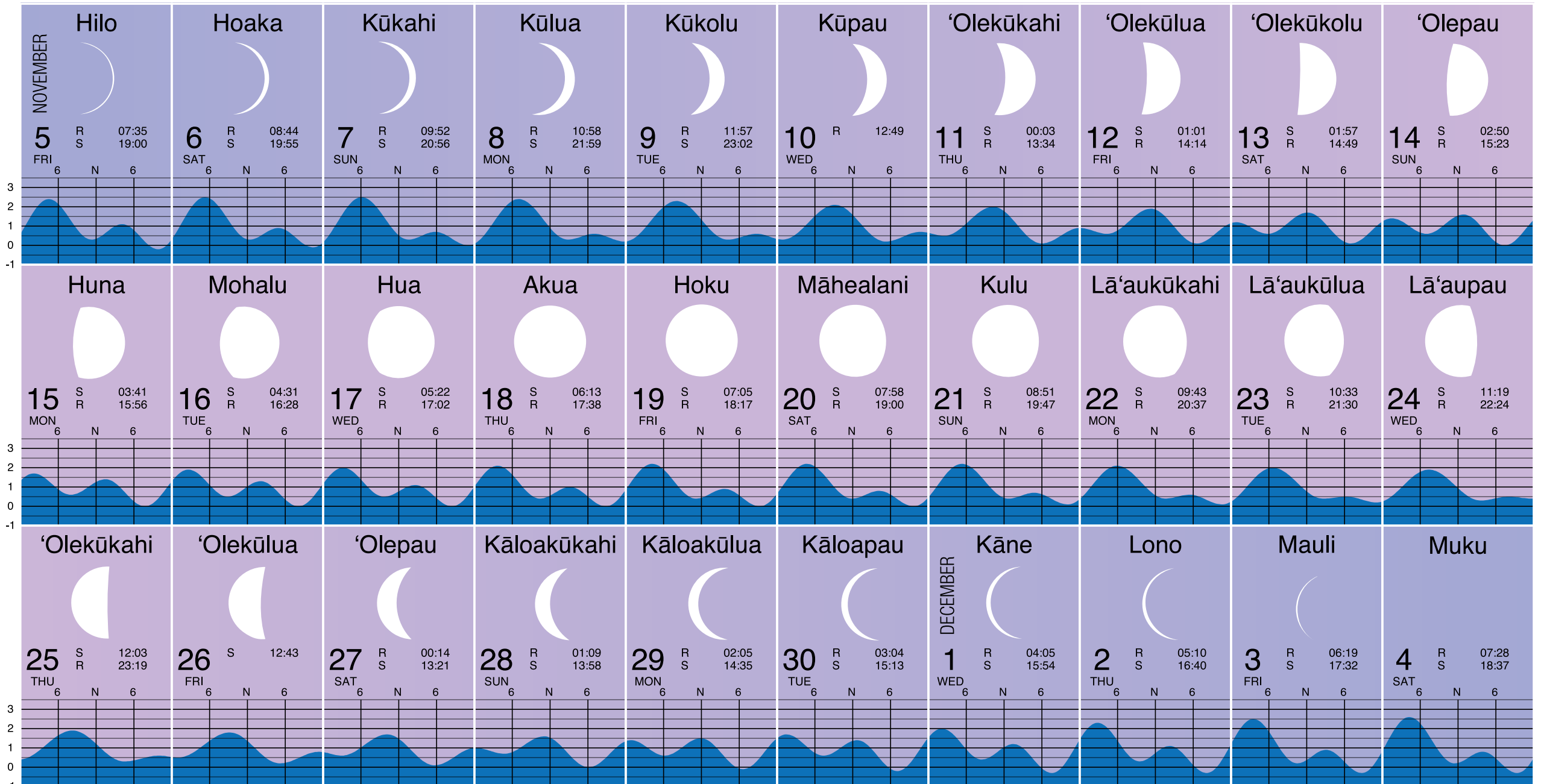
# The Grounds

“**The Grounds**” is a unique underwater ledge off the coast of Kona. Upwelling near Ke‘āhole Point, the westernmost point of Hawai‘i island, makes these waters very productive. Fishermen favor the onshore Kohala current over the off-shore Maui current because it causes pockets of feeding baitfish such as **aku** (skipjack tuna) and **oioi** (frigate mackerel) to form along the ledge. The local trolling and charter fishing fleet from Kona harvests these smaller fish to target blue marlin, **ahi** (yellowfin and bigeye tuna) and other large predators.



# Welehu

Nowemapa 5 - Kēkēmapa 4, 2021



OBSERVATIONS  
 ho'onui (waxing)  
 poepoe (full moon)  
 emi (waning)



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# Pier 38



While not exactly a fishing spot, businesses located at **Pier 38** are an extension of fishing near the Hawaiian Islands.

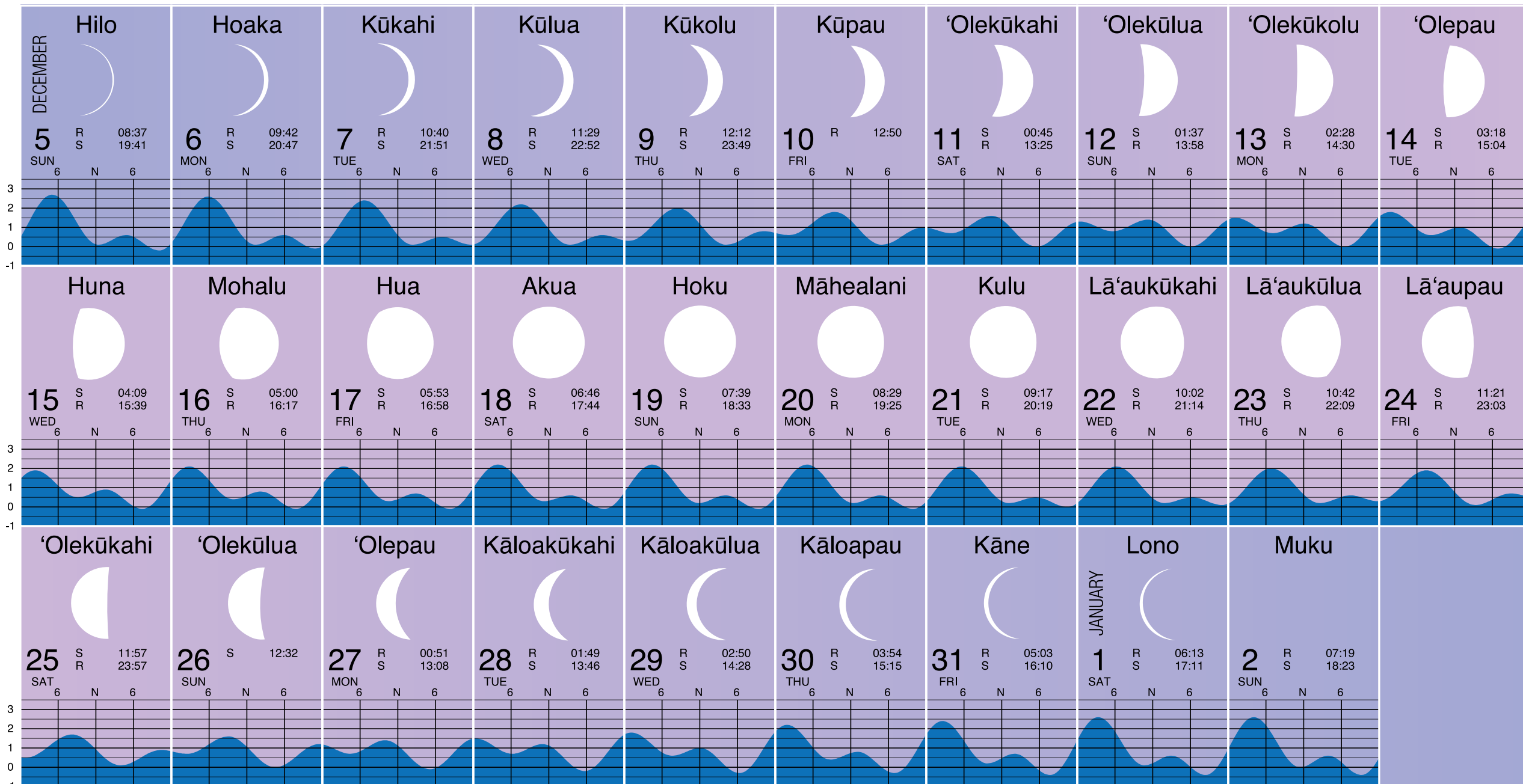
**Pier 38** is home to Hawai'i's Commercial Fishing Village that includes fresh fish distributors, fish markets and restaurants, and fishing supply stores. The Honolulu Fish Auction is the only fresh tuna auction of its kind in the United States. The auction is based on the famous Tokyo fish auction, where large fish are sold individually rather than by the boatload. This concept allows fishermen to sell their fresh catch at a fair price to the wholesale, retail and restaurant sectors.

The Honolulu Fish Auction was originally located on River Street and sold reef fish in addition the pelagic species sold today. This discontinued due to the discovery that an increasing number of local reef fish had a poison in their tissues that is produced by a certain microalgae and causes ciguatera poisoning in humans.



# Makali'i

Kēkēmapa 5 - 'Ianauli 2, 2021



OBSERVATIONS  
 ho'onui (waxing)  
 poepoe (full moon)  
 emi (waning)



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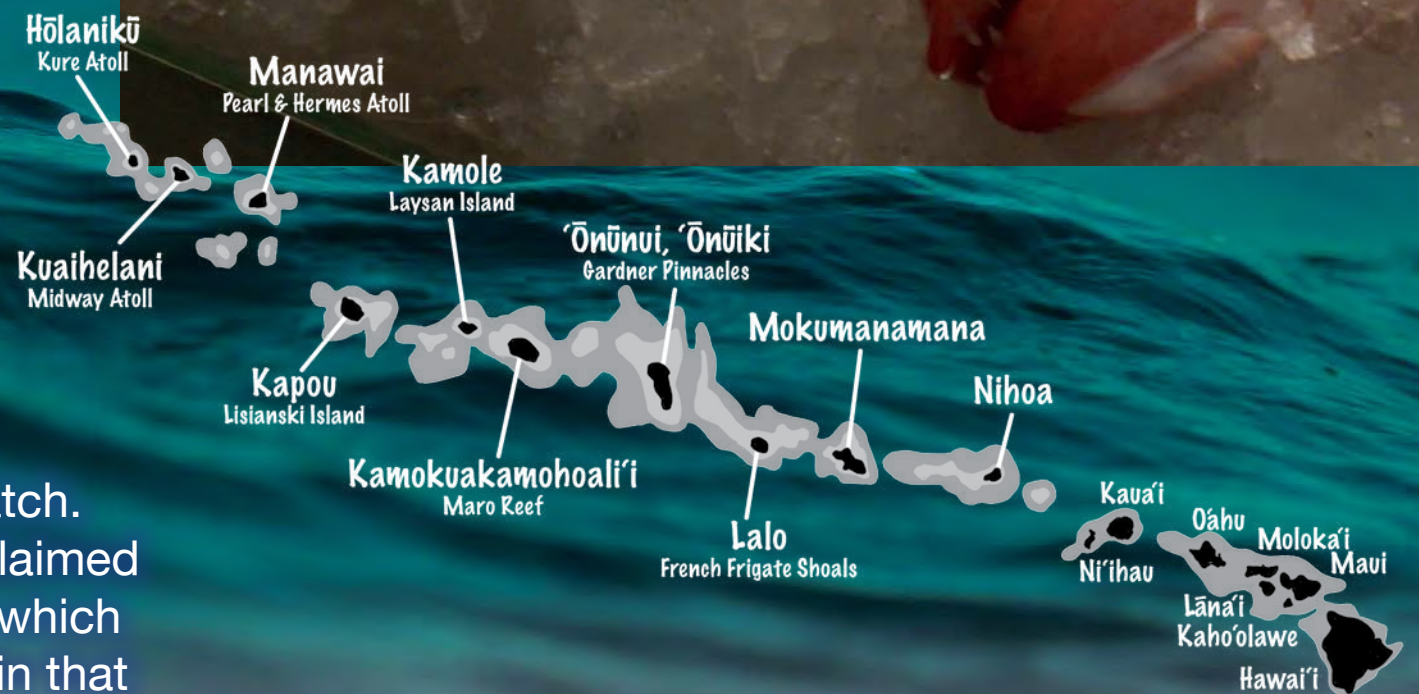


# Northwestern Hawaiian Islands

**The Deep 7 bottomfish fishery** in Hawai'i is composed of six snapper species and one grouper species typically found at depths of 250-1,300 feet. Bottomfishers use a hook-and-line method of fishing in which weighted and baited lines are lowered and raised with electric, hydraulic or hand-powered reels.

In the past, bottomfish fishing in the **Northwestern Hawaiian Islands (NWHI)** was conducted solely by commercial fishermen, and the vessels they used were larger than those fishing around the main Hawaiian Islands due to the greater distance they had to travel.

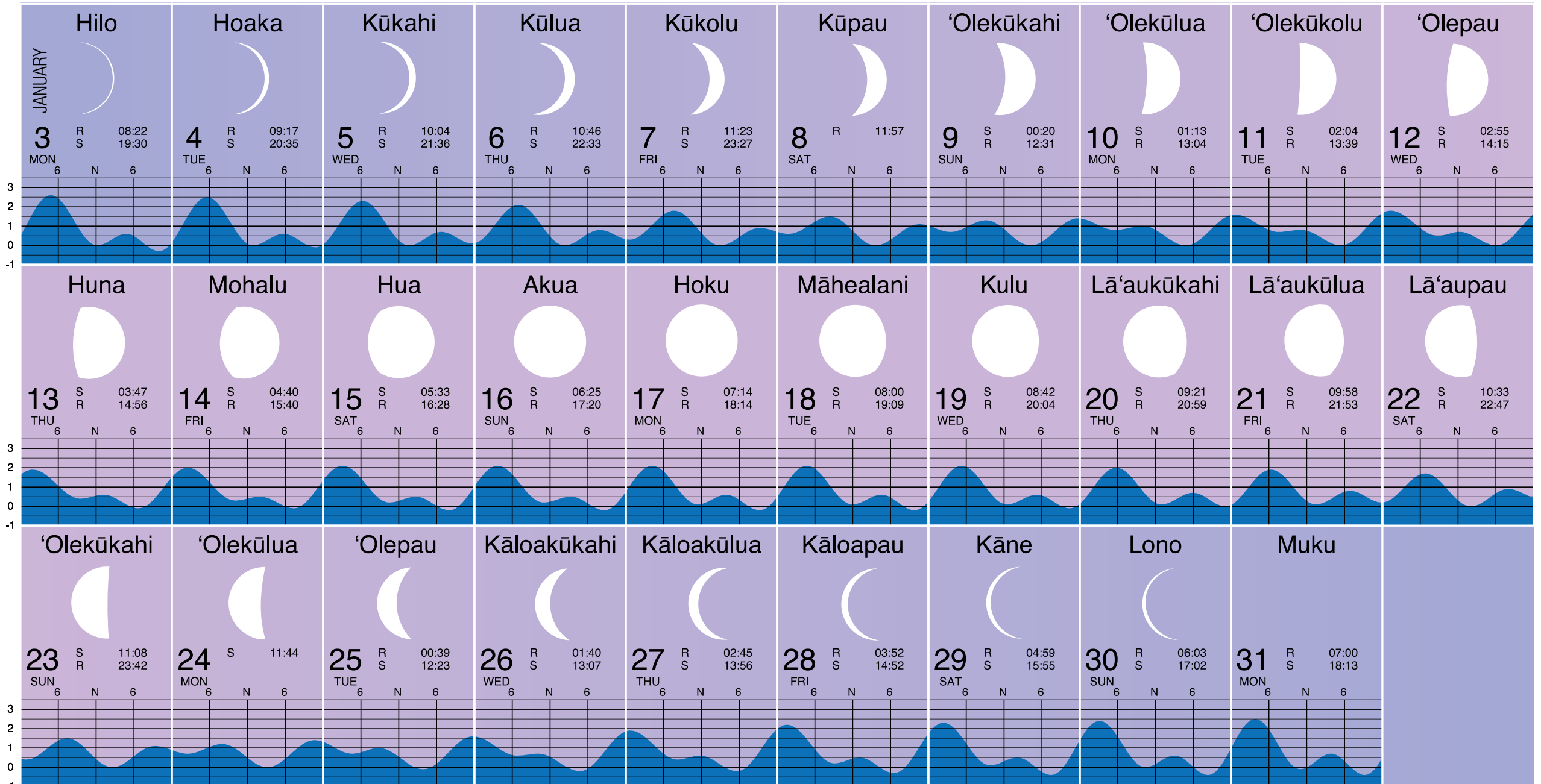
Participation in the **NWHI** bottomfish fishery was controlled through limited access programs in two management zones (**Mau** and **Ho'omalū**). **NWHI** bottomfish made up nearly half of the commercial landings of the total local catch. In 2006, President George W. Bush proclaimed the **NWHI** a Marine National Monument which eventually led to the closure of fisheries in that area on June 15, 2011.





# Kā'eolo

'Ianuali 3 - 31, 2022



OBSERVATIONS

ho'onui (waxing) \_\_\_\_\_

poepoe (full moon) \_\_\_\_\_

emi (waning) \_\_\_\_\_



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# About This Calendar



The **2021 Kaulana Mahina** (Hawai'i Lunar Calendar) features 13 fishing spots or locations found within or near the Hawaiian Archipelago that are important to fishermen. Each month highlights different aspects of the locations such as an area description, historical and modern information, species commonly targeted and gear type used.

The literal meaning of **kaulana mahina** is position of the moon. In the traditional Hawaiian calendar, each **malama** (month) was determined by the 29.5-day cycle of the **mahina** and divided into three **anahulu** (traditional 10-day period). The first period was called **ho'onoui** (growing bigger), beginning when the first crescent moon was visible to the naked eye. The second anahulu was **poepoe** (round or full). The last anahulu was **emi** (decreasing).

The calendar includes an observational space each month with hopes that others will take up the practice of using the calendar as well.

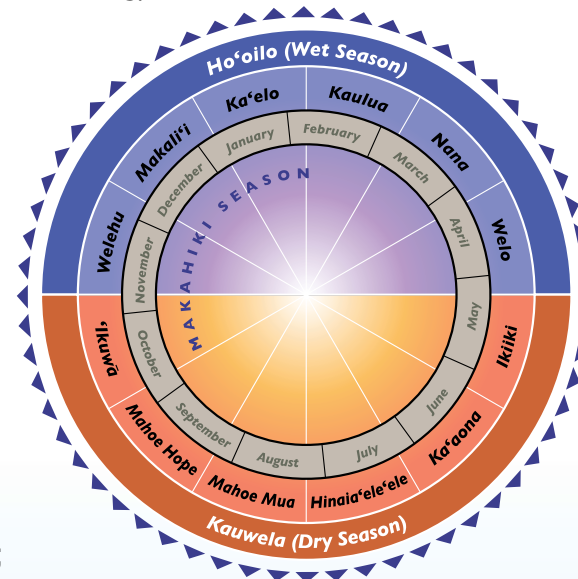
Traditionally, **nā pō mahina** (lunar phases) are used to determine when specific activities should take place, such as fishing times and spawning times when harvesting of some species was limited. Moon phase and moon month names could vary by island and **moku** (district). This calendar uses the moon phases for O'ahu listed in the *Hawaiian Almanac* by Clarice Taylor (1995. Honolulu: Mutual Publishing). The tide charts with moon rise and set times were provided by OceanFun Publishing, NZ. The lunar months, moon phases, and traditional calendar months are given in Hawaiian.

Special mahalo to calendar contributors including Council Member McGrew Rice; Council Advisory Panel members Clay Tam (chair), Gil Kualii'i (vice-chair), Nathan Abe, Basil Oshiro and Chad Pacheco; Council staff Joshua DeMello; Kevin Hibbard; Sam Kahng, University of Hawai'i; Jeff Milisen, Ocean Era; Layne Nakagawa; and James Watt, NOAA.

For an electronic version of this calendar, go to [www.wpcouncil.org/educational-resources/lunar-calendars](http://www.wpcouncil.org/educational-resources/lunar-calendars).

## About the Council

The **Western Pacific Regional Fishery Management Council** has worked with communities in Hawai'i, American Samoa, Guam and the Commonwealth of the Northern Mariana Islands since 2006 to produce traditional lunar calendars to promote ecosystem-based fisheries management, support indigenous fishing and management practices, and enhance community involvement in the fisheries management decision-making process. In Hawai'i, the Council strongly supports the traditional **'aha moku** system of natural resource management, which recognizes the traditional **moku** (districts) as a basis for cultural and community consultation, adaptive management, education, general knowledge and a code of conduct. More information and the **'aha moku** system can be found at [www.wpcouncil.org](http://www.wpcouncil.org) and [www.ahamoku.org](http://www.ahamoku.org). If your **moku** is interested in working with the Council on a future calendar, please send an email to [info@wpcouncil.org](mailto:info@wpcouncil.org).



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Front Cover: **Bamboo Ridge** is a well-known shore-casting spot on the southeast shore of O'ahu, popular with fishermen who target **ulua** (giant trevally).