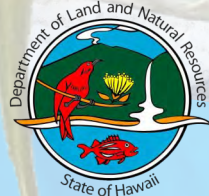


2015 Hanalei Moon and Tide Calendar



PAPAHĀNAUMOKUĀKEA
Marine National Monument



Hanalei Watershed
Hui



Aloha mai!

This calendar was developed through a partnership between the Hanalei community, the Hanalei Watershed Hui, Papahānaumokuākea Marine National Monument, the Hawaiian Islands Humpback Whale National Marine Sanctuary, the Department of Land and Natural Resources Division of Aquatic Resources, and the Waipā Foundation. Traditional Hawaiian knowledge about fish spawning was based on lunar cycles and seasonal changes. Observations provided in this calendar can be used to better care for our reef fish population in Hanalei.



Hanalei Watershed
Hui



Hanalei Tides

The tides presented in this calendar are the subordinate tide predictions for Hanalei Bay. These predictions are based on harmonic data from Nāwiliwili Bay.

Hawaiian Moon Phases

Many calendars today are based on the synodic month, a 29.53 day average orbital period of the moon. In this calendar, the moon phase of Hilo was aligned with the astronomical new moon as determined by the U.S. Naval Observatory. The moon phase of Muku was combined with the Maui phase where appropriate.

Terms Used in the Calendar

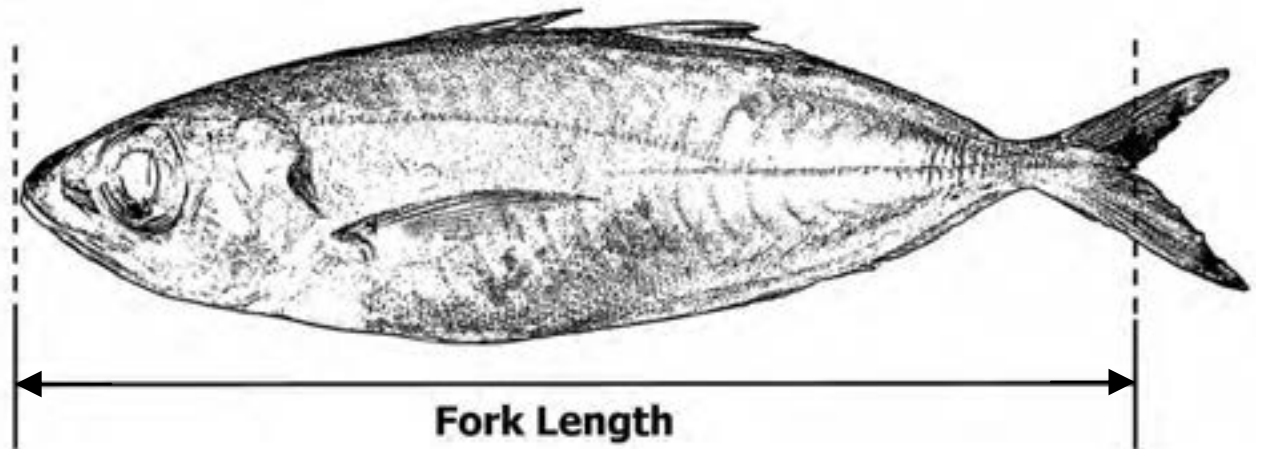
Closed Season: These periods of complete harvest restriction are based on current fishing regulations administered by the State of Hawai‘i through the Department of Land and Natural Resources, Division of Aquatic Resources. A complete list of the regulations can be found at: <http://dlnr.hawaii.gov/dar/fishing/fishing-regulations/>. During a closed season for a given specie, there is a ban on taking, possessing, or selling that specie.

Limited Harvest: Some species have limited harvest periods, restrictions on harvest method (type of gear), bag limits, and/or minimum sizes.

Suggested Limited Harvest: The species listed under suggested limited harvest (SLH) in this calendar are meant to inform fishers when peak spawning may be occurring in Hanalei. These periods are based on observations and gonad data collected in Hanalei. SLH is not a part of Hawai‘i fishing regulations. Annual variations are likely to occur, so harvest carefully.

Gonad: Reproductive organ, male or female.

Fork Length: Measured from fish’s snout to base of “V” in tail fin. State regulated species are measured in this way.



An explanation on

Suggested Limited Harvest

Suggested limited harvest (SLH) is not a part of Hawai'i fishing regulations. The species listed under SLH in this calendar are meant to inform fishers when peak spawning may be occurring in Hanalei. This means that harvesting should be minimized or completely avoided to allow fish to reproduce undisturbed. Although data on manini and 'āholehole spawning was collected in Hanalei, slight variations on peak spawning activity is likely to occur from year to year, so be observant. Spawning may also vary significantly at other locations around Kaua'i.

The traditional practice of seasonally restricting the harvest of a specific fishery in Hawai'i was carefully maintained through keen observation. By learning how to better care for our reef fish stocks, communities can help to restore balance by limiting harvests during periods of stock replenishment. Modern fishing tools are very efficient at harvesting fish, so we need to be extra careful when using them.

If you're interested in learning how you can help to contribute information to this project, contact the *Hanalei Watershed Hui* at:

808-826-1985 or hanaleiriver@hawaiian.net

Closed Season



'Ama'ama: Dec-Mar

Limited Harvest



Moi: 11 inches FL, 15 per day

Suggested Limited Harvest



'Āholehole: Jan-Apr

Fish Fact: Scientists have discovered that kala can be extremely long-lived. Several fish caught on Oahu for a research project were over thirty years old, while two fish were over fifty years old!

IANUALI

HANALEI TIDE & MOON CALENDAR 2015

JANUARY

Sunday
Lāpule

Monday
Pō'akahi

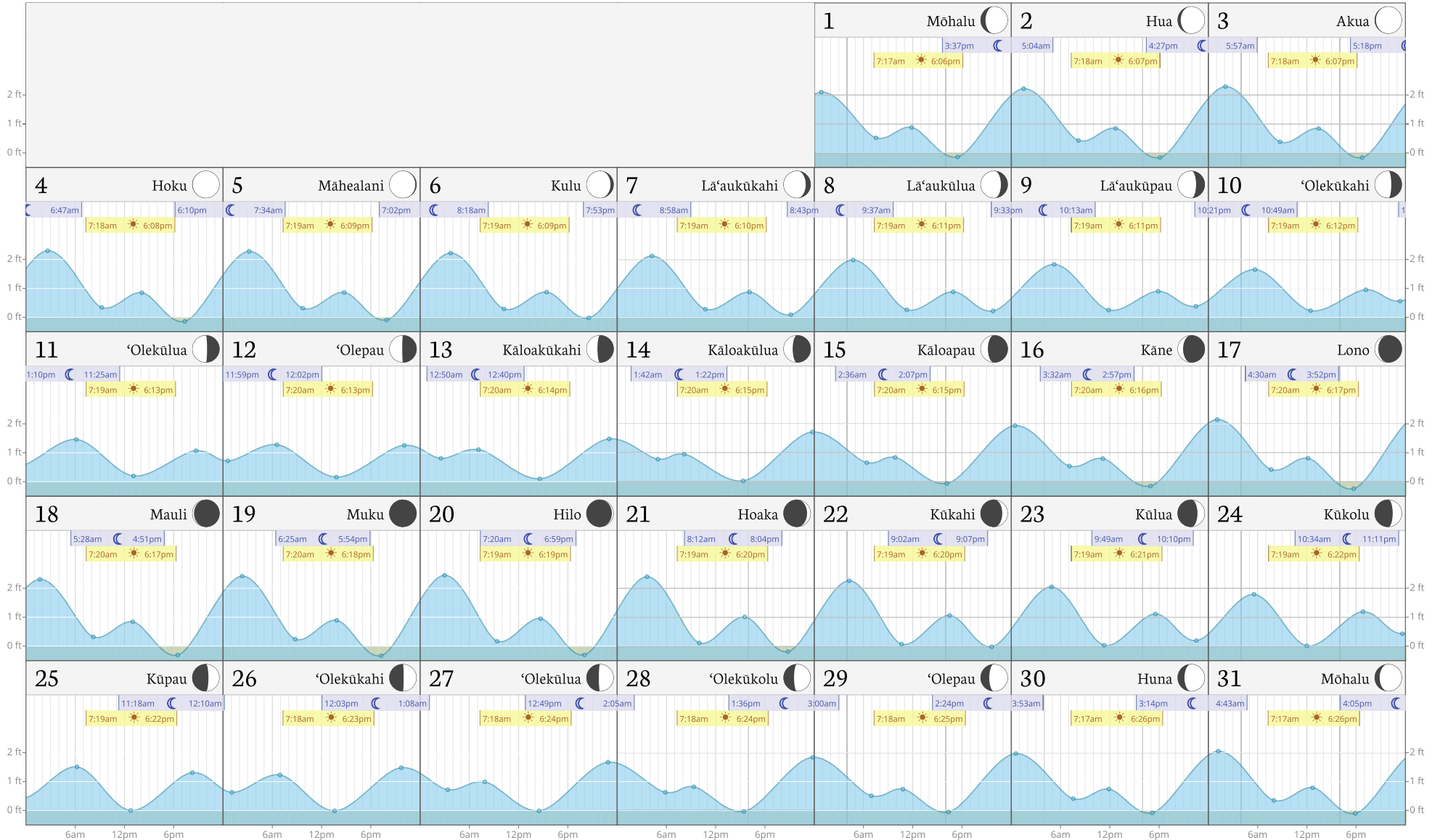
Tuesday
Pō'alua

Wednesday
Pō'akolu

Thursday
Pō'ahā

Friday
Pō'alima

Saturday
Pō'aono



Harvest wisely to ensure future catches!

Making informed choices: learning to identify fish gonads

Fishing Pono:

By learning how to identify the reproductive organs in fish, you can track spawning seasons in your area. When cleaning your catch, look for **developed eggs**. This can indicate spawning, and harvesting should be limited.



Closed Season



‘Ama‘ama: Dec-Mar

Limited Harvest



Moi: 11 inches FL, 15 per day

Suggested Limited Harvest

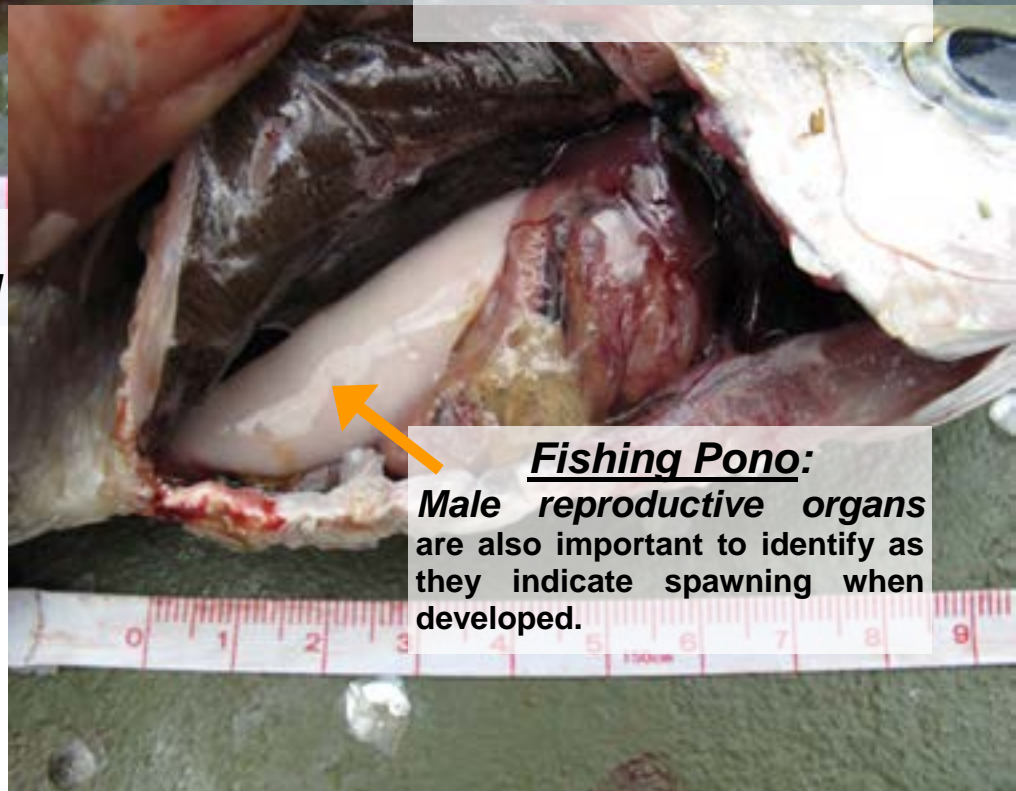


‘Āholehole: Jan-Apr



Fishing Pono:

Under-developed eggs mean fish are most likely not reproducing--this is a good time to harvest. Remember when these seasons occur in your area as each specie will spawn at nearly the same time each year.



Fishing Pono:

Male reproductive organs are also important to identify as they indicate spawning when developed.

PEPELUALI

HANALEI TIDE & MOON CALENDAR 2015

FEBRUARY

Sunday
Lāpule

Monday
Pō'akahi

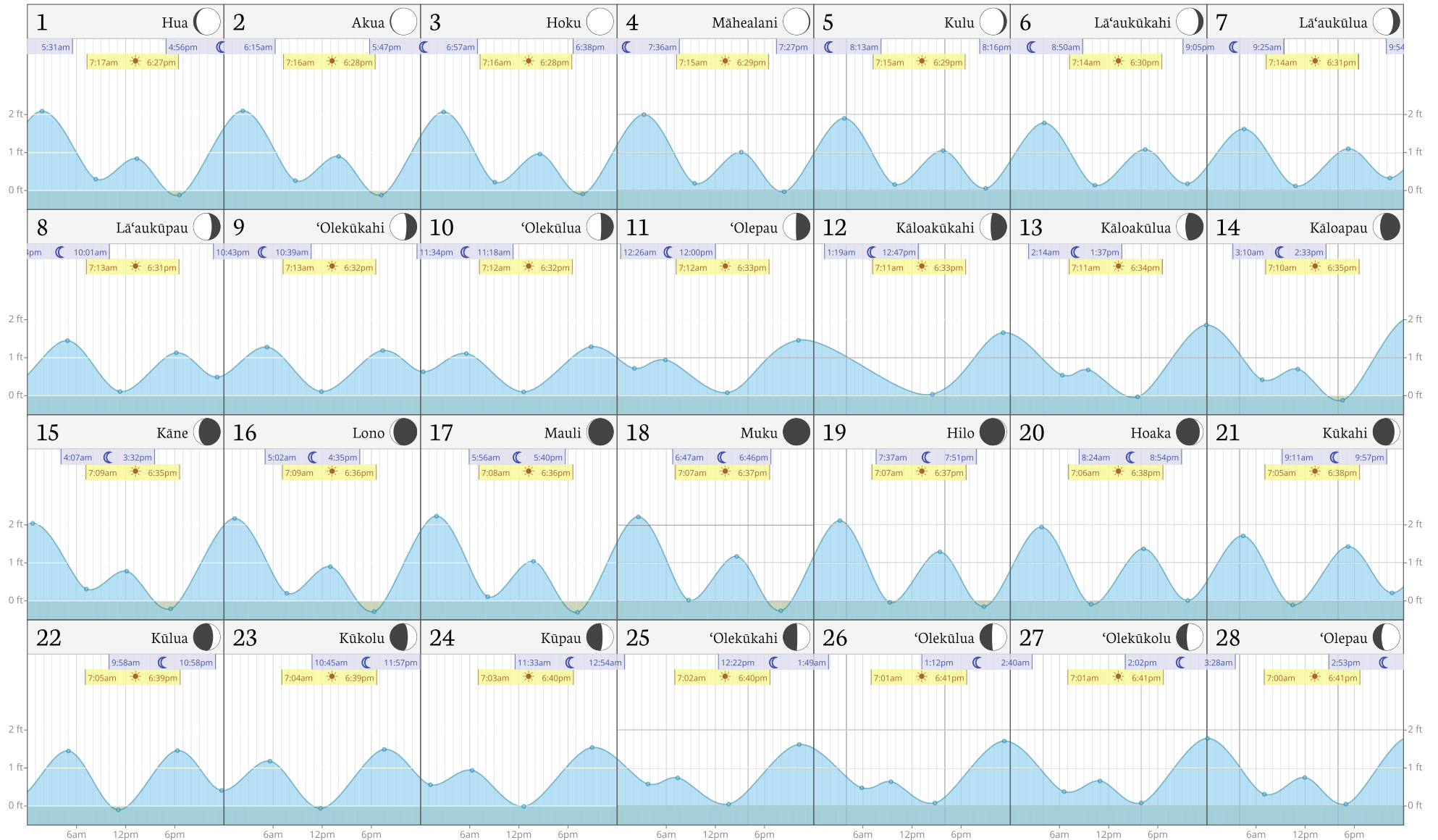
Tuesday
Pō'alua

Wednesday
Pō'akolu

Thursday
Pō'ahā

Friday
Pō'alima

Saturday
Pō'aono



Harvest wisely to ensure future catches!

Know your fish before you harvest: Uhu



Uhu live in family groups called harems, made up of one male (blue-green in color) and several females (brownish-red). If the male is removed from the harem, the remaining females will not spawn for about a year until the largest female undergoes a sex change and turns into the male.

Fishing Pono: Never harvest male uhu as this will prevent female fish in that harem from spawning that year.

Closed Season



‘Ama‘ama: Dec-Mar

Limited Harvest



Moi: 11 inches FL, 15 per day

Suggested Limited Harvest



‘Aholehole: Jan-Apr



Manini: Mar-Jun

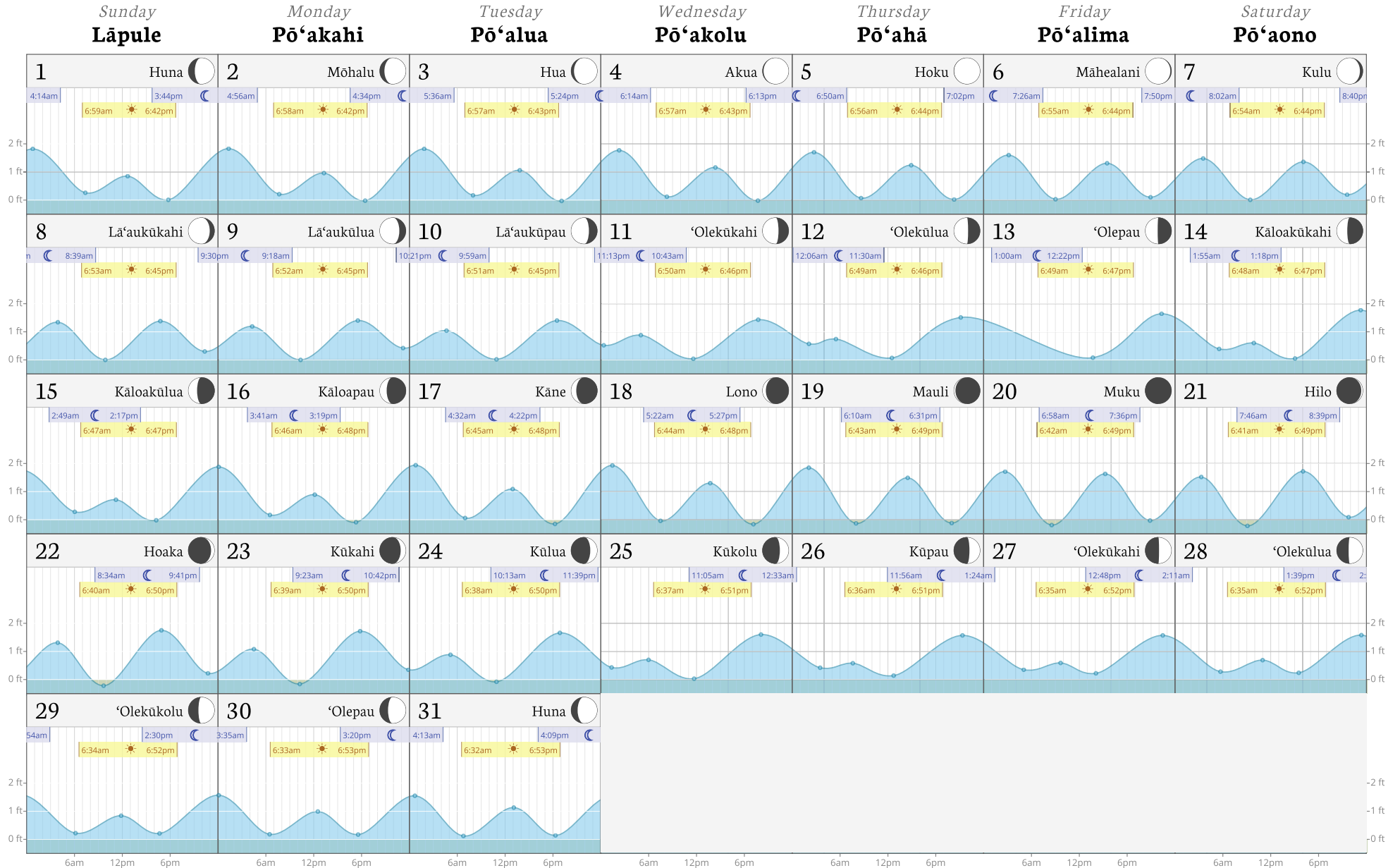


Eggs of Uhu Pananu

MALAKI

HANALEI TIDE & MOON CALENDAR 2015

MARCH



Preserving Fishing Heritage Through Traditional Place Names

Waipae (a.k.a. “Middles” surf break) is the name of the outer reef within the ahupua‘a of Waipā.

The shoreline and waters to the east of Wai‘oli stream is called *Manō‘au*.

The shoreline boundary between the ahupua‘a of Waipā and Waikoko is a large boulder called *Pōhaku ‘ōpio*.

Hono‘iki is the name of the reef on the eastern side of the bay below Pu‘u Po‘ā, while the western point of the bay is known as *Makahoa*.

The ancient fishpond *Kamo‘omaika‘i* is east of the Hanalei river muliwai. Above this place is Pu‘u Po‘ā.

Fishing Pono: Traditional place names can give us a better understanding of the environment, traditional practices, and even species found in an area. By learning their meaning and history we develop a deeper connection to these places, perpetuating culture and stewardship practices that maintain a healthy balance.

Limited Harvest



Moi: 11 inches FL, 15 per day

Suggested Limited Harvest



‘Āholehole: Jan-Apr



‘Ōmilu: Apr-Jul



Akule: Apr-Oct



Manini: Mar-Jun



‘Ōpelu: Apr-Aug

'APELILA

HANALEI TIDE & MOON CALENDAR 2015

APRIL

Sunday
Lāpule

Monday
Pō'akahi

Tuesday
Pō'alua

Wednesday
Pō'akolu

Thursday
Pō'ahā

Friday
Pō'alima

Saturday
Pō'aono



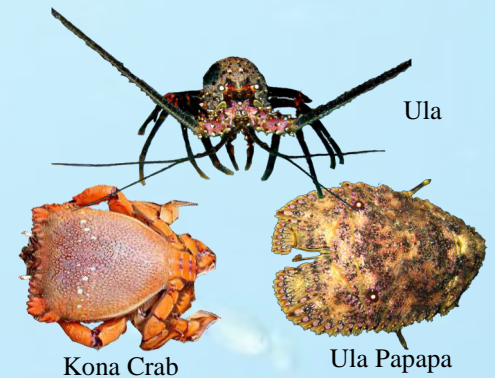
Corals are Important for Fish

Healthy corals are the foundation of a healthy reef ecosystem. They provide food, shelter, and an essential nursery area for many species. Hanalei bay is a challenging environment for corals due to the strong wave action in the winter months and the large amount of freshwater input. Not only are most corals unable to survive in brackish water, but the sediment from floods and erosion can smother corals by blocking sunlight they need to survive. Protecting corals helps fish.

For more information on coral disease and bleaching, visit: <http://dlnr.hawaii.gov/reefresponse/>

Fishing Pono: Anchor boats only in sandy areas. Do not to step on or kick live coral while in the water.

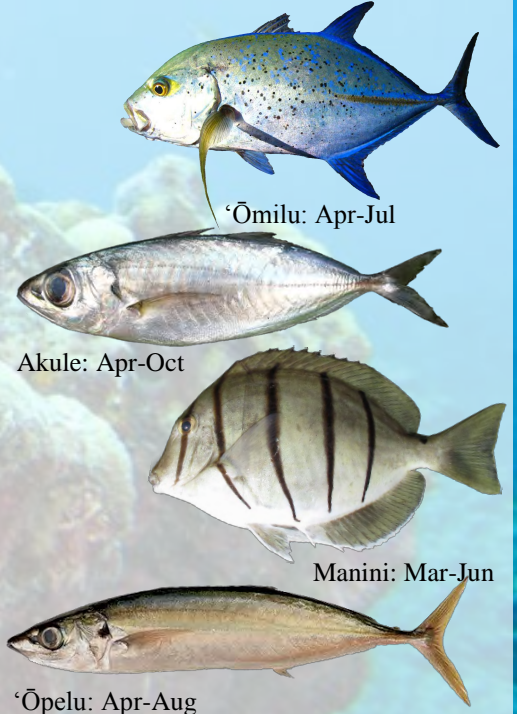
Closed Season



Limited Harvest



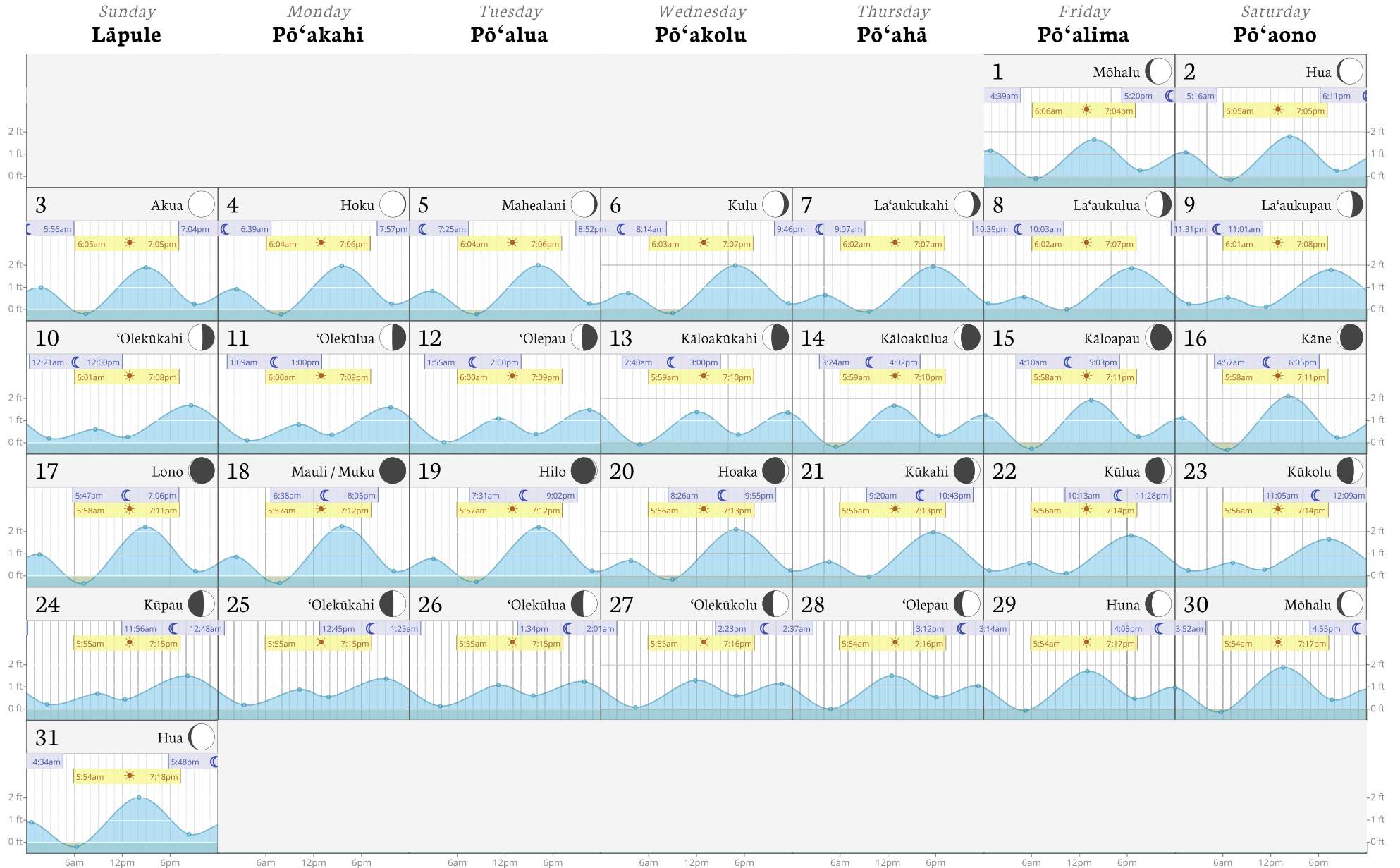
Suggested Limited Harvest



MEI

HANALEI TIDE & MOON CALENDAR 2015

MAY



Harvest wisely to ensure future catches!

*Know your fish before you harvest: **Moi***

Ancient fishermen of long ago were keen observers. They recognized the importance of learning how fish changed as they mature. The following names -- given to the various developmental stages of moi -- illustrate the ancient fishermen's understanding of the environment and how to harvest moi sustainably.

Moi li'i are the young fingerlings, often found in small schools along sandy shorelines.

Mana moi have reached reproductive maturity and are approximately 10-11 inches in fork length. At this stage they are all males. As they grow larger they will undergo a gender transformation, whereby male reproductive organs begin to be replaced with ovaries (female reproductive organs).

Palā moi are fish at the hermaphroditic stage (having both male and female organs). They are approximately 11-13 inches in fork length.

The common name *Moi*, refers to the final stage in the fishes development, once the gender transformation is complete and the fish is a reproductively capable female. Approximately 13 inches fork length and larger.

Fishing Pono: Large moi are all females. Releasing very large fish will help to ensure a healthy number of productive female moi in your area.

Closed Season



Suggested Limited Harvest



IUNE

HANALEI TIDE & MOON CALENDAR 2015

JUNE

Sunday
Lāpule

Monday
Pō'akahi

Tuesday
Pō'alua

Wednesday
Pō'akolu

Thursday
Pō'ahā

Friday
Pō'alima

Saturday
Pō'aono



Living Pono, Mauka to Makai

Waipā is one of five ahupua'a that feed freshwater into Hanalei Bay. The name Waipā has several meanings which include "a prayer or request to the Gods" and "touched water, or water that one can touch". On older maps, however, the name describing this place-Waipā-is actually Waipa'a, which is interpreted as "dammed up water".

What happens on land within an ahupua'a has an impact on our ocean. Rains, winds, and streams carry sediment, trash, nutrients, bacteria, and other pollutants to the ocean. In order to manage our ocean resources, we need to be mindful of our actions on land.

Waipā is an example of how we can better manage our ahupua'a. Through stream restoration, sustainable farming, native plant restoration, and other pono practices, people are working together to make our island home a better place.

Living Pono: As Hanalei is such a rain-soaked area, much of what we put onto and into the ground finds its way to the ocean. Pick up trash and plastics, throw cigarette butts into the trash, not on the ground, and give strong consideration to chemicals, fertilizers, and pesticides before putting them on crops or in your yard.

Closed Season



Moi: Jun-Aug



Ula



Kona Crab



Ula Papapa

Limited Harvest



Halalū: State restrictions apply

Suggested Limited Harvest



'Ōmilu: Apr-Jul



Akule: Apr-Oct



'Ōpelu: Apr-Aug

IULAI

HANAIEI TIDE & MOON CALENDAR 2015

JULY

Sunday
Lāpule

Monday
Pō'akahi

Tuesday
Pō'alua

Wednesday
Pō'akolu

Thursday
Pō'ahā

Friday
Pō'alima

Saturday
Pō'aono



Harvest wisely to ensure future catches!

Making informed choices: observations on He'e

Reproduction of he'e in Hawai'i is still not thoroughly understood. However, it's known that they are able to reproduce year-round, females often dying shortly after eggs have hatched (approximately 12-15 months of age). The eggs are carefully tended to in the den of the female who guards them 24 hours a day. She won't eat during this time, approximately 20-36 days, as leaving them unattended might allow small fish and crustaceans a chance to eat them.

The he'e populations today are reported to be only a fraction of what they were in the recent past. Kupuna tell stories of when he'e were much more abundant and easily found on reef flats at low tide. Harvesting of he'e was a community event in which men, women, and children would participate in. There were also seasonal restrictions on when he'e was open to harvest.

Fishing Pono: Harvesting only 1 or 2 he'e per outing may help to prevent populations from being over-fished. Perhaps harvesting he'e by hand (not spearing) will allow females to be released if eggs are seen in the den.

Closed Season



Moi: Jun-Aug



Ula



Kona Crab



Ula Papapa

Limited Harvest



Halalū: State restrictions apply

Suggested Limited Harvest



Ōpelu: Apr-Aug



Akule: Apr-Oct

'AUKAKE

HANALEI TIDE & MOON CALENDAR
2015

AUGUST

Sunday
Lāpule

Monday
Pō'akahi

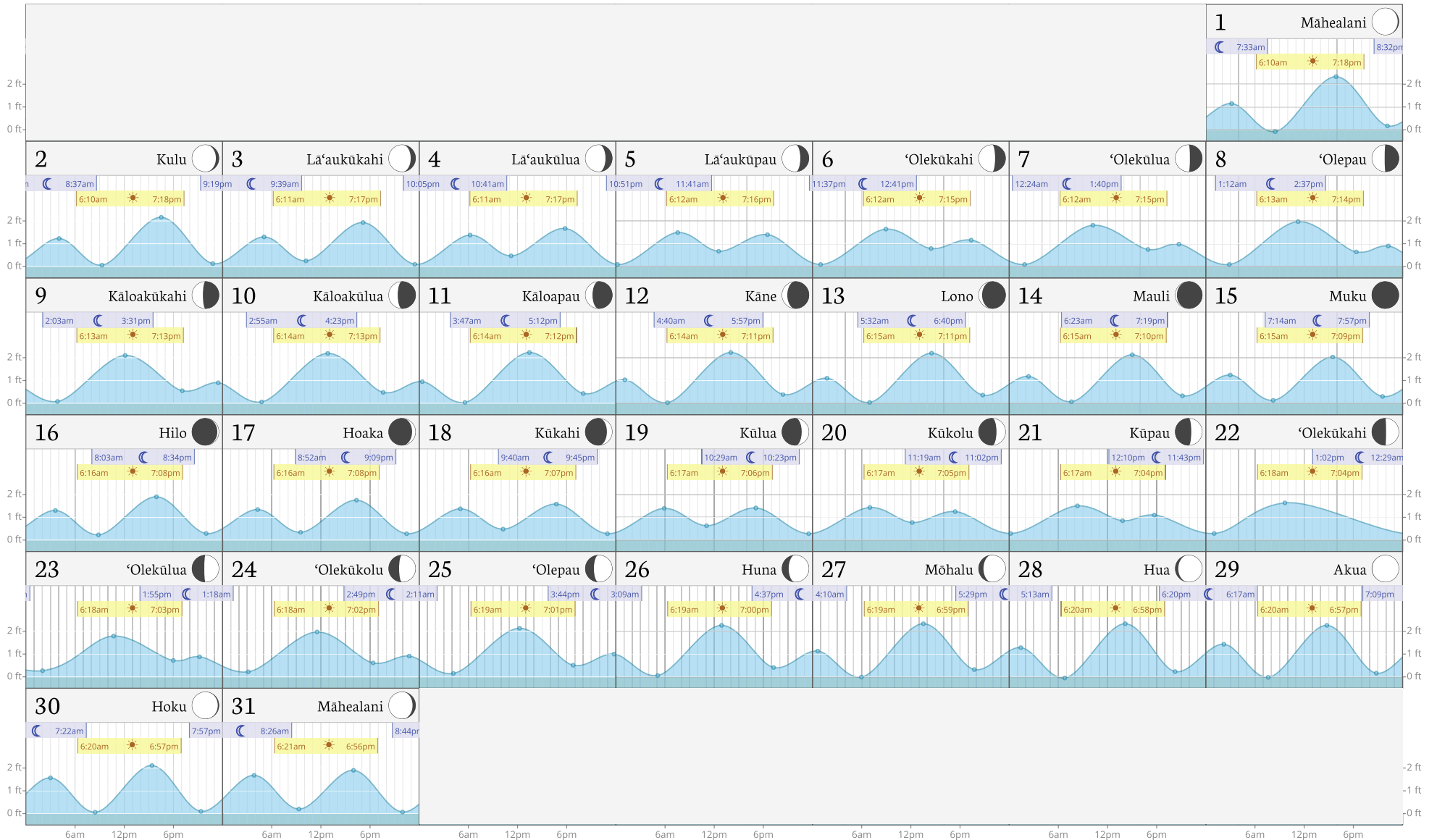
Tuesday
Pō'alua

Wednesday
Pō'akolu

Thursday
Pō'ahā

Friday
Pō'alima

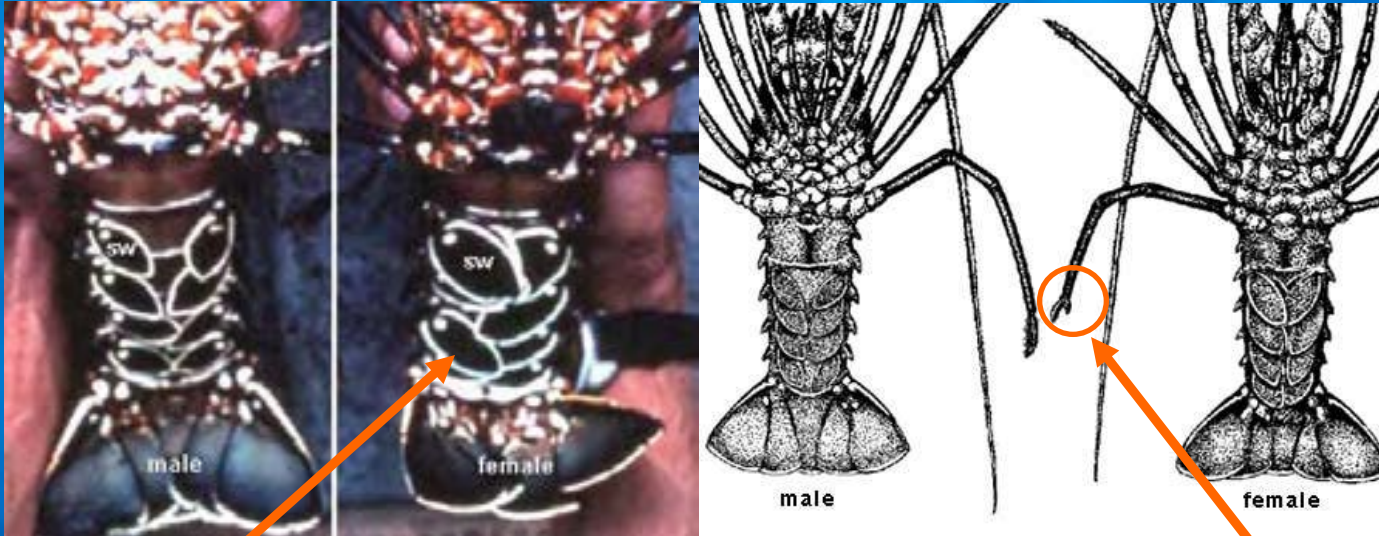
Saturday
Pō'aono



Harvest wisely to ensure future catches!

Know your fish before you harvest: Ula

Only male ula greater than 3 & 1/4 inches in carapace length are legal to harvest from September thru April. Here's how to identify males from females:



Swimmerets are much larger on females. The end of the last leg on females is branched.

Harvesting females is prohibited. Using a spear to harvest is prohibited.

More information on determining the sex of lobster as well as various species of crabs can be found at: <http://dlnr.hawaii.gov/dar/fishing/fishing-regulations/marine-invertebrates/how-to-determine-sex-of-regulated-invertebrates/>

Fishing Pono: Measure your catch and release females! These regulations are needed because ula are slow-growing animals that are prone to over-harvesting.

Limited Harvest



Moi: 11 inches FL, 15 per day



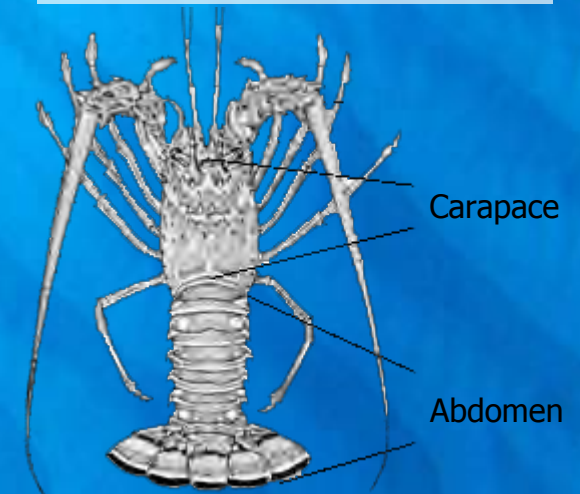
Halalū: State restrictions apply

Suggested Limited Harvest



Akule: Apr-Oct

Lobster Fact: Female lobsters carry eggs in their swimmerets during spawning season. It can be hard to tell if a lobster is male or female from the top, so that's why spearing is illegal.



KEPAKEMAPA

HANALEI TIDE & MOON CALENDAR 2015

SEPTEMBER

Sunday
Lāpule

Monday
Pō'akahi

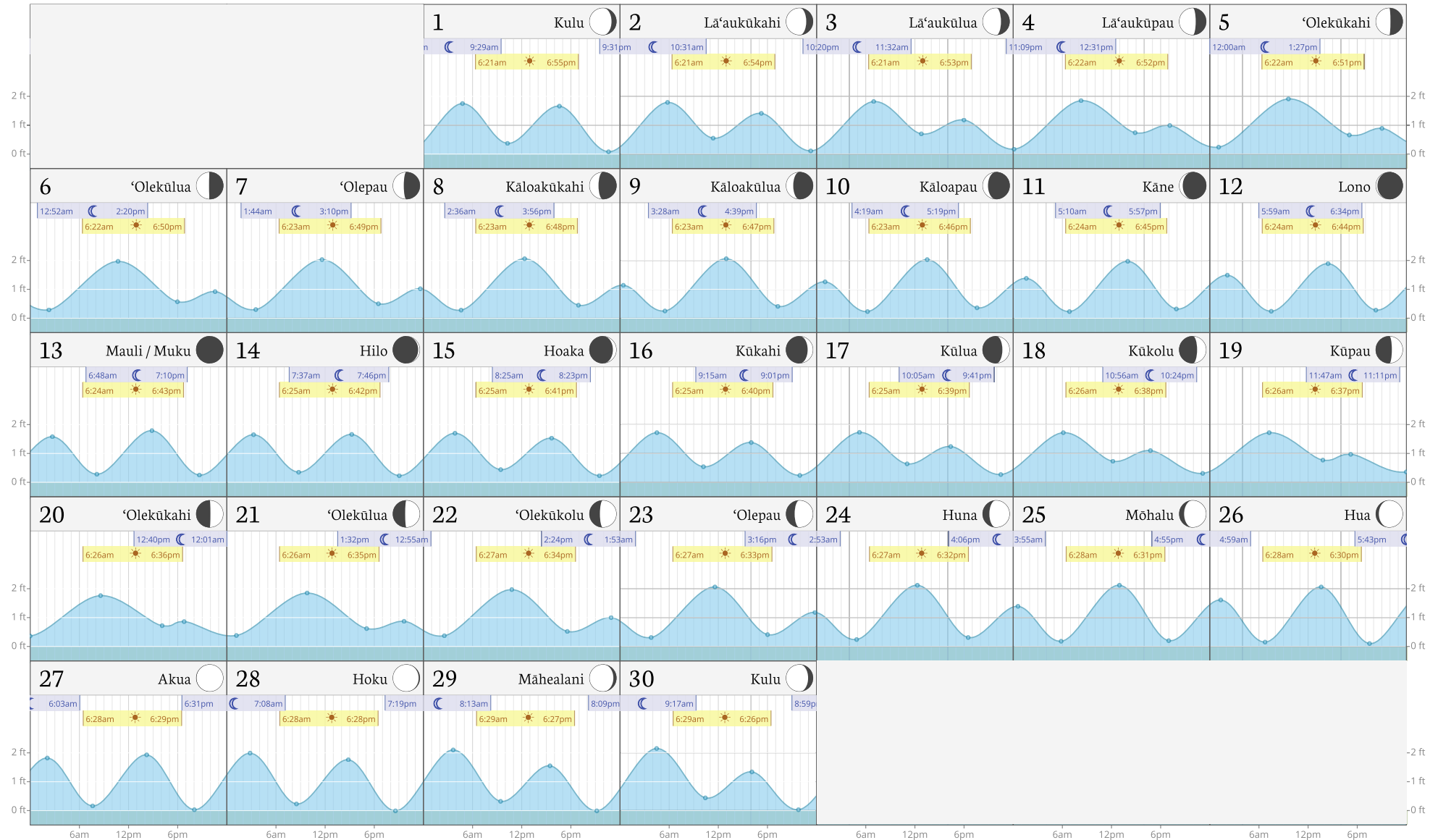
Tuesday
Pō'alua

Wednesday
Pō'akolu

Thursday
Pō'ahā

Friday
Pō'alima

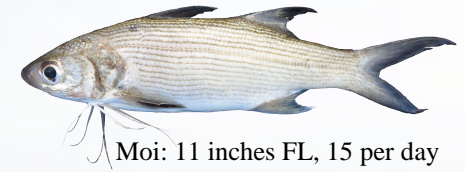
Saturday
Pō'aono



Understanding the Muliwai

Taking care of fish nurseries

Limited Harvest



Moi: 11 inches FL, 15 per day



Halalū: State restrictions apply

Suggested Limited Harvest



Akule: Apr-Oct

Muliwai (estuaries) are areas where freshwater sources meet and mix with the ocean. They are an important habitat for juvenile fish as they are abundant with food and provide a place of refuge from predation. They are also an important filter for land-based sediment; removing pollutants before it reaches live coral. Hawai'i has several types of muliwai, including stream mouths, harbors, bays, sea caves, and groundwater-fed estuaries.

Over 60 fish species have been found in various muliwai throughout Hawai'i. The most common species are 'āholehole, 'ama'ama, weke, moi, 'ōmilu, 'iao, and pāpio. Some of the introduced fish species found in the muliwai of Hanalei are kanda, tilapia, ta'ape, and to'au.

Fishing Pono: Preserving estuaries as a nursery for juvenile fish is often over-looked as a way to care for our reef fish stocks, so tread lightly in these areas.

Fish Fact: Most fish are adapted to live within a specific salinity (salt concentration) range, but some fish are able to live in much broader ranges and are called euryhaline species. Two examples of these in Hawai'i are 'āholehole and 'ama'ama.

'OKAKOPA

HANALEI TIDE & MOON CALENDAR
2015

OCTOBER

Sunday
Lāpule

Monday
Pō'akahi

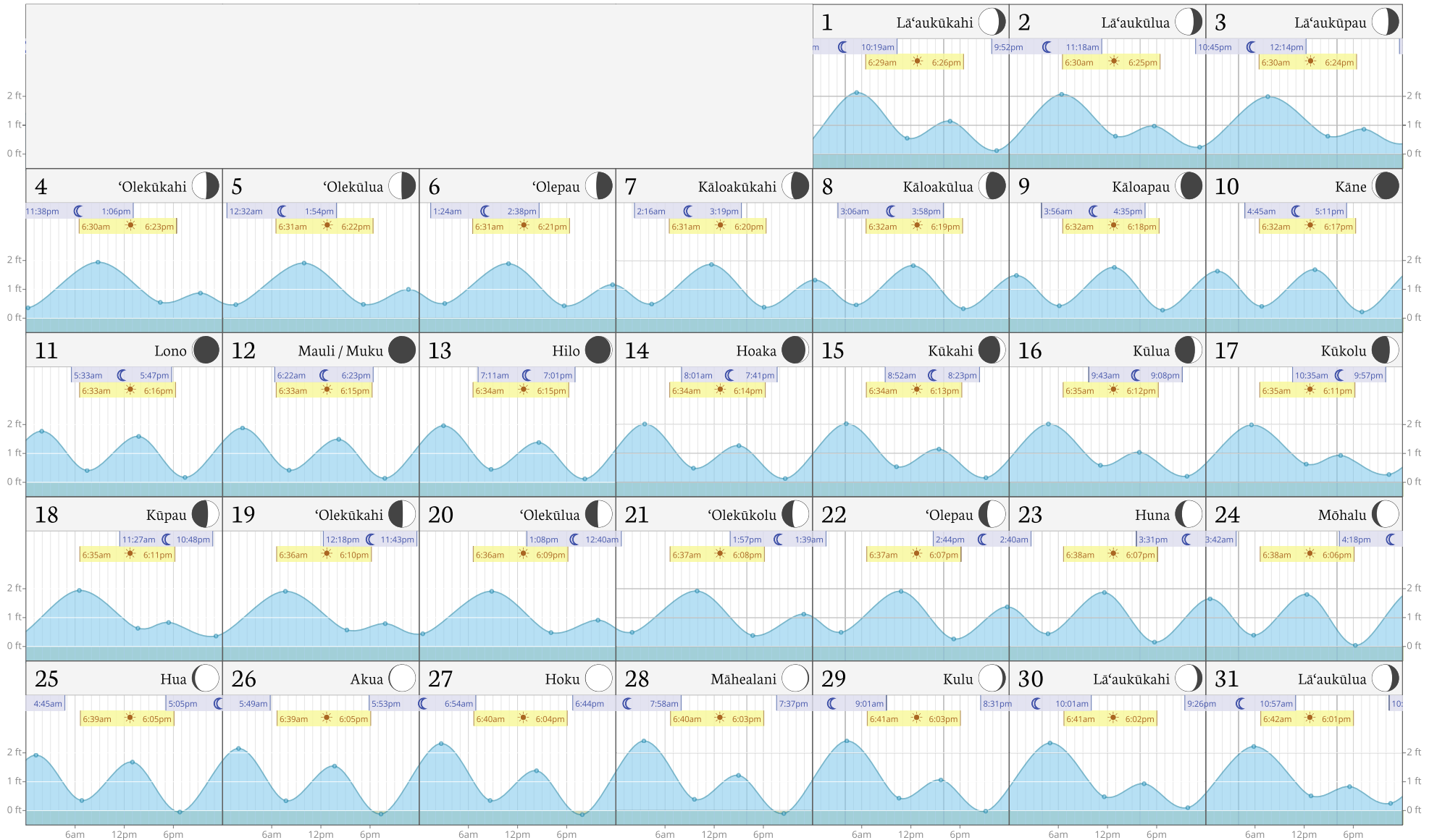
Tuesday
Pō'alua

Wednesday
Pō'akolu

Thursday
Pō'ahā

Friday
Pō'alima

Saturday
Pō'aono



Harvest wisely to ensure future catches!

An explanation of **L50**

Limited Harvest



Moi: 11 inches FL, 15 per day



Āholehole
5"



Āma'ama
11-12"

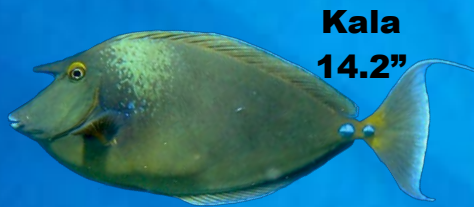


Āweoweo
5-7.3"

Larger fish in most species produce many more eggs than smaller fish that have just reached reproductive maturity. Not only do they produce many more eggs, but the eggs are also much larger with more yolk reserves. This means that the fish hatching from larger eggs have a much better chance of survival.

L50 is the length at which 50 percent of the population is likely to be reproductively mature. The fish listed here are just a few of the species that maturation studies provide information on.

Fish Fact: Studies have found that a 27-inch 'ōmilu will produce about 4.3 million eggs while a 14 inch 'ōmilu will produce only 50,000 eggs. Therefore, it takes about **86** smaller 'ōmilu to produce the same amount of eggs!



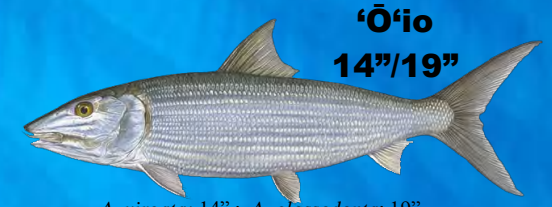
Kala
14.2"



Manini
5"



Uhu uliuli
14"



Ō'io
14"/19"

A. virgata: 14"; *A. glossodonta*: 19"

Fishing Pono: Leaving small fish to mature is pono, as well as leaving the very large ones. Choose to harvest medium-sized fish of each specie. Not too big, not too small, but just right!



Weke
6.6-6.8"



Kūmū
11"



Ōmilu
14"

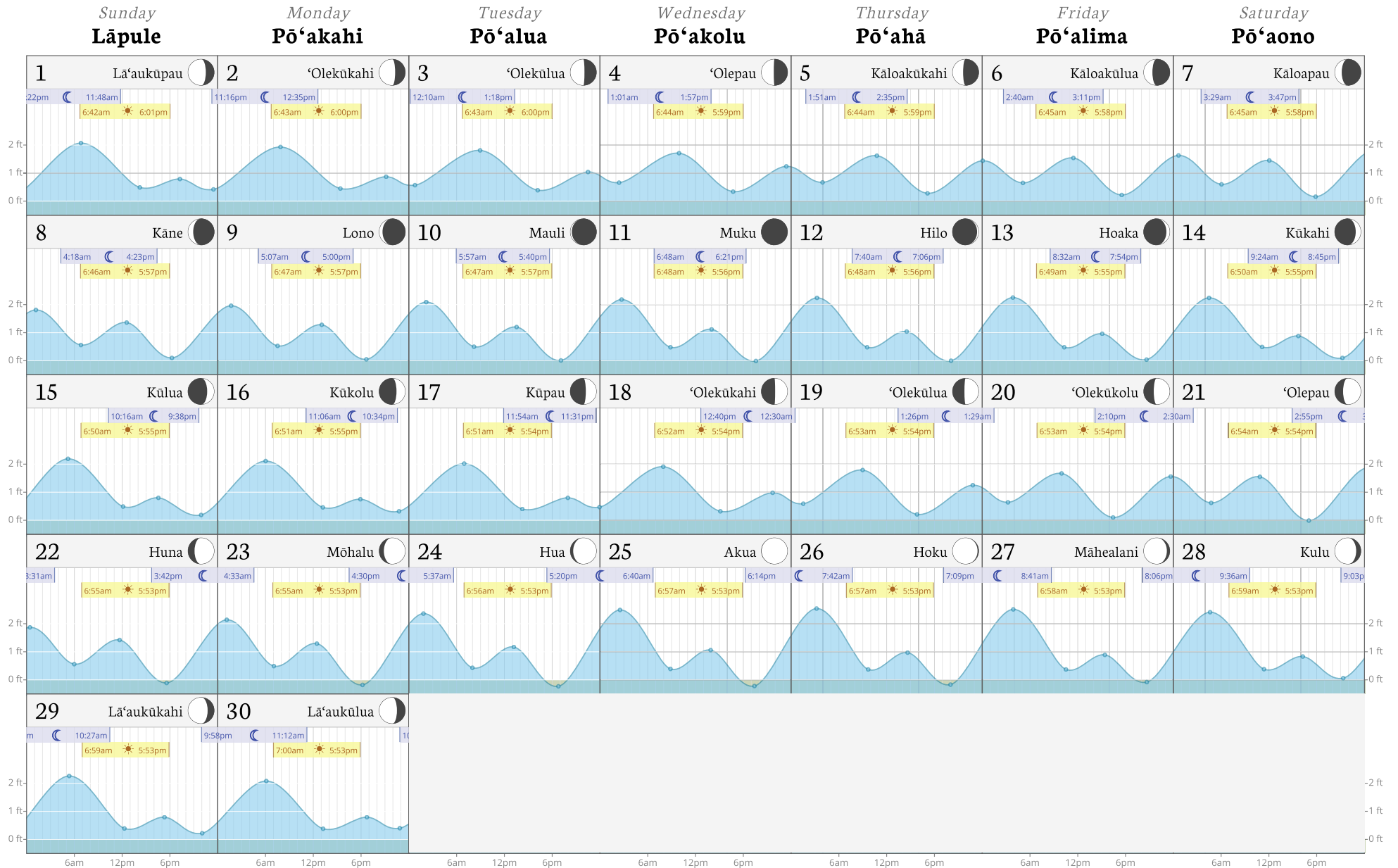


Ulua
21-32"

NOWEMAPA

HANALEI TIDE & MOON CALENDAR 2015

NOVEMBER



Passing on the 'Ike

More sustainable practices to preserve our resources

Using barbless hooks is a great way to reduce the effort needed to remove hooks from unwanted catch. Simply smash the barb down on your hook by using a pair of pliers and you're done! Its surprisingly easy to do, while the likelihood of loosing your catch is minimal.

Preserve your fishing area by removing trash and marine debris. Picking up a few pieces each time will make a difference if we all work together.

We all share the ocean. Respect other ocean users.

Our actions on land affect the health of the ocean. Backyard gardens can be a great way to increase self-sufficiency, but remember to farm pono. Pesticides, herbicides, and excess fertilizer can harm aquatic life so practice organic gardening whenever possible.

Encourage pono practices by sharing your knowledge on how to harvest wisely and care for the environment.

If you're interested in learning how you can help to contribute information to this project, contact the Hanalei Watershed Hui at:

808-826-1985 or hanaleiriver@hawaiian.net

Closed Season



'Ama'ama: Dec-Mar

Limited Harvest



Moi: 11 inches FL, 15 per day

Fish Fact: Although moai are closed to harvest during the peak spawning months of June thru August, spawning activity frequently begins as early as May and will often continue into October. Be observant when cleaning your catch and limit further harvesting if developed gonads are present.

KĒKĒMAPA

HANALEI TIDE & MOON CALENDAR 2015

DECEMBER

« prev next »

Sunday
Lāpule

Monday
Pō'akahi

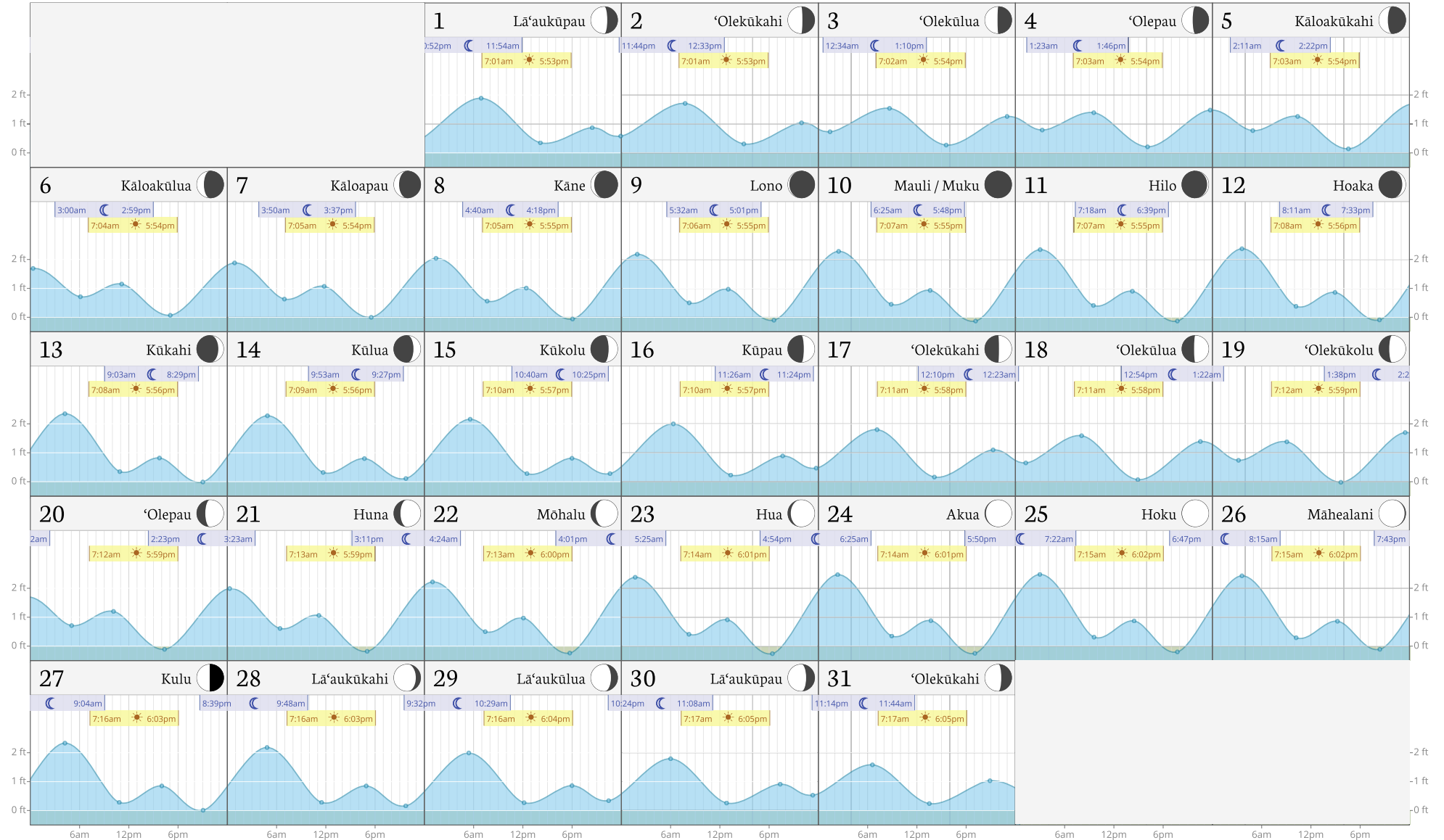
Tuesday
Pō'alua

Wednesday
Pō'akolu

Thursday
Pō'ahā

Friday
Pō'alima

Saturday
Pō'aono



**If you're interested in learning how you can contribute information to this and other projects in Hanalei, please contact the Hanalei Watershed Hui at:
(808) 826-1985 or hanaleiriver@hawaiian.net**

The Hanalei Moon and Tide Calendar was made possible through the following partnerships:

**Hanalei Watershed Hui
Papahānaumokuākea Marine National Monument
Hawaiian Islands Humpback Whale National Marine Sanctuary
Hawai'i Division of Aquatic Resources
Waipā Foundation
Dr. Alan Friedlander, University of Hawaii at Mānoa**

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Hanalei Watershed
Hui

