

Hanalei Moon and Tide Calendar 2014



United Nations
Educational, Scientific and
Cultural Organization



World
Heritage
Centre

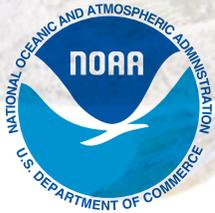
Hanalei Watershed Hui



Photo: Bishop Museum

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, and the Division of Aquatic Resources in the Department of Land and Natural Resources. The calendar is intended to raise awareness about the connections between different environmental processes in Hanalei. The calendar demonstrates the lunar cycle and the tides which follow the moon. Traditional Hawaiian knowledge about fish spawning was often based on lunar cycles and seasonal changes, so a portion of the calendar also explains how to observe and determine the spawning season for fish.



The bar below will appear for every month, and it displays both the Hawaiian months (Malo) and Gregorian months. The Hawaiian months coincide with the 30 phases of the moon. Each month begins with the moon phase named Hilo (new moon) and finishes with Maui or Muku. The Gregorian months are the standard months that are most widely accepted and used internationally.

January <i>Jan. 1 - Jan. 30</i>	February <i>Jan. 31- Feb. 27</i>	March	April	May	June	July	August	September	October	November	December
Hilioholo	Hilionalu	Hukipau	ʻIkuwā	Welehu	Kāʻelo	Ikiiki	Hinaiāʻeleʻele	Māhoe Mua	Māhoe Hope	Hilinamā	Hilinehu

Terms Used In the Calendar

In each month, there is a summary of seasonal fishing regulations administered by the State of Hawaiʻi through the Department of Land and Natural Resources, Division of Aquatic Resources (DAR). There are additional regulations which apply year-round, such as catch size or gear restrictions. These year-round regulations are not displayed in the calendar, so for more information, see the DAR website at: <http://hawaii.gov/dlnr/dar/index.html>

Closed Season

These periods are based on current seasonal regulations administered by the State of Hawaiʻi through the Department of Land and Natural Resources, Division of Aquatic Resources (rules can be found at <http://hawaii.gov/dlnr/dar/rules/ch95.pdf>). During a closed season for a given species, there is a ban on taking, possessing, or selling that species. For example, there is a closed season for mullet (*Mugil cephalus*) from December through March.

Limited Harvest

While a closed season is a complete harvest restriction during certain months, some species have limited harvest periods alone, or in addition to, closed season periods. Limited harvest can regulate fishing technique (e.g., use of net), number of fish harvested, size of fish harvested, or total weight of harvest. For example, there is a closed season for moi (*Polydactylus sexfilis*) from June through August, but from September through May there is a limited harvest of fifteen moi per day.

Suggested Limited Harvest

These periods are based upon observations and gonad data of fish that were caught in the Hanalei area. Limited harvest is suggested during the peak spawning months so fish may reproduce undisturbed. Suggested limited harvest is not a part of any State of Hawaiʻi or Federal regulations, see January page for more information.

Data Presented in this Calendar

Daily tide, moon, and sun data are provided in this calendar.
All predictions are for Hanalei Bay.

Hawaiian Moon Phases

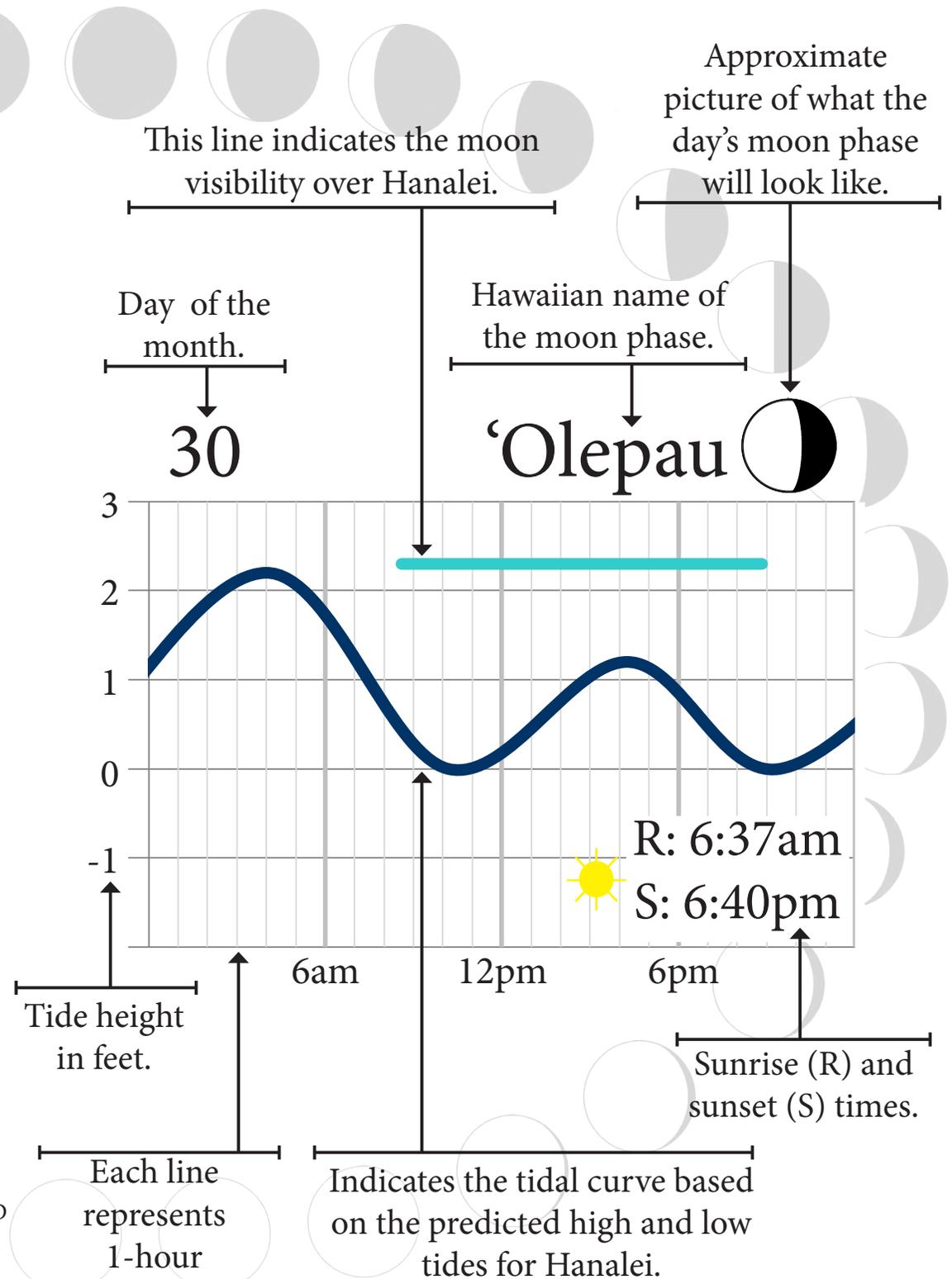
Many calendars today are based upon the synodic month, which is the average orbital period of the moon. A synodic month is 29.53 days. However, there are 30 moon phases. In this calendar, the moon phase Hilo was aligned with the astronomical new moon according to the US Naval Observatory¹. The days and times are based on Universal Time which was converted to Hawai'i Standard Time for this calendar. The rest of the moon phases are laid out accordingly. Each moon phase has its own name (Malo). The moon phase Muku is omitted for months where the next new moon occurs 29 days after the current months' new moon.

Moon Visibility

The visibility of the moon over Hanalei Bay² is provided by the U.S. Naval Observatory website. The rise and set times of each moon phase are represented by the beginning and the end of each bar.

Hanalei Tide

The tides presented in this calendar are the subordinate tide predictions for Hanalei Bay³, these predictions are based on the harmonic predictions for Nawiliwili Bay. Harmonic predictions are based on data from stations at the site while subordinate predictions are adjusted times based on data from a nearby data station.



¹http://aa.usno.navy.mil/cgi-bin/aa_moonphases.pl?year=2013&ZZZ=END

²http://aa.usno.navy.mil/data/docs/RS_OneYear.php

³<http://tidesandcurrents.noaa.gov/>

‘Ianuali

January

Lāpule
Sunday

Pō‘akahi
Monday

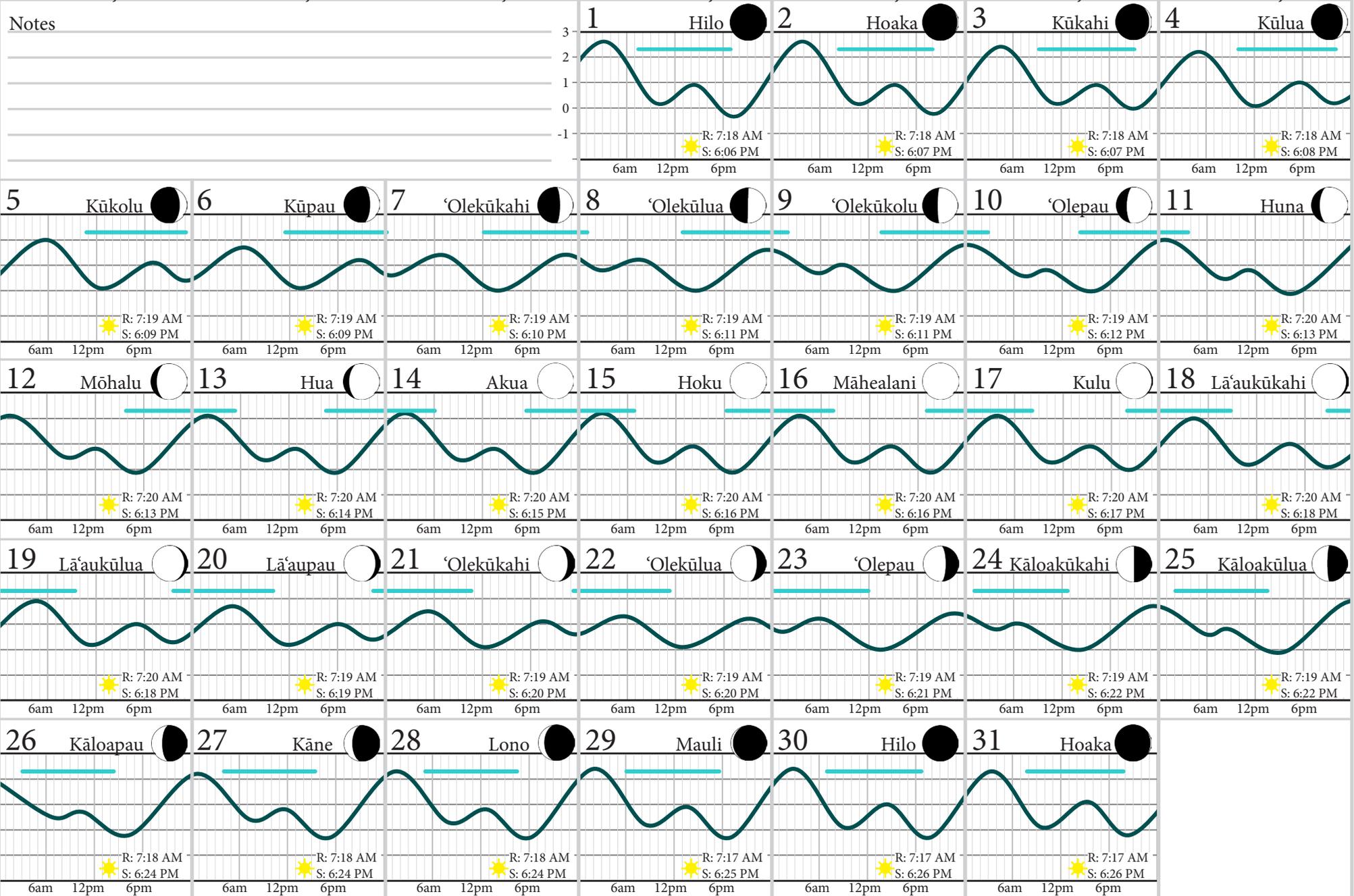
Pō‘alua
Tuesday

Pō‘akolu
Wednesday

Pō‘ahā
Thursday

Pō‘alima
Friday

Pō‘aono
Saturday



Pepeluāli

February

Lāpule
Sunday

Pōākahi
Monday

Pōʻalua
Tuesday

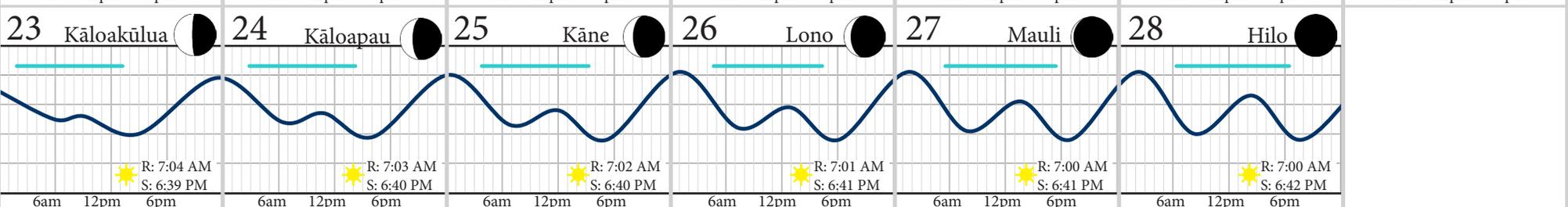
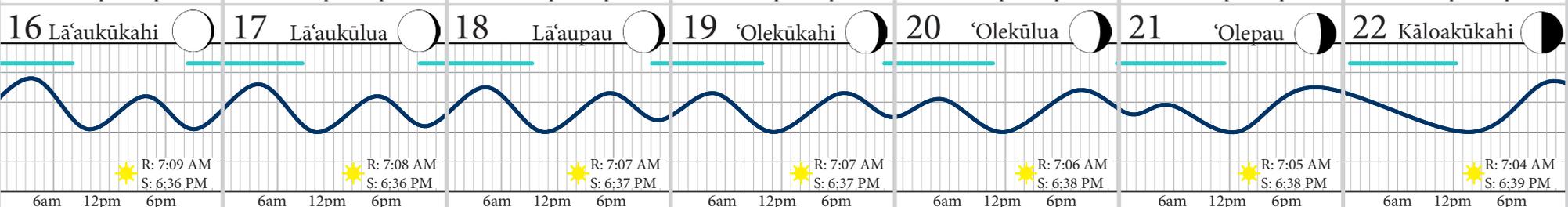
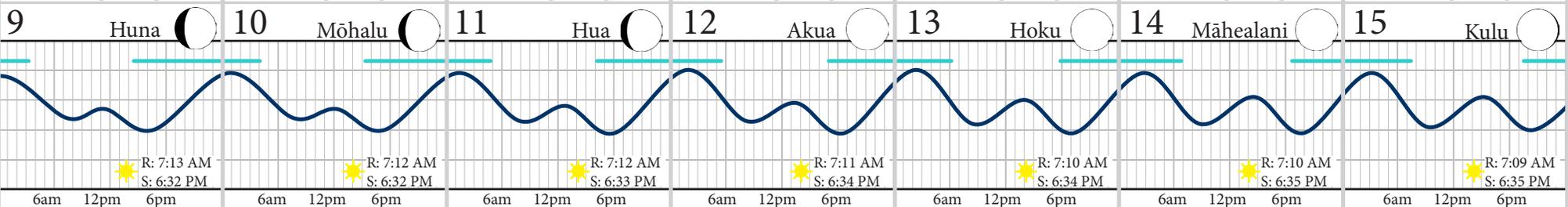
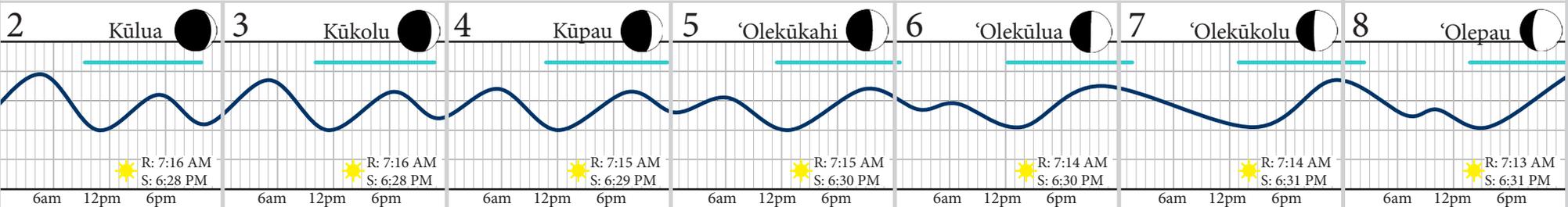
Pōʻakolu
Wednesday

Pōʻahā
Thursday

Pōʻalima
Friday

Pōʻaono
Saturday

Notes

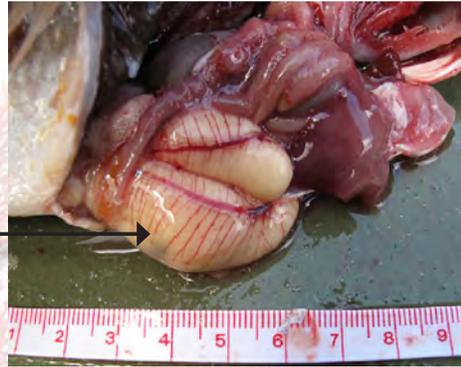


3 Steps to Track Fish Gonad Development

Observe: When cleaning your fish, pay attention to the presence and size of gonads (eggs or sperm).

1

Developed eggs are usually yellowish in color with bright red blood vessels very apparent.



Measure: Weighing gonads on a digital scale is the best way to track their development, however, if you don't have access to a good scale, you can measure the length of the gonads.

Remove gonads and weigh in appropriate units.

Record: Keep track of gonad development over the months to find the peak spawning period of the fish you routinely harvest. Avoid catching them when gonads are developed.

Fish	Date of Catch (M/DD/YY)	Weight (Ounces)	Fork Length (Inches)	Sex (M/F)	State of Gonads (Ripe, Developed, Under Developed, Not Present)	Weight of Gonads (Grams)	Picture (file name)
Aholehole	3/23/12	6.2	8.75	F	Developed	5	
		6.2	8.75	M	Developed	6	
		6.5	9.0	F	Developed	3	
		5.2	8.25	M	Developed	5	
		6.0	8.5	F	Ripe	7	IMon_1029
		5.6	8.25	F	Developed	3	

Closed Season



'Ama'ama (Mullet)

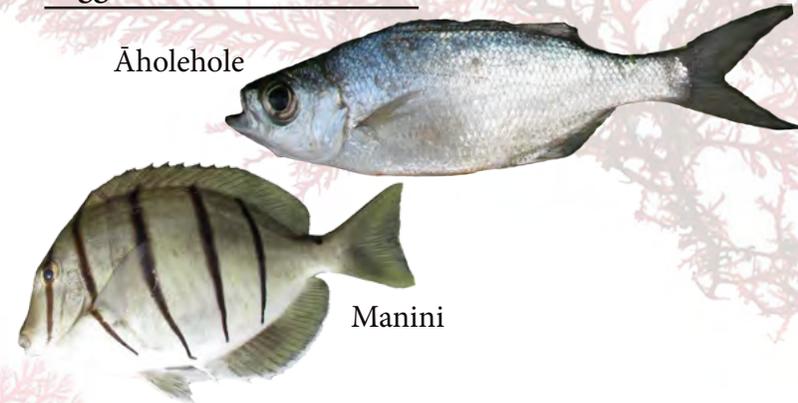
Limited Harvest



Moi (15 per day)

Suggested Limited Harvest

Āholehole

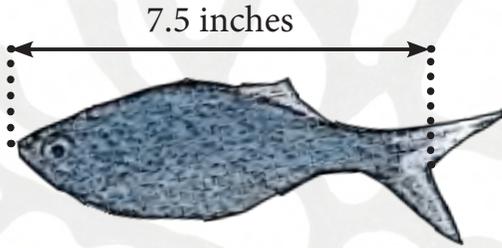


Manini

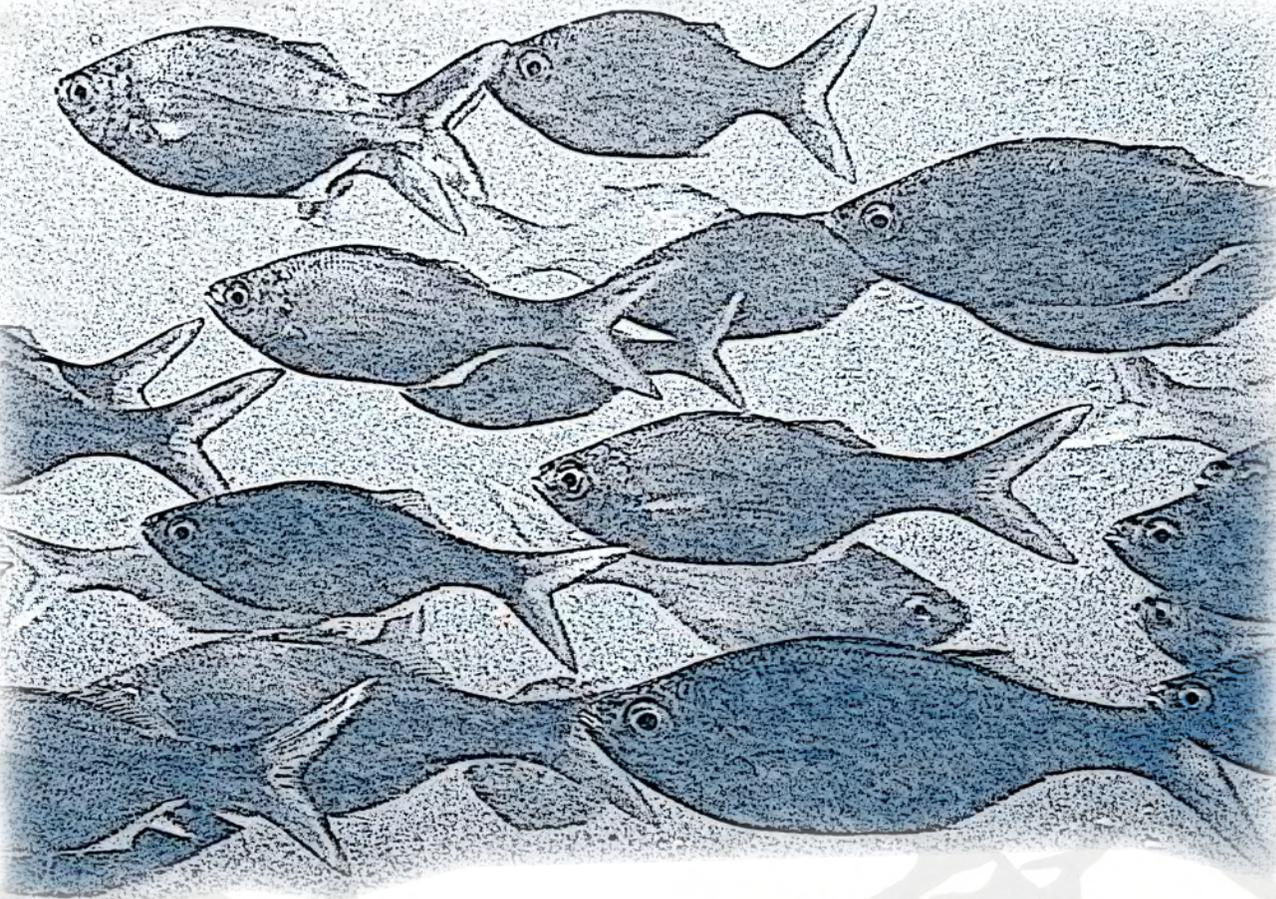
January	February	March	April	May	June	July	August	September	October	November	December
Hiliohola	Hilionalu	Hukipau	'Ikuwā	Welehu	Kā'elo	Ikiiki	Hinaiā'ele'ele	Māhoe Mua	Māhoe Hope	Hilinamā	Hilinehu

Know Your Spawning Seasons

Harvesting fish during their spawning season reduces next years catch.



Aholehole spawn during the wet season. This month marks the end of the peak spawning season for Aholehole. In Hanalei, they have been found to mature around 7.5" so harvesting fish larger than this size after the peak spawning season will ensure that they had an opportunity to spawn.



Limited Harvest



Moi (15 per day)

Suggested Limited Harvest



Manini

Āholehole



Akule

‘Ōmilu



‘Ōpelu

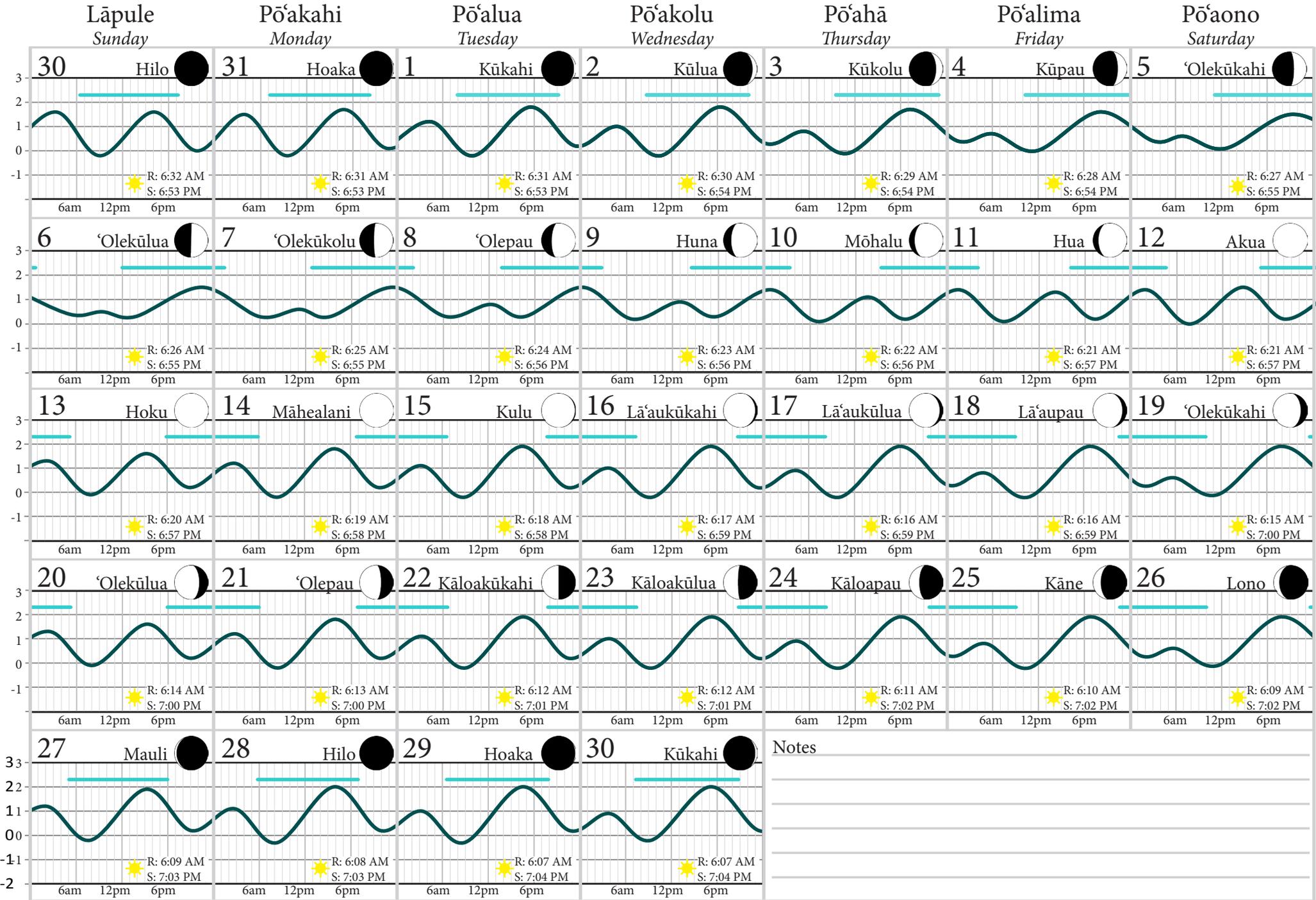
January February March April May June July August September October November December

Mar. 20 - Apr. 27 Apr. 28 - May 27

Hilioholo Hilionalu Hukipau 'Ikuwā Welehu Kā'elo Ikiiki Hinaiā'ele'ele Māhoe Mua Māhoe Hope Hilinamā Hilinehu

‘Apelila

April



Know Your Spawning Seasons

Manini have an extended spawning season. The timing of their spawning season is different across the islands and may also vary by year. Recording when fish are full of eggs helps to identify the times of the year when fish are spawning.



Spawning Male:

Gonad is white with a smooth, milky texture.



Resting Female:

Gonad is white to pink in color and takes up to 1/4 of the body cavity.



Female Approaching Spawning:

Gonads are pink and have a swollen appearance.



Spawning Female:

Gonads are very large and can be pink to clear in color. Eggs may be released upon handling.

You can share your collected spawning information and learn how you can participate in developing spawning season calendars at:

www.hawaii.edu/coral/mooncalendar.

Closed Season



Ula Papapa (slipper lobster)



Ula (spiny lobster)



Kona crab

Limited Harvest



Moi (15 per day)

Suggested Limited Harvest



Manini



'Ōmilu



Akule



'Ōpelu

January	February	March	April	May	June	July	August	September	October	November	December
Hiliohola	Hilionalu	Hukipau	'Ikuwā	Apr. 28 - May 27 Welehu	May. 28 - Jun. 25 Kā'elo	Ikiiki	Hinaiā'ele'ele	Māhoe Mua	Māhoe Hope	Hilinamā	Hilinehu

Mei

May

Lāpule
Sunday

Pō'akahi
Monday

Pō'alua
Tuesday

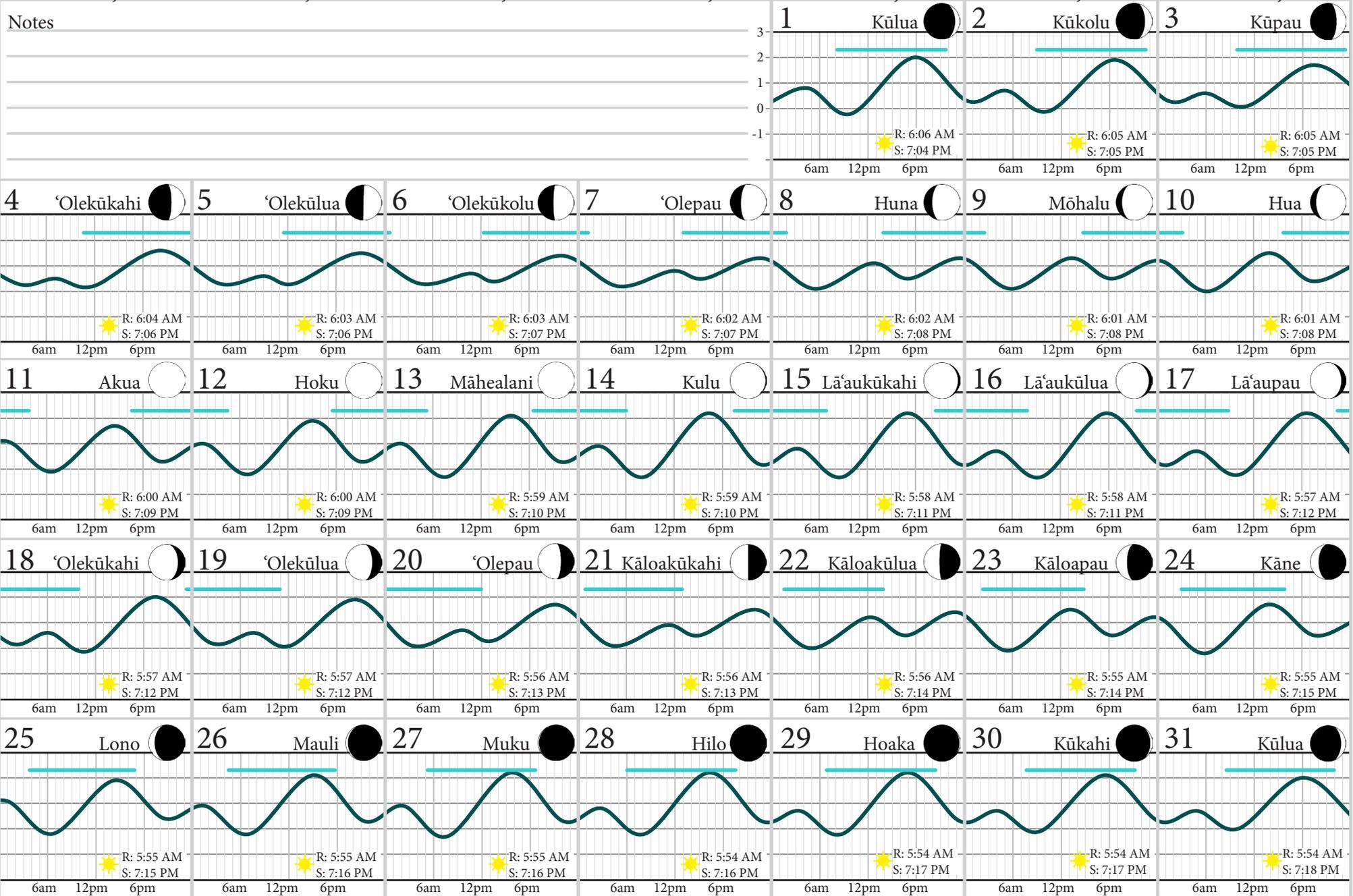
Pō'akolu
Wednesday

Pō'ahā
Thursday

Pō'alima
Friday

Pō'aono
Saturday

Notes



Harvest wisely to ensure future catches!

Slot limit catches: recognizing the importance of leaving very large individuals



Small fish = no take.
Allow them to reach reproductive size!



Medium fish = go for it.
Good choice to fish sustainably!



Large fish = no take.
Larger fish in every species produce MANY more eggs than fish that have just reached their reproductive size. The yolk reserves in eggs from large fish are also larger, offering a better chance of survival for the hatchlings.

Closed Season



Ula Papapa (slipper lobster)



Ula (spiny lobster)



Kona crab



Moi

Suggested Limited Harvest



Manini



'Ōmilu



Akule



'Ōpelu

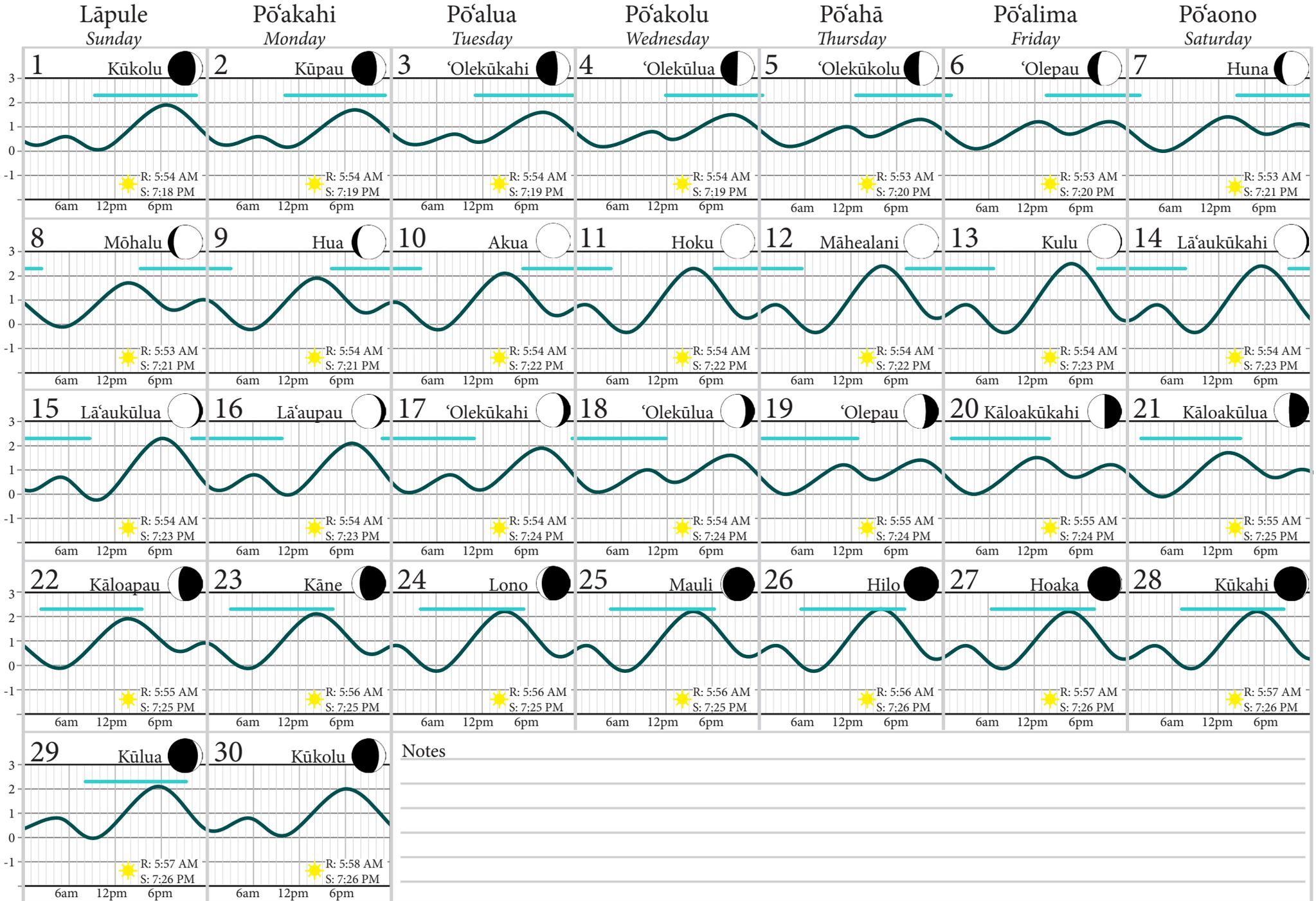
January February March April May June July August September October November December

May 28 - Jun. 25 Jun. 26 - Jul. 25

Hilioholo Hilionalu Hukipau 'Ikuwā Welehu Kā'elo Ikiiki Hinaiā'ele'ele Māhoe Mua Māhoe Hope Hilinamā Hilinehu

June

June



Coral Plays an Important Role for Fish

Healthy corals are the foundation of a healthy reef ecosystem. They provide food, shelter, and essential nursery ground for many species. Hanalei Bay is a challenging environment for corals due to 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 for prolonged periods, but the sediment from flooding



Blue-eye damselfish are just one of the many reef fish in Hawai'i that feed on coral polyps.

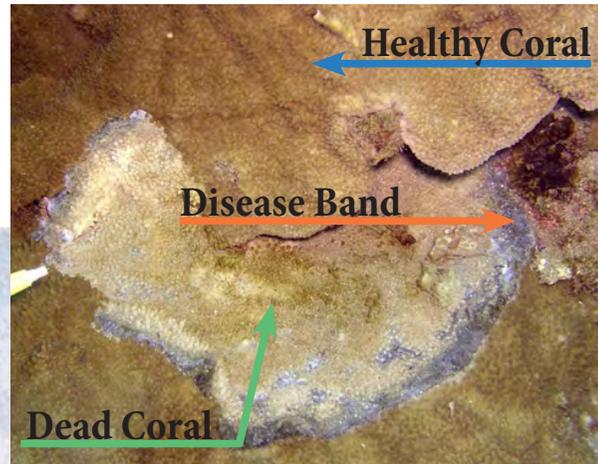
We can help to protect coral by:

- ➔ Not stepping on live coral while swimming and snorkeling
- ➔ Anchoring boats only in sandy areas
- ➔ Minimizing runoff
- ➔ Not littering and removing all discarded or broken fishing gear

events also smothers coral by blocking out the sunlight they need to survive.

Coral, like any living animal, becomes more susceptible to disease when stressed. This can be the result of hurricanes, flooding, excessive sedimentation, a rapid increase in water temperature, and pollution among other things. Little is currently known about coral diseases worldwide and continues to be a topic of active research.

Cooperation between State, Federal, non-profit, and community partners is essential to better understanding coral disease on Kaua'i



A coral disease has been identified on the North shore of Kaua'i. This disease has been causing coral death at varying levels and is identified by a black band (infectious agent) around circular patches of dead coral. Research is currently being done to identify the cause of the disease and develop management options.

Closed Season



Ula Papapa (slipper lobster)



Ula (spiny lobster)

Kona crab



Moi



Limited Harvest

Halalū



Suggested Limited Harvest

‘Ōmilu



Akule



January	February	March	April	May	June	July	August	September	October	November	December
Hiliohola	Hilionalu	Hukipau	‘Ikuwā	Welehu	Kā‘elo	Ikiiki	Hinaiā‘ele‘ele	Māhoe Mua	Māhoe Hope	Hilinamā	Hilinehu

Jun. 26 - Jul. 25 Jul. 26 - Aug. 24

Iulai

July

Lāpule
Sunday

Pō'akahi
Monday

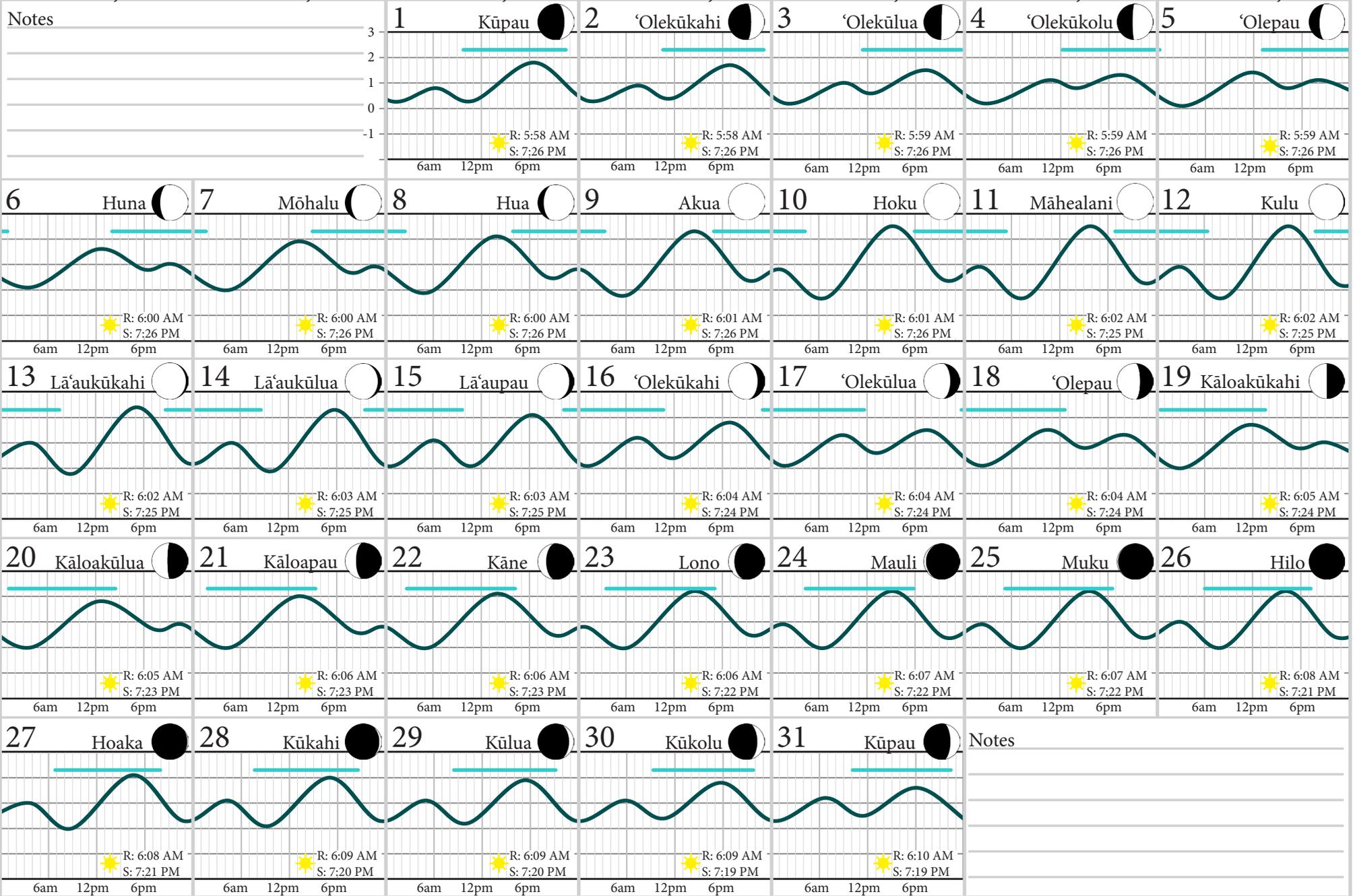
Pō'aluā
Tuesday

Pō'akolu
Wednesday

Pō'ahā
Thursday

Pō'alima
Friday

Pō'aono
Saturday



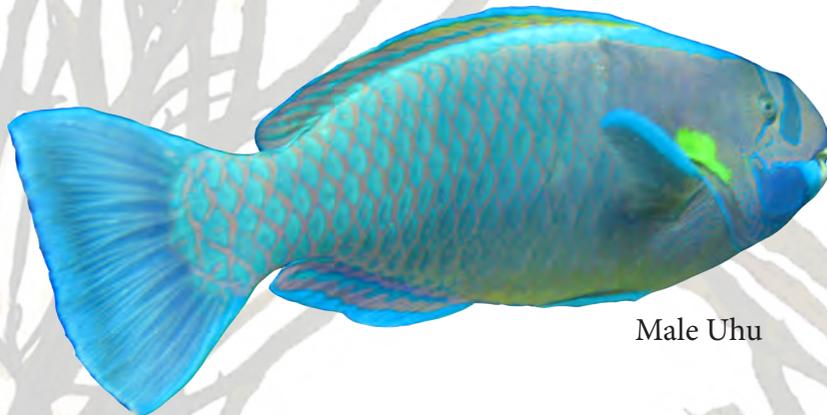
Harvest wisely to ensure future catches!

Know your fish before you harvest.

Uhu: no blue for you!

All species of uhu live in family groups called harems, which are comprised of one male (primarily blue) and several females (more reddish with white tail section).

If the male is removed from the harem, the largest female will undergo a sex change and turn into the lead male.



Male Uhu

This change takes several months and can disrupt the spawning cycle.

Harvesting only medium sized females helps limit the impact on the harems and their spawning cycles.



Female Uhu

Closed Season



Ula Papapa
(slipper lobster)



Ula (spiny lobster)

Kona crab



Moi



Limited Harvest

Halalū



Suggested Limited Harvest

‘Ōpelu



Akule



January	February	March	April	May	June	July	August	September	October	November	December
Hilioholo	Hilionalu	Hukipau	‘Ikuwā	Welehu	Kā‘elo	Ikiiki	Jul. 26 - Aug. 24 Hinaiā‘ele‘ele	Aug. 25 - Sept. 22 Māhoe Mua Māhoe Hope		Hilinamā	Hilinehu

'Aukake

August

Lāpule
Sunday

Pō'akahi
Monday

Pō'aluā
Tuesday

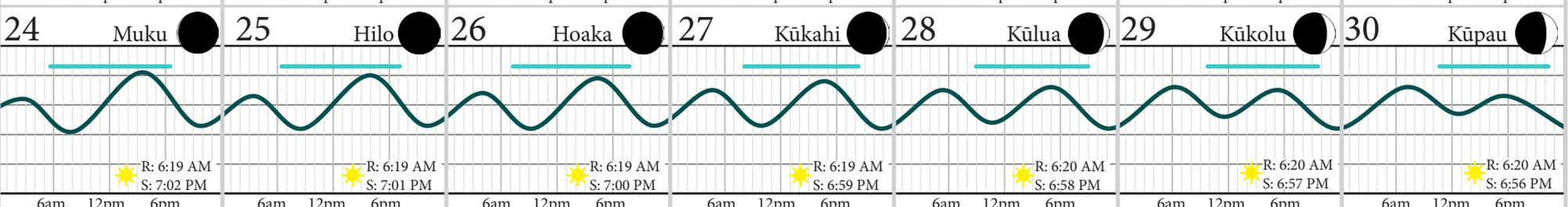
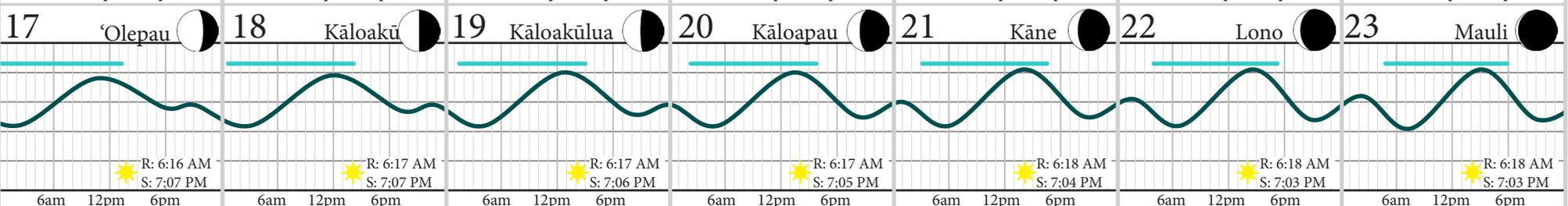
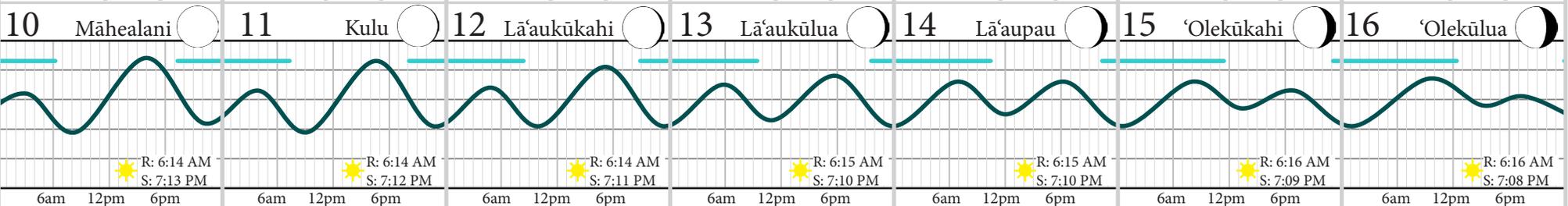
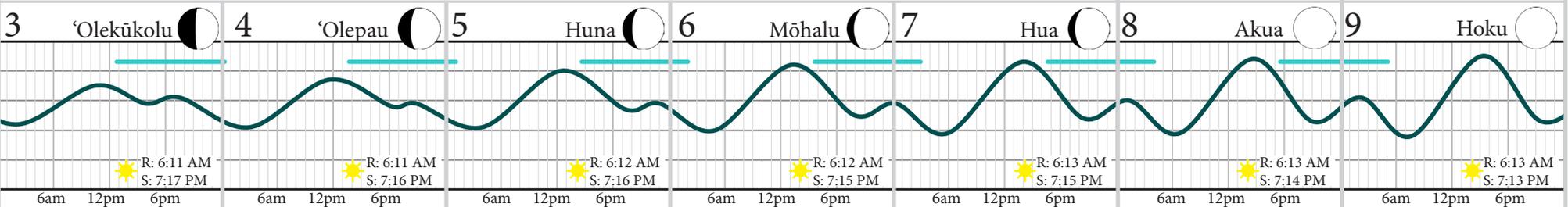
Pō'akolu
Wednesday

Pō'ahā
Thursday

Pō'alima
Friday

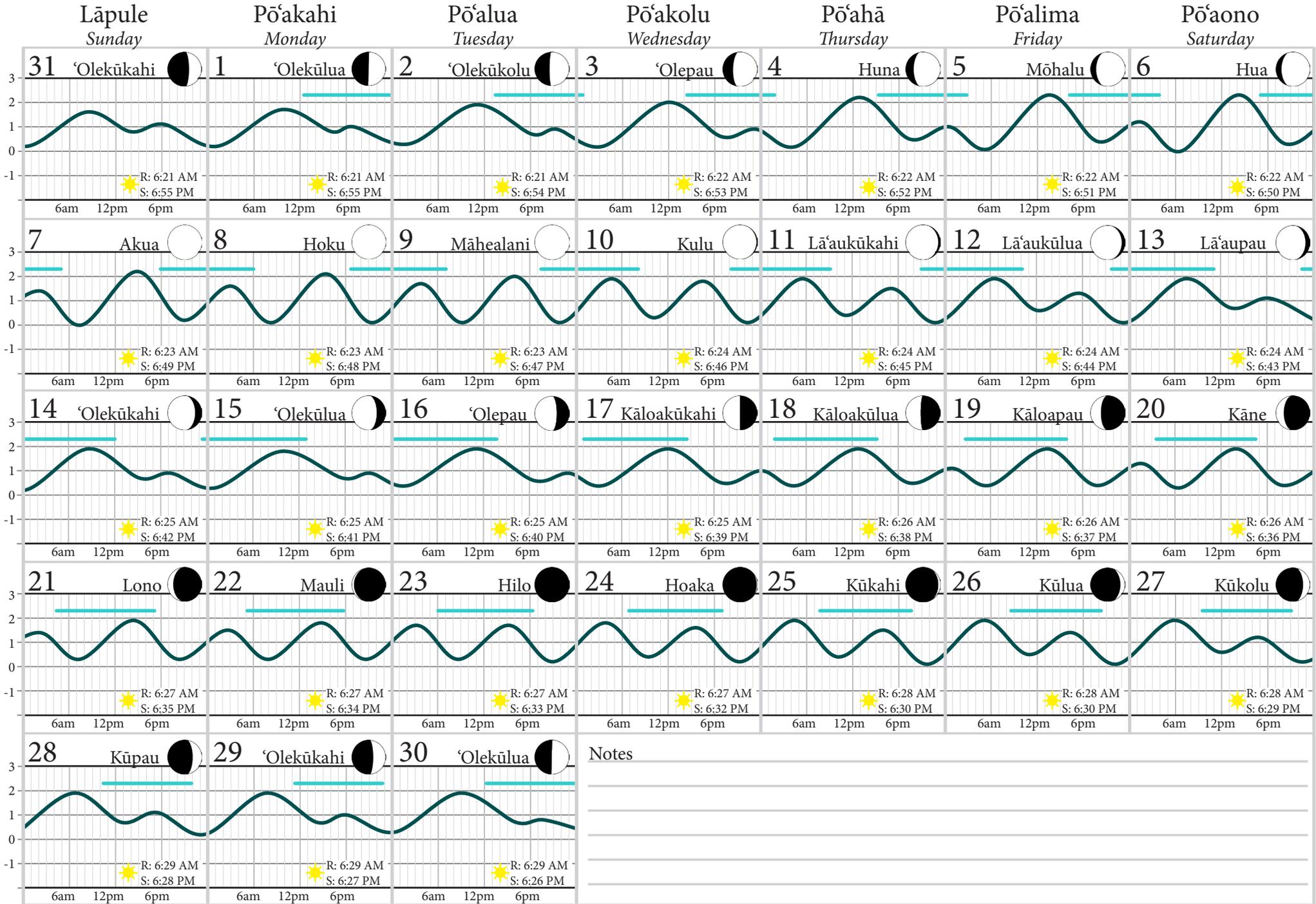
Pō'aono
Saturday

Notes



Kepakemapa

September



'Okakopa

October

Lāpule
Sunday

Pō'akahi
Monday

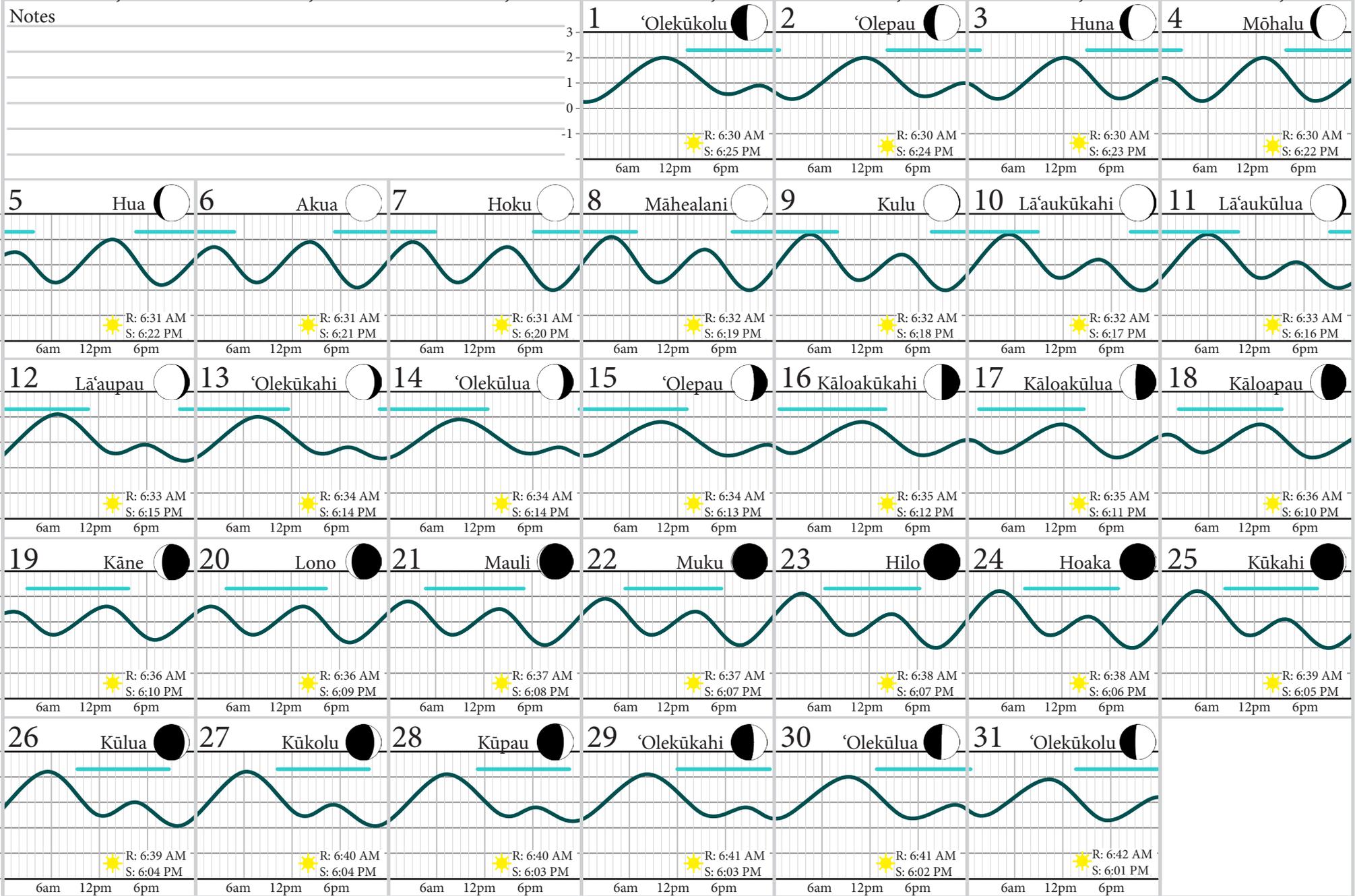
Pō'aluā
Tuesday

Pō'akolu
Wednesday

Pō'ahā
Thursday

Pō'alima
Friday

Pō'aono
Saturday



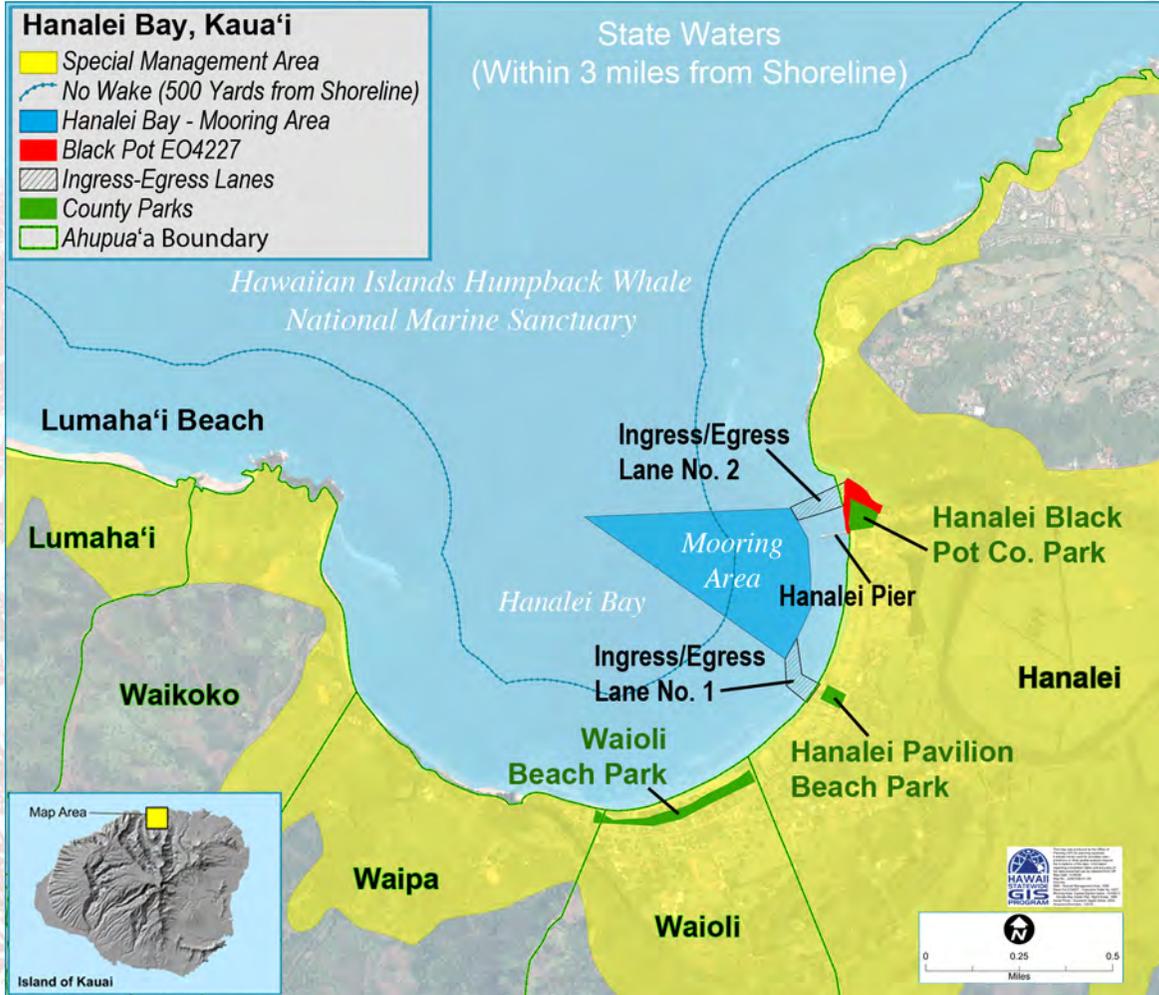
Who to Call in Hanalei

Funded in part by community donations, the Hanalei Watershed Hui worked with State and County offices to produce this map, describing the various jurisdictions and points of contact related to ocean activities in Hanalei Bay. More information can also be found at hanaleiwatershedhui.org.

Limited Harvest



Moi (15 per day)



Hanalei Watershed Hui

5299C Kuhio Highway, Hanalei, Kauai
 Phone: (808) 826-1985
<http://www.hanaleiwatershedhui.org/>

Hawaiian Islands Humpback Whale National Marine Sanctuary

4370 Kukui Grove Street, Suite 206, Lihue, Hawaii 96766
 Phone: (808) 246-2860
<http://hawaiihumpbackwhale.noaa.gov/>

Kauai District Office of Boating and Ocean Recreation

(Hanalei Bay Off Shore Mooring Area and Pier)
 2494 Niumalu Road, Lihue, Hawaii 96766
 Phone: (808) 241-3114
<http://state.hi.us/dlnr/dbor/borkauai.html>

Division of Conservation and Resource Enforcement (DOCARE)

Kauai: (808) 274-3521
 Weekends, holidays, and after-hours: (808) 643-DLNR (3567)

Hanalei National Wildlife Refuge, Kaua'i National Wildlife Refuge Complex

P.O. Box 1128, Kīlauea, Hawai'i 96754
 (808) 828-1413
<http://www.fws.gov/refuge/Hanalei/about.html>

Division of State Parks, Kauai District Office

3060 Eiwa Street, Suite 306, Lihue, Hawai'i 96766
 Phone: (808) 274-3444
<http://www.hawaii.stateparks.org/parks/kauai/>

Division of Aquatic Resources

3060 Eiwa Street, Room 306, Lihue, HI 96766
 Phone: (808) 274-3344
<http://state.hi.us/dlnr/dar/contacts.html>

Department of Health

3040 Umi Street, Lihue, HI 96766
 (808) 241-3614
<http://health.hawaii.gov/kauai/>

Kauai County Department of Parks and Recreation

4444 Rice Street, Mo'ikeha Building, Suite 105, Lihue, HI 96766
 Phone: (808)241-4460
<http://www.kauai.gov/government/departments/parksrecreation/tabid/515/default.aspx>

January	February	March	April	May	June	July	August	September	October	November	December
Hiliohola	Hilionalu	Hukipau	ʻIkuwā	Welehu	Kāʻelo	Ikiiki	Hinaiāʻeleʻele	Māhoe Mua	Māhoe Hope	Hilinamā	Hilinehu
										Oct. 23 - Nov. 21	Nov. 22 - Dec. 20

Nowemapa

November

Lāpule
Sunday

Pō'akahi
Monday

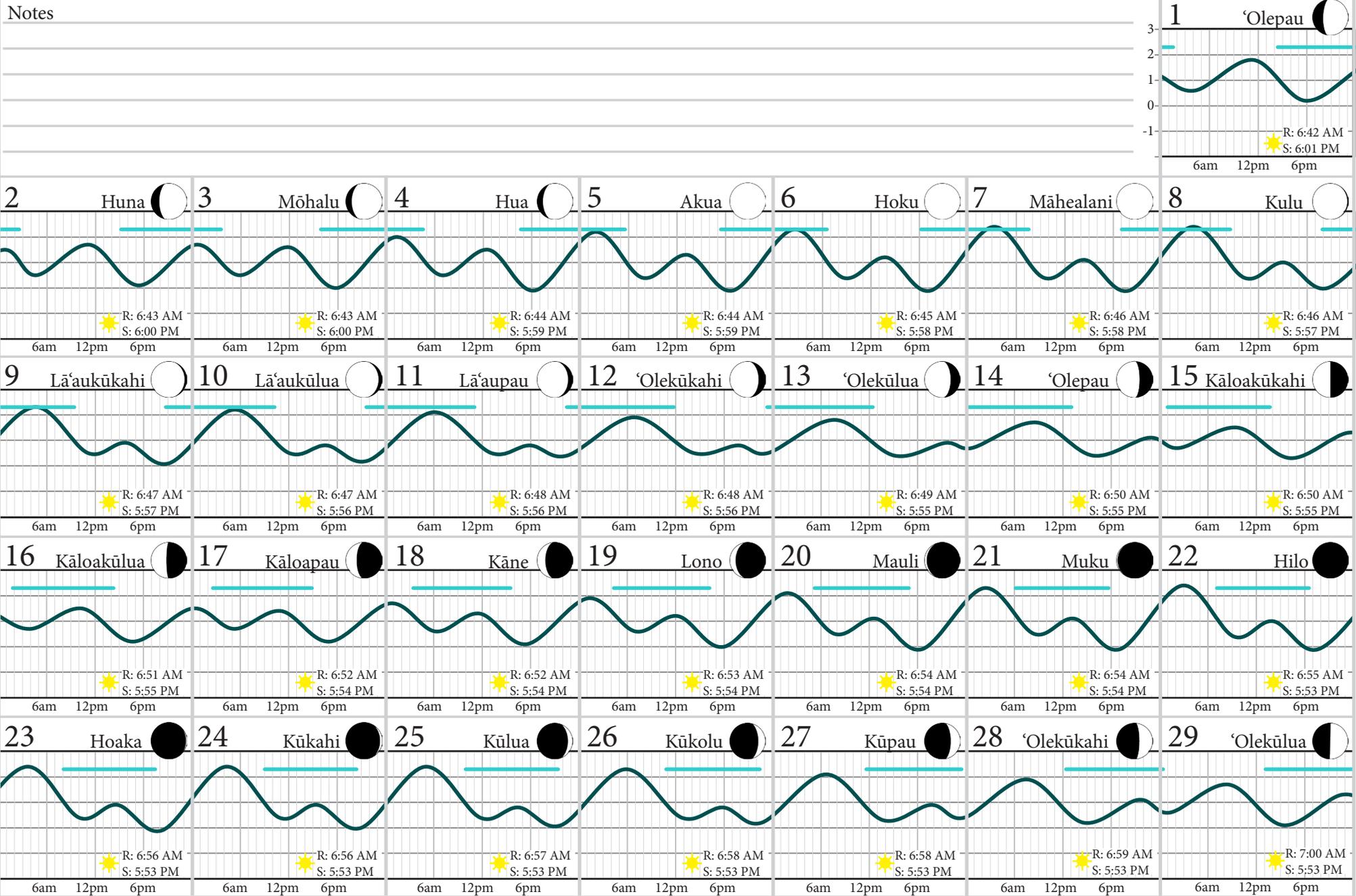
Pō'alua
Tuesday

Pō'akolu
Wednesday

Pō'ahā
Thursday

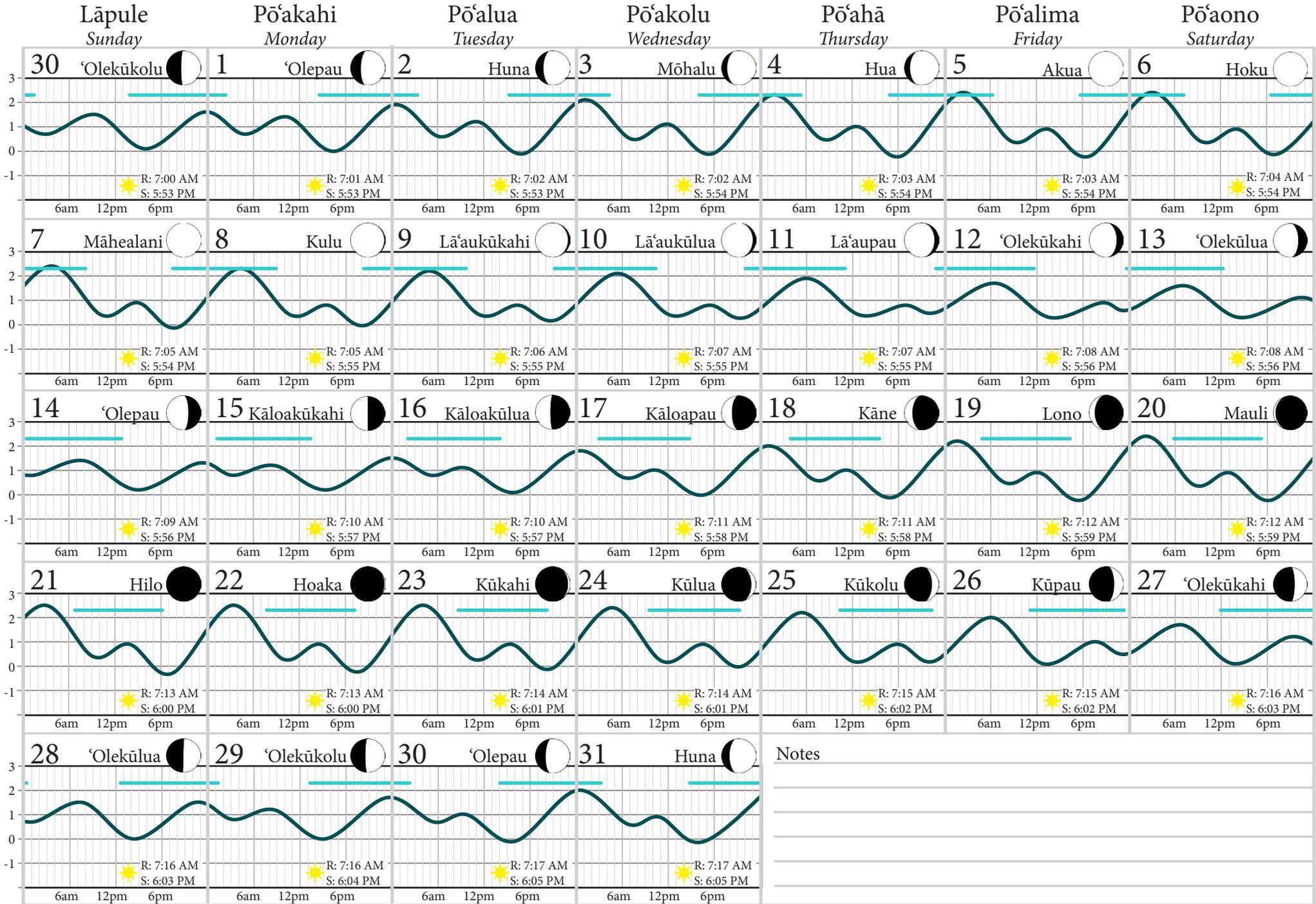
Pō'alima
Friday

Pō'aono
Saturday



Kēkēmapa

December



The proceeds from this calendar
will directly support activities of the
Hanalei Watershed Hui
www.hanaleiwatershedhui.org

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

The Hanalei Moon and Tide Calendar was made possible through the following
partnerships and supporters. Mahalo!

Dr. Alan Friedlander, University of Hawai'i at Mānoa
Brenda Zaun, USFWS (‘A‘o and ‘Ua‘u photos)
Greta Abbey (coral disease photo)
Hanalei Watershed Hui

Hawaiian Islands Humpback Whale National Marine Sanctuary
: Si Sīy 6 [he]a` aX3cgSf[UDWagcW
Papahānaumokuākea Marine National Monument
Wally Ito (limu prints)

References

- HAR 13-95. Hawaii Administrative Rules Title 13 Department of Land and Natural Resources, Subtitle 4 Fisheries, Part V Protected Marine Fisheries Resources, Chapter 95 Rules Regulating the Taking and Selling of Certain Marine Resources. <http://hawaii.gov/dlnr/dar/rules/ch95.pd>
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Hanalei Watershed Hui

