

# Hanalei Moon and Tide Calendar<sup>©</sup> 2012

**Hanalei Watershed Hui**

“supporting and protecting the ecology, cultures  
and sustainable economies of Hanalei”

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The Hanalei Moon Calendar was developed 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.

This box will appear for every month. It displays the current Closed Season and Limited Harvest regulations for that month.

**Terms Used In the Calendar**

In each month, there is a summary of seasonal fishing regulations administered by the State of Hawai'i through the Department of Land and Natural Resources, Division of Aquatic Resources (DAR). There are additional regulations which apply year-round, such as 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>

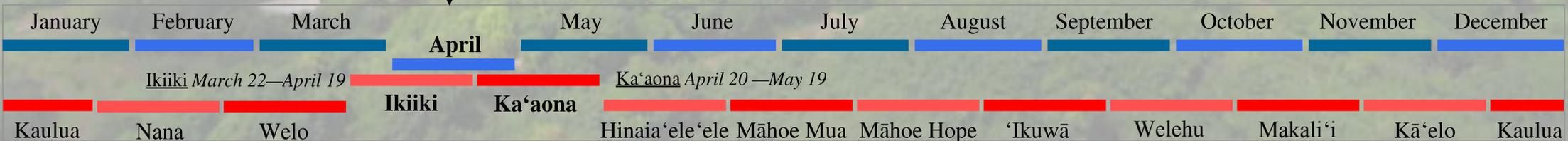
**Closed Season**

These periods are based on current seasonal regulations administered by the State of Hawai'i 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 closed season is a complete harvest restriction during certain months, some species have limited harvest periods alone, or in conjunction with 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 in June through August, but in September through May there is a limited harvest of fifteen moi per day.

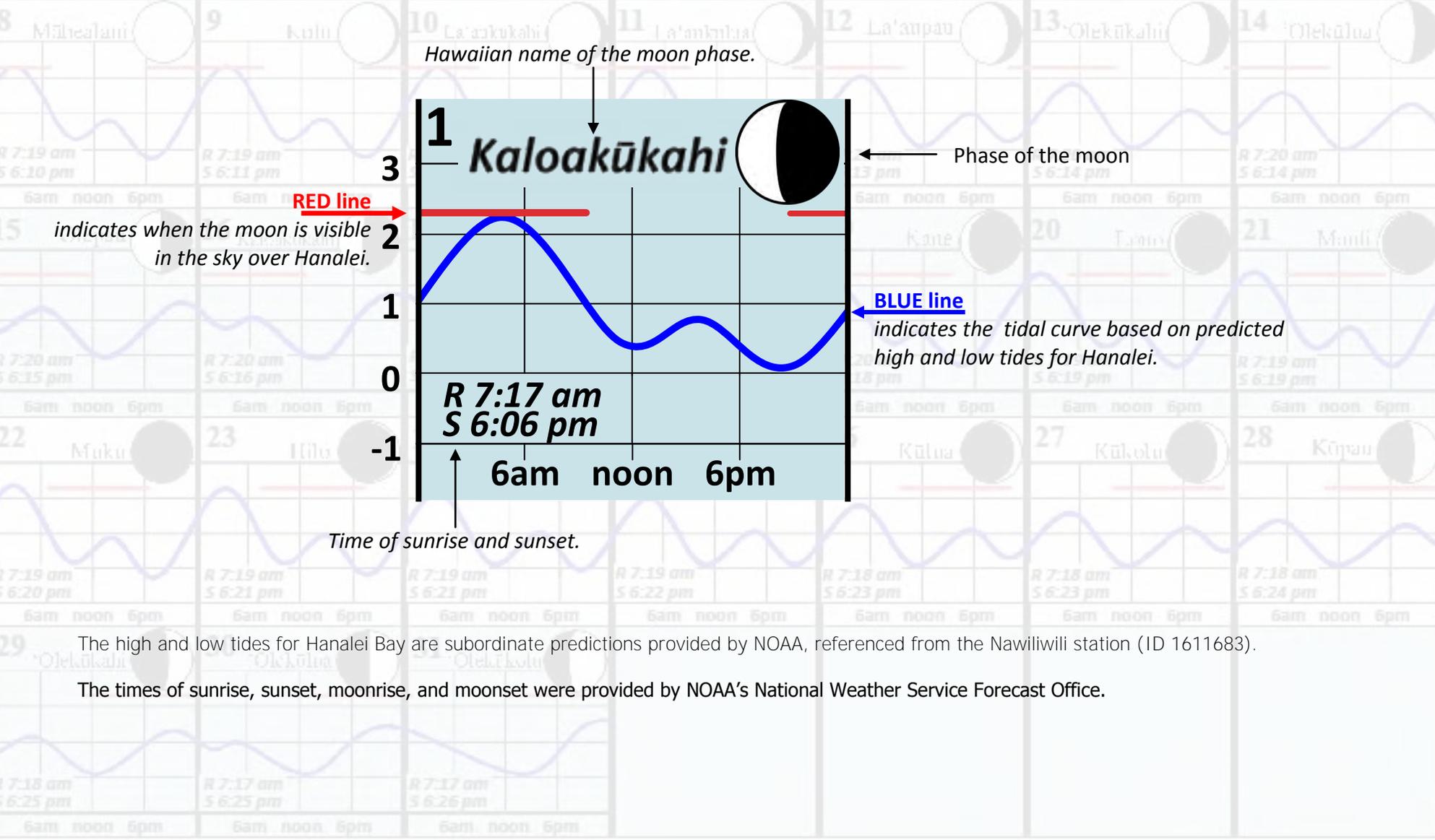
This box will appear for every month, It displays the overlap of the Hawaiian months with the English months. The Hawaiian months coincide with the 30 phases of the moon, each month begins with Hilo and finishes with Maui or Muku. Some Hawaiian months skip Muku. The example below shows the overlap of the Hawaiian months Ikiiki and Ka'aona with the English month of April.



# January 2017

Lāpule Sunday Po'akahi Monday Po'alua Tuesday Po'akolu Wednesday Po'ahā Thursday Po'alima Friday Po'aono Saturday

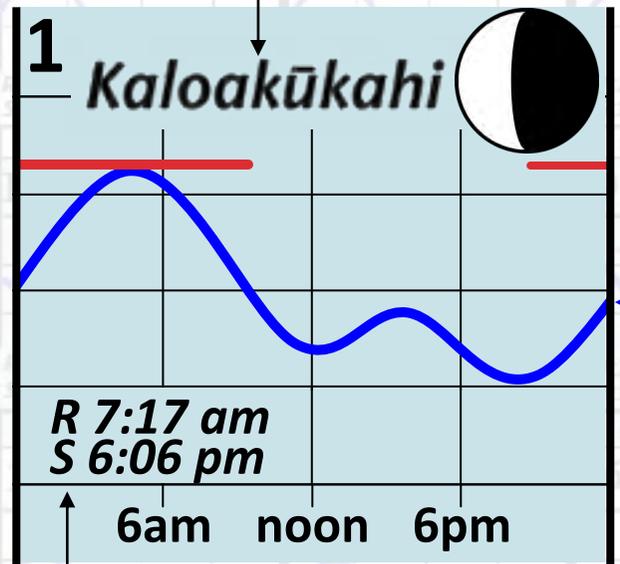
Many calendars today are based on the synodic month, which is the average orbital period of the moon. A synodic month is 29.53 days. However, there are 30 Hawaiian moon phases. In this calendar, Māhealani was matched with the astronomical full moon (as indicated by National Oceanic and Atmospheric Administration (NOAA) National Weather Service Weather Forecast Office), and the rest of the moon phases are laid out accordingly. In some months, Muku is omitted to adjust for the difference. There are different opinions on which Hawaiian moon phase coincides with the astronomical full moon, so we welcome any suggestions for increasing the accuracy and usefulness of this calendar.



**Hawaiian name of the moon phase.**

**1 Kaloakūkahi**

**RED line** indicates when the moon is visible in the sky over Hanalei.



**Phase of the moon**

**BLUE line** indicates the tidal curve based on predicted high and low tides for Hanalei.

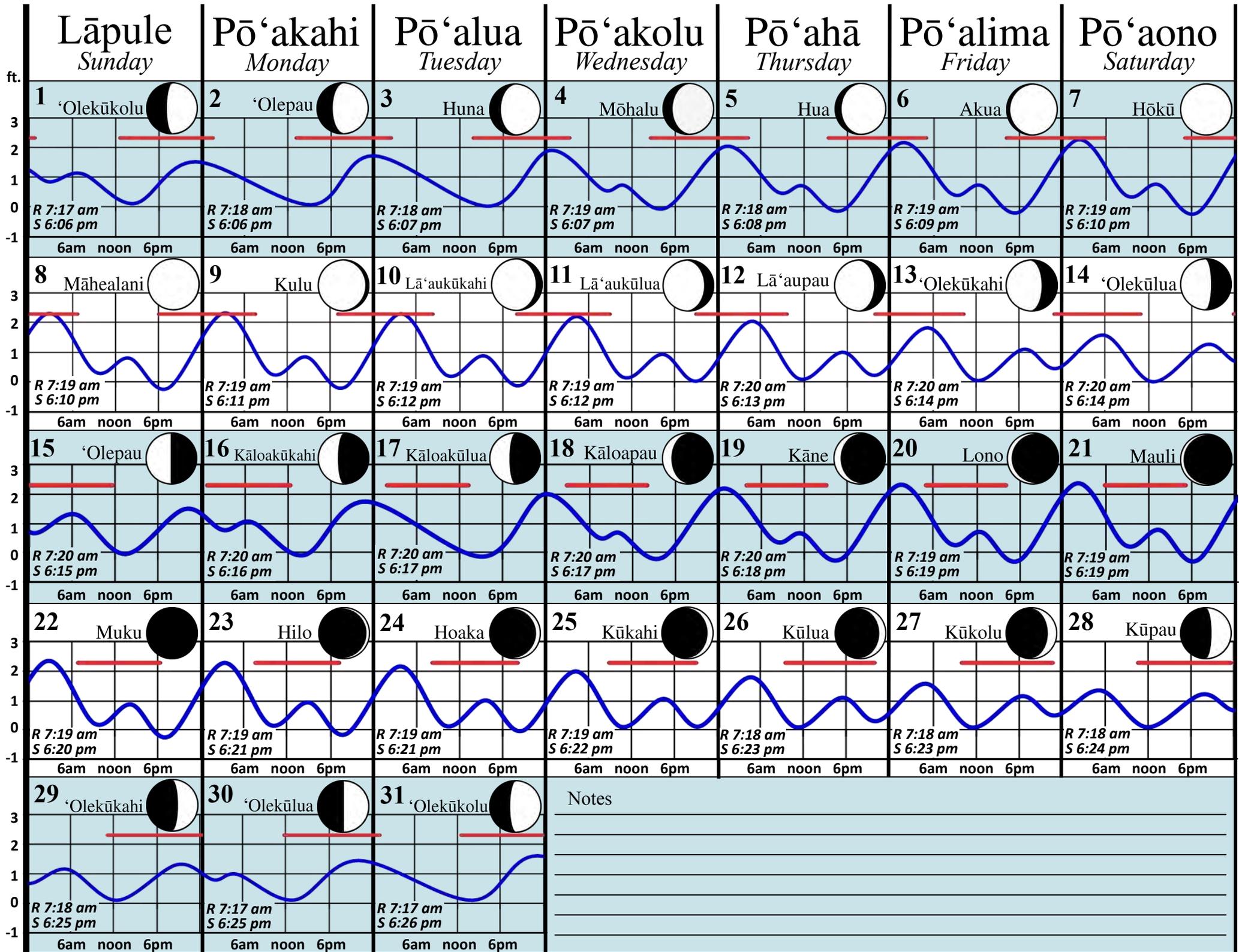
**Time of sunrise and sunset.**

The high and low tides for Hanalei Bay are subordinate predictions provided by NOAA, referenced from the Nawiliwili station (ID 1611683).

The times of sunrise, sunset, moonrise, and moonset were provided by NOAA's National Weather Service Forecast Office.

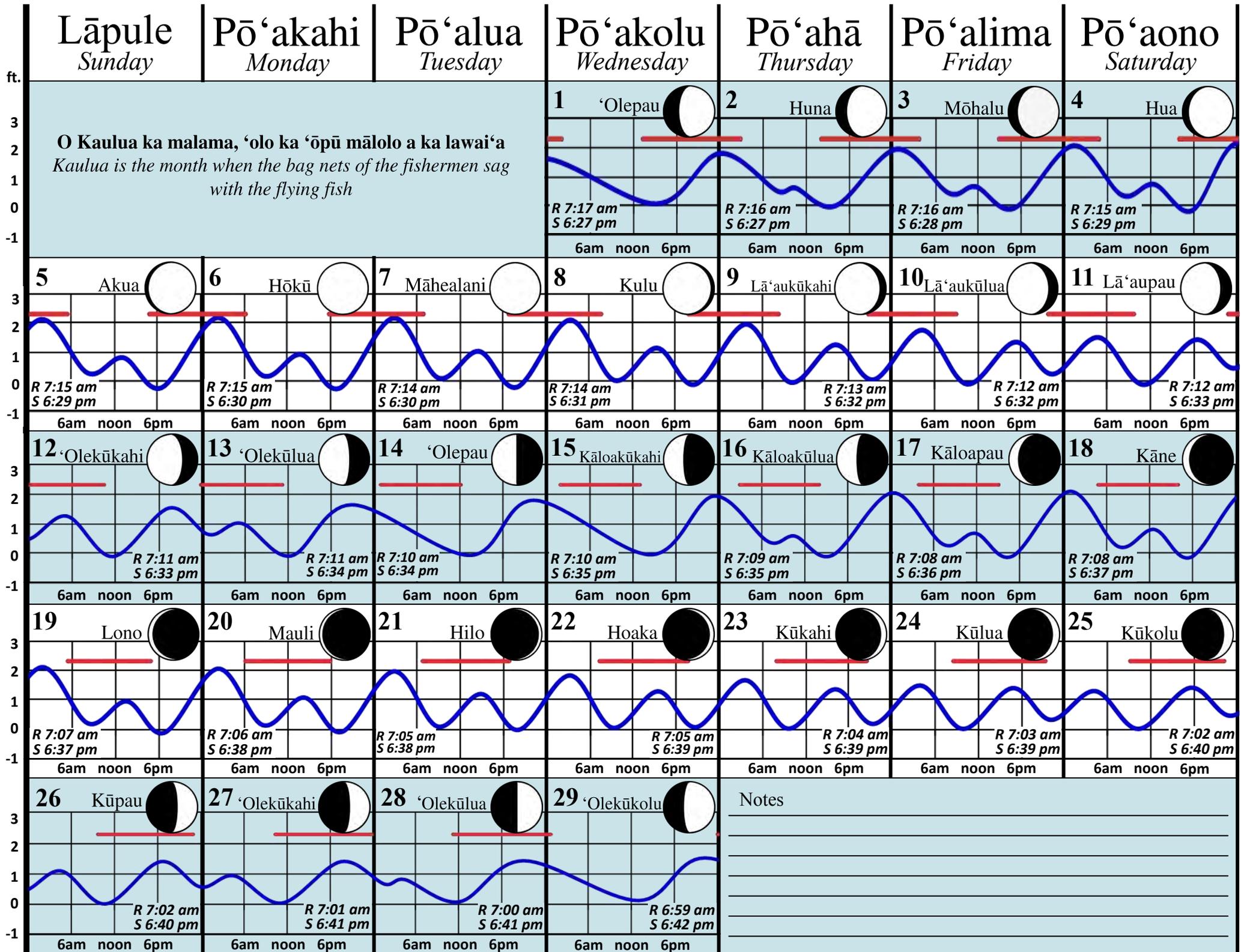


# Januali January 2012





# Pepehuali February 2012



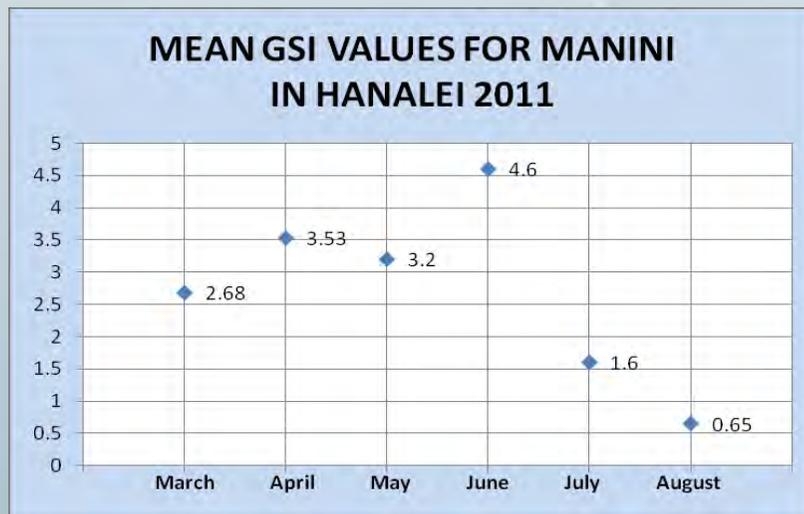
## Determining spawning cycle for manini

Each month, several adult fish were examined. The data collected included fork length (tip of snout to fork of tail fin), weight, and gonad weight. The gonadosomatic index (GSI) is a ratio of the gonad weight relative to the weight of the fish, and this value provides a way to compare the amount of sperm or eggs in fishes during different months.

$$\text{GSI} = (\text{Gonad Weight} / \text{Somatic Weight}) \times 100$$

$$\text{Somatic Weight} = \text{Total Weight} - \text{Gonad Weight}$$

The resulting GSI data is then plotted on a graph to show when gonad weight, and therefore spawning, has reached its peak for each species. The following is the GSI graph produced for manini (*Acanthurus triostegus*):



The information collected reflects the spawning cycle of manini in Hanalei during 2011. Based on this information, predictions can be made for 2012, although variations in the peak spawning months are likely to occur.

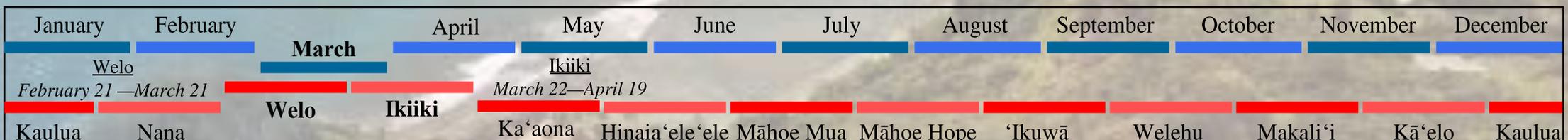
**Closed Season: Mullet**



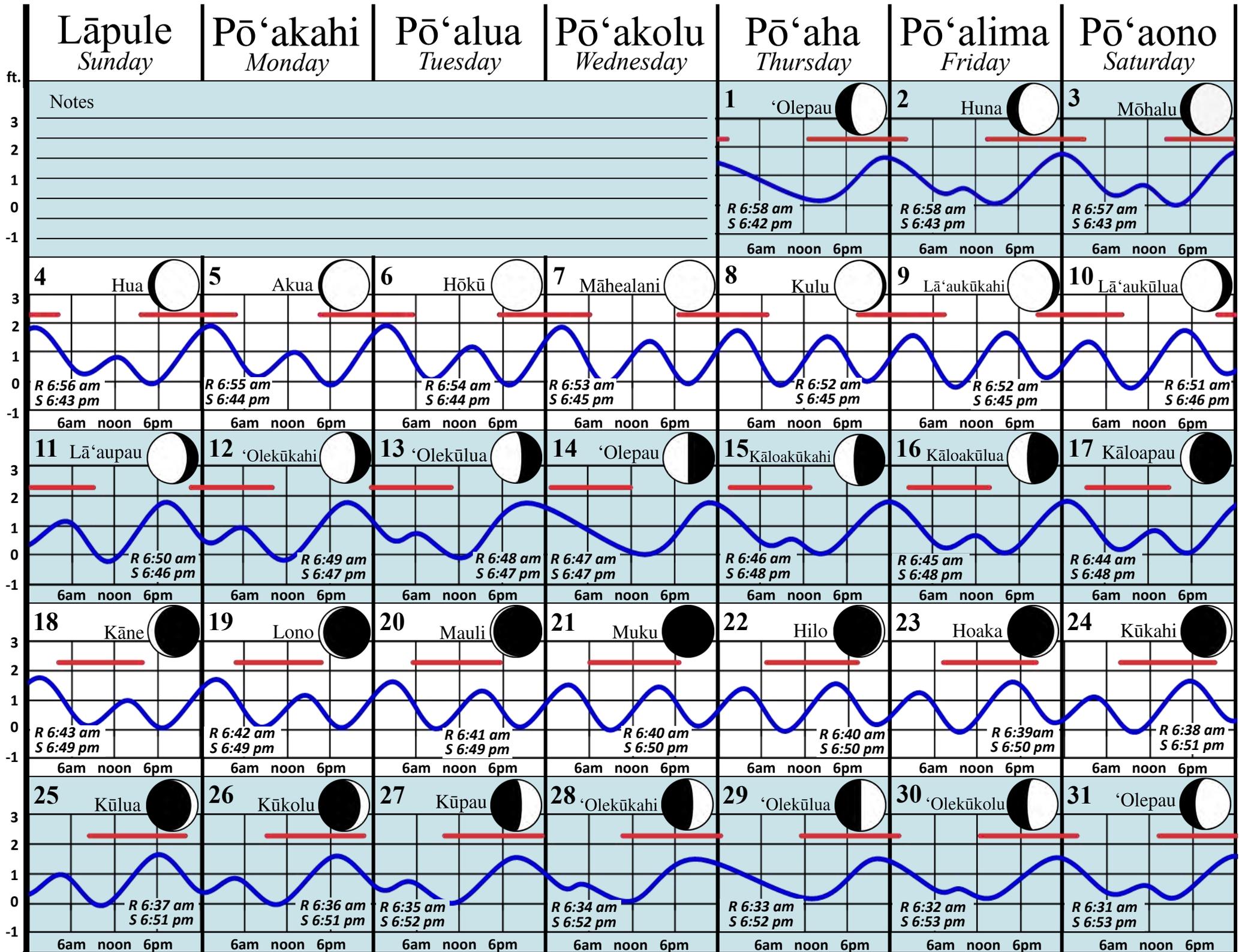
**Limited harvest : Moi**



Manini may begin to spawn this month so practice caution when harvesting during this time.



# Malaki March 2012



# 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 much larger, offering a much better chance of survival for the juveniles that hatch.



## Limited Harvest: Moi



Manini may still be spawning in April, so be cautious when harvesting.

Notes

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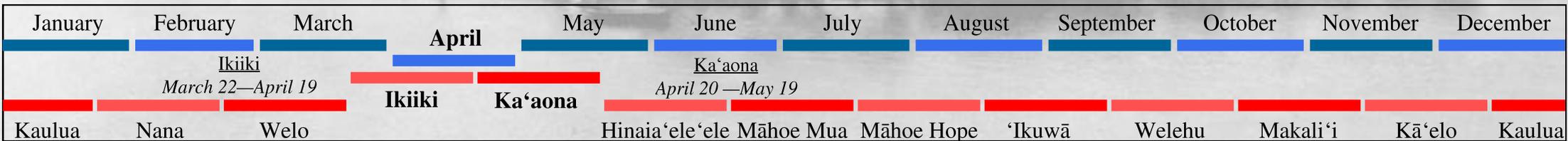
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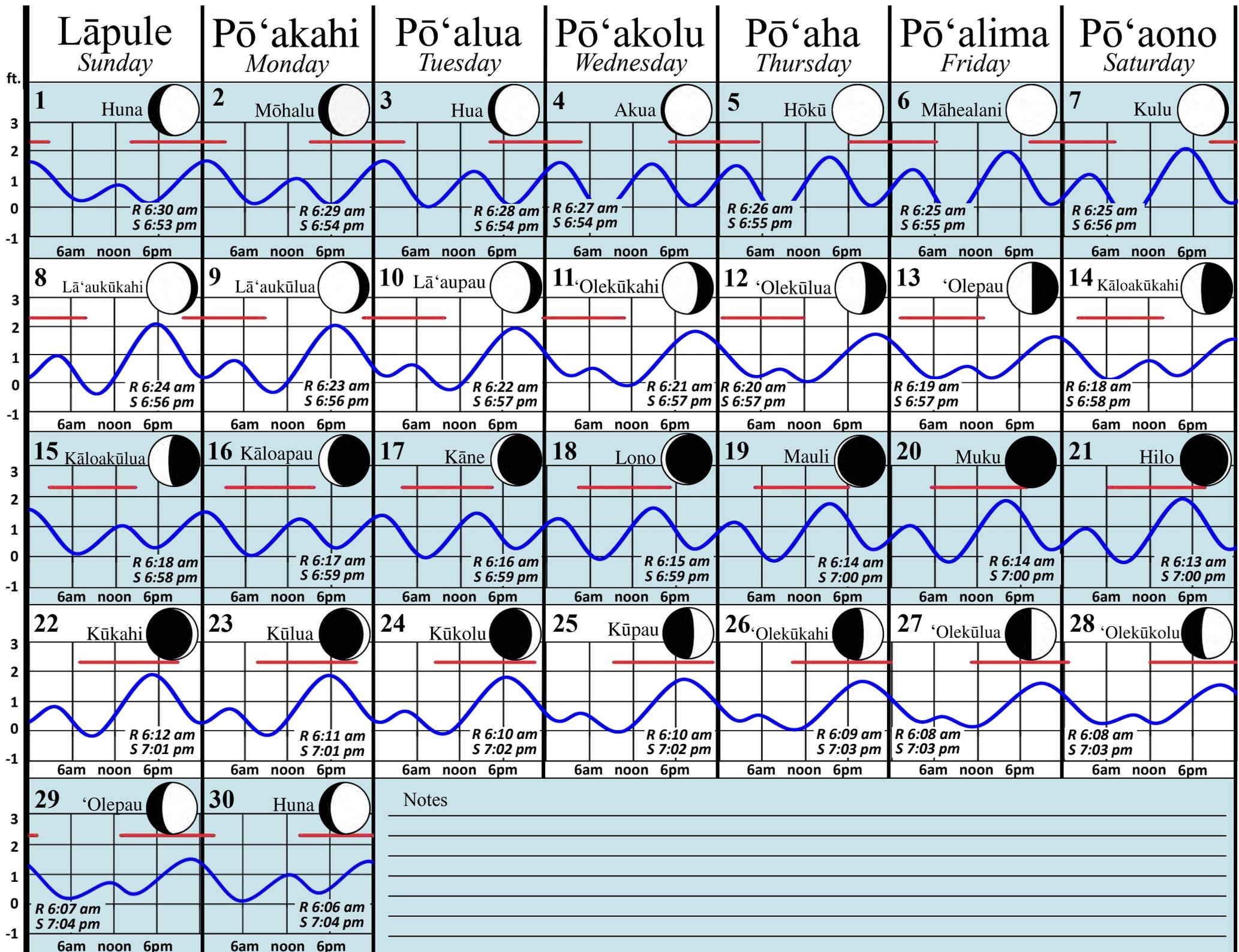
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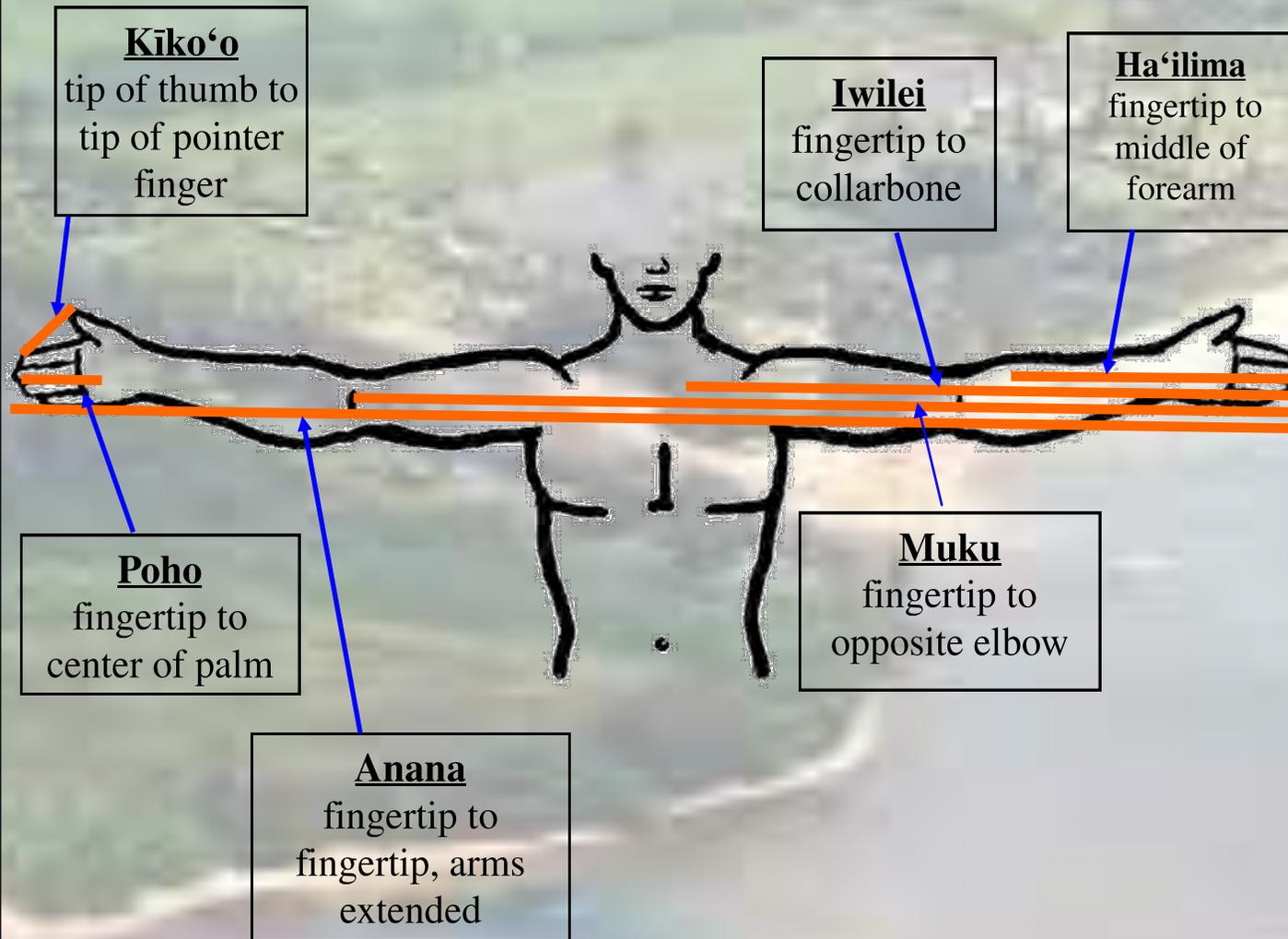


— HANALEI, KAUAI. —

# 'Apelila April 2012



# Hawaiian units of measurement



## Closed Season:

Spiny Lobster, Slipper Lobster, and Kona Crab



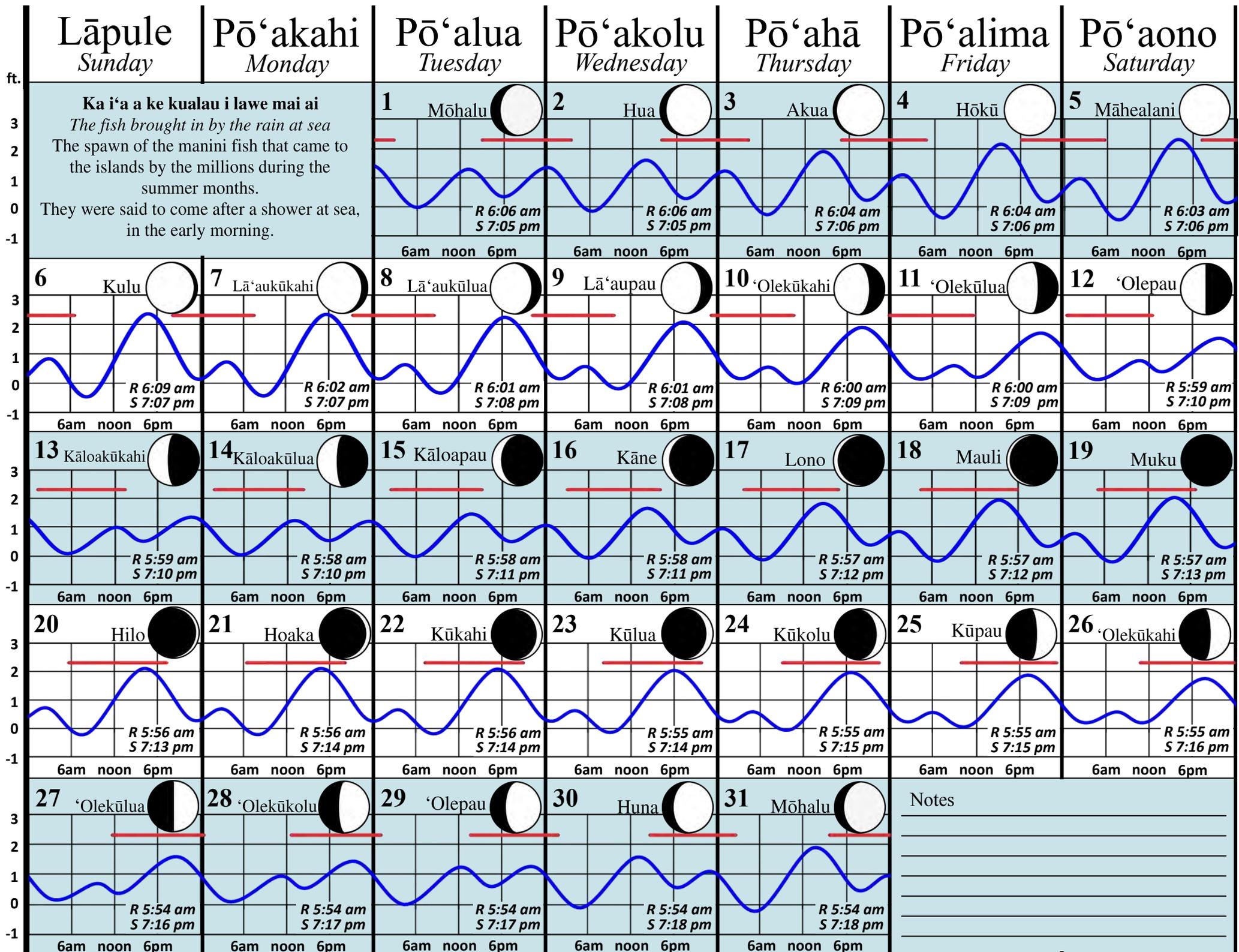
## Limited Harvest: Moi



Manini may still be spawning in May, so be cautious when harvesting.



# Mei May 2012



# Harvest wisely to ensure future catches!

Know your fish before you harvest

*Moi: He kane a i 'ole he wahine?*

Young moi are all males which eventually turn into females when they reach about 13 inches (fork length).



10 inches fork length and smaller = male

**Palā moi** are transforming from male to female, having both eggs and sperm.



11-12 inches fork length = hermaphroditic phase

Releasing very large moi helps to ensure females will survive to spawn successfully.



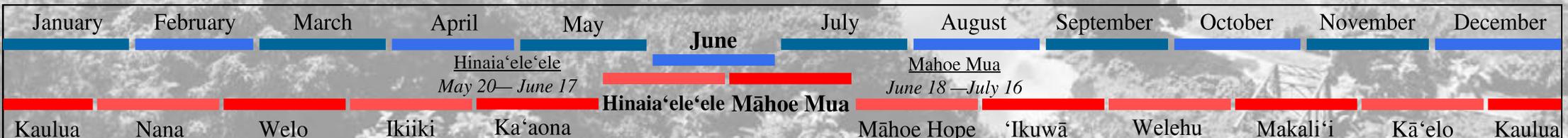
13 inches fork length and larger = female

## Closed Season:

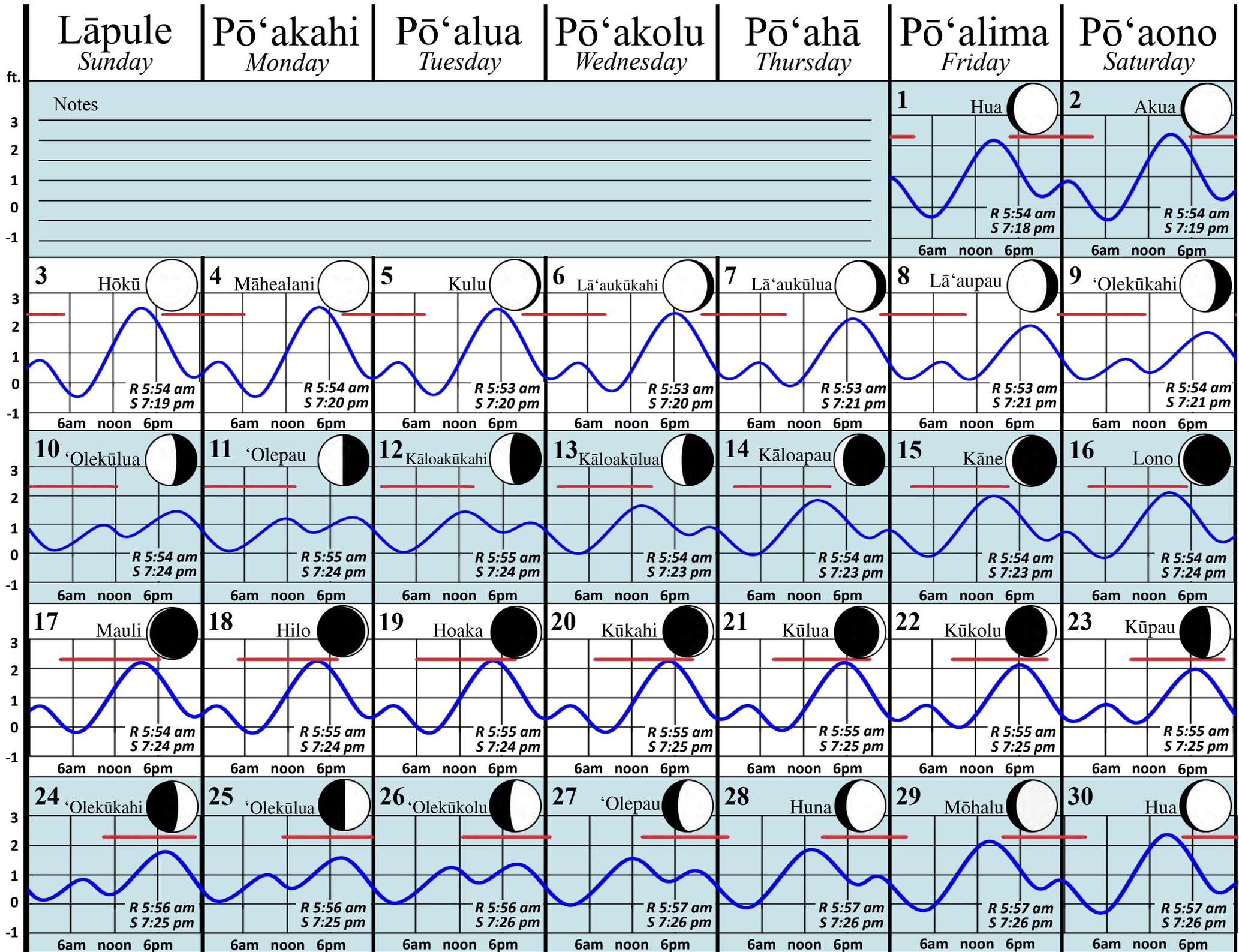
Moi, Spiny Lobster, Slipper Lobster, and Kona Crab



Manini may still be spawning in May, so be cautious when harvesting.

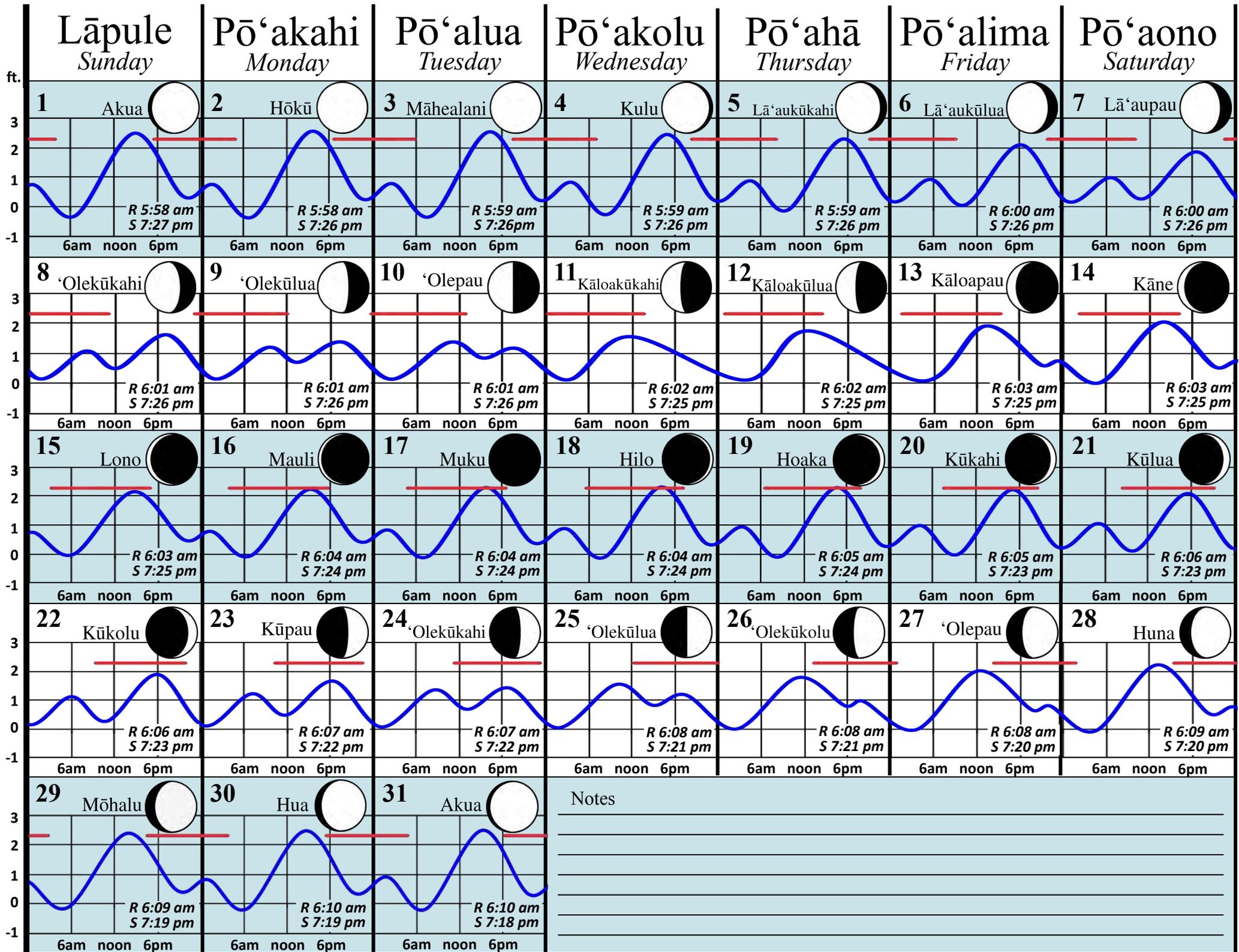


# June 2012





# Iulai July 2012



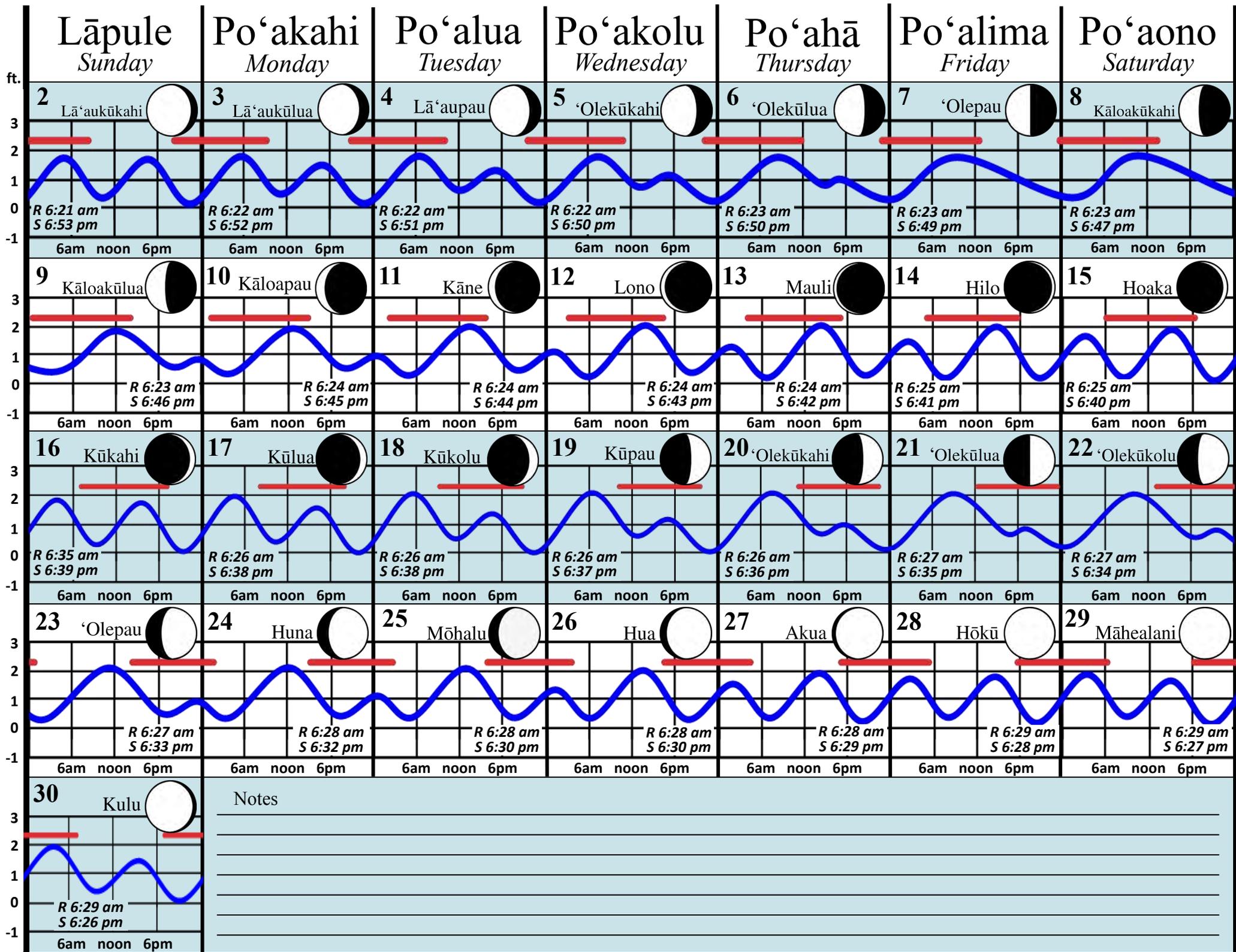






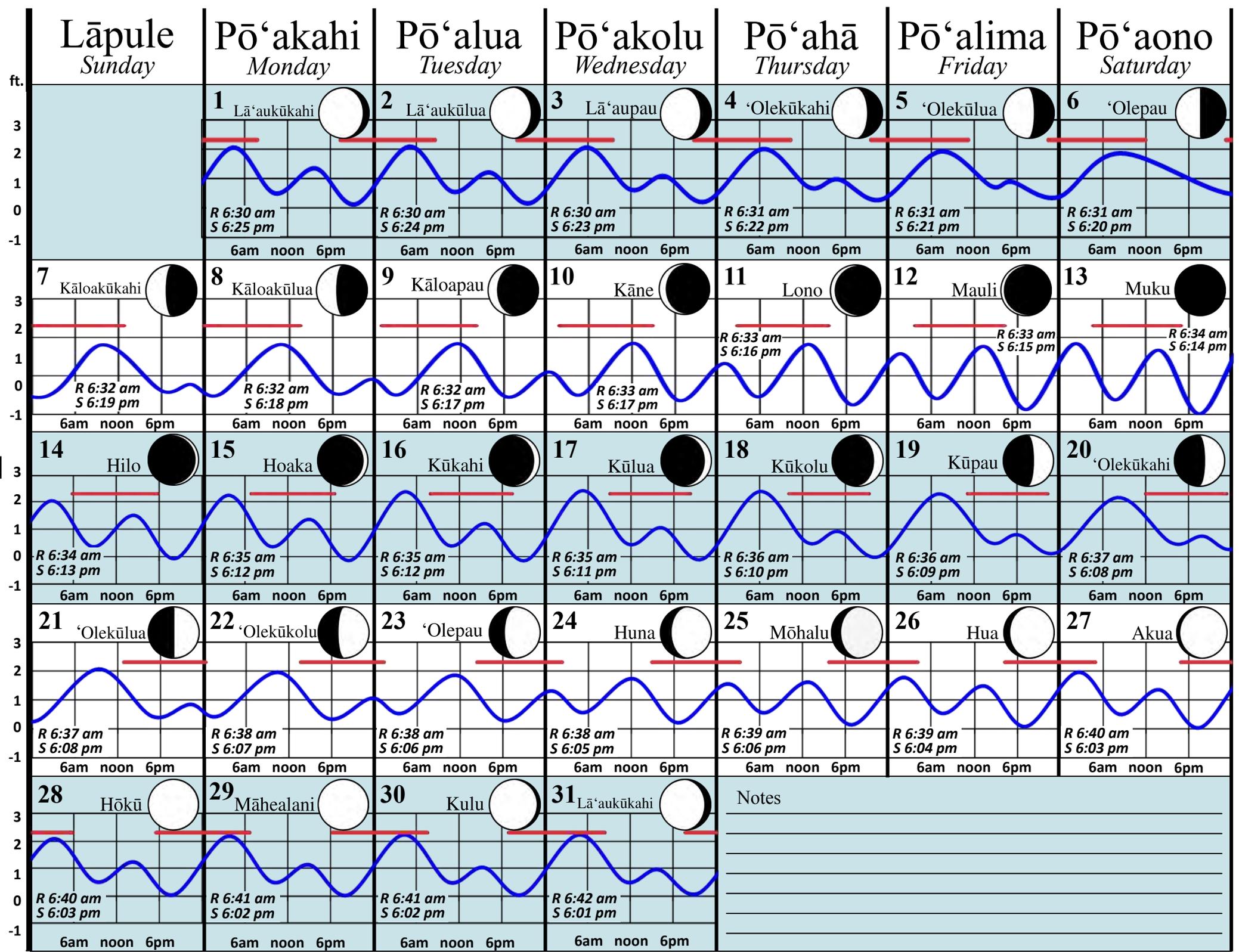
# Kepakemapa

September 2012



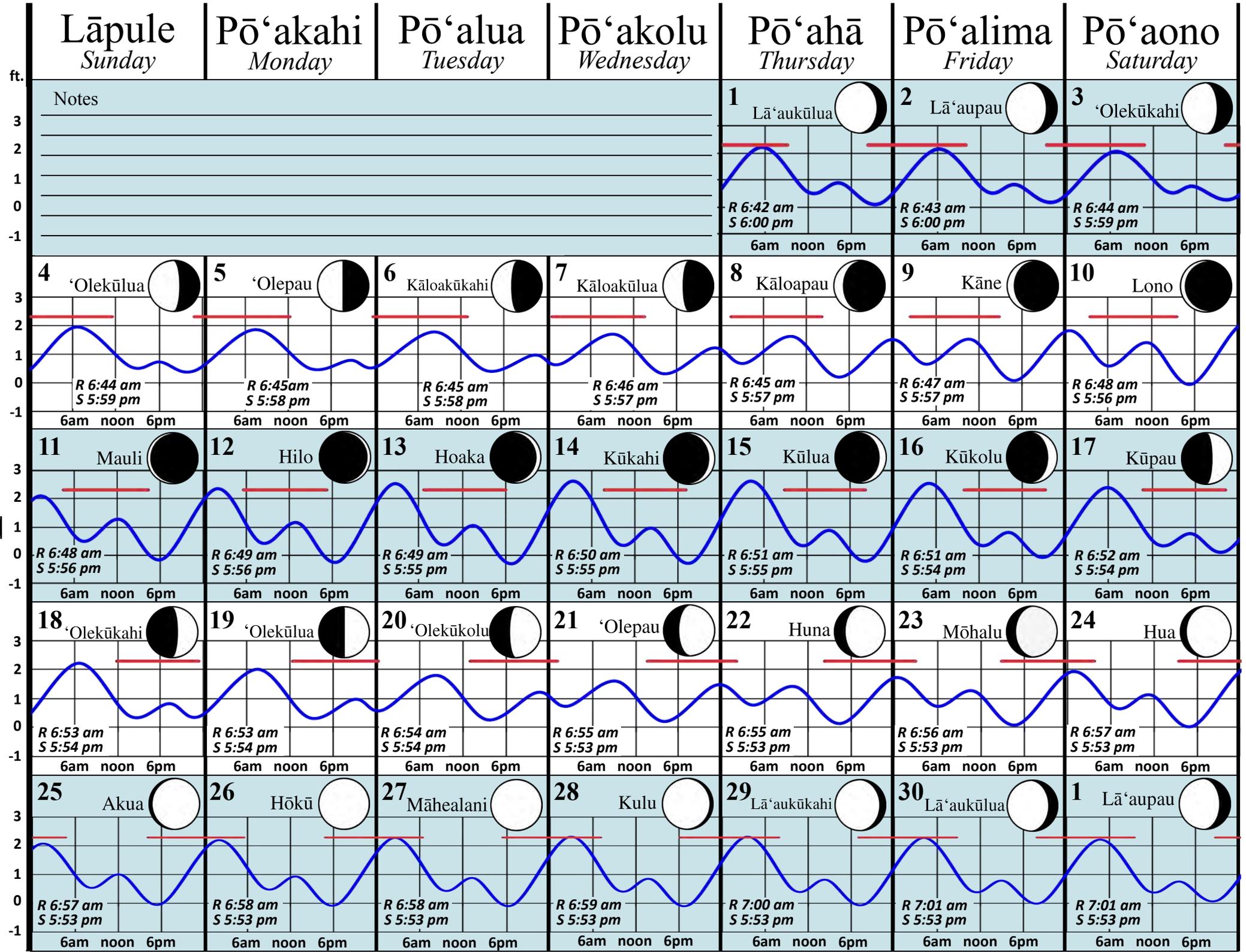


# ‘Okakopa October 2012



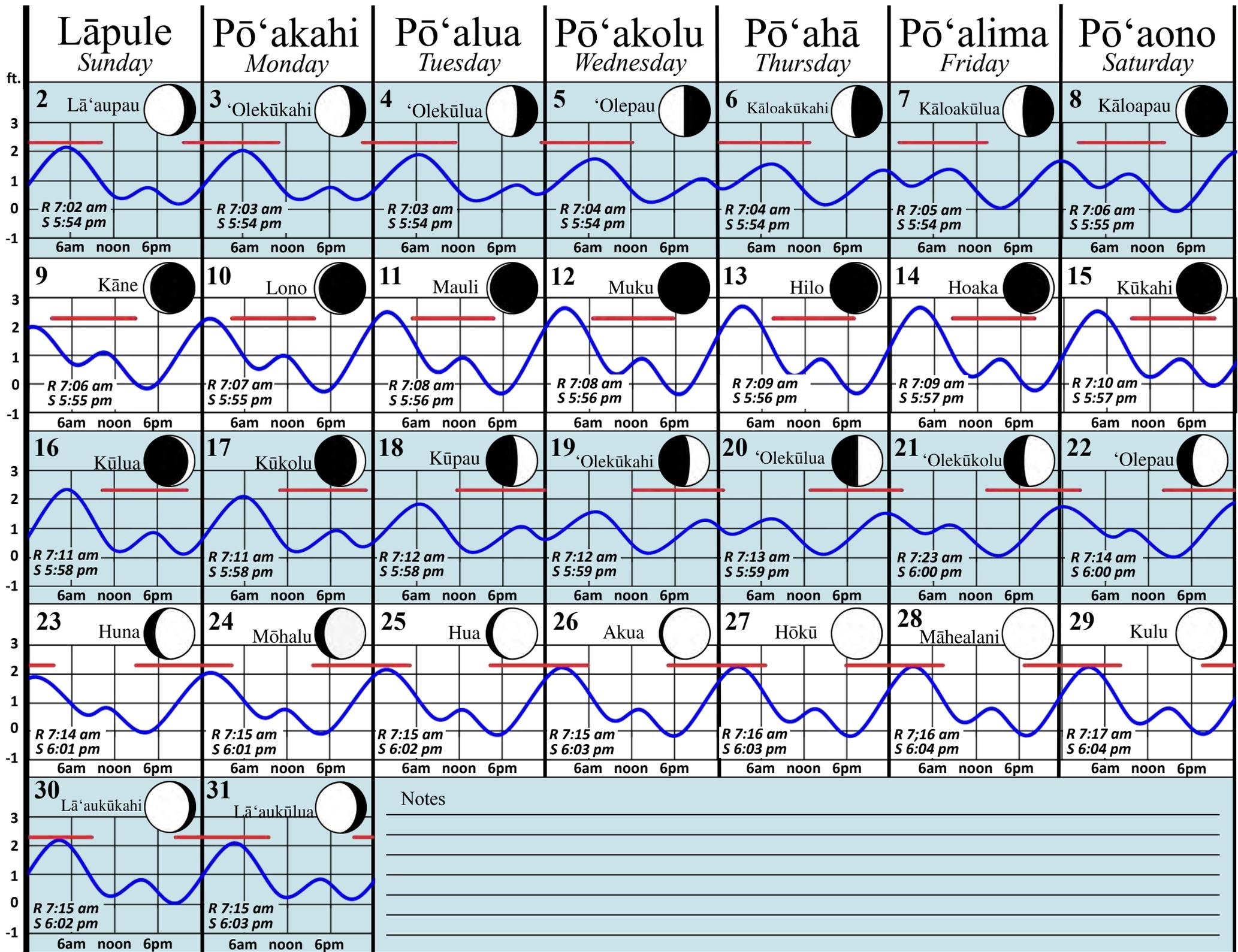


# November 2012





# Kekemapa December 2012



**The proceeds from this calendar will directly support activities of the Hanalei Watershed Hui.**  
*The Hanalei Watershed Hui mission is to support and protect the ecology, cultures and sustainable economies of Hanalei.*

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

### **Acknowledgements**

The Hanalei Moon Calendar was made possible through the Hanalei Watershed Hui and its following supporters:

**Harold K.L. Castle Foundation**  
**Hawaii Community Stewardship Network**  
**NOAA - Papahānaumokuākea Marine National Monument and**  
**NOAA - Hawaiian Islands Humpback Whale National Marine Sanctuary**  
**Hanalei Makai Watch**

*“The Hanalei Makai Watch Program works to restore and sustain life-giving marine resources through vigilant community involvement.”*

**Inkspot**  
**Linnea Heu, UH PIPES**

### **Photo Credits**

Joel Guy—front and back cover pictures

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This calendar includes the current seasonal regulations which are administered by the State of Hawaii through the Department of Land and Natural Resources, Division of Aquatic Resources.  
The full listing of rules, including year-round regulations, can be found at <http://hawaii.gov/dlnr/dar/regulations>.

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### **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.pdf>
- NOAA National Weather Service Weather Forecast Office, <http://www.srh.noaa.gov/jax/?n=astro>.
- NOAA Tides and Currents, [http://tidesandcurrents.noaa.gov/tide\\_predictions.shtml](http://tidesandcurrents.noaa.gov/tide_predictions.shtml).
- Pukui, Mary Kawena. 1983. ‘Ōlelo no‘eau; Hawaiian proverbs and poetical sayings. Bishop Museum Press, Honolulu.
- Wichman, Frederick B. 1998. Kauai: Ancient place-names and their stories. University of Hawaii Press, Honolulu.
- Wichman, Frederick B. 2006. Touring the legends of the North Shore. Kauai Historical Society, Lihū‘e.