2014 Hawaiian Lunar Calendar
Moku o Kona, Mokupuni o O'ahu
He hānai aliʻi, he ʻai ahupuaʻa.
The rearing of a chief is the ruling of an ahupuaʻa.

A person in whose care a young chief was placed was often rewarded with a large tract of land.

About This Calendar

This Hawaiian lunar calendar features the Moku o Kona (District of Kona) on the island of O'ahu (Mokupuni o O'ahu) and the ahupua'a (smaller geographical and political subdivisions) within it. The calendar provides information on cultural places and contemporary stewardship and educational initiatives related to the ahupua'a. The traditional system of natural resource management in the Hawai'i archipelago prior to Western contact was based on management at the moku level. It is said that Mā'ilikūkahi, a great chief on O'ahu, divided the lands into moku into about the 13th century. High chiefs were assigned to each of the six moku of O'ahu and lesser chiefs to each of the ahupua'a. On July, 9, 2012, Gov. Neil Abercrombie signed into law Act 288, which formally recognizes the 'Aha Moku (Moku Council) system of natural resource management.

The 1959 Bishop Museum map of the Kona Moku was used as guidance for selecting the featured ahupua'a in this calendar. This map depicts 15 ahupua'a. It is unclear if Kapalama was an 'ili (smaller division within an ahupua'a) or an ahupua'a, and it is not included in the calendar. Historically, Pauoa was believed to be an 'ili of Nu'uanu so it is not included on the calendar. There is also reference to a Lihu'e ahupua'a in Kona, but it is not on the reference map and is not included in the calendar. Wa'ialae nui and Wa'ialae iki seem to have been drawn from an older ahupua'a called Williwilinui. Wa'ialae is included on the calendar. An historical reference says Maunalua was an 'ili of Waimanalo though there was no indication of how or why. Maunalua is included in the calendar.

The HM Nautical Almanac Office (HMNAO at astro.ukho.gov.uk/websurf) and the QuickPhase Pro version 3.3.5 program were used as guidance for calculating the moon phases. Traditionally, each day (the night before and the following day) was named for the lunar phase visible by the naked eye the night before. Those wishing to participate in a worldwide project to better predict sightings of the first crescent moon, which determines the start of a lunar month, are encouraged to go to http://astro.ukho.gov.uk/ and click on Crescent Moon Watch. A space for observations is provided for each month where you can record the date you saw the first crescent moon and other features of the lunar month.

Moon phase and moon month names may vary by island. This calendar uses the moon phases for O'ahu listed in the Hawaiian Almanac by Clarice Taylor (1995, Honolulu: Mutual Publishing).

In the traditional Hawaiian calendar, the lunar month was determined by the 29.5-day cycles of mahina (moon). The moon cycle was divided into three 10-day periods known as anahulu. The first 10-day period was called ho'onui (growing bigger), beginning on the first crescent. The second anahulu was poepoe (round or full). The nights of the bright moon (Akua, Hoku and Mahealani) were referred to as nā pō mahina kōnane (bright moonlight nights). The last anahulu was emi (decreasing).

Traditionally, lunar phases are used to determine when specific activities should take place. Daniel Kaha'ulelio in Ka 'Oi Hana Lawai'a: Hawaiian Fishing Traditions explained the relationship between the moon phases and fishing:

The days that are good for going to sea to fish are the three La'a'u days; for the fish will take the bait continuously in all kinds of fishing; Akua too, for the fish had voracious appetites. They ate like akua, supernatural beings. On the day named Mohalu the fish open their mouths wide for food; on Mahealani the fish eat one after the other and on 'Olepau, the fish consume all, pau, taking, ho'olawe, like Kahoolawe, which has been fished all around by your writer; that was with my parents and grandparents. On the three Kū nights the fish ate greedily. This my grandfolks taught me; it is useless to go fishing on any other time.

This 2014 Hawaiian lunar calendar was produced by the Western Pacific Regional Fishery Management Council with special thanks to Erron Yoshioka (Moanalua High School), Al Keali'i Chock, Joni Bagood and Kaulalani Kupihea (Mokauea Fishermen's Association), Mahina Duarte (Halau Kua Mana Charter School), Lucas Moxey (NOAA OceanWatch Central Pacific), Alia Thompson (Kaimuki Middle School), Randy Jackson (Wa'ialae Elementary Public Charter School), Darrah Brown (Ni Valley Middle School), Rae DeCoito (Mālama Maunalua), John Thompson (Shrimp Mart), Tia Reber (Bishop Museum), Dore Minatodani (Hawaiian Collection, University of Hawai'i at Mānoa Library), Melissa Shimonishi (Hawai'i State Archives), Dennis Drake and Kenneth Hays (US Army Garrison Hawai'i), Gavin Hirano (State Survey Office, DAGS Land Survey Division), David Robinson and Anne Grant (OceanFun Publishing), and Eric Woo, Miho Owada and Randall Chun (Eric Woo Design, Inc.).

All indigenous limu are important to Hawaiians for various uses. Limu kala is an edible seaweed and important forage for many sea species. Chop the young leaves and add it to soups or stews or deep fry the leaves whole. It can be chewed and applied as a poultice to open coral cuts. It is woven into lei (garland) and used in hula (dance) and lawai’a (fishing) practices. It is very important in ho’oponopono (forgiveness ceremony). Kala means to forgive.

Ahupua’a o Moanalua
High School Summer Course on Marine Science and Fisheries

Moanalua High School has partnered with the Western Pacific Regional Fishery Management Council over the last seven years to provide an annual high school summer course on marine science and fisheries open to Hawai‘i students. Led by science teacher Erron Yoshioka, students receive a mixture of classroom lessons and hands-on experiences on topics ranging from the Hawai‘i seafood industry to traditional fishponds and resource management practices. During the last two years, the classes have included field trips to the island of Moloka‘i to learn about traditional practices at Mo‘omomi Bay with Mac Poepoe. The course concludes with an outreach activity involving the community, such as running a catch-and-release fishing tournament for youth, providing water quality assessments or publishing an article in a local magazine.

Hands-on experience with kalo (taro) at the Loko Ea Fishpond. Kalo was the primary food for Hawaiians and, according to myth, is their ancestor. The ahupua’a of Moanalua is said to have been named for two encampments (moana lua) at kalo patches where travelers bound for Honolulu from Ewa rested.

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‘Opeapea ula (red shrimp) are an endemic species found in the brackish anchialine ponds. The shrimp grow to about ½ inch, eat algae and today are raised as pets. [Photo courtesy of Shrimp Mart.]
Located between Kahauiki and the island of Mokumoa, Loko Weli (Weli Fishpond) encompassed approximately 30 acres. The area, now dredged coral fill and known as the Lower Fort Shafter flats, is currently located at the mouth of the Maunaloa and Kalihi Streams, ewa-mauka (west-mountainside) of the Middle St. and Dillingham Blvd. intersections.

Al Keali‘i Chock, ethnobotanist at the University of Hawai‘i at Mānoa, frequented Loko Weli as a child (about 1935–1940), as it was leased by his father Chock Hon. The adjacent rice fields were leased by his father’s uncle, Chock Look.

I remember going there about every other Sunday afternoon and often putting scraps of meat (usually ham) on a circular net (sort of like a hoop) and finding nice big Samoan crabs a couple of hours later. Lots of mullet. Our family physician went there often for peace and quiet on Sunday afternoons, and the result was free medical service (even after my father’s death!). Once I slipped on the wooden “bridge” over the outlet to the sea, and my father (who was dressed in a suit) jumped in to rescue me.

The fish harvested from the pond were served at the Post restaurants (Ft. Shafter, Ft. Armstrong, Luke Field on Ford Island where the Army Air Corps was first located before it moved to Hickam, and Hickam Field) of which my father was proprietor. The post restaurants were later replaced by the officer, non-commissioned officer and enlisted men clubs.

‘Ama‘ama (mullet) were a very choice indigenous fish. Stages are (finger length) pua ‘ama, pua ‘ama‘ama, pua pó‘ola, ‘o‘ola (hand-length) kahaba (or pahaba); (20 cm) ‘ama‘ama; (30 cm or more) ‘anae.
I ka wa mamua, I ka wa mahope. The future is in the past.

In 1972, plans for the Honolulu Airport expansion led to attempts to evict the fishing families from Mokaua island for future dredging and filing. In 1975 fishermen were arrested for trespassing and five fishermen’s homes were burned. The event was filmed and broadcast, and the populace rallied to the fishermen’s cause. The State ordered a historic study to establish the importance of the island and area to Hawai‘i history.

In 1978, after three years of negotiation, a 65-year lease arrangement was signed with the Mokaua Fishermen’s Association. The Association is restoring the fishing village and using the island as a cultural placed-based education learning center offering educational activities for various schools and community groups. Efforts include planting native species to protect the existing coastline, removing invasive species, repairing and revitalizing the fishpond, monitoring water quality, conducting plankton tows, identifying inner-tidal reef organisms and removing marine debris. Perpetuating an understanding of wahi pana (storied places) is part of the foundation of the restoration efforts. The vision is to plant seeds to be realized in the next generations, in hopes that their fortitude to malama honua (care for the Earth) will protect and save the natural resources indefinitely.

Mokaua

Mililani High School student cleans the Mokaua reef flat of old bottles.

Waipahu High School class learns about the moʻolelo (stories) of the Mokaua.

Kamehameha Schools chemistry class cleans the reef of invasive “gorilla ogo” for a class experiment on biofuel and removes all the living animals found in the limu.

Farrington High School students use GPS to map coral at Mokaua island.

Students learn the history of Mokaua, which has escaped the dredging and filling that has been the fate of most of the nearby islands and fishponds.
In some stories Ku’ula, the Hawaiian fishing god, lives in Hāna on Maui. On O’ahu, Kū’ula lives at Niolopa, a section of Nu’uanu valley currently in the neighborhood near Wylie Street.

Kū’ula and Hina live at Niolopa, Nu’uanu. They possess a pearl fish hook called Kanoi, guarded by the bird Kamanuwai, who lives upon the aku fish [skipjack tuna] caught by the magic hook. When Kipapalaulu, King of Honolulu, steals the hook, the bird sleeps from hunger, hence the name of the locality, Kaumakapili (perching with closed eyes). Hina bears an abortive child which she throws into the water. It drifts to a rock below the Ho’olilimanu bridge and floats there. This child is Aiai. The king’s daughter discovers it, brings up the child, and when he becomes a handsome youth, she marries him. One day she craves aku fish. Her husband, Aiai, persuades her to beg the stolen hook of her father. Thus he secures the hook and returns it to its bird guardian.

Kamaliʻi i ʻike ʻole i na helu pō
Little children who do not know the moon phases

Muku nei, Muku, ka malama
Muku is here, Muku the dark moon

Hilo nei, kau ka Hoaka
Hilo is here, followed by Hoaka

ʻEha Ku, ʻEha ʻOle
Four Ku, Four ʻOle

Huna, Mohalu, Hua, Akua
Huna, Mohala, Hua, Akua

Hoku, Mahealani, Kulu
Hoku, Mahealani, Kulu

ʻEkolu Lāʻau, ekolu ʻOle, ʻekolu Kāloa
Three Lāʻau, three ʻOle, three Kāloa

Kāne, Lono, Mauli, Pau!
Kāne, Lono, Mauli, Done!

To learn the hand movements, search for Mele Helu Pō on YouTube.

Ahupuaʻa o Makiki
Mele Helu Pō
Hawaiian Moon Chant & Hand Game

Students from Halau Ku Mana Charter School perform the Mele Helu Pō. Halau Ku Mana is located in Mauanalaha valley of Makiki. The school seeks to instill Hawaiian values in their students with curricula that support Hawaiian ways of learning. Its vision is to facilitate individual and community healing and empowerment by fostering lifelong learners who think, feel and act in ways that are pono (righteous) and recognize strengths and address challenges as they seek positive, systemic change in their local, regional and global communities.
Mālama Ke Ahupua’a Watershed Project

As part of the Mālama Ke Ahupua’a program, students from Farrington High School explored the Mānoa Valley watershed by following Mānoa Stream from the mountain (makua) to the ocean (makai). They learned about the cultural significance of this area, as well as its unique natural environment. During this hands-on program, students collected water samples at different locations along the stream and conducted chemical analyses in their classroom to find out about the stream’s water quality and gain a better understanding of the overall health of the ahupua’a.

Based on their findings, the students noticed changes in nutrients and bacteria levels along the stream and observed how the water quality of the stream decreased as they traveled makua to makai. With this information, the students learned about the relationship that exists between decreasing water quality levels with increasing urbanization and the importance of carefully managing our natural environment in a responsible and sustainable way.

Photos courtesy of the University of Hawaii GEARUP (Gaining Early Awareness and Readiness for Undergraduate Programs) and NOAA OceanWatch Central Pacific.
Ahupua'a o Pālolo

The 7th Grade Gifted and Talented Life Science Class at Kaimuki Middle School, taught by Ms. Aila Thompson, created this visual representation of the Pālolo ahupua’a and the meanings of its landmarks. The class provided the following explanation of the art:

Within the letters of “Pālolo” are handprints, which show what type of community we have here in Pālolo. The hands represent the children of Pālolo, and Pālolo means “clay” in Hawaiian, thus the muddy-like color. Kaimuki means “ti leaf oven” in Hawaiian, so a picture of ti leaves on the left of the word Pālolo is shown. Under the word Pālolo is Diamond Head because that is a major landmark in our ahupua’a. In Hawaiian, it is Kaimana (Diamond) Hīla (Head). Diamond Head’s other name is Lae’ahi, meaning back or brow, because it looks like the dorsal fin of a tuna. The picture next to Diamond Head is an ocean because kāhala means “amberfish,” which is a type of fish that lives in the waters off Kāhala. On the bottom left corner, there is a picture of a canoe and the ocean. This represents Wai’alae, which means “the waters frequented by the Hawaiians.” Overall we tried to grab the natural beauty of Pālolo and its local hotspots into a picture.

Pālolo was the last valley with extensive wet-taro lands. The stream was large and capable of irrigating terraces along its course on both sides and below the end of the valley on land now covered by houses. There were terraces, some on steep slopes, all along Wai’ōma’o and Pūkele streams, which join to form Pālolo Stream. Far back in these little valleys wild taro was found in abundance in 1935.

Ahupua’a o Wai’alae
Limu Huki and Rain Gardens

Wai’alae Elementary Public Charter School is a student-centered school that honors the whole child. It is committed to nurturing a community of learners who strive for excellence and innovation, empowering all members of the community to actively engage in a democratic society. Fourth graders from the school have worked with Mālama Maunalua to learn about watersheds and ahupua’a and how they are affected by run-off, channelized streams, sediment and pollution. Students learn about native and invasive limu (seaweed) and then work to remove invasive limu at Paikō lagoon near Kuli‘ou‘ou Beach Park. The students previously have done the same work at Wai’alae Beach Park. The school has plans to develop rain gardens on its campus using native Hawaiian plants. Students will be involved in the planning of the gardens, propagating and purchasing the plants, some of the installation and then maintenance.
The central figure of this painting by Oliver Kinney is Kūʻula, the son of Kāne and Hina. Kūʻula was the premier fishing deity worshipped by Hawaiian fishermen. As Kūʻula rises, he swims through the larger fish, the aku, which represents the season of kauwela (the hot season) and ʻōpelu, the smaller fish, which represents hoʻoilo (the wet season). © 2006, Western Pacific Regional Fishery Management Council.

Ahupuaʻa o Wailupe
Maunalua Hawaiian Civic Club

The Maunalua Hawaiian Civic Club is based in ʻĀina Haina in Wailupe, one of the half-dozen ahupuaʻa surrounding Maunalua Bay. The club’s motto is ʻŌpelu haʻalili i ke kai (the ʻōpelu that make the sea ripple), said of active quick moving people. The club is engaged in outreach, promoting the Aha Moku system, addressing invasive alien algae (such as gorilla ogo), reviving traditional relationships with the honu (Hawaiian green sea turtle) and enhancing public awareness of the cultural sites of Maunalua.

Traditionally, ʻōpelu (Pacific mackerel scad) and aku (skipjack tuna) were kapu (tabu) at different times of the year.

At the kapu hua, i.e., the 13th day of Kāʻelo, in January, a human sacrifice was offered, together with the fish aku, at which it is said that the Kahoalii, a man personifying the god, plucked out and ate an eye of each. By this ceremony the tabu was taken off from the aku, and the ʻōpelu became tabu for the next six months, not to be eaten on pain of death.

In the month of Hinaiaʻeleʻele, or July, the tabu was taken off the ʻōpelu and reimposed on the aku. The first night, Hilo, of this month was kapu loa. No fire could be kindled, and no sound of man or beast or fowl must be heard.

Toward morning the high-priest, accompanied by another priest, went to the ʻōpelu house of Kūʻula, the god of fishermen, where he sacrificed a pig, and recited the great ʻaha as during a dedication. …

The chief also proceeded to the heiau, where he offered his ʻōpelu to the gods, plucking out and eating the right eye of the fish. Next day the sea was free, and the ʻōpelu was noa, or free to all, but the aku in its turn was tabu for the next six months.

### Observations

- **August 26**: R 07:10 S 19:34
- **August 27**: R 07:59 S 20:11
- **August 28**: R 08:49 S 20:49
- **August 29**: R 09:40 S 21:29
- **August 30**: R 10:32 S 21:24
- **August 31**: R 11:26 S 22:58
- **September 1**: R 12:21 S 23:49
- **September 2**: R 13:18 S 00:42
- **September 3**: S 01:40 R 02:42
- **September 4**: S 01:40 R 00:42
- **September 5**: S 02:42 R 16:05
- **September 6**: S 03:45 R 16:57
- **September 7**: S 04:50 R 17:47
- **September 8**: S 05:54 R 18:35
- **September 9**: S 06:58 R 19:22
- **September 10**: S 08:00 R 20:08
- **September 11**: S 09:01 R 20:55
- **September 12**: S 10:00 R 00:42
- **September 13**: S 10:58 R 01:40
- **September 14**: S 11:53 R 02:42
- **September 15**: S 12:45 R 03:45
- **September 16**: S 00:42 R 13:34
- **September 17**: S 00:58 R 14:20
- **September 18**: S 01:48 R 15:04
- **September 19**: S 02:37 R 15:44
- **September 20**: S 03:27 R 16:23
- **September 21**: S 04:16 R 17:00
- **September 22**: S 05:05 R 17:37
- **September 23**: S 05:54 R 18:14
- **September 24**: S 06:45 R 18:50

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Eighth-grade students at Niu Valley Middle School have teamed with Waldorf School (Niu campus) to regularly clean the Niu stream mouth, and the Niu Valley Community Association and residents are working the deeper main canal behind Niu shopping center several times per year. This could be the first valley in Hawai‘i where schools and residents are working together and teaming with a community organization (Mālama Maunalua) and the City & County of Honolulu to keep its entire ditch/canal network clean through community kuleana (responsibility). Their work is making a beneficial impact on Maunalua Bay.

Niu Valley Middle School students have also teamed up with Mālama Maunalua to participate in limu huki at Maunalua Bay. Removal of the invasive algae helps to contribute to an increase in the population of native sea grass, restoring the Bay’s natural ecosystem balance. By participating in both activities, students were able to see the impact of their work at the level of the mountain and the ocean. The work helps students develop as sense of kuleana for the environment and perpetuates Niu Valley Middle School’s mission of becoming “stewards of our world and its people.”
Observations

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Paikō is named for Manuel De Pico (the name in time Hawaiianized into Paikō), a whaler from the Portuguese group of the Azore islands, who arrived in Hawai‘i in the 1840s. He eventually acquired half of the ahupua‘a of Kuli‘ou‘ou. Following the custom of the time, his property extended offshore to the edge of the reef and included the “fishery,” or fishing rights, within its boundaries.


According to Lawai‘a magazine, the traditional konohiki management system was intact at Paikō and other fisheries in Manunalua Bay as late as the 1950s and 1960s. Traditionally, the konohiki was a steward who had an intimate understanding of and the responsibility to manage the water, land, agricultural and/or fishing resources of a particular area. The konohiki at Maunalua Bay placed seasonal and locational kapu (closures) on the ‘anae (mature mullet) and akule (bigeye scad) to ensure their survival.

Lawai‘a magazine quotes kūpuna (elders) who recalled that “the fish pond known as Paikō Lagoon served as a natural hatchery for mullet and nehu [a bait fish]. … Most of the mullet in Kuapā Pond were taken from the mud flats in front of Kuli‘ou‘ou Park and put into the pond. The nehu and ‘iao [a bait fish] fed the akule fishery off of Portlock. Paikō enforced its Ahupua‘a Konohiki fishing rights until after Statehood [1959].”

Mālama Maunalua is dedicated to the restoration of Maunalua Bay by removing invasive alien algae, reducing run-off of sediment and pollutants from the land into the Bay and increasing the marine life. Volunteer-based huki events are organized to bring the community together to remove invasive alien algae. With the ongoing effort, more than 3 million pounds have been removed from Paikō Beach. The alien algae are disposed at Otsuji Farms in Hawai‘i Kai, where it supplies the soil with rich nutrients and aids in the production of healthy crops.

Maintenance of the Paikō region is achieved through a combination of community huki events and a group of community volunteers known as Kuahui who pull on a daily basis and increase the chances of natural reestablishment of native species such as the native endemic nenue sea grass.

Educational huki are offered to help grade school students understand the importance of a healthy watershed, identify invasive and native species of limu, become informed on the connection between the mountains and sea (mauka to makai) and participate in a small huki.
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About the Kona Moku

“This area is subject to the cyclonic southerly (kona) storms in winter months, but through most of the year is cooled by trade winds sweeping through low gaps in the Koolau range at the top of Moanalua, Kalihi, Nu’uanu and Mānoa valleys. There were abundant rain, ever flowing streams, springs, pools, verdant interior valleys, broad slopes and well-watered lowlands, fishpond areas, harbors, beaches, and lagoons. Altogether Kona was, for O’ahu, the area richest in natural resources and most pleasant for abundant and comfortable living.”


About the Western Pacific Regional Fishery Management Council

The Western Pacific Regional Fishery Management Council is a federal instrumentality created by Congress in 1976 to manage federal fisheries in Hawai‘i and other US Pacific Islands. The 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. If your moku is interested in working with the Council on a calendar, please contact us at info.wpcouncil@noaa.gov.

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