

Observation Log














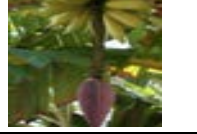
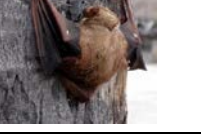


The Hawaiian lunar calendar is one of the best examples of place based learning. Every district of each island compiled knowledge through observation of the natural cycles and seasons of the environment and the activities of living organisms within the environment. Over time, tried and improved practices were incorporated to efficiently fish, farm and work with the natural rhythms of the environment in a sustainable manner.

This observation log was created so that the observer can begin to record and compare correlating activities with the environment, season, plant, animal & fish activities with the lunar phase and the lunar month. Learning the lunar cycle assists us in reconnecting ourselves with our environment.


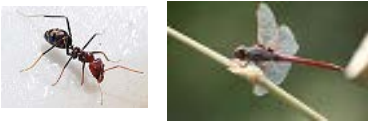
















Each data log requires the observer to record the date, time, lunar month and lunar phase. Weather activity is also noted to begin to observe climate and seasonal changes. Growth processes & cycles between the listed animal, fish or plants are pertinent to begin to see the correlating activities. Please note that the observation log lists common organisms at Kahalu'u and Maluaka, Keauhou. Each district will have slight to dramatic differences. Please make adjustments accordingly.

Keauhou Kahalu'u Ma Uka Observation Sheet

8.12






















Date & Time:	Month:
Location:	Wet Season - Dry Season
'O ke 'Anilā- E kahalaina i ke 'ano 'anilā	
Wind: 'Akau[N] Moa'e[NE] Hikina [E] Malanai[SE] Hema[S] Kona[SW] Komohana[W] Kohala[NW]	Rain: Heavy Heavy&Windy Hard rain Hard rain/wind Light Light/Windy
Clouds: Rain clouds Wind clouds Kaha'ea(thick overcast) 'Omamalu(light overcast) Vog Colors: Gray Red Orange White Green Yellow Black	
Mea Kanu/Ulu: Mark if they are flowering, fruiting, seeding, dry or with new shoots	Birds, Bats & Insects: How many? Where? What time?
 Ohi`a	 'Amakihi
 'Ilima:	 'Apapane
 'Uluhe	 'Io
 'Ohi'a'ailehua	 Pueo
 Mamaki	 Moths
 'Awapuhi	 Butterflies
 Kou	 Worms/caterpillars
 Mai'a	 Bats
 Ko	 Spiders

Other observations
















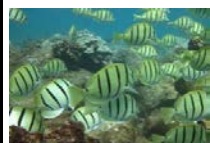








 <p style="text-align: center;">Kalo</p>	 <p style="text-align: center;">Ants and Pinao</p>
<p>Mea Ulu/Kanu: Plants - Mark if they are flowering, fruiting, seeding, dry or with new shoots</p>	
 <p style="text-align: center;">Ti Plants</p>	 <p style="text-align: center;">'uala</p>
 <p style="text-align: center;">gourds/ipu</p>	 <p style="text-align: center;">Pa'u'ohi'iaka</p>
 <p style="text-align: center;">'Awa</p>	 <p style="text-align: center;">'Ulu</p>
 <p style="text-align: center;">Wauke</p>	 <p style="text-align: center;">Popolo</p>
 <p style="text-align: center;">'Ie'ie</p>	 <p style="text-align: center;">'Ohe</p>
 <p style="text-align: center;">Uhi/Yam</p>	 <p style="text-align: center;">Palapalai</p>
 <p style="text-align: center;">Avocado</p>	 <p style="text-align: center;">Honohono Grass</p>
<p>Animals</p>	
 <p style="text-align: center;">Pua'a</p>	 <p style="text-align: center;">Moa</p>
<p>Other animals, plants or insects you may've noticed</p>	

Other observations

Keauhou Kahalu'u Ma Kai Observation Sheet

Date & Time:	Month:	Moon Phase:
Location:	Wet Season - Dry Season	
'O ke 'Aniā- E kahalaina i ke 'ano 'aniā		
Wind: 'Ākau[N] Moa'e[NE] Hikina [E] Malanai[SE] Hema[S] Kona[SW] Komohana[W] Kohala[NW]	Rain: Heavy Heavy&Windy Hard rain Hard rain/wind Light Light/Windy	Clouds: Rain clouds Wind clouds Kaha'ea (thick overcast) 'Oma i malu (light overcast) Vog Colors: Gray Red Orange White Green Yellow Black
Other Weather Phenomena:		
Nā I'a: Fish, Limu, Turtles, Whales	Mea 'Ulu: Plants	Manu: Birds, Bats & Insects:
 Ama (Fingerling) Kahala (Hand Length) 'Ama'ama (8 in) 'Ana'e (12in.+)	 Hinano(flower) Blooming Kihala (fruit) Green Orange Ripe &Falling	 Kōlea Black feathers White feathers
 'Iao 'Tiao 'Iomo	 shoots	 'Akekeke Ehia? Ma hea?
 Moi	 New shoots Fruit Dry	 'Auku'u
 Āholehole	 Flowers New vines Fruit Dry	 'Ulili
 'Ulua/Papio	 New vines Fruit Dry	 Kioea
Nā I'a: Fish, Limu, Turtles, Whales & other mammals		Manu: Birds & Insects
Plants: Ma kai		
 'Opelu	 'Ilima Flower Fruit Dry	 Iwa
 Halalū(7 in) Akule (adult)	 Niu, Flowering, Fruit	 'Ā Ehia? I hea?

Other observations

			
Oama (3 inches) Weke (mature)	Kou	Moths	
			
Mamo	Milo	Butterflies	
			
'Opae'ula 'Opaehuna	Kamani	Worms/caterpillars	
			
Koholā	Pōhinahina	Bats	
			
Turtles	Loulu	Spider	
			
Mānini	Kalo	Ants	
		Other insects:	
Ti Plants	Ti Plants		
			
Sharks	gourds/ipu		
		Ocean Activities	
Crabs	Mai'a/Banana		
<input type="checkbox"/> High tide <input type="checkbox"/> Low tide			Salinity
Other observations:			Water Flow

Other observations

Observation Reference Sheet:

This is an informational tool for the observer(s) conducting observations.

Observation Schedule/Times

Kahiki (Diurnal/Day)	Times	Kauila (nocturnal/night)	Times
Ao	6:00 am	Kihi	6:00 pm
Lā	6:00 am – 9:00 am	Pili	9:00 pm
Kakahiaaka	9:00 am - Noon	Kau	12:00 am
Awakea	Noon	Pili Puka	3:00 am
'Auinālā	12:05 pm – 3:00 pm	Kihi Puka	6:00 am
Napo'o ka lā	3:00 pm – 6:00 pm		
Ahihi	6:00 pm		

- Table shows Traditional Hawaiian terms used for time allotment.

Malama (Month)

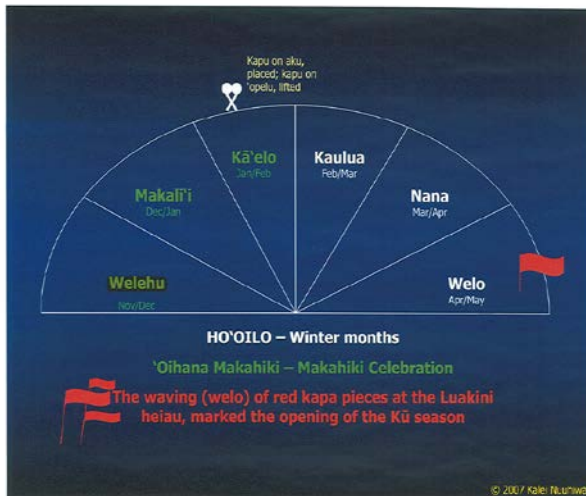


Figure 1. Show Winter Months

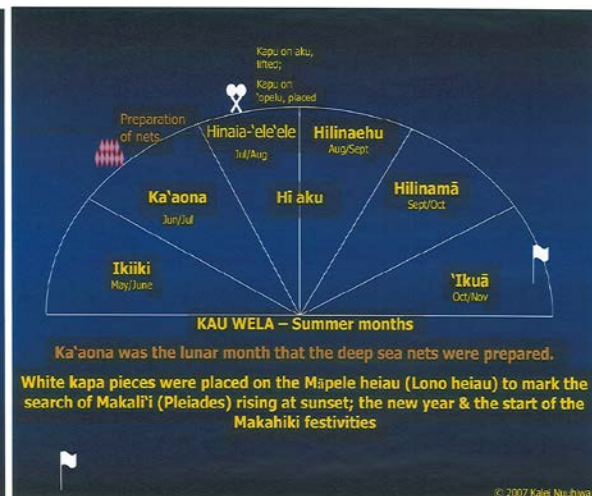


Figure 2. Show Summer Months

- Use these figures above to understand the different seasons.
- Winter – Season of Lono
- Summer – Season of Kū



Pō Mahina (Moon Phase)

Figure 3. Hawaiian names for the phases of the moon.

Location/Site

Kahalu'u Ahupua'a	Keauhou 1 and Keauhou 2
Makole'a Site (Lawn or Makai Area)	Kaneaka Holua Slide
Ke'eku Heiau	He'eia Bay
Hapaiali'i Heiau	Keauhou Bay
Kaheka (Pond Area)	Lekeleke
Keauhou Beach Resort Roof Top	Maluaka (Mala 'ai)

Kau (Season)

Kau Ho'oilo	Wet	Winter	November - April
Kau Wela	Dry	Summer	May - October

Notable Weather Activity (All tables are in accordance to highlighted Activity)

Wind

'Akau – North	Hema – South	Komohana – West
Moa'e – North East	Malanai – South East	Kohala – North West
Hikina – East	Kona – South West	Strong Winds
Light Winds	No Winds	

Heavy	Constant	Light
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Rain

Heavy with wind	Constant with wind	Light with wind
No Rain		

Clouds

Rain Clouds	Wind Clouds
Overcast (Thick/Light)	Vog Visible

- **Colors**

Gray	Red	Orange	White	Green	Yellow	Other Color(s)
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- Other notable Activity – use this box to write down any other observations that may have stood out to you that you may think is important to note.

Marine and Terrestrial Life Form Observations

Hilo	Good fishing is to be expected all day.	Since the moon is mo'owini or thin, it is not a good day for planting.
Hoaka	Good fishing is to be expected all day, but especially in the morning.	'' '' '' ''
Kūkahi	Good fishing is to be expected all day, but especially in the morning.	A good day to plant trees that will grow tall and upright.
Kūlua	Good fishing is to be expected all day.	'' '' '' ''
Kūkolu	'' '' '' ''	'' '' '' ''
Kūpau	'' '' '' ''	'' '' '' ''
'Olekūkahi	An unproductive day. The ocean is rough and the currents are strong and erratic. The 'Ole winds make fishing unproductive.	Unproductive for planting. Mend gear. Prune back plants as they will remain cut back a little longer.
'Olekūlua	'' '' '' ''	'' '' '' ''
'Olekūkolu	'' '' '' ''	'' '' '' ''
'Ole(kū)pau	'' '' '' ''	'' '' '' ''
Huna	A productive day for fishing.	Plant gourds as the leaves of the vine will protect the growing gourds.
Mōhalu	Excellent fishing on the high tide is to be expected.	Plant flowering plants.
Hua	Good fishing is to be expected all day.	Plant fruiting trees and plants.
Akua	First full moon. These next full moons are excellent for fishing as the tides are at their extremes.	A busy time for planting. Kāmauli, offerings, were left for gods or ancestors.
Hoku	On high tide, red and limu eating fish are abundant.	Planting occurred under the light of the full moon.
Māhealani	'' '' '' ''	Planting occurred under the light of the full moon.
Kulu	'' '' '' ''	Mai'a planted this evening will have large bunches.
Lā'aūkūkahi	An ok day for pelagic fishing near shore.	Not a good day for planting fruit or seed bearing plants.
Lā'aūkūlua	An ok day for pelagic fishing near shore.	'' '' '' ''
Lā'aupau	The 'Ole winds and rough seas begin.	'' '' '' ''
'Olekūkahi	An unproductive day. The ocean is rough and the currents are strong and erratic. The 'Ole winds make fishing unproductive.	Unproductive for planting. Mend gear. Prune back plants as they will remain cut back a little longer.
'Olekūlua	'' '' '' ''	'' '' '' ''
'Olepau	'' '' '' ''	'' '' '' ''
Kaloakūkahi	An evening full of fishing occurred. Watch for box jelly fish.	Planting good. String, kapa, rope, etc made today.
Kaloakūlua	'' '' '' ''	'' '' '' ''
Kaloapau	'' '' '' ''	'' '' '' ''
Kāne	Lamalama fishing occurred near shore. The tide is low at night.	An excellent day for planting crops.
Lono	'' '' '' ''	'' '' '' ''
Mauli	'' '' '' ''	'' '' '' ''
Muku	'' '' '' ''	'' '' '' ''

Figure 4: Oihana or traditional mahi'ai (farming) & lawai'a (fishing) practices using the lunar phases.

Marine Life:

- How are fish and sea creatures reacting to the environment and weather?
- How do certain fishes aggregate is it in a school of fish or in pairs or single?
- What are fish and crustaceans (crabs, shellfish) feeding on in the water?
- Do you recognize any limu (algae) near the shore? If so describe the color, texture, and location of the limu.
- List familiar species present on the reef and describe them.

Plant Life:

Reproductive Parts					
Flowers	absent/present	color(s)	texture/size	counts	describe
Buds	absent/present	color(s)	texture/size	counts	describe
Fruits/seeds	absent/present	color(s)	texture/size	counts	describe

Vegetative Plant Parts			
Leaves	absent/present	Color	shape/texture/smells
Stem/Branch	nodes or internodes present/absent	Color	Lichen/ parasitic growths on branches/stems
Roots	visible	Color	aerial or ground roots

- Observe which plants are cultivated and harvested
 - Food, Medicine, tools
 - Relationships, how plants are related to species in the water and sky.
 - Be open minded and think about how all species are connected.

Bird and Insect Life:

- Record activity of bird and insect activity.
- Look at how much and when certain species aggregate and how (e.g, Birds – in flocks, pairs, or single)
- How is food gathered by certain bird and insect species?
- Differentiate between native birds and migratory birds (birds that come to the Islands seasonally)? And find out how migratory birds are evolving (change of behavior over time) to stay in Hawaii instead of migrate back home?

Water Activity

Tides

High Tide	Low Tide
Rising - Height (ht) /Feet (ft)	Rising - Height (ht) /Feet (ft)
Falling - Height (ht) /Feet (ft)	Falling - Height (ht) /Feet (ft)

- Salinity
 - Defined as: The salt level in the water or how much dissolved salt is in a body of water.
 - This can be determined usually by checking the ph levels in the water through a collected sample of water in a tube/vile and adding 5 drops (may vary by indicator) of the PH indicator and just watch for the color (high acidity levels or salt levels will usually give a red/pink color; Base levels are shown through colors like a green color; if the color is a blue color that shows a more balanced amount of base and acid, or also known to be the color for fresh water (remember that this test only shows salt levels it does not show bacteria or parasitic activity using the ph indicator).
 - High levels of salt can reflect high levels of conductivity
 - Conductivity can be measured using a probe that is connected to a meter reader device.
 - Freshwater = low levels of salt = low levels of conductivity
 - Conductivity = ability to be able to produce an electric current.
- Water Flow
 - Constant flow? Do you notice pūnāwai or freshwater springs?
 - How does water feel? Temperature?
 - Warm, Cold, Hot
 - Other Observations

‘Ōlelo No’eau (Hawaiian Proverbs)

- Making connections with the land, ocean, and celestial/skies. Looking at the different relationships of plants and animals and how they relate to each other relative with seasons and regeneration.
- Looking at clues that our natural environment reveals to us so we are able to make logical and relevant decisions on our times of gathering/harvesting, planting and the style of work done at certain times and places.
- Example of some
 - He ua he’e nehu no ka lawai’a– “it is rain that brings nehu for the fishermen” - refers to the rain that precedes the run of nehu fish. MKP#1566.
 - Ku i ke Kīpu’upu’u – “Buffeted by the Kipu’upu’u – Said of hurt feelings. Kipu’upu’u is a chilly wind and rain at Waimea, Hawaii. MKP#1882.
 - Kū ka Hālelo, Ke ‘ā o Kahawai – “A lot of trash accumulated with the rocks in the streams” – the sign of a storm. Also said of the many useless, hurtful words uttered in anger. MKP#1888.