

Fanha'aniyan Pulan C Hamoru

January 23, 2023 - February 10, 2024



Western Pacific Regional
Fishery Management Council

WPCOUNCIL.ORG

Traditional/Cultural Knowledge

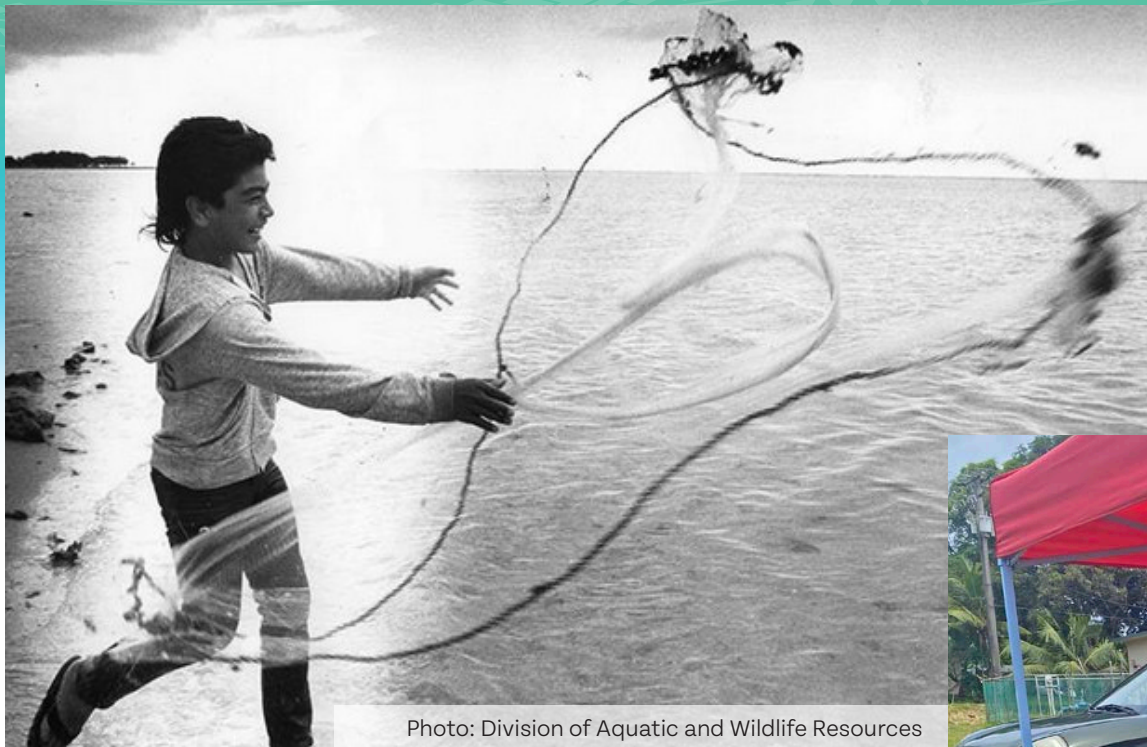


Photo: Division of Aquatic and Wildlife Resources

When *talayerus* (throw netters) gather along the shores, it is a sign of the arrival of forage fish like *mañahak* (juvenile rabbitfish).



Photo: Felix Reyes

If you don't catch your own, *atulai* (bigeye scad) is commonly available from roadside vendors in Guam when in season. Support your local fishermen by buying fresh locally caught fish.

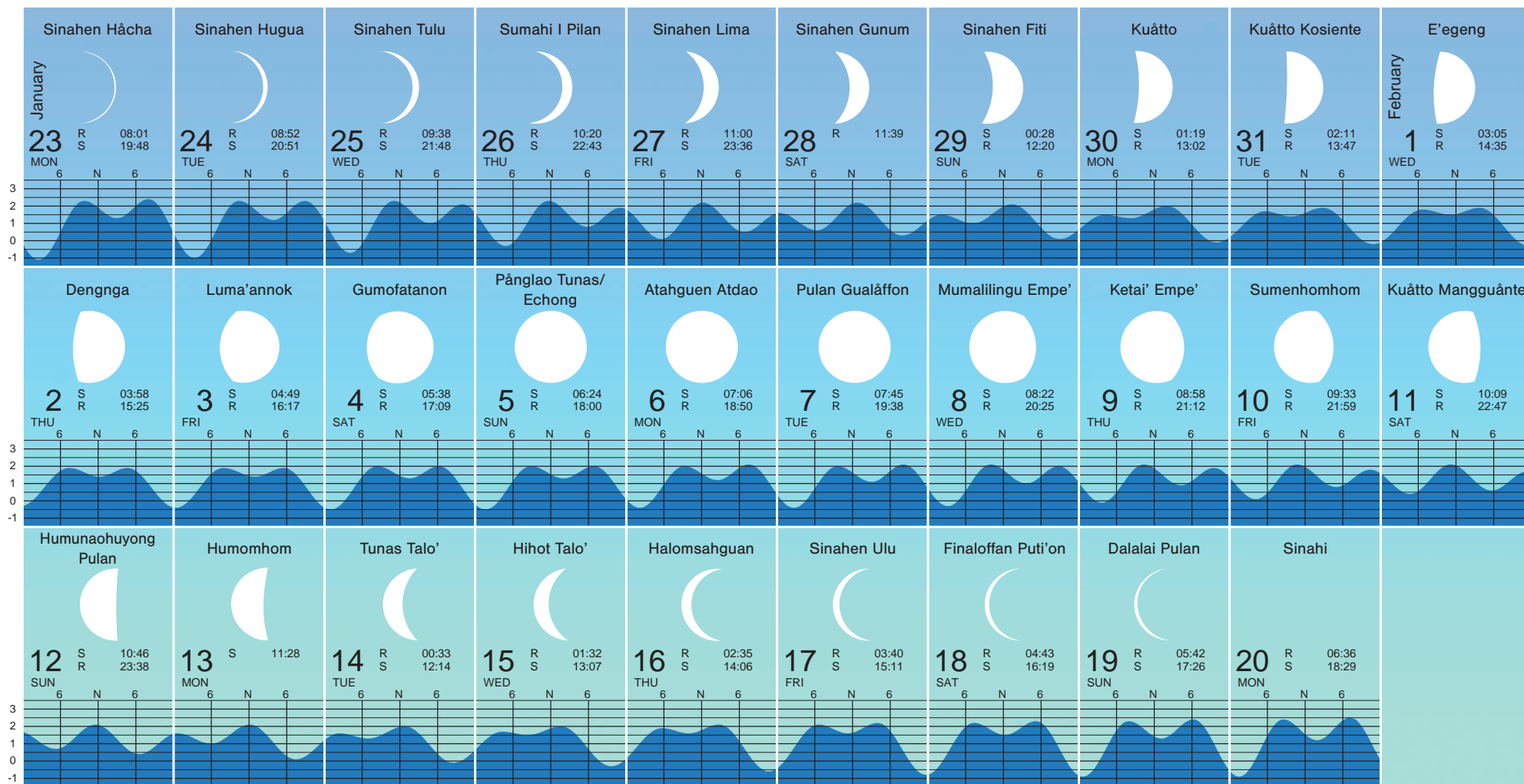


Photo: Felix Reyes

Our *manamko* (elders) carry the knowledge of Chamorro traditional cultural fishing practices and why we care to protect our resources. They are a ready resource because they know how certain species are caught and prepared. Fish are typically *ma-patti* (shared) during village fiestas, family gatherings, and special community events.

Umayangan

January 23 - February 20
Ineru 23 - Fibreru 20, 2023



MOON-RELATED OBSERVATIONS AND ACTIVITIES



Western Pacific
Regional Fishery
Management Council

Environment

Botague (mahimahi) typically bites from January to April, blue marlin from June to October, and wahoo from November to December. *Mañahak* (juvenile rabbitfish) runs are seasonal during April or May and again during September or October.

The seasonality of fish often coincides with natural cues on land. For example, some attribute the arrival of termites in the early evening or the ripening of the *kamachile*' fruit (Manila tamarind) with the arrival of the *mañahak*.



Photo: Jimmy Badong

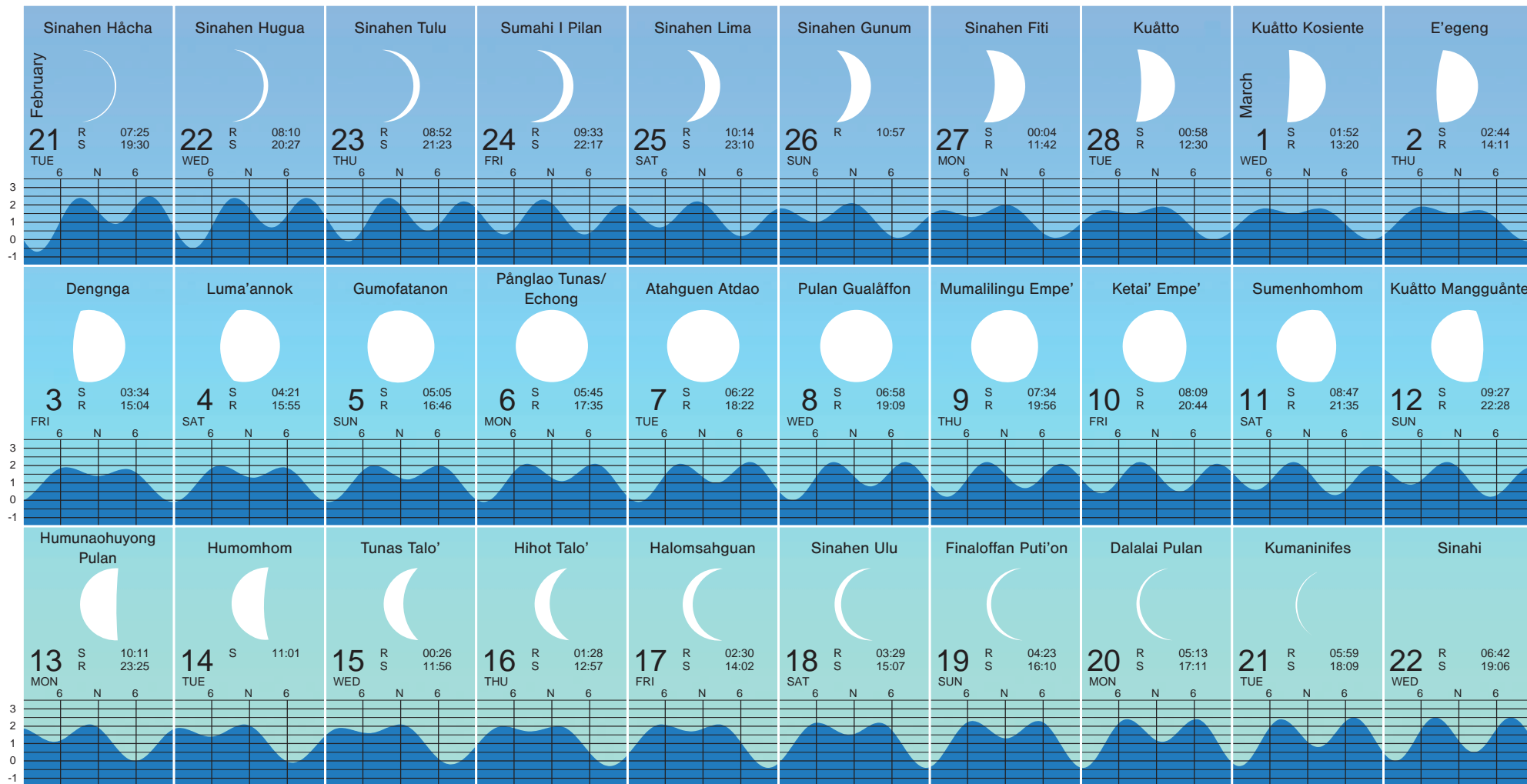


Photo: Felix Reyes

Guam has two seasons: dry from January to June and rainy from July to December. Rough water tends to occur more often during the rainy season and into the winter months, tapering off during February. When the water gets rough, it's a safe bet to fish near the fish aggregating devices (FADs) as they are more accessible.

Tumaiguini

February 21 - March 22
Fibreru 21 - Måtso 22, 2023



MOON-RELATED OBSERVATIONS AND ACTIVITIES



Western Pacific
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Management Council

Seasonality/ Sustainability



A pile of mostly i'e. Photo: Felix Reyes

Fishermen highly anticipate the start of the *atulai* (bigeye scad) and *i'e* (juvenile jacks) season, when they catch for family and *patté* (sharing) with friends. The *atulai* season lasts from one to six months starting in late spring. *I'e* are common during the months of July through October but are found in greater abundance during August.

Mañahak (juvenile rabbitfish) typically make their run two times a year, usually around April to May and again in October. The runs are similar to a salmon run up the river, except the *mañahak* run onto the reef flats from the open ocean. The schools can be quite large with millions of these small fish. As they transition into adults, *mañahak* are called *sesyun* and can be caught year round. Both stages are a highly prized delicacy.



When the *atulai* runs, fishermen are elbow to elbow casting for a few to take home.

Photo: Division of Aquatic and Wildlife Resources

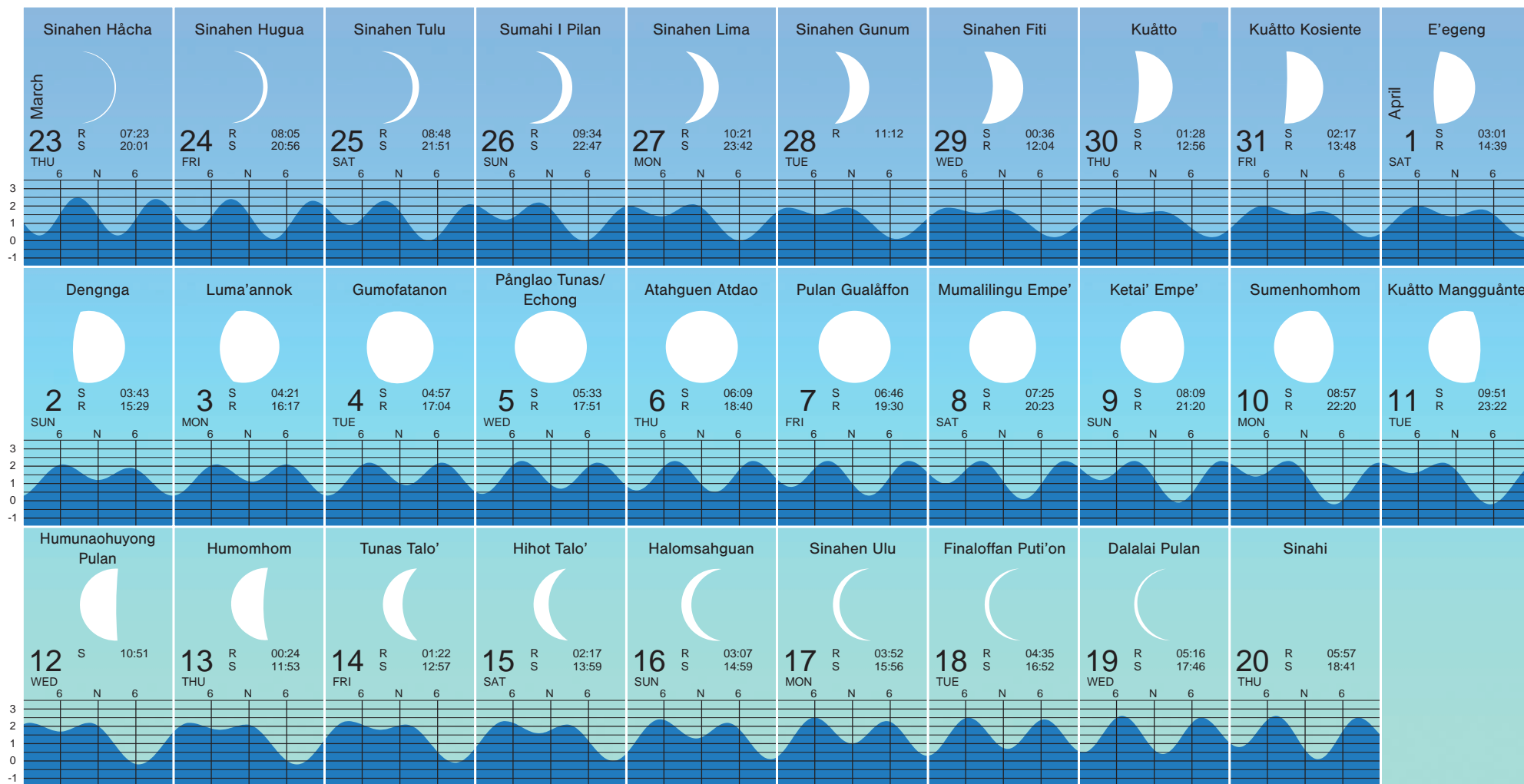


Sesyun.
Photo: WPRFMC

Maimo

March 23 - April 20

Måtso 23 - Abrit 20, 2023



MOON-RELATED OBSERVATIONS AND ACTIVITIES



Western Pacific
Regional Fishery
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Traditional/Cultural Knowledge



Fishermen wait for the season of bigger fish to arrive, but sometimes small fish take the lures. When relatively small pelagic fish start to be caught, fishermen know it is a sign that their larger relatives are soon to arrive.

Photo: Felix Reyes

What is the relationship between pelagic fish and seasonal fish like *ti'ao* (juvenile goatfish) and *mañahak* (juvenile rabbitfish)? Fishermen know that different fish have different seasons. Sometimes the arrival of large pelagic fish is foreseen when fishers start to see an abundance of *mañahak* and other forage fish being eaten in the open water. They adapt their lures to reflect the species of bait fish being eaten by pelagic fish to improve their catch.



Photo: Division of Aquatic and Wildlife Resources



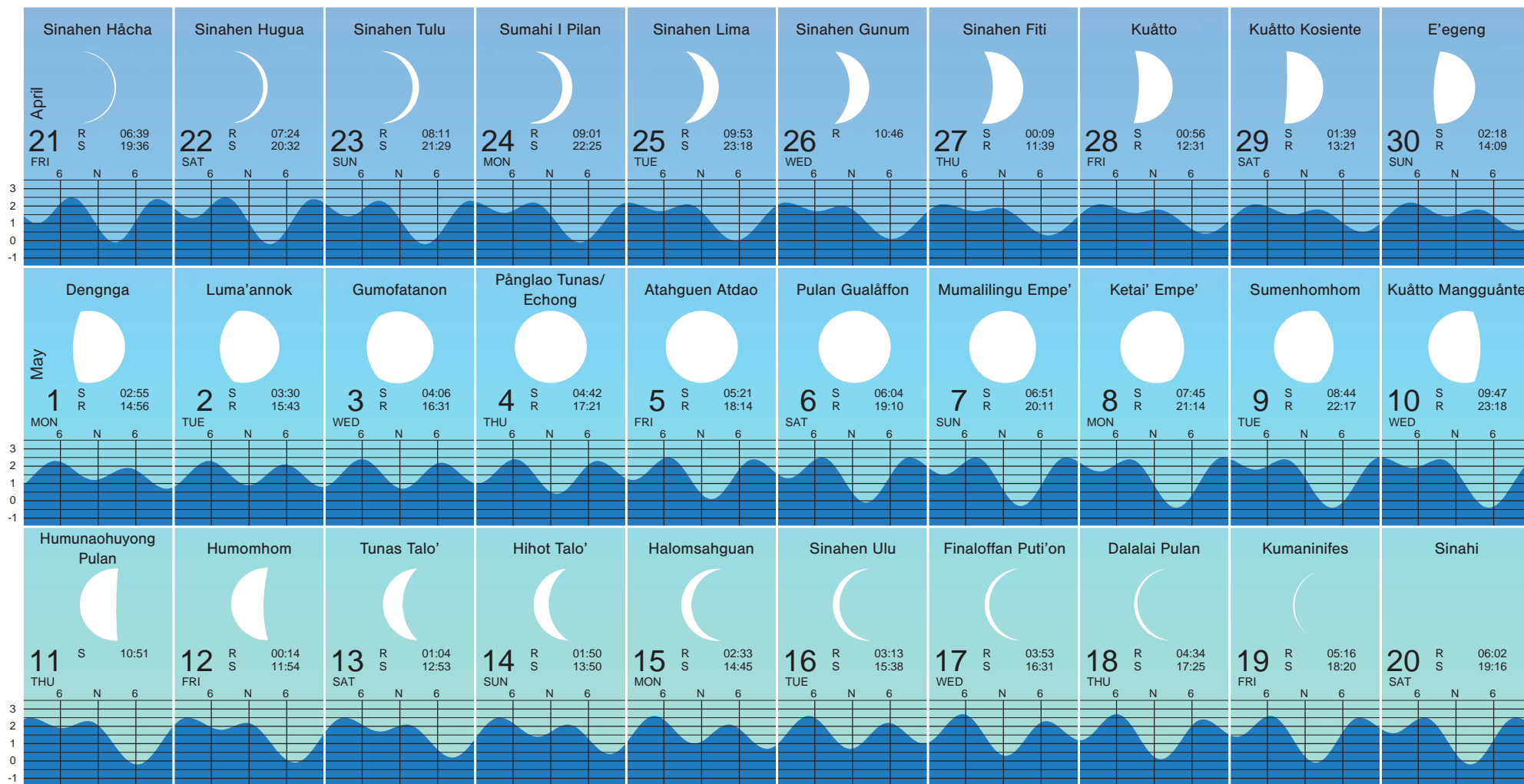
Photo: Felix Reyes

Having modern fishing equipment does not always equate to catching more and larger fish. Early fishermen, using basic fishing tools available during their time, were able to catch some of the largest fish around.

Umatalaf

April 21 - May 20

Abrit 21 - Måyu 20, 2023



MOON-RELATED OBSERVATIONS AND ACTIVITIES



Western Pacific
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Food Safety



Photo: Michael Dueñas

Michael Dueñas demonstrates the parts of a small tuna to youth at the Guam Fishermen's Cooperative Association, teaching them about food safety and how to take care of their catch. Eat only fresh fish that have clear eyes, a clean smell and are recently caught.

Mañahak (juvenile rabbitfish) taste better before they have fed after crossing into the lagoons. After they feed, their color changes from silver (bottom) to spotted (top) and they pop when fried due to the algae in their stomachs, making them less desirable.



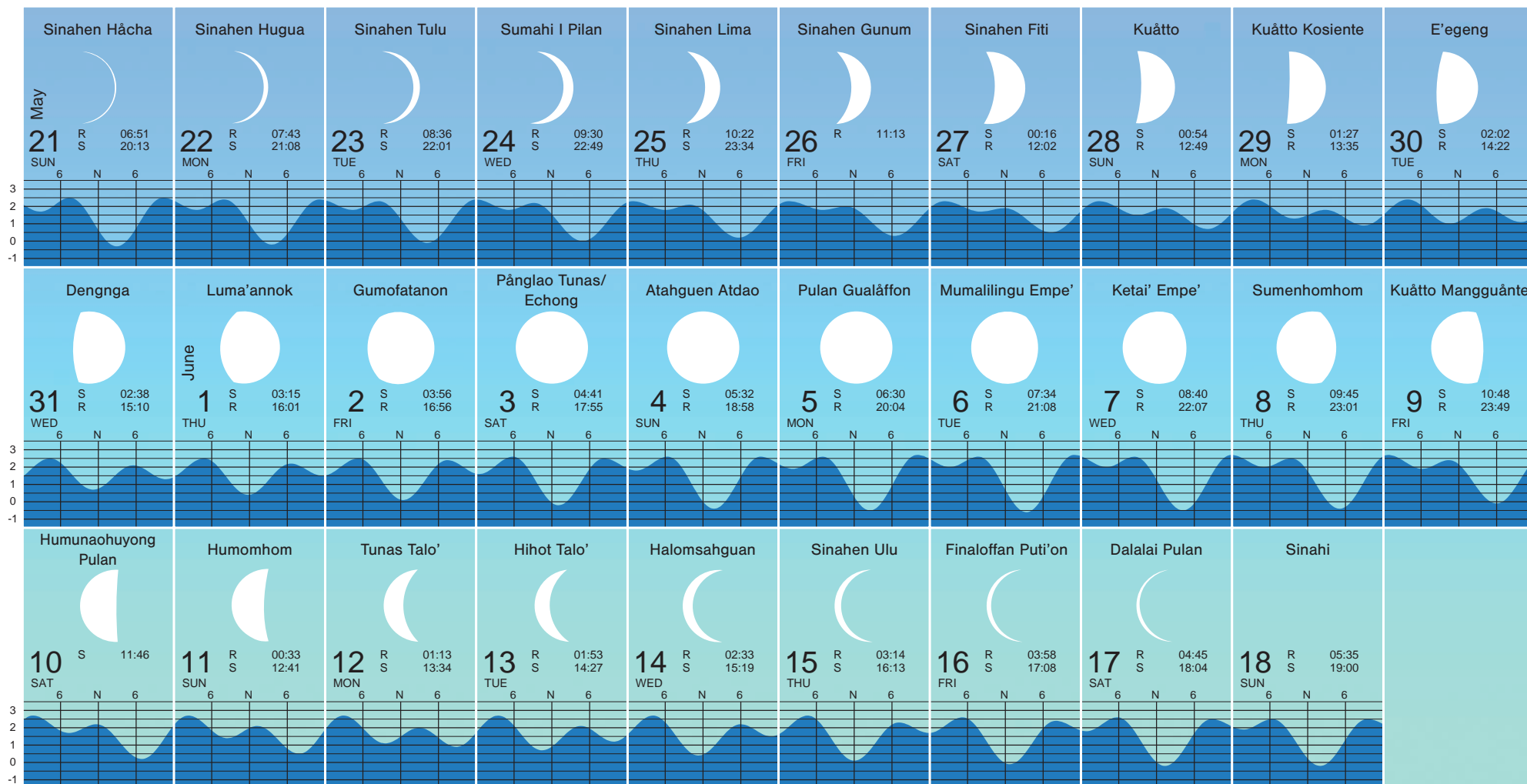
Photo: Felix Reyes

It is important to understand the fish you catch, including identifying the species, knowing when they are caught throughout the year and what they eat. This helps fishers know whether the fish is safe to eat or when they taste better (usually earlier in the season). *Mamulan* (mature jacks or giant trevally) and many reef fish more than 6 pounds tend to be poisonous (ciguatoxic) due to the accumulation of toxins. Small marlin under 130 pounds taste better than their larger relatives. The same is true about skipjack tuna and wahoo; their meat is tender and more flavorful.

Lumuhu

May 21 - June 18

Måyu 21 - Huniu 18, 2023



MOON-RELATED OBSERVATIONS AND ACTIVITIES



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Management Council

Traditional/Cultural Knowledge



To identify fish, our *manamko* (ancestors) named fish based on their features or characteristics. The *ababang* looks like its namesake, a butterfly, and a wrasse called *palakse'* (slippery) was named for the coat of slime on its body. The *i'e* (juvenile jack) got its name from the sound it makes when caught.

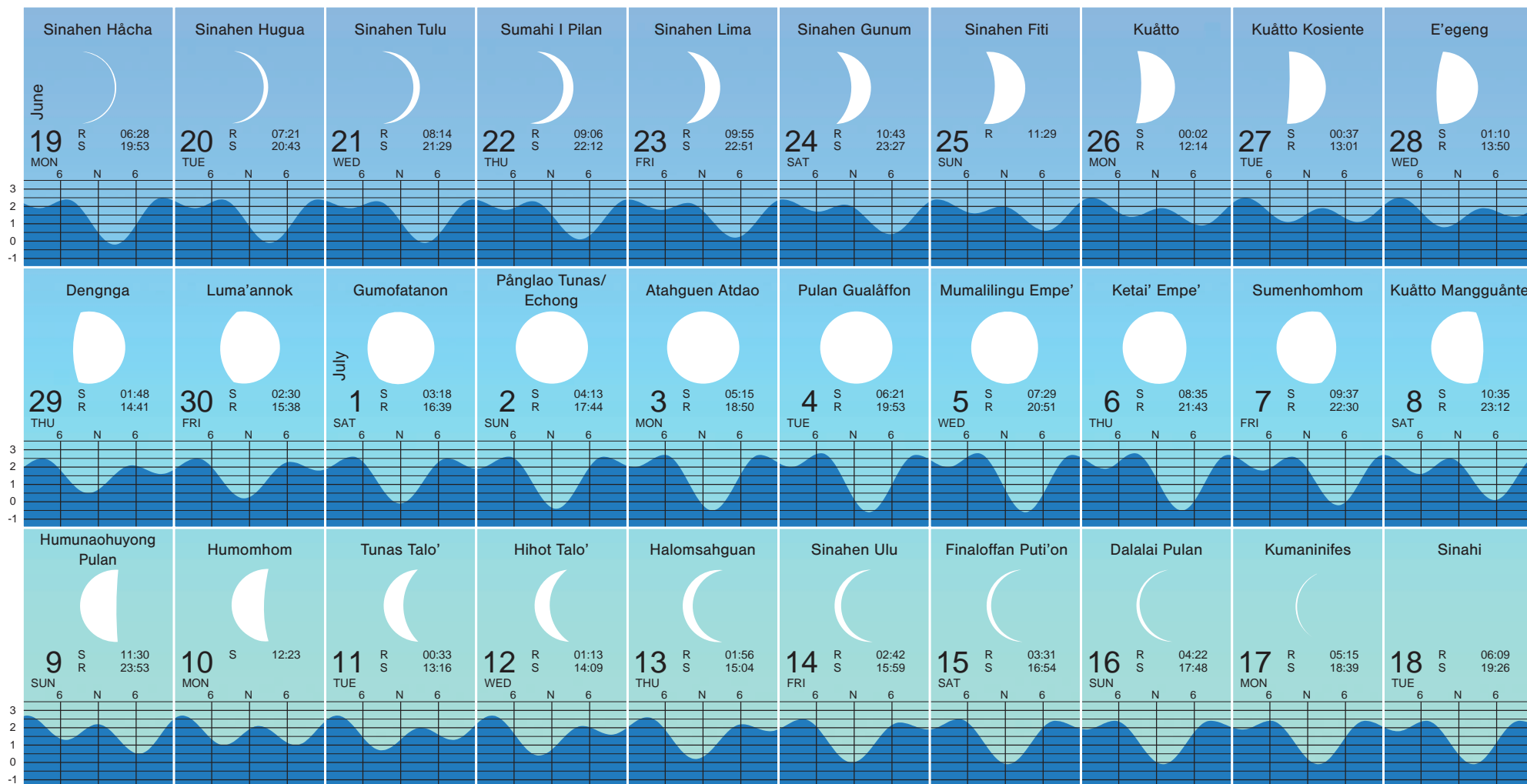


There are so many fish species in Guam's waters that it is sometimes difficult to identify which species they are. The *måtan haggan* (emperor) was named because its eyes look like those of a sea turtle, but some also call it *måtan hagon* because the eyes also resemble plant leaves.

Makmamao

June 19 - July 18

Huniu 19 - Huliu 18, 2023



MOON-RELATED OBSERVATIONS AND ACTIVITIES



Western Pacific
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Management Council

Fish Data Collection



Photo: Audrey Toves

Open ocean fishing by Chamorros of long ago was only allowed for the men in the family. Women fished closer to shore or near the reef margin. Today, the number of women interested in learning is increasing.



Council scholarship recipient Leilani Sablan conducts an independent creel survey to track changes in target reef fish.

Photo: Leilani Sablan

In Guam, the Division of Aquatic and Wildlife Resources collects fishery-dependent data directly from fishermen using creel surveys from shore and boat-based fishers. Good data allows fishery managers to make well-informed decisions to ensure the sustainability of fish populations so we can fish forever!

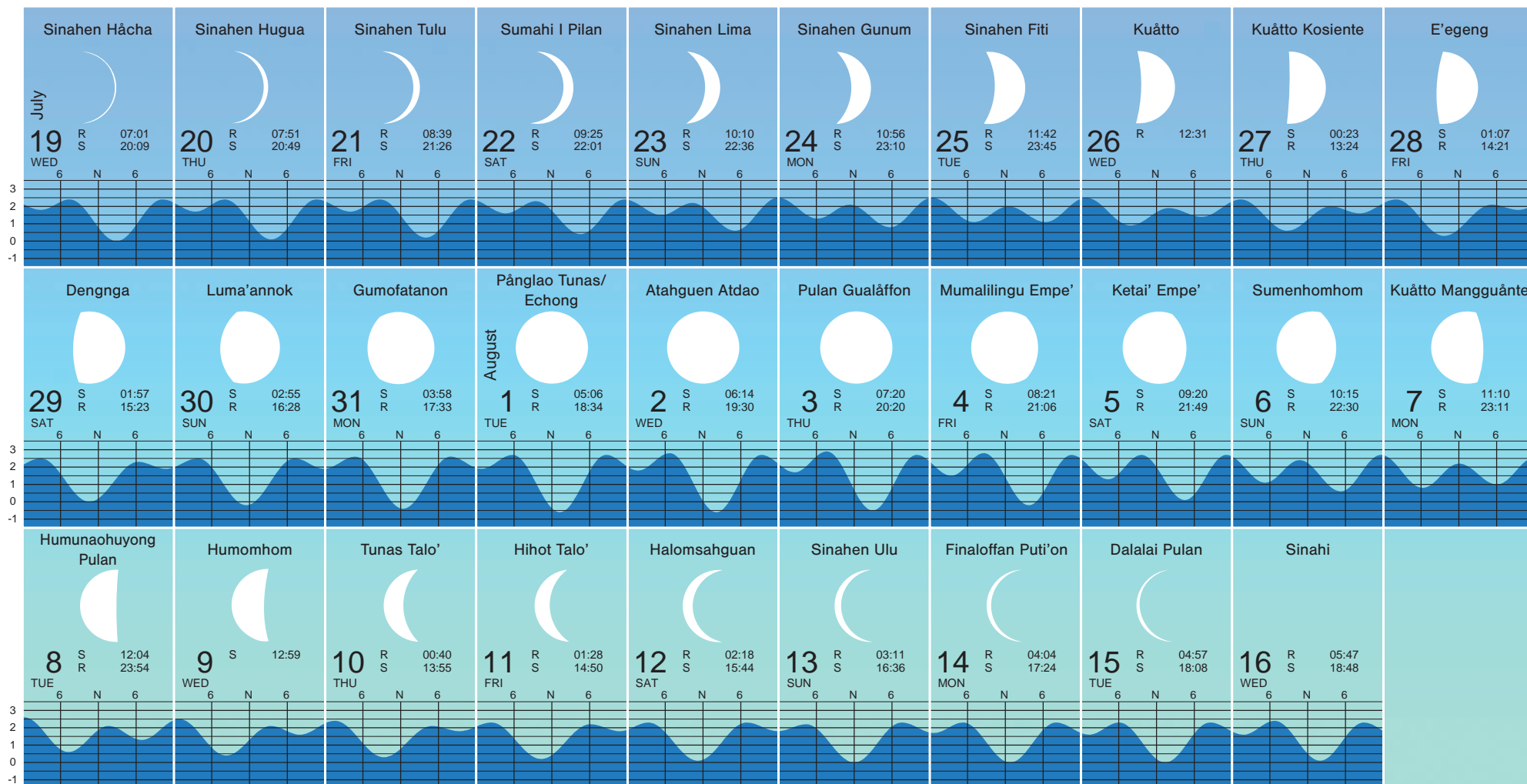


Photo: Felix Reyes

Mananaf

July 19 - August 16

Huliu 19 - Agosto 16, 2023



MOON-RELATED OBSERVATIONS AND ACTIVITIES



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Fishing Clubs/Education

Being in a fishing club brings a sense of community and security, especially for the youth, and helps foster lifelong hobbies and friendships. Members learn about modern fishing methods, including information about fish-specific baits, lures, depths and fishing areas around the island.



Photo: Felix Reyes

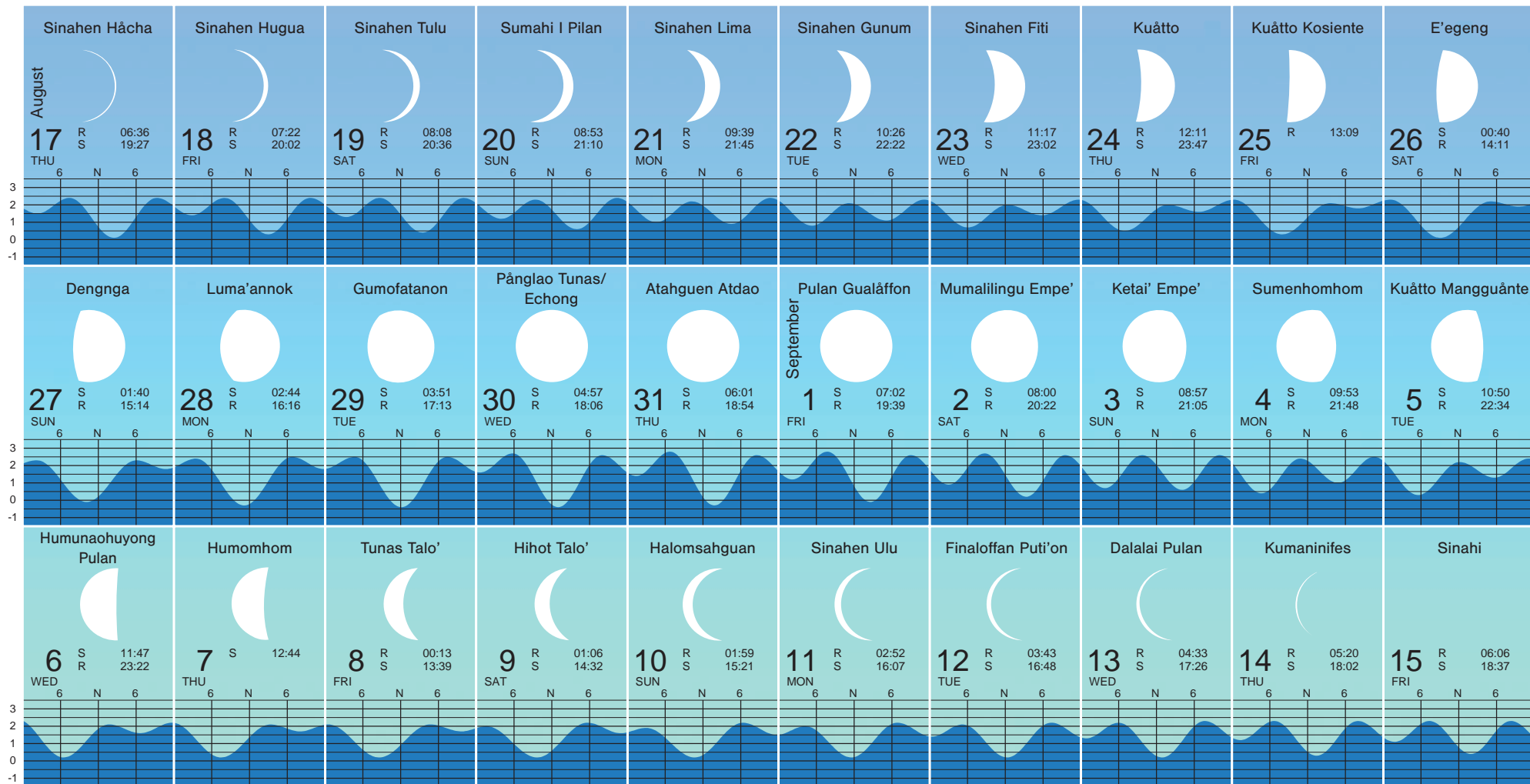


Cradle to grave. Southern High School Fishing Club members share knowledge about fishing using modern boats and tools with elementary school students.

Photo: Stephen Meno

Semo

August 17 - September 15
Agosto 17 - Septiembre 15, 2023



MOON-RELATED OBSERVATIONS AND ACTIVITIES



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Food Security/Health



Healthy ecosystems produce healthy fish to feed the community. Locally caught fish are fresher than imported fish. Buying local reduces waste and supports efforts to sustainably manage our fisheries by understanding what is caught, how much is caught and where it is caught.

Fishermen showcase their catch that will be sold to restaurants on Guam to promote food security.

Photos: James Borja

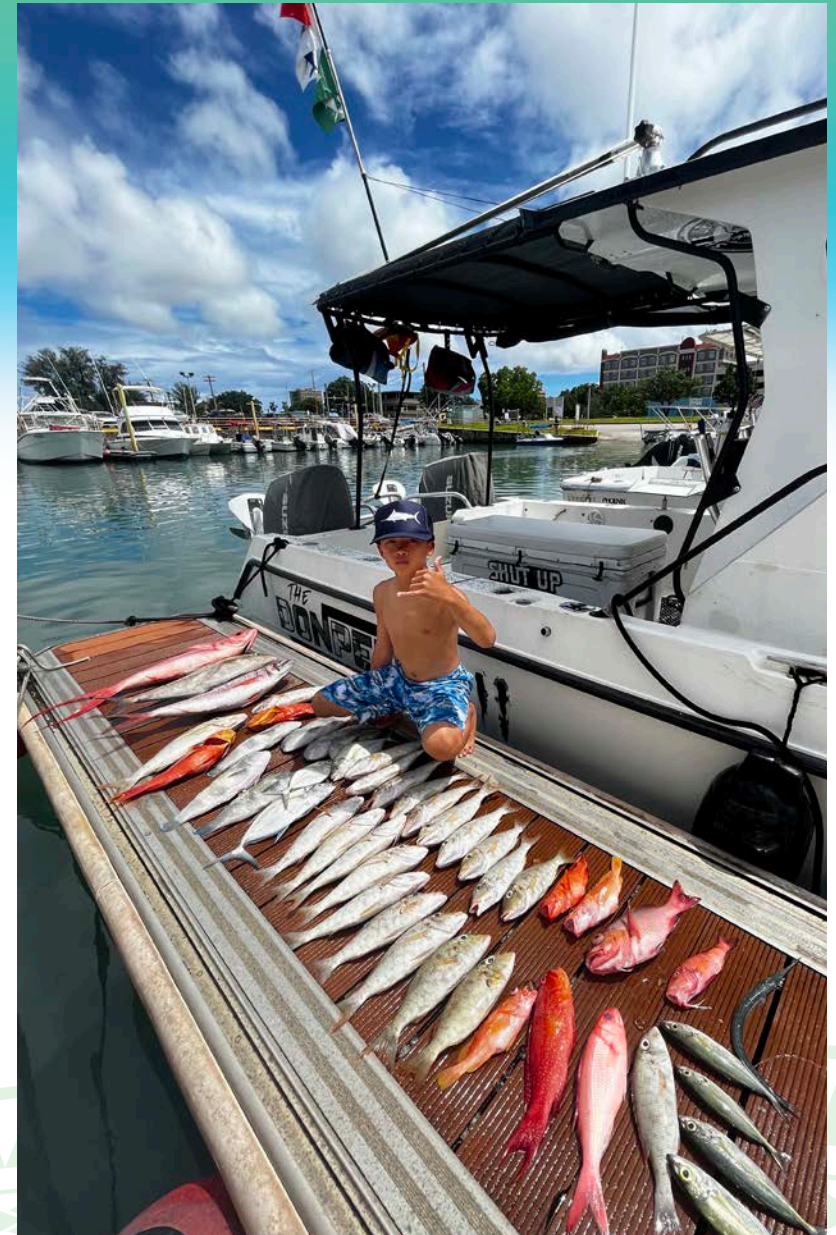
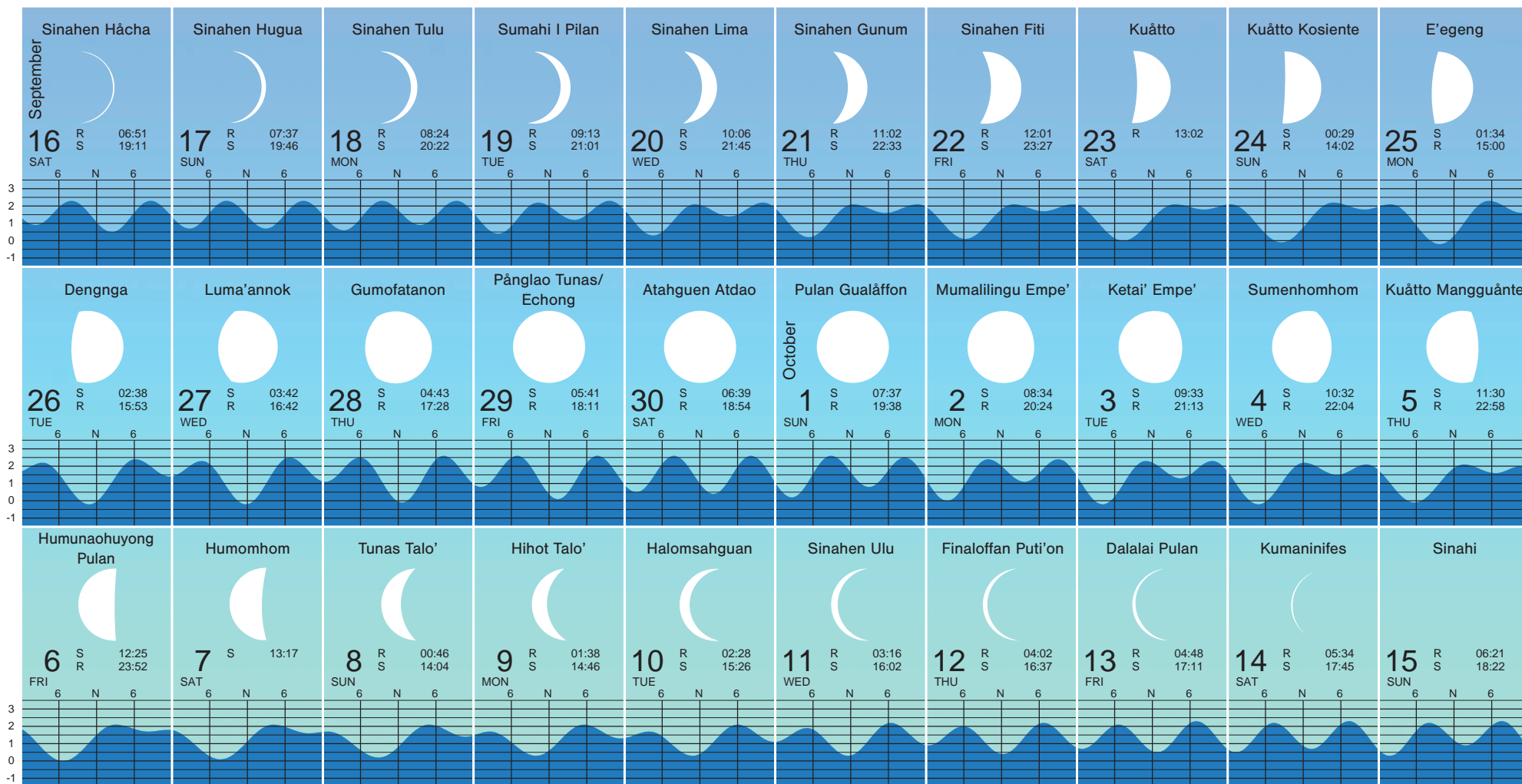


Photo: Don Pedro Makaveli Cruz

Tenhos

September 16 - October 15

Septembre 16 - Oktubri 15, 2023



MOON-RELATED OBSERVATIONS AND ACTIVITIES



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Fishing Derbies/Education



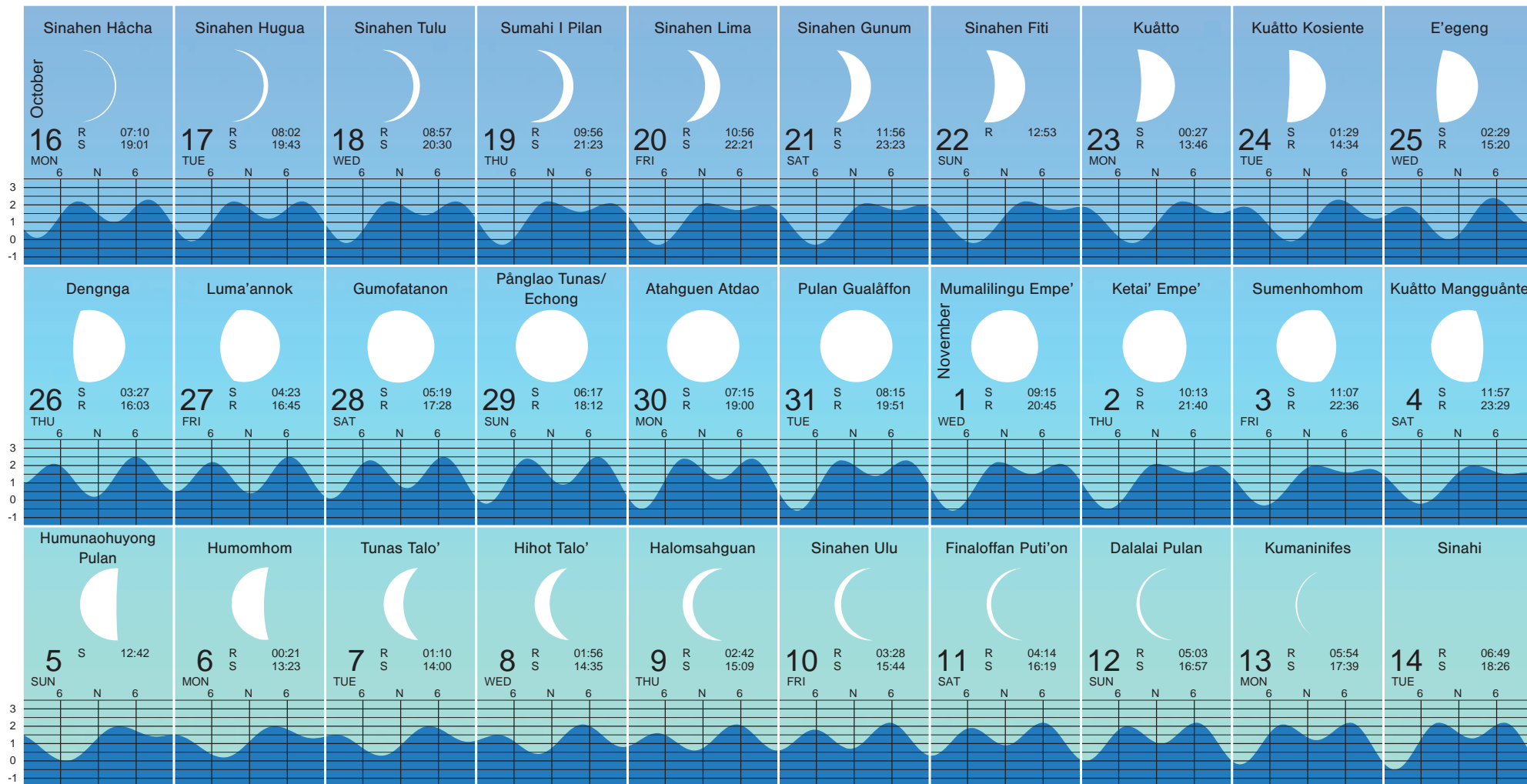
Join the Guam Division of Aquatic and Wildlife Resources Kid's Fishing Derbies to learn or teach about the importance of data collection and fisheries management strategies. Teaching kids early to fish also teaches them to respect our resources and be responsible stewards of the sea.



Photos: Felix Reyes

Lumamlam

October 16 - November 14
Oktubri 16 - Nubembre 14, 2023



MOON-RELATED OBSERVATIONS AND ACTIVITIES



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Fishing Tools

Our *taotaomo'na* (ancestors) used traditional plant fibers and even human bone or fish bones to craft fishing tools like spears, hooks and gorges to catch fish of all sizes, including marlin! Fishing line and nets were made of plant materials. Bone needles were used to make or mend fishing nets. Readily available stone and shell sinkers were used to bring bait closer to the ocean floor where more fish are located.



Photo: Felix Reyes

Regular maintenance and repair of fishing tools is an important part of fishing.



Photo: Division of Aquatic and Wildlife Resources

Today, some of these tools have been adapted. Now all use monofilament to make *talaya* (throw nets) or *chenchulu* (surround nets), carbon fiber fishing poles, electric reels and aluminum or fiberglass boats with gas or diesel engines. These modern tools allow fishermen to travel farther in the ocean and stay out longer to catch fish.

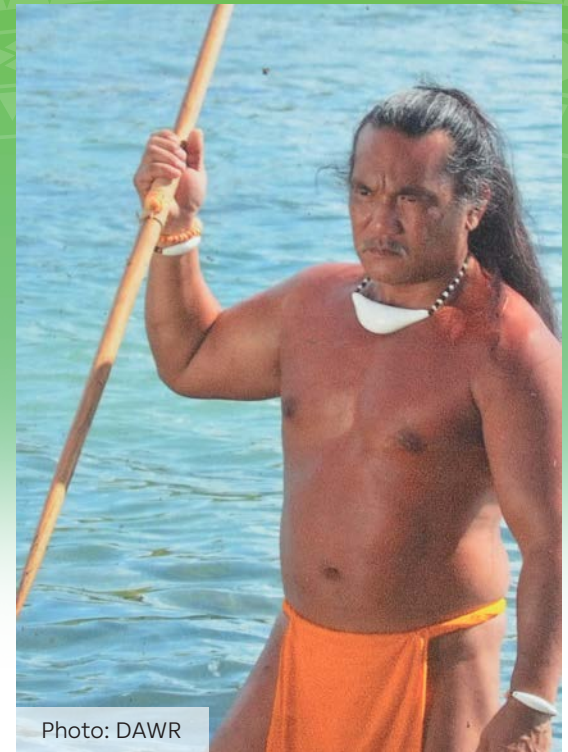


Photo: DAWR

Fishing hooks, weight and gorges used by ancient Chamorros.



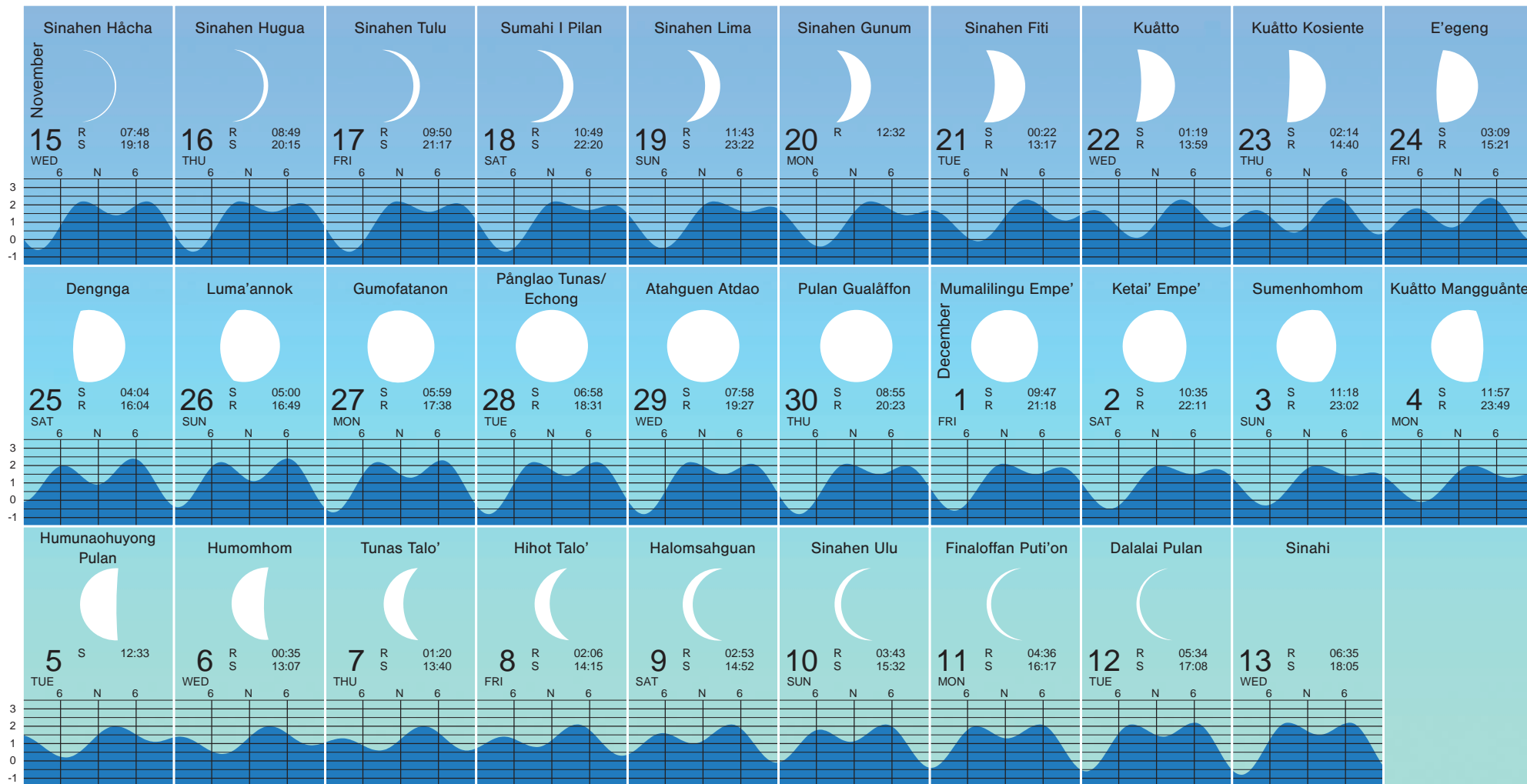
1. This ~500-year old fish hook is made of human bone and is the point of a 2-piece fish hook. The shank may have been made of wood, or some type of material that does not last in the ground. 2. A pearl shell fish hook with a notched shank, ~500-1000 years old. 3. A fishing weight crafted from a giant clam shell (*Tridacna*), ~2,500 years old. 4. The largest of the 3 gorges is made of helmet shell (*Cassis*), while the other 2 are from a giant clam shell (*Tridacna*).



Photos: Rick Schaefer¹, Judith Amesbury^{2,3,4}

Fangualo'

November 15 - December 13
Nubembre 15 - Disembre 13, 2023



MOON-RELATED OBSERVATIONS AND ACTIVITIES

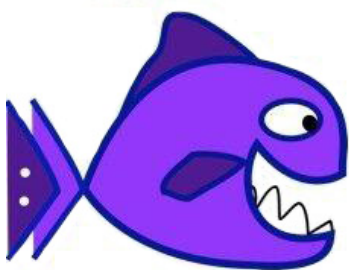


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Food Safety

Ciguatera

Second most common fish-borne toxin



Larger fish ingest smaller fish



Small fish feed on coral reef **dinoflagellates**



Contains toxin

Gambierdiscus toxicus

- Odorless, colorless, tasteless
- Not deactivated by heat

Gastrointestinal

- Abdominal pain, vomiting, diarrhea

Neurologic

- Temperature-related dysesthesias (hot-cold reversal)
- Sensation of tooth looseness
- Ataxia, coma

Cardiovascular

- Bradycardia, hypotension, pulmonary edema

Management

- Supportive care
- Antiemetics
- IV fluids for hypotension
- Atropine for bradycardia
- Mannitol for neurologic morbidity



Barracuda



Grouper



Red Snapper



Parrotfish



Amberjack

Ciguatera fish poisoning, or ciguatera, is a foodborne illness caused by eating fish contaminated with toxins produced by dinoflagellates, or small marine organisms living on or near coral reefs. Symptoms may include diarrhea, vomiting, numbness, itchiness, sensitivity to hot and cold, dizziness and weakness. The onset of symptoms varies with the amount of toxin eaten from half an hour to up to two days. Some symptoms remain for a few weeks to months.

Any fish can cause ciguatera, but certain fish are more commonly affected such as *alu* (barracuda), *gadao* (grouper), *tagafi* (red snapper), jacks and eels.* The elder Chamorros avoided this by preferring reef fish that do not eat other fish, which increases the likelihood of the accumulation of toxins in the larger fish. You can also avoid poisoning by not eating the liver, intestines, heads and roe (eggs) of smaller reef fish.

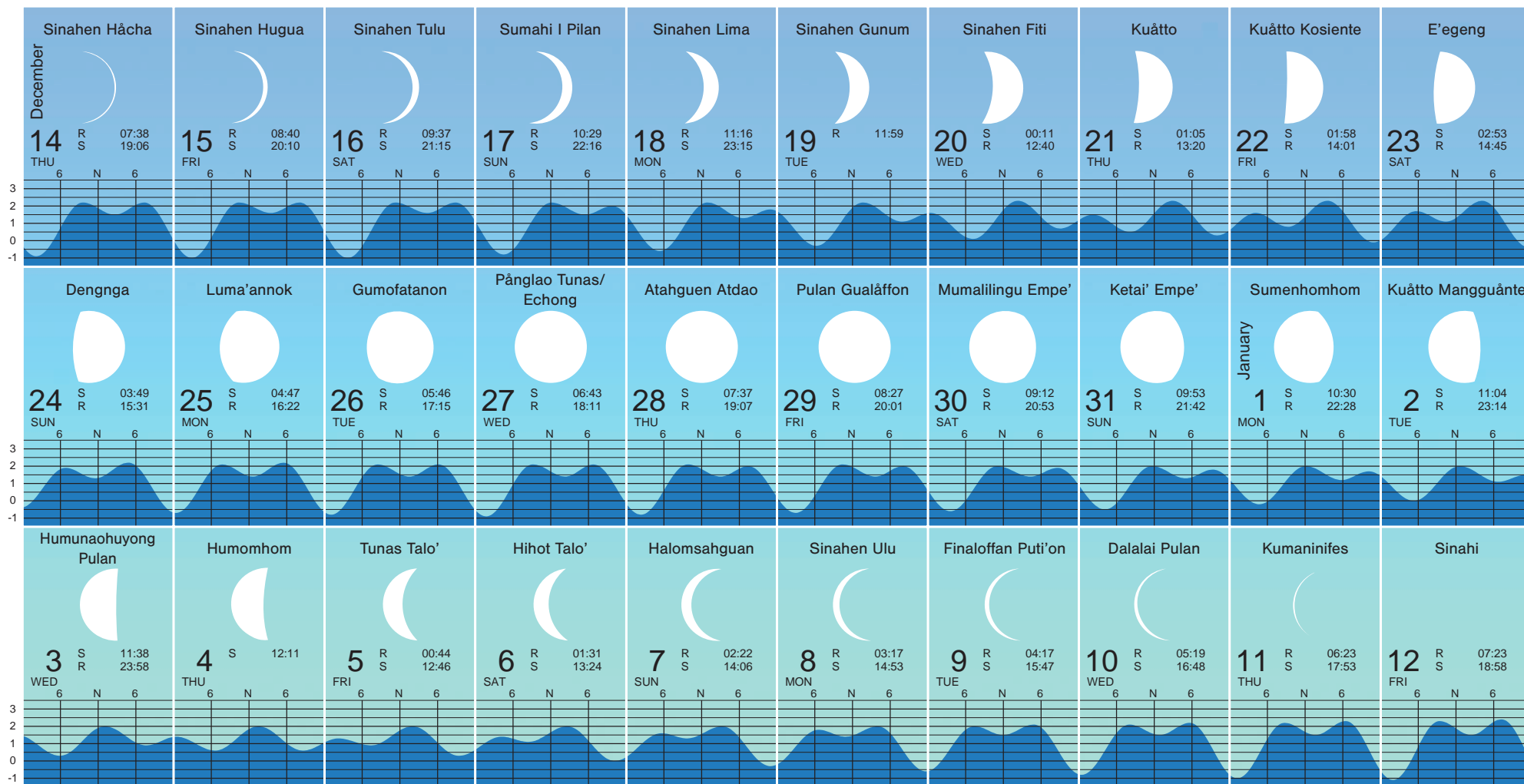
Source: wwwnc.cdc.gov/travel/yellowbook/2020/preparing-international-travelers/food-poisoning-from-marine-toxins

Eating fish that are ciguatoxic can be very painful. If in doubt, before going fishing, check with the Division of Aquatic and Wildlife Resources to see what size and species of fish should be released.

(*Note: Although parrotfish appear in the image, DAWR says they are not known to be ciguatoxic.)

Sumongsong

December 14, 2023 - January 12, 2024
Disembre 14, 2023 - Ineru 12, 2024



MOON-RELATED OBSERVATIONS AND ACTIVITIES



Western Pacific
Regional Fishery
Management Council

Fish Data Collection



Photo: Andrew Kang

Quality fish data gathered by scientists, including life history information and forage habitat, is important for managers to make responsible fishery management decisions.

Otoliths (ear stones or ear bones) are located directly behind the brain of bony fishes. Different species have otoliths of different shapes and sizes. Scientists can extract them and study a cross section to determine a fish's age and how fast it grew from year to year.

Fish Life History Biosamples



Section of a snapper otolith.
Photo: NMFS/Joe O'Malley.

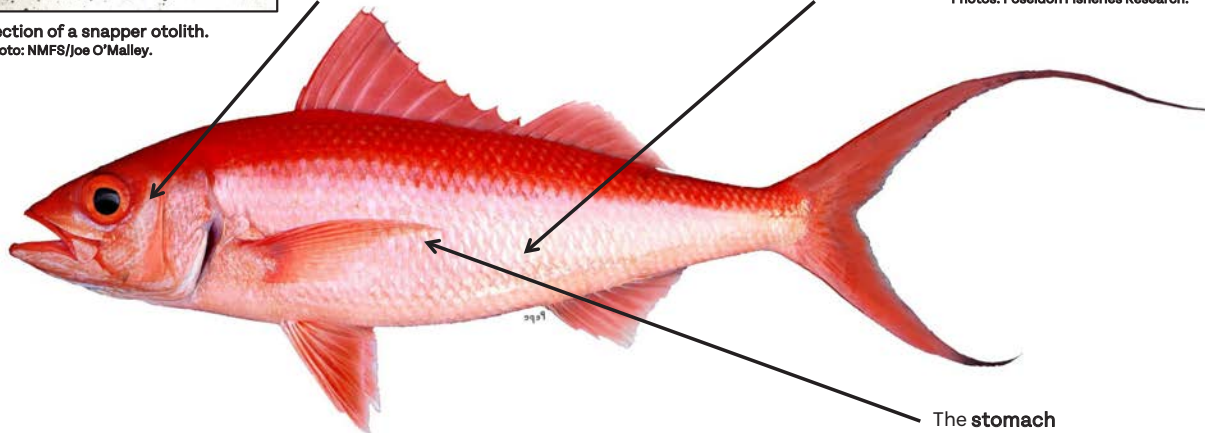
An **otolith** (ear bone) forms annual lines, similar to the rings in a tree trunk. The distance between lines indicates fish relative growth each year.



Gonads tell scientists information about reproductive development.



(L) Fish ovaries and (R) testes.
Photos: Poseidon Fisheries Research.



The **stomach** contents show the fish's diet.

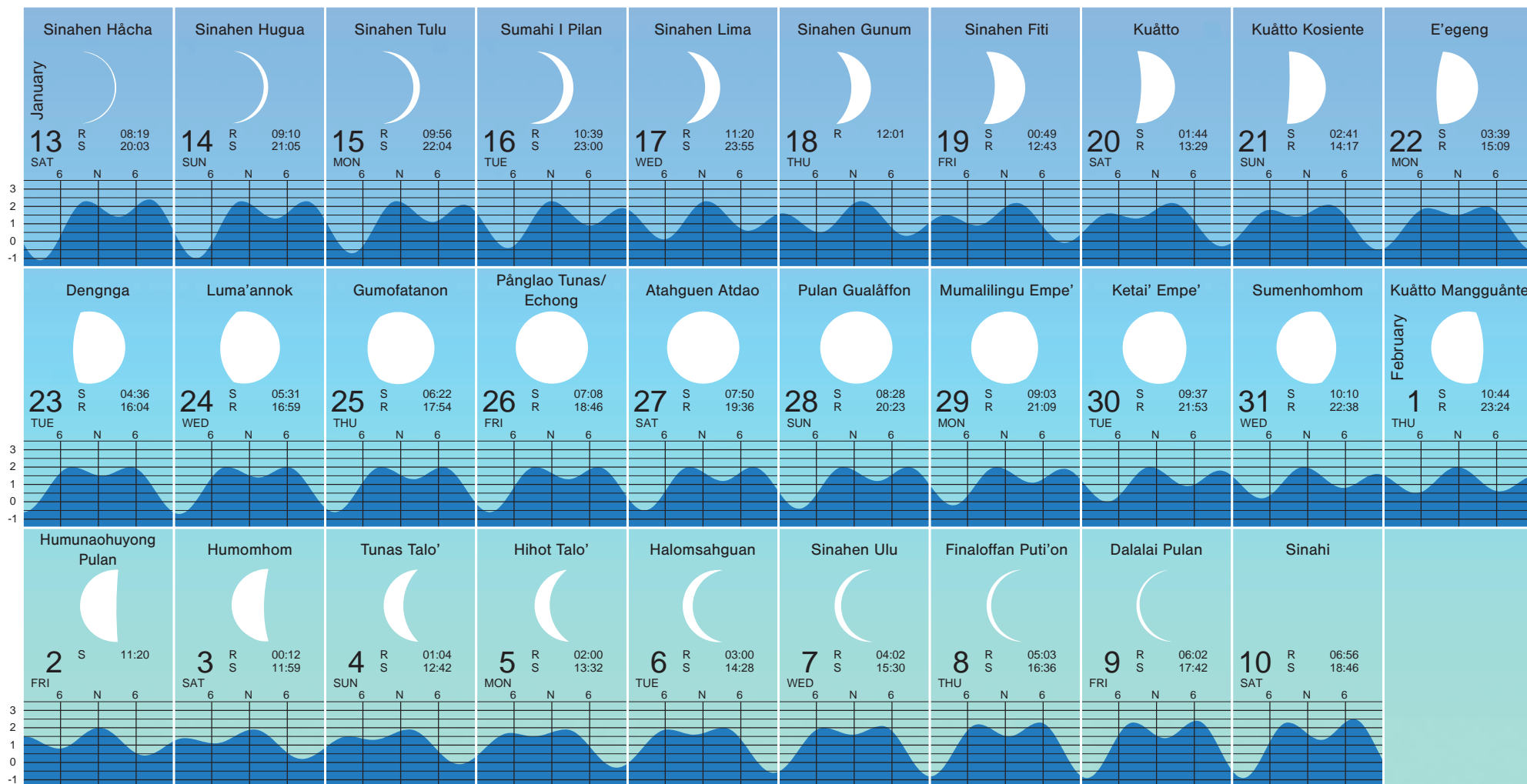
Fork length, along with **weight**, can be used for fish population assessments.



Photo: WPRFMC

Umayangan

January 13 - February 10
Ineru 13 - Fibreru 10, 2024



MOON-RELATED OBSERVATIONS AND ACTIVITIES



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About This Calendar

The **Western Pacific Regional Fishery Management Council** has produced traditional lunar calendars for Guam since 2007. The intent is to enhance community involvement in fishery management.

In addition to sharing traditional and cultural knowledge about fishing, the 2023 *Fanha'aniyan Pulan CHamoru* (Chamorro Lunar Calendar) provides information about different ways that fisheries are monitored and kept healthy. The lunar months, moon phases and traditional calendar months are given in Chamorro, the native language of the indigenous people of Guam. The moon phases in this calendar are for Hagåtña as calculated by the HM Nautical Almanac (astro.ukho.gov.uk/websurf). The tide charts with moon rise and set times are in Chamorro Time for Hagåtña and were provided by OceanFun Publishing, NZ.

A special *Un Dangkulu Na Si Yu'us Ma'ase* to calendar contributors including Council family members Judith Amesbury, Ken and James Borja, Michael Dueñas, Audrey Toves; Council staff Floyd Masga, Felix Reyes, Amy Vandehey; Brent Tibbatts, Division of Aquatic and Wildlife Resources; Julian Flores, Andrew Kang, Stephen and Frances Meno, Leilani Sablan, Jimmy Snaer Badong, Southern High School Fishing Club.

For an electronic version of this calendar, go to www.wpcouncil.org/educational-resources/lunar-calendars.

Send us an email at info@wpcouncil.org to let us know how you use our calendar!

Front cover photo: Students from Marcial Sablan Elementary School learn the basics of fishing and caring for our marine resources. Photo: Stephen Meno

About the Council

The **Western Pacific Regional Fishery Management Council** was established by Congress in 1976 to manage fisheries in the offshore waters surrounding Guam, the Commonwealth of the Northern Mariana Islands, American Samoa, Hawai'i and the U.S. Pacific Remote Island Areas. The fisheries in federal waters surrounding Guam are managed under the Mariana Archipelago and Pacific Pelagic Fishery Ecosystem Plans. Traditional knowledge and wide community involvement are integral parts of the ecosystem-based approach to fishery management.

Photo: Division of Aquatic and Wildlife Resources



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