Starry, Starry Night

An innate knowledge of astronomy among the traditional fishers of the southwest coast of India has, for generations, helped them in their fishing activities

Coming from a fishing family in Kerala, in the southwest coast of India, I have naturally been attached to the sea and the folklore of fishers, which is now on the brink of extinction. For the past six years, I have been collecting examples of such folklore, with the help of student friends from 'Friends of Marine Life', a group based in Kerala.

Although labouring from *kattumaram*s (the traditional three-log catamarams used by small-scale artisanal fishers of south India—Ed.), traditional fishers of southwest India have detailed knowledge about sea-bottom topography, and have developed techniques to accurately return to fishing reefs, again and again. The traditional knowledge of fishers encompasses knowledge about the sea, its turbidity, currents, waves and the movement of fish. It also extends to interesting facets of astronomy.

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The United Nations General Assembly has declared the year 2009 as the International Year of Astronomy. What do traditional fishing communities of southwest India know about astronomy, and how has this knowledge been used in their fishing activities? What are their beliefs about astronomy?

The traditional fishers of southern Kerala have relied on planets, stars and constellations to tell time, to navigate, fish and locate offshore reefs. While fishing at sea, the non-motorized traditional fishers of the region, who employ hooks-and-line or driftnet fishing gear, still rely mainly on observation of planets and stellar positions to tell time at night.

The setting of *Chottu-velli* (Venus), the rise of *Vidia-velli* (also Venus) and the position of *Mulakka-meen* (Belt of Orion), for instance, are all markers of time. The fishers believe the rise of *Malaya-meen* (Spica) or the setting of *Ara-meen* (Pleiades) influences the movement of fish, and is an important determinant in the deployment of fishing gear. Traditional fishers still rely on *Kappal-velli* (Ursa Major), *Kurisu-velli* (Southern Crux) or *Mulakka-meen* (Belt of Orion) to navigate. Further, they rely on *Kania-velli* (Pole Star) to determine the position of reefs.

In southern Kerala, soon after sunset, *Chottu-velli*, or Venus, is visible for two to three hours on the western horizon from May to August. Fishers believe fish migrate, and forage, in the bright light of this 'white giant'; hence the brief hours, when *Chottu-velli* is up in the sky, are deemed favourable for fishing. The setting of *Chottu-velli* (which literally means 'dinner star') also marks the fishers' dinner time at sea.

Morning star

Vidia-velli ('morning star') is also Venus, but this time, visible in the east before daybreak during the same season. The time between the sighting of this planet and sunrise is also considered

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conducive for a type of fishing called *kavar-achil* especially for *kannan para* (*Alectis indicus* or Indian threadfish).

In the traditional knowledge of the fishers, *chottu-velli* and *vidia-velli*, although they refer to the same planet, Venus, are considered separate stars, also called *sandhya nakshatram* ('evening star') and *prabhata nakshatram* ('morning star'), respectively, in Malayalam, the language of Kerala.

Lift-net fishers of southern Kerala believe the position of *ara-meen* or Pleiades (visible to them during October to February) has a significant influence on tides, and on the availability of *mada-meen*, or reef fish such as *kora (Protonibea diacanthus* or black-spotted croaker), *parava* (*Alectis indicus* or Indian threadfish), *chilavu* (*Sphyraena jello* or banded barracuda) and *mural* (*Hemiramphus far* or blackbarred halfbeak). They time their fishing trips in such a manner as to reach fishing reefs when Pleaides is visible just overhead. Fishers believe the light emitted from Pleiades, which is 630 light-years from Earth, does influence the movement of fish.

Malaya-meen, the star Spica, visible from January to March, has the most unique influence on fishing, according to the fishers of southern Kerala. It also assists in sailing because the rise of *Malaya-meen* coincides with the onset of the land breeze. It helps hook-and-line fishers launch their sail-based *kattumaram*s to reach their fishing grounds. When *Malaya-meen* rises, fishes migrate landward, and *vice versa* when it sets in the west, the fishers believe. Ray fish, in particular, take the bait during the rise of *Malaya-meen*. Similarly, net fishers find *kiri-meen* (*Amblygaster clupeoides* or sharpnose sardine) available during this time.

The traditional fishers of Kerala imagine the sky to be a gigantic dial, with certain stars functioning as the moving hands of the clock, indicating the time at night. The fishers have a keen visual sense of the distance between stars, and their positions, which are used to tell time more or less accurately while they work at night under a clear sky.

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Artisanal fishermen in a *kattumaram,* a traditional craft, off the coast of Trivandrum, Kerala, India.
The traditional knowledge of south Indian fishers extends to interesting facets of celestial astronomy

SIFFS

Small-scale artisanal fishermen with a four-log *kattumaram* at Valiyathura, Kerala, India. Fishermen like these rely on the position of stars for navigation and determining time

The position of *Uli-uli-kol* (which literally means a 'measuring rod') or *Mulakka-meen*, the Belt of Orion, in the middle sky (from November to March) plays an important role in navigating between offshore reefs and the shore, as well as for determining time while fishing at sea. Fishers also rely on *Kappal-velli* (literally, 'ship star'), Ursa Major, seen in the northern sky during the months of March to September, and *Kurisu-velli*, Southern Crux, seen in the southern sky, again during March to September, and *Erana-velli*, Sirius, for navigation during November to March.

Kania-velli, or the Pole Star, sited in the far north throughout the year, has an entirely different role for the reef fishers of southwest India. The star is visible to the naked eye only from the shore or beyond in the seaward direction. Reef fishers triangulate the position of different fishing reefs in relation to *Kania-velli* and landmarks. This traditional system of locating reefs using the triangulation technique is called *kanicham*.

Spring tide

Finally, how do the southwest fishers using *kattumaram* view Earth's moon? The spring tide evokes mixed feelings since bigger waves during the spring tide make it difficult to launch *kattumaram*s. Moreover, in the moonlight, migratory fish avoid fishing gear, the fishers believe.

However, the story is different as far as *koru-kanava*, or squid, and different species of reef fish are concerned. Different species of squid are believed to aggregate in offshore reefs to lay eggs during the days just before the full moon, and to remain there for a fortnight until the eggs are hatched. During moonlit nights, fishers catch squid from such reefs.

Apart from squid, other different species of fish that forage in reefs are also caught during moonlit nights. Fishers would, during that time, stay overnight, fishing in these reefs. This fishing practice is called *thangal* or 'stay' fishing. The fishers expect a good catch in lunar months, when the moon is tilted towards the south at the beginning of the lunar phase. Also, crabs, cuttlefish and clams, the fishers believe, are meaty during the waning phase of the moon, and lean during the waxing phase of the moon.

How should we regard these astronomical beliefs of the traditional fishers of southern Kerala? Do stars, planets and the earth's moon really influence the movement of fish and fish catches? Such knowledge exists not only in Kerala, but also wherever there is traditional fishing. It is up to the community of astronomers to examine the scientific basis of these beliefs of traditional fishing communities, and to gauge their relevance for a better understanding of fish migration, and conservation and management of marine fish stocks.

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