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### **‘Mamahi:’ Stars of Tawi-tawi**

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THE PHILIPPINE ATMOSPHERIC, GEOPHYSICAL AND ASTRONOMICAL SERVICES ADMINISTRATION (Pagasa) is asking the public to help it compile local legends about celestial objects for educational purposes. The compilation will be submitted to the International Astronomical Union in 2009, which has been declared the International Year of Astronomy to mark the 400th year of the first astronomical observation through a telescope by Galileo.

“It will be an honor for us to show to the world how stars or celestial bodies shaped our culture or beliefs,” said Cynthia Celebre, chief of Pagasa’s astronomy research and development section.

Responding to Pagasa’s appeal, Talk of the Town is featuring a history professor’s study of how the Badjaos of Tawi-tawi use stars and constellations in their daily lives -- hunting, planting, fishing and seafaring.

Early Filipinos have a rich knowledge of the heavens. Certain indigenous groups in the country, mostly their elders, retain the knowledge, which may be lost unless it is recorded or passed on to the next generation.

Man’s fascination with celestial bodies, particularly stars, is partly due to his affinity with them. Scientists have established that without the life and death of stars, man will not be on Earth today. From stars that exploded long ago came elements like oxygen, calcium, iron and zinc found in the human body. – Ed

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### **By Dante L. Ambrosio**

BITUIN, BITUUN, BITUON -- this is how various groups in the country call a star. But to the Samas of Tawi-tawi, a star is mamahi. This I learned when I surveyed the islands’ astronomical lore starting in 1995, the year a solar eclipse was seen over the province.

Two Sama Dilauts, known as Badjaos, from the capital town of Bongao drew their version of the sky for me. They identified several asterisms or star groups which they use in their activities. I confirmed these later with other fishermen, farmers, seafarers and religious leaders they call imam.

Among these asterisms are Batik (Orion’s belt), Mupu (Pleiades), Bubu (Big Dipper), Paliyama (parts of Aquila), Mamahi Utara (North Star), Saloka (Scorpius), Anakdatu and Sahapang

(Alpha and Beta Centauri), Bunta (Southern Cross), Lakag or Maga (morning star), Mamahi Kagang and Mamahi Pagi. There are many more.

It is unfortunate that city-bred denizens like us have almost no chance to acquire the knowledge of the heavens which our forefathers mastered. While scientists and astronomers built upon the knowledge of the ancients, the educated among us are not even cognizant of our own astronomical lore.

Some might have heard of Orion but not Batik or Balatik, Pleiades but not the Tagalogs' Mapolon or the Bikolanos' Moroporo, Big Dipper but not Bubu or the Samarnon's Lusong, and Southern Cross but not Bunta. Although on occasions they might have heard of Tatlong Maria (Orion's belt), Supot ni Hudas (Pleiades) or Krus na Bituin (Southern Cross), these came to us only with the advent of Christianity.

In fostering science awareness, we could start and build on what we already have and what is, in fact, still being used out there in the field. Thus, my attempt to document our own astronomical lore.

What did our forefathers think about when they looked at the heavens? Why did they organize the stars into groups and named them after specific objects in their immediate milieu? What prompted them to believe that stars influence their lives? How come people still hang on to these beliefs?

Posing these questions means venturing into the realm of a people's culture. It requires probing into the indigenous system of knowledge. A system which a group of people develops in the course of time in a continuing interaction with nature. It enabled the group to survive in the past and continues to inform its way of thinking and acting at present.

We often look down on this knowledge as a hodgepodge of superstitions which we regard as irrational and without scientific basis. Still we are astounded by the rich treasury of knowledge of indigenous peoples when we come to learn of it and which science, when it tries to, finds to have some solid basis and logic of its own. Just look at modern medicine as it engages the albularyos' indigenous knowledge of herbal cure!

The Samas possess their own knowledge of the stars. Like other peoples of the world, they long ago divided them into groups, betraying again man's propensity to classify and organize things to better grasp and understand them.

Star groups are named after objects which are familiar to a particular culture. Thus, in naming stars, a particular group of people puts its own mark—its own culture—in the sky complete with stories that also bear its identity.

It thus becomes "natural" for the stars of Tawi-tawi to display the characteristics of a culture nurtured by watery surroundings. Mamahi Kagang, Mamahi Pagi, Bunta, Sahapang, Bubu, and Anakdatu are all related to the sea by their nature, use and activity.

Kagang is a crab, pagi is a stingray while Bunta is a puffer fish. Sahapang is a three-pronged spear used to catch fish while bubu is a rectangular bamboo fish trap. Anakdatu is a fisherman poised to spear a puffer fish with his sahapang.

Besides fishing, the Samas plant in the uplands and hunt in the mountains. Thus, they have Saloka, a coconut tree, in the sky. They also have Batik for an asterism which is also a spear trap used in hunting wild pigs. It is the most prominent asterism in the Philippines and is called Balatik, Belatik, Bayatik and Blatik by various ethnic groups.

While people put their own mark on the stars by grouping and naming them, these stars in turn influence their lives. Used as markers, they help organize the activities of the people as they appear in the night or dawn sky.

The Samas consult Batik, Paliyama and Saloka in planting their crops. Their appearance and location at various times coincide with conditions necessary for each stage of kaingin farming.

With some variation, kaingin farming in the Philippines is done during the months of December to May. The land to be farmed is chosen and cleared from December to February. Between March and April, when the sun is at its hottest and there is enough wind to fan the flames, the cut trees and grasses are dried and burned. Planting is done in April and May when it starts to rain. Hardly could one plant with the onset of the rainy season.

Farmers in Tawi-tawi now use clock position to indicate the stars' location in the sky. It is at 6 o'clock when a star is seen in the east or in the west and is at 12 o'clock when it is at the zenith.

Imam Ladia said that the clearing of the huma should start when Batik appears at 10 at nightfall. This is around December to January. Burning should start when it is already at 11:30 after sunset. This is from February to March. Planting is done when it starts to rain around April to May or before Batik appears ready to set in the west at nightfall. After this, one could no longer plant; the bird maya and other pests would be out to wreak havoc on the newly planted field. This also marks the onset of the rainy season.

While Batik is consulted at nightfall, Paliyama is used as a marker at dawn. Clearing and burning is done when Paliyama appears in the east at positions called sampangan (8-9 o'clock) and malambang musim (10-11 o'clock). This is from January to April. It is time to plant while it is at luttu Paliyama (at the zenith) when it starts to rain. This is around April to May.

Aside from Batik and Paliyama, Saloka is also used as a marker in planting coconuts. The Samas believe that a coconut tree bears fruit quickly when planted at a time when Saloka appears low on the eastern horizon at nightfall. It will bear fruit at a later date if planted when it is already at luttu or at the zenith after sunset.

When Samas see many stars inside the rectangular trap Bubu, they set down their own fish traps into the sea, believing that they will have a good catch. The appearance of many stars indicate good weather, which may be one reason for the good catch.

My Sama Dilaut informants said that the position of the stars, which form the rope used to pull up the bubu out of the sea, indicated the strength of the current. These stars form the handle of the Big Dipper. When they are in the east, the current is strong but when they are in the west, the current is weak or there is no current at all.

Several stars, together with the wind, are used in direction finding. Samas know that the morning star Lakag or Maga is in the east, Bubu and Mamahi Utara are in the north, while Bunta is in the south.

The western direction is reckoned with stars Tunggal Bahangi and Mamahi Magrib. Unfortunately, I failed to identify these stars. The same goes with Mamahi Satan, the south star. Of course, the east-west direction is easily identifiable with the aid of the sun which is also a star. For the same directions, the Samas also observe Batik and Mupu which traverse the sky from east to the zenith to the west.

Together with stars, winds are also used to mark direction. Satan or salatan, the south wind, is associated with Bunta, the asterism named after a puffer fish. The heavenly fish releases the air from its puffy body once it ends its seasonal appearance in the night sky. That air is satan or salatan.

When Anakdatu, which follows Bunta, has come and gone, the north wind called utara replaces the south wind. Another marker for utara is the appearance of Mupu in the east at nightfall. It is also utara that blows when the northern stars of Batik get dimmer. Its southern stars dim when it is satan's turn to blow.

To take note of these subtle changes, one must be very knowledgeable about and sensitive to incremental changes in the environment. A characteristic which the Samas possess considering their continuing close relationship with the environment.

Samas are noted seafarers. They once manned the ships of the sultans of Sulu who traded across the seas. Their use of celestial navigation is thus legendary, albeit unresearched and unstudied.

Mamahi Utara is a prominent navigational star. This is the north star which remains "steady" unlike other stars which changes position as they cross the sky from east to west, according to Imam Yasin. Using this as a guide, one may reach Cotabato and Zamboanga by sailing northeast, Sabah northwest, Celebes or Sulawesi and Balikpapan in Kalimantan southeast with some necessary adjustments along the way.

Bunta is used in crossing the Sulu Sea from Mapun near Palawan to the capital town of Bongao on the Tawi-tawi mainland. To reach Bongao, the pilot with an outstretched arm must keep Bunta one dangkal -- from the tip of the thumb to the tip of the middle finger -- to the left of the boat's prow. If the prow veers to the left by a dangkal, it will reach Languyan instead which is at the northern end of Tawi-tawi. But if it veers to the right, the boat will land at Sibutu which is at the southern end of the archipelago.

Cardinal directions

One of the more experienced seafarers of Panglima Sugala, another Tawi-tawi municipality, is Aspalman Jalman. He uses five stars to mark the four cardinal directions—Maga for the east, Tunggal Bahangi and Mamahi Magrib for the west, Mamahi Uttara for the north, and Mamahi Satan for the south.

As long as one knows the position of Mamahi Uttara and Mamahi Satan and the relative position of one's destination, one could readily lay down the path to be taken by the boat, according to Aspalman. This is easily said than done because one must expect the unexpected during a trip. Like when he drifted down to the Celebes Sea after his engine broke down between Sibutu and the Tawi-tawi mainland. On occasions like this, no star would be of help.

All these are but a part, a very small part, of Tawi-tawi's astronomical lore. Indeed, there is much to be learned not only from the Samas but also from other groups in the country. Aware of this lore, we will not only be enjoying the sky when we look at it at night. We will also be reading -- and will be reminded of -- our own past and culture.

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*(Dante Ambrosio Ph.D., is a professor at the Department of History of the University of the Philippines-Diliman.)*

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### **Balátik and Moropóro Stars of Philippine skies**

By Dante L. Ambrosio

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MANILA, Philippines--WE ARE RUNNING TWO ARTICLES ON THE ROLE THAT STARS, CONSTELLATIONS, THE SUN and the moon play in the lives of Filipinos. This is in response to the weather bureau's appeal for the public to help it gather stories about celestial objects that shaped "our culture or beliefs."

Last week, we featured how the Badjaos of Tawi-tawi use stars in hunting, planting, fishing and seafaring. Today, we focus on the influence of Balátik (Orion) and Moropóro (Pleiades) on the practices of various groups in the country.

Studies show that before the Spaniards came to the country, early Filipinos already had a rich knowledge of the heavens. This knowledge, retained mostly by elders of indigenous communities, may be lost unless it is recorded, popularized and passed on to the next generation.

– Editor

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AMONG THE STAR groups that are often mentioned in studies of stars in Philippine skies, two appear to be more prominent. These are Orion and the Pleiades, which are called by various names, among which are Balátik and Moropóro.

How to explain the prominence? There is a combination of reasons.

One, Orion is composed of several bright stars. The combination of the stars of Orion's Belt and Orion's Sword remind many Philippine cultures of the spring trap used in hunting wild pigs. They call the trap balátik. Christian Filipinos, on the other hand, see in the stars of Orion's Belt the Tres Marias or Tatlong Maria (Three Marias) which are of Spanish-Christian origin.

Prominent positions

The Pleiades' distinguishing mark is the bunching together of its stars, a rarity among naked-eye stars. It is called Moropóro, Molopólo or Mapúlon by various ethnic groups throughout the archipelago. Christian Filipinos know it as either Supot ni Hudas (Judas' pouch) or Rosaryo (rosary).

Two, Orion and the Pleiades occupy very prominent positions in Philippine skies. They both rise in the east, traverse the sky almost through the zenith and set in the west. Orion's brightness and

the large area it occupies horizontally in the middle of the sky make it the most visible among constellations during its seasonal appearance, with Pleiades leading it off not far ahead.

#### Swidden farming

Three, their seasonal appearance in Philippine skies at night coincides with environmental conditions that are conducive to various cultures' activities, most especially kaingin or swidden farming. Thus, the local population's dependence on these stars in timing the various stages of their agricultural work.

It is this third reason which makes Orion and the Pleiades particularly important among Philippine cultures. The two appear from October to May in the Philippine night sky. This is the kaingin period for swidden farmers. They choose the land for kaingin around December and January, clear it from January to February, let the cut trees and grasses dry during the hot months of March and April, and burn them around late April as the gentle northeast wind blows.

They plant the cleared land around May after the first drops of rain. Both Orion and the Pleiades' changing positions at nightfall during these months serve to guide the swidden farmers in their work.

A number of stars of Orion form the Philippine constellation commonly known as Balátik. It is named after a spear trap used for hunting, especially wild pigs. William Henry Scott described a Visayan spear trap in this manner:

#### Balátik

“The balátik was a rather sophisticated machine. Standing on two stout poles driven into the ground in the form of an X, it had a long stock with a slot to hold the shaft, a powerful bow or spring to propel it, and a catch to hold the string and release it when triggered. It even had a safety lock to prevent it from firing accidentally....”

It is indeed a widely used trap which researchers had described or drawn a number of times. Francis H. Lambrecht had a drawing of an Ifugao bala'ih trap which is no different from a balátik.

Balátik as an asterism clones the trap in the sky. My Badjao or Sama Dilaut informant pointed it out to me as it sets in the west in an early May night. It is composed of Orion's Belt as the shaft or arrow and Orion's Sword as the bow or thruster.

Nicole Revel had the same stars and form for the Palawan Binawägan mägsasawäd , which is also named after the Palawan's spear trap.

#### Spanish chroniclers

Philippine groups already recognized Balátik as a trap and a constellation by the time Spaniards colonized the archipelago in 1565. Juan de Plasencia mentioned it in his 1589 account as one of

the Tagalog stars though misidentifying it as Ursa Major. Alonso de Mentrída mentioned the same in his Hiligaynon vocabulary but like Plasencia misidentified it—for Gemini this time.

Seventeenth century compilers of Tagalog vocabularies like Francisco de San Antonio and Pedro de San Buenaventura described it as both a trap and an asterism composed of the stars of Orion. They identified it as the Spanish Tres Marias, referring to Orion's Belt.

#### Ethnographic studies

Later ethnographic studies revealed Balátik's popularity across the archipelago. The asterism is known as Balátik or by its cognates Bayatik, Belatik, Batik to several Philippine groups. The Ifugao Balbalays, the Jama Mapun Batik and the Palawan Binawägan mägsasawäd refer to the same trap and asterism.

The Teduray Seretar and the Bukidnon Magbangan may not be a trap, yet they are also associated with hunting. Both are hunters and kaingin farmers in the myths. Seretar's body is formed by Orion's Belt, his left arm by Betelgeuse and his right by Rigel. His bolo, kept in a rattan scabbard, is Orion's Sword in modern astronomy. Fay-Cooper Cole did not identify the Bukidnon stars by their modern names but it may be surmised that Magbangan is composed of the stars of Orion given the facts of his observations. He did mention that Magbangan is a hunter and a swidden farmer.

#### Weaving

Weaving is an important craft among the Ilokans and Igorots of northern Luzon. This is, perhaps, one reason they see quite a different figure in the stars of Orion. Rather than a trap, they see their weaving frame, the *gagan-ayan*, among its stars.

The three stars of Orion's belt are known as Tatlong Maria, Atlung Maria and Trismariya to Christian Filipinos from the Spanish Tres Marias. Still we find the old Tagalog name Balátik being reported among the Christian Tagalogs of Tayabas (now Quezon province) as cited by Arsenio Manuel in his *Tayabas Tagalog lexicography*.

#### Moropóro

The Pleiades is the next well-known asterism in Philippine skies. I use the term Moropóro to refer to it because it is known to several Philippine groups by this name or by its cognates.

Plasencia reported in 1589 that the Tagalogs knew of the Spaniards' *siete cabrillas* or "seven goats," the Spanish version of the Pleiades. The Tagalogs called theirs *Mapulon*. He added that because of this, they knew of the changing of the season.

San Antonio and San Buenaventura listed *Mapolon* in their respective 17th century Tagalog vocabularies, identifying it likewise with the Pleiades and the Spanish goats. Juan de Noceda and Pedro de Sanlúcar had *Mapolong* or *Polonpolon* as the Tagalog name for the Pleiades.

### Cock's foot

Three hundred years later, the Tagalogs of Tayabas still recognize it as Mapúlon, while those of Laguna province call it Mapulong. Manuel gave three meanings to the Tayabas Tagalogs' mapulún: it is a group of stars in which one is surrounded by many; it is a group of scales in a fighting cock's foot in which one scale is surrounded by six others; and, it is the neat winding of a string on a spool.

Miguel de Loarca, reporting on the Bisayans of Panay in 1582, observed that the Pleiades marked the first month of their seasonal calendar, the time to start preparing land for farming. He did not give its name or the time of its appearance.

Mentrida, however, said the Hiligaynons of Panay called Pleiades Molopólo. Scott averred that the Bisayan name for Pleiades is Moropóro, meaning "boiling lights" or "flock of birds." He timed its appearance in the month of June at dawn.

The early Bikolanos of southeastern Luzon also called the Pleiades Moropóro.

These names or their cognates are still with other Philippine groups particularly on the central and southern islands of the Visayas and Mindanao. The Pleiades is Murupúru in Antique on Panay island and among the Tagbanuas of Palawan, Molopólo to the Bukidnons of Bukidnon, and Mulupúlu to the Arumanen Manobos of Cotabato.

### Sweet potatoes

These names, however, mean different things. I have mentioned Scott's meaning of Moropóro, though I do not understand what he meant by "boiling lights." To the Bisayans, Molopólo is a plant belonging to the mallow family.

Other Philippine groups have different names for the Pleiades. The Teduray Kufukufu are flies swarming over the remains of the wild pig killed by the hunter Seretar. To the Palawans, Manapuru is a bunch of sweet potatoes eaten by a wild pig. Mopo, to the Jama Mapuns, is the pig, which is the target of their Batik.

### Myths

The stories about Balátik and Moropóro are closely tied with two different economic activities of the early Filipinos. One story revolves around hunting, while the other centers on agriculture, kaingin farming in particular.

Stuart Schlegel said the Teduray Seretar (Orion) is a hunter. Baka (the Hyades) is the jaw of the wild pig he killed while Kufukufu are the flies swarming over the remains of the pig. A Teduray myth, recounted by Schlegel, tells that the three are cousins who consented to be left behind in the sky to serve as guides to farmers while their kin proceeded to the region of their great god to live there forever.

The story of the hunter, the pig and the trap is quite common among some southern Philippine cultures. It can be found among the Palawans, Bukidnons, Jama Mapuns and Samas.

The story of Magbangal and his wives among the Bukidnons as recounted by Cole is not unlike the story of Tohng and his wives, which Eric Casiño found among the Jama Mapuns and which I also heard among the Tausugs and Samas of Tawi-tawi. Magbangal is a star group formed out of the stars of Orion while Tohng and his two wives are the Jama Mapun Tanggung composed of the three main stars of Aquila. Tanggung is the Sama Paliyama.

The story is about a kaingin farmer with magical powers who ordered one of his wives not to interfere with his work but who nonetheless disobeyed him. This forced him to go to the sky with his tools and wives to help guide those left behind in their agricultural work. The story tells why people have to break their back doing kaingin farming to survive.

### Seasons

Orion and the Pleiades are two of the more prominent star groups among Philippine cultures mainly because they serve as guides to kaingin farmers.

Schlegel, Revel and Cole described how the Tedurays, Palawans and Bukidnons use the stars of Orion and the Pleiades in swidden farming. In Teduray kaingin farming, for example, Schlegel identified at least four positions of Seretar and Kufukufu that are crucial in determining its stages.

Two of these are their appearance in the east at nightfall and their setting in the west before the end of their seasonal appearance. The other two are when they are at locations the Tedurays call ranga (chicken's nest), which is 10 degrees around the zenith, and kemuda (riding the horse) which is the zenith itself. These positions signify the propitious times for particular stages of kaingin farming.

Since the changing of the seasons indicates when to begin agricultural work, it follows that the stars used as kaingin markers also serve as indicators of this change. As early as late 16th century, both Plasencia and Loarca had noted this in the case of the Pleiades among the Tagalogs of Luzon and the Bisayans of Panay.

The Bukidnons know that when all constellations (i.e. Magbangal, et al) appear in the east it is the dry season; when they appear at the zenith it is the hot season, and when they rise in the west it is the beginning of the rainy season—exactly the positions taken by Orion and the Pleiades during these periods.

### Rice ritual

Reports from Cordillera in northern Luzon usually mentioned the stars in rituals and prayers. An example is the botó sacrifice by the Mayawyaw Ifugaos as reported by Lambrecht. The sacrifice is supposed to be the most important part of the Ifugao rice ritual. Invoked in the prayers, aside

from the sun and the moon, are 10 stars: Balbaláys, Tállo, Pumînal, Tunúgan, Ilîhan, Palpálo, Nahikîhig, Nachalipópong, Agiwána and Nîpngot.

In the pakdé sacrifice of the Kankana-eyes, Morice Vanoverbegh found a number of star groups to which some of the prayers are addressed. He named and identified them thus: Kinamálig or Balangáy (Ursa Major), Tudóng, Binabbáis (Orion's Belt), Salibúbu (Pleiades), Pinadánga (Hyades), Wáyat, Dopó, Ketmá, Uling, and Liwliw. He also mentioned a few asterisms not mentioned in the prayers: Kinallaúb (Coma Berenices), Sangbát and Laská.

*(Dante L. Ambrosio is a professor at the History Department, College of Social Sciences and Philosophy, University of the Philippines, Diliman, Quezon City. He can be reached at [danteambrosio@yahoo.com](mailto:danteambrosio@yahoo.com))*