

## THE SO-CALLED MUSICAL SOLE OF SIAM.\*

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The subject of the musical sole can not be regarded as having any practical importance. The most that can be said of it is that it possesses considerable biological and popular interest, and is not without a place in the folk-lore of Siam.

Almost every person who spends much time on the large rivers and coastal waters of Siam will sooner or later experience the musical sole, and if he does not at once recognize it he will be enlightened by fishermen, river men, and others.

*Literary citations.*—In order to bring this matter to your attention with a proper historical and literary setting, I can not do better than to quote from the writings of people who have lived in Siam. I am unable to state whether there are references to this fish in early Siamese scripts: if there are, I shall be thankful for citations or quotations.

The first writer I can cite is Pallegoix. The worthy Bishop Pallegoix passed many years in Siam, and in 1854 published in Paris a work entitled "Description du Royaume Thai ou Siam." The same year saw also the publication of his chief literary monument, a dictionary in Siamese, French and English. The bishop told some rather good fish stories, and it is to him that we must give credit for an early, perhaps the earliest, published account of the fish under consideration. It is not clear whether Pallegoix made a personal observation or simply recorded a belief current among the Siamese of his day. In the course of an all-too-short account of the fresh-water and sea fishes, we find this note:

The dog's-tongue is a fish shaped like a sole; it attaches itself to the bottom of boats, and makes a sonorous noise, which is more musical when several are stuck to the same boat and act in concert.

Sir John Bowring came to Siam on an important diplomatic mission in 1855, and in 1858 published "The Kingdom and People of Siam." Bowring quoted extensively from Pallegoix and not unnaturally made use of Pallegoix's reference to the "dog-tongue-

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fish," but apparently offered nothing original on the subject.

We may next consult Col. G. E. Gerini who compiled a noteworthy book on "Siam and its Productions, Arts, and Manufactures," of which there were both Italian and English editions issued in 1911 and 1912 in connection with the Turin and Rome international expositions of 1911. Gerini was an erudite man who spent many years in Siam and made important contributions to the history and archeology of the country. His excursions into the field of ichthyology were brief and not entirely successful. He wrote:

Quite harmless and even edible is the *linma* or dog-tongue fish, resembling a sole and better known by the nickname of harmonic fish, which, clinging on to the keel of boats, lulls the navigators by uttering a sound which is not altogether unmusical.

I will now quote a writer who personally experienced the sound but apparently did not see the fish in the act of producing sound and simply accepted the popular belief. H. Warington Smyth, in his "Five Years in Siam," published in 1898, records that while sailing in a small vessel in the Gulf of Siam off Nakon Sritamarat—

The noise at night under our bottom from the *pla linma*, or dog's-tongue fish, was at times extraordinary. Though common in fresh water, I had not before heard them at sea, and their booming note, especially as we were moving fast, considerably startled me at first.

Enough has now been quoted to show the reality of the phenomenon and the belief in the agency of the sole in producing it; but we may see what is said on this subject in the latest and best work on Siam by the esteemed president of the Siam Society. Mr. Graham in his "Siam" does not identify the fish, but he furnishes collateral evidence that enables one to determine what fish he had in mind when, in a general account of the fishes, he refers to—

... the siren fish, which attaches itself to boats and other immersed bodies and can be heard grunting down below with ventriloquistic effect.

*Current belief and personal observation.*—The name *pla linma* (dog-tongue fish) is applied by the Siamese to various fishes of

both fresh and salt waters belonging to the tribe of soles. The principal genera are *Synaptura* and *Cynoglossus*. The long, slender forms of the latter genus are often called *pla lin kwai* (buffalo-tongue fish), and there are several other names of local distribution in which the word *lin* is used.

The belief is quite general among the Siamese that these fish produce the sounds ascribed to them. The belief persists from generation to generation and loses no strength, notwithstanding no one has ever observed the fish while making a musical or other sound either in or out of the water, no one has ever seen a sole attached to the bottom of a moving or stationary boat, and no one has ever known soles to follow a rapidly moving boat or to congregate about a boat at anchor.

I wish to add my testimony as to the occurrence of fish-produced musical sounds in the rivers and seas of Siam. I have heard the weird sounds on at least a dozen occasions, during both day and night, in different parts of the Menam Chao Phya from Paknam as far as as Nakon Sawan, in the Banghia, Bangpakong, Tachin, Meklong, Pasak, and other rivers, and in various parts of the Gulf of Siam. At times, while in a boat at anchor, I have heard such a volume of sound as to indicate a large school of fishes. I have, however, been unable to go as far as fishermen and authors and others in identifying as *lin ma* the fish that makes the sounds.

*Noises produced by fishes.*—This brings us to a consideration of the vocal sounds produced by fishes.

Practically all fish sounds that have any noteworthy volume and could be regarded as at all sonorous or musical are produced through the medium of the swim-bladder, which acts as a sounding board when its tense walls and the contained gas are made to vibrate by the rapid contraction of special muscles.

There is a large and important family of fishes most of whose members have the habit of making drumming, booming, croaking grunting, or similar sounds. The most characteristic sounds are best described as drumming, and the drum family gets its name therefrom. Representatives are found in temperate and tropical waters all over the world, and many species occur in the rivers and seas of Siam. Under the name of *pla chuet* the Siamese include

a dozen or more small drums, and under the name *pla ma* (horse fish) they designate a drum that attains a length of a meter or more.

It is easy to demonstrate the sounds made by the drum fishes. By simply exposing the large air-bladder and its attached muscles and applying the electrodes of a battery to the muscles or to the nerves which control the muscles, the fishes may be made to perform *ad libidum*.

It was a drum fish of the same genus as some occurring in Siam that, by its loud and varied musical sounds, probably gave rise to the Homeric fable of the sirens.

Among a number of other families of fishes known to make vocal sounds are the grunts or pigfishes, some of which are to be met with in the local salt waters. These fishes often go in schools and produce a sound not unlike the grunt of a pig.

The most conspicuous of the sound-making fishes in Siam are the catfishes. I venture to say there are nearly one hundred species of catfishes in local waters, and many of them are able to produce loud sounds by means of a special muscular mechanism connected with the swim-bladder. The genus of catfishes which includes the well-known *pla tepo*, *pla sawai*, *pla sangkawad*, and *pla buk* has a remarkable elastic-spring contrivance by means of which the complicated swim-bladder, incompletely divided into a number of chambers, is made to vibrate when the muscles relax and the peculiar springs come into play. It would be interesting to know what kind of sound would be produced by a fish of such proportions as the colossal *pla buk* of the Mekong.

The noisiest catfishes in Siam are those called *pla kot* and *pla uk*, deriving their common names undoubtedly from the circumstance that both in the water and out of the water they utter a characteristic *kot, kot, kot* or *uk, uk, uk*. These fishes constitute the most numerous genus (*Arius*) in this country, and the different species have calls of somewhat different quality and pitch uttered with different volume. They are very common river and sea fishes, go in schools, congregate about boats and landings, and will follow vessels if food is being thrown overboard. Some of them practice oral incubation, the large eggs, relatively few in number, being held in the mouth-cavity of the male during the entire hatching period.

*Inability of the soles to perform as claimed.*—It is not pleasant to be put in the position of having to dispute a long-established and wide-spread belief, but the facts must be faced and it must be pointed out that the soles have no swim-bladder or other noise- or sound-making organs and are therefore soundless; that the soles do not and can not adhere to the bottom of boats, as they have no sucking or adhesive apparatus, and, while a live or a dead sole would stick tightly to a smooth, wet plank, a piece of paper would do the same; and that the soles are bottom-inhabiting fishes and seldom leave the bottom, they are unable to swim freely like ordinary fishes, they are unable to float owing to the absence of the hydrostatic organ, and they are utterly unable to swim rapidly through the surface water and keep up with a rapidly-moving boat as described by Smyth.

The musical sole is therefore non-existent. Having shown that the belief is unsupported by authentic observation and is disapproved by the anatomical and physiological characters of the sole family, I might drop the subject. It will be more satisfactory, however, after having demolished the musical sole, to erect something in its place, if that is possible.

*The real sound-making fishes:*—I will state what I believe to be the fishes that actually make the musical sounds that have been ascribed to the soles.

In the salt waters there can be little question that in Siam, as elsewhere, the principal sound-makers are the drum fishes. They are supplemented by certain catfishes and other species. In the fresh waters the chief sound-makers are undoubtedly the catfishes, supplemented by the drums.

It is difficult to make convincing observations in a case of this kind, and I am quite willing to acknowledge that I have little to offer that would pass as proof. I can, however, record at least one observation that was quite convincing to me. Several years ago, I was in a launch in the Pasak River above the barrage at Dha Luang in a stretch of river where both soles and drums are exceedingly rare and if they occur at all it must be only as stragglers. In the late afternoon the characteristic subaquatic sounds began under and about the launch and the landing stage at which the boat was

tied, and continued for an hour or more. During that time catfishes of one species, to which the name *pla kot* is usually given, were very common about the launch and frequently came to the surface to pick up bits of food. A cast net thrown about the launch caught only *pla kot*, and I am satisfied that it, and it alone, was responsible for the sounds.