

## A NEW RECORD FOR THE SPEARTOOTH CARCHARHINID SHARK *GLYPHIS GLYPHIS* FROM PULO CONDOR, SOUTH CHINA SEA

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### ABSTRACT

*Glyphis glyphis* (Müller and Henle 1839) is one of the most poorly known sharks in the world. The only previously reported specimen is the holotype, a stuffed specimen in the Zoologisches Museum Berlin. The type locality is unknown. The previously unrecorded set of jaws reported here, also in the same museum, represents the second known specimen of the species, and the first with a known locality. The jaws were obtained at Pulo Condor (modern Vietnamese name Con Dao), a coral island in the South China Sea about 100 km offshore from the Mekong delta. Although the type locality of *G. glyphis* is unknown, the type was collected by the French Voyageur-Naturaliste August Lamare-Picquot, who collected one of the two type specimens of the related species *Glyphis gangeticus* in the Gangetic delta or Sundarbans south of Kulna (present day Bangladesh). It is suggested that the holotype of *G. glyphis* was collected in the same general area.

Key words: Carcharhinidae, *Glyphis glyphis*, new locality record, speartooth shark.

### INTRODUCTION

*Glyphis glyphis* (Müller and Henle 1839) is type species (by absolute tautonymy) of the carcharhinid shark genus *Glyphis* Agassiz 1843. Although several undescribed species of *Glyphis* have been reported in recent years<sup>2</sup>, there are still only three Recent named species assigned with certainty to the genus. They are *G. glyphis*, *G. gangeticus*, and *G. siamensis*<sup>3</sup>. They are among the rarest of all carcharhinid species in museum collections. No specimens have been identified previously with *G. glyphis* except for the holotype in the Berlin Zoological Museum. The original illustration of the species is reproduced here (Fig. 1).

The only definite information about the origin of the holotype of *G. glyphis* provided in the original description is that it was collected by Lamare-Picquot. This is the same man who collected the holotype of *Glyphis gangeticus*, also described by MÜLLER & HENLE (1839). As a doctor traveling on his own and then as Voyageur-Naturaliste of the Museum d'Histoire Naturelle in Paris, Lamare-Picquot traveled widely in the Pacific and Indian

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<sup>2</sup>The undescribed species of *Glyphis* are from Borneo, New Guinea, and Australia.

<sup>3</sup>For *Glyphis siamensis* (Steindachner 1896), regarded by me as a junior synonym of *G. gangeticus*, see preceding article (ROBERTS, 2007). It has been suggested that *Carcharias murrayi* Günther 1883, from Karachi, may also belong in *Glyphis* but there is no way to verify this unless the missing holotype is located (GARRICK, 1982: 188). Received 6 August 2006; accepted 29 September 2006.

Oceans, residing at times in Chandranagore, Mauritius, and isle de Borbon. Most of the fish species he collected are marine, and the great majority of the specimens are from blue-water tropical islands with coral reefs<sup>4</sup>. Notable exceptions to this pattern of collecting are the trips he made from Chandranagore to the lower Sundarbans or Gangetic delta (see preceding article in this journal). He might have obtained the holotype of *G. glyphis* in the same general area.

My search for the species of *Glyphis* was undertaken with the hope that populations of both of the species collected by Lamare-Picquot and described by MÜLLER & HENLE would be found. In the event, *G. gangeticus* was found. With the one exception of the set of jaws from Pulo Condor reported here, however, I have not found any *G. glyphis*. Nevertheless I still suspect that *G. glyphis* occurs in the Sundarbans and that that is where it was first collected by Lamare-Picquot. Like its congener *G. gangeticus*, it may also live in the muddy waters of the Bay of Bengal. For the time being, however, this is only speculation.

The extremely small eyes set members of the genus *Glyphis* apart from all other carcharhinid sharks in the Old World. The small eyes of *G. gangeticus* may be correlated with a preference for habitats with reduced visibility due to high sediment load (muddy water).

In *Glyphis* the upper jaw teeth are more or less triangular with serrated margins. These teeth are shearing teeth. The lower teeth, as in many carcharhinids, are quite different in morphology. Rather than triangular they are tricuspid, with an elongate lance- or spear-shaped central cusp. The teeth near the middle of the lower jaw have a small rounded cusp on each side of the elongate central cusp. The margins of the three cusps of the lower jaw teeth are wholly or partially covered with fine serrations. These are stabbing teeth.

#### GLYPHIS GLYPHIS FROM PULO CONDOR

During a visit to the Naturkunde Museum in Berlin (Zoological Museum of Berlin, ZMB) I searched through a large number of miscellaneous shark jaws hoping to find the missing jaws of the holotype of *G. gangeticus*. Instead I found a previously unreported set of jaws from a large *G. glyphis* (Fig. 2). The jaws, catalog number ZMB 14850, 493 mm wide, were obtained at Pulo Condor by Henry Thamann, 7 December 1898. This island, about 100 km SE of the mouth of the southernmost major distributary of the Mekong delta and about 220 km south of Saigon is now part of the Republic of Vietnam. Its Vietnamese name is Con Dao.

#### DISCUSSION

The main distinction between the two recognized species of *Glyphis* concerns the jaw teeth. *Glyphis glyphis* has fewer teeth than *G. gangeticus*. Müller and Henle reported 26 upper and 27 lower jaw teeth in the holotype. The large set of jaws from Pulo Condor has the same counts. The upper jaw teeth of *G. glyphis* and *G. gangeticus* are morphologically

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<sup>4</sup>Teleost fishes collected by Lamare-Picquot are deposited in MNHN where their locality records may be consulted.

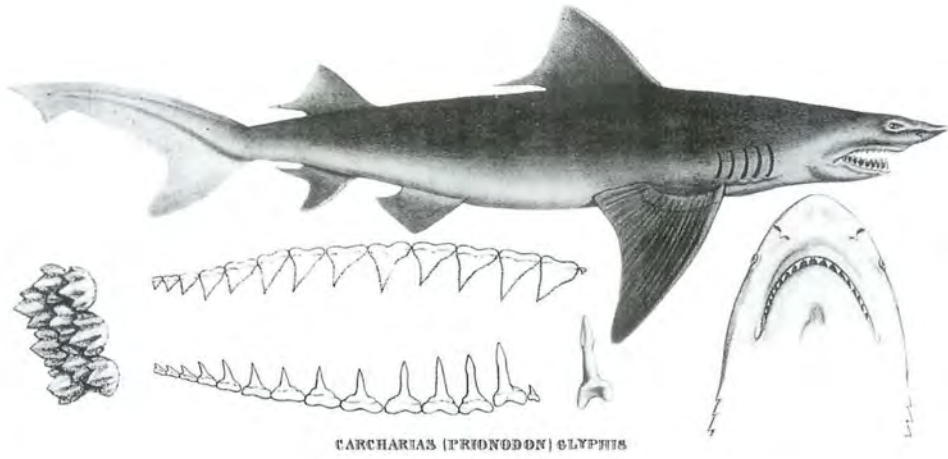


Figure 1. *Glyphis glyphis*, (MÜLLER & HENLE, 1839), original illustration of holotype, ZMB 5266 (from MÜLLER & HENLE, 1839).



Figure 2. *Glyphis glyphis* from Pulo Condor, jaws and teeth (ZMH 14850).

similar, but there are important morphological differences in the lower jaw teeth. In *G. gangeticus* the large central cusps of the lower teeth are all lance-like, and uniformly tapering towards the tip. In *G. glyphis* the lower teeth, especially those towards the middle of the jaw, have expanded crowns. The length of the expansions varies considerably, being greatest in the teeth at positions 3–5 on either side of the symphysis of the lower jaw. The serrations on the lower jaw teeth of *G. glyphis*, unlike those of *G. gangeticus*, are confined to the expanded distal portions of the central elongate cusp. The teeth towards the middle of the jaw also have a small cusp on either side of the central cusp, but these cusps are less well developed than in *G. gangeticus* and their margins lack serrations.

Another difference between *G. glyphis* and *G. gangeticus* involves the relative size of the first and second dorsal fins. In both species the second dorsal fin is much smaller than the first dorsal fin, but the difference is greatest in *G. gangeticus*. This difference is reflected in the original figures of the two species published by MÜLLER & HENLE (for *G. glyphis*, see Fig. 1, for *G. gangeticus* see ROBERTS, 2007, Figs. 1, 2, and 3c. The single specimen of *G. cf. glyphis* from Borneo I have examined has a relatively large second dorsal fin, and this apparently also applies to the *G. cf. glyphis* specimens recently collected in Australia and New Guinea.

## CONCLUSION

Several points are noteworthy about this large set of jaws of *G. glyphis*. They are the second known specimen of the species. They represent an entirely new and unexpected locality for the genus *Glyphis* and the species *G. glyphis*. The spear-shaped crowns are more pronounced than in any previously reported material of *G. glyphis*. With a width of 493 mm, they are significantly larger than the jaws of any previously reported specimens of *Glyphis*.

The jaws have 26/27 teeth. The same number of upper and lower jaw teeth are shown in the figure of the holotype of *G. glyphis* published by MÜLLER & HENLE, 1839 (Fig. 1). The teeth are much more serrated than indicated in the original figure published by Müller and Henle. In the present set of jaws all of the lower teeth are serrated. In the innermost 1–3 large teeth (excluding the small median tooth) the serrations are very small and are confined to the relatively small distal blade or spear-shaped tip. This serrated portion increases in length from teeth 1 to 5 or 6. The serrations are small and weakly developed in teeth 1–3, much larger and better developed in teeth 4–9. In teeth 6 or 7 to 9 the entire margin of the tooth is serrated (as in the lower jaw teeth of *G. gangeticus* generally). The basal cusps on either side of the main central cusp are less well developed than in *G. gangeticus*. The cusps are entirely absent on teeth 1–3. Small cusps are present on teeth 4 to 6 or 7. Rather than rounded as in *G. gangeticus*, these cusps tend to be flattened, as if pressed down.

Regarding the locality, Pulo Condor or Con Dao normally is surrounded by coral reefs and clear blue oceanic waters. This does not correspond to the sort of muddy habitat in which one might expect to find sharks of the genus *Glyphis*. But the muddy waters of the flume of the Mekong extend far out to sea when that great river is in full spate, and may well have been within reach of fishermen setting out from Pulo Condor in 1898 even if they did not actually reach the island itself.

## REFERENCES

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