

## Elasmobranches Found in the Bay of Bengal from Pelagic Longline and Drift Gill Net Fishing

Tassapon Krajangdara<sup>1</sup>, Reangchai Sujittosakul<sup>2</sup> and Md. Jalilur Rahman<sup>3</sup>

<sup>1</sup> Andaman Sea Fisheries Research and Development Center,  
Department of Fisheries, Phuket 83000, THAILAND

<sup>2</sup> Deep Sea Fishery Technology Research and Development Institute,  
Department of Fisheries, Samutprakarn 10270, THAILAND

<sup>3</sup> Marine Fisheries and Technology Station, Bangladesh Fisheries Research Institute,  
Motel Road, Cox's Bazar-4700, BANGLADESH

### Abstract

The elasmobranches caught by pelagic longline and drift gill net in the Bay of Bengal were identified into 6 species, 5 genera and 4 families. Two species belonging to family Alopiidae were *Alopius pelagicus* and *A. superciliosus*. Only one species of family Triakidae was *Iago garricki*. The species representing family Carcharhinidae were *Galeocerdo cuvier* and *Carcharhinus falciformis*. The last species, *Pteroplatytrygon violacea*, belonged to family Dasyatidae. The diagnostic characters of these species were the main content of this report.

**Keywords:** elasmobranches, Bay of Bengal, pelagic longline, drift gill net, diagnostic character

### Introduction

The amount of elasmobranches (sharks and rays) killed in large-scale high sea fisheries is poorly known and has not been systematically assessed and an unknown part of the by catch is discarded at sea. Several large-scale fisheries operating in the high seas around the world are known to take a substantial by-catch of elasmobranches, particularly sharks. Although sharks are retained and utilized in some of these fisheries, they usually are dumped, sometimes alive after their fins have been chopped off. The survival of released sharks varies depending on the type of gear used. Trawls and gill nets and perhaps purse seines, almost certainly cause 100% mortality. While longline permit prolonged survival of sharks by allowing limited movement and thus some respiration, survival rates depend on the metabolism and endurance of individual species. Overall, it is believed that most of by-catch of sharks in large-scale fisheries have high mortality. This might not be true for batoids which generally have different mobility requirements in order to respire. However, their catch are normally small in large-scale high sea fisheries due to their more demersal habits (Bonfil, 1994). Eleven species of shark are commonly caught by tuna longlines in the Indian Ocean such as *Isurus oxyrinchus*, *Lamna ditropis*, *Alopias pelagicus*, *A. superciliosus*, *Prionace glauca*, *Galeocerdo cuvier*, *Carcharhinus longimanus*, *C. falciformis*, *C. albimarginatus*, *C. melanopterus* and *Sphyrna* spp. (adapted from Sivasubramaniam, 1964).

This survey was to study the elasmobranches caught in the Bay of Bengal by pelagic longline (PLL) and drift gill net (DGN).

## Method

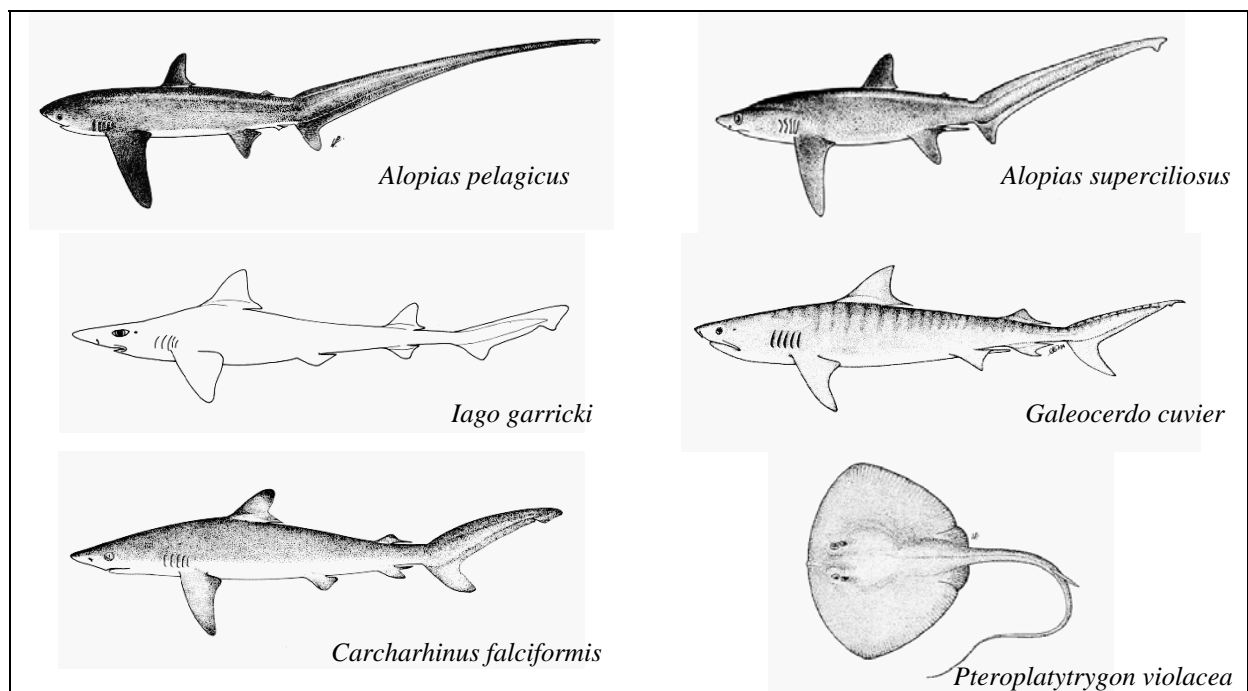
1. The elasmobranches (sharks and rays) were collected after capturing by PLL and DGN.
2. Fish identification was followed Carpenter and Niem (1998, 1999).
3. Measurement of total length (TL) in each specimen was recorded.

## Results

Thirty-five specimens of elasmobranches were identified representing 5 species of shark (29 specimens) and 1 species of ray (6 specimens). They belonged to 4 families and 5 genera as shown in table 1 and fig. 1.

**Table 1** The Elasmobranches caught by PLL and DGN in 3 areas (A, B and C).

Family	Species (n=specimen)	Pelagic longline (PLL)			Drift Gill net (DGN)		
		A	B	C	A	B	C
Alopiidae	<i>Alopias pelagicus</i> (1)			/			
	<i>A. superciliosus</i> (11)		/	/			
Triakidae	<i>Iago garricki</i> (1)	/					
Carcharhinidae	<i>Galeocerdo cuvier</i> (1)			/			
	<i>Carcharhinus falciformis</i> (15)	/	/	/	/	/	/
Dasyatidae	<i>Pteroplatytrygon violacea</i> (6)	/		/			
/ occurred							



**Figure 1** Six species of elasmobranches were found in this survey.

Only twelve specimens of Alopiidae (thresher sharks) were caught by PLL and were identified representing 2 species of *Alopias pelagicus* and *A. superciliosus*. *A. pelagicus* (TL 256 cm) was found only 1 specimen in area C whilst *A. superciliosus* (TL 205-329 cm) was found in area B and C (Fig. 2). The diagnostic characters of these 2 species are as follow:

*A. pelagicus* is a large shark. Head with 5 medium-sized gill slits; snout moderately long and conical; forehead nearly straight in lateral view, broadly arched between eyes; head narrow; no nictitating eyelids; mouth moderately long and semicircular, placed below eyes, with labial furrows rudimentary; teeth small, sharp-edged, with a single narrow. Two dorsal fins, the first moderately large and located equidistant between the pectoral and pelvic fin bases; second dorsal fin minute and positioned well ahead of the small anal fin; pectoral fins narrow, long and nearly straight, broad-tipped, and not falcate; upper lobe of caudal fin very long and strap-like, about as long as the rest of the shark; lower lobe short but strong; terminal lobe very small. Upper precaudal pit present but no caudal keel. Body with bluish or grey above, white below, with a silvery sheen in gill region; white color from belly not expanded over pectoral-fin bases.



**Figure 2** *Alopias superciliosus* was caught by PLL in area C.

*A. superciliosus* is a large shark and look like *A. pelagicus*. Differentiation from *A. pelagicus*, it has a deep horizontal groove on nape on each side from the level of mouth to pectoral fin; eyes very large, expanding onto dorsal surface of head; mouth moderately long and semicircular, placed below eyes, with labial furrows rudimentary; teeth moderately large, sharp-edged, with a single broad. Two dorsal fins, the first moderately large and located just in front of the pelvic fin origins; pectoral fins very narrow, long and falcate, broad-tipped. Upper lobe of caudal fin very long and strap-like. Body with purplish grey above, cream below, light colour of abdomen not expanded over pectoral-fin bases.

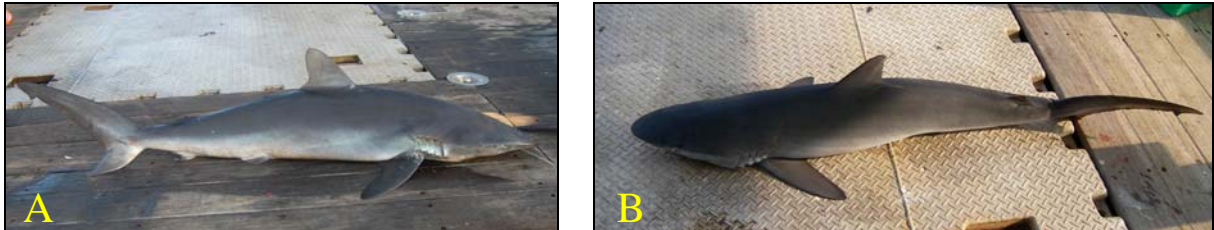
The Triakidae (Hound sharks) was found only *Iago garricki* (TL 80 cm) from PLL in area A. The diagnostic character of this specie is as follow:

*I. garricki* is a small shark. Head with 5 small gill slits; small spiracles present; snout moderately long and conical; eyes lateral oval with nictitating eyelids, subocular ridges obsolete; mouth small and semicircular, placed below eyes, with labial furrows moderately long; teeth small usually similar in both jaws. Two dorsal fins, the first moderately large and located over pectoral fin bases; second dorsal fin medium and located ahead of the small anal fin; pectoral fins large; upper lobe of caudal fin moderately long; lower lobe short.. No caudal keel and precaudal pits. Body with grey above and white below.

The Carcharhinidae (Ground sharks) was found 2 species from PLL and DGN. *Galeocerdo cuvier* (TL 200 cm) was found only 1 specimen in area C, but it could escape from PLL. *Carcharinus falciformis* (TL 85-178 cm by PLL and 55-131 cm by GN) was caught from both gears in area A, B and C (Fig. 3). The diagnostic characters of these 2 species are as follow:

*G. cuvier* is a large and fusiform shark. Head with 5 medium-sized gill slits; snout very short and bluntly rounded, eyes lateral with nictitating eyelids; spiracles small, slit-like, but easily visible; mouth large and semicircular, upper labial furrows as long as snout,

reaching to front of eyes; teeth coarsely serrated. Two dorsal fins, the first moderately large and located nearly pectoral fin bases; second dorsal fin medium and long base, located over the small anal fin; pectoral fins moderately large and falcate; upper lobe of caudal fin long; lower lobe long and point. A low rounded keel on each side of caudal peduncle. Back dark grey or black, rectangular bars on sides and fins.



**Figure 3** *Carcharinus falciformis* was caught by PLL (A) and DGN (B).

*C. falciformis* is a large shark, with elongate and slender body. Head with 5 small-sized gill slits; snout narrowly, rounded, moderately long; eyes lateral with nictitating eyelids; no spiracles; mouth moderately large and semicircular, upper teeth serrated and labial furrows very short. Two dorsal fins, the first moderately high and apex rounded, its origin behind the free rear tips of pectoral fin; second dorsal fin very low, its located over the small anal fin; pectoral fins long and falcate; interdorsal ridge present; upper lobe of caudal fin long. Back dark grey, grayish brown or bluish black; belly grayish or white.

Six specimens of the Dasyatidae (Stingrays) were caught from PLL in area A and C and only one species was found, *Pteroplatytrygon violacea* (TL 94-133 cm, DL 31-51 cm and DW 42-64 cm) (Fig. 4). The diagnostic character of this species is as follow:



**Figure 4** *Pteroplatytrygon violacea* was caught by PLL in area C.

*P. violacea* is a pelagic stingray with thick trapezoidal disc, anterior margin uniformly convex. Body depressed and flattened with denticles and tubercles on the mid-dorsal surface of disc and tail; 5 small gill opening on underside of front half of pectoral disc; eyes dorsolateral on head and just anteromedial to spiracles; pectoral fin very large, originating at anterior tip of snout and ending posterior to pelvic fin origins; low skin fold

present on undersurface of tail; whip-like tail longer than disc with large 2 stinging spine. Dark purple, black on both surfaces (ventral surface almost entirely dark).

### **Discussion and Conclusion**

The result of this survey appeared that only 6 species of elasmobranch were found. Most of them are epipelagic or mesopelagic fish. Catch of elasmobranchs were not so many because the types of fishing gear used were selective fishing gear (PLL and GN).

### **References**

- Bonfil, R. 1994. Overview of world elasmobranch fisheries. FAO Fisheries Technical Paper 341. FAO, Rome. 119 pp.
- Carpenter, K. E. and V. H. Niem. 1998. Sharks. **In:** FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Vol.2. FAO, Rome. p. 1193-1366.
- Carpenter, K. E. and V. H. Niem. 1999. Batoid fishes. **In:** FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Vol.3. FAO, Rome. p. 1397-1529.
- Sivasubramaniam, K. 1964. Predation of tuna longline catches in the Indian Ocean, by killer whales and sharks. *Bull. Fish. Res. Stn. Ceylon*. 17(2):221-236.