# Assessing the Abundance of Demersal Fishery Resources in Southeast Asian Waters

**Nakaret Yasook**

Results of surveys conducted from 2004 to 2007 using the bottom vertical longline gear indicated that high value demersal fishery resources are abundant in the untrawlable waters of Southeast Asia. This article, which expounds on the results of the surveys, was based on the paper presented during the Regional Workshops on Information Collection of Demersal Resources as Surimi Raw Materials in Southeast Asian Waters and on the Findings of Demersal Resources from M.V. SEAFDEC 2 held in Chiang Rai, Thailand, 18-20 December 2007.

Funded by the Japanese Trust Fund (JTF) Program of the Government of Japan's Fisheries Agency, demersal fishery resources surveys were conducted by SEAFDEC with the collaboration of the Member Countries, to collect data on the relative abundance of demersal resources in the untrawlable waters of Southeast Asia. Specifically, the basic data and information on demersal fish species collected in 2004 to 2007 from four survey areas were used as basis to investigate the existing potential demersal fishery resources in the Southeast Asian waters. The four survey areas covered the untrawlable areas of the Andaman Sea of Thailand; West Coast of Borneo in the Waters of Brunei Darussalam, and Sabah and Sarawak of Malaysia; West Coast of Luzon and Sulu Sea of the Philippines; and the East Coast of Vietnam (**Figure 1**). A total of 105 fishing stations were surveyed on board the M.V. SEAFDEC 2.

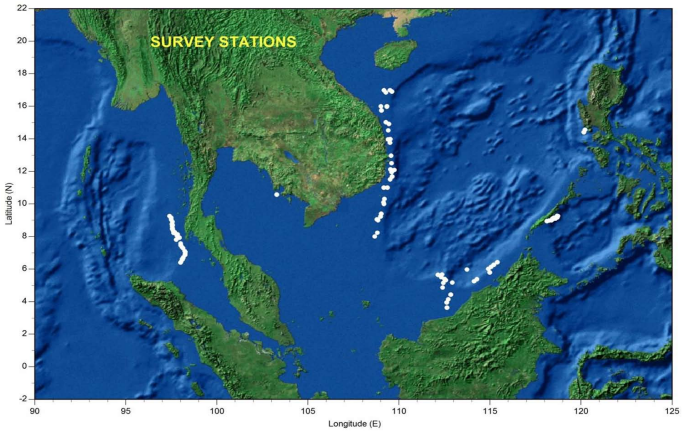


**Figure 1.** Bottom Vertical Longline fishing stations as survey areas in 2004-2007

## The Bottom Vertical Longline

The bottom vertical longline gear was used to study the distribution and abundance of demersal fish species in the untrawlable areas of the Southeast Asian region. The fishing depths were between 38-300 m, and the fishing operation started in the early morning with 2-4 hours immersion time. The number of hooks used varied from 380 to 960 depending on the fishing ground. Squid was used as bait for the fishing operations using the bottom vertical longline gear (**Figure 2**).

## CPUE and Average Catch

The highest CPUE per 1000 hooks in the fishing stations was 384.72 ind/1000 hooks in the Andaman Sea and the lowest was 1.19 ind/1000 hooks in the West Coast of Borneo in the Waters of Brunei Darussalam, and Sabah and Sarawak. The average CPUE in each survey areas and the average composition of the main catch, i.e. Serranidae, Lujanidae, Nemipteriae, other economic-value fishes, sharks and rays, and trash fishes are shown in **Figure 3**. The average catch in the Andaman Sea was the highest at 83.25 ind/haul/1000 hooks. However, 50% of the catch was considered discard species such as sharks and rays, and trash fish.

## Distribution and Abundance

The data also showed that 19 species and one unidentified species of Serranidae were distributed in the survey areas. Areolate grouper, *Ephinephelus areolatus* was also distributed in all areas surveyed as well as 13 species and two unidentified species of Lutjanidae. Tang's snapper, *Lipochilus carnolabrum* was found in the Andaman Sea and East Coast of Vietnam only while goldbanded jobfish, *Pristipomoides multidens* was found in all areas. Five

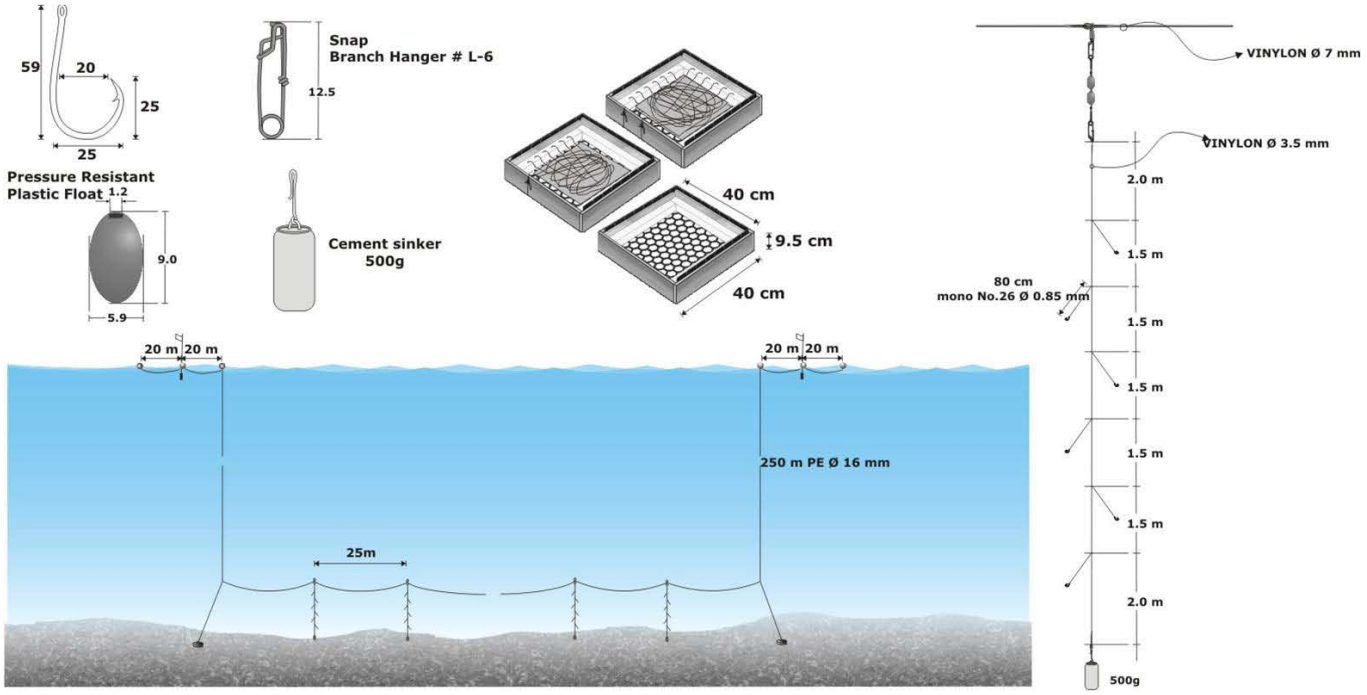


**Figure 2.** Bottom Vertical Longline used in the demersal fishery resources surveys

families of sharks were also caught using the bottom vertical longline, where dogfish shark (Family Squlidae) was dominant in all areas surveyed. The economic fishes caught from bottom vertical longline from each survey area, categorized by family, are shown in **Table 1**.

The data further indicated that the dominant family was different in each area. The cichlid fish (Family Cichlidae) for example was the highest family in the Andaman Sea (60.91%), the Emperor fish (Family Lethrinidae) in the West Coast of Borneo, and West Coast of Luzon and Sulu Sea (56.69% and 69.13%, respectively), and the lizard fishes (Family Synodontidae) in the East Coast of Vietnam (41.92%).

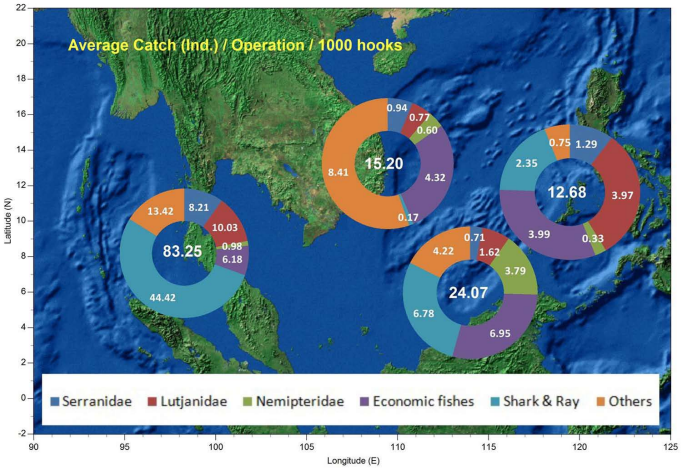


**Figure 3.** Average catch and group composition caught by Bottom Vertical Longline in each fishing area

Non-target species were also caught by the bottom vertical longline from the survey areas, where the prominent group also differ in each area (**Table 2**). Gurnards, sea robins (Family Triglidae) was the highest in the Andaman Sea (57.14%), shark suckers (Family Echeneidae) in the West Coast of Borneo (77.57%), morays (Family Muraenidae) and threetooth puffer (Family Triodontidae) in the West Coast of Luzon and Sulu Sea (48% and 40%, respectively), and puffer (Family Tetradontidae) in the East Coast of Vietnam (41.09%).

## Way Forward

The data from the bottom vertical longline gear surveys showed that high-value demersal fishery resources specifically the groupers and snappers are found in the untrawlable waters of Southeast Asia. There are 20 species of groupers and 15 species of snappers found although only some species such as *Ephinephelus areolatus* are distributed in each area surveyed. The highest CPUE was in the Andaman Sea, followed by West Coast of Borneo and East Coast of Vietnam. The lowest CPUE was in the West Coast of Luzon and Sulu Sea of the Philippines. However, about 50% of the catch comprised the discards that included sharks and rays as well as other non-target species such as morays and puffers.

**Table 1.** Individual catch/operation/1000 hooks by family group from Bottom Vertical Longline by survey area

| Survey Area | Family | Ind/ operation/ 1000 hooks | % |
|---|---|---|---|
| Andaman Sea | Berycidae | 1.38 | 0.60 |
| | Bothidae | 9.44 | 4.12 |
| | Caesionidae | 1.38 | 0.60 |
| | Cichlidae | 139.35 | 60.91 |
| | Gempylidae | 1.85 | 0.80 |
| | Haemulidae | 18.51 | 8.09 |
| | Halocentridae | 4.16 | 1.82 |
| | Hapalogenyidae | 8.33 | 3.64 |
| | Lethrinidae | 1.85 | 0.80 |
| | Priacanthidae | 7.29 | 3.18 |
| | Sphyraenidae | 1.38 | 0.60 |
| West Coast of Borneo | Acropomatidae | 5.20 | 3.56 |
| | Ariidae | 3.57 | 2.44 |
| | Branchiostegidae | 3.24 | 2.22 |
| | Carangidae | 2.38 | 1.63 |
| | Haemulidae | 1.38 | 0.95 |
| | Halocentridae | 7.29 | 4.99 |
| | Lethrinidae | 82.73 | 56.69 |
| | Sparidae | 32.07 | 21.98 |
| | Scrombridae | 1.19 | 0.81 |
| | Sphyraenidae | 1.19 | 0.81 |
| | Synodontidae | 5.65 | 3.87 |
| West Coast of Luzon and Sulu Sea | Acropomatidae | 1.04 | 2.06 |
| | Carangidae | 11.91 | 23.66 |
| | Lethrinidae | 34.82 | 69.13 |
| | Polymixiidae | 1.04 | 2.06 |
| | Scrombridae | 1.54 | 3.06 |
| East Coast of Vietnam | Acropomatidae | 1.08 | 0.76 |
| | Branchiostegidae | 5.87 | 4.12 |
| | Carangidae | 22.22 | 15.59 |
| | Coryphaenidae | 1.38 | 0.97 |
| | Glaucosomatidae | 12.15 | 8.52 |
| | Halocentridae | 8.44 | 5.93 |
| | Sparidae | 18.29 | 12.84 |
| | Priacanthidae | 11.41 | 8.01 |
| | Terapontidae | 1.85 | 1.29 |
| | Synodontidae | 59.72 | 41.92 |

The data seemed to indicate that the fishery resources in the untrawlable fishing grounds could be potential resources that could be utilized in deep sea fisheries. However, further study would still be necessary in order to reduce the catch of the discard species.

**Table 2.** Individual catch/operation/1000 hooks of trash fishes by family group from Bottom Vertical Longline by survey area

| Survey Area | Family | Ind/ operation/ 1000 hooks | % |
|---|---|---|---|
| Andaman Sea | Chaetodontidae | 1.38 | 0.28 |
| | Dactylopteridae | 1.38 | 0.28 |
| | Berycidae | 24.40 | 4.93 |
| | Scorpaenidae | 25.69 | 5.19 |
| | Echeneidae | 4.62 | 0.93 |
| | Congridae | 1.38 | 0.28 |
| | Muraenidae | 150.38 | 30.39 |
| | Triglidae | 282.75 | 57.14 |
| | Tetraodontidae | 1.38 | 0.28 |
| | Triodontidae | 1.38 | 0.28 |
| West Coast of Borneo | Monacanthidae | 1.38 | 1.49 |
| | Scaridae | 1.38 | 1.49 |
| | Labridae | 1.22 | 1.31 |
| | Scorpaenidae | 1.22 | 1.31 |
| | Echeneidae | 71.93 | 77.57 |
| | Ophichthidae | 1.19 | 1.28 |
| | Muraenidae | 1.04 | 1.12 |
| | Ostraciidae | 1.38 | 1.49 |
| | Tetraodontidae | 2.61 | 2.81 |
| | Diodontidae | 4.09 | 4.41 |
| | Triodontidae | 5.24 | 5.66 |
| West Coast of Luzon and Sulu Sea | Labridae | 1.04 | 12 |
| | Muraenidae | 4.16 | 48 |
| | Triodontidae | 3.47 | 40 |
| East Coast of Vietnam | Dactylopteridae | 1.85 | 0.64 |
| | Berycidae | 8.18 | 2.87 |
| | Echeneidae | 2.77 | 0.97 |
| | Ophichthidae | 6.82 | 2.39 |
| | Congridae | 38.88 | 13.63 |
| | Muraenidae | 103.51 | 36.29 |
| | Ostraciidae | 2.22 | 0.77 |
| | Tetraodontidae | 117.19 | 41.09 |
| | Triodontidae | 3.70 | 1.29 |

## About the Author

**Dr. Nakaret Yasook** is from the Fishing Technology and Fish Behavior Section, Capture Fishery Technology Division of the SEAFDEC Training Department in Samut Prakan, Thailand.