

The fishery resources of Indonesia

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Indonesia is rich in fishery resources. It can produce over 6 million tons of fish products in a given year, though at present, fish catch averages only about 2.3 million tons per year (45%).

The country ranks as one of the top ten fish producers in the world. Most of the catch comes from nearshore waters harvested by artisanal fishers despite government attempts to modernize the fishing industry. In addition, the country has aquaculture in brackish and freshwaters, including paddy fields.

Here are the fishery resources in Indonesia:

Demersal fishes

Demersal fisheries is known to be moderately exploited. The catch is about 2,068,000 tons while the maximum sustainable yield (MSY) is approximated at 1,033,800 tons per year. This view is based upon the swept area survey that calculates demersal fish resource based on fish captured by trawl.

The small pelagics

The pelagic small fish is defined as a school of small fish who lives near the surface of the sea. Among the species of this group (excluding tunas) are seeds (*Decaptes* spp.), Indian mackerel (*Rastrelliger* spp.), trevalies (*Selar* spp.), sardines (*Sardinella* spp.), wolf herring (*Chironcentrus* spp.), anchovies (*Stolephorus* spp.), hair tails (*Trichiurus* spp.). The MSY is approximated 50% of the resources or about 2.5 million tons per year within the area of 2,100,00 km².

Tunas

Tunas are well known as a highly migratory group which travels as far as 1,229 km or 2,276 miles. There are small and large tunas. Large tunas measure between 40 and 180 cm while small tunas range between 20 and 105 cm.

Large tuna species include yellowfin (*Thunnus albacares*), big eye (*abesus*), marlin (*T. allalunga*), south blue fin (*T. atlanticus* sp.), north blue fin (*T. thynnus*), black fin (*T. atlanticus* sp.), and sword fish (*Xiaphias* spp.).

Small tunas are skipjack (*Katsuwonus pelamis*) and the south-

INDONESIA the archipelago

17,508 islands (6,000 are inhabited)
81,000 km coastline
5.8 million km² sea area (70% of territory)
45.4 x 10⁵ ha of mangroves
2.3 million tons of fisheries products per year



A postcard from Indonesia by an unknown artist
courtesy of CR Lavilla Torres

ern little tunas (*Euthynnus affinis*, *E. alleteratus*, *E. lineatus*, *Auxis thazard*, *A. rochei*, *T. tonggol*).

MSY of large tunas is estimated at 178,368 tons per year while MSY of small tunas is estimated as 294,975 tons per year.

Shrimps and crustaceans

Penaeid shrimp is the major species produced, and is found in all coastal waters near estuaries, in waters 30-40 meters deep. The tiger shrimp (*Penaeus monodon* / *P. semisulcatus*) are comfortable in depths of 40-60 meters with clear water and muddy-sandy seabed. MSY of penaeid shrimp is 100,700 tons per year.

Spiny lobster is another popular species for export. It can be found in coral areas with sandy or crushed coral seabed. Common species found is *Panulirus homarus*. MSY of this is estimated as 4,487,700 tons per year.

Two crab species are also important fisheries commodities. One is mangrove crab or mud Crab (*Scylla serrata*) and the other is the ocean crab or swim crab

(*Pertunidae* spp.). The habitation of mangrove crab is entangled with mangrove distribution.

Coral fishes

Located in one of the most fertile ecosystem are the coral fishes. They are not fully utilized because of traditional catching technology and the difficulty in reaching the fishing areas. Species of this group include the yellow tail (*Caesio* spp.), the easiest to catch and market because of its high economic value.

At least 13 families of coral fishes have been found in Indonesian waters.

Molluscs

The most number of mollusc species are found in Indonesian waters. There are 100 species of clams (*Pelecypoda*), 1,500 species of snails (*Gastropoda*), 65 species of sea cucumbers (*Holothurionidae*) and two genus of cephalopods.

☞ NEXT PAGE



Seaweeds

In the Siboga Expedition of the late 1800s to early 1900s, there have been 555 seaweed species collected from Indonesian waters. Of these, 55 species have been utilized traditionally for food or medicine.

There are two groups of red seaweeds (*Rhodophyceae*) being exploited. The first group -- agarophytes -- comprises of *Gracilaria*, *Gelidium* and *Gelidiopsis*. These species produce agar, a jelly product for food or other purposes.

The second group -- carrageenophytes -- consists of *Hypnea* and *Chondrus* which produce carrageenan, a polysaccharide agar-like product.

Other important seaweeds are the Chlorophyceae (i.e. *Caulerpa*) which is consumed as salad or pickled; *Sargassum* which can be processed to produce algin for agriculture and animal husbandry; and *Ulva* and *Entromorpha* which are used as natural fertilizers.

Aquaculture

Freshwater culture, brackishwater culture, marine cage culture, and public water cage culture have still an opportunity to be expanded and developed. However, only 30% of Indonesia's 4.29 million ha of mangroves can be developed for brackishwater culture. The aim is to maintain an ecological balance.

The species produced in brackishwater culture are tilapia (*Tilapia* spp.), milkfish (*Chanos chanos*), mullet (*Mugil* spp), giant sea perch (*Lates calcarifer*), and shrimp (*P. monodon*).

In freshwater culture, common species cultured are: carps (*Cyprinus carpio*), Java barb (*Punctius goniototus*), kissing gouramy (*Helostoma temminckii*), catfish (*Clarias batrachus*), giant catfish (*Pangasius pangasius*), snakeskin gouramy (*Trichogaster pectoralis*), giant frog (*Rana catesbiana*), eel (*Fluta alba*), freshwater giant prawn (*Macrobrachium rosenbergii*), river eel (*Anguilla* spp.), snake eel (*Hypthalmictic molitrix*), and grass carp (*Ctenopharyngodon idellus*).

Paddy fields are utilized for fish culture at the beginning of the planting season. In public waters -- lakes, rivers, dams, swamps -- fish can be cultured in floating and static cages.

The common species being exported by Indonesia are shrimps, tunas, and skipjack, froglegs, jelly fish, crabs and seaweeds. This shows that commodities exported are still limited to some particular species. Due to the decrease of oil prices, the government of Indonesia has encouraged fisheries exports to increase foreign earnings.

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