Fishery Basics – Fishing Gear

Gear Types

All types of fishing gear, regardless of how it might be used, are designed to lure and capture fish. Fishing gears are defined as tools used to capture marine/aquatic resources, whereas how the gear is used is the **fishing method**. Additionally, a single type of gear may also be used in multiple ways. Different target **species** require different fishing gear to effectively catch the target species.

Fishing gears fall under two general categories, active gear and passive gear. Active gears are designed to chase and capture target species, while passive gears generally sit in one place allowing the target species to approach the capture device. The **United Nations Food and Agriculture Organization (FAO)** further classifies fishing gear into 11 categories primarily based on how the gear are fished, we have provided detailed information about each category **See Fishing Gear**. To browse a partial list of fishing methods and marine zones where they might be used **click here**.

Hook & Line

Hook and line gear consist of a minimum of two parts, a hook that is attached to a monofilament line. Artificial or natural baits are used to lure fish to the hook and once the fish has bitten the hook it is **hauled** in. It has been suggested that the first fishing line was actually Eskimo walrus-hide line used with a **harpoon** (See Fishing Gear – Grappling & Wounding Gear). Hook and line gear are used to catch **benthic**, **demersal**, and **pelagic** fishes.

Modern fishhooks come in a variety of sizes, shapes, and materials. There are two main types of hooks: **J-hooks** and **circle hooks**. J-hooks are manufactured with the point of the hook parallel to the shank of the hook creating a J-shape. Circle hooks are manufactured with the point of the hook turned perpendicularly to the shank forming a circular shape. Traditionally J-hooks have been used in most **fisheries**, but **recent efforts** have been made to promote the use of circle hooks in more fisheries. Circle hooks have resulted in higher catch rates and reduce mortality rates of both the discards of the targeted species and **bycatch**.

Both J-hooks and circle hooks can be **barbed** or **barbless**. Barbed hooks have an additional point (barb) that protrudes from the inside of the hook that helps to retain the bait on the hook as well as a fish once it has been caught. Barbless hooks do not have an additional point and thus it is easier to remove from the fish when caught, which is considered less damaging to the fish.

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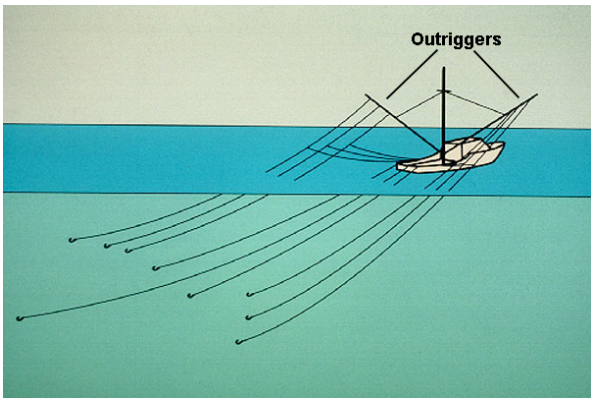
A side-by-side comparison of barbed J-hooks and circle hooks (left) and barbless J-hooks and circle hooks (right). (Credit: Florida Sea Grant)

Hook and line gear can be further classified by how they are used. There are four common methods for using hook and line gear: trolling, longlining, jigging, and pole and line fishing.

1. **Trolling lines** are lines with baited hooks that are dragged behind **trollers** (See Fishing Vessels – Line Vessels), as well as other types of vessels. Trolling speeds vary depending on the target species, but generally are between 2.3 and 7 **knots** (2.6-8.1 mph). A single line or multiple lines may be connected to **outriggers** that extend from both sides of the boat. Targeted species vary in size from small fish like **Mackerel** to large pelagic species like **Albacore Tuna** (See California Fisheries – Albacore Tuna), other species of **Tuna**, and **Chinook Salmon** (See California Fisheries – Chinook Salmon). Troll lines may be set to fish close to the surface or the lines can be weighted to fish at selected depths. Lines may be hauled in by hand or by mechanical means (i.e. hydraulics). At the end of each line there are a variety of embellishments – **spoons**, spinners, and feathered **jigs**, in addition to baitfish.



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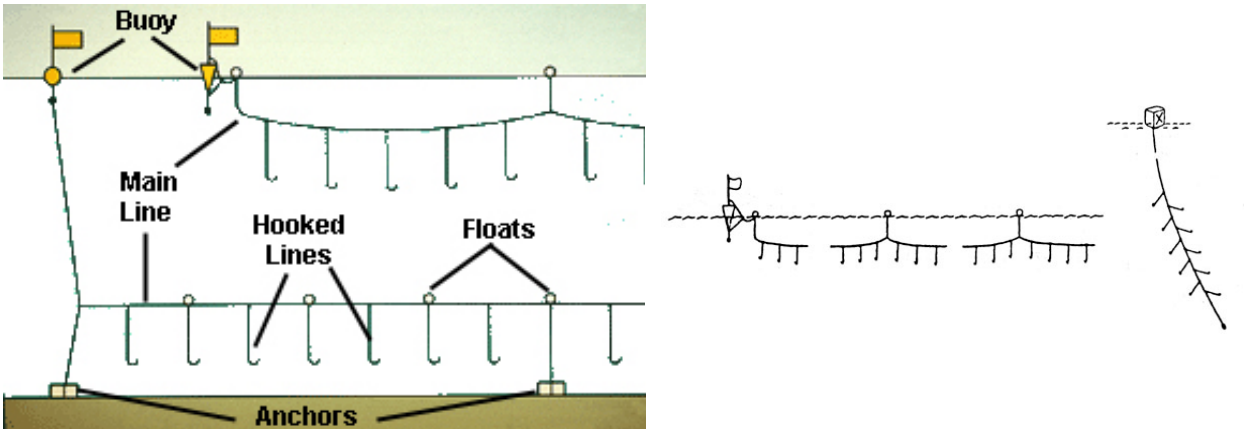
Illustrations of trolling lines attached to outriggers (left) and a fish caught on one of many deployed troll lines (right). (Credit: Food and Agriculture Organization of the United Nations and Matthew Squillante, Monterey Bay Aquarium Seafood Watch)

2. Longlines can be classified by how they are fished:
   - **Set longlines** are stationary lines that are anchored to the vessel, the seafloor or to an anchored buoy
   - **Drift longlines** are attached to floats that drift freely with the ocean currents.

   All longlines consist of a main line, which may reach up to 100 km (62 miles) in length, with short lengths of hooked lines (called gangions) spaced evenly along the main line. The lines are typically set ("paid out") from a slowly moving vessel. Longlines may be baited by hand or by baiting machines. The setting and retrieval of the gear may also be done by hand or with the use of mechanized equipment like line haulers or **gurdies** aboard **longliners** (See Fishing Vessels – Line Vessels). The main lines may be set so that the baited lines hang vertically in the water column or horizontally along the seafloor. Pelagic species targeted by drift longlines include **Tunas**, **Sharks** and **Swordfish**. Demersal species targeted by set longlines include **Cod** and **Halibut**. **Longlining *(animation)*** is considered one of the most fuel-efficient methods of commercial fishing.

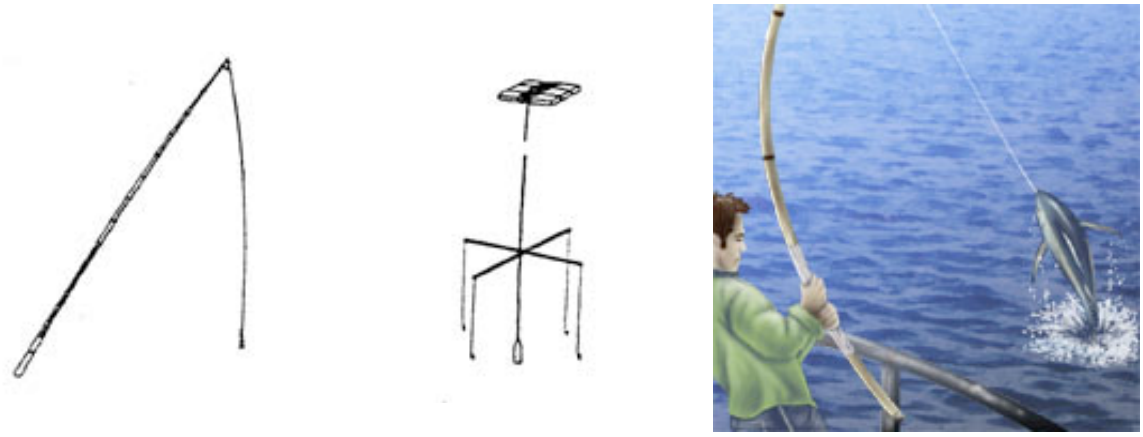


Illustrations of set longlines (left) and drift longlines (right). (Credit: Food and Agriculture Organization of the United Nations)

3. **Jigger lines** are a specialized type of vertical line, fitted with specialized ripped hooks, used primarily in the southern hemisphere Squid fisheries and some northern Cod fisheries. Multiple hooks are evenly spaced along the main line, which is hauled in using jerky vertical movements. This movement simulates the realistic movement of common prey species of the targeted species. In the Squid fishery, lights are used to attract the Squid towards the surface. As the line is jerked vertically, the Squid attack the hooks and are either caught by the mouth or the body. Jigger lines are typically used by specialized

jigger vessels (See Fishing Vessels – Line Vessels), but may also be operated from other types of boats.

4. **Pole and line gear** consists of a hook and line attached to a pole. If the line is much longer than the rod it is wound around a reel or moulinet. Both artificial and natural fish are used to lure the prey. Poles are commonly made out of wood or fiberglass and can be operated by hand or mechanized. **Albacore Tuna** (See California Fisheries) and other Tuna species are commonly caught by the pole and line method in **commercial** fisheries. Pole and line fishing can occur from the surface to great depths, the only limiting factor is the amount of line used. This gear is most commonly associated with **recreational** angling.



Illustrations of two basic types of pole and line gears (left) and a fisherman using a pole and line to capture a fish (right). (Credit: Food and Agriculture Organization of the United Nations and Matthew Squillante, Monterey Bay Aquarium Seafood Watch)

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Additional Resources

Bycatch Reduction Database

CommercialFishing.org – **New Fishing Hooks Required in Gulf of Mexico Longline Fishery**

FAO – **The Use of Technical Measures in Responsible Fisheries: Regulation Of Fishing Gear**

Live Science – **New Fishing Hook Reduces Shark Catch**

Fishery Basics – Fishing Gear

Marine Conservation Society – **Fishing Methods**

Rhode Island Sea Grant – **Bycatch Fact Sheet**