The tuna supply chain

The seafood industry in the UK is committed to sourcing its fresh and frozen tuna sustainably. Research is used to understand as much as possible about stock status before purchase; the industry advocates, and support, efforts to improve fisheries; the industry prioritises fisheries that can demonstrate accurate catch and by-catch records above and beyond just the statutory requirements; and engages with conservation organisations to work together within supply chains to achieve progress in fishery management.

The UK industry has been a leader in supporting and driving the implementation of new rules to stop Illegal, Unreported and Unregulated tuna fishing; tuna is only sourced from legal boats where the flag legality and registration details of vessels are checked and all suppliers can trace their fish back to origin.

Key species and their use in the supply chain

Tuna are amongst the world’s most lucrative and popular commercial fish with approximately four million tonnes (t) of tuna caught around the world each year. There are four main markets.

<table>
<thead>
<tr>
<th>Common and latin name</th>
<th>% world catch</th>
<th>Catch method tended to be used</th>
<th>Main use in the supply chain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellowfin, <em>Thunnus albacares</em></td>
<td>27%</td>
<td>Line &amp; Purse seine</td>
<td>Canning, fresh, frozen</td>
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<tr>
<td>Skipjack, <em>Katsuwonus pelamis</em></td>
<td>57%</td>
<td>Purse seine</td>
<td>Canning, fresh, frozen, dried</td>
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<tr>
<td>Bigeye, <em>Thunnus obesus</em></td>
<td>11%</td>
<td>Line &amp; Purse seine</td>
<td>Sashimi, fresh, frozen</td>
</tr>
<tr>
<td>Albacore, <em>Thunnus alalunga</em></td>
<td>5%</td>
<td>Line</td>
<td>Canning, sashimi, fresh, frozen</td>
</tr>
<tr>
<td>Atlantic bluefin, <em>Thunnus thynnus</em></td>
<td></td>
<td>Line and ranching</td>
<td>Sashimi, fresh, frozen</td>
</tr>
<tr>
<td>Pacific bluefin, <em>Thunnus orientalis</em></td>
<td></td>
<td>Line and ranching</td>
<td>Sashimi, fresh, frozen</td>
</tr>
<tr>
<td>Southern bluefin, <em>Thunnus maccoyii</em></td>
<td></td>
<td>Line and ranching</td>
<td>Sashimi, fresh</td>
</tr>
</tbody>
</table>

Status and management

Tuna species are highly migratory and range over large areas, passing through many nations’ Exclusive Economic Zones (EEZs) and throughout all international tropical waters. Assessment and management requires international collaboration. Tuna fishing for canned tuna has developed significantly since the 1950s, and for the fresh and frozen market tuna fisheries have developed more recently. The rules for recording catch, effort and other factors for tuna continually develop and due to the highly migratory nature of the species, the number and geographical spread of fisheries, the number of nations involved, the nature of artisanal fisheries, and the growth of the international fishing fleet, it can be difficult to gather data, establish stock status and thus reach agreement in the complexities of managing highly migratory trans-oceanic species.
As well as managing the fish species and ecosystems there are livelihoods that must be taken into consideration. Many tuna fishing areas occur in and around the EEZs of Developing countries. Many artisanal fishermen and communities in the developing world depend on catching tuna, as do many international distant-water boats. National food production, food security and national fishing rights are also significant factors in tuna management.

Tuna stocks are managed under five international management commissions (Regional Fishery Management Organisations, or RFMOs) constituted under United Nations’ fishery conventions. Despite these international conventions, unregulated fishing does occur. Skipjack tuna is considered to be highly productive and not prone to overfishing. Yellowfin, bigeye, bluefin and albacore tuna are considered more vulnerable to overfishing. Different species because of their size, price and other qualities are used for different markets. The commonest, by far, sold in the UK are skipjack and yellowfin.

**Best practice in the UK**

In the UK the majority of fresh and frozen tuna is imported by a small number of companies. Most will purchase yellowfin tuna, in addition to small amounts of albacore and skipjack tuna. A number of albacore and skipjack tuna stocks are either MSC certified or under MSC assessment. To date there are no MSC certified yellowfin tuna fisheries. As a rule all of the tuna imported is line caught - pole and line, handline or shorter long lines. Tuna fisheries that use artisanal, low impact, and highly selective fishing methods are prioritised. Mature fish (22kg+) with an average size landed of 35kg are targeted. No juvenile fish are sourced and the fishing methods suppliers use are able to effectively target mature fish. All species caught on tuna trips are retained and command a commercial value at market. There are no discards.

In the UK, we consume around 336,000 t (live weight equivalent) of tuna each year. The great majority of this is canned tuna, although the market for fresh and frozen tuna is increasing. The great majority of the species sold in either format in the UK will be skipjack, then yellowfin.

**Fishing methods**

Many of the issues surrounding tuna concern fishing methods. Three fishing methods supply most of the world’s tuna: traditional trolling/pole and line; long line; and purse seine net. Other methods include: handlines, drift nets and gill nets, which are used in artisanal fisheries. In some areas, most notably the Indian Ocean, where around 400,000 t pa of tuna is caught by these methods; these artisanal methods can be very important fisheries.

**It is line caught methods that supply most of the fresh and frozen tuna in the UK.** Using a line to catch tuna is a relatively low-intensity fishing method used because it allows for the fish to be handled separately. Handling tuna individually is required to produce the qualities commonly required in tuna cuts sold fresh or frozen (e.g. steak, loins and other fresh or frozen formats) and that are usually not cooked or canned prior to sale.
It is net caught methods that supply most of the canned, pouch and shelf-ambient tuna in the UK. Using a purse seine, driftnet or gillnet tends to produce most of the worlds’ canned tuna, although the volumes of tinned tuna containing pole and line caught tuna is increasing and this catch method will generally be shown on the label.

Main fishing methods

- **1. Trolling/Pole and line – 10% of tuna caught by this method**
  The vessels search for shoals of tuna, using surface observations of tuna feeding on small pelagic fish, water clarity and temperature. Trolling vessels catch the tuna by towing several hooks with lures on them astern of the vessel. Pole and line vessels remain stationary alongside a shoal and excite the tuna into a feeding frenzy using a combination of live bait and water jets played on the sea surface. The tuna are captured on barb-less hooks with lures dangled into the feeding shoal of tuna, mostly the hooks do not have bait on them, the tuna will take a bare hook. These methods can be regarded as low impact fisheries, with little by-catch or other ecological effect apart from the harvesting of the tuna. However, care has to be taken to avoid overfishing of bait fish stocks in sensitive coastal areas.

- **2. Pelagic long lining - 14% of tuna caught by this method**
  Long-lines for tuna are deployed horizontally, suspended from floats. Their position in the water column is controlled by weights and floats and hook depth is selected in order to target specific species. Hook size also determines the size of the fish caught hence juveniles can be avoided. The baited hooks are on short “dropper” lines, or snoods, clipped on at intervals. In areas where they are present that tend to be non-coastal and in particular latitudes, there is risk of by-catch of albatross and other oceanic seabirds, due to the birds diving after the bait while the lines are being shot. This risk can be minimised by selection of fishing area, the use of bird scaring flag lines (‘tori lines’); concealing the baited hooks by shooting them into the water or at night; or making the hooks less visible by dyeing the bait blue or setting from the side of the vessel; distracting the birds (strategic offal discards); and reducing the opportunity for birds to seize the baited hook by sinking baited hooks faster. Pelagic long-line gear can be used to catch other, legally permitted and recorded species including sharks, swordfish, marlins and has also been found to accidentally catch unwanted species including, other sharks, birds, turtles. Circular hooks can reduce the probability of fish and sea turtles swallowing hooks, so they can be released on capture. These ecosystem effects are the subject of ongoing work by the RFMOs.

- **3. Purse seining – 63% of tuna caught by this method**
  Schools of tuna are caught by means of a large net which surrounds the school. The net is then 'pursed' when the purse line closes the bottom of the net, after which the net is gradually brought aboard. The fish are then lifted out of the net using mechanical grabs. Tuna purse-seine fisheries use drifting Fish Aggregation Devices (FADs). Typically these are bamboo rafts
of about 3 x 1.5m under where the fish tend to congregate; and they may be monitored remotely from the fishing vessel. The purse seine is shot around the FAD, which increases capture. Fish including skipjack tuna, and other species, may congregate under the FAD. Dolphins are not usually found in association with FADs, but catches of undersize tuna and other pelagics can be higher using FADs. The purse-seine method is used primarily to catch tuna for processing ie canning.

- **4. Tuna ranching, and farming**

One species of tuna is in such demand and of such high value that a ranching industry has developed. The species is bluefin and because of stock status (not to mention cost!) it is not for sale in UK retail supermarkets. Ranching is when the fish are taken from the ocean and held in fish cages for fattening. Farming fish is when eggs and juvenile fish can be produced in captivity and this innovation is in development for some tuna species but not yet commercially viable to produce fish on a global scale.

**For further information:**
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See: [http://www.seafish.org](http://www.seafish.org)

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