Fishery Basics – California Fisheries

Pacific Albacore Tuna (Thunnus alalunga)


Left photo courtesy of NOAA. Right photo courtesy of NOAA Fisheries Service Southwest Fisheries Science Center.

Life History

Albacore Tuna, also known as Longfinned Tuna, belong to the **Scombridae family**, which is composed of approximately 55 **species** of fishes that are generally known for their powerful swimming ability and long, annual migrations. Albacore are a **highly migratory species** that are **found** in **tropical**, **subtropical**, and **temperate** zones of the Pacific, Atlantic, and Indian Oceans as well as the Mediterranean Sea. It is believed that two **populations** of Albacore inhabit the Pacific Ocean, a North Pacific **stock** and a South Pacific stock. Existing data indicates that the two populations do not mix. The **distribution** of the North Pacific stock extends from the central Pacific coast of Mexico to the Gulf of Alaska and across the Pacific to the north east coast of Japan down to the equator. **Juvenile** Albacore (2-5 years old) complete extensive annual migrations across the Pacific Ocean, while spawning adults (5-6 years and older) make shorter migrations within the eastern Pacific Ocean.

Juvenile migrations typically begin in the late spring and early summer off the coast of Japan. By late summer, juvenile Albacore have migrated across the Pacific Ocean to the inshore waters of the U.S. west coast and by year-end they have returned to the western Pacific Ocean. However, it is generally believed that oceanic conditions, like **sea surface temperatures** and water clarity, have a strong influence on the timing and geographical extent of these migrations. When migrating, Albacore of similar size travel in large aggregations, which sometimes may extend to 19 miles in width. Albacore generally follow water temperature gradients ranging between 15-19.5°$_C$ (59-67°$_F$) when migrating. However, studies have found that they also spend time in colder (9.4°$_C$/49°$_F$) nutrient-rich **upwelling** waters, where schooling prey species like the **Pacific Sardine** (See California Fisheries – Pacific Sardines) might be foraging. Albacore may live up to 12 years, growing to 140 cm (55 in), and weighing over 45 kg (100 lbs).

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Albacore spawn from March to July in the western and central Pacific Ocean, where unfertilized eggs are released near the surface for fertilization. Once the eggs are fertilized they develop rapidly, with hatching occurring 24-48 hours later. Egg production is dependent on the size of the female. It is estimated that a female releases 800,000 to 2.6 million eggs per spawning cycle.

Fishery History

At the turn of the 20th century, the U.S. **commercial** Albacore industry began in southern California. Prior to this time Albacore was primarily considered a nuisance and discarded because **troll** (See Fishing Gear – Hook & Line) fishermen were targeting the larger more desirable Bluefin Tuna. However, in 1903 a packing plant in San Pedro, CA began packing Albacore as an experiment to keep the plant operating due to a lack of Pacific Sardines. The 700 experimental cases were only labeled as "Tuna." The canned Albacore was a success, not only because it had a long shelf life but also because of Albacore's choice white, tasty meat. By 1914, production of Albacore in the San Pedro plant had reached 400,000 cases annually.

Through the first quarter of the 20th century the Albacore **fishery** of the **nearshore** waters of southern California continued to expand in size. Fishermen used a variety of means to catch the fish including, trolling, **pole and lines** (See Fishing Gear – Hook & Line), and **purse seines** (See Fishing Gear – Surrounding Nets). By 1925, commercial **catches** of the fish peaked at 9,900 t (22,000,000 lbs) in southern California. Also in 1925, Japan and other Asian countries entered the global tuna market. The troll fishery for Albacore expanded northward along the California coast and by the late 1930s was operating in the nearshore waters of California, Oregon, and Washington. Expansion continued westward as well, and by the mid-1940s vessels that were targeting Albacore operated several hundred miles off the coast of California in the central Pacific Ocean.

In 1949, the first regulatory efforts to manage tuna and other species taken by tuna vessels in the eastern Pacific Ocean were made through an international agreement between the United States and Costa Rica. This agreement led to the creation of the **Inter-American Tropical Tuna Commission (IATTC)** in 1950. Although geographic expansion of the fishery slowed in the 1950s and 1960s, an increased market demand resulted in **landings** averaging approximately 13,608 t (30,000,000 lbs) annually. By the mid 1970s, larger U.S. vessels began fishing further west, focusing their **efforts** north of the Hawaiian Islands, with some vessels fishing as far west as the international dateline. By fishing further west these vessels were able to extend the **fishing season** by intercepting migrating Albacore in the **high seas** earlier in the year. However, from 1961 to 1979 approximately 99% of reported U.S. Albacore catches were made within 200 miles of the North American coast. High seas fishing for Albacore continued from the mid 1970s through 2000. Since 2000, most vessels have operated no more than 1,000 miles from the west coast due to high fuel costs and market uncertainty. Commercial landings of Albacore have

varied greatly throughout the history of the fishery. Between 1986 and 2005, U.S. west coast landings have ranged from a low of 2,220 t (4,894,262 lbs) in 1986 to a high of 18,431 t (40,633,400 lbs) in 1996.

Current Fishery

The U.S. west coast Albacore fishery is an **open access** fishery, but vessels participating in it must apply for a Highly Migratory Species permit. Vessels based out of the west coast and vessels landing their catches on the west coast of the U.S. must abide by the **Highly Migratory Species Fishery Management Plan (HMSFMP)** developed by the **Pacific Fishery Management Council (PFMC)** (See National Management). The HMSFMP requires both commercial and **recreational** vessels, fishing for Albacore or other highly migratory species, to apply for a permit that endorses specific gear types.

Permit holders must maintain and submit daily logbooks of catch and effort to the **National Marine Fisheries Service (NMFS)**. Scientific **observers** may also be required to be on board any vessels fishing for highly migratory species. Within the commercial fishery, trolling is still the primary method of catching Albacore by U.S. vessels, however foreign vessels use purse seines and **longlines** (See Fishing Gear – Hook & Line) to catch Albacore and other tuna species. Pelagic longline fishing for Albacore is prohibited within the U.S. **Exclusive Economic Zone (EEZ)** and shallow-set longline fishing is prohibited both inside and outside of the EEZ.

Due to the migratory nature of Albacore, management of the fishery is not limited to one agency. Currently, two federal councils and two international commissions manage the North Pacific stock of Albacore. Individual states may also implement their own regulations on the fishery as well. Under federal jurisdiction, Albacore are managed under the PFMC HMSFMP (2004). In 1987, the **Western Pacific Fishery Management Council's** implemented the **Pelagic Fisheries of the Western Pacific Region Fishery Management Plan**. It is the responsibility of both the IATTC and the **Western and Central Pacific Fisheries Commission** to manage and conserve all tuna species within **international waters** (See Where do we Fish? – International). Additionally, a **treaty** exists between the U.S. and Canada, which allows vessels from both countries to fish for Albacore within the U.S. and Canadian EEZs.

Current Challenges in Fishery

The primary concern involved with the Albacore fishery, and many other highly migratory species fisheries, is the **overfishing** (See Looking at Overfishing) of stocks. Due to the migratory nature of the species and the fact that the majority of fishing efforts occur in international waters, it is difficult to regulate the participants of the fishery. While U.S. vessels fishing for Albacore are practicing sustainable fishing methods, many foreign vessels may be fishing illegally. To download a 2010 letter addressing the concerns of the **American Albacore Fishing Association** to the PFMC **click here (*pdf*)**.

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