Albacore Tuna (*Thunnus alalunga*)

Certification Units Covered Under this Species:

- Pole and Line
- Troll and Jig

Summary

Albacore tuna is a highly migratory species (HMS) distributed throughout the world's oceans. In the North Pacific, the stock is jointly managed by two international organizations: the Inter-American Tropical Tuna Commission (IATTC) for waters east of 150˚ W longitude, and the Western and Central Pacific Fisheries Commission (WCPFC) for waters west of 150˚ W longitude. Along the U.S. West Coast, albacore tuna are managed under the Pacific Fishery Management Council's Highly Migratory Species Fishery Management Plan. In the U.S., albacore are fished commercially primarily using pole and line and troll and jig. The north Pacific albacore stock is considered to be healthy at current levels of recruitment and fishing mortality.

NOTE:

This fishery has already been certified by the Marine Stewardship Council. This assessment is a summary of the existing full MSC assessment by Global Trust Certification, Ltd (GTCL).

Unless otherwise noted, all text, figures and tables in this Rapid Assessment are from GTCL 2010:

Global Trust Certification Ltd. (GTCL) 2010. MSC Fishery Assessment Report: Public Certification Report. The Canadian Highly Migratory Species Foundation (CHMSF) British Columbia North Pacific Albacore (*Thunnus alalunga*) Tuna Fishery and the American Western Fishboat Owners Association (WFOA) North Pacific Albacore (Thunnus alalunga) Tuna Fisheries. Global Trust Certification Ltd., Riverlane, Dundalk Ireland.

Strengths:

- Stock is considered healthy
- Harvest strategy is responsive to the state of the stock and regular stock assessments are conducted
- Bycatch is low

Weaknesses:

- No biomass-based reference points
- No ongoing observer coverage of commercial fishing vessels

History of the Fishery in California

Biology of the Species

[From GTCL 2010]: Albacore tuna (*Thunnus alalunga*) is a highly migratory tuna found in all of the global oceans and Mediterranean Sea. In the Pacific Ocean there are two separate and distinct stocks of albacore, one in the North Pacific and the other in the South Pacific. Albacore tuna mature at approximately 5 years or at about 85 cm and has a lifespan of about 10 to 12 years. Growth rates are moderate, with fork lengths at 1 year of age of nearly 40 cm. Fecundity is estimated to be 0.8 to 2.6 million eggs per spawning. North Pacific albacore spawn from March through July on grounds located in the Western and Central Pacific Ocean in subtropical waters between about 10˚ to 25˚ N latitudes (Figure 1).

In general, the bulk of the juvenile albacore recruiting into the North Pacific fisheries first enter the Japanese western Pacific fisheries off Japan and then move eastward. Recovery of tagged juveniles (ages 1 to 5) indicates that fish tagged off Japan appear in the North American fishery; movement is along the North Pacific Transition Zone. Albacore tagged off North America seem to move across the Pacific during the fall and appear in Japan in the late-winter/spring fisheries. These fish then appear to migrate back to North America. There are few tag returns of mature fish. Based on catch patterns it would seem that adults move to lower latitudes. In addition to this general pattern of movement there may be variations associated with recruitment. It appears that a small portion of the population may spawn further east than the bulk of the population and first enter the fishery off North America.

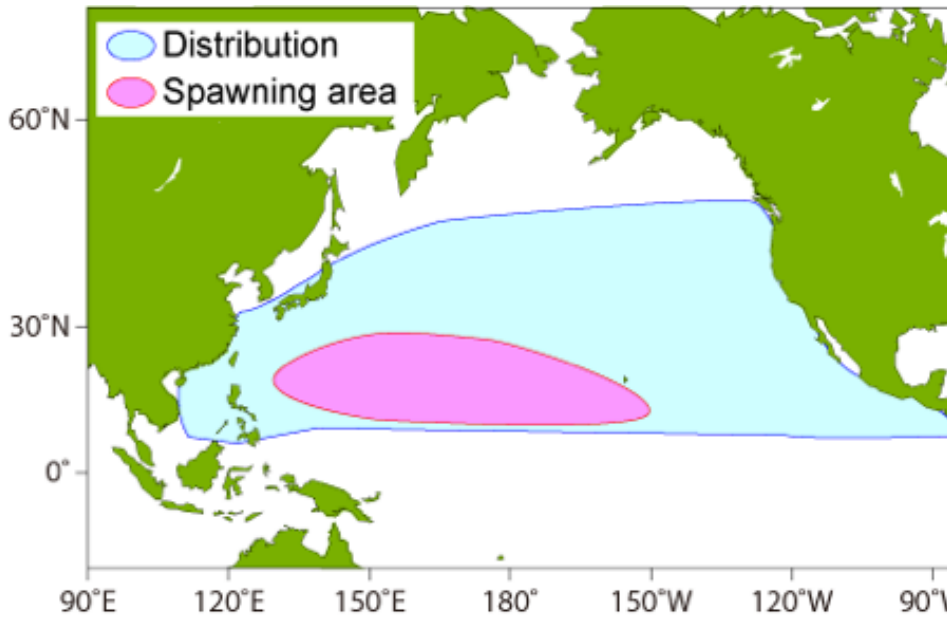

Figure 1. Distribution and spawning area of albacore tuna in the North Pacific Ocean (from ISC 2013).

Albacore, like other tunas, have a number of physiological and morphological specializations that adapt them to a fast, continuous swimming lifestyle in the pelagic open ocean environment. The most notable of this is a “counter current multiplier system” (heat exchanger) which allows them to regulate their body temperatures. The albacore tuna body temperature may be as

much as 15˚ above ambient temperature. Their metabolic rates are 2 to 10 times higher than most other bony fishes, and they have very large eyes for detecting prey and specialized fins and body form to reduce drag. Albacore are opportunistic carnivores and as adults have few predators, although they may be preyed on by large marine mammals, sharks, and billfish.

Commercial Fishery

[From GTCL 2010]: The U.S. surface troll fishery for albacore has been operating since the early 1900's in the North Pacific. Fishermen commenced targeting seasonally migrating albacore in nearshore ocean waters off southern California to meet the needs of a tuna cannery established there. The troll fishery gradually spread northwards, but was restricted to waters off California until the late 1930's, when it extended to waters off the states of Oregon and Washington, and eventually to waters off British Columbia, Canada. Until the late 1970's, the troll fishery began operations in early July, when migrating albacore approach the west coast of North America, and was primarily conducted in near shore oceanic waters. From 1961 through 1979, approximately 99% of the reported U.S. catches of North Pacific albacore were made within 200 miles of the North American coast, with 84% off the U.S. coast and 9% and 7% in the jurisdictional waters of Mexico and Canada, respectively. Since the late 1970's, U.S. albacore fishers with larger vessels begin troll fishing in the early spring months on the high seas. Some of these vessels operate as far west as the International Dateline and beyond, to extend the fishing season by intercepting albacore migrating towards the coast of North America and locating high catch rate areas. The extent of the albacore migration is variable and a significant characteristic of the U.S. surface fishery is the wide north-south variation in the geographical locations of the most productive fishing grounds. Uniquely, a large proportion of this variability is at the multi-decade rather than the inter-year time scale.

The estimated number of vessels landing albacore peaked at more than 2,000 in the mid-1970's. However, fewer vessels have been active in recent years. During the past five years the number of U.S. troll vessels that landed albacore ranged from 652 to 870, with vessels smaller than about 17 m outnumbering larger vessels by approximately two to one.

The history of the U.S. pole-and-line fishery for albacore differs somewhat from that of the troll fishery, and is linked to the U.S. tropical tuna fishery for yellowfin, bigeye, and skipjack tunas. The pole-and-line method of catching albacore also began in the early 1900's with vessels operating within a one-day run from port to provide product for a tuna cannery located in southern California. A poor catch of albacore in 1918 forced pole-and-line boats to shift to fishing for tropical yellowfin and skipjack to fill the cannery's demand for tuna. In subsequent years even though the availability of albacore may have been high, the amount of pole-and-line effort expended for albacore was thereafter greatly influenced by events in the tropical tuna fishery. Today there are, fewer than about 200 U.S. vessels using this fishing method for catching North Pacific albacore.

Recreational Fishery

North Pacific albacore are a popular recreational species. Recreational charter vessels are required to maintain logbooks to document their catch. From Point Conception to the Mexican border, there is a limit of 10 fish per day, and from Point Conception north to the Oregon border there is a limit of 25 fish per day (CDFG 2012). In 2010, the estimated number of albacore retained by recreational fishermen was 15,301 and in 2011 it was 4,416 (PFMC 2012).

MSC Principle 1: Resource Sustainability

*Sustainability of Target Stock

[From ISC 2011]: The most recent stock assessment was completed in June 2011. The north Pacific albacore stock is considered to be healthy at current levels of recruitment and fishing mortality. Current estimated mortality, F2006-2008, is well below the fishing mortality that would lead the spawning stock biomass (SSB) to fall below a threshold established of the average of the ten historically lowest estimated SSBs (SSB-ATHL) in at least one year of a 25-yr (2010-2035) projection period. The stock is expected to fluctuate around the long-term median SSB (~405,000 t; Figure 1) in the foreseeable future given average historical recruitment levels and constant fishing mortality at F2006-2008 (Figure 2). Based on these findings, the Working Group concludes that overfishing is not occurring and that the stock likely is not in an overfished condition, although biomass-based reference points have not been established for this stock. However, recruitment is a key driver of the dynamics in this stock and a more pessimistic recruitment scenario increases the probability that the stock will not achieve the management objective of remaining above the SSB-ATHL threshold with a probability of 50%. Thus, if future recruitment declines about 25% below average historical recruitment levels (Figure 3) due either to environmental changes or other reasons, then the impact of F2006-2008 on the stock is unlikely to be sustainable. Therefore, the working group recommends maintaining present management measures.

[From GTCD 2010][1]: It is highly likely that the stock is above the point where recruitment would be impaired. Evidence of this can be summarized as follows:

- Current level of Spawning Stock Biomass (SSB) and information on temporal trends in spawning biomass levels and subsequent recruitment
- Temporal trends in recruitment over the last two decades
- Recent F (F2002-2004= 0.75) correspond to a level at which good recruitment has been observed (ISC, 2007)

Implicitly, reference points are appropriately defined. Reference points were scored based on the following issues:

- The appropriateness of the reference points is unknown
- The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity
- The target reference point is such that the stock is maintained at a level consistent with BMSY or some measure or surrogate with similar intent or outcome

*For California's Sustainable Seafood Program, this category must score an 80 or higher during an MSC assessment.
[1]The MSC Full assessment by GTCL 2010 was conducted before the latest June 2011 stock assessment was completed, thus justifications for scoring use old data.

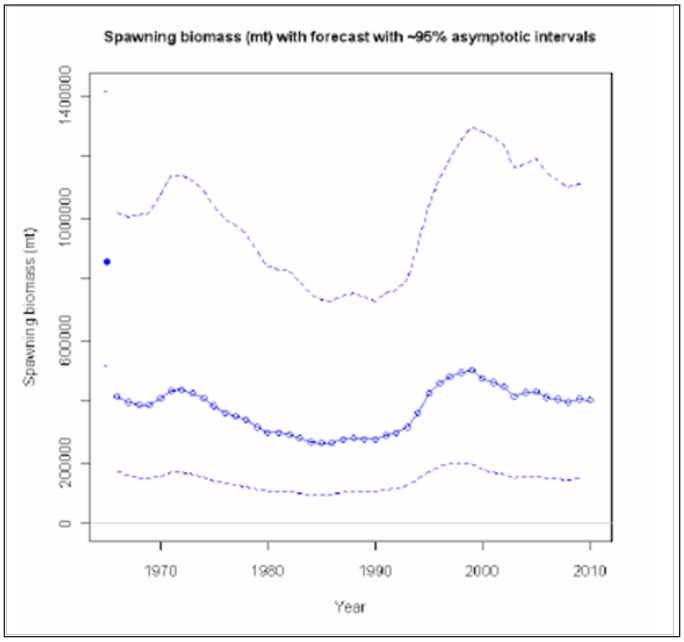

Figure 2. Estimated spawning biomass of albacore tuna in the North Pacific Ocean. The open circles represent the maximum likelihood estimates of each quantity and the dashed lines are the 95% asymptotic intervals of the estimates (± 2 standard deviations) in lognormal space (from ISC 2011).

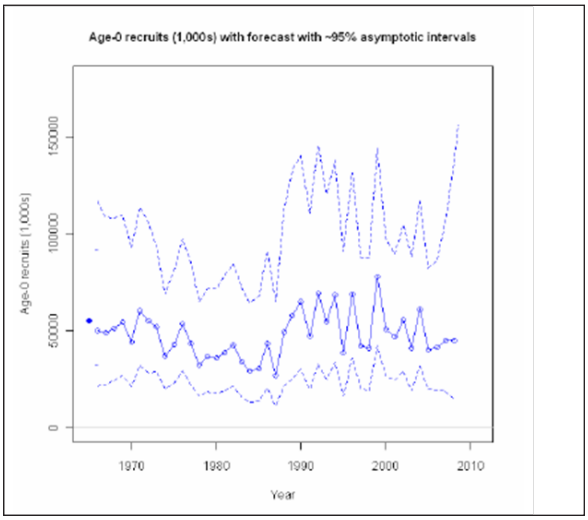

Figure 3. Estimated age-0 recruitment of albacore tuna in the North Pacific Ocean. The open circles represent the maximum likelihood estimates of each quantity and the dashed lines are the 95% asymptotic intervals of the estimates (± 2 standard deviations) (from ISC 2011).

Scores for MSC Component 1.1: Sustainability of Target Stock (from GTCL 2010)

Performance Indicator	Rating	Justification
1.1.1 Stock Status		80; It is highly likely that the stock is above the point where recruitment would be impaired
1.1.2 Reference Points		75; Reference points are implicit
1.1.3 Stock rebuilding		Not triggered; stock is considered healthy

Harvest Strategy (Management)

[From GTCL 2010]: The international management of the North Pacific albacore stock is shared by two international organizations: the Inter-American Tropical Tuna Commission (IATTC) for waters east of 150˚ W longitude, and the Western and Central Pacific Fisheries Commission (WCPFC) for waters west of 150˚ W longitude. The IATTC and WCPFC have legal authority within their administrative boundaries. Domestically, for the US troll & jig and pole & line albacore fisheries management is through the Highly Migratory Species Fishery Management Plan (HMS FMP) of the Pacific Fishery Management Council (PFMC). The ISC for Tuna and Tuna-like Species in the North Pacific Ocean conduct stock assessments as well as enhance scientific research and cooperation for the conservation and rational utilization of tuna and tuna-like species of the North Pacific Ocean. North Pacific management measures adopted by the IATTC and the WCPFC are passed to the respective member countries that conduct fishing operations on Pacific albacore for implementation.

Internationally, the harvest strategy has been defined by the Antigua Convention of the IATTC, and the Convention on the Conservation and Management of Highly Migratory Fish Stocks of the Western and Central Pacific (WCPFC). The objective of these conventions is to ensure the long-term conservation and sustainable use of the fish stocks covered by these conventions, in accordance with the relevant rules of international law. In order to achieve the overall objective the convention texts define the harvest strategy framework, which must be implemented through the Pacific Region Integrated Tuna Fisheries Management Plan (IFMP) and the Fisheries Management Plan for U.S West Coast Fisheries for Highly Migratory Species (HMS FMP) in Canada and the United States, respectively.

The Harvest Strategy Framework is based on the precautionary approach. The legal framework for the precautionary approach is embodied in a number of international agreements of which the USA is a signatory:

- UN Convention of the Law of the Sea (1982)
- Rio Declaration on Environment and Development (1992)
- FAO Code of Conduct for Responsible Fisheries (1995)
- UN Fish Stocks Agreement UNFA (1995)
- US and Canada Albacore treaty

Evidence given by stock effort monitoring programs, and stock assessment outputs, indicates that tools in use to limit fishing effort are effective in achieving exploitation levels required (F =

0.75) by management.

Scores for MSC Component 1.2: Harvest Strategy (from GTCL 2010)

Performance Indicators	Rating	Justification
1.2.1 Harvest Strategy		95; Harvest strategy is responsive to the state of the stock and is working in achieving its objectives
1.2.2 Harvest Control Rules and Tools		80; Well defined harvest control rules that take into account uncertainties, tools used are effective
1.2.3 Information/Monitoring		100; All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of the inherent uncertainties in the information and the robustness of assessment and management to this uncertainty
1.2.4 Assessment of Stock Status		100; The assessment is appropriate for the stock and for the harvest control rule and takes into account the major features relevant to the biology of the species and the nature of the fishery

MSC Principle 2: Environment

Retained Species

Troll and Jig

[From GTCL 2010]: The US FMP requires all commercial vessels to maintain and submit logbooks to NMFS (US HMS FMP). Albacore troll vessels catch minor amounts of other non targeted pelagic fish species that are usually caught during transit to or from the fishing grounds and may be retained. The most common species that are incidentally caught include skipjack tuna (*Katsuwonus pelamis*), mahi mahi (*Coryphaena hippurus*), yellowtail (*Seriola lalandi*), Eastern Pacific bonito (*Sarda chiliensis*), bigeye tuna (*Thunnus obesus*), and bluefin tuna (*Thunnus thynnus*) (Childers and Betcher, 2008 – NOAA Southwest Fisheries Science Center) and incidental catches of these species are typically very low (ISC 2009/Annex 6). No 'main' retained species which are caught during fishing operations are known to occur in the fishery. Trolling vessels are known to use frozen anchovies on occasion to attract albacore to the artificial jigs/fishing lures. No quantitative data are available on the amount of anchovies used in this manner but the quantities are considered to be small and insignificant in terms of impact on the anchovy stock. No 'main' retained species therefore occur and the fishery scores 100 for component Retained species (Point 7.2.3 in the MSC guidance document).

Scores for MSC Component 2.1: Retained Catch, troll and jig (from GTCL 2010)

Performance Indicators	Rating	Justification
2.1.1 Outcome		100; No 'main' retained species
2.1.2 Management		100; No 'main' retained species, thus this category is not applicable.
2.1.3 Information		100; No 'main' retained species occur, thus this category is not applicable

Pole and Line

[From GTCL 2010]: Albacore pole & line fisheries are acknowledged to have very low levels of bycatch species with a documented average discard rate of 0.1% in global pole & line fisheries for tuna and other highly migratory species (FAO 2005). Data on retained species caught during fishing operations are collected by US mandatory logbook, and onboard observers collected bycatch data from US pole & line vessels between 2004 – 2006 which verified the occurrence of insignificant levels (less than 1%) of overall bycatch (retained and/or discarded non target species) in the Pacific albacore fishery (NMFS 2007). The quantities of non target species which are retained onboard can be considered as minor given the low overall observed bycatch rate (retained and/or discarded non target species) and no main retained species, caught during fishing operations, occur in the fishery.

Live anchovies are, however, retained onboard as bait in the pole and line fishery and can be considered as a 'main' retained species. Northern anchovy is a monitored species under the US Coastal Pelagic Species (CPS) Fisheries Management Plan (FMP). Most of the US landings come from California (PFMC 2008). The recommended default Maximum Sustainable Yield (MSY) control rule gives an Allowable Biological Catch (ABC) for the entire Northern Anchovy - northern sub population of 25% of the MSY catch but MSY has not been estimated in recent years as a stock assessment has not been deemed required under the monitoring program (PFMC 2009). The stock is considered to be sustainable with minimal impact from harvest for the live bait fishery (pers. Comm. Mike Burner, Staff Officer Pacific Fisheries Management Council (PFMC)). Quantitative evidence is not available which demonstrate that the stock is within biological limits. Strong justification exists, however, in terms of extensive monitoring of landings, larval abundance, environmental variables (pers. Comm. Mike Burner, PFMC) and the existence of an extensive framework on 'Point of Concern' which triggers full stock assessment if required (PFMC 2009), of very low risk of serious or irreversible harm to the stock.

There is a strategy in place for managing Northern anchovy under the Coastal Pelagic Species Fishery Management Plan; the annual SAFE report includes all available information that may be used to determine if a point- of-concern exists e.g. overfishing or if a stock should be considered for Active management. Active management is not currently required for the Northern Anchovy stock. The

California Department of Fish and Wildlife (CDFW) operates a Live Bait Log for live bait fishers and an extensive time series extending back over 40 years on anchovy landings is used in monitoring the fishery (PFMC 2008). Therefore the strategy is based on information directly

about the fishery and 'testing' under evaluation by the Pacific Fishery Management Council supports 'high confidence' that the strategy will work. Monitored fisheries data provide 'clear evidence' that the strategy is being 'implemented successfully' and there is some evidence from historical fisheries data that the strategy is 'achieving its overall objective' which is sustainability of the stock.

Scores for MSC Component 2.1: Retained Catch, pole and line (from GTCL 2010)

Performance Indicators	Rating	Justification
2.1.1 Outcome		90; Low levels of retained species
2.1.2 Management		100; Main retained species is managed under the CPS FMP
2.1.3 Information		100; Accurate and verifiable information is available on the catch of all retained species and the consequences for the status of affected populations.

Bycatch Species

Troll and Jig

[From GTCL 2010]: The US FMP requires all commercial vessels to maintain and submit logbooks to NMFS. Albacore troll vessels catch minor amounts of other pelagic fish species that are usually caught during transit to or from the fishing grounds. The most common species that are incidentally caught include skipjack tuna (*Katsuwonus pelamis*), mahi mahi (*Coryphaena hippurus*), yellowtail (*Seriola lalandi*), Eastern Pacific bonito (*Sarda chiliensis*), bigeye tuna (*Thunnus obesus*), and bluefin tuna (*Thunnus thynnus*) (Childers and Betcher 2010) and incidental catches of these species are typically very low (ISC, 2009/Annex 6). Fishermen generally use barbless hooks as this method speeds up fishing operations and fish are landed individually so bycatch fish may be returned alive. NMFS contracted observers collected bycatch data from US troll vessels between 2004 – 2006 which verified the occurrence of insignificant levels of bycatch in the Pacific albacore fishery (NMFS 2007). No 'main' bycatch species are known to occur, bycatch is exceptionally rare and negligible in its impact and the fishery, therefore, meets SG 100.

Scores for MSC Component 2.2: Bycatch, troll and jig (from GTCL 2010)

Performance Indicators	Rating	Justification
2.2.1 Outcome		100; No 'main' bycatch species
2.2.2 Management		100; No 'main' bycatch species, thus this category is not applicable.
2.2.3 Information		90; There is no ongoing observer coverage

Pole and Line

[From GTCL 2010]: Albacore pole & line fisheries are acknowledged to have very low levels of bycatch species with a documented average discard rate of 0.1% in global pole & line fisheries for tuna and other highly migratory species (FAO 2005). Data on bycatch are collected by US mandatory logbook and onboard observers collected bycatch data from US pole and line vessels between 2004 – 2006 which verified the occurrence of insignificant levels of bycatch in the Pacific albacore fishery (NMFS 2007). No 'main' bycatch species are known to occur, bycatch is exceptionally rare and negligible in its impact and the fishery, therefore, meets SG 100.

Scores for MSC Component 2.2: Bycatch, pole and line (from GTCL 2010)

Performance Indicators	Rating	Justification
2.2.1 Outcome		100; No 'main' bycatch species
2.2.2 Management		100; No 'main' bycatch species, thus this category is not applicable.
2.2.3 Information		90; There is no ongoing observer coverage

Endangered, Threatened, & Protected Species

Troll and Jig

[From GTCL 2010]: The US is subject to international requirements on the protection of ETP species under the CITES/Washington Convention on International Trade in Endangered Species of Wild Fauna and Flora and national legislation such as the Endangered Species Act, the Marine Mammal Protection Act, and the Migratory Bird Treaty Act (NMFS 2009). Mandatory logbook data provided by US fishermen includes provision of data on any ETP species and none were reported in 2007 (Childers and Betcher 2010). US independent observer data from the same fishery do not show catch of any ETP species (NMFS 2007). All fish are landed individually on barbless hooks (http://wfoa-tuna.org/boats/) so if an incidental catch event of an ETP species occurs the animal may be returned alive. No catch of ETPs was reported in independent observer reports. This suggests there is a high degree of certainty that the effects of the fishery are within limits of national and international requirements for protection of ETP species. There is a high degree of confidence that there are no significant detrimental effects (direct and indirect) of the fishery on ETP species. The fishery meets all issues of SG100 and scores 100 (PI 2.3.1).

The HMS FMP final rule adopts measures to minimize interactions of HMS gears with protected species and to ensure that the fisheries are operating consistent with federal law. These measures include time and area closures, gear requirements, and safe handling and release techniques for protected seabirds and sea turtles. Protected species interactions for gears other than drift gillnet and longline fisheries are not major issues (PFMC 2007) US fishermen are obliged to complete mandatory logbooks (PFMC 2007) and provision of data on ETP species is included. These data are used to address International and National requirements. Neither US logbook data (Childers and Betcher 2010) nor independent observer data (NMFS 2007) show catch of any ETP species. All fish are landed individually and barbless hooks are used so if an

incidental catch event of an ETP species occurs the animal may be returned alive. Logbook data verified by observer data, combined with the practice of using barbless hooks permitting release of non target species alive, represents a strategy in place for managing the fisher's impact on ETP species. Independent observer data provides an objective basis that the strategy will work. This is based on some information about the fishery. There is evidence from logbook data that the strategy is being implemented successfully. Therefore all issues in SG80 are met.

In the context of exceptionally rare incidences of ETP species being caught in this fishery, a comprehensive strategy can be considered to be in place in terms of monitoring through provision of mandatory log book data, and the use of barbless hooks as a measure to improve the mortality of returned species. US fishermen also have detailed guidelines on safe handing and release methods to minimize mortality of ETP species (PFMC 2007) so the strategy achieves 'above' national and international requirements for the protection of ETP species so the first issue of SG is met. Comprehensive independent monitoring data are not available however so a quantitative analysis that supports high confidence that the strategy will work is not possible. The lack of ongoing independent monitoring means that clear evidence that the strategy is being successfully implemented is not available. On this basis troll & jig and pole & line score 85 for this PI (2.3.2).

Scores for MSC Component 2.3: Endangered, Threatened, & Protected Species, troll and jig (from GTCL 2010)

Performance Indicators	Rating	Justification
2.3.1 Outcome		100; No ETP bycatch
2.3.2 Management		85; No ongoing independent monitoring
2.3.3 Information		80; No ongoing independent monitoring

Pole and Line

See section above for troll and jig.

Scores for MSC Component 2.3: Endangered, Threatened, & Protected Species, pole and line (from GTCL 2010)

Performance Indicators	Rating	Justification
2.3.1 Outcome		100; No ETP bycatch
2.3.2 Management		85; No ongoing independent monitoring
2.3.3 Information		80; No ongoing independent monitoring

Habitat

Troll and Jig

[From GTCL 2010]: Trolling for albacore tuna is carried out by towing up to 14 artificial jigs on individual lines of monofilament in the epipelagic zone of the open ocean (Dotson 1980). No

contact is made with the seabed and contact with the epipelagic zone is negligible because of the minimal dimensions of the fishing gear. Oceanic pelagic species such as albacore tuna are migratory and spend the majority of their lives in deep waters offshore, typically beyond the continental shelf in waters deeper than 100m. Based on limited data available for oceanic pelagic species, benthic-pelagic linkages are predictably weak (Grober-Dunsmore et al. 2008). Evidence exists therefore that the fishery is highly unlikely to reduce habitat structure and function to the point where there would be serious or irreversible harm.

Evidence exists that the fishery is highly unlikely to reduce habitat structure and function to the point where there would be serious or irreversible harm. Therefore a management strategy is not required and the fishery scores 100 under this PI.

Scores for MSC Component 2.4: Habitat, troll and jig (from GTCL 2010)

Performance Indicators	Rating	Justification
2.4.1 Outcome		100; Unlikely to cause irreversible harm
2.4.2 Management		100; Management strategy not required
2.4.3 Information		100; Geographic range of fishery is well documented

Pole and Line

[From GTCL 2010]: Pole & line fishing for albacore tuna is carried out by deploying a single baited hook at the end of a leader of heavy monofilament at the end of a fishing pole in the epipelagic zone of the open ocean. No contact is made with the seabed and contact with the epipelagic zone is negligible because of the minimal dimensions of the fishing gear. Oceanic pelagic species such as albacore tuna are migratory and spend the majority of their lives in deep waters offshore, typically beyond the continental shelf in waters deeper than 100m. Based on limited data available for oceanic pelagic species, benthic-pelagic linkages are predictably weak (Grober-Dunsmore et al 2008). Evidence exists therefore that the fishery is highly unlikely to reduce habitat structure and function to the point where there would be serious or irreversible harm.

Evidence exists that the fishery is highly unlikely to reduce habitat structure and function to the point where there would be serious or irreversible harm. Therefore a management strategy is not required and the fishery scores 100 under this PI.

Scores for MSC Component 2.4: Habitat, pole and line (from GTCL 2010)

Performance Indicators	Rating	Justification
2.4.1 Outcome		100; Unlikely to cause irreversible harm
2.4.2 Management		100; Management strategy not required
2.4.3 Information		100; Geographic range of fishery is well documented

Ecosystem

[From GTCL 2010]: No major impacts have been identified in relation to retained species, bycatch, ETP species and habitat. Key ecosystem elements relative to the scale and intensity of the trolling fishery are, therefore, restricted to the target species, albacore tuna. Key elements which therefore need to be considered are: depletion of top predators and tropic cascade caused by depletion of albacore as a prey/forage species, trophic cascade effects caused by depletion of albacore as a predator, and changes in genetic diversity of albacore caused by selective fishing. Information on the effects on size composition and species biodiversity of the ecological community relates specifically in this case to the effects of fishing on albacore tuna and trophic cascade analyses for this species.

Extensive research has been carried out on albacore tuna as a top predator in Pacific tuna ecosystem and trophic status studies which primarily use the Ecopath with Ecosim model (Cox et al. 2002a, Cox et al. 2002b, Hinke et al. 2004, Sibert et al. 2006). Albacore tuna is not considered to be a common forage species and the body of research which considers albacore tuna as a top predator, infers that the fishery for albacore tuna and therefore removal of a portion of the stock as a potential forage species, is highly unlikely to adversely affect the diet of other species.

A number of studies have occurred on albacore diet since 1949, and diet has remained stable over this period. Despite a recent resurgence of Pacific sardine, only Northern anchovy and Pacific saury consistently have been important prey. The results support theoretical predictions of optimal foraging models that albacore prefer cold, near –shore waters containing anchovy and saury while minimizing time in warmer, offshore habitat of sardine. An estimated 0.1% to 5% of anchovy recruitment biomass was removed annually by albacore tuna from 2005 to 2006 and research has shown that top-down impacts of predation potentially occur, that albacore and anchovy interact strongly and populations may be sensitive to changes in the other (Glaser 2009). Extensive monitoring of the anchovy stock has shown the stock to be in good condition and recruitment/abundance is heavily influenced by oceanic climatic changes (PFMC 2008, pers. Comm. Mike Burner, PFMC). Saury abundance is also heavily influenced by oceanic climatic changes (Tian et al. 2002). Although top-down impacts of predation potentially occurs on Northern anchovy and Pacific saury, it is highly likely that these impacts are significantly outweighed by the effects of oceanic climatic conditions. This infers that the albacore fishery and therefore removal of a portion of the stock, is highly unlikely to significantly alter abundance of the main prey species.

Most stock assessments include the implicit assumption that an overfished resource will revert to its original status, the “virgin stock”, if fishing is discontinued. It now appears, however, that ‘severe overfishing’ can produce irreversible consequences (in terms of genetic diversity), which may be due to the elimination of one or more sub-populations (FAO 2001). Analysis of stock status in P1 of this report has shown that the Pacific albacore tuna stock is not considered to be overfished and therefore genetic diversity of the overall population is unlikely to change due to current levels of fishing effort. In addition, the highly migratory behaviour of albacore tuna (Kohin et al. 2005), which results in wide spread dispersion throughout the Pacific should prevent sub populations from being overfished. This infers that fishing effort is highly unlikely to disrupt the genetic diversity of albacore tuna. The low impact of albacore tuna on other species in terms of trophic cascade as previously described in Principle 2 of this assessment, infers that the genetic diversity of tropic related species is also highly unlikely to be disrupted.

Based on the information provided above, there is evidence that the albacore fishery is highly

Scores for MSC Component 2.5: Ecosystem (from GTCL 2010)

Performance Indicators	Rating	Justification
2.5.1 Outcome		100; Unlikely to disrupt key elements to ecosystem structure
2.5.2 Management		100; No impact identified, thus no management strategy is needed
2.5.3 Information		100; Evidence is available that shows the fishery is unlikely to disrupt the ecosystem

unlikely to disrupt the relevant key elements (predator – prey, prey – predator relationships and genetic diversity) underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.

MSC Principle 3: Management System

Governance and Policy

[From GTCL 2010]: The Magnuson-Stevens Fishery Conservation and Management Act (as amended through 2008) is the principal law governing marine fisheries in the United States. It was originally adopted to extend control of U.S. waters to 200 nautical miles in the ocean; to phase out foreign fishing activities within this zone and to conserve and manage fishery resources.

The operational framework for the North Pacific albacore tuna fishery is generally consistent with local, national and international laws or standards. Evidence of this is provided by The Magnuson-Stevens Fishery Conservation and Management Act and the Fishery Management Plan for highly migratory species, the High Seas Fishing Compliance Act, the Tuna Conventions Act, the Canada/USA Treaty, and membership in the WCPFC and the IATTC. Other evidence that demonstrate that the USA is consistent with international laws or standards include; UN Convention on the Law of the Sea (1982), Rio Declaration (1992), FAO Code of Conduct for Responsible Fisheries (1995), UN Straddling Stocks Agreement UNFA (1995).

Evidence of the existence of a management system that incorporates transparent mechanism for the resolution of legal disputes, effective in dealing with most issues and that is appropriate to the context of the fishery is provided in the FMP. Section 1.3 of the FMP states “The United States shall cooperate directly or through appropriate international organizations with those nations involved in fisheries for highly migratory species with a view to ensuring conservation and shall promote the achievement of optimum yield of such species throughout their range, both within and beyond the exclusive economic zone.” The National Court provides the ultimate system for resolution of domestic disputes. Also Section 1.3 of the FMP provides evidence of the existence of a system to comply in a timely fashion with binding judicial decisions arising from any legal challenges Section 6 of the FMP contain mechanisms to formally commit to the legal rights created explicitly or established by custom of people dependent on fishing for food: “Pacific Coast treaty Indian tribes have treaty rights to harvest HMS in their usual and accustomed fishing areas in U.S. waters.”

The consultative process for North PACIFIC Albacore is extensive at both the scientific and management levels. First, the ALBWG of the ISC generates the primary assessments. The International Scientific Committee (ISC) is a formal scientific body made up of scientists from countries throughout North Pacific which reviews tuna assessments and research in the North Pacific. In the USA the consultation process is described in the Fisheries Management Plan for Highly Migratory Species. The consultation process provides evidence that organizations and individuals involved in the management process have a say in the proceedings. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction. Functions, roles and responsibilities are defined in the terms of reference of PFMC bodies and the international Committees. The PFMC process provides opportunity and encouragement for parties involved in the albacore tuna fishery to express their views. Parties can provide briefs to appropriate PFMC Committees. The HMS FMP provides the regulatory mechanisms needed for the US albacore fishery and the mechanisms for advising the US on negotiations for access rights with other countries (Canada). The commissions formulate overarching management regulations based upon recommendations from scientific committees or staff. Regulations are then implemented by individual member and cooperating countries. The USA is a member country of the WCPFC and IATTC.

Scores for MSC Component 3.1: Governance and Policy (from GTCL 2010)

Performance Indicators	Rating	Justification
3.1.1 Legal and/or Customary Framework		90; The management system is generally consistent with local, national or international laws or standards that are aimed at achieving sustainable fisheries in accordance with MSC Principles 1 and 2.
3.1.2 Consultation, Roles and responsibilities		100; The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information and explains how it is used or not used.
3.1.3 Long-term Objectives		100; Magnuson-Stevens Act and FMPs
3.1.4 Incentives for Sustainable Fishing		80; The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2 and seeks to ensure that negative incentives do not arise.

Fishery Specific Management System

[From PFMC 2011]: In California, A general resident or non-resident commercial fishing license and a current California Department of Fish and Game (CDFG) vessel registration are required to catch and land albacore. Additionally, the HMS FMP requires a federal permit with a surface hook-and-line gear endorsement for all U.S. commercial and recreational charter fishing vessels

that fish for HMS within the West Coast exclusive economic zone (EEZ, 3–200 nautical miles) and for U.S. vessels that pursue HMS on the high seas (seaward of the EEZ) and land their catch in California, Oregon, or Washington.

Enforcement of fishing regulations is conducted in state waters by CDFW's Law Enforcement Division and in federal waters by NOAA's Office of Law Enforcement. Additionally tools such as port sampling, logbooks, and observer coverage are used to monitor catch and ensure vessels have the correct permits for the catch they are landing. Violators are prosecuted under the law. There is no evidence of systemic non-compliance.

Please see the Harvest Strategy section under Principle 1 for further information.

Scores for MSC Component 3.2: Fishery Specific Management System (from GTCL 2010)

Performance Indicators	Rating	Justification
3.2.1 Fishery Specific Objectives		100; HMS FMP
3.2.2 Decision-making Processes		95; Established decision-making processes use the precautionary approach and respond to important issues that may arise
3.2.3 Compliance & Enforcement		95; An enforcement system exists and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.
3.2.4 Research Plan		90; HMS FMP
3.2.5 Management Performance Evaluation		80; The fishery has in place mechanisms to evaluate key parts of the management system and is subject to regular internal and occasional external review.

California Specific Requirements

The California voluntary sustainable seafood program requires fisheries seeking certification to meet California specific standards in addition to the standards and requirements of the Marine Stewardship Council (MSC) sustainable fisheries certification program. These include:

1. Higher scores (80 instead of 60) for two performance indicators (PI) of the MSC program: "Stock Status" (PI 1.1.1) and "By-catch of Endangered, Threatened, or Protected (ETP) Species" (PI 2.3.1). These two PIs are highlighted in the report.

2. Additional independent scientific review: The OPC Science Advisory Team will be engaged in the certification process through early consultation in reviewing minimum eligibility criteria, and review of the MSC-required pre-assessments and full assessments. The reviews will be conducted in addition to MSC's peer review, thus bringing additional credibility, transparency,

and independence to California's certification process.

3. Additional traceability components: The California program will develop a unique barcode for California certified sustainable fish. This barcode can be either scanned by a smart-phone or linked to a website that will reveal additional information about the fishery, and information about toxicity when available.

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Appendix A

MSC Assessment Tree			Albacore Tuna*	
			Pole and line	Troll and jig
Principle	**Component**	**Performance Indicator**	**All**	**All**
Principle 1: Health of Fish Stock	Outcome	1.1.1: Stock status		
		1.1.2: Reference points		
		1.1.3: Stock rebuilding	*Did not assess*	*Did not assess*
	Harvest Strategy (Management)	1.2.1: Harvest strategy		
		1.2.2: Harvest control rules		
		1.2.3: Info/ monitoring		
		1.2.4: Stock assessment		
Principle 2: Impact on Ecosystem	Retained species	2.1.1: Status		
		2.1.2: Mgmt strategy		
		2.1.3: Information		
	By-catch species	2.2.1: Status		
		2.2.2: Mgmt strategy		
		2.2.3: Info		
	ETP species	2.3.1: Status		
		2.3.2: Mgmt strategy		
		2.3.3: Info		
	Habitats	2.4.1: Status		
		2.4.2: Mgmt strategy		
		2.4.3: Info		
	Ecosystem	2.5.1: Status		
		2.5.2: Mgmt strategy		
		2.5.3: Info		
Principle 3: Management System	Governance & Policy	3.1.1: Legal framework		
		3.1.2: Consultation, roles, and responsibilities		
		3.1.3: Long term objectives		
		3.1.4: Incentives for sustainable fishing		
	Fishery Specific Mgmt System	3.2.1: Fishery specific objectives		
		3.2.2: Decision making process		
		3.2.3: Compliance & enforcement		
		3.2.4: Research plan		
		3.2.5: Management performance evaluation		