COOK ISLANDS TUNA LONGLINE

ANNUAL REPORT

2010

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OFFSHORE FISHERIES DIVISION

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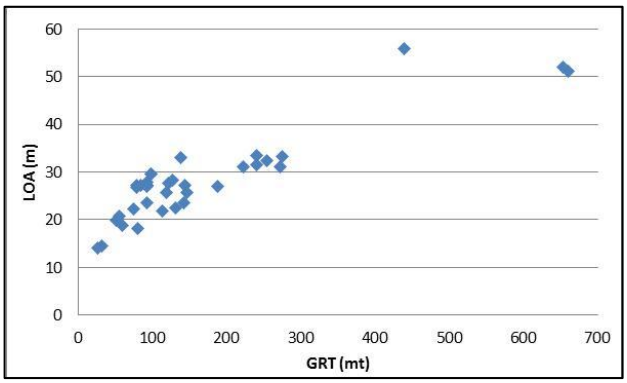
1. Introduction

Two distinct fisheries are exploited by the Cook Islands longline fishery, within the Cook Islands exclusive economic zone (CKEEZ). The two fisheries are defined by the target species, setting practices, vessel sizes and fishing operations. The two fisheries, northern and southern, are separated at 15 degrees latitude south. This delineation was determined by the fishing activities and characteristics exhibited by the two fisheries.

The northern fishery targets albacore tuna (*Thunnus alalunga*) destined for the cannery in Pago Pago, American Samoa. Targeting albacore requires deep sets generally using a minimum of 30 hpb[1], with trip length ranging between 3 to 14 weeks. Vessels seldom venture south of 15°S latitude.

Vessels operating in the southern fishery are based out of Rarotonga. These vessels generally target tuna and billfish species, practicing shallow set operations to catch a range of bycatch species valued on the local market. Exporting to USA, Japanese and New Zealand markets has diminished over the years mainly due to economic reasons.

2. Licensing and fleet structure



In late 2008 the reintroduction of licensing foreign fishing vessels was implemented. Since then several foreign fishing vessels have been licensed annually. There is no set license issuing period during the year, with license applications processed as they are received. Cook Islands registered vessels are provided licenses to fish within the Cook Islands EEZ and high seas fishing authorizations within the Western and Central Pacific Fisheries Commission (WCPFC) Convention Area.

Figure 1. Fleet capacity for vessels fishing within the Cook Islands EEZ.

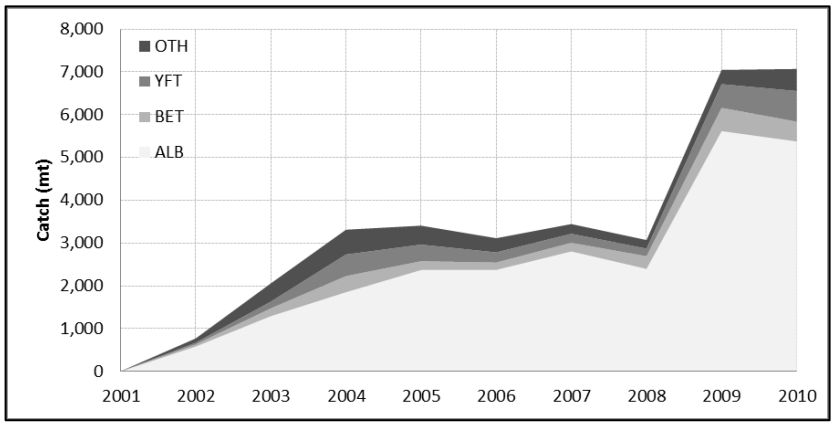
A total of thirty-seven (37) longline fishing licenses were issued in 2010, authorizing fishing within national waters beyond territorial seas (12nm), four licenses were issued to vessels operating solely in the southern fishery. In accordance with the *Marine Resources Longline Fishery Regulations 2008* (also referred to as the longline management plan), fishery effort was limited to forty fishing licenses. Although Cook Islands vessels are issued authorisations to fish on the high seas, and noting the majority of vessels operate solely in the EEZ, only three vessels were authorised to fish on the high seas without licenses for the EEZ. Five vessels that operate in the northern fishery made trips to Avatiu to unload bycatch as part of the licensing incentive scheme under the longline management plan.

The average size of vessels fishing in the EEZ in terms of length overall and gross registered tonnage is 28.3m and 164mt, respectively. Figure 1 below demonstrates the fleet capacity according to size.

As of April 2011, the new *Marine Resources Longline Fishery Regulations 2011* came in to force. This limits the albacore fishery in the northern Cooks to a cap of forty (40) longline fishing licenses, and ten (10) in the southern fishery.

3. Catch and Effort

For the purpose of this report, catch totals are estimated using data from longline fishing vessel logsheets. Reported catch estimates for 2010 are raised using Vessel Monitoring System (VMS) data, this is done when data coverage is incomplete. Due to data issues relating to mis-reporting, non-reporting and biases in reported catch estimates, and when processing of all 2010 fishery data types are completed, annual estimates will be verified and raised using unloading, port sampling, observer and port visit data.



The highest recorded total catch and effort estimates were achieved in 2010. Raised catch estimates for 2010 totalled about 7,070mt across all species. The northern fishery accounted for 96% of total in zone catch. Albacore catches continue to dominate overall catches (figure 2)

Figure 2. Accumulative total catches by target species, 2001-2010.

totalling about 5,375mt and accounting for 76% of total species composition, followed by yellowfin with total catches of 716mt and bigeye with 464mt. Other species catches totalled 515mt.

Effort continues to be concentrated in the northern fishery with 14.3 million hooks of effort exerted in 2010, and just over 1 million hooks in the southern fishery. A total of 15.3 million hooks of effort for 2010 (see figure 4), the highest on record. Prior to 2009 effort was largely concentrated in the north-west quadrant of the zone, however in recent years effort levels have increased in the north-eastern quadrant, resulting in a more even distribution of effort across the whole of the northern Cook Islands.

Post 2005 effort levels in the southern Cooks reduced in comparison to the 2002-2005 period. Decreases in the number of fishing vessels operating out of Rarotonga due to high operating

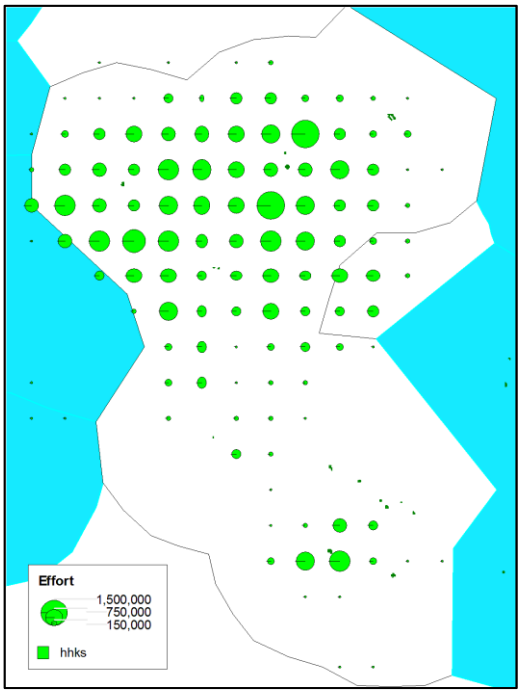


Figure 3. Longline effort distribution, 2010.

costs and the high seasonal and climatic impacts on catches contributed to this declining trend. The number of vessels operating out of Rarotonga has levelled off in recent years, with effort restrained by the relatively small sizes of these vessels, and

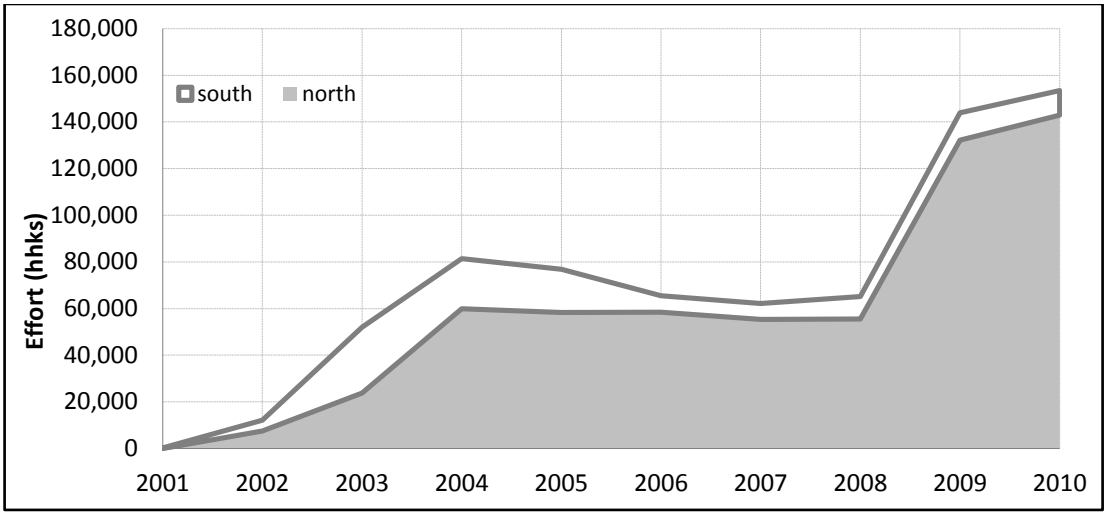


Figure 4. Total cumulated effort for the northern and southern fisheries, 2001-2010.

differences in operational aspects, such as their fishing strategy, compared to the northern fishery. Effort by these vessels continues to be concentrated within 100nm of Rarotonga. Figure 3 demonstrates 1 degree by 1 degree aggregated effort distribution for 2010.

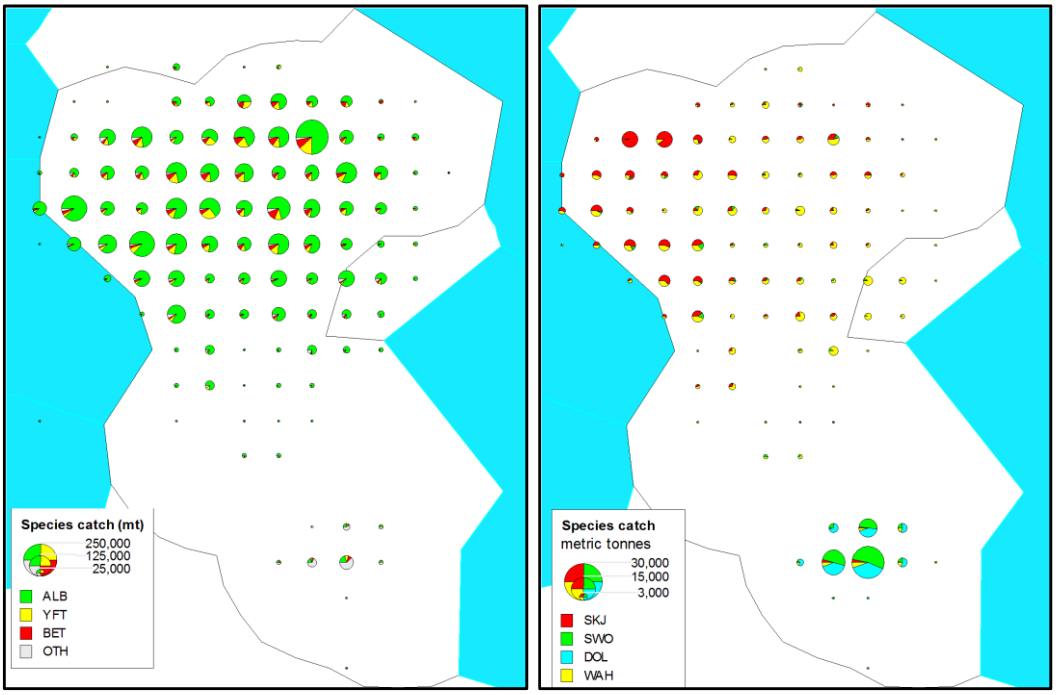


Figure 5. Catch distribution (kilograms) for target species (left) and predominant bycatch species (right), 2010.

Catch distribution (by weight in kilograms) for 2010 by the longline fishery is shown in figure 5, displayed in 1 degree by 1 degree plots, for both target and bycatch species, for both the northern and southern fisheries. The dominance of albacore catches in the northern fishery is evident in

contrast to the southern fishery that shows 'other' non-tuna species are more abundant in catches. In 2010 catches of swordfish and mahimahi dominated southern fishery catches. Although depicted in the bycatch plot in figure 5, swordfish and mahimahi are considered target species in the southern fishery, as the local market demand prefers a range of species. Bycatch species in the northern fishery are dominated by skipjack and wahoo catches.

Catch rates

Catch rates are represented as either NPUE (no/hhk = number of fish per 100 hooks of effort) or CPUE (kg/hhk = kilograms per 100 hooks of effort). In general, first quarter catch rates and total catches remain as the lowest during the year, with this period referred to as the off-season. During this period some vessels prefer to dock and carry out maintenance. In general, third quarter catches are the peak of the fishing season.

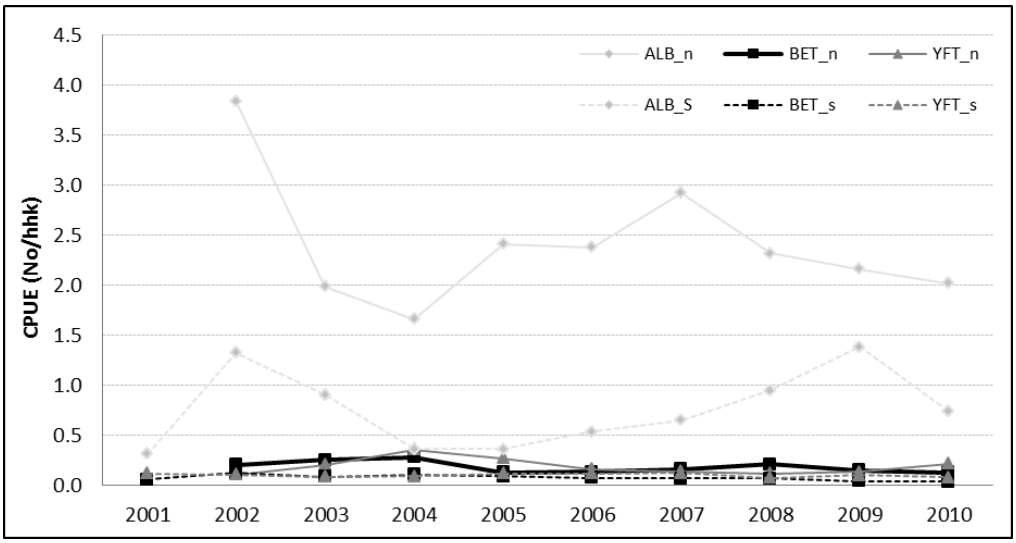


Figure 6. Average annual nominal catch rates (no/hhk) for target tuna species, for the northern (n) and southern (s) fisheries, 2001 – 2010.

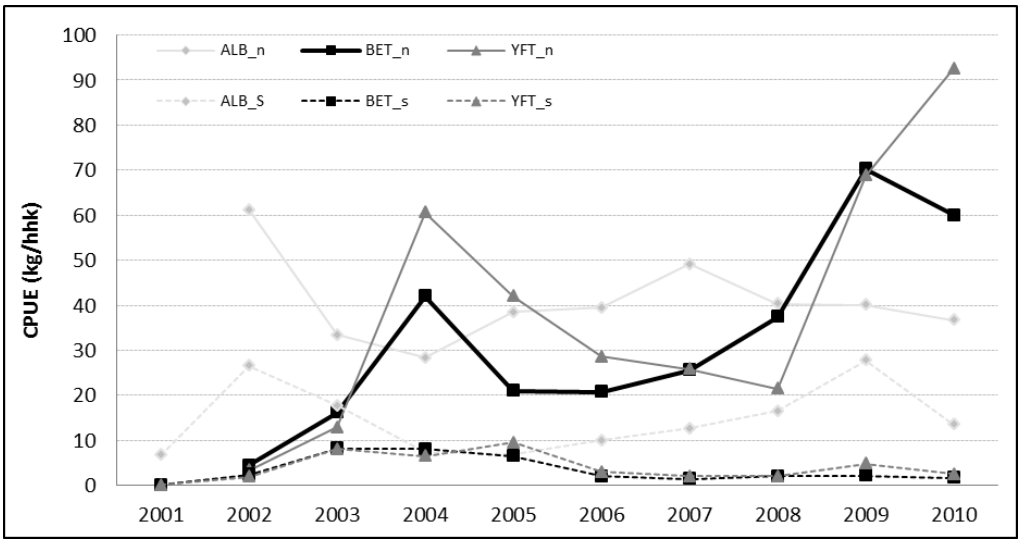


Figure 7. Average annual nominal catch rates (kg/hhk) for target tuna species, for the northern (n) and southern (s) fisheries, 2001-2010.

Nominal albacore catch rates from the northern fishery are relatively high, given it is a targeted fishery and when compared to other areas in the Pacific. Figure 6 shows the annual average nominal catch rate trends between 2001 and 2010 in no/hhk. Earlier in the time series albacore catch rates declined quickly as would be expected in an unfished or lightly fished fishery. It should also be noted that no fishing activities were carried out in the northern fishery in the years 2000 and 2001 due to the foreign fishing license moratorium imposed by Government to encourage the development of the domestic fishing industry. Since then average annual nominal albacore catch rates have remained between 2 and 3 no/hhk.

Strong seasonal effects are prominent in the southern fishery, and catch rates normally begin increasing in March indicating the start of the season. Southern albacore catch rate trends are consistent with overall targeting practices for this fishery between 2001 and 2010. Initial targeting was deep for albacore and bigeye to cater for export markets, however post 2003 targeting moved towards shallow set fishing to catch swordfish and other species that inhabit shallow waters. Recent CPUE trends are consistent with the increased proportion of deep sets compared to previous years.

Nominal catch rates for yellowfin (*Thunnus albacares*) and bigeye tuna (*Thunnus obesus*) follow similar patterns over time, increasing during periods where albacore catch rates are low, indicating targeting shifts. One important factor to note is the under reporting of catches. It is known that dumping of undesirable, less valued species is common practice to make room for albacore during fishing trips, however, discarded catches are not accurately recorded. One avenue being pursued to correct this is the use of observer data and unloadings. Factors that may influence catch rates include changes in relative stock abundance, seasonality, changes in effort in the fishery, changes in the size of fish caught and climatic influences. Changes in catch rates over time are likely due to climatic influences and stock recruitment trends.

Reported fish sizes have remained relatively stable over time. Figure 8 shows a decrease in the size of swordfish since the start of the time series. This trend coincides with the start of the domestic fishery based out of Rarotonga and the introduction of swordfish targeting practices in the early 2000's. A reduction in the initial catch size is expected when a fishery is first established, and in the case of swordfish larger females are removed from the population. Since 2004 specific swordfish targeting practices in the southern fishery have alternated with shallow targeting that allows for a range of species to be caught to meet the demand of the local market.

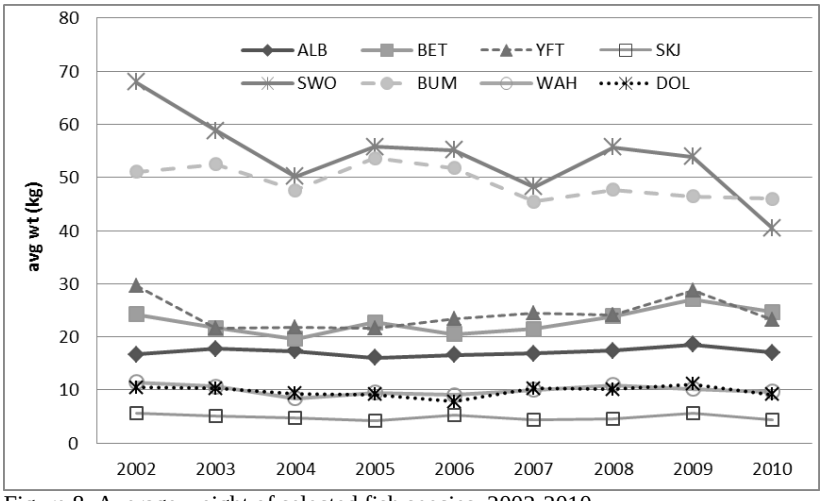


Figure 8. Average weight of selected fish species, 2002-2010

Catch and effort beyond national jurisdiction

All Cook Islands flagged longline fishing vessels issued with EEZ licenses are issued authorizations to fish on the high seas areas within the WCPFC convention area. Three vessels sought authorization to fish solely in areas beyond the EEZ and within areas of other national jurisdictions in 2010.

Since 2005 the number of vessels operating beyond the CK EEZ has increased, however effort levels remain relatively low. In 2010, a total of 19 vessels fished in areas beyond the CK EEZ with a total catch of 350.4mt. These vessels target albacore as shown in Figure 9 below. Total effort was 1.16 million hooks in 2010.

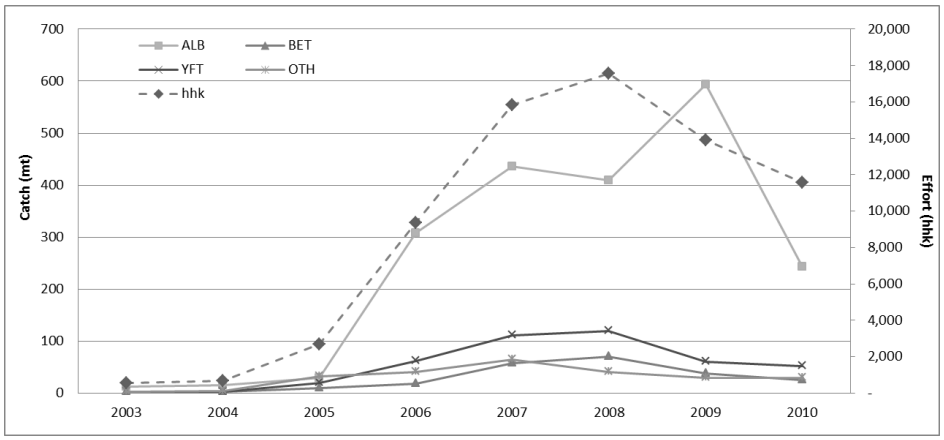


Figure 9. Catch and effort from vessels fishing beyond the CK EEZ, 2010.

Monitoring and Research Programs

i) Swordfish Tagging and Training Project

The Cook Islands swordfish tagging and training project began in September 2009. Training of local tagging technicians was carried out over a 3 week period by the pelagic tagging program coordinator for the Australian Commonwealth Scientific and Industrial Research Organization, Dr. Karen Evans. Funding for this project was provided by a US Federal Grant through the National Marine Fisheries Service (NMFS) of NOAA. Twenty Pop-up, Satellite, Archival Tags are expected to be deployed within Cook Islands waters by the end of the project.

This tagging program and the information that will be gained from it will help the Cook Islands and regional scientists attempting to determine the stock status of this species within the South Pacific. Tagging with archival tags provides invaluable information about species behaviour, movement through the water column and migration routes. Satellite archival tags also allow for greater collection of data without having to recapture the fish, unlike conventional tags.

One tag was deployed in 2010, however the program intends to recommence tag deployment in third quarter 2011.

ii. Cook Islands National Observer Program

Fisheries observers monitor and record activities and operations onboard fishing vessels, vital information that helps to describe and understand what is happening in the fishery. The National Observer Program (CINOP) carried out a fisheries observer training workshop in Apia in January 2011. Given the majority of the Cook Islands fleet are based in Pago Pago, American Samoa, logistical issues and the reluctance of Cook Islanders to work on fishing boats for extended

periods, a training workshop was held to begin using Samoan observers. This will help to increase the coverage of vessels in the northern fishery, as in the past most of the coverage was carried out on the southern fishery.

During 2010, ten observer placements were undertaken, one in the northern fishery on a vessel based in American Samoa and nine on domestic vessels based from Rarotonga. The nine placements from Rarotonga involved standard monitoring of fishing operations, swordfish tagging and biological sampling of albacore.

Observer coverage on Cook Islands licensed vessels in 2010 was approximately 2% of fishing days. With the increase in observer numbers we anticipate an increase in coverage with a target of 8% for 2011, increasing to 10% in 2012.