

SOUTH PACIFIC ALBACORE TAGGING



Nearly 3000 South Pacific albacore tuna were tagged in 2009 and 2010 in New Zealand waters. Some of these fish were recaptured close to where they were released up to three years after tagging. But several were recaptured from longline fisheries in Fiji and American Samoa in 2012.

In March 2009, a 60 cm albacore was released in New Zealand with a white tag and an injection of oxytetracycline. Three years later while processing fish at the PAFCO cannery in Levuka (Fiji), a worker found the tagged fish, which at that time measured around 90 cm. Unfortunately, the finder forgot to keep the whole fish and we were not able to collect the otoliths.



The Secretariat of the Pacific Community (SPC) Oceanic Fisheries Programme (OFP) commenced a tagging project for South Pacific albacore in 2009. The objective of the project was to obtain information on exploitation rates and movement of albacore.

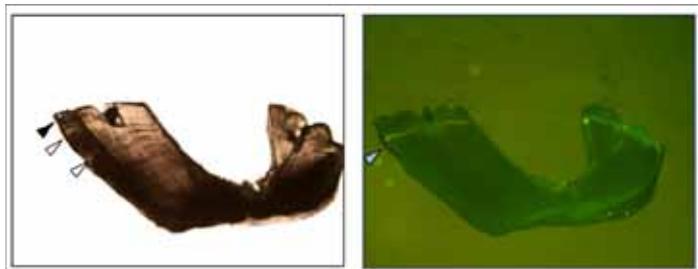
The first albacore tagging cruises were completed in 2009 along the west coast of New Zealand. Albacore were captured using typical commercial troll fishing gear, and a total of 2766 albacore were tagged and released. Commercial longline fishing gear was used to catch and tag a further 92 albacore in 2010 along the east coast of New Zealand. Each tagged albacore was measured to the nearest cm (fork length measurement) then tagged using a conventional plastic tipped tag. Each tag was inscribed with a unique five-digit number, contact details and the amount of the reward for returning tags.

During the tagging cruises, scientists also conducted an age validation experiment to help determine the age and growth rates of albacore. The age of fish can be estimated by counting the number of bands in the otoliths (ear bones) of the fish, just as one can count the growth rings in trees. However, it is important to know how often (once per year, twice per year etc.) these bands are formed to accurately estimate the age.

To determine how often these bands are formed, scientists injected 1457 tagged albacore with oxytetracycline (OTC), a harmless antibiotic that leaves a mark in the otoliths of fish at the time of injection. The otoliths are then collected from recaptured albacore that were injected with OTC, and the otoliths are examined under a microscope. Under ultraviolet light, the OTC mark appears as a distinct fluorescent line. The amount of otolith growth after the fluorescent mark allows scientists to determine how often the bands are formed in the otoliths.



Albacore that were injected with OTC were tagged with white tags, while all other albacore were tagged with yellow tags. There is a USD 20 reward for returning yellow tags and recapture information and a USD 100 reward for returning whole fish that have a white tag.



Left: Otolith section under a microscope. Arrows indicate location of growth bands. Right: otolith section viewed under ultraviolet light. Arrow indicates location of fluorescent OTC mark.

REWARDS

USD 20

YELLOW DART TAG



FORK LENGTH (cm)



USD 100
Keep the whole fish

WHITE DART TAG



FORK LENGTH (cm)



If an albacore is found with a yellow tag, remove the tag and record the information needed (see list below).

If an albacore is found with a white tag, **keep the whole fish** and record the information needed! You will receive a **reward of USD 100**.

Every time someone finds a tag and completes a tag recovery form, a reward can be claimed.

If there is an observer onboard the vessel, ask for his or her assistance before removing the tag. The observer will measure the fish and record the necessary information. You can also seek assistance from port samplers.

To claim your reward, first contact Caroline Sanchez from the Secretariat of the Pacific Community (SPC) in New Caledonia (carolines@spc.int+687 242227). You will then be directed to give the tag to SPC in Suva.

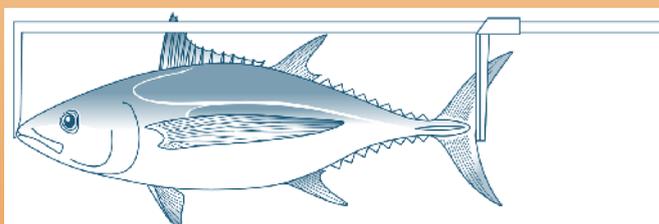
Tag recoveries may also be reported to SPC by email (tagging@spc.int), or on a Web-based form at www.spc.int/tagging. You can also download tag recovery forms from this website.



www.spc.int/tagging

Information needed:

- ➡ When was the tagged fish found?
- ➡ What were you doing when you found the tag (fishing, transshipping, unloading in port)?
- ➡ Which boat caught the fish (name + flag)?
- ➡ Where and when was the fish caught (latitude/longitude + date)?
- ➡ What is the size (length from upper jaw to the tail fork) and weight of the fish?





Tagging albacore with satellite tags

Tagging fish with conventional tags only provides information on the point of release and recapture. It does not provide information on where the fish has travelled in between or its up and down movements in the water column. To obtain more detailed information on the movement patterns of albacore, scientists at SPC tagged 19 albacore with pop-up satellite archival tags (PSATs; see picture below). The PSATs were deployed on albacore caught in New Caledonia, New Zealand and Tonga in 2010.

The PSATs were programmed to release from the fish after 352 days. Each tag recorded the depth (pressure) and water temperature every 75 seconds and light levels during dawn

and dusk periods. Data recorded by the tags while attached to the fish were transmitted to satellites when the tags detached from the fish and floated to the surface. These data were then used to examine the movement behaviour of each fish.

All of the tags that were deployed released prematurely, but some interesting results were obtained. For example, one albacore tagged in Tongan waters on the 7th July 2010 was tracked for 34 days. During this time it travelled into Fiji for about a week, before moving back into Tonga (Fig. 1). This fish spent most of the nighttime in warm, shallow (< 150 m) water and most of the daytime in cooler, deeper (150–350 m) water (Fig. 2).



● Release ● Recapture

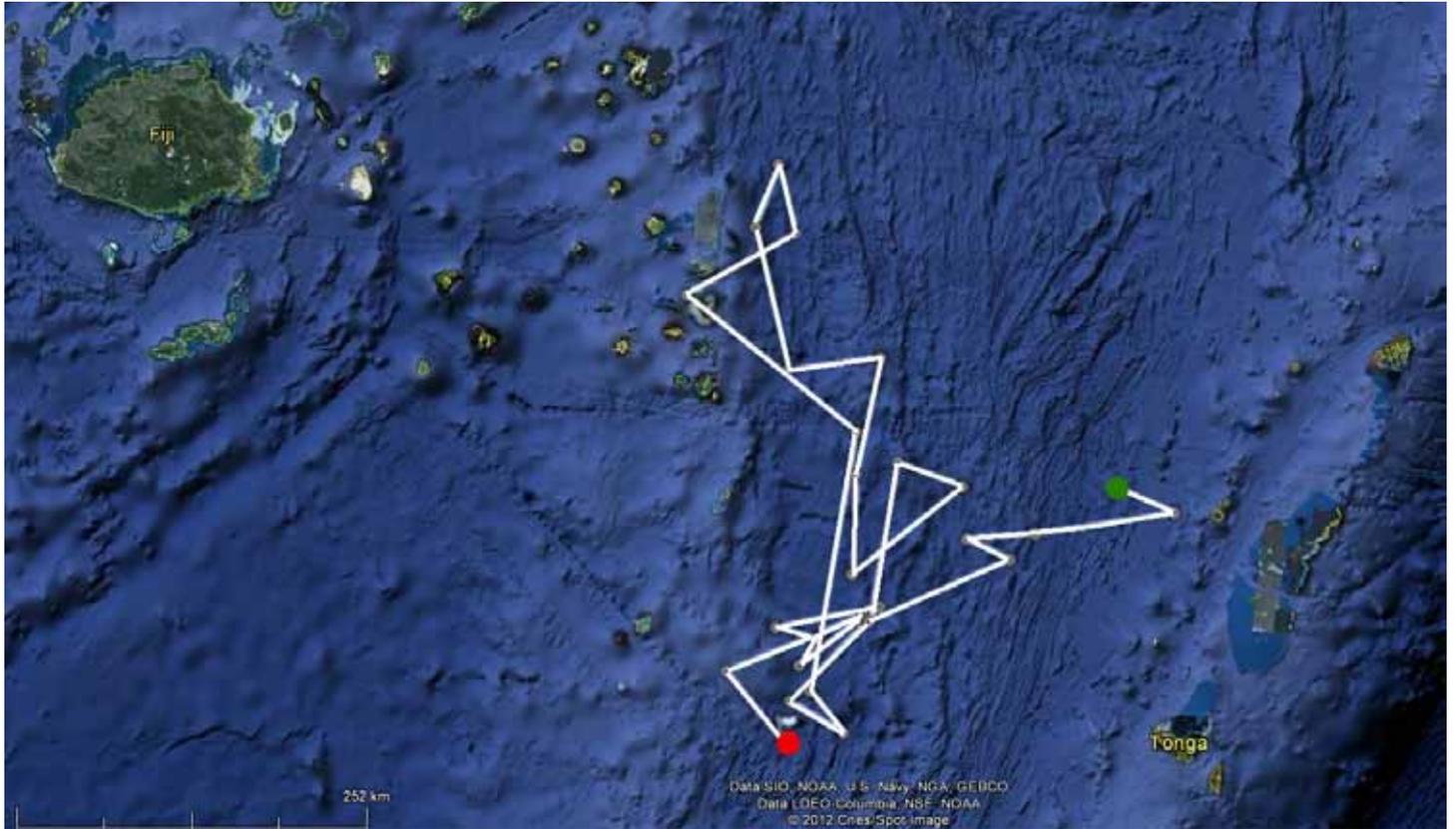


Figure 1. Estimated track for one albacore tagged in Tonga. The star indicates release location and flag indicates location of tag pop-up.

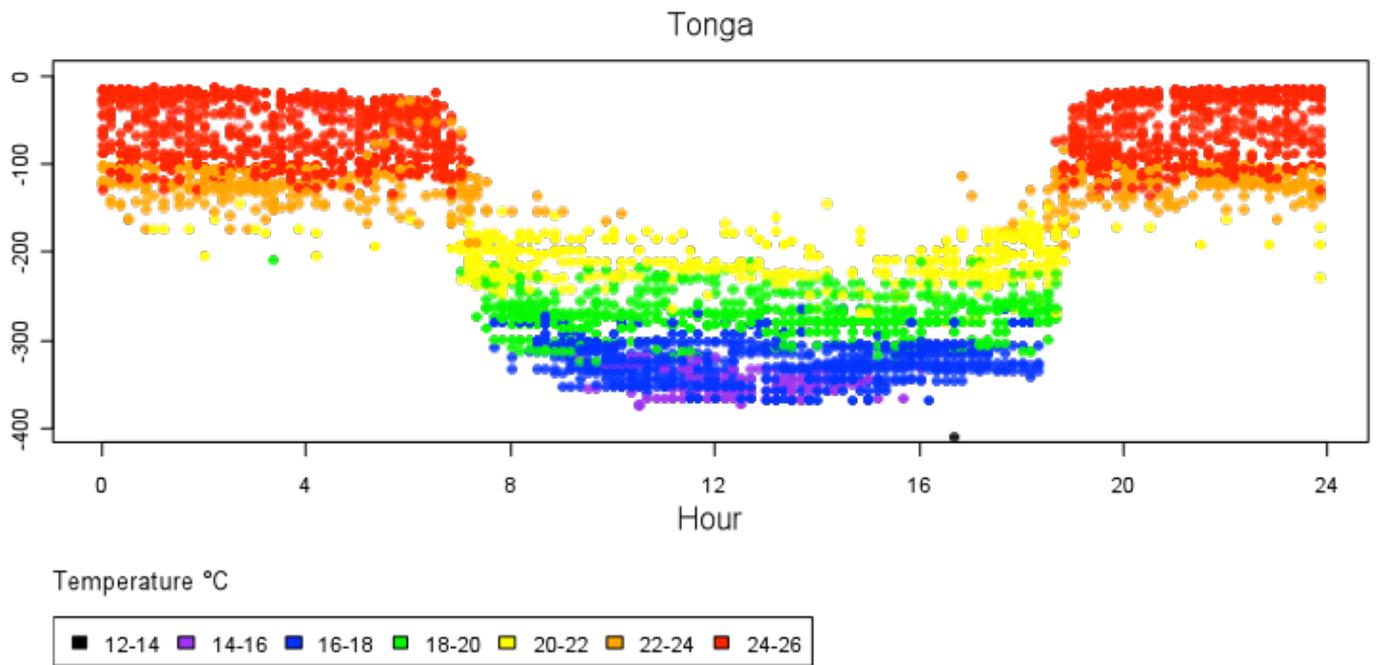


Figure 2. Daily depth and temperature data for an albacore tagged with a PSAT in Tonga.