

## REGIONAL TUNA TAGGING PROGRAMME

### Nearly 200,000 fish tagged

Tuna fisheries provide an important source of income for many Pacific Island countries and territories; therefore, obtaining high-quality scientific information on the sustainability of tuna stocks is critical for ensuring the long-term future of and the economic benefits derived from them.

Tuna tagging provides information on the movements, growth and mortality rates of tuna. The Pacific Tuna Tagging Program (PTTP), which is implemented by SPC's Oceanic Fisheries Programme (OFP), collects this information from equatorial regions of the western and central Pacific Ocean. OFP then uses this information to improve the accuracy and quality of stock assessments for its member countries.

Tuna tagging involves capturing live fish (Fig. 1), attaching a small, but visible tag to them, measuring their length, and releasing them back into the ocean. The fish are tagged and released within a few seconds of capture. Since the start of the tagging programme in 2006,

over 194,000 skipjack, bigeye and yellowfin tunas have been tagged and released. According to observed trends, over 200,000 tunas are expected to be tagged and released by mid-July 2009. Concurrently, the project has tagged tunas using two types of electronic tags — acoustic transmitting tags and archival storage tags — and over 600 fish have been released with these tags.

The project has so far used three vessels to tag fish. The pole-and-line vessel *Soltai 6*, which has limited range, has been used to tag tuna in waters of Papua New Guinea and Solomon Islands. *Soltai 105* is a long-range range pole-and-line vessel and has been used for extended tagging cruises in the exclusive economic zone (EEZs) of the Federated States of Micronesia, Kiribati, Indonesia, Marshall Islands, Palau, Philippines, Tuvalu and the high seas. The *DoubleD* is a handline vessel chartered from Hawaii and has been used to tag tuna in the central Pacific, in

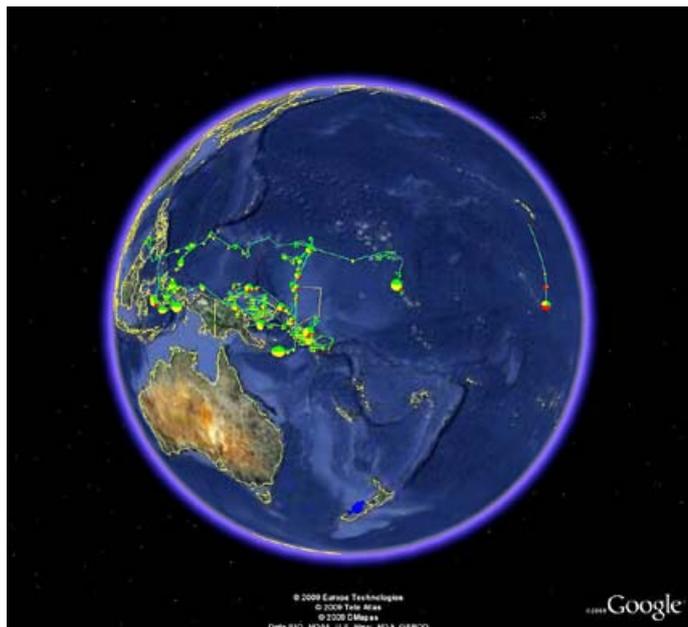
the Line Islands region of Kiribati, and in the equatorial high seas areas bordering French Polynesia north of the Marquesas Islands. Figure 2 shows the area currently covered by the PTTP and Table 1 indicates the number of fish tagged per EEZ.

As of 31 April 2009, more than 22,000 tags have been recovered and returned to SPC (Table 2). Most of these fish were tagged with yellow plastic dart tags bearing the serial numbers of the tag and the words "SPC NOUMEA – REWARD – [www.spc.int/tagging](http://www.spc.int/tagging)".

The *Soltai 105* is expected to complete its current cruise in mid-June 2009 and will begin its next cruise in mid-July 2009 which will concentrate on tagging fish in the high seas pocket between the Federated States of Micronesia, Indonesia, Palau, Solomon Islands and Papua New Guinea, as well in each of these countries' EEZs. The *DoubleD* is also expected to complete its current cruise in July and will



**Figure 1.** Triple poling a large bigeye tuna on *Soltai 105*.



**Figure 2.** Western and central Pacific tag releases (Google Maps).

**Table 1.** Tag releases by exclusive economic zone (EEZ) as of 30 April 2009.

EEZ	Tag releases
Federated States of Micronesia	11,730
Indonesia	25,197
Kiribati (Gilbert Islands)	12,783
Kiribati (Line Islands)	1,959
Marshall Islands	1,312
Palau	7,289
Philippines	1,914
Papua New Guinea	82,153
Solomon Islands	41,323
Total	185,660

**Table 2.** Tag releases and recoveries as of 30 April 2009.

Species	No. of releases	No. of recoveries	%
Skipjack	116,922	13,849	11.28%
Yellowfin	63,952	7,709	11.87%
Bigeye	4,786	967	14.61%
Total	185,660	22,525	11.59%

depart for its next cruise in October 2009, concentrating its efforts along the tropical atmosphere ocean (TAO) buoys in the central Pacific Ocean.

**TAG RECOVERY**

It is very important for the success of the project that all tag recaptures be reported to SPC. Therefore, PTTTP staff ask commercial and recreational fisherman to be on the lookout for tagged fish among your catch. If you find one, we ask that you record the following information:

- Tag number
- Species
- Capture date
- Capture location (degrees and minutes of latitude and longitude)
- Fish length (measured on a flat surface from the tip of the head to the fork in the tail)
- Set type (e.g. drifting FAD, anchored FAD, log, free school)
- Vessel name
- Finder name and address, including email address

Once you have recorded this information, the tag should be removed from the fish and stapled or taped to the paper on which you recorded the data.

Tags can be redeemed for cash rewards (10 US dollars for each conventional plastic tag) or a PTTTP polo shirt. A small number of tunas have an electronic archival tag implanted into their body cavity (Fig. 3). A sensor stalk can be seen protruding from the body of the fish. Most of these fish have also been



**Figure 3.** Electronic tag being surgically implanted by “master-tagger” David Itano.

tagged with a red conventional tag. Please **carefully** remove the archival tag from the fish and keep it with the accompanying plastic tag and data as described above. SPC will pay a reward of USD 250 for an archival tag in addition to USD 10 for any conventional tag.

SPC maintains a website for the PTTTP where tags can be reported and where further information about the tagging programme can be found. The website address is [www.spc.int/tagging/](http://www.spc.int/tagging/). Tag returns and recapture information can also be reported to [tagging@spc.int](mailto:tagging@spc.int).

Upon return to port, please post tags and accompanying information to:

Helene Ixeco  
Oceanic Fisheries Programme  
SPC, BP D5  
98848 Noumea Cedex  
New Caledonia

or give them to your local fisheries office.

**BIOLOGICAL SAMPLING**

The tagging cruises have been exceptional opportunities to conduct biological sampling, which complements the work undertaken by national observers of many countries in the region who contribute to SPC’s trophic tuna studies.

Observers collect stomach, muscle and liver samples of tuna and other pelagic fish species while observing onboard purse seiners and longliners. Collecting these samples constitutes the foundation of our pelagic ecosystem descriptive work. Examining stomach contents and chemically analysing muscle and liver samples enables us to describe the diet of different species and determine the relationships between these species. These data are included into ecosystem models, which then help us understand how the ecosystem functions by simulating the impact of fisheries management measures and environmental changes.

The tagging project has allowed us to collect additional samples from areas that have already been sampled (e.g. Papua New Guinea, Solomon Islands and

Federated States of Micronesia), and has provided an opportunity for us to collect samples in areas where fish have not previously been sampled or were only poorly sampled such as Palau or Kiribati (Fig. 4)

Since the beginning of the PTPP in 2006, the scientific team onboard *Soltai 105* has collected 3,618 stomach, muscle and liver samples (Fig. 5). Most of the fish sampled were skipjack (*Katsuwonus pelamis*) (1,796) and yellowfin (*Thunnus albacares*) (1,504), although we also collected bigeye (*T. obesus*) (140) and 178 specimens of various species such as marlin, rainbow runner (*Elagatis bipinnulata*), kawakawa (*Euthynnus affinis*) and mahi mahi (*Coryphaena hippurus*).

Moreover, we have been using a new electronic device called

the “fatmeter”, which allows us to test the fat content of fish using microwave technology that does not require chemical analysis (Fig. 6). The fat content gives us another source of information on the diet and health status of the fish, and complements the more classical stomach content examination and chemical analysis approach. This device has enabled us to test 2,277 fish so far, including 79 bigeye, 1,270 skipjack and 928 yellowfin.

Stomach content examination began in 2006 and is undertaken at SPC (Noumea) in OFP’s laboratory. In total, 1,156 stomachs have been examined, including 36 bigeye, 638 skipjack, 409 yellowfin and 73 specimens of other species. Collection and examination of stomach samples is ongoing.



**Figure 4.** Thomas Usu (Papua New Guinea) conducting onboard biological sampling.



**Figure 5.** Large yellowfin tuna stomach sample showing a whole skipjack recently eaten.



**Figure 6.** Digital fat meter reading.