

Biological Sampling Newsletter

for Observers and Port Samplers

SPC-OFP Ecosystem Monitoring and Analysis

Issue #2 – 31 March 2007

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Stomach sampling overview of the GEF-SAP project 2000-2005 &
2nd overview of stomach sampling of the GEF-OFM project 2005-2010.

Welcome to the March 2007 newsletter for the “Ecosystem monitoring and analysis” programme co-ordinated by SPC in Noumea. In this issue we provide an update to issue #1 of this newsletter on the stomach sampling undertaken to date in collaborations with the national observer programmes of the region.

STOMACH SAMPLING INFORMATION AND ECOSYSTEM MODELLING

To better understand the ecosystem that support the tuna fishery we are analysing the food habits of the tuna collected by national observer. This information will ultimately be used by fisheries managers to make more certain evaluations about the impacts that particular harvest strategies have on the ecosystem.

The work accomplished so far, first by the observers collecting the samples and then by the scientists examining the food habits of the tuna, has been assembled into an ecosystem model. In March 2007, a group of specialists gathered at SPC, Noumea to compile a large amount of data on the different species of the pelagic ecosystem to produce a model explaining the interactions between the species. The masterpiece of this model was the diet matrix that has been calculated using the stomach content information. This type of model should allow scientists and managers to estimate the impact of fishing or environmental factors on all the species of the pelagic ecosystem: tuna, sharks, marlins, wahoo... By continuing the sampling effort we will be able to improve the diet matrix and the accuracy of the model to provide better estimates.



From left to right, from back to front: David Kirby (SPC), Simon Nicol (SPC), Jeff Dambacher (CSIRO, Australia), Tom Okey (CSIRO, Australia), Tim Essington (University of Washington, USA), Bob Olson (IATTC, USA), Valerie Allain (SPC).

Ecosystem modelling workshop, 5-9 March 2007, SPC Noumea.

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RESULTS OF THE GEF-SAP PROJECT (2000-2005)

- Between 2000 and 2005, observers sampled 3100 stomachs (Figure 1 - Table 1).
- Of those 2749 stomachs have been examined, that is 29 more samples during the 1st quarter of 2007.
- 85 stomachs from New Caledonia and French Polynesia (Figure 2) remain stored in the SPC freezer and will be examined in the laboratory during the second quarter 2007.
- Lack of data did not allow us to examine 11 more samples that were sampled.
- This component of the program was funded under the under the GEF-Oceanic Fisheries Management component of the Strategic Action Programme of the Pacific Small Island Developing States (SAP)

Table 1. Number of stomach samples collected and examined during the GEF-SAP Project 2000-2005; shaded cells are the numbers that changed since the last update in January 2007.

Observer Program	Number of stomachs sampled	Number of stomachs examined, entered in the database	Number of stomachs that need to be examined	Number of sub-samples ¹ of stomachs or additional stomach not in the observer form	Number of stomachs lost, missing, rotten or without data	Stomachs entered in the database because of isotope analysis but no stomach
Cook Islands	29	29				
Fiji	65	40			25	
French Polynesia	561	480	29	12	59	
FSM	182	174			8	
FSMA	392	398		1		5
Marshall Islands	52	52				
New Caledonia	528	450	56	5	27	
Papua New Guinea	471	300			171	
Ship of Opportunity	71	75		5	1	
Solomon Islands	357	360		3		
SPC	362	360			2	
Wallis & Futuna	30	31		1		
Total	3100	2749	85	27	293	5

¹ The sub-samples of stomachs are stomachs sampled from preys found in predator stomach.

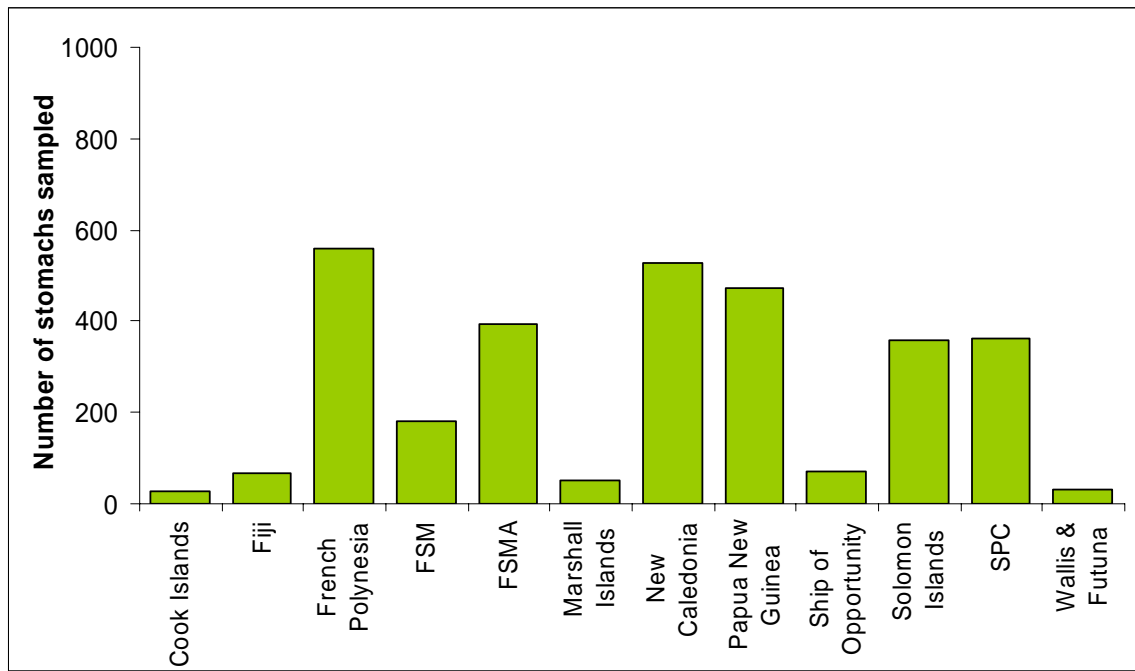


Figure 1. Number of stomachs collected by the different observer programmes during the GEF-SAP Project 2000-2005.

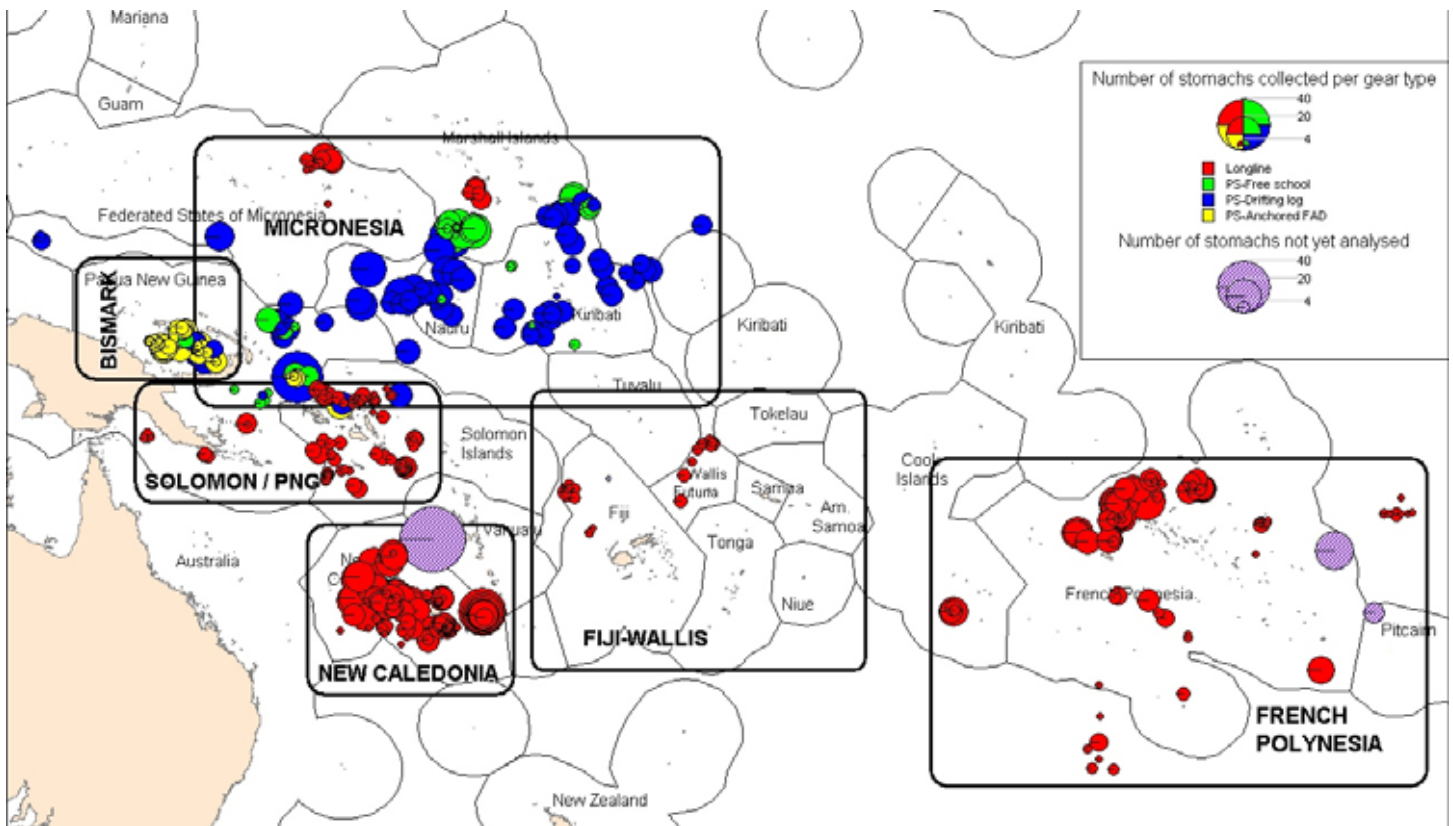


Figure 2. Geographic distribution of the samples collected/analysed and the samples collected but not yet analysed during the GEF-SAP Project 2000-2005.

2005 – 2010 PROJECT PLAN

The stomach analysis will continue in the GEF- funded project “Pacific Islands Oceanic Fisheries Management Project (OFM)” 2005 – 2010, and will contribute to answering 4 key fisheries management objectives:

1. complete the dataset of stomach samples to obtain a valid description of the trophic structure of the pelagic ecosystem,
2. collect samples from different gear types in the same area to describe the diet of different parts of the fish populations,
3. collect samples from seamounts to establish their impact on the diet of tuna and other pelagic predators,
4. collect samples around anchored FADs in the Bismarck Sea to determine their impact on the diet of tuna and other pelagic predators.

To reach these objectives the strong collaboration with the observer programmes will need to continue.



Display of the preys found in a fish stomach at the lab at SPC Noumea.

PRIORITY AREAS FOR SAMPLING IN 2006 -2010 ARE:

- Micronesia area for purse seine samples of free-school, and FAD associated schools of skipjack and large specimens of yellowfin and bigeye (more than 80 cm), bycatch specimens should also be collected.
- Micronesia area for longline samples of all tuna species and bycatch specimens.
- Bismarck Sea for purse seine anchored FAD samples of all tuna species and bycatch specimens
- Fiji- Wallis area including Tonga, Samoa, American Samoa and Cook Islands for longline samples of all tuna species and bycatch specimens
- Solomon-PNG area for longline samples of all tuna species and bycatch specimens.
- More samples from French Polynesia and New Caledonia are still required but are of a lower priority.
- Recording and reporting the presence of seamounts in the vicinity of sampling would be beneficial.

2006 – 2007 RESULTS

The second phase of the sampling started in July 2006 and observers have sampled 1571 stomach of which 356 have been analysed and entered in the database (Table 2, Figure 3).

During the last quarter Samoa started collecting samples and the Federated States of Micronesia continued their sampling effort. In Papua New Guinea, and particularly in the Bismarck Sea, SPC scientists in collaboration with Papua New Guinea observers continued the collection of samples from around FADs, seamounts and within free schools, in conjunction with the second tuna tagging cruise (Figure 4). The cruise commenced in February 2007 and will continue until May 2007.

Table 2. Number of stomach samples collected and examined during the GEF-OFM Project 2005-2010 as of 31 March 2007; shaded cells are the numbers that changed since the last update.

Observer Program	Number of stomachs sampled	Number of stomachs examined, entered in the database	Number of stomachs that need to be examined
Cook Islands	34		34
French Polynesia	105	67	39
FSM	51		51
New Caledonia	24		24
SPC ²	1344	289	1054
Samoa	13		13
Total	1571	356	1215

² PNG tagging trip

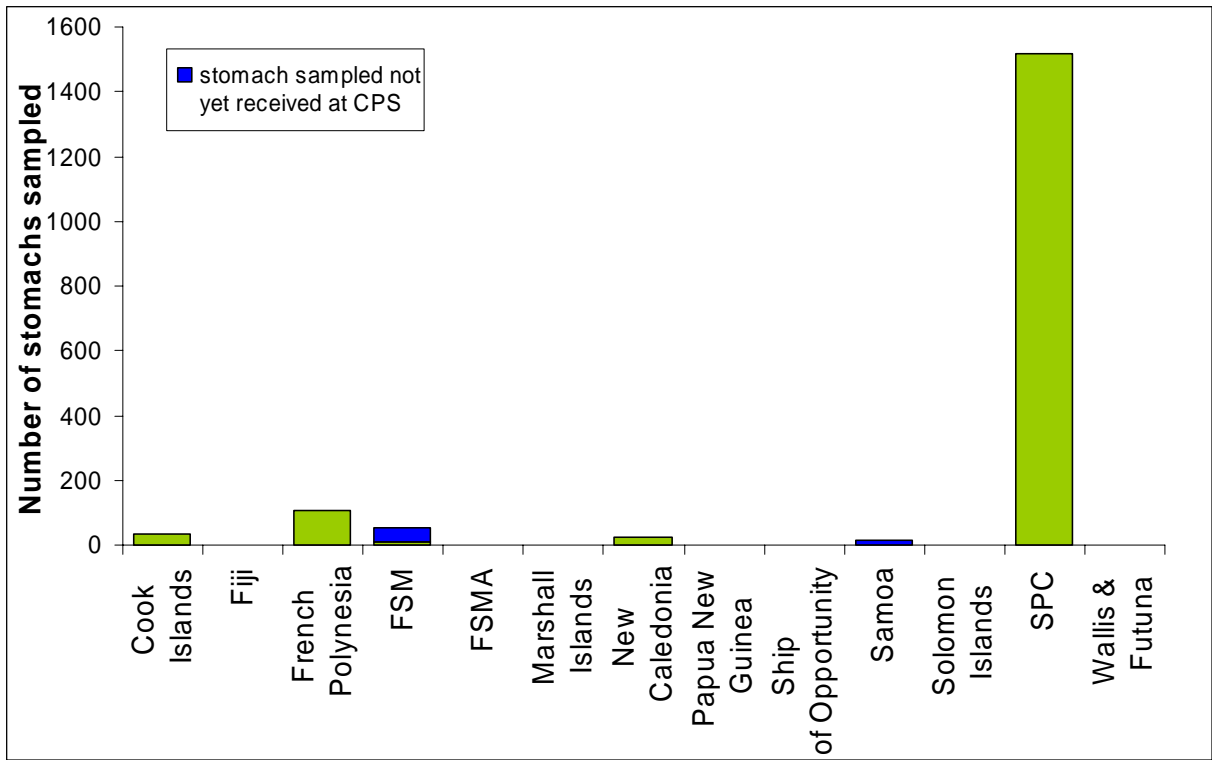


Figure 3. Number of stomachs collected by the different observer programmes during the GEF-OFM Project 2005-2010 as of 30 March 2007.

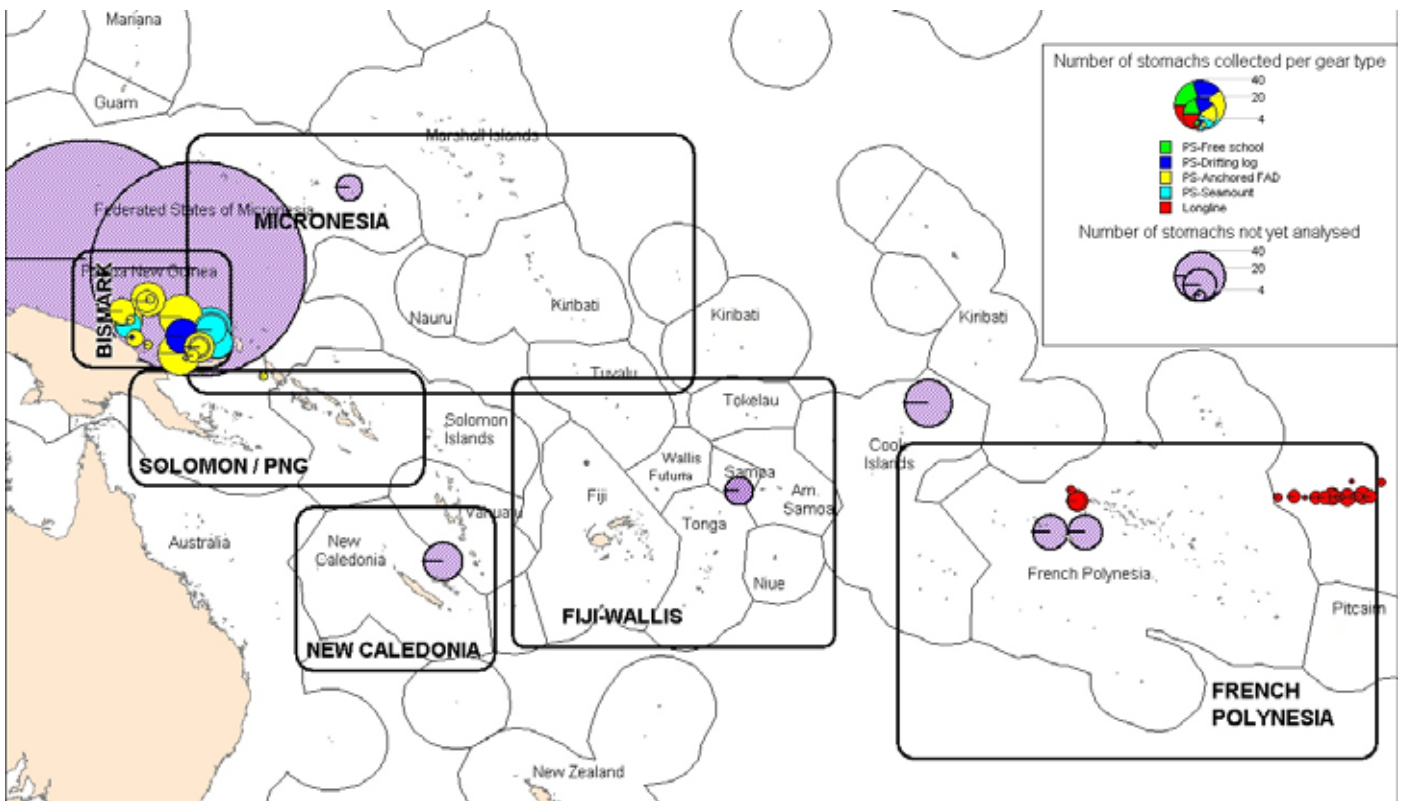


Figure 4. Geographic distribution of the samples collected/analysed and the samples collected/not yet analysed during the GEF-OFM Project 2005-2010 as of 31 March 2007.

ADDITIONAL INFORMATION

An overview of the GEF-SAP 2000-2005 sampling programme and the strategy for the new GEF-OFM 2005-2010 was sent to the observer programmes in July 2006 and this report has been presented during the Second Scientific Committee of the Western and Central Pacific Fisheries Commission in Manila in August 2006; it is available at http://www.wcpfc.int/sc2/pdf/SC2_EB_IP6.pdf.

YOUR HELP IS VITAL

The success of this project is dependent upon the efforts of the observers. If you are experiencing difficulties with collecting, storing and transporting of samples or delays in payment please contact Caroline Sanchez (carolines@spc.int), Valérie Allain (valeriea@spc.int), Peter Sharples (peterbs@spc.int) or Siosifa Fukofuka (siosifaf@spc.int) who will attempt to resolve these logistical and/or training issues.

NEXT NEWSLETTER: END OF JUNE – BEGINNING OF JULY 2007

Your comments on the content of this report are welcome, please send them to Valérie Allain (valeriea@spc.int) and/or Caroline Sanchez (carolines@spc.int).