# BIOLOGICAL SAMPLING newsletter

SPC Secretariat of the Pacific Community

SPC-OFP Ecosystem Monitoring and Analysis Section*

*Issue #18 April 2011*


## CONTENTS



Welcome to the 18th issue of *Biological Sampling Newsletter*, which provides news about the Ecosystem Monitoring and Analysis Section of the Secretariat of the Pacific Community's (SPC's) Oceanic Fisheries Programme (OFP).

In this issue we 1) look at prey commonly found in predators' stomachs, 2) provide information on a new technique to identify squids,3) give you staff news, 4) bring to your attention a rare species caught on longline, 5) present the new observer biological form, and 6) report on the training activities of trainee trainer and debriefers.

We hope you enjoy this newly designed issue of the biological sampling newsletter.

**We hope you enjoy this new issue !**


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**As in previous issues, we present some common prey species found in tuna stomachs and describe how our laboratory technicians indentify them.**

## Alepisauridae, commonly called lancetfish.

The family name Alepisauridae is derived from the Greek words 'a', 'lepis' and 'sauros', which loosely translate to 'without', 'scale' and 'lizard'.
The Alepisauridae family has two genera (*Alepisaurus* and *Omosudis*) and three species. There are some differences between these two genera.

## Size

Fish of the genus *Alepisaurus* can grow to a maximum length of 215 cm TL, but the common length is between 70 cm and 150 cm TL.
Fish of the genus *Omosudis* are much smaller. The maximum length is 23 cm TL, while the common length is 20 cm TL.

*Alepisaurus ferox*

*Alepisaurus brevirostris*

*Omosudis lowii*

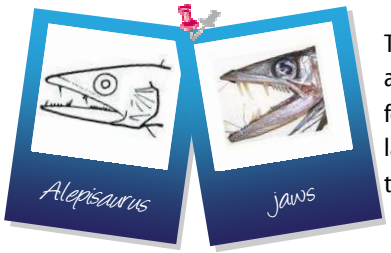
***In tuna stomachs, we mainly come across larvae, juveniles but sometimes adults that range in size from 2.5 cm to 140 cm (standard length).***

## Environment

The Alepisauridae are deep-water. Most are meso and bathypelagic (depth range : 100-1000 m). Fish of the genus *Alepisaurus* are found in most parts of the Pacific, Atlantic, and Indian oceans. Fish of the genus *Omosudis* are found worldwilde in tropical and temperate waters.

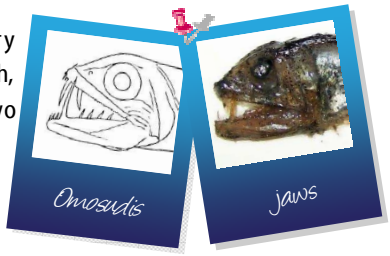
## Identification

The Alepisauridae are deep-water fish with smooth, scaleless bodies. To identify them, we first look at the jaws. The Alepisauridae have very large strong pointed teeth.




The lower jaw has one average-size tooth, then a few small teeth, then two large strong pointed teeth.

The lower jaw has one very large strong pointed tooth, and the upper jaw has two large teeth. The lower jaw is more square than that of genus *Alepisaurus*.




We can also distinguish between the two species of *Alepisaurus* by looking at their dorsal fin. *Alepisaurus ferox* usually has several dorsal rays protruding from the first dorsal fin, which starts behind the operculum. *Alepisaurus brevirostris,* on the other hand, has a rounded dorsal fin that starts in front of the operculum.

## Fishing activity

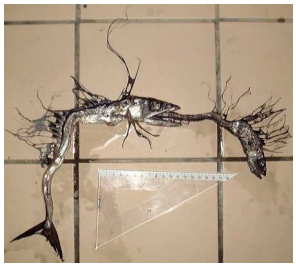
We can find all three species as predators on longline catches : often *Alepisaurus ferox*, sometimes *Alepisaurus brevirostris* and occasionally *Omosudis lowii*, which is smaller.

## Predator

Stomach analyses reveal that these fish are common prey for bigeye, albacore and yellowfin tuna, and also lancetfish themselves. Cannibalism in this species is common, in fact 25 per cent of Alepisauridae stomachs contain juveniles of this family.

An example of cannibalism :

These specimens of Alepisauridae were found in an Alepisauridae stomach.



**As you know from the previous issue, Cyndie Dupoux, laboratory assistant at SPC, travelled to the Melbourne Museum in Australia to undertake training in marine animal identification (taxonomy). She had the opportunity to work with Pr. Chung-Cheng LU and learn new methods of identifying cephalopods that we describe in this issue.**

## What are the new parameters ?

Pr. Chung-Cheng LU taught Cyndie to use two new parameters to help in the identification of digested cephalopods.

- the lower, ventral part of the beak.
- the radula, a sort of toothed tongue which lies in the mouth between the two parts of the beak and that helps the cephalopod to move food around.

Because both the radula and the beak are hard (they contain chitin, like fingernails), they are not digested or are digested very slowly. Even when the squid mantle and tentacles have been digested, the beak and radula are still present in the stomach and can be used to identify the squid.

## Where can we find them ?

The mouth is visible at the centre of the arms and in it you can see the beak (Figure 1). When you open the beak you can see the radula. It looks rough and translucid (Figure 2).

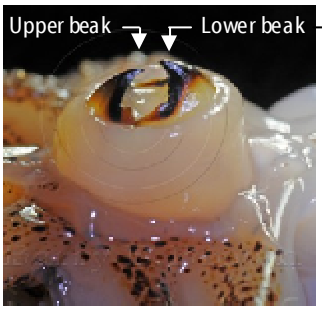



Figure 1 : Cephalopod mouth

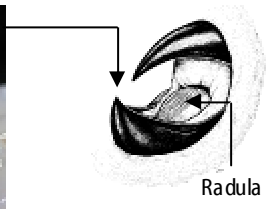



Figure 2 : Radula inside the cephalopod beak

## Zoom on the lower beak

The lower beak is the most useful part for identification, because it is the most complex part, with many different features that allow us to identify the various families. In Figure 3, you can see that the size and the tip of the lower beak rostrum allow us to differentiate between three families of a gelatinous octopus found in fish stomachs.

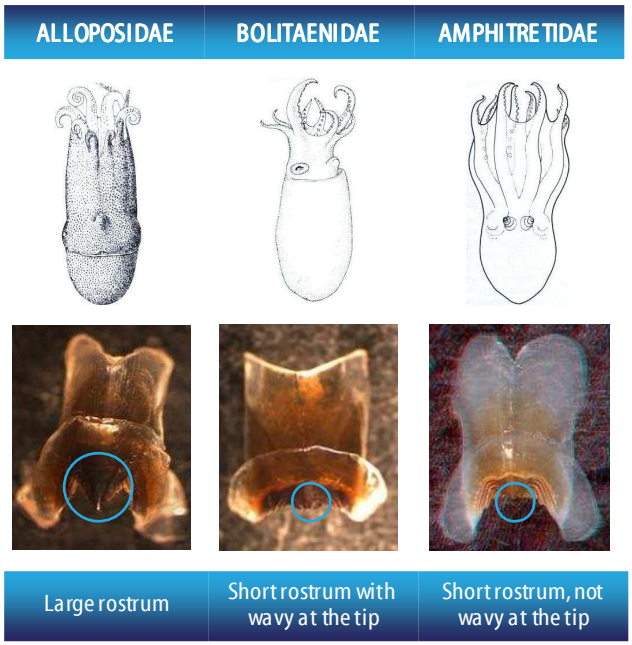



Figure 3 : The shape of the rostrum of the lower beak distinguishes three families of cephalopod

## Zoom on the radula

The radula is extracted using forceps, gently so as not to tear it. Then it is flattened between slide and coverslide and observed under a microscope. The rows of teeth are symmetric, and by counting the number of teeth, the squid and octopus families can be identified (Figure 4).

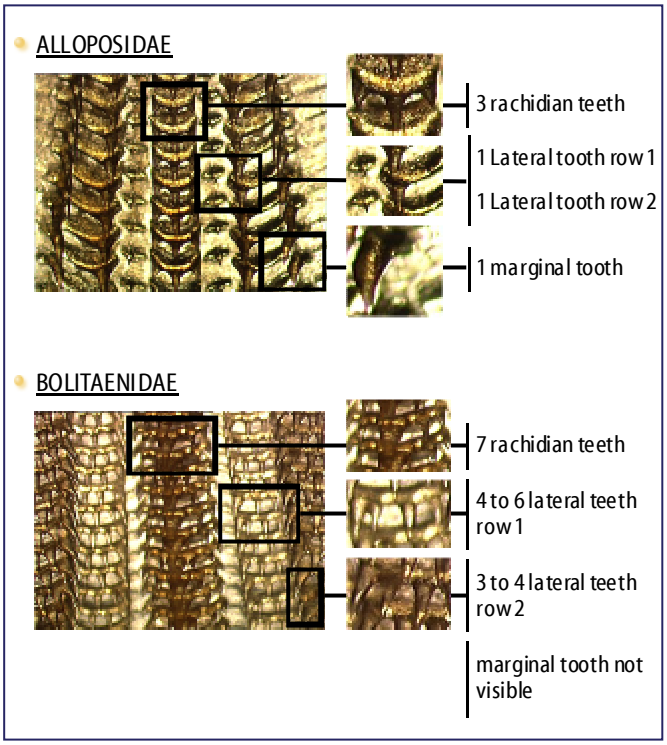


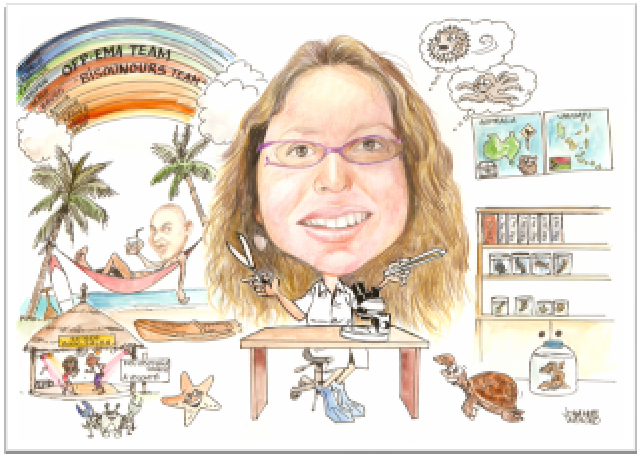

Figure 4 : Microscopic view of the arrangement of teeth on the radula

**There have been changes in our team : Cyndie Dupoux's departure and the arrival of Jeff Dubosc.**

## Cyndie DUPOUX - Laboratory assistant

After two years with the OFP-EMA team working as a laboratory assistant, Cyndie Dupoux decided to return to France to resume her studies.
Her passion for taxonomy leads her to new projects and she hopes to find her feet at the National Museum of Natural History in Paris, France.
We thank her for the quality of her work and her cheerful personality.

We hope to see her again in a few years — why not !




## Jeff DUBOSC - Laboratory assistant

We are delighted to welcome Jeff Dubosc, who joined us in the Noumea EMA Section in February as laboratory assistant, taking over from Cyndie. A fish addict since his youth, Jeff obtained a professional licence in tropical aquaculture and aquariology in 1997 in France. He then worked in several aquaria in France before coming to the New Caledonia Lagoon Aquarium. His main work consists of conducting qualitative and quantitative taxonomic analyses of oceanic predators' stomach contents. Jeff can be contacted at jeffd@spc.int.

# Medusafish

Medusafish are called many other common names, including rudderfish, big eye, big-eye trevalla, blue-eye, blue-eye cod, blue-nose, bluenose warehou, bonita, bream trevalla, deep-sea trevalla, Griffin's silverfish, sea trevally, stoney-eye or just trevalla.

## Identification from a photo

The fish shown in Figure 1 was caught on a hook in French Polynesia during a tuna longline trip. The observer on board was intrigued by this specimen and did the right thing; he took several pictures from different angles and photographed various parts of the fish. We received those photos and identified it as a medusafish, belonging to the Centrolophidae family (fish code "CEN").

We are not sure of the exact species but this specimen probably belongs to the *Hyperoglyphe* genus, whose identification keys are:

- A stout body,
- A blunt snout,
- Small scales,
- Two dorsal fins (the first one has short, stout spines and is joined by a membrane to the base of the second one, which is higher and longer-based — falcate pectoral fins),
- A forked caudal fin,
- Many small pores on the head.

Several species of *Hyperoglyphe* show the ventral black striped pattern of juveniles, as seen in Figure 1.


Figure 1: Medusafish caught in French Polynesia

This identification stays uncertain because, unfortunately, the photographs do not show important details for identification, such as the size of the specimen and other specifics (e.g. fins), preventing us from properly identifying it.

## How to take a good photo

The following picture (Figure 2) explains how to help us identify specimens:

- Fins held open.
- Something to give an idea of the size of the fish (ideally a caliper but could be something else, e.g. a pen, lighter, glove).

Figure 2: How to take a good photograph

## About medusafish…

There are 31 species belonging to this family and they occur worldwide, mainly in temperate marine waters.

As adults, Centrolophidae are benthic species found over or near rocky areas. Generally, they remain close to the rocky sea bed during the day and move up in the water column at night, following concentrations of food.

They feed mainly on gelatinous plankton, but they also feed on a range of fish, molluscs, squids and crustaceans.

While little is known about the larval stages, juveniles tend to stay around the midwater to surface level, usually in association with floating organisms, which range from large masses of floating kelp (algae) to jellyfish — hence the name medusafish — depending on the species.

These young fish form schools and it is believed that as the juveniles reach ~50 cm they become semi-bottom dwelling over hard bottom at depths of around 350–450 m, then move to waters as deep as 1500 m as they grow.

As adults, some species may reach a size of 1.5 m and are highly regarded as a food fish when they are caught by longline and trawlers.

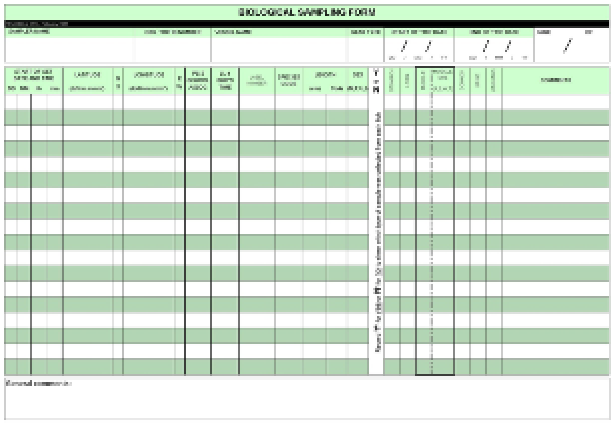
## A new biological sampling form

A new, user-friendly biological sampling form has been developed to facilitate the recording of data associated with biological samples collected by observers. The form can be used by observers working on longliners and purse-seiners.
The information recorded includes:

- basic trip information : sampler name, observer trip number, vessel name, gear type, start and end trip dates ;
- catch information : start of set date and time, positions, school association (for PS) and ship's time, label number, species code, length, length code, sex ;
- information on the samples collected for each fish : stomach, liver, muscle (muscle site), gonads, spine and otoliths.

The form was developed so that all this information can be recorded on one form to facilitate the processing of data. A copy of the completed form can be attached with the samples when they are sent for analysis in Noumea or Australia. This information is crucial; we have sometimes had difficulty obtaining it and had to contact people in the national or regional agencies.
While detailed instructions are provided on the back, new observers will be taught how to use the form during training, while current observers should easily become familiar with it after their experience in using many types of forms.
The forms will be distributed to observer coordinators, who will be able to hand them to current and future observers tasked to collect biological samples.

Please feel free to contact Caroline Sanchez (carolins@spc.int) or Malo Hosken (maloh@spc.int) if you require further information on how to use this form. We will gladly advise you, and we look forward receiving some completed new forms which will allow a faster processing of the samples and consequently a faster payment for observers.


BIOLOGICAL SAMPLING FORM

**Once again, thank you very much for your valuable collaboration.**

## Training new biological sampling trainers in Pohnpei – April 2011

SPC biological sampling trainers and coordinators Caroline Sanchez and Malo Hosken will conduct training in biological sampling in Pohnpei (FSM) from 4–8 April, with the objective of training senior observers and current assistant trainers to become biological sampling trainers.

Overall, eight trainee trainers will attend this workshop. Some of them may already be known to you; their names are listed below.

The workshop will include classroom and practical teaching. Pohnpei was the location chosen for this training as it is a central place in terms of travelling and there are a lot of fish landed in this port, which will be useful for practising the extraction of biological samples.

| | |
|---|---|
| Steve Peter | Federated States of Micronesia |
| Manasseh Avicks | Secretariat of the Pacific Community |
| John still Villi | Solomon Islands. |
| Benaia Bauru | Kiribati |
| Glenn English | Papua New Guinea |
| Kevin Kissekeup | Papua New Guinea |
| Elton Clodumar | Republic of the Marshall Islands |
| Kyle Aliven | Republic of the Marshall Islands |

Once the trainee trainers have completed this workshop, they will be conducting biological sampling training — under the supervision of senior trainers — as part of national, regional and sub-regional observer training, so that appropriate feedback can be given to them, as well as certifying them in their new role.

Figure 1 : The observer debriefers

The March 2011 debriefing workshop assembled the best observer debriefers currently available in PIRFO (Pacific Island Regional Fisheries Observers) programmes to help put together the standards for PIRFO debriefer development, training and certification. In the process, they became the first people to become fully certified PIRFO debriefers.

During the three-week workshop in Noumea, the participants were exposed to the data-churning coal-face, receiving many presentations from fisheries scientists so as to have a better understanding of how the data they so often handle get used. They also found the time to familiarise themselves with our laboratory activities and observe the further processing of the many samples they have handled over the years, whether as an observer with knife in hand, or as a debriefer with a cooler full of frozen samples and a plane to meet.

Figure 2 : Workshop room

When the participants came to the laboratory for a visit, Valerie Allain explained the objectives of the stomach content study and Jeff Dubosc, our new laboratory assistant, showed them how we process the samples (stomachs contents). They were able to see the different species that we find in the stomachs of fish caught during the observer trips.

Figure 3a, 3b, 3c : Laboratory visiting

**Next newsletter in July2011**

We welcome your comments on the content of this newsletter – please send them to Valérie Allain (valeriea@spc.int), Elodie VOUREY (elodiev@spc.int).