

Communications...

From: *Alexandre Ziegler*

A bit of history on the *Beche-de-mer Information Bulletin*

The *SPC Beche-de-mer Information Bulletin* (BDM) is the only echinoderm-related publication ever published in true journal format (ISSN 1025-4943). As the name suggests, BDM focuses on sea cucumbers, although its content has expanded considerably over the years. It now includes original research papers and review articles, correspondences, abstracts from publications and conference papers, bibliographies, address lists, spawning observations, market news, information on upcoming meetings and workshops, and general data on sea cucumber fisheries resource management.

The first issue of BDM was published in January 1990, the publisher being the Secretariat of the Pacific Community (SPC, formerly known as the South Pacific Commission). SPC is an international, non-profit organisation based in Noumea, New Caledonia that helps Pacific Islanders achieve sustainable development. Publication of BDM is funded by the SPC, the European Union, France, Australia, and other governmental bodies. Since 1990, SPC has published 33 issues of BDM, all of which are available for free download (<http://www.spc.int/coastfish/en/publications/bulletins/beche-de-mer.html>). In addition to the access to individual issues, a database permits searching the contents of all SPC publications, including BDM (<http://www.spc.int/coastfish/en/publications/digital-library.html>).

The decision to start the *SPC Beche-de-mer Information Bulletin* was made following a series of meetings in the late 1980s. Sea cucumbers are an important export item for many Pacific nations, and the late 1980s had seen a surge in production associated with increasing levels of imports into mainland China. This development had led to fears among fisheries experts that local Pacific resources might become unable to support such high levels of fishing pressure. The SPC workshop on Pacific Inshore Fishery Resources held March 1988 in Noumea led to the establishment of a number of networks of experts (the so-called special interest groups, or SIGs) on particular resources of interest to Pacific fisheries managers. At the 6th International Coral Reef Symposium held August 1988 in Townsville, Australia, the designated coordinator of the Beche-de-mer SIG, Chantal Conand, met with several holothurian experts and members of SPC to discuss how the exchange of ideas between them could be improved and how future collaboration could be fostered. During a business lunch, SPC announced that it would be capable of funding a journal aimed at achieving the goals of the recently founded Beche-de-mer SIG, in fact the first SIG to become installed under the SPC umbrella. A decision to circulate questionnaires among sea cucumber experts in order to gauge their interest and to identify individuals who might be able to provide future technical information on beche-de-mer fisheries was made during the SPC Regional Technical Meeting on Fisheries held in August 1989 in Noumea. About 60 colleagues responded, and consequently Chantal Conand, as coordinator of the Beche-de-mer SIG, became the first managing editor of the newly founded SPC Beche-de-mer Information Bulletin.

BDM does not constitute a peer-reviewed publication, as all contributions are sent to the managing editor, who then decides whether the article is fit for publication or not. Until issue 27 Chantal Conand acted as the managing editor, before she co-edited issue 28 together with Igor Eeckhaut, who officially became the managing editor of BDM from issue 28 onwards. Technical and editorial aspects of BDM are managed by SPC staff, in particular Aymeric Desurmont and (previously) Jean-Paul Gaudechoux. BDM is a bilingual publication: the original texts are submitted and published in English, but a full translation into French, called *La bêche-de-mer Bulletin d'Information*, is provided by SPC in addition to the English version (<http://www.spc.int/coastfish/fr/publications/bulletins/la-beche-de-mer.html>).

For some time, BDM was published twice annually (i.e. 1990, 1991, 2001, 2002, and 2004–2008), but budget cuts at SPC have led to a reduction to one issue per year from 2005 onwards. Also, printed copies were sent out free of charge to registered members of the Beche-de-mer SIG, but from issue 24 onwards, the distribution was limited to SPC member countries and territories due to budget cuts and environmental reasons. Total page numbers of BDM issues have steadily increased over time, from 14 pages in issue 1 to 76 pages in issue 32. Announcements for the next issue are usually made through the publisher's website as well as through emails sent out to contributors, interested institutions, and all members of the Beche-de-mer SIG.

BDM readership has enlarged considerably over time, now encompassing holothurian and echinoderm scientists, fisheries and coral reef managers, as well as members of various non-governmental organisations. Over the last 20 years, numerous articles published in BDM have been cited in high-ranking research papers, illustrating the importance of the work presented in the *SPC Beche-de-mer Information Bulletin*.

From: Jean Ruffez¹

In Madagascar, sea cucumber harvesting still kills compressor divers

A mission of the Francophone Association for the mutual assistance and the development of life sciences (AFEPS) recently occurred in December 2013. At the request of Grand'air, Reunion's university sports association, a technical internship (Fig. 1) was provided to about 20 students from Reunion and to Madagascar compressor divers from Antsiranana Bay (aka Diego Suarez). During this internship, AFEPS had the responsibility of teaching the students first aid specific to diving, especially the use of the therapeutic recompression by immersion (TRI), also called the "hyperbar room for the poor". This method consists of re-immersing the victim as soon as possible to a depth of 9 m for one hour, and making the victim breathe pure oxygen or, if unavailable, compressed air for a longer time.



Figure 1. Technical teaching: a) Madagascan diver; b) boat used. (Images: Jean Ruffez)



Figure 2. Diego Bay and Ramena in Madagascar.

Dive-fishing has always existed in Madagascar. It used to be performed mostly by free diving, but for a few years, fishing boats owners have equipped their boats and equipped the young divers who work for them with scuba gear. These divers have no knowledge of diving techniques. They just carry on their backs a buoyancy control device with a 12-L tank filled with air. For gear devices, they carry only regulators and manometers. Each diver uses between three and four tanks per dive, diving to depths of 40 m to collect sea cucumbers. Of course, many accidents occur. In this area, there is no hyperbaric room available. Before our arrival, we had been informed that in Antsiranana Bay (Fig. 2) there was at least one dead fisher a week.

The month of December is known as a good period for sea cucumber harvesting in this area of Madagascar. Indeed, as local fishers say, it's protected from the winds and December is the last month before the storms during which sea cucumbers hide in the mud. On the very day of our arrival in Ramena, in Diego Suarez Bay, we were informed that an accident had happened in Sakalava Bay (Fig. 2). A group of 10 fishers from

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Diego Suarez was diving to collect sea cucumbers. One of them never surfaced and his body was never found. Another diver became paralysed in his lower limbs while he surfaced; unfortunately, we could not have any contact with the victim. The worst part is that we had full TRI equipment with us, which could have been used to re-immerses the victim with pure oxygen and, therefore, avoided him being paralysed. Only four days later did the victim's brother-in-law contact us. It was too late to intervene. We wanted to contact the victim to understand the conditions in which these fishers dive and what their knowledge is of scuba diving. Unfortunately, this young diver, a 29-year old father, refused to meet us, arguing that he was ashamed of what happened to him. AFEPS is used to this kind of behaviour. It is similar to what is seen in Việt Nam (Ruffez 2008): victims think their accident is due to destiny. It's hard for them to understand what happened. Indeed, they are all used to repeating the same process every day, during each dive. So they do not understand why suddenly one day, one or two of them get paralysed or do not surface.

In Việt Nam, when we organise trainings for "first aider divers", compressor divers understand that accidents are linked to a lack of knowledge about the science of diving. As soon as they learn that accidents are actually caused by bubbles, and that if they apply the basic safety rules (slow ascent and decompression stops), they no longer have accidents. They have noticed that when someone who had a diving accident (bend or medullary accident) is quickly re-immersed with air, or preferably with pure oxygen according to the Clipperton protocol, articular pains, paralysis and sphincter troubles disappear.

The Grand'air association will continue training young Madagascan divers from Ramena village. Those divers mostly practice free diving and the training will enable them to hunt and collect sea cucumbers deeper. Yet, if we consider precautions and public health prevention, it appears that the idea that this training could be the cause of a marine resources decrease is false. Indeed, with or without training, these divers would be recruited by unscrupulous fishing boat owners who will make them collect sea cucumbers regardless of the depth. Thanks to TRI equipment and a basic training of a few first aider divers, intervention can be performed immediately after diving accidents happen, significantly reducing the rate of death and the amount of consequences. For the last three years, AFEPS's experience in Việt Nam massively proved this method with different flotillas of compressor divers from Ninh Van Bay, close to Nha Trang city, and from Ly Son Island in the center of Việt Nam (Ruffez 2008).

The TRI, Clipperton protocole, developed by Dr J.E Blatteau from the Health Service of the Naval Army's Institute (IMNSSA in French) at the occasion of the Clipperton Island expedition in 2005, is efficient. It has been proved in Việt Nam, where many compressor divers have been saved and have avoided paralysis thanks to this protocol. That is the "decompression chamber of the poor". Indeed, you just need a 40-50-L tank filled with industrial oxygen, a pressure regulator, a 15 meter-long tube and a special device, designed by Dr P. Cavenel, used to connect the tube with a Nitrox Octopus. This gear is easy to find and not very expensive in poor countries.

Re-immersion must be performed as soon as possible, before the diving accident becomes a diving disease. A DVD on first aid methods adapted to diving is delivered to trainers, who use it as a tool to teach first aid methods to divers. Three versions are available: French, English and Vietnamese. The 25-year-long experience of AFEPS enables, modestly but efficiently, the development of training among poor fishers populations, based on technical innovations derived from military research.

Yet, beyond public health matters, the environmental issue of marine resource decrease is also at stake. It raises questions about the ecological, economic and social impacts of fishing methods, and about the possible alternatives to foresee both injured and healthy fishers' reconversion. That is why AFEPS is working on another cooperative project to be carried out with local and foreign partners, for an aquaculture school/ company for the production, transformation and commercialisation of *Holothuria scabra*.

Thanks to the "Help to diving fishers in the inter-tropical zone" APP programme, AFEPS will continue contributing to the training of first aider divers and of voluntary trainers, as it was the case for the projects of diving fishers' reconversion in Việt Nam, Madagascar or elsewhere. Important needs obviously exist in many other developing countries and new initiatives have to be raised to help the most disadvantaged local populations living in vulnerable marine areas. Any voluntary competences are more than welcome to help the association and to participate to the development of these fascinating international solidarity missions.

Reference

Ruffez J. 2008. Diving for holothurians in Việt Nam: A human and environmental disaster. SPC Beche de Mer Information Bulletin 28:42-45.

From: P.A.D. Ajith Kumara¹

Recent training workshop on Artificial Breeding and Larval Rearing of *Holothuria scabra* in Sri Lanka

Sri Lanka's beche-de-mer industry has a long history, and includes around 21 commercial sea cucumber species, most of them reported to be overexploited (Dissanayake and Stefansson 2010). As in many other countries of the world, Sri Lanka started a sea cucumber seed production programme. Under this programme, which began in late 2011, sandfish (*Holothuria scabra*) was successfully bred by scientists of the National Aquatic Resources Research and Development Agency (NARA), which is the research part of Sri Lanka's Ministry of Fisheries and Aquatic Resources Development.

To disseminate this technology to interested local parties, NARA conducted a two-day residential training workshop on artificial breeding and larval rearing of sandfish at NARA Regional Research Center in Kalpitiya on 14 and 15 December 2013. Private sector participants, including hatchery owners, hatchery managers and officers from government agencies as well as non-governmental organisations, were trained through this workshop. This was the first training workshop carried out in Sri Lanka on the breeding and larval rearing of any sea cucumber species, and NARA wishes to conduct few more training sessions in 2014. This training workshop was conducted by Mr P.A.D. Ajith Kumara, Senior Scientist of Inland Aquatic Resources and Aquaculture Division of NARA and A.L.M Rifky, Officer-In-Charge of NARA Regional Research Center, Kalpitiya.



Participants with resource persons (upper left photo);
The selection of broodstock for artificial breeding (upper right photo);
Participants being instructed during a breeding session (lower left photo);
Participants being instructed on broodstock feed (lower right photo).

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