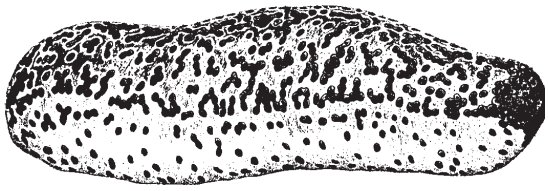
B E C H E - D E - M E R

CORRESPONDENCE



Can we use colour for sex-determination of the white teatfish?

Christian Ramofafia, Scientist Assistant at ICLARM (Coastal Aquaculture Centre, P.O. Box 438, Honiara, Solomon Islands) sent a letter to Chantal Conand to ask her about one possible way to determine sex of the white teatfish.

'...You might have gathered from Alex Holland that ICLARM Coastal Aquaculture Centre launched a sea cucumber project in 1993. Since then, work has been ongoing in the following areas: (i) growth of juvenile surf redfish in captivity, (ii) spawning and larval rearing and (iii) gonad study of white teatfish.

The gonad study of white teatfish was started 4 months ago. 20 individuals are collected monthly. The Gonad Index was calculated and gonads are classified into macroscopic maturity stages using your methods. I have observed that gonad colour varies among individuals, some being blue or grey while others were white. Unfortunately these gonads were still in stages I or II, so the sex could not be determined. Can you please advise me whether sex can be determined on the basis of colour?

In 1993, we attempted to spawn white teatfish in captivity. We observed that female gametes were greyish in colour while male gametes were white. I am tempted to conclude that the individuals whose gonads were blue or grey must be female and those with white gonads must be males.

I would be most grateful if you could help clarify these ideas.'

Reply by Chantal Conand

'...I respond to your question: in stages I and II, colour is not used for sex determination; microscopical observation is necessary. Even in the later stages it is always necessary to confirm the macroscopical observations by microscopical ones.'

New positions at Northern Reefs Seafoods Pty. Ltd.

Mr J. D. Sheahan , one of the new directors of Northern Reefs Seafoods Pty. Ltd. (ACN No. 063 701 628; 537 Malvern Road; TOORAK VIC 3142; Tel: 823 1456; Fax: 823 1496) writes to Chantal Conand about new positions in his company.

'...We wish to advise you that Mr John Rosenhain has resigned as director of RTS Trading Pty. Ltd. as referred to in your Magazine issue No. 6.

We advise that the new directors of the Company are G.D. Sheahan and E.J. Trahair, at the same address.

We are the largest beche-de-mer exporters in Australia working mainly in Northern Territory waters. We further advise that our beche-de-mer operation is conducted through the company Northern Reef Seafoods Pty. Ltd. by the above mentioned directors.'

Update on the work at the Royal Hawaiian Sea Farms

Dale Sarver Research Director at the Royal Hawaiian Sea Farms, (Inc., P.O. Box 3167 Kailua-Kona, Hawaii 967450) sent a letter to Chantal Conand to tell her about his work on *Stichopus horrens*.

'...I am writing to update you on the work we have been doing here in Kona. We are about six months into our two-year project to develop nursery and growout techniques for Stichopus horrens *and another yet unidentified species.*

The larval rearing methods are now relatively consistent and we can obtain many thousands of settled juveniles of S. horrens *using only small rearing vessels in the laboratory. During the last run we successfully scaled up to 30 l tanks, and will try out some 350 l designs in June.*

There have been mixed results with the nursery systems so far, with low survival rates to one month. Once they make it past the first two-week transitional period, however, survival is very good and growth is fast. We are planning to try a stock enhancement trial this summer, stocking newly settled juveniles into a traditional Hawaiian fish pond. I think if we can harvest all or most of the present population from the small pond, we can monitor the cohort of stocked animals.

We had good luck with the other species too. This Stichopus / Thelenota *is found in water over 30 m, but is not common. I wrote to you earlier about this species and how we observed male spawning in one of our tanks. Recently I saw natural spawning in the wild. There was a single male reared up and releasing sperm. This was at a depth of 47 m, at 1600 h on the day after full moon. There were a few others of this species in the general area, but none closer than 20 m away, and none of the others were spawning. I observed the same thing in the same spot this month at full moon too. I frequent this diving spot and have not noted spawning at any other time. It seems pretty obvious they have a lunar spawning cycle.*

Just after observing the first male spawning, we brought several into the lab and tried to induce spawning. Heavy spawning occurred during the night. We applied the same larval rearing methods we use for S. horrens, *and we successfully settled several hundred juveniles. The larvae of the two species are essentially identical, although the cues for settling are different. They are now about a week old and seem to be doing well.*

In the next couple of weeks I will preserve some specimen samples and send them to you. Hopefully you can get a name for me. Incidently, I gave some of these cucumbers to people who normally eat S. horrens. *They prepared them in the typical Japanese pickled fashion, and raved about how good they were. This species may have more commercial potential than the one presently eaten.*

Intensive aquaculture for sea cucumbers may or may not prove financially feasible, but I am confident rearing large numbers of juveniles in hatcheries could form the basis for extensive reef culture or stock enhancement, if there is reasonable resource management in place. I will keep you informed on our progress.'

Sea cucumbers in Madagascar

Olivier Behra, Manager of BIODEV (Biodiversity and Development, Lot YX 18 Andrefandrova Antananarivo, Madagascar; Phone or Fax (2) 286 51) wrote a letter to Chantal Conand about the possible over-exploitation of sea cucumbers in Madagascar.

'...We work in the areas of conservation and sustainable development in Madagascar. For this reason, recently several questions about Echinodermata have been sent to us. We would like to get your comments on sea cucumbers. Sea cucumbers have been subjected to significant levels of exploitation and in certain areas, fishermen can only find them at depths from 12 to 15 m. Is it possible that they could still be found at depths which are inaccessible

to fishermen, or is it likely that certain species, or at least certain populations, are actually threatened?

Is sea cucumber farming possible? Either off-site until metamorphosis or possibly in a protected bay by simply providing nutritional supplements? Or in any other form?'

Reply from Chantal Conand

'...I have just received a letter about sea cucumbers from the Head of your programme and would like to provide some information concerning a subject which merits study in Madagascar given the current lack of information available and the ***probable world-wide over-exploitation*** *of this resource.*

On the question: 'Does exploitation have any negative impact?':

Sea cucumbers are a fragile fisheries resource which requires a sensible management which does not exist in most of the producing countries. At the very least, statistics about fishing, processing and/or exportation should be collected. This would allow an initial approach to be made to the problem. It does not seem possible to give an opinion about overfishing without such data. The fact that fishermen are diving deeper than before is an indication of the overexploitation of certain populations. It is also necessary to know which species are involved, because there are about 10 species that have commercial value and the biology of each one is different. Overfishing of detritivore species can also have an effect on the functioning of the ecosystem, but we still lack data on this subject.

'Aquaculture?':

This has not yet been technically mastered. Individual growth is probably slow, a factor which does not favour productivity. Well-controlled growth experiments could prove useful. Such programmes are currently being carried out in some laboratories.'

Erratum

Beche-de-mer Information Bulletin #6, p. 20

On the page 20 of the article by S. Uticke, the biomass should read: 'The overall abundance for *H. atra* was 10.7 / 100 m^2 (biomass 1280 g) and for *S. chloronotus* was 9.0 / 100m^2 (biomass 1410 g).

S. Uticke informs that he is now preparing a Ph.D. at the Australian Institute of marine Studies, PMB 3, Townsville, Queensland 4180, Australia. His e-mail is S.UTICKE@aims.gov.au.

He is studying the role of holothurians in nutrient cycles of near-shore reefs.