

Request for information on spawning behaviour of tropical holothurians

by M. Byrne¹ and C. Conand²,
¹University of Sydney, Australia
²Labo. Océano. Biologie, U.B.O, France

Substantial advances have been made recently in knowledge of the reproduction and development of holothurians (Franklin, 1980; Conand, 1981,1990; Shelley, 1981; Harriot, 1982,1985; Ong Che and Gomez, 1985; Costelloe, 1985; Smiley and Cloney, 1985; Cameron and Fankboner, 1986,1989; Smiley, 1986,1988; McEuen, 1988; Sewell and Berquist, 1990). Although these publications include studies on tropical holothurians (Franklin, 1980; Conand, 1981,1990; Shelley, 1981; Harriot, 1982,1985; Ong Che and Gomez, 1985), most research has concentrated on the reproduction of temperate species (Smiley and Cloney, 1985; Cameron and Fankboner, 1986,1989; Costelloe, 1985; Smiley, 1986,1988; McEuen, 1988; Sewell and Berquist, 1990).

A recent review on the spawning behaviour of north-east Pacific holothurians by McEuen (1988) provides a substantial database for the region and also includes a survey of available information on spawning in tropical holothurians.

This review is particularly useful for the north-east Pacific in that it provides predictive information on the reproductive cycle and potential appearance of larvae in the plankton for species whose reproductive cycle has not been documented. It also includes information on the possible suite of environmental cues that trigger spawning by holothurians.

A similar review on spawning of tropical holothurians, especially one based on observations from countries with beche-de-mer fisheries, would be of great value in providing data on reproductive activity of commercial species, especially those species for which there is no information.

In conversation with several colleagues working in the tropics it was evident that they, and other workers, have encountered spawning holothurians during field research or other activities. These observations could be used as an initial database on reproduction and spawning in tropical holothurians. Over the next few months we would like to put together as much information as possible on spawning of tropical holothurians. If any of our readers have observed spawning in the field, please send us the details.

We need as much of the following information as possible:

1. What species was involved?

2. How many individuals were spawning? If more than one individual was spawning, how close were the spawning individuals to each other?
3. How many individuals were not spawning?
4. When were the observations made?
5. What was the locality?
6. Describe the spawning behaviour.
7. What were the environmental parameters i.e:
 - (a) Time of day: dawn, daytime, dusk, night-time?
 - (b) What stage of the lunar cycle: first quarter, full moon, last quarter?
 - (c) What was the state of the tide: low, mid, high?
 - (d) What was the depth: on the sea floor, on top of coral, etc.?
8. Were any other echinoderms spawning?

Please send your observations to: M. Byrne, Histology F-13, University of Sydney, NSW 2006, Australia, or to: C. Conand, Laboratoire d'Océanographie Biologique, UBO, Brest, France.

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A Handbook on the Japanese Sea Cucumber - Its Biology, Propagation and Utilisation (K.Y. Arakawa, 1990)

*translated by M. Izumi,
South Pacific Commission,
Noumea, New Caledonia*

In the last issue of the Beche-de-mer Information Bulletin (No 3, November 1991) a summary of the general biology of Stichopus japonicus, experiments on seed collection and culture of larvae and juveniles, as described in the above publication, was given. The Appendix is summarised below.

4. Appendix

4.1 Propagation

4.1.1 Resource preservation and management

Prohibition of sea cucumber fishing in certain seasons or areas under local fishing regulations is very effective in terms of resource management, as well as protecting areas for juvenile release and seedlings.

4.1.1.1 Prohibited fishing area

An example of the effectiveness of prohibited fishing areas comes from Oura Bay, Saga Prefecture in

Kyushu. Stones were scattered over the sea-bottom in an area of 700 m² and 1,700 juveniles were released. Fishing was prohibited for two years in an area of 1,500 m² which included the area of release. At the end of the prohibition period, 90 fishing boats made a total catch of 1,600 kg, approximately 30 times higher than previous catches.

In another example, in Migayi Prefecture in 1938 (also in an area where stones had been scattered over the sea-bed), fishing of adult sea cucumber was prohibited for three years in an area of 1,938 m². After the prohibition was lifted, catches increased by 2.5 to 3.7 times.

4.1.1.2 Prohibited fishing season

Most local regulations provide for prohibited fishing seasons between March and November, since there is a spawning season from March to July and a season of high water temperatures from August to September. The local prohibited fishing seasons are shown in Figure 1.