

## Spawning observations

A request for information on spawning behaviour of tropical holothurians was published in Beche-de-mer Information Bulletin #4. For this issue we have received a list of observations (presented below) compiled by S. Uthicke in the Lizard Island (Australia) area and another observation on lollyfish spawning by Dr Johann Bell from ICLARM in the Solomon Islands.

### 1. Spawning observations from Lizard Island area (compiled by Sven Uthicke, Institut für Hydrobiologie, Hamburg, Germany)

Date: 11/11/1992  
 Time: 18h00  
 Species: *Stichopus chloronotus*  
 Moon Phase: full + one  
 Remarks: 1 specimen spawned in Aquarium  
 Observer: S. Uthicke

Date: 12/11/92  
 Time: 18h00–18h30  
 Species: *Stichopus chloronotus*  
 Moon Phase: full + 2  
 Remarks: 8 individuals observed (≈15 per cent of observed specimens), sea grass bed off research station.  
 Observer: S. Uthicke

Date: 13/11/92  
 Time: 18h30  
 Species: *Stichopus chloronotus*  
 Moon Phase: full + 3  
 Remarks: 1 specimen, Mauros Reef  
 Observer: S. Uthicke

Date: 12/12/92  
 Time: 18h30  
 Species: *Stichopus chloronotus*  
 Moon Phase: full + 2  
 Remarks: 14 individuals spawned (≈ 20 per cent of observed individuals)  
 Observer: S. Uthicke

Date: 16/12/93  
 Time: 16h30  
 Species: *Holothuria fuscopunctata*  
 Moon Phase: 3/4 -1  
 Remarks: 2 individuals, North Direction Island  
 Observer: S. Uthicke

Date: 29/12/92  
 Time: 16h30  
 Species: *Bohadschia graffei*  
 Moon Phase: 1/4 -3  
 Remarks: 1 specimen, North Reef  
 Observer: S. Uthicke

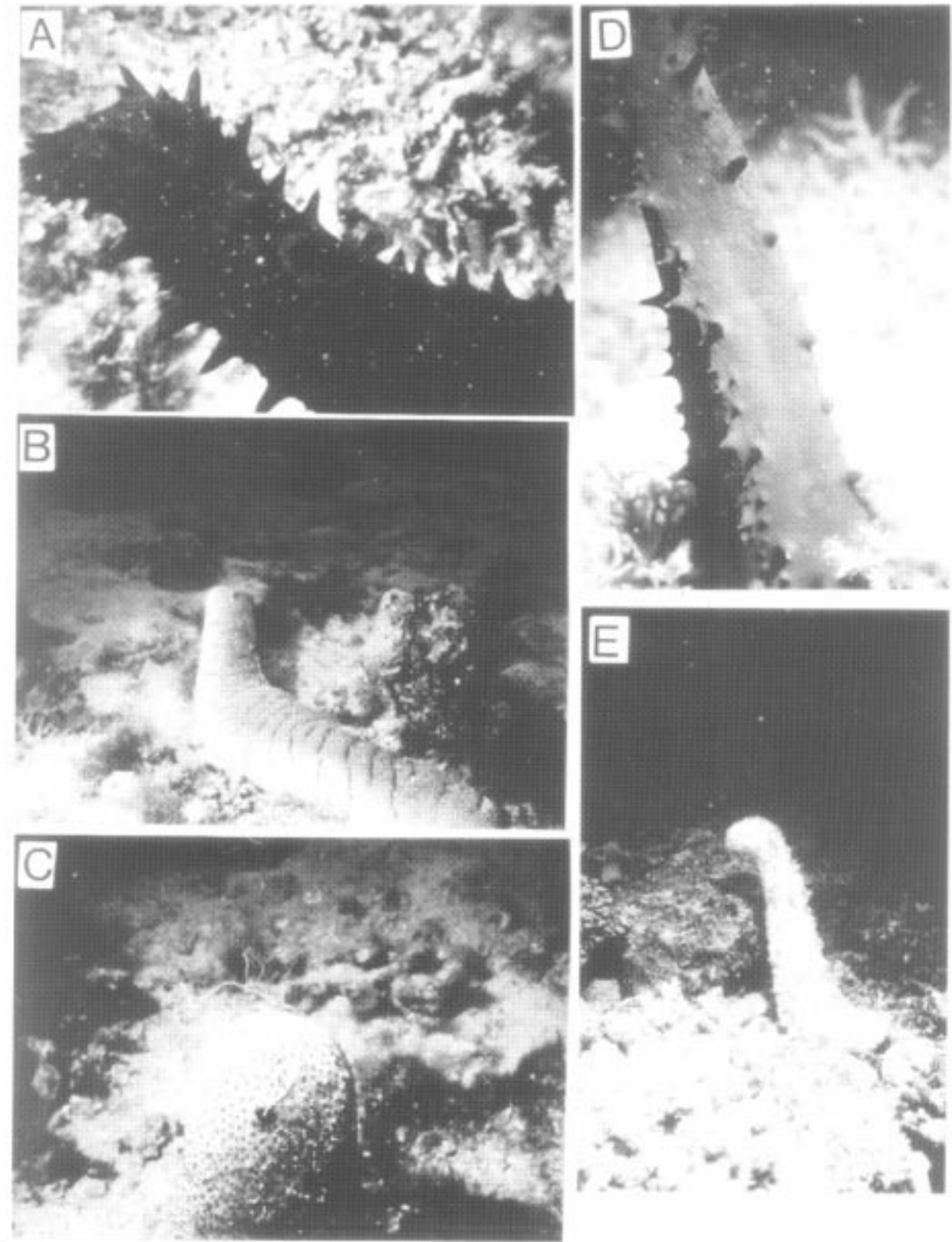
Date: 11/1/93  
 Time: 18h40  
 Species: *Stichopus chloronotus*  
 Moon Phase: full + 3  
 Remarks: 8 specimens spawned on reef flat, other days after full moon were checked, but no spawning occurred.  
 Observer: S. Uthicke

Date: 11-12/1/93  
 Time: ≈ 9h00 and 17h00 on both days  
 Species: *Holothuria coluber*  
 Moon Phase: full + 3  
 Remarks: Observer described spawning as very intensive, he claims that more than 50 per cent of population spawned each time.  
 Observer: Roland Knapp

Date: 25/11/92  
 Time: 17h30  
 Species: *Stichopus variegatus*  
 Moon Phase: new + 1  
 Remarks:  
 Observer: Bridgit Kerrigan

Date: 26/11/92  
 Time: 17h40  
 Species: *Stichopus variegatus*  
 Moon Phase: new + 2  
 Remarks: Watsons Bay, ca. 8m depth, individuals crawled on exposed places to spawn.  
 Observer: S. Uthicke

Date: 16/2/93  
 Time: 16h15  
 Species: *Bohadschia graffei*  
 Moon Phase: 3/4 + 2  
 Remarks: 4 individuals, South Reef  
 Observer: S. Uthicke



Holothurians spawning. A and D: *Stichopus chloronotus*; B and C: *Holothuria fuscopunctata*; E: *Bohadschia graffei* (photos: Sven Uthicke)

Date: 9/4/93  
 Time: 19h00  
 Species: *Stichopus chloronotus*  
 Moon Phase: full + 2  
 Remarks: 5 individuals, sea grass bed  
 Observer: S. Uthicke

**General Remarks:** only populations of *S. chloronotus* were generally observed for spawning (this means that they actually did not spawn in the months where no spawning was recorded) all observations on other species were made by coincidence.

### Spawning of lollyfish (*Holothuria atra*) — communicated by Johann Bell

**Species:** *Holothuria atra*

**Number:** Three individuals (1 female & 2 males) out of a group of 15 animals held in a 75l fibreglass tank spawned at 12.00h on 14 October 1993. The tank was supplied with a system of flow-through seawater at 30°C.

**Behaviour:** Anterior half of the body elevated during spawning, with uniform swaying from side to side. Gametes were released from the genital papillae in strands of varying lengths. Gametes were negatively buoyant, sinking to the bottom of the tank or onto the animal itself. Eggs were pink and sperm were white. The release of gametes was moderately slow. Upon disturbance, gametes spilt from the strand into the water. The spawning period for each individual varied between 20 and 30 min.

**Fertilisation:** The average size of an unfertilised egg was 137µm. The two-cell division stage was reached after two hours. The four-cell stage began after four hours.

**Moon Phase:** 1 day before New Moon.

### The sea cucumber should stay under

by Catherine Malaval  
 (Excerpt from an article published  
 in Liberation, 25/01/94)

The holothurian, highly valued for its culinary virtues, especially in South-East Asia, is being over-fished.

The problem is that, like the earthworm on land, it plays an important ecological role on the sea floor.

Dried, rehydrated, tossed into a soup or cut into thin slices, it is a delicacy for the Chinese, who call it beche-de-mer or trepang. Served raw with soy sauce, it is also a favourite of the Japanese. This has been true for thousands of years, ever since the culinary qualities of the holothurian, or sea cucumber, were first discovered. Unfortunately this creature, whose soft body makes it at first glance quite repulsive, is today the target of a booming trade.

In tropical regions, 80,000 t are thought to be harvested each year, while another 12,000 t are estimated to be taken annually in temperate zones. Their destination: the big Singapore and Hong Kong markets. 'Over-exploitation is occurring almost everywhere. While it is true that we do not have as much information on the sea cucumber as we do on tunas or whales, the signs are unmistakable. Once an area is depleted, fishermen change

location, and this process is being seen more and more frequently. The size at capture is also decreasing. Nowadays it rarely even reaches one metre', explained Chantal Conand, a biological oceanographer and senior lecturer at the University of La Réunion.

In short, the sea cucumber is highly sought after not only in Japan or China but also in all the other 'Chinatowns' around the world, such as those in Sydney or San Francisco. So much so that this animal, which once passed its days peacefully reclining on the ocean floor, is soon to become the subject of a study programme off the Galapagos Islands by the World Conservation Union (an international conservation organisation). It is already under surveillance in the Maldives. Researchers are hoping to develop a system of aquaculture without delay. This will not be possible without a full file on holothurians, a major task.

'Just knowing its growth rate poses a problem. Frankly, measuring a holothurian is like trying to measure an accordion!' claims Conand, who, from 1981 to 1984, conducted a study aimed at assessing the number of exploitable species, for ORSTOM in