

# FEEDING BEHAVIOUR OF *HOLOTHURIA TUBULOSA* AND *HOLOTHURIA POLII* OF TAMENTEFOUST AREA - ALGERIA

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## Abstract

The feeding behaviour of *Holothuria tubulosa* and *H. polii* was carried out in one shallow water area characterised by *Posidonia* meadow. The morphometric characteristics of the ingested particles and their organic matter and water contents were compared to the bottom sediment. The results illustrate the alimentary specificity of each species, which ingest average and fine sediment fraction. The two species are able to discriminate between particles rich and poor in nutritive elements.

**Keys-words:** Echinodermata, organic matter, sediments

## Introduction

Holothurians are major component of *Posidonia* meadow [1]. They play an important role in recycling of the organic matter and the oxygenation of the bottom [2]. They feed by scraping particulate deposits and selecting organically rich materials using their tentacles. Holothurians ingest the sediment for its nutritive particles [3], bacteria [4], meiofauna [5] and marine phanerogams leaves [6, 7].

## Material and methods

The sampling was done during April-May 2001 in one station of -3m depth (Fig. 1). Two batches composed of ten individuals of each species were taken. The water rates of the bottom and pooled guts sediments (first batch) are obtained by weighting before and after desiccation (24h at 105 °C) and the organic matter (OM) is calculated after passing the sediment in oven (2h at 550 °C) using the formulas: % Water =  $(1 - DW/WW) \times 100$ ; % OM =  $(1 - AW/DW) \times 100$  (WW = Wet Weight; DW = Dry Weight; AW = Ash Weight) [8]. The bottom and the pooled guts sediments [9] (second batch) are dried (24h at 105°C), weighted and sieved mechanically (AFNOR sieves). The contents of each sieve are weighted and percentage of the fractions [10] is calculated.

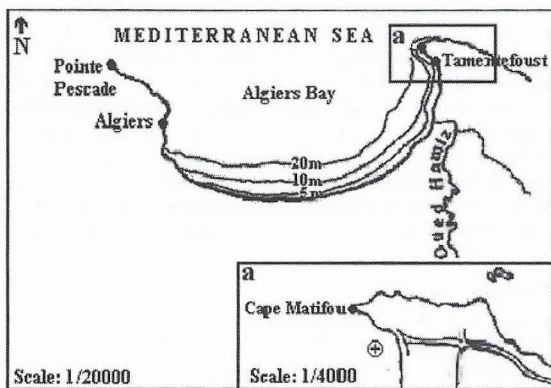


Fig. 1. Situation of the Tamentefoust station. A = detail. + = sampling area.

## Results and discussion

### Organic matter and water

The high rate of OM obtained in the gut sediment ( $p > 0.01$ ) (Fig. 2) show that the two species have a tendency to select OM from the bottom. The water overvaluation in the gut sediment is in close relationship with the increase of the OM (Fig. 2). Indeed, more the OM is high; more it requires water to ingest it. The difference in OM noted in the gut of the two species could be related to their biota. *H. tubulosa* exist between *Posidonia* leaves, which are responsible for the accumulation of the detritus [11]. *H. polii* prefers the sandy bottom influenced by hydrodynamism that disperses food.

### Granulometry

The bottom sediment is characterized by high rate of fine fraction (55,13%) (Tab. 1). The predominance of this fraction is related to OM concentration [12]. It seems that *H. polii*, has a tendency to select this fraction. Generally, *H. tubulosa* and *H. polii* prefers the average fraction (40.36-60.26%) (Tab. 1). The difference noted in selection of the particles could be related to its charge in OM and to the difference existing in the texture of the tentacles [13]. Indeed, according to [6], *H. tubulosa* is able to know particles covered by OM.

Table 1. Gut and bottom fractions percentages. \*: Classification according to [12].

Granulometric fraction*	<i>H. (H.) tubulosa</i>	<i>H. (L.) polii</i>	Bottom sediment
< 40 µm	4.22	5.72	3.20
Very fine fraction (40-60 µm)	1.75	9.10	3.70
Fine fraction (60-200 µm)	17.32	31.92	55.13
Average fraction (200-600 µm)	60.26	40.36	35.12
Coarse fraction (600-2000 µm)	15.86	15.73	2.55

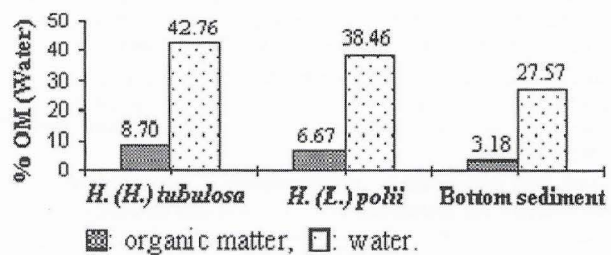


Fig. 2. Gut and bottom organic matter and water percentage.

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