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Identifying CITES-listed sea cucumbers: An identification guide

Marie Di Simone,¹ Arnaud Horellou,¹ Frédéric Ducarme² and Chantal Conand²

Introduction

CITES, the Convention on International Trade in Endangered Species of Wild Fauna and Flora, has the mission of preventing international trade from causing the extinction of a species, either by regulating or trade prohibition. In this context, from the end of the 1990s, groups of experts were formed to examine the issue of the trade in sea cucumbers (Bruckner 2006), the importance of which is similar to that of shark fins. However, no listing proposal has been submitted to the Conference of Parties for almost 20 years.

Finally, in 2019, sea cucumbers were included in CITES Appendix II, with three easily identifiable species – the “teatfish” from the subgenus *Holothuria* (*Microthele*) (Di Simone et al. 2021). This French proposal had been presented by the European Union, the United States, Kenya, Senegal and the Seychelles. This was the first proposal for sea cucumbers presented to a Conference of the Parties.

Difficulties in identifying sea cucumbers


After 17 years of unsuccessful attempts, this first CITES listing of sea cucumbers raises the question of the implementation of controls and reporting on a group little considered by non-specialists. Commercial data are most often reported by


groups (“sea cucumber”) rather than by species, preventing clear identification of the most popular species. Moreover, control authorities themselves are not competent and have no tools to differentiate goods containing sea cucumbers. The question arises as to how to certify that a package containing sea cucumbers is legal or not, if nobody is able to certify that they are not species that are currently listed on CITES. These animals, mainly exported to Asian markets, should be distinguished at the species level by fisheries officers, traders and other specialists to better target overexploited species.

Identifying sea cucumbers is a matter for specialists. Indeed, most works are based on spicules, small structures in calcium carbonate that require dissection and microscopy to be observed. In 2012, the Food and Agriculture Organization of the United Nations published the first edition of a guide to sea cucumbers of global commercial importance (Purcell et al. 2012). This guide identified 58 species that are significantly represented in international trade and mainly fished for in the Pacific and Indian oceans, bound for China and, to a lesser extent, Viet Nam. A new edition of the guide extends to other regions and other species, and is in the process of being published (Purcell et al. 2023). It allows an expert to identify the different species of sea cucumbers with laboratory criteria. These methods, however, are not compatible with the reality on the ground, especially with control authorities.

31
WRINKLED OR BUMPY


**Large wrinkles on black surface
(zebra stripes)**






➔ *Holothuria fuscopunctata*
Holothuria scabra

Irregular bumps





➔ 32

Figure 1. Excerpt from the identification key for live specimens of sea cucumbers. Source: Di Simone et al. 2022

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Realisation of a simplified identification guide on sea cucumbers

The French Scientific Authority for CITES³ has therefore decided to produce a simplified identification guide, based on the FAO scientific guide, in a long-term vision on sea cucumbers, their trade and the constitution of more precise data (Di Simone et al. 2022). This guide presents 56 species of sea cucumbers, protected or not by CITES, traded worldwide, for food consumption. It is supposedly vulgarized

and simplified for being used by non-specialists, including enforcement authorities whose mission is to detect what is potentially illegal.

This guide makes it possible to recognize traded species using two identification keys: one for live specimens (Fig. 1) and one for dried specimens (Fig. 2). Each species is described in the form of a sheet presenting the morphological and/or distinctive characteristics, as well as the description of the spicules for specialists (Fig. 3).

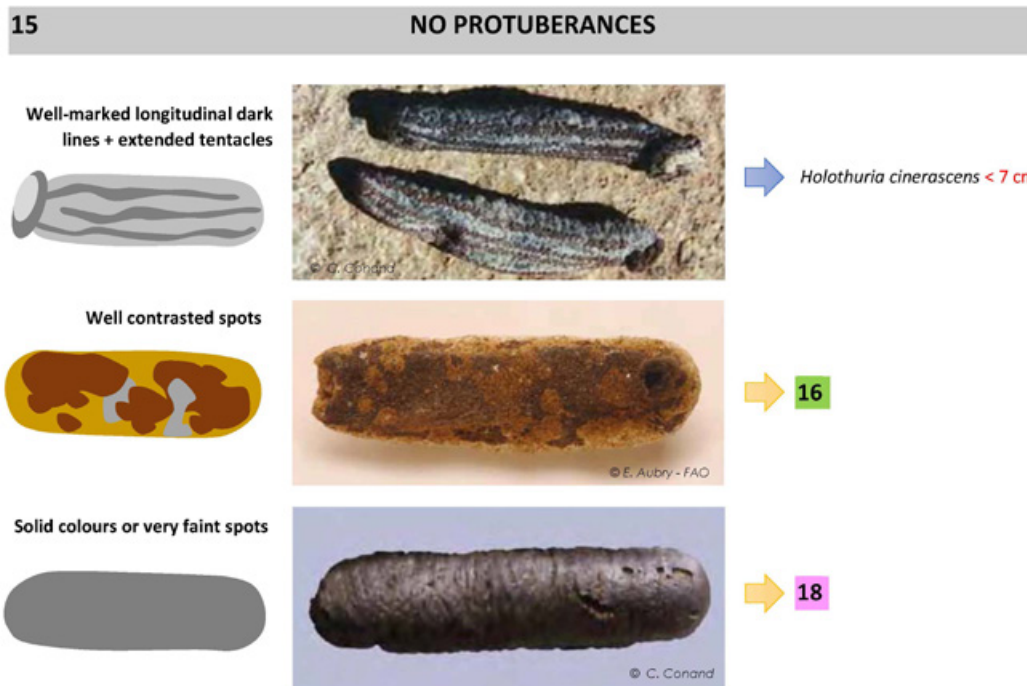






Figure 2. An excerpt from the identification key for dry specimens of sea cucumbers. Source: Di Simone et al. 2022

Holothuria lessoni
Massin, Uthicke, Purcell, Rowe & Samyn, 2009

Common names:
🇬🇧 Golden sandfish
🇫🇷 Holothurie de sable verrucosité

Live form (spotted variant) Live form (black variant)

Live form (beige variant) Dry form

30 cm on average, 46 max.

1.1 to 1.4 kg

Highly variable colouring: from dark greyish black to beige with black blotches and spots, or beige without black spots. Ventral surface is whitish or grey in the black variants


13 cm

Golden brown

Elongated, ends of the body are rounded, slightly arched dorsally

Small ventral cut

Similar species









Holothuria scabra

And for the experts...

Characteristics of the spicules:

Tentacles	Slightly curved rods (60–650 µm) spiny at the extremities
Dorsal body wall	Tables with discs (50–110 µm), spiny, quadrangular, and perforated by one central hole and 4–10 peripheral holes (large discs with circles of peripheral holes); spine ending in a spiny crown; knobbed buttons (40–60 µm) and 3–4 pairs of small holes.
Ventral podia	Tables and buttons similar to those of the body wall (but some are smooth); rods with perforated extremities (115–265 µm) and perforated plates (85–280 µm)
Dorsal podia	Buttons, tables and rods. Buttons are smooth or nodulous, with 3–4 pairs of holes and perforated plates (160–200 µm) with two rows of holes

(after Massin et al., 2009)

Figure 3. Example of a species sheet. Source: Di Simone et al. 2022

³ Patrinat (Office français de la biodiversité, Centre national de la recherche scientifique, Muséum national d'Histoire naturelle, Institut de recherche pour le développement)



Figure 4. The cover of the sea cucumber identification guides in English, French, Spanish and Mandarin.

Permalinks to download the guide are given below:

English version: <https://inpn.mnhn.fr/docs/CITES/Guide-identification-concombres-de-mer-2022-EN.pdf>

French version: <https://inpn.mnhn.fr/docs/CITES/Guide-identification-concombres-de-mer-2022-FR.pdf>

Spanish version: <https://inpn.mnhn.fr/docs/CITES/Guide-identification-concombres-de-mer-2022-ES.pdf>

Chinese version: <https://inpn.mnhn.fr/docs/CITES/Guide-identification-concombres-de-mer-2022-CN.pdf>

In addition to being published in the three official languages of CITES (French, Spanish and English), the guide is also translated into Chinese. Given that the largest import market for sea cucumbers is, by far, China and its neighbouring countries, China is demanding that Mandarin be a new official language of CITES. And, also given that enforcement authorities require maximum efficiency, publishing this guide in Mandarin is important, both for the conservation of sea cucumbers and for the challenges of applying the Convention's commitments to China.

Support for CITES sea cucumber listing proposals

This guide also supports a long-term sea cucumber strategy. It is an important tool for implementing the CITES listing of teatfish and for future sea cucumber listings. It supported the proposal to include the genus *Thelenotia* in Appendix II presented by France under the European delegation during CoP19, which took place in Panama in November 2022 (Di Simone et al. 2023). The proposal was accepted, and three additional species of sea cucumbers are now listed in CITES. All CITES authorities around the world, as well as the fisheries concerned, will have an obvious need for increased skills.

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