

## Processing of sea cucumbers to *bêche-de-mer*: a case study from Sri Lanka

<sup>1</sup>Nishanthan G, <sup>2</sup>Kumara PADA, <sup>3</sup>De Cross MDST, <sup>4</sup>Prasada DVP  
and ~~Dissanayake DC~~

<sup>1</sup>Department of Zoology, University of Sri Jayewardenepura, Gangodawila, Nugegoda, Sri Lanka; <sup>2</sup>Inland Aquatic Resources and Aquaculture Division, National Aquatic Resources Research and Development Agency (NARA), Crow Island, Colombo 15, Sri Lanka; <sup>3</sup>Department of Aquaculture and Fisheries, Faculty of Livestock, Fisheries and Nutrition, Wayamba University of Sri Lanka, Makandura, Gonawila 60170, Sri Lanka; <sup>4</sup>Department of Agriculture Economics, University of Peradeniya, Peradeniya

Corresponding author: dileepa\_dc@yahoo.com

Bêche-de-mer, the processed sea cucumbers are one of the export oriented fishery products of Sri Lanka for centuries. This study identified the major steps of sea cucumber processing and their limitations. Data were collected from sea cucumber processors at Puttalam, Mannar, Kilinocchi and Jaffna districts from September 2015 to March 2016 through direct observations and questionnaires. Sea cucumber processing, which takes 5-10 days, mainly involves cleaning, evisceration, first boiling, salting, second boiling and drying. Some variations in processing steps were observed among species. Sea cucumbers are cleaned before evisceration to remove slime and sand particles on their body. In most species, evisceration is done making a small cut at the posterior end of the body, however, in the teat fish this cut is made along the midline of dorsal body. In *Stichopus* spp., the internal organs are removed squeezing the animal or placing a slit in the ventral side. Boiling duration varies with species. The highest boiling time was reported for *Holothuria scabra* ( $24 \pm 13$  minutes) followed by *T. anax* ( $16 \pm 6$  minutes). Average boiling time for *Bohadschia* spp. ranged from  $9 \pm 5$  minutes and it was  $\sim 13$  minutes for *Stichopus* spp. Most processors (87 %) used saline water as the boiling medium while others used fresh water. Most species are boiled together except *Bohadschia* sp. and *H. atra*. All sea cucumbers are salted after boiling for 1-2 days. Both iodinated (86.67 %) and non-iodinated (13.33 %) salts are used and 5 kg of salts are used for 100 pieces. Salted products are boiled once again for around  $5 \pm 3$  minutes. Sun drying is the widely practiced drying method. Drying time ranged from 3 to 5 days. Around 73.3 % of surveyed processors completed full processing, while others only completed partial processing. It was evident that post-harvest losses were 5 – 8 % at the end of the processing cycle. Malpractices during processing such as improper evisceration, intentional adding of sand, over-salting, mixing low-value species with high-value species and poor hygiene practices were identified as some limitations of existing methods.

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