

COMMUNICATIONS

Communications prepared by Chantal Conand

New books/works on holothurians

Mohsen M. and Yang H. 2021. Sea cucumbers: Aquaculture, biology and ecology. First edition. Academic Press.

Sea cucumbers: Aquaculture, biology and ecology is a reference book that gathers practical and biological knowledge necessary to promote the aquaculture of sea cucumbers, aiming to share experience across regions and facilitate learning so that mistakes are not repeated. The book pays particular attention to sea cucumber research in the Middle East, where sea cucumber experience is limited but of potential value.

The book starts with the basic biology and ecology of sea cucumbers, drawing a general idea of the sea cucumbers morphology, internal biological processes and interaction with the surrounding environment. The second part of this book aims to shed light on the lesser mentioned sea cucumber resources in the Middle East. This part summarised the available knowledge on sea cucumbers in the Mediterranean Sea, the Red Sea and the Persian Gulf, particularly the variety of sea cucumber species, aquaculture development and utilisation research of sea cucumbers. The last part of this book is about sea cucumbers from production to consumption. This part summarises the standard culture techniques for six newly introduced sea cucumber species: *Holothuria tubulosa*, *H. poli*, *H. arguinensis*, *H. leucospilota*, *H. mammata* and *Stichopus horrens*. It then reviews the modern processing and cooking methods of sea cucumbers. Finally, the book discusses the steps needed to promote sea cucumber aquaculture and stock enhancement in the Middle East.

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Global knowledge on the commercial sea cucumber *Holothuria scabra*

By Jean-François Hamel, Igor Eeckhaut, Chantal Conand, Jiamin Sun, Guillaume Caulier and Annie Mercier

This article will be published in *Advances in Marine Biology* in 2022.

One of the most intensively studied holothuroids, *Holothuria scabra* has been discussed in the literature since 1833. The species is important for several reasons: 1) it is abundant and widely distributed in several shallow soft-bottom habitats throughout the Indo-Pacific; 2) it has a high commercial value on the Asian markets, where it is mainly sold as beche-de-mer; and 3) it is the only tropical holothuroid species that can currently be mass-produced in hatcheries. Over 20 years elapsed since the last comprehensive review on *H. scabra* was published in 2001. Research on *H. scabra* has continued to increase, fuelled by intense commercial exploitation and further declines in wild stocks over the entire distribution range. This review compiles data from over 900 publications pertaining to the biology, ecology, physiology, biochemical composition, aquaculture, fishery and trade of *H. scabra*. Although several references are likely to have been missed by our investigation, we present the most complete reference list to date, including material published by local institutions and/or in foreign languages. The main goal of this project was to summarise and critically discuss the abundant literature on this species, making it more readily accessible to all stakeholders wishing to conduct fundamental research, aquaculture and stock enhancement, and management programmes on *H. scabra* across its geographic range.

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Research on echinoderms in Latin America V is now available from the webpage of the Journal of Tropical Biology¹

This special issue included several papers presented at the Fourth Latin American Conference of Echinoderms, held from 10–15 November 2019 in La Paz, Baja California Sur, Mexico. It is dedicated to our dear Dr Blanca Estela Buitrón Sánchez, and was published in memory of Dr Jonh Pearse. In the first pages you can read the dedications that Francisco Solís and Renato Ventura kindly wrote.

¹ <https://revistas.ucr.ac.cr/index.php/rbt/issue/view/3030>

The contributions on holothurians are:

Feeding habits of *Holothuria (Stauropora) fuscocinerea* (Echinodermata: Holothuroidea) in a Mexican Pacific reef
By Brenda Maya-Alvarado, Laura-Georgina Calva-Benítez, Rebeca Granja-Fernández, Jessica Pérez-López, Andrés López-Pérez

First record of the genus *Leptopentacta* (Cucumariidae: Colochirinae) for the Nicaraguan Caribbean.
By Francisco-Alonso Solís-Marín, Osmar-Benito Sandino, Carlos-Andrés Conejeros-Vargas, Andrea-Alejandra Caballero-Ochoa

Reproductive cycle of the sea cucumber *Holothuria forskali* (Holothuriida: Holothuriidae) in the Ría de Vigo (NW of Spain)
By Tania Ballesteros, Ana Tubío, Rosana Rodríguez, Alba Hernández, Damián Costas, Jesús Troncoso

Expansion of the genus *Massinium* (Holothuroidea: Thyonidae) to the American continent and description of a new species
By Francisco-A. Solís-Marín, Alfredo Laguarda-Figuera, Carlos-A. Conejeros-Vargas, Andrea-A. Caballero-Ochoa, Alicia Durán-González

New records of the family Cucumariidae (Holothuroidea: Dendrochirotida) for the Mexican Pacific
By Daniel-M. Sánchez-Alonzo, Francisco-A. Solís-Marín, Carlos-A. Conejeros-Vargas

Translation of two articles by J.M. Lawrence

Catalogue Raisonné of the Families, Genera and Species of the Class of Echinoderms

Agassiz L. and Desor E. 2020. Catalogue Raisonné of the families, genera and species of the class of echinoderms: A translation of Agassiz L. and Desor E. 1846. Catalogue raisonné des familles des genres et des espèces de la Classe de Echinodermes. Annales des sciences naturelles, volume 6, series 3, p. 305–374. (translated by J.M. Lawrence). <https://doi.org/10.5038/bin.books.1024>

Memoir on the Synapte of Duvernoy (Synapta Duvernæa A. de Q.)

de Quatrefages A. 2021. Memoir on the Synapte of Duvernoy (*Synapta Duvernæa* A. de Q.): A translation of de Quatrefages A. 1842. Mémoire sur la Synapte de Duvernoy (*Synapta Duvernæa* A. de Q.). Annales des sciences naturelles. Zoology. Series 2, volume 17, p. 19–93. (translated by J.M. Lawrence). <https://doi.org/10.5038/bin.books.1031>

Statistics on publications published in 2021 related to holothurians

by Chantal Conand

A Google Alert, using the word “holothurian”, was set up for the period January to December 2020. The same method had first been used in 2016 to produce the article “Bibliography on holothurians: Access to modern tools to follow new publications”, which was published in the SPC Beche-de-Mer Information Bulletin #36.²

Table 1. Number of documents related to holothurians published in 2021, from 1 January to 31 December.

Months	General biology, ecology	Biochemistry, microbiology	Genetics	Aquaculture	Fishery, socioeconomics	Total/month
January	10	5	2	3	2	22
February	10	6	3	2	2	23
March	11	3	0	4	4	22
April	11	7	1	0	6	25
May	6	10	2	2	1	21
June	7	9	1	1	1	19
July	8	5	3	8	3	27
August	12	4	4	4	1	25
September	6	8	5	5	3	27
October	3	2	1	2	4	12
November	9	6	2	0	2	19
December	6	3	0	0	5	14
Total	99	68	24	31	34	256
Ratio %	39%	27%	9%	12%	13%	

² <https://purl.org/spc/digilib/doc/gbcb>

Information collected on the Internet

*Crocodiles kill two divers hunting for sea cucumbers in Solomon Islands after ban lifted*³

by Tahlea Aualiitia

Two men have been killed in separate crocodile attacks in Solomon Islands while diving for sea cucumbers at night.

Key points:

- A sea cucumber catch can earn Pacific divers hundreds of dollars.
- The lifting of a sea cucumber ban has sparked a harvesting craze.
- Crocodile population are booming in the Solomon Islands

The deaths last week of a 36-year-old man and another man in his 20s came less than a month after the country lifted a ban on harvesting the marine animal called beche-de-mer, in order to boost the economy after COVID-19.

Royal Solomon Islands Police Force Provincial Assistant Commissioner Joseph Maneluga said he was concerned about the attacks, which occurred just a day apart.

“I think the people are going crazy because of the reopening of the beche-de-mer,” he said.

“And the population of crocodiles is really increasing, and so that is the threat that we have.”

*Sea cucumber crime is a thing, and this is where it's happening*⁴

by Frank Jacobs

A “seafood mafia” is plying the waters between India and Sri Lanka to satisfy China’s appetite for an increasingly rare delicacy.

Sri Lanka’s legal market for sea cucumbers next to India’s illegal one is proving too tempting a proposition for poachers.

Long a delicacy in China and East Asia, sea cucumbers are now also becoming a rarity worldwide.

India has outlawed the trade, inaugurated a marine reserve, and put together a law enforcement task force.

But the trade remains legal in Sri Lanka, which has become the hub for widespread “seafood laundering”.

*Sea cucumbers pinch out “5 Eiffel Towers’ worth” of poop per reef, per year*⁵

by Nicoletta Lanese

Sea cucumbers – those chubby tubes of flesh that scooch around the ocean floor – have a very special talent: The tubular creatures are elite poopers, collectively expelling more than 64,000 tonnes of sandy poop out of their bottoms each year.

That’s not an estimate for the entire globe; that’s how much sea cucumbers poop on a single coral reef, per year. And even that tremendous number may be an underestimate, according to a new study, published Feb. 2 in the journal *Coral Reefs*.⁶

Williamson J.E., Duce S., Joyce K.E. et al. 2021. Putting sea cucumbers on the map: Projected holothurian bioturbation rates on a coral reef scale. *Coral Reefs* 40:559–569

*Les nouvelles formes de pêche à Saint-Pierre-et-Miquelon (New forms of fishing in St. Pierre and Miquelon (A short video on sea cucumber fishing in St. Pierre and Miquelon.))*⁷

Une courte vidéo sur la pêche aux concombres de mer à Saint-Pierre et Miquelon. (A short video on sea cucumber fishing in St. Pierre and Miquelon.)

³ <https://www.abc.net.au/news/2021-10-10/divers-killed-by-crocodiles-hunting-sea-cucumber-beche-de-mer/100515588>

⁴ <https://bigthink.com/strange-maps/sea-cucumber-crime/>

⁵ <https://www.livescience.com/sea-cucumber-poop-reef.html>

⁶ <https://link.springer.com/article/10.1007/s00338-021-02057-2>

Illegal trade in Africa's high-value marine products escalating⁸

by Shem Oirere

Only six of the 30 African countries with sea cucumber resources have reported their export totals over the past decade, despite an escalating trend of underreporting and illegal trade of it and other high-value marine species in the region.

According to a report by TRAFFIC,⁹ an international non-governmental organization that campaigns against illegal trade in wild animals and plants, the current illegal trade in high-value marine products between Africa and Asia – especially of species like seahorse, sea cucumber, and fish maw – is flourishing. That illegal trade is decimating the species' populations and denying several coastal communities means to a livelihood, the report found.

TRAFFIC based the report on findings of a study compiled in September 2020 showing “population declines, inadequate regulation, stretched law enforcement, and local communities impacted by illegal and unsustainable catch and trade.”

“As the trade in fish maws, sea cucumbers, and seahorses from Africa to Asia increases in volume, we simultaneously see significant discrepancies in the reported imports and exports of products linked to these taxa,” TRAFFIC Project Support Officer Simone Louw said. Louw also served as lead author of the reports.

The report said smuggling networks are taking advantage of existing legal shortcomings in some African countries to divert illegally harvested high-value marine products to international supply chains. Shark fins, abalone, sea cucumber, and fish maws are some of the most at-risk marine species in the illegal trade due to being “highly-prized luxury seafood products consumed as symbols of status of wealth,” the report found.

The report's findings are consistent with previous observations with from the Food and Agriculture Organization of the United Nations (FAO), indicating in 12 of 30 countries in Africa and the Indian Ocean region the sea cucumber resource “appears to be overexploited or fully exploited.”

The region, which FAO estimates to be producing at least one-third of the world's dried sea cucumber products, has also attempted various measures to address the overexploitation of the marine species, such as the imposition of total bans that “seem to be insufficient for a sustainable use of the resources.”

The international trade in high-value marine products, the FAO said, is characterized by “by exports from the producer countries, imports in ‘intermediates’ such as Yemen and Dubai, and final markets, where the key role of China/Hong Kong/Southeast Asia is most apparent.”

The FAO estimated sea cucumber species *H. scabra*, found in various marine regions off Africa's coast, fetches up to USD 369 (EUR 305) per kilogram, making it one of the continent's highest-value marine products.

Kenya, Tanzania, Madagascar, and South Africa are some of the African countries where the underreported and illegal marine products trade or harvest is more pronounced, according to the report.

In Tanzania, a country formed after the 1964 union of Tanganyika (mainland) and the island of Zanzibar, a powerful smuggling cartel has taken advantage of legislative inconsistencies between the two territories to overexploit the sea cucumber. In mainland Tanzania, trade in sea cucumber is banned, but in Zanzibar it is legal to trade in the marine species, creating a loop-hole for the cartels to smuggle out sea cucumber and other high-value seafood, the report said.

“High demand, especially from East Asia, has resulted in an expanding marine product ‘gold rush,’ with more than 80 percent of African coastal states now exporting fish maw to Hong Kong Special Administrative Region alone,” the report said.

In an effort to reverse this flourishing illegal trade in prized marine species, two sea cucumber species that mostly occur in the Western Indian Ocean – *Holothuria fuscogilva* and *H. nobilis* – have been listed under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

⁷ <https://www.facebook.com/france3/videos/515592209480496>

⁸ <https://www.seafoodsource.com/news/environment-sustainability/illegal-trade-in-africa-s-high-value-marine-products-escalating>

⁹ <https://www.traffic.org/publications/reports/sea-cucumber-trade-from-africa-to-asia/>

The commercially exploited aquatic species were listed on CITES1 Appendix II in 2019, placing an obligation on customs officials across Eastern and Southern Africa “to identify these species from other non-listed species and grant export permits to adequately regulate international trade.”

The report calls for urgent and immediate action in the short term to reverse the trend including increased regulation and closer scrutiny of trade through efforts like creating specific HS codes and investigating “discrepancies between African and Asian countries/territories.”

Additionally, African governments, it said, should urgently probe the findings in the report “as it indicates significant levels of unsustainable and illegal harvest and trade, which is having a detrimental impact on target marine populations, and the local fishing communities that rely on them.”

Shem Oirere is a Kenyan journalist who previously worked for daily newspapers as a general news correspondent, business reporter and sub-editor before turning to full-time freelancing. For the more than 20 years, he has covered various sectors of Africa’s economy including agriculture, food processing, and maritime industries. A graduate of the University of South Africa, he has traveled within and outside Africa covering various industry events that have a bearing on the continent’s economy on behalf of different international consumer and trade publications. He currently lives in Nairobi, Kenya.

*COVID-19 fears driving medicinal interest, demand for sea cucumbers in China*¹⁰

by Mark Godfrey

New Zealand Wild Catch Limited has reached an agreement with leading Chinese traditional medicine retailer Beijing Tongrentang for exclusive sales of dried and instant sea cucumber in New Zealand. One of the largest global retailers of traditional Chinese medicine, Beijing Tongrentang has eight stores in Auckland, New Zealand.

Chinese buyers are using sea cucumber as a home remedy to prevent infection from COVID-19, New Zealand Wild Catch Limited Co-Founder and CEO James Parfitt told SeafoodSource. The firm sells the gold tip sea cucumber (*Stichopus mollis*), which is native to New Zealand waters, under the Gold Tip brand.

“After a brief stop in sales in March, April 2020 Gold Tip sales have been very strong since the COVID outbreak, given the immune benefits of regular consumption of sea cucumber,” Parfitt said. “But there is still room to grow by increasing harvest and processing in New Zealand and distribution capacity in China.”

Parfitt said his brand has thrived during the pandemic due to Chinese customers’ trust in the company’s wild products and the company’s policy of not using additives. Additionally, a study performed by researchers at Auckland University showed the company’s products’ bioactives compared favorably with farmed Chinese sea cucumber, Parfitt said.

“Trade ... is going well into formal offline channels in China,” Parfitt said. “The New Zealand government has been very supportive and engaging since the COVID outbreak, meaning airfreight disruptions have been minimized.”

Parfitt said his firm is still looking for one or two retail distributors in China “who fit with our channel strategy.” He’s also hoping to secure support from Beijing Tongrentang’s affiliates in Southeast Asia “once travel opens up and we can meet face-to-face.” The company has plans to expand sales in Japan and Singapore as well.

But Parfitt said he’s encountering efforts to counterfeit his brand in many of his markets. “There are still fake gold tip sea cucumber from Indonesia claiming to be New Zealand gold tip, as well as cheaper shallow-water black tip sea eggplant in New Zealand,” he said. “But the encouraging thing for us is that consumers are starting to realize that irregular shape of gold tip is a good way to tell wild from farmed sea cucumber. We are seeing in the COVID climate repeat customers placing more value in function and health benefits rather than form and uniformity.”

Sea cucumber prices in China rose year-on-year in 2020 and have remained strong, according to DJames Lim, CEO of the Lim Shrimp Organisation, which has been building a large indoor sea cucumber farming facility in northern China. “We plan to restart remaining construction after the winter season,” he told SeafoodSource. COVID is restricting produce from being imported smoothly into China, complicating his company’s business, Lim said.

¹⁰ <https://www.seafoodsource.com/news/supply-trade/covid-19-fears-driving-medicinal-interest-demand-for-sea-cucumbers-in-china>

600 kg sea cucumber worth Rs 3 crore seized by Indian Coast Guard¹¹

by Sidharth MP

New Delhi: An Indian Coast Guard team in Tamil Nadu seized 600 kg of sea cucumber from a small boat that was involved in smuggling. Based on a tip-off, the ICG team at Mandapam, Ramanathapuram district, tracked the suspected vessel and laid a cordon to block its escape.

Subsequently, the boat was found to be anchored off Uchhipalli, Ramanathapuram on Tuesday (October 19, 2021) afternoon.

Coast Guard nabs two for attempted smuggling of 1.2 tonnes of sea cucumber¹²

by Sidharth MP

Chennai: The Indian Coast Guard in a joint operation with the Forest Department seized 1200 kg of sea cucumber being smuggled off the coast of Mandapam, Ramanathapuram district in Tamil Nadu on Tuesday (July 6).

They arrested two persons who were trying to ship the consignment abroad illegally.

The joint patrol was initiated after intelligence was received regarding the illegal trans-shipment of sea cucumber in the late intervening hours of Monday and Tuesday. Operating in the dark of the night, the officials monitored the movement of a suspicious vessel and intercepted it.

“Boarding the vessel in the morning hours of Tuesday, officials recovered 100 gunny bags of sea cucumber weighing 1.2 tonnes and brought the two-crewed vessel to Mandapam North Fishing Harbour. Investigation revealed that the bags of Sea cucumber were meant to be shipped across the International Maritime Boundary Line (KMBL) under the cover of the night,” the ICG said in a statement.

Sea cucumbers are an important constituent of the coral ecosystem and are categorised as an ‘endangered species’ with their harvest being banned under the Wildlife Protection Act of 2001. They play an important role in maintaining the health of marine ecosystems.

Much of the sea cucumbers smuggled out of Tamil Nadu go to Sri Lanka and other South-East Asian countries, where they are consumed as food and used to prepare medicines.

Indian Coast Guard seize two tonnes of endangered sea cucumber worth Rs 80 million¹³

by Sidharth MP

The boat along with seized sea cucumbers was brought to Mandapam and handed over to forest officials.

Chennai: Based on a tip-off, the Indian Coast Guard team at Mandapam, Ramanathapuram, Tamil Nadu seized a 2-ton shipment of marine species Sea Cucumber, that was being smuggled via Indian waters. Early on Sunday, Coast Guard teams in the Gulf of Mannar and Palk Bay areas tracked the boat and laid a cordon to block the suspect vessel at sea.

Sea cucumbers are an important constituent of the marine ecosystem as they play an important role in maintaining the health of the ecosystem. In India, Sea cucumber is treated as an endangered species listed under schedule 1 of the Wildlife Protection Act of 1972.

The boat which was found anchored 15 km off the Vedalai South locality in Mandapam was boarded and searched by an ICG team. The boarding team of ICG Hovercraft H-183 recovered 200 gunny bags of sea cucumber weighing 2000kg or 2 tons. The boat along with seized sea cucumbers was brought to Mandapam and handed over to forest officials. The value of seized sea cucumbers is said to be around Rs.8 crores.

¹¹ <https://zeenews.india.com/india/600-kg-sea-cucumber-worth-rs-3-crore-seized-by-indian-coast-guard-2404074.html> crore

¹² <https://zeenews.india.com/india/coast-guard-nabs-two-for-attempted-smuggling-of-1-2-tonnes-of-sea-cucumber-2374439.html>

¹³ <https://www.wionews.com/india-news/indian-coast-guard-seizes-two-tonnes-of-endangered-sea-cucumber-worth-rs-80-million-414256>

According to the Coast Guard, an investigation revealed that the consignment was planned for transshipment across the International Maritime Boundary Line during dark hours. Sea cucumbers are in high demand in China and Southeast Asia, where it is consumed as food and used in medicine. This endangered species is primarily smuggled from Tamil Nadu to Sri Lanka in fishing vessels from Ramanathapuram and Tuticorin districts.

By excreting inorganic nitrogen and phosphorus, they enhance the productivity of benthic animals - those living on the ocean floor. One of the by-products of the sea cucumber's digestion of sand is calcium carbonate, a key component of coral reef. To survive, coral reefs must accumulate calcium carbonate, and thus sea cucumbers play a vital role in their preservation. Sea cucumbers also maintain the transparency of seawater by eating sewage. Feeding and excretion by sea cucumbers also increase alkalinity, which counteracts ocean acidification. Illegal harvesting and overexploitation of these animals leads to poorer sediment health, reduces nutrient recycling and impacts biodiversity.

2022 meetings

The Second International Conference on Biodiversity, Ecology and Conservation of Marine Ecosystems

More information at: <https://www.become2022.com/>

Workshop on sea cucumber aquaculture and diseases

A workshop with European researchers working on these topics in Europe and abroad, in collaboration with researchers from Thailand and Madagascar, will take place in October 2022 at "Station marine de Concarneau" (France)

For more information: Prof. Nadia Améziane: ameziane@mnhn.fr

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