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Current status of sea cucumber fisheries, management approaches and compliance

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Status of sea cucumber fisheries

1. Harvesting sea cucumbers to process into beche-de-mer is the most important coastal fishery product traded from the Pacific Islands region with many island and coastal communities deriving significant income from the sea cucumber fishery and beche-de-mer trade.
2. Due to increased demand from Asian markets, sea cucumber resources in many Pacific Island Countries and Territories (PICTs) have declined due to excess harvesting and exports. Management by national fisheries agencies, departments/authorities responsible has been less than effective and many PICTs have implemented moratoriums on the sea cucumber fishery and beche-de-mer trade over the last 10-20 years. The result being, a boom-and-bust fishery.
3. Sea cucumber fisheries have followed patterns of rapid spatial expansion at multiple scales, involving processes described as ‘serial exploitation’, ‘roving bandits’ and ‘contagious exploitation’, involving a high level of IUU. Between 1996 and 2011, the number of countries serving the Chinese sea cucumber market expanded from 35 to 831. From 2012 to 2016, dried and frozen beche-de-mer was reportedly supplied to Hong Kong SAR by 119 and 48 countries/territories respectively². For the past 25 years, 85% of all beche-de-mer exported from the Pacific Islands region has come from the Melanesian countries.
4. Vietnam is now becoming an increasingly important entry port as many importers try to avoid the duties now imposed on imports to Hong Kong. This has resulted in illegal movement of beche-de-mer from Vietnam to China.

Management, compliance and governance

5. Several PICTs have adopted management plans and/or regulations, and several more are developing management frameworks to manage their sea cucumber fishery and beche-de-mer trade. Various approaches are used in the management of sea cucumber fisheries including:
 - a. Total allowable catch (TACs);
 - b. Short-term harvest or opening season;
 - c. Minimum size limits;
 - d. Protected species;
 - e. Gear restrictions;
 - f. Limits on export and/or processing licenses; and
 - g. Requirement to submit BDM export data.

¹ Eriksson, H. and Clarke, S. 2015. Chinese market responses to overexploitation of sharks and sea cucumbers. *Biological Conservation*. 184. 163-173.

² Purcell, S.; Williamson, D. and Ngaluafe, P. 2018. Chinese market prices of beche-de-mer: Implications for fisheries and aquaculture. *Marine Policy*. 91: 58-65.

6. Monitoring TACs has proven difficult for many PICTs to effectively implement, with several PICTs exceeding their established TACs by two-to-three-fold. In some cases, PICTs extended the open seasons for harvesting sea cucumbers and allowing more time for the exporters to export beche-de-mer.
7. Enforcing size limits is another problematic area. For example, Fiji sampled various beche-de-mer species 2014 and determined that 36 % of them were under the regulation size, with 67 % being below scientifically recommended minimums. During a monitoring program in Vanuatu in 2016, it was determined that 82 % of all beche-de-mer exported was undersized³. Both fishers and governments lose significant revenue by not enforcing size limits on live sea cucumbers (i.e. allowing them to reach their reproductive potential and ability to spawn) and dried beche-de-mer. If size limits were enforced, it has been estimated that the long-term harvest of sea cucumber species could actually increase by up to 97% and generate up to 144% more revenue⁴. In addition, an increase of larger size sea cucumbers has additional benefits for the various marine environments where sea cucumbers are found.
8. Data collection is another area that requires improvement and more effort is required to gather information along the whole of the value chain. A closer collaboration between national fisheries agencies/departments/authorities and their national customs agencies could assist with better management of beche-de-mer exports.
9. Many PICTs fisheries agencies have limited enforcement capacity. Subsequently, if producing PICTs want to have their sea cucumber fisheries and beche-de-mer trade to continue to supply the economic benefits to their communities and national revenue, then there is a need to adopt appropriate management and enforcement procedures to ensure the long-term biological sustainability and economic benefits that come from the sea cucumber fishery and beche-de-mer trade. A greater focus on controlling what beche-de-mer exporters do would be a good starting point.
10. Despite significantly more training, increased stock surveys, better management plans, and substantial investment from donors, beche-de-mer exports and values have declined. Unfortunately, many management actions are routinely undermined by political interference and/or business interests (i.e. the beche-de-mer exporters and importers).

IUCN and CITES listing of sea cucumber species

11. The International Union for the Conservation of Nature (IUCN) Red List assessments place species into one of three threatened categories (Critically Endangered, CR; Endangered, EN; or Vulnerable, VU), or classify them as Near Threatened, NT; Least Concern, LC; or Data Deficient, DD.

³ Leopold, M. 2016. *Evaluating the harvest and management strategies for the sea cucumber fisheries in Vanuatu*. Projects No 4860A1 (BICH2MER) and CS14-3007-101 (BICHLAMAR). IRD, Noumea, 64pp.

⁴ Lee, S.; Govan, H.; Wolff, M. and Purcel, I M. 2018. Economic and other benefits of enforcing size limits in Melanesian sea cucumber fisheries. *SPC Fisheries Newsletter*. 155:29–36.

12. In 2013, the International Union for the Conservation of Nature conducted an assessment of more than 370 species of sea cucumbers in the order Aspidochirotida for its Red List of Threatened Species, and listed seven species as endangered, four of which are found in tropical waters. These are sandfish (*Holothuria scabra*), golden sandfish (*H. lessoni*), black teatfish (*H. whitmae*), and prickly redfish (*Thelenota ananas*). IUCN also listed nine species which were considered vulnerable, five of which are found in tropical waters. These are deepwater redfish (*Actinopyga echinites*), surf redfish (*A. mauritiana*), blackfish (*A. miliaris*), white teatfish (*H. fuscogilva*), and lastly, curryfish (*Stichopus hermanni*).
13. In 2015, the United States of America, proposed listing 36 sea cucumbers species for inclusion in Convention for the International Trade of Endangered Species's (CITES's) Appendix II at the 2016 17th CITES Convention of the Parties (CoP) meeting in Johannesburg, South Africa. The road for CITES listing of sea cucumbers actually started over fifteen years ago, when the United States of America in 2002 submitted a discussion paper at 12th CITES CoP in Santiago, Chile. To date, only one sea cucumber species is listed on Convention for the International Trade of Endangered Species, and this is *Isostichopus fuscus* from Ecuador, which is currently listed in Appendix III of CITES.
14. More recently, the European Union under a proposal by France has proposed to have the teatfish species, black teatfish (*H. whitmae*, and *H. nobilis*), and white teatfish (*H. fuscogilva*) listed on Appendix II of CITES.
15. In February 2019, the 6th Expert Panel of the Food Agriculture met in Rome to review this proposal by France and determined the following:
 - a. For White teatfish (*H. fuscogilva*), apart from localized cases of severe decline, the available information **did not meet the listing criteria** for CITES Appendix II;
 - b. For the Indian Ocean black teatfish (*H. nobilis*), the available **information was insufficient** to determine this species' status in relation to the listing criteria for CITES Appendix II at this time; however
 - c. For the Pacific Ocean black teatfish (*H. whitmaei*), the available information **met the listing criteria** for CITES Appendix II.
16. A decision to list these teatfish species will be made at the 18th CITES CoP to be held in Colombo, Sri Lanka from the 23rd June-03rd July 2019. The listing of the teatfish species could have benefits for management and may provide the much-needed political attention to the improvement of management of the sea cucumber fishery and beche-de-mer trade in many PICTs. However, the seven PICTs that are parties to CITES, Fiji, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga and Vanuatu will no longer have the freedom to harvest and export these three species. If these teatfish species are listed on CITES Appendix II at the 18th CITES CoP then these PICTs if they wish to continue to export these teatfish species will then require their national fisheries agencies/departments/authorities as the in-country Scientific Authority to make non-detrimental findings to allow for harvesting and exports to continue. They will also need to liaise with their counterpart national conservation agencies/departments as the in-country CITES Management Authority to issue permits for exports of these teatfish species.

PROP BDM project in Melanesian Spearhead Group countries, Federated States of Micronesia, Marshall Islands and Tuvalu

17. The SPC with financial support from the World Bank's Pacific Islands Regional Oceanscape Program (PROP)⁵. The SPC component of the PROP which started in 2017 and will end this year is to support participating countries to sustainably manage defined coastal fisheries, focusing on those value chains with the greatest potential for increased benefits, i.e. coastal fisheries such as BDM. Activities undertaken by SPC under the PROP are consistent with and complements the Melanesian Spearhead Group (MSG) Roadmap for Inshore Fisheries Management and Sustainable Development.
18. Activities undertaken during the first two years of the SPC component of the PROP include:
 - a. A review of sea cucumber fisheries data collection, management practices, market information and trends in six of the seven eligible countries.
 - b. The reactivation of the MSG Fisheries Technical Advisory Committee. In November 2017, the 7th FTAC met in Port Vila, Vanuatu where several sea cucumber fisheries information papers and briefs were produced for this meeting, including:
 - i. Status of Global and Pacific region sea cucumber fisheries;
 - ii. Maximum long-term economic value and ecological sustainability of sea cucumbers;
 - iii. Recovering the value of sea cucumber fisheries in Melanesia;
 - iv. Setting minimum size limits for MSG sea cucumber fisheries;
 - v. Buyer and market prices for BDM for Melanesia;
 - vi. Political will, transparency and information; and
 - vii. Harmonisation of conditions for sea cucumber fisheries management across Melanesia.
 - c. A sea cucumber fishery management meeting was held for non-MSG participating countries in September 2018 to strengthen and share management strategies for the sea cucumber fishery and beche-de-mer trade from around the region.
 - d. Developing a Policy Brief for submission to the Pacific Island Forum Leaders detailing the value of coastal fisheries, in particular beche-de-mer and highlighting several constraints for effective management.
19. The major project activities for 2019 are:
 - a. To convene MSG FTAC meeting;
 - b. Ongoing implementation of the political will engagement strategy;
 - c. An assessment on harmonising pricing structures for sea cucumbers and beche-de-mer as well as licensing conditions; and
 - d. Developing and maintaining a regional database, including detail on exports of various inshore fisheries commodities.

⁵ This program is located at the Forum Fisheries Agency in Honiara, Solomon Islands.