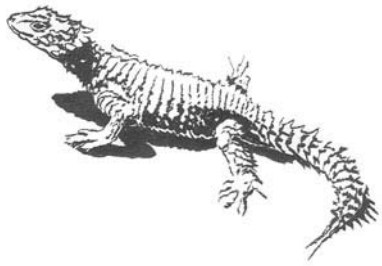
CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA



Twentieth meeting of the Animals Committee
Johannesburg (South Africa), 29 March-2 April 2004

CONSERVATION OF AND TRADE IN SEA CUCUMBERS IN THE FAMILIES HOLOTHURIDAE AND STICHOPODIDAE (DECISIONS 12.60 AND 12.61)

1. At its 12th meeting (CoP12, Santiago, 2002), the Conference of the Parties adopted Decisions 12.60 and 12.61 on sea cucumbers within the families Holothuridae and Stichopodidae. The CITES Secretariat was directed through Decision 12.61 to convene a technical workshop on this issue in cooperation with relevant bodies. In accordance with Decision 12.60, the Animals Committee is to review the outcomes of the workshop, develop appropriate recommendations, and prepare for consideration at CoP13 a discussion document on the biological and trade status of these sea cucumbers.

2. The CITES Secretariat consulted the Animals Committee at its 19th meeting (Geneva, August 2003) concerning the workshop's objectives, timing, participation, format and proposed agenda (see documents AC19 Doc. 17 and AC19 WG9 Doc. 1).

3. The Animals Committee defined the following objectives for the workshop:

   a) to review information on the status, catches and bycatches of and trade in specimens of sea cucumbers within the families Holothuridae and Stichopodidae; and on domestic measures for their conservation, including consideration of the adequacy of these measures;

   b) to establish conservation priorities and actions to ensure the conservation of sea cucumbers within the families Holothuridae and Stichopodidae, addressing inter alia trade monitoring and controls, national legislation and regulations, fisheries management options, conservation management and research, enforcement and capacity building; and

   c) to formulate findings and recommendations that would contribute towards the discussion paper on the biological and trade status of sea cucumbers within the families Holothuridae and Stichopodidae to be prepared by the Animals Committee for discussion at the present meeting.

4. The technical workshop on the conservation of sea cucumbers in the families Holothuridae and Stichopodidae took place in Kuala Lumpur, Malaysia, from 1 to 3 March 2004. It was attended by about 40 experts and representatives from exporting and importing countries, private industry, and IGO's and NGO's (see annex 4).

5. During two initial sessions of the workshop, general background documents were presented on the objectives of and background to the workshop; sea cucumber biology (including taxonomy;

distribution; conservation status); utilization of and trade in sea cucumbers (including sea cucumber fisheries; levels of current international trade; illegal, unreported and unregulated trade; bycatch; socio-economic characteristics) and on fisheries management and conservation (including management options and practices; CITES and CITES listings). These general presentations were followed by a session during which country status reports were presented (See agenda of the technical workshop in annex 2).

6. In the final two sessions of the workshop, three working groups were established to address specific questions concerning national fisheries management, priorities for international conservation and protection, and potential CITES implementation issues (see terms of reference of the three working groups in annex 3). The findings and recommendations of the working groups were presented and commented upon in plenary.

7. The participants in the workshop endorsed and built upon the recommendations made at the FAO Workshop on Advances in Sea Cucumber Aquaculture and Management (ASCAM) (14-18 October 2003; Dalian, China), which were distributed as document Inf. 3. The findings and recommendations of the technical workshop on the conservation of sea cucumbers in the families Holothuridae and Stichopodidae should therefore be interpreted and applied in conjunction with the outcomes of the ASCAM workshop. The main findings and recommendations of the technical workshop are presented in annex 1.

8. As required under Decision 12.60, the Animals Committee should review, with the assistance of experts as may be needed, the outcomes of the technical workshop and other available information concerning the biology, catch and bycatch of and trade in sea cucumbers within the families Holothuridae and Stichopodidae, and develop appropriate recommendations for inclusion in a discussion paper for consideration at the 13th meeting of the Conference of the Parties (Bangkok, 3-15 October 2004).

TECHNICAL WORKSHOP ON THE CONSERVATION OF SEA CUCUMBERS
IN THE FAMILIES HOLOTHURIDAE AND STICHOPODIDAE
KUALA LUMPUR (MALAYSIA), 1-3 MARCH 2004

FINDINGS AND RECOMMENDATIONS

National fisheries management

General recommendations concerning national fisheries measures for conservation and management of sea cucumbers in the families Holothuridae and Stichopodidae

National Management Programs

1. A number of management tools that are in use or have been recommended in countries with sea cucumber fisheries that have biological and economic benefits. These include minimum size limits, gear restrictions, spatial and seasonal closures, rotational harvests and limited entry. These measures may be adopted either singly or in combination, using an adaptive management process. Measures adopted in each location will depend on the status of the fishery, available information, and feasibility.

2. There is no one best management tool. Specific management measures that are practical and can be adopted will depend on the particular circumstances in each fishery, with specific considerations for tropical and temperate fisheries; number of target species; existing knowledge and capacity; and fishery arrangements.

3. Where possible, management development should involve community participation, with emphasis on building a sense of community resource ownership.

4. As an initial step, three different management scenarios could be developed depending on the existing arrangements, including:

   a) open-access fisheries with little or no information on the fishery;

   b) marine tenure or community-based managed areas with some knowledge of the fishery; and

   c) locally or nationally managed fisheries with certain protective measures in place and methods to obtain catch and resource data but an incomplete understanding of effectiveness of measures and critical gaps in necessary information.

5. The essential steps of an adaptive management process could include:

   a) Characterization of the fishery (number of fishers, location and amount of catch by species etc), markets and domestic trade routes;

   b) Application of minimum size limit for export;

   c) Evaluation of minimum size limit on sea cucumber populations using fishery-dependent data and population assessments;

   d) If catch data and/or population data indicate the fishery is declining, area closures could be implemented within collection areas;

   e) In the absence of sufficient fishery dependent/independent data to clearly show that stocks are declining, area closures and other options such as seasonal closures and rotational harvest could be applied as a precautionary approach;

f) As soon as sufficient data are available, a total allowable catch could be implemented;

g) If stocks continue to decline, the implementation of total area closures for the affected species may be recommended to allow recovery of stocks; human-assisted aggregation of sexually mature adults may also be carried out to promote fertilization rates and subsequent recruitment; and

h) Collection and analysis of population survey and catch data could be maintained for the worst case scenario described in paragraph 7; the fishery could be reopened at precautionary levels once population surveys indicate recovery.

6. More specific recommendations on an adaptive management process could be made for individual countries through an analysis of present fishery status, existing management measures, and perceived problems using information obtained from country reports presented at ASCAM and CITES workshops, in the SPC Bêche-de-mer Information Bulletin and other publications, and through expert consultations.

7. Evidence suggest that some sea cucumber populations and/or species are in decline and pressures on these resources are increasing. Given the vulnerable status of these fisheries, difficulties in obtaining critical data needed for management, and challenges in implementing protective measures to address overexploitation, international measures such as a CITES Appendix-II listing could offer substantial benefits through the required reporting of trade statistics and the non-detriment finding provided by this listing.

Resource, fishery and trade monitoring and data acquisition

8. Countries should work to implement monitoring programs with emphasis on a) improved collection, reporting and information sharing of fishery-dependent data on species-specific catch, effort, sizes, locations etc and b) implementation of field monitoring programs to obtain information on sea cucumber distribution, densities, and other relevant data.

9. Standardized reporting of exports by species and products should be encouraged. Trade routes should be identified and if possible, they should be consolidated. Legitimate trade routes should be encouraged to prevent the proliferation of black market trading that hampers the accurate estimation and monitoring of stock removals.

10. Wherever possible, existing monitoring programs should be encouraged to add sea cucumbers to their purview. While the specific method used to monitor populations can vary, standardized approaches should be utilized within individual fisheries to allow comparison of data over time, with pilot studies undertaken to identify the optimal approach for the particular situation. Field monitoring should utilize stratified random sampling approaches to obtain relevant information for each habitat type or zone, with sufficient replication in as many locations as feasible.

11. Sea cucumber fishers, industry and community members should be encouraged to participate in monitoring programs and technical assistance in the form of training programs in monitoring methods, species identification, and application of monitoring data towards management should be provided.

Education and capacity building

12. One of the greatest needs is for improved education, training and dissemination of resource tools to assist in sea cucumber identification, best collection practices, reporting provisions, processing techniques, and management approaches for all levels of the production and marketing chain as appropriate (e.g., local fishers, processors, buyers, middlemen, resource managers and owners, and enforcement officials).

13. Communication networks should be encouraged, possibly through a web-based forum, with emphasis on possible regional networks that transfer information and provide technical assistance to local communities through some form of national/rural extension network. This could be attached to

existing networks or programs (e.g., SPC, SPREP) or involve the creation of a more specific network for related multi-species (invertebrate) fisheries.

14. National and local advisory groups involving fishers, processors, buyers, resource owners/managers and fisheries agencies should also be encouraged to enhance conservation and management, and address socioeconomic needs.

Enforcement

15. There is an overarching need to improve enforcement capacity to address poaching and illegal trade, and to ensure that user groups adhere to adopted management measures. The specific enforcement approach will depend on the individual circumstances and could involve national or local governments, or communities. An effective enforcement program in developing countries is likely to require substantial support and assistance from developed countries.

Specific recommendations concerning national fisheries measures for conservation and management of sea cucumbers in the families Holothuridae and Stichopodidae

16. It is recommended that a Sea Cucumber Fishery Management Plan be developed and implemented in each country as an integral component of a sea cucumber conservation strategy. A prioritized list of specific fisheries management measures is presented in Table 1. These are the following: adoption of minimum size limits (SL); develop area closures; establishment a Total Allowable Catch (TAC), impose gear restriction; rotational harvests; seasonal closures of the fisheries; limit entry to the fisheries; and adopt collection practices. The measures are prioritized by feasibility, achievability and relative ease of obtaining the necessary information to implement them. The prioritization is indicative only. The fishery management measures in Table 1 may be used individually or in combination. For some species it is likely that more than one measure will be necessary to ensure sustainability.

Table 1. Specific recommendations concerning national fisheries measures for conservation and management of sea cucumbers in the families Holothuridae and Stichopodidae

Priority	Measure	Recommendations	Comments	Information needs
1	Minimum size limit (SL)	1. That a minimum size limit be set based on size at Onset of Sexual Maturity (OSM). The SL regulation should be based on dried animals. 2. Recognizing the difficulty of enforcing individual SL for each species, two alternative approaches are proposed: (1) that four size limits be set; (2) that a SL be set in a form of relevance to the trade—i.e., ban trade in the XS (extra small) and perhaps S (small) categories. 3. To avoid the wasteful harvesting of undersized sea cucumber it is recommended that communities be educated as to the minimum wet length of sea cucumber species so that undersized sea cucumbers are not harvested. 4. Wet SL should be set for each species, based on size at OSM.	- Minimum SL was identified as an important measure to protect against overfishing and recruitment failure if set at a level that ensures adequate reproduction below the SL. - Minimum SL based on wet weight is impossible because of extreme size/shape changes. - If international/regional SLs are set, these should be regarded as minima for each country. Each country may choose to set higher SL to provide further protection if desired, or if biological analysis demonstrates this is advisable. - Since bêche-de-mer is traded in various forms (dried, frozen, salted, etc), a SL for only dried product is practical since all other forms have variable water content and therefore degrees of shrinkage. - Trade in portions of bêche-de-mer should be prohibited so that chopped undersized bêche-de-mer are not sold. - A minimum SL on dried product will not work for value-added product (pills, meals, etc) created in-country. This needs to be addressed. - A minimum SL is not sufficient for species where juveniles are not findable (i.e. the catch is only of mature adults, such as in case of *Holothuria nobilis*) but still are prone to depletion. A minimum SL therefore needs to be used in combination with other measures to constrain fishing pressure.	- Samples of each species, spanning the size range over which the transition from immature to sexually mature is made, should be taken. Sexual condition (male, female, immature) should be determined for each animal by inspecting the gonad. The maturation ogive (an S-shaped curve, from 0% mature to 100% mature with increasing size) should be created. The size at 50% maturity is then determined, and the minimum SL set as slightly above this length. With information on growth and the length-fecundity relationship, it is possible to use more detailed methods (egg-per-recruit analysis) to determine an appropriate SL more precisely.
2	Area closures	1. That communitis identify good habitat for their commercially harvested sea cucumber species, and set aside a portion of habitat in a protected area for protection of a portion of the population to safeguard against depletion of spawning stock biomass. 2. Spatial closures are recommended as a	- In principle the idea of protecting a portion of a fished population within areas closed to fishing makes sense. The effectiveness of this management measure depends on its location with respect to larval transport (sources and sinks), and on planktonic larval duration (among other things). - In areas with resource tenure, closures may have to be very small, thus communities should be	- Information for optimal placement and size of protected areas is difficult to obtain. In many countries and locations it will not be possible to obtain this information. It may be necessary (and sufficient) to use local knowledge on water currents and species to best locate a closed area. In many places it will be necessary to obtain the approval of the local community in the

		possible tool to enhance stocks in surrounding fished areas but these need to be flexible and developed using best available information on current flows (likely 'source' and 'sink' areas) sea cucumber biology and community needs and interests.	encouraged to identify areas with diverse, high density sea cucumber areas that could be protected to maximize possible benefits. - It is noted that setting aside marine protected areas can foster within a community a sense of stewardship and sustainable fishery management, and this may include the re-establishment of traditional fishery management measures.	location of the reserve.
3	Total Allowable Catch (TAC)	1. That the effectiveness and enforceability of a TAC for sea cucumber be evaluated by reviewing its success elsewhere (e.g. in Papua New Guinea, where a TAC is part of the management plan: "That a TAC be set for each Province … using the best information available").	- It is noted that a TAC may be an effective way of controlling fishing, but may require large amounts of monitoring for effective compliance. - A TAC may be set in two ways: (1) as a proportion of the spawning stock biomass (e.g. 30% in Mexico); or (2) from historical catch records. The latter approach can only work when there is a long time series of catch (and catch rate) data. It is noted that a TAC appropriate when stock levels are in good condition will likely be too high if stocks have become depleted. - Monitoring of catch as it happens is essential for TAC management fisheries. Implementation and compliance may be major obstacles in many countries. - A TAC would have to be set for each species to avoid serial depletion. This is probably impossible if using method (2) because catch data are not often collected by species (this applies especially to catch rates). - There may be equitability issues associated with quotas when issued as individual quotas; or in the case of a competitive TAC may result in uncontrolled fishing and likely quota over-runs.	- Method 1: Estimates of abundance of fishable biomass (i.e., of legal size). These may be obtained using area-based (e.g., transect) methods, or other methods where appropriate. This is most feasible, and likely to be more reliable, when the fishing areas are small (as in Mexico). - Method 2: From a time series of catch data, determine catch levels at which harvests appear sustainable. This is a very simplified approach, but not much more may be achievable in many countries.
4	Gear restrictions	1. Diving (SCUBA or HOOKAH) Prohibition on use of compressed air was not supported, but recommendations for depth restrictions and education on safe diving practices is essential. 2. Trawling	- Pros: Some fisheries (e.g. U.S.A.) can only feasibly involve harvest using dive gear, as other methods (trawling) would be more destructive. - Cons: Trawling is the only possible method in deep water.	

		A prohibition on the use of trawl gear is not feasible, but efforts should be directed towards minimizing habitat damage overall and protecting vulnerable habitats that are important for sea cucumbers and other species. In general, trawling should be prohibited in any high relief coral or rocky bottom habitat to reduce bycatch and habitat damage to these fragile habitats, and gear should be as benign as possible.		
5	Rotational harvest	1. Rotational harvest could benefit certain fisheries but it would have to be used in combination with other management tools.	- Pros: Can offer biological benefits by allowing individuals to achieve a larger size - Cons: May be difficult to implement in areas with resource tenure like Fiji, where the fisheries are community-owned.	- Determining appropriate rotation rates will require an adaptive management approach, i.e. not feasible to determine this on the basis of population or recruitment information.
6	Seasonal closures	1. Seasonal closures could include closures during reproductive periods to protect spawning stock, or closures during other times of the year to reduce overall effort. 2. However natural closures during certain periods of the year (such annual closures during the monsoon season) would still be beneficial to sea cucumber populations.	- Where the reproductive season is extended over many months, seasonal closure must be for reasons other than to protect reproductive stock. - The multi-species nature of many fisheries, and the asynchrony of spawning season between species, compounds the problem. It is noted, however, that restricting the fishing season, for whatever reason, provides conservation benefits by constraining fishing mortality.	- Where the rationale for closure is the spawning season: information on duration of the spawning season.
7	Limited entry	1. Limited entry provides a way to cap effort and get information on the fishery with required submission of logbooks.	- Cons: Not feasible to implement in countries where for social or cultural reasons limited entry is not acceptable.	- This will require a social and economic analysis to determine the impacts and benefits of this approach.
8	Collection practices	1. That collection methods that are destructive of the habitat not be used 2. This means: don't turn boulders or coral heads to search for sea cucumber because this may inhibit subsequent recruitment.	- If this is in the Management Plan, as opposed to being in a Code of Practice, this would ban trawl-fishing for sea cucumber. - Unless a country is adopting a ban on bottom trawling, irrespective of target species, then a ban on trawling for sea cucumber alone may be inconsistent with policy, or unjustifiably target one fishery but not others.	-

Priorities for international conservation and protection

General findings concerning international measures for conservation and management of sea cucumbers in the families Holothuridae and Stichopodidae

17. Sea cucumber fisheries have a long history of exploitation, with records dating back to the early 18th century. These fisheries should be viewed through three characteristics: multi-specific versus mono-specific; tropical versus temperate; traditional (artisanal) versus recent (industrial).

18. There is no scientific evidence or perception that sea cucumber stocks presently under exploitation are at risk of biological extinction (except at the local level). Generally, economic extinction (too scarce for harvesting to be profitable) occurs before biological extinction. This may not be true, however, when high-value species continue to be harvested, even when at very low levels of abundance, by fishers who have turned to less-valuable species; the incidental catch of depleted high-value species may drive them towards local extinction. The negative ecosystem effects of stock depletions or the long-term effects on such species for stock recovery, geographical coverage etc are not known, although there is a belief in some coastal fishing communities that sea cucumbers 'keep the sea floor clean'. The recorded 'boom and bust' nature of largely unregulated fisheries often reflects similar fluctuations in stock abundance.

19. It is recognized that the framework that would support sea cucumber fisheries management and reporting is at an early stage of development in most fishing nations.

20. Basic biological and ecological information is still limited for most commercial species. In addition, the recorded history of fisheries is not detailed enough to allow useful determination of sustainable catch rates.

21. The establishment of appropriate management for sea cucumber fisheries is generally hampered by this situation.

22. However, it is critical for the following measures to be seen as a priority, and for there to be some leverage which promotes the development of management strategies and harmonized trade reporting.

Bio geographical 'hot spots' for sea cucumbers in the families Holothuridae and Stichopodidae

23. The biogeographical hotspots for sea cucumbers in the families Holothuridae and Stichopodidae are identified as follows (based on FAO regions):

    - East Coast of Africa and the Red Sea including Egypt, Kenya, Madagascar, Mozambique, Somalia, Sudan, Tanzania and Yemen and West Indian Ocean Island countries including Comoros, Madagascar and Seychelles.

    - Western Pacific including Fiji, New Caledonia, Papua New Guinea, Solomon Islands, Tonga and Vanuatu.

    - Asia including China, Indonesia, Malaysia, Philippines, Thailand and Viet Nam.

    - Central and north western part of South America including Costa Rica, Ecuador, Guatemala, Honduras and Mexico.

Taxa of conservation concern

24. Table 2 lists all main commercial sea cucumber species in the families Stichopodidae, Holothuridae and Cucumariidae. Some species require further taxonomic revisions. The Table provides an indication of the levels of concern (1: high concern; 2: concern in certain countries of its range; 3 potential for future concern as harvests increase; 4: no concern; 5: minor species of little commercial importance) and the commercial value (1: high; 2: medium; 3: low; x: unknown), the region where the species occurs, and comments regarding the management concerns. It should be noted that Table 2 and 3 provide provisional assessments of the levels of concern for certain species, based on

the best information available to the working group. Further research or information may change some assessments.

25. The criteria used for designating concern levels do not relate to perceptions that stocks of sea cucumbers are in danger of biological extinction. The levels 1-5 reflect concerns for more careful management and trade stabilization. The criteria used to designate categories 1-5 took into account the following 7 elements: a) Commercial value; b) Vulnerability to harvest and environmental fluctuations; c) Geographic distribution; d) Historical and present status of the different populations; e) Importance in the world trade; f) Concern raised by several countries; and g) Knowledge of particular life strategies (e.g. slow growth, low natural mortality, long life spen) or genetic information (e.g. isolated populations).

26. Table 3 provides further details on the holothurian species that were categorized as of high concern (category 1), of concern in certain countries of its range (category 2), or as having the potential for future concern as harvests increase (category 3), and gives additional justifications for the categorizations.
The species regarded as of urgent concern are *Holothuria fuscogilva*, Holothuria nobilis*, Holothuria scabra, Thelenota ananas* and *Isostichopus fuscus.* Species that are of concern in certain parts or countries of its range are *Actinopyga echinites*, Holothuria scabra versicolor*, Actinopyga lecanora, Actinopyga miliaris*, Actinopyga mauritiana, Stichopus herrmanni*, Stichopus horrens* and *Stichopus chloronotus.* The species for which information indicates a potential of future concern as harvests increase are *Bohadschia argus, Holothuria fuscopunctata, Parastichopus californicus* and *Isostichopus badionotus.* ('*' signifies uncertain taxonomic status).

International measures to enhance conservation and management of Sea cucumbers in the families Holothuridae and Stichopodidae

General management measures

27. Based on the recommendations regarding sea cucumber fisheries and management formulated at the ASCAM workshop, the various types of general measures that could be considered are as follows:

    - National/regional capacity building, possibly through CITES, at regional level
    - FAO-International Plan Of Action
    - Standard reporting system for exports as recommended by FAO
    - Harmonized Customs codes – similar system could be used (i.e. as for sharks under CITES)
    - Resource assessment (stock assessment/re-assessment)
    - Promote processing and education, and provide better knowledge of processing methods and true market value to fishers or fishing cooperatives, allowing them to negotiate as good a price as possible
    - FAO-COFI working group and/or UNEP-WCMC to conduct trade/market analysis
    - Adopt code of conduct, including size limits
    - Management plans and critical research needs as recommended at the ASCAM workshop
    - Resolve taxonomic identification problems and clarify the use of common (commercially-used) names for different species in trade.

28. Table 4 lists more specifically the types of international measures identified (voluntary, regulatory, regional or international) to enhance general conservation and management of Sea cucumbers in the families Holothuridae and Stichopodidae, with for each an indication of the actors that could contribute towards their implementation, and the anticipated impacts on stakeholders.

Measures concerning species of concern or possible concern

29. The following measures should be considered for the species categorized as of high concern, of concern in certain countries of its range, or as having the potential for future concern as harvests increase (see Table 3): a) exporting countries should develop and implement a regionally harmonized national management plan for this species; b) internationally harmonized reporting codes for export of these species should be adopted; and c) priority should be given to these species for basic biological and ecological research and stock assessments.

Table 2. Main commercial holothurian species (Stichopodidae, Holothuridae and Cucumariidae)

Concern level **1: high concern** **2: concern in certain countries of its range** **3: potential for future concern as harvests increase** **4: No concern** **5: Minor species of little commercial importance**	**Species** *** taxonomy to be revised**	**Family**	**Common Name**	**Comments re. concerns** Note: Indonesia and the Philippines export significant quantities of Sea cucumbers but have limited data available of what is fished and the state of stocks	**Commercial value:** **1: high** **2: medium** **3: low** **X: unknown**	**Region (FAO code)**
2	*Actinopyga echinites**	Holothuridae	Deep water redfish	Taxonomic only	2	Pacific Western Central; Indian Ocean Eastern; Indian Ocean Eastern (PWC 71, IOE 51, IOE 57)
3	*Actinopyga lecanora*	Holothuridae	Stonefish	Zone 2 (no information Indonesia and Philippines); notable in PNG fishery	2	Pacific Western Central; Indian Ocean Eastern; Indian Ocean Eastern (PWC 71, IOE 51, IOE 57)
2	*Actinopyga miliaris**	Holothuridae	Blackfish	Taxonomic confusion - species mixing; Zone 2 (no information Indonesia and Philippines); susceptible to harvest; Species found at high densities in protected bays (shallow water); widely distributed	2	Pacific Western Central; Indian Ocean Eastern; Indian Ocean Eastern (PWC 71, IOE 51, IOE 57)
2	*Actinopyga mauritiana*	Holothuridae	Surf redfish	Zone 1 (no information Indonesia & Philippines), esp. Red Sea	2	Pacific Western Central; Indian Ocean Eastern; Indian Ocean Eastern (PWC 71, IOE 51, IOE 60)
4	*Actinopyga palauensis*	Holothuridae			2	Pacific Western Central; Indian Ocean Eastern; Indian Ocean Eastern (PWC 71, IOE 51, IOE 61)
5	*Bohadschia atra*	Holothuridae			3	Pacific Western Central; Indian Ocean Eastern; Indian Ocean Eastern (PWC 71, IOE 51, IOE 62)
3	*Bohadschia argus*	Holothuridae	Tigerfish	Future species of concern; Zone 2 (no information Indonesia and Philippines)	3	Pacific Western Central; Indian Ocean Eastern; Indian Ocean Eastern (PWC 71, IOE 51, IOE 63)
4	*Bohadschia marmorata**	Holothuridae	Brown sandfish	This species and *B. vitiensis* intereported due to similarities in appearance	3	Pacific Western Central; Indian Ocean Eastern; Indian Ocean Eastern (PWC 71, IOE 51, IOE 64)

4	*Bohadschia vitiensis* *	Holothuridae	Brown sandfish	This species and *B. marmorata* intereported due to similarities in appearance	3	Pacific Western Central; Indian Ocean Eastern; Indian Ocean Eastern (PWC 71, IOE 51, IOE 65)
5	*Bohadschia subrubra*	Holothuridae			3	Pacific Western Central; Indian Ocean Eastern; Indian Ocean Eastern (PWC 71, IOE 51, IOE 66)
4	*Bohadschia similis*	Holothuridae	Chalkfish		3	Pacific Western Central; Indian Ocean Eastern; Indian Ocean Eastern (PWC 71, IOE 51, IOE 67)
5	*Holothuria arenicola*	Holothuridae			3	Pacific Western Central; Indian Ocean Eastern; Indian Ocean Eastern (PWC 71, IOE 51, IOE 68)
5	*Holothuria cinerascens*	Holothuridae			3	Pacific Western Central; Indian Ocean Eastern; Indian Ocean Eastern (PWC 71, IOE 51, IOE 69)
4	*Holothuria atra*	Holothuridae	Lollyfish		3	Pacific Western Central; Indian Ocean Eastern; Indian Ocean Eastern (PWC 71, IOE 51, IOE 70)
4	*Holothuria coluber*	Holothuridae	Snakefish		3	Pacific Western Central; Indian Ocean Eastern; Indian Ocean Eastern (PWC 71, IOE 51, IOE 71)
4	*Holothuria edulis*	Holothuridae	Pinkfish		3	Pacific Western Central, Indian Ocean Eastern, Indian Ocean Eastern (PWC 71, IOE 51, IOE 72)
1	*Holothuria fuscogilva* *	Holothuridae	Whit teatfish	Zones 1, 2, 3 (no information Indonesia & Philippines); Species not easily accessible (deep water refuge provides surrogate protection); Slow growth and high commercial value; Even quotas in well managed fisheries (E. coast Australia) have been reduced as a precautionary measure).	1	Pacific Western Central, Indian Ocean Eastern, Indian Ocean Eastern (PWC 71, IOE 51, IOE)
3	*Holothuria fuscopunctata*	Holothuridae	Elephant trunkfish	Future species of concern; Zone 2 (no information Indonesia & Philippines); Species not easily accessible (deep water refuge provides surrogate protection).	3	Pacific Western Central, Indian Ocean Eastern, Indian Ocean Eastern (PWC 71, IOE 51, IOE 74)
4	*Holothuria leucospilota*	Holothuridae			3	Pacific Western Central, Indian Ocean Eastern, Indian Ocean Eastern (PWC 71, IOE 51, IOE 75)
5	*Holothuria impatiens*	Holothuridae		Low commercial value - some concern in Madagascar (no information Indonesia and Philippines)	3	Pacific Western Central, Indian Ocean Eastern, Indian Ocean Eastern (PWC 71, IOE 51, IOE 76)

1	*Holothuria nobilis**	Holothuridae	Black teatfish	Zones 1, 2, 3 (no information Indonesia & Philippines); Susceptible easily accessed shallow water stock of concern; Slow growing species found at low densities; Even in tightly managed fisheries e.g. East coast Australia the quota has needed to be withdrawn pending further studies	1	Pacific Western Central, Indian Ocean Eastern, Indian Ocean Eastern (PWC 71, IOE 51, IOE 77)
1	*Holothuria scabra*	Holothuridae	Sandfish	Zones 1, 2, 3 (no information Indonesia & Philippines); Susceptible shallow water stock (studies presently planned to investigate for deeper water stocks in Australia); Muddy bottom species easily targeted; Can be found at high densities; Subject to population fluctuations due environmental location; Genetically isolated populations found on relatively small scales; Represents most of the global market; Aquaculture potential; Evidence of localized economic depletions found across Pacific, Madagascar, Tanzania, Red Sea; Australia presents a contrary view with a stable fishery at 200-300 metric tonnes (wet eight) per annum.	1	Pacific Western Central, Indian Ocean Eastern, Indian Ocean Eastern (PWC 71, IOE 51, IOE 78)
2	*Holothuria scabra var. versicolor**	Holothuridae	Golden sandfish	Zones 2, (no information Indonesia and Philippines); More information needed for other zones; Catches of this species are often reported under sandfish; Has a high commercial value.	1	Pacific Western Central, Indian Ocean Eastern, Indian Ocean Eastern (PWC 71, IOE 51, IOE 79)
4	*Pearsonothuria graeffei*	Holothuridae	Flowerfish		3	Pacific Western Central, Indian Ocean Eastern, Indian Ocean Eastern (PWC 71, IOE 51, IOE 80)
2	*Stichopus chloronotus*	Stichopodidae	Greenfish	Future species of concern; Zone 2 (no information Indonesia and Philippines); value increasing	2	Pacific Western Central, Indian Ocean Eastern, Indian Ocean Eastern (PWC 71, IOE 51, IOE 81)
2	*Stichopus herrmanni **	Stichopodidae	Curryfish	Zones 1, 3 (no information Indonesia and Philippines); future concern in Zone 2; found in protected waters, easily fished; problems with processing	2	Pacific Western Central, Indian Ocean Eastern, Indian Ocean Eastern (PWC 71, IOE 51, IOE 82)
3	*Stichopus horrens*	Stichopodidae	Dragonfish	Zones 3 (no information Indonesia and Philippines), especially in parts of Malaysia and Thailand	3	Pacific Western Central, Indian Ocean Eastern, Indian Ocean Eastern (PWC 71, IOE 51, IOE 83)

1	*Thelenota ananas*	Stichopodidae	Prickly redfish	Zones 1, 2, 3 (no information Indonesia and Philippines); Large species of medium to high value; Susceptible as low fecundity and late sexual maturity.	1-2	Pacific Western Central, Indian Ocean Eastern, Indian Ocean Eastern (PWC 71, IOE 51, IOE)
3	*Thelenota anax*	Stichopodidae	Amberfish	Potential replacement of higher value species.	2	Pacific Western Central, Indian Ocean Eastern, Indian Ocean Eastern (PWC 71, IOE 51, IOE)
4	*Thelenota rubralineata*	Stichopodidae		More information needed	3	Pacific Western Central (PWC 71)
3	*Athyonidium chilensis*	Cucumariidae		More information needed; Recent non traditional growing fishery.	x	Pacific Southeast (PSE 87)
5	*Stichopus mollis*	Stichopodidae				Pacific Southwest (PSW 81)
4	*Apostichopus japonicus*	Stichopodidae			1	Pacific Northwest (PNW 61)
4	*Parastichopus parvimensis*	Stichopodidae			x	Pacific Eastern Central (PEC 77)
3	*Parastichopus californicus*	Stichopodidae		Future concern.	x	Pacific Eastern Central (PEC 77)
1	*Isostichopus fuscus*	Stichopodidae		Concern Ecuador, (Galapagos) and Mexico; small range; Generally mono species fishery without other options for fishers.	x	Pacific Eastern Central (PEC 77)
3	*Cucumaria frondosa*	Cucumariidae		More information needed	x	Atlantic Northwest (ANW 21)
4	*Actinopyga agassizi*	Holothuridae			x	Atlantic Western Central (AWC 31)
4	*Holothuria mexicana*	Holothuridae			x	Atlantic Western Central (AWC 31)
4	*Astichopus multifidus*	Stichopodidae			x	Atlantic Western Central (AWC 31)
3	*Isostichopus badionotus*	Stichopodidae		More information needed	x	Atlantic Western Central (AWC 31)

Table 3. Main commercial holothurian species from concern levels 1, 2 and 3 (see Table 2)			
Concern level **1: high concern** **2: concern in certain countries of its range** **3: potential for future concern as harvests increase**	**Concern level** **1: high concern** **2: concern in certain countries of its range** **3: potential for future concern as harvests increase**	**Concern level** **1: high concern** **2: concern in certain countries of its range** **3: potential for future concern as harvests increase**	**Concern level** **1: high concern** **2: concern in certain countries of its range** **3: potential for future concern as harvests increase**
1	1	1	1
1	1	1	1
1	1	1	1
1	1	1	1
1	1	1	1
2	2	2	2
2	2	2	2
2	2	2	2
2	2	2	2
2	2	2	2
2	2	2	2
2	2	2	2
3	3	3	3
2	2	2	2
3	3	3	3
3	3	3	3
3	3	3	3
3	3	3	3

Table 4. International measures (voluntary; regulatory; regional and international) for ensuring management and conservation of Sea cucumbers in the families Holothuridae and Stichopodidae			
Measure	**Detailed action**	**Possible body to undertake action or to provide assistance**	**Implications for stakeholders**
1. Basic biology ecology	- Taxonomic research	Global Taxonomic Initiative, National and regional Bodies, University	Trade definition/legal definitions. Distribution awareness. Design of Marine Protected Areas.
	- Population parameters (larval, recruitment, growth, mortality)	University	Understanding of species vulnerability in order to design appropriate management strategies
	- Restocking issues	WorldFish Centre, University	
	- Habitat understanding & effects of sea cucumber removal	University	
2. Fishery assessment (Density and biomass, indirect measures, MSY)	- Design improvement and harmonization/standardization of methodology	SPC, CSIRO, GBRMPA, FAO, University	Allow comparisons across regions of fishery experience
	- Case study reports (both good &bad)	SPC, USP, FAO, University	Potential of understanding of carrying capacity and TAC settings
3. Trade measures	- Harmonization of trade reporting	CITES, FAO	Understanding catch and trends and commercial activity
	- Trade bulletins	INFOFISH	Understanding the market
4. Fisheries management	- Management plans with regionally harmonized comparable data collection	FAO, SPC, other regional fisheries bodies	Stock awareness, achieving optimal sustainability Short- to medium-term economic hardship
	- Research into restocking effects	WorldFish Centre	
5. Capacity building	- Management plans	FAO, SPC	
	- Post harvest for fishers	SPC, FAO	
	- Management training for national administrators	Fishery body	
	- Training of customs / clearance officers	CITES	
	- Research and assessment training		
6. Communication and awareness	- Educational training material fisher/administrator	SPC, CITES, Fishery body	
	- Trade bulletins		

Table 4. International measures (voluntary; regulatory; regional and international) for ensuring management and conservation of Sea cucumbers in the families Holothuridae and Stichopodidae			
Measure	**Detailed action**	**Possible body to undertake action or to provide assistance**	**Implications for stakeholders**
1. Basic biology ecology	- Taxonomic research	Global Taxonomic Initiative, National and regional Bodies	Trade definition/legal definitions. Distribution awareness. Design of Marine Protected Areas.
	- Population parameters (larval, recruitment, growth, mortality)	University	Understanding of species vulnerability in order to design appropriate management strategies
	- Restocking issues	WORLDFISH	
	- Habitat understanding & effects of sea cucumber removal	IRD	
2. Fishery assessment (Density and biomass, indirect measures, MSY)	- Design improvement & Harmonization of methodology	SPC, CSIRO, GBRMPA, FAO	Allow comparisons across regions of fishery experience
	- Case study reports (both good &bad)	SPC, USP, FAO	Potential of understanding of carrying capacity and TAC settings
3. Trade measures	- Harmonization of trade reporting	CITES FAO	Understanding catch and trends and commercial activity
	- Trade bulletins		Understanding the market
4. Fisheries management	- Management plans with regionally harmonized comparable data collection	FAO, SPC, other regional fisheries bodies	Stock awareness, achieving optimal sustainability Short- to medium-term economic hardship
	- Research into restocking effects	WORLDFISH	
5. Capacity building	- Management plans	FAO, SPC	
	- Post harvest for fishers	SPC, FAO	
	- Management training for national administrators		
	- Training of customs / clearance officers	CITES	
	- Research and assessment training		
6. Communication and awareness	- Educational training material fisher/administrator	SPC, CITES	
	- Trade bulletins		

Potential CITES implementation issues

Evaluation of the benefits and constraints of including species of sea cucumbers in the families Holothuridae and Stichopodidae in the Appendices of CITES

30. Including species of sea cucumbers in the families Holothuridae and Stichopodidae in the Appendices of CITES is expected to have the following beneficial consequences:

    a) Reduce illegal trade and harvest in certain countries;

    b) Awareness rising amongst stakeholders and decision-makers;

    c) Could help address FAO concerns about overexploitation, as expressed in the ASCAM workshop (October 2003, Dalian, China);

    d) Listing in Appendix II or III can assist in the conservation and management of sea cucumber species for long-term socioeconomic benefits from sustainable fisheries;

    e) Regulatory measures to comply with CITES provisions;

    f) Comprehensive and standardized trade and quota reporting, to species level;

    g) May encourage the development of new Regional Fishery Management Organizations (RFMO's) for sea cucumbers;

    h) Enhanced opportunities for technical assistance and capacity building;

    i) Additional benefits when species are included in Appendix II are related to the requirement for ensuring that levels of exportation are non-detrimental to the survival of these species [i.e. are sustainable], and thereby contribute to a cessation of over harvest and the perpetuation of sustainable fisheries.

31. The following problems and constraints were identified regarding the inclusion of species of sea cucumbers in the families Holothuridae and Stichopodidae in the Appendices of CITES:

    a) Burden on both range countries and importing countries concerning:

        i. Permitting requirements;

        ii. Establishment or adjustment of institutional infrastructure to deal with new CITES trade (e.g. potential additional costs for management planning, monitoring programs, new research initiatives, development of new legislation and wildlife inspections);

        iii. New training required regarding CITES trade regulations and species and specimens identification;

        iv. For species listed in Appendix II: the establishment of non-detriment findings in compliance with Article IV, with little data or guidance;

        v. Development of regulatory measures to comply CITES provisions.

    b) Short-term socio-economic impacts, particularly:

        i. Reduction in fisheries income for fishers and traders in range States where legal trade is expected to decline (acknowledging however that prices may increase);

        ii. Reduction in tax revenue for certain exporting range States where the levels of export are reduced (in certain range States, legal trade may decline while illegal trade may increase);

iii. Disruption of local fishing communities.

c) Potential to diminish cooperation in market surveys and to investigate IUU trade.

Recommendations for further CITES activities concerning the management and conservation of sea cucumbers in the families Holothuridae and Stichopodidae

33. Future CITES-related activities concerning international trade in sea cucumbers in the families Holothuridae and Stichopodidae will depend upon the number of species that are included in the Appendices of the Convention. In this regard, two "scenarios" can be envisaged, one being a status quo [i.e. one species, *Isostichopus fuscus*, listed in Appendix III for Ecuador], and a second in which additional species are included. Recommendations for both "scenarios" have been formulated.

"No additional listings" scenario

34. In case no more species are included in the Appendices of CITES than *Isostichopus fuscus,* CITES Parties should consider taking the following actions:

a) CITES Parties should endorse the recommendations and findings of the FAO ASCAM workshop.

b) CITES Authorities should draw the attention of their national fisheries agencies to the importance of sea cucumber fisheries and the vulnerability of particular species in international trade. This could include the need for:

i. Development of national fishery management plans or fishery regulations;

ii. Minimization of sea cucumber by catch in other fisheries;

iii. National or provincial monitoring programs for sea cucumbers of commercial importance;

iv. Development of aquaculture and restocking programs, as appropriate.

c) CITES Parties should encourage the regional cooperative management of commercially important sea cucumber species, including the formation of appropriate Regional Fishery Management Organizations (RFMO's).

d) CITES Parties should encourage their national fisheries agencies to collaborate for the international development of standardized population surveys and trade monitoring protocols.

e) CITES Parties should raise awareness of sea cucumber conservation problems in other Conventions and agreements.

f) CITES Parties involved in the international trade of sea cucumbers should collaborate on the development of universal marking and labeling schemes for specimens.

"Listing" scenarios

35. More taxa or populations could be listed under CITES. If this is the case, the Parties are recommended to consider the following actions:

a) Parties should adopt and implement the recommendations noted in the "non-listing" scenario above (cfr. paragraph 34).

b) Parties should be assisted in complying with the provisions of the Convention, and particularly with the implementation of Article IV (i.e. the making of non-detriment findings, trade monitoring, and legal acquisition issues) in case species are included in Appendix II.

c) Parties should consider the following options for listing further species under CITES:

v. Listing in Appendix III of *Isostichopus fuscus* by additional range States.

vi. Appendix-III listing by range States of additional sea cucumber species where necessary to complement national laws, regulations, and management plans.

vii. Appendix-II listing of sea cucumber species, with three alternatives:

- A Party or Parties propose a limited number of commercially important sea cucumber species in the families Holothuridae and Stichopodidae for inclusion in Appendix II, and monitor the effectiveness of the listing.

- A Party or Parties propose all sea cucumber species in the families Holothuridae and Stichopodidae currently in commercial trade for inclusion in Appendix II (c. 30 to 45 species in the families Holothuridae and Stichopodidae).

- A Party or Parties propose all species in the families Stichopodidae and Holothuridae under Article II 2(a) and 2(b).

Measures that range States should consider in case species of sea cucumbers are included in Appendices II or III

Measures to be taken by range States when including species in Appendix III

36. The following actions should be taken by range States wishing to include additional sea cucumber species in the families Holothuridae and Stichopodidae in Appendix III:

a) Follow the listing process laid out Resolution Conf. 9.25 (Rev) on the inclusion of species in Appendix III, and consult other range States of the species prior to the listing as requested in that Resolution.

b) Have in place or develop laws, regulations, or management measures that directly affect the international trade in a given species from the relevant range State.

c) Establish a CITES certificate and permit issuance system, in coordination with relevant national agencies.

d) Compile information on species in trade, and on forms in which they are traded.

e) Consider possibilities to label and/or identify species, and products and derivatives thereof, in trade.

Measures to be taken by range States and Parties when including species in Appendix II:

37. The list bellow indicates what measures range States and Parties should consider when sea cucumber species in the families Holothuridae and Stichopodidae are to be included in Appendix II:

a) Submit a proposal for the inclusion of the taxa in Appendix II for consideration by the Conference of the Parties, and following provisions in Resolution Conf. 9.24 (Rev. CoP12).

b) Undertake measures b) to e) referred to above, as per an Appendix-III listing.

c) Ensure that levels of export are non-detrimental to the survival of the species, i.e. ensure that trade is sustainable.

d) Monitor export levels in order to maintain the species throughout its range at a level consistent with its role in the ecosystem in which it occurs.

e) Consider taking additional measures to facilitate Appendix-II listing, such as:

i. Analyze the feasibility of labeling certain products in trade;

ii. Provide enforcement and compliance training;

iii. Develop and disseminate identification tools, such as practical guides and forensic techniques;

iv. Request for, or provide technical assistance for population survey methods, the making of non-detriment findings, quota setting and regional cooperative management;

v. Provide training and consultation on the making of non-detriment findings;

vi. Undertake public outreach to all stakeholders concerned by fisheries and trade in sea cucumbers, decision-makers and NGOs;

vii. Enhance and ensure national interagency collaboration between CITES authorities, law enforcement agencies, fisheries agencies, NGOs and other stakeholders;

viii. Call for assistance from other Parties in implementing the provisions of the Convention for trade in Appendix-II listed species of sea cucumbers;

ix. Collaborate with traders, fishers, and others to ensure pragmatic and practical implementation of CITES.

TECHNICAL WORKSHOP ON THE CONSERVATION OF SEA CUCUMBERS
IN THE FAMILIES HOLOTHURIDAE AND STICHOPODIDAE
KUALA LUMPUR (MALAYSIA), 1-3 MARCH 2004

AGENDA (FINAL)

Opening ceremony

1. Adoption of the agenda and working programme

Session 1: Background; biology and uses of sea cucumbers

2. Objectives of and background to the workshop

3. Sea cucumber biology

    - Taxonomy and distribution
    - Biology
    - Conservation status

4. Utilization of and trade in sea cucumbers

    - Utilization as food, in traditional East Asian Medicine and other uses
    - Sea cucumber fisheries
    - Legal trade
    - Illegal, unreported and unregulated trade
    - Bycatch
    - Socio-economic characteristics of the trade in sea cucumbers

Session 2: Fisheries management and conservation

5. Management and conservation strategies & practices

    - Fisheries management approaches of wild harvest (minimum size limits, closed seasons, closed areas, etc.)
    - Aquaculture
    - Restocking
    - Trade controls and enforcement, including identification of specimens in trade

6. CITES and sea cucumbers

    - CITES requirements and provisions
    - Compliance with Article IV, including the making of non-detriment findings and 'legal acquisition' issues
    - Experience with the inclusion of *Isostichopus fuscus* in CITES Appendix III

Session 3: Country status reports

7.1. China

7.2. China (Hong Kong)

7.3. Cuba

7.4. Ecuador

7.5. Fiji

7.6. Indonesia

7.7. Jamaica

7.8. Japan

7.9. Malaysia

7.10. Mexico

7.11. Philippines

7.12. Solomon Islands

7.13. United States of America

7.14. Northern Territories (Australia)

7.15. Canada

7.16. Egypt

Session 4: Working Groups

8. Major findings and recommendations from the Workshop on Advances in Sea Cucumber Aquaculture and Management (ASCAM), 14-18 October 2003, Dalian, China by A. Lovatelli, FAO.

9. Establishment of working groups: tasks, composition and reporting

10. Working group sessions (addressing conservation strategies; fisheries management; national and international measures; and potential CITES implementation issues)

Session 5: Working group reports; findings and recommendations

11. Working group reports

12. Identification of priorities and actions to secure the conservation status of sea cucumbers in the families Holothuridae and Stichopodidae

13. Implementation of Decision 12.60 by the Animals Committee: communication and reporting to the Conference of the Parties

14. Closure of the workshop

TECHNICAL WORKSHOP ON THE CONSERVATION OF SEA CUCUMBERS
IN THE FAMILIES HOLOTHURIDAE AND STICHOPODIDAE
KUALA LUMPUR (MALAYSIA), 1-3 MARCH 2004

TERMS OF REFERENCE OF WORKING GROUPS

Working group 1: National fisheries management

Task:

1. Identify and review existing and potential national fisheries measures for conservation and management of Sea cucumbers in the families Holothuridae and Stichopodidae.

2. Identify and prioritise elements of workable management plans, including adaptive management measures, fishery-dependent and fishery-independent monitoring activities, and reporting.

3. Evaluate the pros and cons of the proposed fishery management measures from a biological, socio-economic and enforceability standpoint.

4. Provide suggestions to which audiences and actors these fisheries management actions should be directed, and to what taxa and geographical regions they could apply.

5. Formulate and prioritise recommendations and actions to ensure adequate fisheries management of Sea cucumbers in the families Holothuridae and Stichopodidae.

Take into consideration:

- Recommendations from the FAO workshop.

- Trade characteristics: single species/multiple species; international/national and local; food/medicinal/live; captive bred/aquaculture/wild collected; artisanal/targeted/bycatch removal; etc.

- Management options: quotas; size limits; certification and labelling; aquaculture; restocking; gear restrictions; licensing; MPAs and habitat protection; etc.

- Challenges: knowledge, costs, time, resource needs, socio-economic implications, etc.

Outputs:

1. A prioritised list of fisheries management options, identifying for each pros and cons, actors and audiences, cost and benefits, regional and taxonomic scope, feasibility, etc. that should lead to better conservation and management of Sea cucumbers in the families Holothuridae and Stichopodidae.

Working group 2: Priorities for international conservation and protection

Task:

1. Review the biological and trade status of Sea cucumbers within the families Holothuridae and Stichopodidae and identify and prioritise the threats to their long-term survival.

2. Indicate the bio geographical hotspots for Sea cucumbers in the families Holothuridae and Stichopodidae, and the taxa that are most under threat and/or require most urgently conservation attention.

3. Review approaches to regionally and internationally manage and conserve Sea cucumbers in the families Holothuridae and Stichopodidae, taking into consideration voluntary measures, guidelines and certification, and regional or international regulatory measures (incl. CITES). Prioritise these policies.

4. Assess biological, social and economic requirements and implications of the different policies, and recommend actions by relevant stakeholders.

5. Provide suggestions to what taxa and geographical regions these measures should apply, and to which audiences and stakeholders they should be directed.

Take into consideration:

- Biological and trade information on Sea cucumbers in the families Holothuridae and Stichopodidae.

- Research needs.

- The costs and benefits of different international measures and policy options in terms of implementation, enforcement and control, social and economic impacts, resource requirements, conservation, future utilization of the resource, etc.

- Recommendations from the FAO workshop.

Outputs:

1. A list of bio geographical 'hot spots' for Sea cucumbers in the families Holothuridae and Stichopodidae

2. A list of taxa of conservation concern, with justifications and an indication of measures to be taken to ensure their long-term management and conservation.

3. A table listing types of measure identified (voluntary; regulatory; regional and international) with proposed actions, and identifying for each the implications for the stakeholders, and the impact on conservation and management of Sea cucumbers in the families Holothuridae and Stichopodidae.

Working group 3: Potential CITES implementation issues

Task:

1. Discuss the appropriateness and feasibility (costs and benefits) of CITES as a tool to assist in the management and conservation of Sea cucumbers in the families Holothuridae and Stichopodidae.

2. Identify the scientific and management requirements concerning the inclusion of species of Sea cucumbers in the families Holothuridae and Stichopodidae in the Appendices of CITES, and assess the needs to and possibilities of range States of meeting these requirements.

3. Address options on how to handle the problem of illegal, unrecorded and unregulated trade, considering CITES and other mechanisms.

4. How to address enforcement/identification problems for specimens of Sea cucumbers in the families Holothuridae and Stichopodidae in trade, and how to control international trade in parts and derivatives, and finished products?

Take into consideration:

- CITES provisions concerning trade in species included in Appendix II and III

- Article IV of the Convention (the making of Non-detriment Findings; legal acquisition)

- Species and specimens in international trade (whole live and dried; parts and derivatives; processed products; origins of specimens in trade)

- Species taxonomy

- Identification issues, including recognition of specimens in international trade to the species level, labelling and marking.

- Taxa and range States of particular concern.

- Controls of international trade in CITES-listed species, and CITES reporting and data gathering requirements.

- Recommendations from the FAO workshop.

Outputs:

1. An evaluation of the pros and cons of including species of Sea cucumbers in the families Holothuridae and Stichopodidae in the Appendices of CITES.

2. If appropriate suggestions for further CITES activities concerning the management and conservation of Sea cucumbers in the families Holothuridae and Stichopodidae, including geographical and species priorities.

3. A list of measures that range States should consider in case species of Sea cucumbers in the families Holothuridae and Stichopodidae are included in Appendix III or II, indicating their feasibility, implications for stake holders, practical recommendations for their implementation, and an evaluation of their costs and benefits.
