



Agreement on the Conservation of Albatrosses and Petrels

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FAO INTERNATIONAL GUIDELINES ON BYCATCH MANAGEMENT AND REDUCTION OF DISCARDS

Submitted by Secretariat

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APPENDIX E

Extract from the Report of the Technical Consultation to Develop International Guidelines on Bycatch Management and Reduction of Discards held in Rome, Italy, from 6 to 10 December 2010

**International Guidelines on Bycatch Management
and Reduction of Discards****SUMMARY**

These International Guidelines on Bycatch Management and Reduction of Discards were developed and adopted by the FAO Technical Consultation held in Rome from 6 to 10 December 2010. They are intended to assist States and RFMO/As in the management of bycatch and reduction of discards in conformity with the FAO Code of Conduct for Responsible Fisheries.

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1. BACKGROUND

- 1.1 The 1995 Code of Conduct for Responsible Fisheries (the Code) of the Food and Agriculture Organization of the United Nations (FAO) calls for the sustainable use of aquatic ecosystems and requires that fishing be conducted with due regard for the environment. The Code also promotes the maintenance, safeguarding and conservation of biodiversity of ecosystems by minimizing fisheries impacts on non-target species and the ecosystem in general. However, despite the Code's endorsement by all FAO Members, there is growing concern that levels of fishing mortality as a result of bycatch and discards threaten the long-term sustainability of many fisheries and the maintenance of biodiversity in many areas, resulting in increased food insecurity and adversely affecting the livelihoods of millions of fishers and fishworkers dependent on fish resources.
- 1.2 Calls for action on bycatch and discards have been raised at the United Nations General Assembly (UNGA), including in UNGA Resolution A/RES/64/72 on Sustainable Fisheries adopted by the Sixty-fourth Session. States, subregional and regional fisheries management organizations and arrangements (RFMO/As) and other relevant international organizations were urged to reduce or eliminate bycatch, catch by lost or abandoned gear, fish discards and post-harvest losses, and to support studies and research that will reduce or eliminate bycatch of juvenile fish.
- 1.3 Past efforts taken by FAO to address these issues have included the development of the 1999 FAO International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries (IPOA-Seabirds) and its related Best Practices Technical Guidelines, the 1999 FAO International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks) and the 2009 FAO Guidelines to Reduce Sea Turtle Mortality in Fishing Operations. Despite these efforts, problems persist with the high levels of unwanted and often unreported bycatch and discards in many fisheries around the world, including the capture of juveniles of economically valuable and ecologically important fish. In 2004, FAO estimated that discarded global catch was approximately 7 million tonnes. Estimating the total amount of global bycatch and discards, however, has proven difficult for a variety of reasons. Depending on the definition used, bycatch may be in excess of 20 million tonnes.
- 1.4 At the Twenty-eighth Session of the FAO Committee on Fisheries (COFI) in March 2009, FAO reported on bycatch and discards and reiterated that in poorly managed fisheries, unreported and unregulated (i) landings of bycatch, (ii) discards and (iii) pre-catch losses were issues of major concern. At the same session, COFI agreed that FAO should develop International Guidelines on Bycatch Management and Reduction of Discards through the process of an Expert Consultation followed by a Technical Consultation.
- 1.5 Accordingly, FAO took steps to develop the Guidelines by coordinating (i) an Expert Consultation held in Rome, Italy, from 30 November to 3 December 2009 to prepare a draft of the Guidelines and (ii) a Technical Consultation held in Rome, Italy, from 6 to 10 December 2010 to finalize the International Guidelines on Bycatch Management and Reduction of Discards (these Guidelines).
- 1.6 These Guidelines are to be interpreted and applied in conformity with the relevant rules of international law, as reflected in the United Nations Convention on the Law of the Sea of 10 December 1982 (1982 UN Convention). Nothing in these guidelines prejudices the rights, jurisdiction and duties of States under the international law of the sea as reflected in the 1982 UN Convention.
- 1.7 These Guidelines are also to be interpreted and applied to complement bycatch measures addressed in the IPOA-Seabirds and its related Best Practices Technical Guidelines, the IPOA-Sharks and Guidelines to Reduce Sea Turtle Mortality in Fishing Operations.

2. SCOPE, PURPOSE AND OBJECTIVES

2.1 Scope

The scope of these Guidelines is global, covering all fishing activities in all seas, oceans and inland waters.

2.2 Purpose

The purpose of these Guidelines is to assist States and RFMO/As in implementing the Code and an ecosystem approach to fisheries through effective management of bycatch and reduction of discards.

2.3 Objective

The objective of these Guidelines is to promote responsible fisheries by:

- (i) minimizing the capture and mortality of species and sizes which are not going to be used in a manner that is consistent with the Code;
- (ii) providing guidance on measures that contribute towards more effective management of bycatch and reduction of discards; and
- (iii) improving reporting and the accounting of all components of the catch of which bycatch and discards are subsets.

2.4 Characteristics of bycatch

2.4.1 It is not possible to develop a standard international definition of bycatch because of the very diverse nature of the world's fisheries, historical differences in how bycatch has been defined nationally, ambiguities associated with bycatch related terminologies and choices of individual fishers on how different portions of their catch will be used. Also there are functional interpretations of bycatch that include catch that a fisher did not intend to catch but could not avoid, often did not want or chose not to use. There are also regulatory interpretations of bycatch in fisheries management plans and these types of interpretations may not necessarily coincide.

2.4.2 In fisheries that have a fishery management plan, species and sizes considered to be bycatch may be designated in the plan. If not designated, bycatch refers to the portion of the total catch that is not consistent with the plan. Bycatch may also be designated as catch that is prohibited in that fishery.

2.4.3 In multispecies/multigear fisheries where there is poor gear selectivity and where most species caught are used, bycatch refers to that part of the catch that should not have been caught, *inter alia*, because of detrimental ecological and/or economic consequences.

2.4.4 A wide range of problems with bycatch have been recognized in specific fisheries and some examples include, *inter alia*, catching:

- (i) species and sizes not specifically targeted in a fishery;
- (ii) species that are protected, endangered or threatened;
- (iii) juvenile fish; and
- (iv) organisms for which there is no intended use.

2.4.5 Some countries include pre-catch mortality and ghost fishing in their legal definitions of bycatch, whereas others do not. Additional measures may be necessary to address these other consequences of fishing and are considered in section 8 of these Guidelines.

2.5 Characteristics of Discards

Discards are that portion of the total catch which is thrown away or slipped. Discards may be comprised of single or multiple species and may be alive or dead. In the context of these Guidelines discards refer to the throwing away or slipping of dead fish and fish that may not

survive after live release. While the objective is to reduce the capture of living aquatic resources that are not going to be used, some capture is unavoidable. In this case, the objective should be to release them alive and maximize their survival by reducing post-release mortality. Some examples of the fishery-specific problems of discarding include, *inter alia*:

- (i) changes in food chain ecology through discarding dead fish or fish that may not survive after live release;
- (ii) perceived wastage of fish through discarding; and
- (iii) unsustainable fishing if the amount of discards is not included in the assessment of the status of the fishery and in the implementation of the relevant management plan.

3. MANAGEMENT FRAMEWORK

3.1 Governance frameworks

3.1.1 States, acting as flag States, port States, coastal States or importing or exporting (market) States in conformity with the relevant rules of international law, in particular trade-related instruments, or when exercising jurisdiction over their nationals, should, with the advice of the competent fisheries management authority, contribute to the attainment of their objectives for the management of bycatch and reduction of discards.

3.1.2 States should establish and implement national policies, legal and institutional frameworks for the effective management of bycatch and the reduction of discards, including those measures agreed by RFMO/As in which they are members or participate as cooperating non-members. Governance and legal frameworks should enable, *inter alia*:

- (i) the application of an ecosystem approach to fisheries;
- (ii) the use of effective input controls and/or output controls especially in fisheries where bycatch and discards are a significant issue;
- (iii) as appropriate, the implementation of co-management and community-based management of fisheries to better manage bycatch and reduce discards; and
- (iv) the implementation of measures and actions set out in international conventions, internationally agreed guidelines and other international fisheries instruments, in order to manage bycatch and reduce discards.

3.2 Institutional and management frameworks

3.2.1 States should ensure that measures taken to manage bycatch and reduce discards are consistent with the 1982 UN Convention and the 1995 Agreement for the Implementation of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (UN Fish Stocks Agreement) and with other international instruments including the Code.

3.2.2 States should adopt and implement measures necessary to ensure the management of bycatch and reduction of discards as part of fisheries management:

- (i) in accordance with the precautionary approach, as reflected in Article 6 of the UN Fish Stocks Agreement, and as set out in Article 6.5 and 7.5 of the Code;
- (ii) in accordance with the responsible use of fish as set out in the Code; and
- (iii) based on the best scientific and technical information available, taking into account fishers' knowledge.

3.2.3 States should promote capacity building for better management of bycatch and the reduction of discards including, as appropriate, participation in the co-management and community-based management of fisheries.

3.2.4 States and RFMO/As should:

- (i) develop or amend management plans for their fisheries so that the plans include objectives for the use and management of that portion of the full catch of which bycatch and discards are subsets, and that such plans are consistent with the Code;
- (ii) encourage the involvement of fishers in the development of measures to manage bycatch and reduce discards, recognizing the value of their knowledge and experience; and
- (iii) promote the use of appropriate incentives to manage bycatch and reduce discards and ensure they are sufficient to encourage the adoption of and compliance with management measures.

3.2.5 States should strengthen and build the capacity of RFMO/As in order to manage bycatch and reduce discards, incorporating the relevant principles and norms of international law and international instruments into the mandates of these organizations or arrangements.

3.2.6 When a species is taken in both areas under national jurisdiction and adjacent areas beyond national jurisdiction, actions taken in relation to the management of bycatch and reduction of discards for that species would be more effective if they are compatible across these areas.

4. BYCATCH MANAGEMENT PLANNING

4.1 Management planning

4.1.1 States and RFMO/As should ensure that all significant sources of fishing mortality in a fishery are addressed in fisheries management planning and that such planning is based on an ecosystem approach to fisheries and is consistent with the Code.

4.1.2 States and RFMO/As should identify and assess fisheries where bycatch and discards occur and specify the requirements for management actions. Such assessments should, where feasible, include, *inter alia*:

- (i) information on the type(s) of fishing conducted or considered, including the vessels and gear types, fishing areas, levels of fishing effort, duration of fishing as well as the target and bycatch species and their sizes, and in particular threatened, endangered or protected species;
- (ii) a risk assessment to identify the specific nature and extent of bycatch and discard problems in the fishery as a basis for prioritization and planning;
- (iii) a review of the effectiveness of existing initiatives to address the bycatch and discard problems identified in the risk assessment;
- (iv) a review of the potential effectiveness of alternative methods to address the bycatch and discard problems identified in the risk assessment;
- (v) an assessment of the impacts of bycatch management and discard reduction measures on fishing operations and, in the case of States, on livelihoods to ascertain the potential effects of their implementation and the support necessary to facilitate their uptake;
- (vi) a review of the systems for the regular monitoring of the effectiveness of measures for bycatch management and reduction of discards, assessed against the management goals; and
- (vii) a regular assessment of plans and management measures for adjustment, as appropriate.

4.1.3 States and RFMO/As should, based on the assessments and identification referred to in paragraph 4.1.2 of these Guidelines, undertake bycatch management planning for all fisheries that require bycatch management action. This planning should include

objectives, strategies, standards and measures directed at managing bycatch and reducing discards. Bycatch management planning should be incorporated into broader fisheries management plans.

4.1.4 States and RFMO/As should ensure that bycatch management planning includes best practices for bycatch management and reduction of discards developed in cooperation with relevant stakeholders. These best practices should, where applicable, include, *inter alia*:

- (i) identification of current bycatch and discard problem(s);
- (ii) review of the social and economic context, drivers and objectives that are associated with bycatch and discard problem(s);
- (iii) the listing and justification of quantifiable and verifiable short-term and long-term management objectives;
- (iv) where bycatch and discard problems need to be addressed, the development of measures to meet these objectives, tailored to the characteristics of each fishery, while seeking to increase the compatibility and consistency between the different management measures applied to the same stock or in the same fishery, to:
 - (a) minimize potential bycatch through spatial and/or temporal measures;
 - (b) minimize bycatch through the modifications of fishing gears and practices;
 - (c) maximize the live release of bycatch while ensuring the safety of the fishing crew;
 - (d) reduce discards; and/or
 - (e) utilize the bycatch to the extent possible that continues to be taken under these measures in a manner that is consistent with the Code.
- (v) the inclusion of fishers as full partners in developing, testing and evaluating the performance of mitigation measures;
- (vi) support for controlled trials under commercial fishing conditions that investigate the effectiveness of mitigation measures;
- (vii) encouragement of innovation through the collaboration of fishers, scientists, industry, resource managers, intergovernmental organizations (IGOs), non-governmental organizations (NGOs) and other relevant stakeholders;
- (viii) encouragement of collaborative research among States on fisheries that they share or that have similar bycatch and discard problems; and
- (ix) promotion and increased public awareness of actions that successfully mitigate bycatch and discard problems in the fishery.

4.1.5 States and RFMO/As should identify adequate funding and staff resources during the planning phase for bycatch management.

5. DATA COLLECTION AND BYCATCH ASSESSMENTS

5.1. Data collection, reporting, and assessment

5.1.1. As part of bycatch management planning, States and RFMO/As should, to the extent possible and taking into account the scale and type of the fisheries:

- (i) establish appropriate and reliable monitoring and assessment techniques to:
 - (a) determine how bycatch and discards affect living aquatic resources and
 - (b) evaluate and refine the performance of measures for bycatch management and reductions of discards;
- (ii) implement data collection procedures and protocols appropriate to the scale and type of fishery and taking into account the results of the risk assessment referred to in paragraph 4.1.2 of these Guidelines, including the use of observers, standardized logbooks and vessel position monitoring systems;

- (iii) consider the use of national and regional training programmes for fishers, resource managers and scientific observers to improve bycatch identification, data collection and reporting; and
 - (iv) ensure that data collection programs include socio-economic surveys on, *inter alia*, the value of landings and employment in harvesting sectors and the social and economic impacts of regulatory measures.
- 5.1.2. States and RFMO/As should develop strategies for the long-term collection of accurate data appropriate to the scale and type of fishery taking into account the importance to management of fishery-specific and species-specific estimates of total catch, size distributions of catch, discards, as well as spatial and temporal variability in bycatch and discard mortality.
- 5.1.3. Where necessary, States and RFMO/As should strive to achieve a level and scope of observer programs sufficient to provide quantitative estimates of total catch, discards, and incidental takes of living aquatic resources.
- 5.1.4. To standardize the collection of bycatch and discard data, States and RFMO/As should:
- (i) establish research and management priorities on a fishery-by-fishery basis;
 - (ii) solicit the input of fishers, scientists, industry, resources managers, IGOs, NGOs and other relevant stakeholders on standards for bycatch and discard data collection;
 - (iii) design and test sampling protocols to provide the desired precision and accuracy of data at the lowest cost;
 - (iv) evaluate the accuracy and precision of the data and their usefulness in estimating the magnitude and characteristics of the bycatch and discards; and
 - (v) integrate the collection of economic and social information (e.g. operating costs, fleet size, and vessel characteristics) with the collection of oceanographic and biological information.
- 5.1.5. States and RFMO/As should identify the type and quality of the information that currently exists including considering the availability of expertise and information from participants in the fisheries, conservation groups, and other stakeholders and ensure all appropriate information sources are used fully in the risk assessment referred to in paragraph 4.1.2 of these Guidelines as well as in assessments of the impacts of bycatch and discard mortalities.
- 5.1.6. Subsequently, States and RFMO/As should assess the impacts of bycatch and discards as well as the biological and economic impacts of bycatch management and discard reduction measures.
- 5.1.7. States and RFMO/As should give due consideration to the fact that since bycatch management and the reduction of discards often requires different types of data from many sources, improved integrated systems may be required to aggregate, manage and analyze this data. Consideration should be given to making bycatch and discard data publicly available to promote transparency in bycatch management.
- 5.1.8. States and RFMO/As should recognize that in some multispecies, multigear fisheries, reporting the full species composition of catches may not be practical. Consequently, alternative methods, such as reporting on indicator species or other suitable proxies may be necessary.

6. RESEARCH AND DEVELOPMENT

- 6.1 States and, as appropriate, RFMOs should conduct and promote research that is essential for planning on bycatch management and the reduction of discards. Where information is insufficient to conduct the types of risk assessment and other analyses referred to in sections 4 and 5 of these Guidelines, additional research should be conducted on the biology of species

taken as bycatch, the performance of fishing gears and mitigation measures and the social and economic consequences of measures and techniques to manage bycatch and reduce discard mortality.

- 6.2 Fishing gear and fishing method-based measures should be tested under commercial fishing conditions, using properly trained personnel and with the cooperation and collaboration of the fishing sector from the initial stages of testing through to implementation.
- 6.3 States and RFMO/As should collaborate in assessing bycatch and discard issues throughout the entire distribution range of the species of concern where applicable.
- 6.4 In fisheries with bycatch and discard problems as identified by the risk assessment referred to in paragraph 4.1.2 of these Guidelines and where effective measures for reduction are not available, States and RFMO/As should establish research and development programmes for more selective fishing gears or alternative fishing methods that are practical, safe, effective, socio-economically viable and contribute to the sustainable management of the affected species.
- 6.5 In support of management measures to mitigate bycatch and discard problems, States and RFMO/As should, where appropriate, map seabed habitats, distributions and ranges of species taken as bycatch, in particular rare, endangered, threatened or protected species, to ascertain where species taken as bycatch might overlap with fishing effort.
- 6.6 States, RFMO/As, and the fishing sectors that require additional resources to develop or implement research on bycatch may establish partnerships or collaboration with institutions responsible for the development of the fishing sector, appropriate research providers and funding bodies, including private foundations.

7. MEASURES TO MANAGE BYCATCH AND REDUCE DISCARDS

- 7.1 States and RFMO/As should ensure that bycatch management and discard reduction measures are:
 - (i) binding;
 - (ii) clear and direct;
 - (iii) measurable;
 - (iv) science-based;
 - (v) ecosystem-based;
 - (vi) ecologically efficient;
 - (vii) practical and safe;
 - (viii) socio-economically efficient;
 - (ix) enforceable;
 - (x) collaboratively developed with industry and stakeholders; and
 - (xi) fully implemented.
- 7.2 Management measures should be periodically reviewed to ensure that they continue to meet goals and objectives.
- 7.3 Tools to manage bycatch and reduce discards

States and RFMO/As should ensure that a range of tools to manage bycatch and reduce discards are available. Such tools include, *inter alia*:

 - (i) input and/or output controls;
 - (ii) the improvement of the design and use of fishing gear and bycatch mitigation devices;
 - (iii) spatial and temporal measures;
 - (iv) limits and/or quotas on bycatches;
 - (v) bans on discards, where applicable, providing that the retained catch cannot be released alive and is utilized in a manner that is consistent with the Code; and
 - (vi) incentives for fishers to comply with measures to manage bycatch and reduce discards.

7.4 Input and output controls

- 7.4.1 States and RFMO/As should give careful consideration to the implementation of controls on fishing capacity and effort in a fishery where bycatch and discards occur and cause significant problems. In the event that action is contemplated, the provisions set out in the 1999 FAO IPOA for the Management of Fishing Capacity should be followed.
- 7.4.2 Controls on fishing capacity and effort to address bycatch and discard issues should be targeted at the fishery causing the issue.
- 7.4.3 Excess capacity and effort excluded from one fishery/area/time should not lead to increased bycatch and discard problems in other fisheries/areas/times.
- 7.4.4 States and RFMO/As should give careful consideration to the use of output controls for the management of bycatch and reduction of discards.
- 7.4.5 Output control measures, such as individual or fleet-wide quotas, and/or limits on allowable bycatch could be developed and implemented within the framework of fishery management plans.
- 7.4.6 Quotas for target species, or allocations of a quota among fleets or fisheries, may be adjusted, based on estimated bycatches or discard mortalities associated with catches of the target species.

7.5 Improvement of the design and use of fishing gear and bycatch mitigation devices.

- 7.5.1 States and RFMO/As should consider utilizing technological measures to improve selectivity and reduce bycatch and discards, including, *inter alia*:
 - (i) changing the design, rigging and deployment of fishing gear (e.g. mesh size, hook size, aimed trawling);
 - (ii) installing bycatch reduction devices (e.g. turtle excluder devices, sorting grids, square mesh panels, tori lines on longlines);
 - (iii) using operational techniques during fishing to reduce encounters with bycatch (e.g. the backdown manoeuvre during purse-seining);
 - (iv) using equipment, practices and handling techniques that increase the probability of survival of the released catches;
 - (v) using an alternative fishing gear that results in lower bycatch; and
 - (vi) the appropriate use of integrated vessel and fishing gear position monitoring and habitat mapping systems.
- 7.5.2 In the preparation of gear-based regulations, States and RFMO/As should ensure that they are compatible with other measures, such as the minimum legal landing sizes, and that the consequences of implementing such regulations are known and acceptable.

7.6 Spatial and temporal measures

- 7.6.1 States and RFMO/As should consider measures to reduce interactions with particularly vulnerable bycatch (e.g. juveniles and rare, endangered, threatened or protected species) through identifying and establishing areas where the use of all or certain gears is limited or prohibited, based on the best available scientific information and consistent with international law.
- 7.6.2 States and RFMO/As should consider the use of adaptive spatial closures to reduce bycatch problems.
- 7.6.3 States and RFMO/As should encourage information-sharing among fishers and managers to identify areas/times of bycatch problems so that fishers effectively avoid them.

- 7.6.4 States and RFMO/As should base closure decisions on the best available scientific advice and give careful consideration to the potential indirect and unintended consequences of such measures.
- 7.6.5 States and RFMO/As should consider the feasibility of introducing a requirement to move away from areas where significant bycatch problems occur.
- 7.7 Limits and/or quotas on bycatches and discards
- 7.7.1 States and RFMO/As, as part of a fisheries management plan, should consider the establishment of no-discard regimes, wherever applicable, and individual and fleet-wide limits on bycatch in those fisheries where bycatch is unavoidable.
- 7.7.2 When implementing bycatch limits and/or quotas, States and RFMO/As should give consideration to:
- (i) the time required for fishers to adjust to any new restrictions;
 - (ii) the use of complementary measures that may be necessary to enhance their effectiveness (e.g. reporting requirements);
 - (iii) the type and level of monitoring required to achieve adequate compliance; and
 - (iv) the transferability of such limits and/or quotas.
- 7.7.3 States and RFMO/As should, to the extent possible and where applicable, aim to ensure that the sum of all quotas for a fleet reflects the expected catch composition in the area of operation.
- 7.7.4 When setting a quota for a species that can be taken both as a target as well as a bycatch in various fisheries, it is necessary to ensure that quotas for the species as targeted catch and as bycatch are accounted for within an overall limit.
- 7.7.5 Where information on the bycatch populations is limited, bycatch limits and quotas should be set in accordance with the precautionary approach.
- 7.8 Economic incentives for managing bycatch and reducing discards
- States should take into consideration the fact that fishers are more likely to comply with management measures and adopt fishing techniques that are designed to manage bycatch and reduce discards if such measures improve their revenue, the quality of their catch, their operational efficiency and/or safety. Furthermore, the following points could also be considered:
- (i) access to or restriction from fishing opportunities can be a strong economic incentive for compliance with bycatch mitigation measures; and
 - (ii) in accordance with international rules on subsidies and duties, the costs to fishers for installation of bycatch mitigation technologies could be lessened, where appropriate, through the application of grants/loans and preferential treatment on duties and taxes for investment in such technologies.
- 7.9 Other measures to manage bycatch and reduce discards
- 7.9.1 States and RFMO/As should seek to eliminate or adjust regulatory measures that provide incentives which may undermine bycatch management and discard reduction measures.
- 7.9.2 In situations where bycatch must be released, techniques may have to undergo further development to maximize the survival of the released living aquatic species, while giving due consideration to the safety of the fishing crew.
- 7.9.3 The management of bycatch and reduction of discards should be supported by technological development in the post harvest sector.
- 7.9.4 States and RFMO/As should recognize that actions that are taken to reduce bycatch of one species may increase bycatch of others.

8. PRE-CATCH LOSSES AND GHOST FISHING

- 8.1 States and RFMO/As should consider measures to address the impact of pre-catch losses and ghost fishing on living aquatic resources. Possible actions to assess and mitigate such impacts include, *inter alia*:
- (i) adopting objectives in fisheries management policies and plans to minimize mortalities as a result of pre-catch losses and ghost fishing;
 - (ii) improving the scientific information on the magnitude and causes of pre-catch losses and effects of ghost fishing, so that they can be included in stock, fishery and ecosystem assessments; and
 - (iii) developing technologies and measures that quantify, and reduce, the mortalities and impacts associated with pre-catch losses and ghost fishing. This may include methods for estimating pre-catch losses by various gear types, modification of gears and fishing methods, identification of gear ownership, reduction of gear losses, development of gear retrieval procedures and programs, and reducing, and where possible eliminating, fishing power of lost gear, e.g. through the use of degradable materials.
- 8.2 States and RFMO/As should take account of current work at the International Maritime Organization on the revision of Annex V of the International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978 (MARPOL 73/78) and the Guidelines for the Implementation of Annex V in relation to reducing the impact of lost fishing gear.

9. MONITORING, CONTROL AND SURVEILLANCE (MCS)

- 9.1 States and RFMO/As should, where appropriate and to the extent possible:
- (i) require reporting of all relevant information related to bycatch and discards; and
 - (ii) undertake MCS of all relevant fishing operations, including catch handling on board the fishing vessel and landings at ports.
- 9.2 States should establish and implement the appropriate national policies, as well as the legal and institutional frameworks, for effective monitoring, control and surveillance of fisheries for management of bycatch and reduction of discards.
- 9.3 This may include inspection of fishing vessels and gear prior to the commencement of fishing operations, and taking into account the relevant regulations of RFMO/As, where applicable.
- 9.4 In order to promote greater voluntary compliance and improved enforcement of bycatch management measures, States and RFMO/As should encourage the participation of fishers in policy development, implementation and self-policing (e.g. through co-management and community-based management).

10. AWARENESS, COMMUNICATION AND CAPACITY BUILDING MEASURES

- 10.1 States and RFMO/As should provide reliable information and raise the level of awareness of bycatch and discard problems, and measures needed to address them, among fishers, governments, policy-makers, other relevant stakeholders and the general public.
- 10.2 States and RFMO/As should develop a framework for long-term cooperative working relationships on bycatch management and discard reduction with stakeholders, management authorities at all levels and other agencies and organizations, including providing accurate and timely information on bycatch-related issues, regulations and activities.
- 10.3 States should identify opportunities for cooperative planning to reduce inconsistencies among management frameworks from local to international levels.

- 10.4 States and RFMO/As should collate and share best practice methods for monitoring, estimating and managing bycatch, reducing discards, preparing appropriate legislation and/or regulations and for effective communication and training.
- 10.5 States should provide opportunities for fisheries managers to increase their knowledge of bycatch and discard issues and their potential solutions. Policymakers should be provided with information, advice and options regarding bycatch and discard problems, their socio-economic impact and their potential solutions.
- 10.6 States should also ensure that fishing gear technologists receive specialised training in technical measures which may be adopted to mitigate bycatch and discards and should provide adequate training to fishers in the use and maintenance of the technology and practices so developed.
- 10.7 Several actions are needed by States to promote the cooperation and uptake of bycatch management and discard reduction measures, including:
- (i) take into account fishers' opinions and suggestions on effective bycatch management and discard reduction measures;
 - (ii) provide clear explanations to fishers on why it is necessary to manage bycatch and reduce discards in their fisheries, the consequences of failing to do so and the benefits of adopting bycatch management and discard reduction measures;
 - (iii) communicate regularly with fishers on the causes and conditions that lead to bycatch and discards, the evolution of bycatch management and discard reduction programmes, the results of research and the status of species of interest;
 - (iv) coordinate and strengthen the activities and programmes of fishers' cooperatives, companies and similar organizations to manage bycatch and reduce discards; and
 - (v) provide adequate training to fishers in the use and maintenance of technology and practices that are used in the management of bycatch and reduction of discards, techniques that allow fishers to develop their own solutions, the handling, recovery and release of bycatch species captured alive, basic legislation and policies and communication techniques to allow their bycatch management and discard reduction work to be elucidated to appropriate target audiences.

11. CONSIDERATIONS FOR IMPLEMENTATION OF THESE GUIDELINES

- 11.1 States and RFMO/As should collaborate to address common issues, such as through the development of compatible standards, tools and information aimed at facilitating the implementation of these Guidelines.
- 11.2 States and RFMO/As should, where necessary, collaborate with FAO and other relevant organizations to standardize monitoring and reporting procedures on bycatch and discards.
- 11.3 States and RFMO/As should inform stakeholders and the general public of actions taken to improve bycatch management and reduce discards.
- 11.4 FAO should review the progress made in the implementation of internationally agreed guidelines on the basis of the existing biennial questionnaire reports to COFI.
- 11.5 In implementing these Guidelines, consideration should be given to, *inter alia*, accountability, adaptability, effectiveness, practicability, socio-economic aspects, timeliness and transparency.

12. SPECIAL CONSIDERATIONS FOR RFMO/As

- 12.1 RFMO/As should recognize the importance of addressing bycatch and discard problems.
- 12.2 States participating in RFMO/As should ensure that the relevant RFMO/A working groups include the participation of scientists with appropriate expertise to conduct and evaluate bycatch and discard assessments and proposed mitigation strategies.

- 12.3 RFMO/As should, where possible, cooperate among each other to support bycatch management and discard reduction, including developing the long-term capacity of RFMO/As to coordinate and cooperate for data collection, assessments of bycatch and discards and potential capacity building activities.
- 12.4 RFMO/As should work collaboratively and cooperatively with relevant IGOs to address bycatch and discard problems.

13. SPECIAL REQUIREMENTS OF DEVELOPING STATES

- 13.1 Consideration should be given by States, international financial institutions and relevant IGOs to enhance the capacity of developing States to manage bycatch and reduce discards in their fisheries through financial and technical assistance in terms of research, data collection, development of socio-economic studies on bycatch management and discard reduction, technology transfer training and scientific cooperation, in conformity with international law and the Code.
- 13.2 FAO should give special consideration to providing technical assistance to developing States, including fostering international cooperation and capacity building for the application of these Guidelines, including in data poor fisheries. Needs may arise in areas such as:
- (i) development of management frameworks;
 - (ii) development of effective bycatch management planning;
 - (iii) data collection and assessment of bycatch and discards;
 - (iv) bycatch and discard monitoring and reporting;
 - (v) development and implementation of measures related to bycatch management and discard reduction;
 - (vi) pre-catch losses and ghost fishing;
 - (vii) development of effective MCS;
 - (viii) research development;
 - (ix) awareness, communication and capacity building measures; and
 - (x) support to implement the FAO IPOA to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing, the IPOA-Capacity, the IPOA-Sharks the IPOA-Seabirds and associated and other relevant FAO Best Practice Technical Guidelines.

This document contains the report of the Technical Consultation to Develop International Guidelines on Bycatch Management and Reduction of Discards held in Rome, Italy, from 6 to 10 December 2010. The Technical Consultation was convened to develop International Guidelines as called for by the FAO Committee on Fisheries at its Twenty-eighth Session in 2009.

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