FAO Fisheries and Aquaculture Report No. 1041 **FIRO/R1041 (En)**

ISSN 2070-6987

Report of the

FAO WORKSHOP ON BYCATCH MANAGEMENT AND LOW-IMPACT FISHING

Kuwait City, the State of Kuwait, 9–12 December 2012

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FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
Rome, 2013

ISBN 978-92-5-107607-1 (print)
E-ISBN 978-92-5-107608-8 (PDF)

PREPARATION OF THIS DOCUMENT

This document contains the report of the Report of the Workshop on Bycatch Management and Low-impact Fishing held in Kuwait City, the State of Kuwait, on 9–12 December 2012. The Workshop was convened to develop a road map on how bycatch can be more effectively managed and how to reduce impacts of fishing on the environment. The meeting reviewed the current knowledge on bycatch in the Regional Commission for Fisheries (RECOFI) / Gulf Cooperation Council region and considered priority follow-up action. The workshop adopted a draft concept document in the form of a regional action plan for managing the environmental impacts of fishing in the RECOFI region.

The Workshop was hosted by the Public Authority for Agriculture Affairs and Fisheries Resources of the State of Kuwait.

FAO. 2013.
Report of the FAO Workshop on Bycatch Management and Low-impact Fishing, Kuwait City, the State of Kuwait, 9–12 December 2012.
FAO Fisheries and Aquaculture Report No. 1041. Rome. 113 pp.

ABSTRACT

The Workshop on Bycatch Management and Low-impact Fishing held in Kuwait City, the State of Kuwait, on 9–12 December 2012 was convened to develop the concept of a Regional Action Plan on how bycatch can be more effectively managed and to reduce impacts of fishing on the environment. The meeting reviewed the current knowledge on bycatch in the Regional Commission for Fisheries (RECOFI) / Gulf Cooperation Council region and considered priority follow-up action. The workshop adopted a draft concept document in the form of a Regional Action Plan for managing the environmental impacts of fishing in the RECOFI region.

Workshop participants agreed that the primary objective a regional action plan was to ensure the long-term livelihoods of those involved in the fisheries sector through the adoption of responsible fishing practices and that elements of the plan should interalia: (i) prioritize responsible fishing through embedding the ecosystem approach to fisheries (EAF) in relevant national policies, (ii) minimize the impact of trawling on the sensitive habitats and reduce the impact on vulnerable species, both target and non-target, (iii) provide a rational approach to fleets for reducing bycatch, discards and gear loss, (iv) adopt a comprehensive approach that recognizes the differing environmental, economic and social conditions of the various fisheries within the region, (v) raise awareness, train and incentivize stakeholders about sustainable fishing Workshop participants also agreed that the stages of the regional action plan should include as a priority: a regional analysis and diagnosis followed by action implementation.

CONTENTS

OPENING OF THE MEETING AND ARRANGEMENTS FOR THE SESSION

1. A Workshop on Bycatch Management and Low Impact Fishing was held in Kuwait City, from the 9 to 12 December 2012. The prospectus and the agenda of the Workshop are shown in Appendix 1.

2. The main goal of the Workshop was to develop a road map on how bycatch can be more effectively managed and how to reduce impacts of fishing on the environment. The meeting was intended to synthesize the current knowledge on bycatch in the Regional Commission for Fisheries (RECOFI)/Gulf Cooperation Council (GCC) region and consider priority follow-up actions in the form of a regional action plan for managing the environmental impacts of fishing in the RECOFI region.

3. The main objectives of the Workshop were as follows:

- to raise awareness among RECOFI members of the environmental, technological and economic impacts associated with bycatch and fishing impacts;
- to bring different stakeholders together to identify financial, policy and technological challenges and actions necessary to manage bycatch and introduce low-impact fishing techniques;
- to develop a regional action plan aimed at improved management of bycatch and reduction of fishing impacts in selected fisheries for submission to RECOFI through its Working Group on Fisheries Management.

4. The Workshop was attended by the representatives from Bahrain, Iran (Islamic Republic of), Iraq, Kuwait, Oman, Qatar, Saudi Arabia, the United Arab Emirates and FAO. During the last day, representatives of the Kuwait fishing industry attended the meeting. The list of participants in the Workshop is shown in Appendix 2.

5. The Workshop was called to order by Dr Haider Ali Murad, Deputy Director-General Fisheries Sector of the Kuwait Public Authority for Agriculture Affairs and Fisheries Resources (PAAF), who delivered the opening statement. The text of his statement is reproduced in Appendix 3.

6. The Workshop was addressed first by Dr Piero Mannini, Senior Fisheries Officer of FAO's Regional Officer for the Near East and North Africa. Mr Petri Suuronen, Fishery Industry Officer of FAO's Fishing Operations and Technology Service (FIRO) then gave an opening statement on behalf of Mr Arni Mathiesen, Assistant Director-General, Fisheries and Aquaculture Department, FAO, Rome, Italy. The texts of these statements are reproduced in Appendixes 4 and 5.

ELECTION OF THE CHAIRPERSON

7. Dr Haider Ali Murad was elected Chairperson of the Workshop.

ADOPTION OF THE AGENDA

8. The agenda of the Workshop was adopted as it appears in Appendix 1.

BACKGROUND, OBJECTIVES AND EXPECTED OUTCOMES OF THE WORKSHOP

9. The FAO Code of Conduct for Responsible Fisheries (the Code) calls for 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 by minimizing fisheries impacts. However, there is growing concern that the combined effect of failing to manage bycatch effectively and reduce impacts from fishing is threatening the long-term sustainability of

fisheries, the maintenance of biodiversity and contributing to food insecurity, thus affecting the livelihoods on those dependent on fish resources.

10. At its sixty-sixth session, the United Nations General Assembly (UNGA) urged States, subregional and regional fisheries management organizations and arrangements and other relevant international organizations to reduce or eliminate bycatch, catch by lost or abandoned gear, fish discards and post-harvest losses, support studies and research that will reduce or eliminate bycatch of juvenile fish, and consider the development of standards for reducing or eliminating discards. In 2011, at its twenty-ninth session, the Committee on Fisheries (COFI) endorsed the International Guidelines on Bycatch Management and Reduction of Discards and recommended that FAO provide support in capacity building.

11. The extensive tropical coastal areas of the RECOFI/GCC region have supported commercial and artisanal fisheries for many decades. At the same time, some of these fisheries are characterized by high bycatch, much of which is comprised of juveniles of ecologically important and economically valuable species and which is often discarded. Moreover, excessive use of trawling in areas of fragile or vulnerable habitats may also have unwanted impacts.

12. In light of the above concerns and in response to requests from RECOFI members to reduce the impacts of fishing on the marine environment, this Workshop was arranged to develop a road map on how bycatch can be more effectively managed and how to reduce impacts of fishing on the environment. This Workshop was intended to synthesize the current knowledge on bycatch in the RECOFI/GCC region and consider priority follow-up actions.

BYCATCH MANAGEMENT AND OTHER ENVIRONMENTAL ISSUES IN FISHING IN THE RECOFI REGION DISCUSSED BY WORKSHOP PARTICIPANTS

13. Workshop participants were informed that the shrimp-directed bottom trawl fisheries have a major bycatch of fish, juvenile shrimp and other benthic organisms. Among various types of fishing, shrimp trawling is the biggest contributor with the highest ratio of bycatch to shrimp catch, 5:1 in temperate and subtropical waters and 10:1 in tropical waters (Slavin, 1982; Ye et al, 2000).1 Shrimp-directed fisheries in the RECOFI region are no exception. Ayoub, Al Hussaini and Ali Al Baz (2005) suggest that up to 97 percent of Kuwait's shrimp trawler bycatch is discarded.2 Kelleher (2005)3 states that "the aggregate discards from shrimp fisheries (Saudi Arabia, Kuwait, Iran, Bahrain, Pakistan) total approximately 100,000 tonnes", but this is likely to be a considerable underestimate.

14. Workshop participants were informed of the results of a survey undertaken with the RECOFI Member States, the results of which are provided in Appendix 6.

15. Workshop participants identified a number of key issues, including:

- Bycatch is an important economic part of the catch in many fisheries in the region.
- As fish prices rise, increasing numbers of bycatch species will become target species.
- Regular monitoring of both bycatch and discard levels, as well as economic drivers, is important.
- Good experimental evidence of the potential of bycatch reduction devices (BRDs) in Iran (Islamic Republic of), Kuwait and Oman has been obtained, but adoption by the industry has been limited.
- There is still no clear bycatch policy, or reduction measures, at the national or regional level.

[1] Slavin, J.W. 1982. Utilization of shrimp bycatch. *In* IDRC, ed. *Fish bycatch – bonus from the sea*, pp. 21–28. Report of a Technical Consultation on Shrimp Bycatch Utilization (IDRC-198e). Ottawa.
Ye, Y., Alsaffar, A.H. & Mohammed, H.M.A. 2000. Bycatch and discards of the Kuwait shrimp fishery. *Fisheries Research*, 45: 9–19.
[2] Al Ayoub, Al Hussaini & Ali Al Baz. 2005. *Application of bycatch reduction devices to Kuwait's shrimp fishery*. KISR Project 2000-1207-03;
[3] Kelleher, K. 2005. *Discards in the world's marine fisheries. An update*. Fisheries Technical Paper 470. Rome, FAO. 152 pp.

- The ecological, commercial and socio-economic costs and benefits of BRD introduction are still largely unknown in the region.
- Most fisheries are governed by licensing and have some spatial and seasonal restrictions.
- There is little logbook or observer use in the region.
- New, non-technological techniques for bycatch management, such as real-time closures and effort control schemes, are of interest.
- There is poor participation by the fishing industry/sector in the planning, testing and implementation of various bycatch management measures.
- There is a lack of enforcement tools and capability region-wide.
- Excepting Iran (Islamic Republic of), bycatch management does not feature in any national policy directives.
- Gillnets and traps are the main contribution to abandoned, lost or otherwise discarded fishing gear (ALDFG) in the region, but longlines and hooks and lines are also lost and discarded.
- The true levels of gear losses are unknown, but likely to be considerable.
- There is little awareness of ALDFG at national management levels, so there is limited policy attention or waste disposal.

16. Discussions with representatives of different parts of the fishing industry in Kuwait indicated considerable resistance to the introduction of bycatch reduction methods on a unilateral basis, and reinforced the need for harmonized regional action across the RECOFI area in order to provide an image of equality to fishers. They also emphasized that the combination of adverse economic conditions and overfishing was leading to decreasing shrimp yields, thus increasing commercial dependence on other elements of the catch.

FORMULATION OF a CONCEPT FOR A REGIONAL ACTION PLAN FOR MANAGING THE ENVIRONMENTAL IMPACTS OF FISHING IN THE RECOFI REGION

17. Workshop participants drafted a conceptual regional action plan for managing the environmental impacts of fishing in the RECOFI region, followed by a review and acceptance of the completed inputs (Appendix 7).

18. Following discussion, participants agreed that:

- In the northern areas of the Persian Gulf, shrimp trawling is likely to be the most destructive practice; with high bycatch, high discards and potential sea bed impacts.
- In the southern areas, the fishing is mainly conducted by gillnets and traps; most bycatch has a value and is landed, with low discards (mainly undersized fish).
- There are seasonal and spatial restrictions for shrimp trawling in Bahrain, Iran (Islamic Republic of), Kuwait and the United Arab Emirates.
- There is a need to monitor bycatch species to determine which are particularly vulnerable to fishing and overexploitation, and a need to consider total effort limits, with possible limits on time at sea, which will be compensated in the longer term by increased catch per unit of effort of valuable target and bycatch species;
- ALDFG is mainly a gillnet and trap fishery problem everywhere in the RECOFI region – but is relatively short-lived in the case of wire traps (gargoor). However, traps vary in specification, fishing selectivity, etc., so there is a need for a baseline assessment of risk (e.g. loss and impact). There is also a need to focus on gillnets in coral areas and other sensitive areas.
- Gear conflicts (trawl/trap/gillnet) also require examination and possible actions such as the zoning of gear use, etc.
- Fuel consumption is not currently an issue (in terms of costs), but the disposal of oil and other polluting wastes into the Persian Gulf is a concern.

- Environmental awareness needs to be increased both for fishers and decision-makers. There is a need to find mechanisms to build responsibility and stewardship in expatriate fishers in particular.
- Habitat mapping is very important (and potentially expensive). Perhaps the priority action should be to identify key shared areas for priority mapping, and seek data and/or funding from Aramco and other large oil companies operating in the Persian Gulf.
- Government must lead planning (setting goals and objectives), but involve fishers in designing implementation mechanisms;
- Fishers and management partnerships are not a tradition in the region, but this issue is again complicated by the high number of expatriates involved;
- There is a need to develop sustainable incentives to encourage fishers to practice responsible fishing methods.

A REGIONAL ACTION PLAN FOR MANAGING THE ENVIRONMENTAL IMPACTS OF FISHING IN THE RECOFI REGION

19. Participants agreed that the primary objective a regional action plan was to ensure the long-term livelihoods of those involved in the fisheries sector through the adoption of responsible fishing practices and that the plan should:

- prioritize responsible fishing through embedding the ecosystem approach to fisheries (EAF) in relevant national policies;
- minimize the impact of trawling on the sensitive habitats and reduce the impact on vulnerable species, both target and non-target;
- provide a rational approach to fleets for reducing bycatch, discards and gear loss;
- adopt a comprehensive approach that recognizes the differing environmental, economic and social conditions of the various fisheries within the region;
- raise awareness, train and incentivize stakeholders about sustainable fishing.

20. Participants agreed that the stages of the regional action plan should include as a priority: (i) regional analysis and diagnosis; (ii) action implementation; and (iii) plan consolidation phase. Full details of the stages are contained in Appendix 7.

ADOPTION OF THE REGIONAL ACTION PLAN CONCEPT

21. The concept for a regional action plan for managing the environmental impacts of fishing in the RECOFI region was adopted on 12 December 2012.

CLOSING OF THE WORKSHOP

22. Sincere appreciation was expressed to the Government of Kuwait for its hosting and funding of the Workshop.

APPENDIX 1

Prospectus and agenda

I. BACKGROUND AND RATIONALE

The FAO Code of Conduct for Responsible Fisheries (CCRF) calls for sustainable use of aquatic ecosystems and requires that fishing be conducted with due regard for the environment. The CCRF also promotes the maintenance, safeguarding and conservation of biodiversity by minimizing fisheries impacts. However, there is growing concern that the combined effect of failing to effectively manage bycatch and reduce impacts from fishing is threatening the long-term sustainability of fisheries, the maintenance of bio-diversity and contributing to food insecurity, thus affecting the livelihoods on those dependent on fish resources.

At the sixty-sixth session of the United Nations General Assembly (UNGA) urged States, sub-regional and regional fisheries management organizations and arrangements and other relevant international organizations to reduce or eliminate bycatch, catch by lost or abandoned gear, fish discards and post-harvest losses, support studies and research that will reduce or eliminate bycatch of juvenile fish, and consider the development of standards for reducing or eliminating discards. In 2011 at the twenty-ninth session of the Committee on Fisheries, endorsed the International Guidelines on Bycatch Management and Reduction of Discards and recommended that FAO provides support in capacity building.

The extensive tropical coastal areas of the RECOFI and GCC region have supported commercial and artisanal fisheries for many decades. At the same time, some of these fisheries are characterized by high bycatch, much of which is comprised of juveniles of ecologically important and economically valuable species and which is often discarded. Moreover, excessive use of trawling in areas of fragile or vulnerable habitats may also have unwanted impacts.

In light of the above concerns and in response to requests from RECOFI members to reduce the impacts of fishing on the marine environment, a workshop has been arranged to develop a road map on how bycatch can be more effectively managed and how to reduce impacts of fishing on the environment. This workshop will synthesize the current knowledge on bycatch in the RECOFI / GCC region and consider priority follow up actions.

II. OBJECTIVES

- To raise awareness among RECOFI members of the environmental, technological and economic impacts associated with bycatch and fishing impacts;
- To bring different stakeholders together to identify financial, policy and technological challenges and actions necessary to manage bycatch and introduce low impact fishing techniques;
- To develop a regional plan of action aimed at improved management of bycatch and reduction of fishing impacts in selected fisheries for submission to RECOFI through its Working Group on Fisheries Management.

III. WHO IS THIS WORKSHOP FOR?

This workshop will be of benefit to:

- fisheries resource managers and policy makers;
- fishing technologists, and fishery resource technicians;
- the private sector esp. artisanal & commercial fishing associations & vessel operators;
- other stakeholders interested to reduce impacts of fishing on the environment.

IV. WHAT WILL BE THE OUTPUTS FROM THE WORKSHOP?

As a main output the workshop will provide key recommendations to participants on environmental, technological and economic issues related to bycatch management and Low Impact Fuel Efficient fishing and future regional actions. At the end of the workshop participants will:

- Understand the interdisciplinary nature of bycatch management;
- Recognize the factors that detract from effective management of fisheries;
- Identify and consider actions at the local, national and regional levels to effectively manage bycatch and reduce fishing impacts;
- Develop a draft regional framework plan of action;
- Identify the financial (financing – co financing – in kind support), technical inputs and partnerships necessary for success.

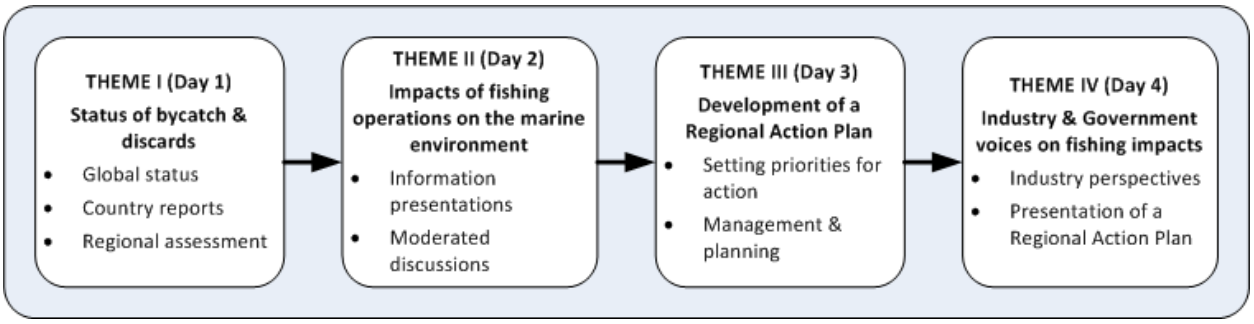
V. INPUTS

In collaboration with relevant fisheries institutes in the region, and FAO RECOFI, the workshop will:

- Review global trends with respect to bycatch;
- Present information on the current status of bycatch and discards in the RECOFI/GCC region;
- Receive inputs from commercial fishers, fisheries officers and administrators on managing bycatch and reducing impacts from fishing;
- Identify regional challenges related to managing bycatch and introducing low impact fishing techniques;
- Propose national and regional actions for effective management of bycatch and adoption of low impact fuel efficient fishing.

VI. WORKSHOP PROCESS

The workshop will be based on four sequential themes as follows:



VII. AGENDA AND TIMETABLE

The provisional agenda and timetable are presented overleaf.

Provisional agenda and timetable

Time	Activity
Day 1	
08.30 – 09.00	Registration
09.00 – 09.20	Welcome remarks – Eng. Jassim Habib Al Bader, **Director-General (PAAF)** Address – **FAO RECOFI** Address - **FAO** Address **–** Dr Haider Ali Murad, **Deputy Director-General Fisheries Sector (PAAF)**
09.20 – 09.50	The global situation of bycatch and the environmental impacts of fishing and a brief introduction to the FAO guidelines on bycatch management (**FAO)**
09.50 – 10.10	Video films showing underwater impacts of fishing (**FAO**)
10.10 – 10.20	Group photo
10.20 – 10.40	Coffee/Tea
10.40 – 10.55	Introduction to the Workshop – Objectives and Outputs **FAO / RECOFI Secretariat?**
10.55 – 11.00	Nomination of chair **(Kuwait)**
THEME I – Status of bycatch and discards globally and in RECOFI countries	
11:00 - 12:15	Country statements on the status of bycatch and discards **4 participating countries (15 minutes each)**
12.15 - 13.30	Lunch
THEME I cont. – Status of bycatch and discards in RECOFI countries	
13:30 – 14:50	Country statements on the status of bycatch and discards **4 participating countries (15 minutes each)**
14.50 – 15.20	Afternoon tea
15.20 – 16.40	Plenary discussion – **Facilitated summary of the baseline situation - what do we know about fishing impacts in the region?** **PLENARY PANEL**
16.40 – 17.10	Plenary discussion – **What are the common issues and priorities that need to be addressed in the future?** **PLENARY PANEL**
17.15 – 17.30	**Wrap-up day 1 – rapporteur**
Day 2	
THEME II – The impacts of fishing operations on the environment	
09.00 - 09:45	Impacts of trawling on different near shore habitats **– FAO**
09.45 - 10.15	Application of BRDs to Kuwait's Shrimp Fishery - KISR
10:15 – 11:00	Impacts of Abandoned, Lost or Discarded Fishing Gear **(FAO+Oman and/or UAE)**
11.00 – 11.30	Morning tea
11.30 – 12.00	Low impact fuel efficient capture techniques - **FAO**
12.00 – 12.30	WWF Sustainable Tropical Shrimp Trawling Blueprint **(Tim Huntington)**

Time	Activity
12.30 – 13.30	Lunch
13:30 – 14.30	FAO International Guidelines on Bycatch Management. Introduction to the guidelines and experiences of bycatch management around the world (**FAO)**
14.30 – 15.30	Moderated plenary discussion – **What are the policy signals from RECOFI member countries relating to bycatch and fishing impacts?**
15.30 – 16.00	Coffee/Tea
16.00 – 17.00	Moderated plenary discussion: **Leadership – who are the national and regional champions and what is the role of industry?**
17.00 – 17.15	**Wrap-up Day 1 – rapporteur**
Day 3	
THEME III – Developing a Regional Action Plan	
09.00 – 09.15	Guidance to ***Working Groups*** established to identify priority issues & actions. Nomination of group leaders
09.15 – 10.15	***Working Group 1: Bycatch – Setting priorities for action*** • Options for bycatch management measures (technical, spatial & other) • R&D needs and the role of industry • Bycatch assessment and data collection • Monitoring, Control & Surveillance (MCS) • Awareness and capacity development needs ***Working Group 2: Development and testing of Low Impact Fishing*** • Future actions at local, national & regional levels (technical, R&D & management) • Time frame and role of industry
10.15 – 10.30	Coffee/Tea
10.30 - 12.00	***Working Groups continued as before***
12.00 – 13.00	Lunch
13.00 - 14.30	***Working Group 1: Bycatch – Management and Planning*** • Development of National Plans of Action for Bycatch Management • Regional Action Planning Framework Needs (institutions and governance) • Monitoring & Evaluation (inc. risk & impact assessments) • Roadmap and time lines ***Working Group 2: Development and testing of Low Impact Fishing*** • Future actions at local, national & regional levels • Time frame and role of industry
14.30 – 15.00	Coffee/Tea
15.00 – 16.00	***Working Groups continued as before***
16.00 - 16.30	Presentations of **Working Group** results (Priorities and actions)
16.30 - 17.30	**Development of the elements of a Regional Action Plan on Bycatch Management in the RECOFI Region**

Time	Activity
Day 4	
THEME IV – Industry – Government voices on fishing impacts	
09.00 – 09.15	Introduction on the importance of industry – government discussion forums
09.15 - 09.45	An artisanal fishers perspective of bycatch and fishing impacts (in Arabic) **– TBA**
09.45 – 10.00	A industrial fishers perspective of bycatch and fishing impacts (in Arabic) **– TBA**
10.00 – 10.30	Video films showing underwater impacts of fishing (FAO)
10.30 – 11:00	Coffee/Tea
11.00 - 12.00	Presentation and discussion of the **Regional Action Plan**
12.00 – 13.00	Lunch
13.00 – 16.00	Field visit to fishing port and vessels
16.00 – 16.30	Closing ceremony

APPENDIX 2

List of participants

MEMBER COUNTRIES

BAHRAIN

Nasser AL SAFFAR
Marine Resources Specialist
Directorate of Fisheries
PO Box 20071, Manama
Tel.: +973 17815872
Mobile: +973 36177221
Fax: +973 17728459
E-mail: Nasser-alsaffar@hotmail.com

Jaffar ISHAQ
Harbor Specialist
Directorate of Fisheries
PO Box 20071 Manama
Tel.: +973 17815862
Mobile: +973 39900452
Fax: +973 17728459
E-mail: jaffarishaq@yahoo.com

IRAN (ISLAMIC REPUBLIC OF)

Seyed Hossein HOSSEINI
Head of Information and Fishing Operations
Ministry of Jihad-e-Agriculture
No. 236, West Fatemi Ave,
Iran Fisheries Organization, 2nd Floor,
Tehran
Tel.: +9821 66943964
Mobile: +912 8101633
Fax: +9821 66941373
E-mail: sh.hosseini49@yahoo.com

IRAQ

Wartan Azzad SERKEES
Senior Fish Biologist
National Project Coordinator FAO/Iraq
Ministry of Agriculture
General Board of Fish Resource Development
Baghdad
Mobile: +964 7901497521
E-mail: vart_fish@yahoo.com

KUWAIT

Haider Ali MURAD
Deputy Director-General Fisheries Sector
Public Authority of Agricultural Affairs and
Fish Resources - PAAF
PO Box 21422 – Safat – 13075 Kuwait
Tel.: +965 22254100
Mobile: +965 66470017
Fax: +965 22254103 / 22254113
E-mail: drhmurad@yahoo.com
drhmurad@paaf.gov.kw

Usama Khalifa Sayed AHMED
Fisheries Consultant
Public Authority of Agricultural Affairs and
Fish Resources - PAAF
PO Box 21422 – Safat – 13075 Kuwait
Tel.: +965 22254147
Mobile: +965 97887592
Fax: +965 22254103 / 22254113
E-mail: khalifausa@yahoo.com
khalifausa@paaf.gov.kw

Moustafa Mohamed Said FOUDA
Fish Diseases and Aquaculture Consultant
Public Authority of Agricultural Affairs and
Fish Resources - PAAF
PO Box 21422 – Safat – 13075 Kuwait
Tel.: +965 22254120
Mobile: +965 99607132
Fax: +965 22254103 / 22254113
E-mail: mfouda65@hotmail.com
fouda@paaf.gov.kw

Kadarkaraiyandi KUMAR
Senior Researcher
Public Authority of Agricultural Affairs and
Fish Resources - PAAF
PO Box 21422 – Safat – 13075 Kuwait
Tel.: +965 22254106
Mobile: +965 66807901
Fax: +965 22254103 / 22254113
E-mail: kumar_kuwait@yahoo.com
kumar@paaf.gov.kw

Farhan Ahmed Mansour ZOBIRAN
Director of Follow-up & Coordination Division
Public Authority of Agricultural Affairs and
Fish Resources - PAAF
PO Box 21422 – Safat – 13075 Kuwait
Tel.: +965 22254171
Mobile: +965 55455534 / 66864334
Fax: +965 22254103 / 22254113
E-mail: Eng_Farhan@windowslive.com

Mohammed AL-KHARAFI
Head of Bio-aquatic Studies & Research Section
Public Authority of Agricultural Affairs and
Fish Resources - PAAF
PO Box 21422 – Safat – 13075 Kuwait
Tel.: +965 22254139
Mobile: +965 99679736
Fax: +965 22254103 / 22254113
E-mail: m_al_kharafi@hotmail.com

Hussain ALSAYEGH
Marine Researcher
Public Authority of Agricultural Affairs and
Fish Resources - PAAF
PO Box 21422 – Safat – 13075 Kuwait
Tel.: +965 22254131
Mobile: +965 9998150
Fax: +965 22254109
E-mail: kinghusain@gmail.com

Abdullah Ahmed ASEM
Biology Researcher
Public Authority of Agricultural Affairs and
Fish Resources - PAAF
PO Box 21422 – Safat – 13075 Kuwait
Tel.: +965 222573015
Mobile: +965 67673699
E-mail: a.asem88@gmail.com

Modi Sabah AL-FADHLI
Marine Researcher
Public Authority of Agricultural Affairs and
Fish Resources - PAAF
PO Box 21422 – Safat – 13075 Kuwait
Tel.: +965 99873949 / 22254161
Mobile: +965 66708844
E-mail: hesadary@hotmail.com

Mohammad ABUL
Director of Biodiversity Conservation
Department
Environment Public Authority - EPA
PO Box 24395 Safat - 13104 Kuwait
Tel.: +965 2482058
Mobile: +965 99788134
Fax: +965 24820570

Ali ALBAZ
Associate Research Scientist
Kuwait Institute for Scientific Research
PO Box 1638, 22017 Salimya
Tel.: +965 24956376
Mobile: +965 99777911
Fax: +965 25711293
E-mail: abaz@kisr.edu.kw

Mohsen ALHUSAINI
Program Manager & Research Scientist
Associate Research Scientist
Kuwait Institute for Scientific Research
(KISR)
PO Box 1638, 22017 Salimya
Tel.: +965 24956372
Mobile: +965 99680209
Fax: +965 25711293
E-mail: mhusaini@kisr.edu.kw

Salah Taleb ALJAZZAF
Senior Research Technician
Associate Research Scientist
Kuwait Institute for Scientific Research
(KISR)
PO Box 1638, 22017 Salimya
Tel.: +965 25737233
Mobile: +965 97800229
Fax: +965 25711295
E-mail: shoda.shodi@gmail.com

Talal Ahmed DASHTI
Senior Research Technician
Associate Research Scientist
Kuwait Institute for Scientific Research
(KISR)
PO Box 1638, 22017 Salimya
Mobile: +965 99679611
Fax: +965 25711293
E-mail: tdashtik@mfd.kisr.edu.kw

Abdul Rahman Al-Othman
Advisor
United Fisheries of Kuwait
PO Box 22044, Safat 13081,
State of Kuwait
Tel.: +965 24950109 / 24950108
Fax +965 24345004

Khalid Al-Sobagha
Fishing Fleet Manager
United Fisheries of Kuwait
PO Box 22044, Safat 13081,
State of Kuwait
Tel.: +965 24950109 / 24950108
Fax +965 24345004

Mohamed Hashim Al-Ali
Chairman
Kuwait Association of Fishermen
PO Box 25699, Safat 13117
Tel.: +965 22427639 / 22451061/2
Fax: +965 22453416

Ibrahim Al-Jassim
Representative of Kuwait Association of Fishermen in PAAF PO Box 25699, Safat 13117
Tel.: +965 22427639 / 22451061/2
Fax: +965 22453416

OMAN

Ahmed Salim AL-HEKAMANI
Fisheries Development Specialist
In-charge, Center for Fisheries Wealth
Ministry of Agriculture and Fisheries
PO Box 467, Postal Code 100
Muscat
Tel.: +968 24688313
Mobile: +968 99426361
Fax: +968 24688329
E-mail: alhekmani2020@hotmail.com

Yahya Khalfan AL-HADEEDI
Head Commercial Fishing Control
Ministry of Agriculture and Fisheries
PO Box 467, Postal Code 100
Muscat
Tel.: +968 24688313
Mobile: +968 99460468
Fax: +968 24688329
E-mail: yahya_hd2@hotmail.com
yahya.hadidi@mofw.gov.om

Sahar Fahmy MEHANNA
Fish Stock Assessment Expert
Marine Science and Fisheries centre
PO Box 467, Postal Code 100
Muscat
Tel.: +968 24688313
Mobile: +968 99530161
Fax: +968 24688329
E-mail: sahar_mehanna@yahoo.com

QATAR

Khalid ALKHALAF
Biologist Expert
Department of Fisheries
Ministry of Environment
Doha
Mobile: +974 55571229
E-mail: khd004@hotmail.com

SAUDI ARABIA

Osama Saad ALAHMEDI
Researcher Assistant Fisheries
Ministry of Agriculture
PO Box (0) Riyadh 11195
Riyadh
Tel.: +966 4055851
Mobile: +966 565956650
Fax: +966 4055851
E-mail: aosama8@hotmail.com

Raddah Abadel ALZAHRANI
Fisheries Specialist
Ministry of Agriculture
PO Box 2580 Jeddah 21461
Fisheries Branch in Jeddah
Tel.: +96626204086 / 26207291
Fax: +966 26204086
Mobile: +966554522133 / 540506002
E-mail: raddahsn@hotmail.com
raddahsn@yahoo.com

UNITED ARAB EMIRATES

Eisa Abdelkerim ALYAFAEE
Head of Oceanographic Section
Ministry of Environment and Water
PO Box. 21 UM ALQAWAN
Tel.: + 67655881
Fax: + 8
Mobile: +971 506467891
E-mail: ealyafee@moew.gov.ae

FAO

Piero MANNINI
Senior Fishery Officer
Secretary of the Regional Commission for Fisheries (RECOFI)
Food and Agriculture Organization of the United Nations (FAO)
Regional Office for the Near East and North Africa, Cairo, Egypt
Tel.: +202 33316000 ext: 2820
Direct: +202 33316141
Fax: +202 37495981
Mobile: + 2 0166687188
E-mail: piero.mannini@fao.org

Petri SUURONEN
Fishery Industry Officer, FIRO
Food and Agriculture Organization of the United Nations (FAO)
Fishing Operations and Technology Service
Viale delle Terme di Caracalla, 00153
Rome, Italy
Tel.: +39 0657055153
Fax: +39 0657055188
E-mail: petri.suuronen@fao.org

Tim HUNTINGTON
FAO Consultant
Poseidon Aquatic Resource Management
Windrush, Warborne Lane, Portmore,
Lymington, Hampshire S041 5RJ, UK
Tel.: +44 (0)1590610168 / 636576
Skype tel: timhuntington
Mobile: +44 (0)7879664988
E-mail: tim@consult-poseidon.com

David CURRIE
Fishery and Aquaculture Officer
Food and Agriculture Organization of the United Nations (FAO)
FAO Subregional Office for the GCC States and Yemen, SNG
Ministry of Environment and Water
P.O. Box 62072
Abu Dhabi, United Arab Emirates
Tel.: +971 24470744
Fax: +971 26586733
E-mail: david.currie@fao.org

Heba FAHMY
Programme Assistant
Food and Agriculture Organization
Regional Office for the Near East and North Africa (RNE)
Cairo, Egypt
Tel.: +202 33316000 ext: 2802
Fax: +202 37495981 / 33373419
E-mail: hebatallah.fahmy@fao.org

APPENDIX 3

Opening Statement by Dr Haider Ali Murad, Deputy Director-General Fisheries Sector of the Public Authority for Agriculture Affairs and Fisheries Resources (PAAF), State of Kuwait

Respected Colleagues from RECOFI Member Countries
Learned Officials from FAO and RECOFI
Distinguished participants
Ladies and Gentlemen

Good morning to all of you. It gives me an immense pleasure to welcome you all to this beautiful country, the State of Kuwait for this important event. Dear friends, all we are well aware that fishing is the major source of food for humanity and it offers great opportunity for employment and economic benefits for us. This unlimited gift of nature needs to be managed properly for offering their sustainable contribution to the nutritional, economic and social well-being of the growing world's population.

There is growing concern in recent years that levels of fishing mortality due to bycatch and discards threaten the long-term sustainability of many fisheries and maintenance of biodiversity in many areas, resulting in increased food insecurity and adversely affecting the livelihoods of millions of fishers and fish workers.

Hence it is a dare need and challenging task not only for us but for entire international community to reduce bycatch, catch by lost or abandoned gear, fish discards and post-harvest losses, and to support research and development activities that will reduce bycatch of juvenile fish.

In realization of the above facts, this workshop is conceptualized to strengthen our combined efforts to efficiently manage fish by-catch and to ensure responsible utilization of marine resources in this region. I am very glad to inform that all most all member countries of RECOFI are taking part in this important event. I sincerely hope that the deliberation and discussions to be held in this event for the coming 4 days will definitely strength our collective efforts to ably manage our marine living resources with special focus on bycatch management in a sustainable way for the well being of our future generation. I am confident that our legitimate commitment on bycatch management and biodiversity conservation in this region will be role model to the rest of the world to strengthen their inspiration on this noble task.

My dear Colleagues and Friends, I wish all of you a successful deliberation in this memorable event and for pleasant stay at State of Kuwait. Thank you very much!

APPENDIX 4

Opening statement by Mr Piero Mannini, Senior Fishery Officer and Secretary of RECOFI on behalf of Mr Abdessalam Ould Ahmed, Regional Representative, FAO Regional Office for the Near East and North Africa

Dr Haider Murad, Deputy Director General, Public Authority of Agriculture Affairs and Fish Resources, Distinguished Delegates, Colleagues, Ladies and Gentlemen,

It is my pleasure to extend a warm welcome to each and all of you on the occasion of the opening of the FAO/RECOFI Regional Workshop on Bycatch Management and Low Impact Fishing, kindly hosted by the Public Authority of Agriculture Affairs and Fish Resources, the State of Kuwait.

The role and obligations of regional fisheries management organizations, such as RECOFI, in fisheries governance are growing steadily. Simultaneously, strengthening regional fisheries management organizations and their performance still remains the major challenge facing international fisheries governance. Numerous RFMOs are recognizant of the need for greater cooperation between member states and the need to reform their legal and institutional framework. RECOFI is no exception to this situation.

I wish to remind you that regional fisheries management organizations such as RECOFI were established by the Member Countries to facilitate and reinforce regional collaboration. The sound management and development of the regional fisheries wealth necessarily require the establishment and development of regional and sub-regional cooperation for fisheries and environmental research. RECOFI appears as a convenient and valid mechanism to promote and enhance the regional dialogue and cooperation for the sustainable development of regional fisheries.

Dear participants and colleagues, I wish to recall that the mandate of the Commission as set out in the Agreement for the Establishment of the Regional Commission for Fisheries (RECOFI Agreement), adopted by the FAO Council in 1999 and entered into force on 26 February 2001, is “to promote the development, conservation, rational management and best utilization of living marine resources, as well as the sustainable development of aquaculture in the area of its competency.”

I would like to remind you that RECOFI was established in accordance with Article XIV of the FAO Constitution and consequently the Commission is empowered to formulate and recommend measures for the conservation and management of living marine resources. In this regard the Commission has effective management powers and should exercise them.

In recent years, the RECOFI has initiated the establishment of a regional strategy for fisheries management based on an ecosystem approach to fisheries with the ultimate goal to ensure long-term sustainability of the resources, the communities and the natural environment supporting them. The Commission is aware of the difficulty of such a task. However, the basic work initiated by RECOFI would indicate that the necessary steps have been made. In order to achieve these objectives significant additional investment is needed in research, human resource development, and institutional strengthening and reforms to create the capacity needed for sustainable fisheries and aquaculture development and conservation. In this regard, it is noteworthy to stress that the need for capacity development was underscored by all Members at the Special Meeting on RECOFI Consolidation and Development in May 2010. Regrettably, Members are not providing their Commission, RECOFI, with the needed support to increase the regional capacity for appraise and management of common resources. Much more can and should be done. Members should be more actively involved in the work of their Commission to fully benefit from its services.

Moreover, it must be remarked that the Commission at its Sixth Session in May 2011 noted that the current level of Members contributions was only sufficient to fund the implementation of a limited number of priority activities, and resolved that additional funds would be required if a more ambitious work programme was to be implemented. As a result, the Commission decided to continue applying fixed and equal contribution for Members, and agreed on a three-fold increase of the Members' annual contributions from 2013 provided that all arrears were liquidated by 31 December 2011. It is of great concern that not all arrears were settled by the given date therefore putting at serious risk the future of the Commission.

This would be most unfortunate as, on the other side, RECOFI is decisively moving from words to facts to assume fully its mandated role as the relevant RFMO in this part of the world and it is not avoiding the challenges posed by its mandate. In fact, the Commission adopted its first fisheries management recommendation, RECOFI/6/2011/1, entitled "Recommendation on minimum data reporting in the RECOFI area" that entered into effect on 1 January 2012.

The recommendation on minimum data reporting in the RECOFI area requires Members Countries to specifically report on discards and bycatch, and on any bycatch reduction device (BRD)/mitigation measure used. Within this context RECOFI and FAO in partnership with the State of Kuwait are holding the current Regional Workshop on Bycatch Management and Low Impact Fishing, to discuss a regional plan of action to promote bycatch management and low impact fishing in the region.

I wish you a full and very productive meeting for the benefit of all.

Lastly, I wish to extend my thanks to those in Public Authority of Agriculture Affairs and Fish Resources and FAO who have worked together to make possible and organize this meeting. Special thanks are due to the State of Kuwait for hosting this event.

Thank you very much for your attention.

APPENDIX 5

Opening Statement by Mr Árni Mathiesen, Assistant Director-General, Fisheries and Aquaculture Department, FAO Rome, Italy

Distinguished guests, friends and colleagues:

On behalf of the Director-General of FAO, Mr Graziano da Silva, it gives me much pleasure to welcome you to this Regional workshop on "Bycatch Management and Low Impact Fishing".

I am delighted that we have been able to assemble such an impressive group of experts from this region of the world. As you know each Expert here today, in his or her personal capacity, has been invited because of the unique professional and geographical experience he or she would bring to the Workshop.

Turning to the issues of low impact fishing, bycatch management and food production, we are all aware that bycatch and discards present not just one but many dilemmas for fisheries and those dependent on the resource as a source of food, income and livelihood. At the same time we are also aware that the global agricultural and food industry is dependent on energy inputs.

Depending on your jurisdiction or ethical persuasion, bycatch may be defined as unintended, unused, inappropriate or unaccounted form of catch. Nevertheless, until and unless we are able to quantify and account for all significant sources of fishing induced mortality, we will not be in a position to ensure that fisheries are exploited in a responsible and long-term sustainable manner and consistent with an ecosystem approach to fisheries.

At the same time, meeting the global food demand of a growing world population over the past century has, at least in part, been achieved by significantly increasing the fossil fuel inputs along the entire agri-food chain. For the fisheries and aquaculture sector, the use of fossil fuels has significantly helped feed the world over the last few decades, mainly through their contribution to increased mechanization of fishing vessels, processing and transport to markets. However, this high dependency of the food system on fossil fuels is now becoming a cause for concern.

Turning to the issues of fishing gears and practices used in coastal environments, most fishing techniques in use today have their origin in an era when fisheries resources were abundant, energy costs were dramatically lower than current levels, and when less attention was paid to operating efficiency and negative impacts of fishing on marine and atmospheric ecosystems.

Distinguished colleagues, the FAO Code of Conduct for Responsible Fisheries (CCRF) calls for 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 by minimizing fisheries impacts. However, there is growing concern that the combined effect of failing to effectively manage bycatch and reduce impacts from fishing is threatening the long-term sustainability of fisheries, the maintenance of bio-diversity and is contributing to food insecurity, thus affecting the livelihoods on those dependent on fish resources. It is in this context that this workshop has been developed.

The main objectives of this Workshop are threefold: Firstly, to raise awareness among RECOFI members of the environmental, technological and economic impacts associated with bycatch and fishing impacts; secondly, to bring different stakeholders together to identify financial, policy and technological challenges and actions necessary to enhance the capacity of RECOFI members to take appropriate actions to manage bycatch and introduce low impact fishing techniques to their respective countries; and thirdly, to use this workshop to develop a draft regional plan of action aimed at reduction of fishing impacts in the RECOFI region.

I would like to acknowledge the financial support provided by the Government of Kuwait, FAO's regular programme, and others for this workshop. In particular, I wish to thank Dr Haider Ali Murad (Kuwait) for his great efforts to bring this workshop to reality and also to Dr Piero Mannini (FAO-NRE) and his staff for facilitating this workshop as part of the RECOFI process.

I wish you all a productive and very successful workshop. The tasks before you are not confined to this workshop but to put into play the first steps towards implementing a regional plan of action to manage and minimize the impacts of fishing in this region. I look forward to seeing the results of your collective actions presented at RECOFI.

Thank you very much.

APPENDIX 6

Bycatch and other environmental impacts of fishing in the RECOFI region
National status questionnaires from the Member states

BAHRAIN: NATIONAL STATUS QUESTIONNAIRE

Introduction and purpose of survey

The extensive tropical coastal areas of the RECOFI and GCC region have supported commercial and artisanal fisheries for many decades. At the same time, some of these fisheries are characterized by high bycatch, much of which is comprised of juveniles of ecologically important and economically valuable species and which is often discarded. Moreover, excessive use of trawling in areas of fragile or vulnerable habitats may also have unwanted impacts.

In light of the above concerns and in response to requests from RECOFI members to reduce the impacts of fishing on the marine environment, a regional workshop has been proposed over 9– 12 December 2012. To be held in Kuwait, this workshop will lead to the development of a road map on how bycatch can be more effectively managed and how to reduce impacts of fishing on the environment. This workshop will synthesize the current knowledge on bycatch in the RECOFI / GCC region and consider priority follow up actions.

The purpose of this survey is to assist the RECOFI members to present the national status of bycatch and other environmental effects of fisheries following a common structured approach. It is intended that they will form the basis for the 15 minute presentations to be made on Day 1 of the Kuwait Workshop.

Format of the questionnaire

This is a semi-structured questionnaire. This means in some places we require facts and figures and in others we require more general information.

The questionnaire structure is as follows:

A. Contact information
B. Country fleet details
C. Incidental bycatch and discarding
D. Abandoned, lost and otherwise discarded fishing gear (ALDFG)
E. Habitat impacts of fishing gear

Who should complete the questionnaire?

Sections A and B can be completed by the fisheries administration. However, the rest of the questionnaire will need to be completed by persons from both Government and the private sector e.g., those with practical experience of dealing with bycatch and discards. It is suggested that a small working committee is convened to go through each question from Section C onwards and formulate joint responses.

If you have any questions on how to answer this questionnaire, please contact Tim Huntington (FAO consultant) by email at tim@consult-poseidon.com***or Dr Haider A. Murad (PAAF)*** drhmurad@paaf.gov.kw

Key definitions:

Target catch: those species that are primarily sought by the fishermen in a particular fishery. The subject of directed fishing effort in a fishery. There may be primary as well as secondary target species

Bycatch: part of a catch of a fishing unit taken incidentally in addition to the target species towards which fishing effort is directed. If possible name the main species being caught, of if these are not recorded, the main types of bycatch e.g., finfish, crustaceans, other invertebrates. Bycatch is either retained or discarded (see definitions below).

- **Retained bycatch**: the part of the bycatch that is landed.
- **Discarded bycatch**: that portion of the bycatch that is returned to the sea as a result of economic, legal, or personal considerations. Also known as 'discards'.

ALDFG: collective term for fishing gear that has been abandoned, lost or otherwise discarded (see separate glossary entries). Often referred to as 'derelict fishing gear' in literature.

- **Abandoned fishing gear**: fishing gear that is deliberately left at sea with no intention by fishers to retrieve it, for whatever reason.
- **Lost fishing gear**: the accidental loss of fishing gear at sea.
- **Discarded fishing gear**: fishing gear or parts thereof that is deliberately thrown overboard without any intention for further control or recovery.

Mobile gear: fishing gear that is towed by a vessel to displace and capture fish. Sometimes called active or towed gear. Examples include trawls and dredges.

Static gear: fishing gear that is placed in one fixed location, usually through anchors and buoys, so that it traps or ensnares passing fish. Includes types of nets, pots and traps.

Please make any comments about the above definitions:

A. Contact information

Country name:	**KINGDOM OF BAHRAIN**
Name(s) of author(s)	NASSER EBRAHIM NASSER AL-SAFFAR
Author's organisation:	Ministry of Municipalities Affairs and Urban Planning DIRECTORATE OF FISHERIES
Lead author contact details:	Tel.: +973 17815872
	Email: Nasser-m-mm@hotmail.com
	Mobile tel: +

B. Country fleet details

B.1: Please provide information on your licensed fishing gears (2009)

Primary gear (note that not all gear types are applicable to each country)	No. of vessels which use gear	Vessel length (m)	Vessel power (hp)	Vessel BTR	Distance from coast (x in box(es))			
					0 – 3 nm	3-12 nm	12-200 nm	>200 nm
Industrial shrimp trawl	Non							
Artisanal shrimp trawl	326	8 – 11			x	x		
Gill nets (wooden)	250(W & F)	8 - 11			x	x		
Gill nets (fibreglass)								
Traps – gargour (wooden)	793(W & F)	8 - 11			x	x		
Traps – gargour (fibre)								
Finfish bottom trawl	Non							
Small pelagic purse seine								
Tuna purse seine								
Surface longline	30	8			x	x		
Others (please specify)Hook&line	30	8			x	x		

B.2: Whichof the following management mechanisms apply to yourshrimp & finfish trawl fleets

Mechanism	Yes	No	If yes, please describe
Licensing of gear and / or vessels	**x**		Both
Gear restrictions or prohibitions / regulations	**x**		There is regulations about nylon nets, three layers bit some fishermen they use it
Areas of operation / times of operation / seasons	**x**		There is determine shrimp fishing areas and prevention season.
Prohibitions in species / sizes landed	**x**		There is low to determine the size of fish caught.
Use of satellite-based VMS		**x**	
Logbook reporting requirements		**x**	

C. Incidental bycatch and discarding

This section looks at what fisheries in your country have a significant incidental bycatch.

C.1: List of fisheries with bycatch

For each gear type used in your country, please list the main species groups that are (i) targeted, (ii) retained as bycatch and (iii) discarded. Where possible, please estimate the annual volume targeted, caught as bycatch or discarded for each fishery.

C1.1: Shrimp and finfish bottom trawls (all hull materials)

Target species		**Retained bycatch species**		**Discarded species**	
Key species groups	***Tonnes per year***	***Key species or species groups***	***Tonnes per year***	***Key species or species groups***	***Tonnes per year***
Penaeus Semisulcatus(90%)	335.0	1. Portunus Pelagicus 2. Siganus spp 3. Sepiidae, Sepiolidae 4. Nematolosa nasus 5. Ariomma indica 6. Lethrinus lentjan 7. Nemipterus Spp. 8. King fish 9. Arius thalassinus 10. Sphyraena Sp. 11. Rhabdosargus haffara 12. Epinephelus spp 13. Sillago Sp. 14. Carcharhinus Sp. 15. Sardinella Sp.	805.0 167.0 116.0 38.0 13.0	Not available	
Year or period of data	2011	2011			
Type of data[1]	official statistics	official statistics			
Source of data	Fisheries assessment section Directorate of Fisheries	Fisheries assessment section Directorate of Fisheries			

Advice on filling this table:

1. This table is indicative only, so please use approximate figures.
2. If figures on bycatch and discard volumes are not available, please make estimates based on any research or observer information.
3. If no such information exists, please leave blank.

[1] Type of data: Please state whether (i) **Documented** (in official statistics), (ii) **Research observations** or (iii) **estimates**

C1.2: Other fishing gears

Please try to estimate the proportions of the retained not-target bycatch and the discarded bycatch. Industry experience will be very useful here.

Gear type	Target catch		Retained, non-target bycatch			Discarded bycatch		
	Key species (list up to 5)	***Approx. annual volume (t)***	***As an estimate, how does the volume compare to the target catch?***		***Key species (list up to 5)***	***As an estimate, what proportion of the total catch is discarded?***		***Key species (list up to 5)***
Gill nets	Scomberomorus commerson(chana'ad),Belonidae(hagool),Hemiramphidae(sils),Rhabdosargus haffara(gorgofan)	789.0	Less		Nil	<10%		Nil
			Same			10-50%		
			More			>50%		
Traps – gargour	Epinephelus spp(homour),Siganus spp(safe),Lethrinus nebulosus(share) Epinephelus chlorostigmas(summan) Portunus pelagicus(cubcub)	3504.0	Less		Nil	<10%		Nil
			Same			10-50%		
			More			>50%		
Small pelagic purse seine			Less			<10%		
			Same			10-50%		
			More			>50%		
Tuna purse seine			Less			<10%		
			Same			10-50%		
			More			>50%		
Surface longline	Epinephelus spp(homour),Lethrinus mahsena(jameh),Carcharhinus Sp.(jarjoor),Trachurus indicus(khadra),Sparidentex hasta(subaity)	68.0	Less		Nil	<10%		Nil
			Same			10-50%		
			More			>50%		
Hadra trap	Siganus spp(safe),Portunus pelagicus (cubcub),plectorhinchus sordidus(janam),etc	556.0	Less		Nil	<10%		Nil
			Same			10-50%		
			More			>50%		

C.2: Information on by-catch and discards

Are the species and volumes of <u>bycatchroutinely</u>recorded or estimated, and if so, how?	**Yes**	**No**	*If yes, please provide information on recording systems e.g., by observers, landing records, logbooks, etc.?*
	x		Estimate depends on the observation system through monthly inspections by the existing statistical system
Are the species and volumes of <u>discardsroutinely</u>recorded or estimated, and if so, how?	**Yes**	**No**	*If yes, please provide information on recording systems e.g., by observers, discard records, logbooks, etc.?*
	x		Estimate depends on the observation system through monthly inspections by the existing statistical system
Have there been any scientific studies or workshops on bycatch?	*Please briefly describe the studies / workshops and provide references if published:*		
	Yes in the eighties(1980s)		
Has there been any length / frequency analysis of bycatch?	No		

C.3: Policy and Regulations on Bycatch

Is there any national policy[2] specifically on bycatch and its management?	**Yes**	**No**	*If yes, note titles and dates of written policy documents which specifically refer to bycatch management, including discarding. If possible, summarise main policy elements referring to bycatch and discarding.*
		x	
Are there any laws and / or regulations <u>managing bycatch and discarding</u>?	**Yes**	**No**	*If yes, include (i) <u>seasonal limits</u> (e.g., when bycatch rates might be high), (ii) <u>spatial zones</u> or <u>geographic areas</u> where fishing is restricted or prohibited, (iii) <u>gear specifications</u> or use that is specifically designed to minimise bycatch and discards. Please also notethe titles of any key law / regulations*
		x	
Do any vessels use any form of bycatch reduction device (BRD) and/ or turtle exclusion device (TED)?	**Yes**	**No**	*If yes, please describebelow (e.g., vessel and gear types, BRD / TED descriptions, proportion of fleet using these, etc).*
		x	

[2] Policy is a statement of political vision.

C.4: With shrimp trawlers, why is there a bycatch?

Is the following statement applicable to your shrimp trawl fishery (yes / no)	**Yes**	**No**	**Describe any other reasons for catching and retaining bycatch**
Could not avoid catching bycatch e.g., gears are unselective	**x**		Throug (bycatch sold for less than other gears about a million dinars annually (study in Arabic)
Vessel owners think that the use of BRDs / TEDs may restrict the catch	**x**		
BRDs & TEDs are too expensive to fit	**x**		
BRD / TED technology not available locally	**x**		
Training in BRD / TED use not available	**x**		
Bycatch has a useful economic value that has a major contribution to vessel earnings.	**x**		
Bycatch has a useful economic value that has a minor contribution to vessel earnings.	**x**		

C.5: Reasons for discarding practises

Are the following statements the reasons for your bycatch discards?	Yes	No	Please state any other reasons for discarding bycatch
Has no market value	x		
Has market value but fish is too small	x		
Quota is exceeded	x		
Too difficult to sort	x		
May damage the target catch	x		
Insufficient storage facilities	x		

C.6: Marketing and utilisation of bycatch

How is retained bycatch marketed?	**Method**	**Yes**	**No**	**Comment of description**
	Via normal market channels	x		
	Intervention or purchase by the Government		x	
	Other 1: Please specify			
	Other 2: Please specify			
Describe whether prices and demand <u>for bycatch species</u> have changed over the last 5 years:		Yes Slightly		
Describe the post-harvest 'chill chain' for retained bycatch and compare and contrast with that for target species. ***For instance is bycatch as well iced, boxed and handled? Are the rates of post-harvest spoilage the same? If not, please briefly describe why.***		bycatch is treated as Commercial species		

C.7: Incidental bycatch of other animals

Do any of your fisheries catch seabirds?	**Yes**		**No**	**x**	**Don't know**		*If yes, please describebelow (e.g., vessel and gear types, frequency, species affected, magnitude of impacts on populations).*
Do any of your fisheries catch marine animals (e.g., turtles, dugong, dolphins, and whales)?	**Yes**	**x**	**No**		**Don't know**		*If yes, please describebelow (e.g., vessel and gear types, frequency, species affected, magnitude of impacts on populations).*
	Tends to be in shrimp nets						

D. Abandoned, lost and otherwise discarded fishing gear (ALDFG)

This section assesses the extent to which fishing gear is abandoned, lost and otherwise discarded in each RECOFI country.

D.1 Main fisheries where ADLFG occurs

Gear type	Is ALDFG a major issue with this fishery (put x in 1 box)				If an issue, please describe the nature of ADLFG for each applicable fishery e.g., whether it is abandoned, lost or discarded, in what circumstances this occurs, and any estimates of losses
	Major	Minor	None	n/a	
Shrimp bottom trawl		x			
Gill nets	x				
Traps – gargour	x				
Traps - hadhra		x			
Finfish bottom trawl				x	
Small pelagic purse seine				x	
Tuna purse seine				x	
Bottom longline				x	
Surface longline	x				
Hooks and lines	x				
Other 2 (specify)					

D.2: Information on ADLFG

Have there been any scientific studies or workshops onADLFD?	If yes, briefly describe the studies / workshops and provide references if published.
	Yes, Roger 98
Is there any monitoring or recording of gear loss?	If yes, provide information on recording systems e.g., by observers, logbooks, gear sales etc.?
	There was a program in the nineties (1990s)

D.3: Reasons for abandoning, discarding or losing fishing gear

What are the main reasons for abandoning, losing or discarding fishing gear?	Reason (put x in yes or no)		Yes	No	Any other reasons for ADLFG
	Abandoned	IUU fishing	x		
		Gear is illegal, so is often abandoned	x		
	Discarded	Gear takes up too much space on vessel	x		
		No facilities for disposing of gear on land	x		
	Lost	Gear damaged by other fishing boats (gear conflict)	x		
		Bad weather	x		
		Fishing gear not well marked or lit	x		
		Poor fishing ground	x		

D.4: Existing management mechanisms to control ADLFG and its impacts

What management mechanisms are currently used to prevent ADLFG?	Mechanism (put x in yes or no)	Yes	No	If yes, please describe
	Regulations for marking and lighting of static gear	x		in wire traps (gargour) they using floating mark and the fixed gillnet
	Spatial zoning of different gears to reduce conflict	x		We have allocated for shrimp fishing grounds and fish and reduces conflicts between fishermen
	Use of GPS and other techniques to locate gear	x		especially for wire traps(gargour)
	Waste disposal facilities at fishing ports for old nets, etc.	x		There is a recommendation for the product decomposes
	Use of biodegradable materials to reduce ghost fishing		x	
	Gear recovery programmes		x	

E. Habitat impacts of fishing gear

E.1 Information and monitoring of the impact of fishing gear on the marine environment

Have there been any scientific studies or workshops onthe impact of fishing gear on the environment?	*Please briefly describe the studies / workshops and provide references if published:*
	No
Is there any routine monitoring or recording of the impact of fishing gear, its impact on the environment and the time taken for habitat recovery?	*Provide information on recording systems e.g., by dive surveys, ROV surveys, etc.*
	No

E.2: Policy and Regulations on the environmental impact of fishing gear

Is there any national policy[3] specifically on fishing methods and their impact of the environment?	*Please note titles and dates of written policy documents which specifically refer to bycatch management, including discarding. If possible, summarise main policy elements referring to bycatch and discarding.*
	There is policy but the growing economic development have an impact on the marine environment such as urban progress
Are there any laws and regulations specifically to manage the environmental impact of fishing gear on the marine environment?	*Please note titles and dates of relevant rules and regulations. These could include (i) gear specifications, (ii) time restriction and (iii) geographic restrictions for particular gear types that might damage the marine environment.*
	Existing law and policy for the gears of fishing and are advised to use the gears of environmentally friendly and decompose if lefted in seawater

[3] Policy is a statement of political vision

BYCATCH AND OTHER ENVIRONMENTAL IMPACTS OF FISHING IN THE RECOFI REGION

IRAQ: NATIONAL STATUS QUESTIONNAIRE

Introduction and purpose of survey

The extensive tropical coastal areas of the RECOFI and GCC region have supported commercial and artisanal fisheries for many decades. At the same time, some of these fisheries are characterized by high bycatch, much of which is comprised of juveniles of ecologically important and economically valuable species and which is often discarded. Moreover, excessive use of trawling in areas of fragile or vulnerable habitats may also have unwanted impacts.

In light of the above concerns and in response to requests from RECOFI members to reduce the impacts of fishing on the marine environment, a regional workshop has been proposed over 9– 2 December 2012. To be held in Kuwait, this workshop will lead to the development of a road map on how bycatch can be more effectively managed and how to reduce impacts of fishing on the environment. This workshop will synthesize the current knowledge on bycatch in the RECOFI / GCC region and consider priority follow up actions.

The purpose of this survey is to assist the RECOFI members to present the national status of bycatch and other environmental effects of fisheries following a common structured approach. It is intended that they will form the basis for the 15 minute presentations to be made on Day 1 of the Kuwait Workshop.

Format of the questionnaire

This is a semi-structured questionnaire. This means in some places we require facts and figures and in others we require more general information.

The questionnaire structure is as follows:

A. **Contact information**
B. **Country fleet details**
C. **Incidental bycatch and discarding**
D. **Abandoned, lost and otherwise discarded fishing gear (ALDFG)**
E. **Habitat impacts of fishing gear**

Who should complete the questionnaire?

Sections A and B can be completed by the fisheries administration. However the rest of the questionnaire will need to be completed by persons from both Government and the private sector e.g., those with practical experience of dealing with bycatch and discards. It is suggested that a small working committee is convened to go through each question from Section C onwards and formulate joint responses.

If you have any questions on how to answer this questionnaire, please contact Tim Huntington (FAO consultant) by email at tim@consult-poseidon.com***or Dr Haider A. Murad (PAAF)*** drhmurad@paaf.gov.kw

Key definitions:

Target catch: those species that are primarily sought by the fishermen in a particular fishery. The subject of directed fishing effort in a fishery. There may be primary as well as secondary target species.

Bycatch: part of a catch of a fishing unit taken incidentally in addition to the target species towards which fishing effort is directed. If possible name the main species being caught, of if these are not recorded, the main types of bycatch e.g., finfish, crustaceans, other invertebrates. Bycatch is either retained or discarded (see definitions below).

- **Retained bycatch**: the part of the bycatch that is landed.
- **Discarded bycatch**: that portion of the bycatch that is returned to the sea as a result of economic, legal, or personal considerations. Also known as 'discards'.

ALDFG: collective term for fishing gear that has been abandoned, lost or otherwise discarded (see separate glossary entries). Often referred to as 'derelict fishing gear' in literature.

- **Abandoned fishing gear**: fishing gear that is deliberately left at sea with no intention by fishers to retrieve it, for whatever reason.
- **Lost fishing gear**: the accidental loss of fishing gear at sea.
- **Discarded fishing gear**: fishing gear or parts thereof that is deliberately thrown overboard without any intention for further control or recovery.

Mobile gear: fishing gear that is towed by a vessel to displace and capture fish. Sometimes called active or towed gear. Examples include trawls and dredges.

Static gear: fishing gear that is placed in one fixed location, usually through anchors and buoys, so that it traps or ensnares passing fish. Includes types of nets, pots and traps.

Please make any comments about the above definitions:
No comments \ good definition.

A. Contact information

Country name:	Iraq
Name(s) of author(s)	Vartan Azad Sarkissian
Author's organisation:	MoA\General Board for Fish Resource Development
Lead author contact details:	Tel.: +
	Email: vart_fish@yahoo.com \ vart_fish@hotmail.com
	Mobile tel: +964 790 149 75 21

B. Country fleet details

B.1: Please provide information on your licensed fishing gears (2009)

Primary gear (note that not all gear types are applicable to each country)	No. of vessels which use gear	Vessel length (m)	Vessel power (hp)	Vessel BTR	Distance from coast (x in box(es))			
					0 – 3 nm	3-12 nm	12-200 nm	>200 nm
Industrial shrimp trawl								
Artisanal shrimp trawl	15	24-30	150-916			x		
Gill nets (steel)boats	45	12-20	75-240			x		
Gill nets (fibreglass)								
Traps – gargour (steel boats)	152	18-24	65-825			x		
Traps – gargour (fibre)								
bottom trawl	11	24-30	150-916			x		
Small pelagic purse seine								
Tuna purse seine								
Surface longline								
Others (please specify)								

B.2: Which of the following management mechanisms apply to your shrimp & finfish trawl fleets?\ all fishing boat must have licens

Mechanism	Yes	No	If yes, please describe
Licensing of gear and / or vessels	**x**		
Gear restrictions or prohibitions / regulations			
Areas of operation / times of operation / seasons	**x**		
Prohibitions in species / sizes landed	**x**		
Use of satellite-based VMS		**x**	
Logbook reporting requirements		**x**	

C. Incidental bycatch and discarding

This section looks at what fisheries in your country have a significant incidental bycatch.

C.1: List of fisheries with bycatch

For each gear type used in your country, please list the main species groups that are (I) targeted, (ii) retained as bycatch and (iii) discarded. Where possible, please estimate the annual volume targeted caught as bycatch or discarded for each fishery.

C1.1: Shrimp and finfish bottom trawls (all hull materials)

Target species		**Retained bycatch species**		**Discarded species**	
Key species groups	***Tonnes per year***	***Key species or species groups***	***Tonnes per year***	***Key species or species groups***	***Tonnes per year***
1. Penaeus semisulcatus 2. x 3. x 4. x 5. x 6. x 7. x	858	16. Nemipterus spp 17. Thrissocles hamiltoni 18. Nematalosa nasus 19. Illish filigera 20. x 21. x	50 33 40 60	1. rays 2. sharks 3. Small mixed fishes 4. Echenel naucrates 5. Guitar rays 6. x 7. x	Not recorded
Year or period of data	1\1\2012-31\10\2012				
Type of data[1]	Yearly report	Marine fishing monthly reports			
Source of data	General board for fish resource development				

Advice on filling this table:

4. This table is indicative only, so please use approximate figures.
5. If figures on bycatch and discard volumes are not available, please make estimates based on any research or observer information.
6. If no such information exists, please leave blank.

[1] Type of data: Please state whether (i) **Documented** (in official statistics), (ii) **Research observations** or (iii) **estimates**

C1.2: Other fishing gears

Please try to estimate the proportions of the retained not-target bycatch and the discarded bycatch. Industry experience will be very useful here.

Gear type	Target catch		Retained, non-target bycatch			Discarded bycatch		
	Key species (list up to 5)	***Approx. annual volume (t)***	***As an estimate, how does the volume compare to the target catch?***		***Key species (list up to 5)***	***As an estimate, what proportion of the total catch is discarded?***		***Key species (list up to 5)***
Gill nets And trawls	Hilsa illisha Epinephelus areolatus Aplectue niger Nemipterus japonicus Pampus argenteus Lisa alata Lethrinus tantjan Dipiodus kotschyi Trachionotus bloshi Pomadasys argenteus Johnius sp	1764 302 52 838 335 217 309 363 1076 275 30	Less Same More	x	Synaptura orientalls Alepes matate Scamberomorus commerson Saurida tumbil Chirocenturus dorab	<10% 10-50% >50%	X	Pterts russellt Hyporhamphus sp \ small size
Traps – gargour	Mylio bifasciatus Different spp.	0.25 54	Less Same More	x	Epinephelus areolatus Arius thalassinus Sphyraena jello Pelates quadrlineatus	<10% 10-50% >50%	x	Mene maculater
Small pelagic purse seine			Less Same More			<10% 10-50% >50%		
Tuna purse seine			Less Same More			<10% 10-50% >50%		
Surface longline			Less Same More			<10% 10-50% >50%		
Hadra trap			Less Same More			<10% 10-50% >50%		

C.2: Information on by-catch and discards

Are the species and volumes of <u>bycatch routinely</u> recorded or estimated, and if so, how?	**Yes**	**No**	*If yes, please provide information on recording systems e.g., by observers, landing records, logbooks, etc.?*
	x		Landing record, all bycatch fishes have market and can be easily sold
Are the species and volumes of <u>discards routinely</u> recorded or estimated, and if so, how?	**Yes**	**No**	*If yes, please provide information on recording systems e.g., by observers, discard records, logbooks, etc.?*
		x	
Have there been any scientific studies or workshops on bycatch?	*Please briefly describe the studies / workshops and provide references if published:*		
	No		
Has there been any length / frequency analysis of bycatch?	No		

C.3: Policy and Regulations on Bycatch

Is there any national policy[2] specifically on bycatch and its management?	**Yes**	**No**	*If yes, note titles and dates of written policy documents which specifically refer to bycatch management, including discarding. If possible, summarise main policy elements referring to bycatch and discarding.*
		x	
Are there any laws and / or regulations <u>managing bycatch and discarding</u>?	**Yes**	**No**	*If yes, include (i) <u>seasonal limits</u> (e.g., when bycatch rates might be high), (ii) <u>spatial zones</u> or <u>geographic areas</u> where fishing is restricted or prohibited, (iii) <u>gear specifications</u> or use that is specifically designed to minimise bycatch and discards. Please also note the titles of any key law / regulations*
		x	
Do any vessels use any form of bycatch reduction device (BRD) and/ or turtle exclusion device (TED)?	**Yes**	**No**	*If yes, please describe below (e.g., vessel and gear types, BRD / TED descriptions, proportion of fleet using these, etc).*
		x	

[2] Policy is a statement of political vision

C.4: With shrimp trawlers, why is there a bycatch?

Is the following statement applicable to your shrimp trawl fishery (yes / no)	**Yes**	**No**	**Describe any other reasons for catching and retaining bycatch**
Could not avoid catching bycatch e.g., gears are unselective	x		Bycatch varies during seasons and locations
Vessel owners think that the use of BRDs / TEDs may restrict the catch	x		
BRDs & TEDs are too expensive to fit	x		
BRD / TED technology not available locally	x		
Training in BRD / TED use not available	x		
Bycatch has a useful economic value that has a major contribution to vessel earnings.	x		
Bycatch has a useful economic value that has a minor contribution to vessel earnings.			

C.5: Reasons for discarding practises

Are the following statements the reasons for your bycatch discards?	Yes	No	Please state any other reasons for discarding bycatch
Has no market value	x		
Has market value but fish is too small	x		
Quota is exceeded		x	
Too difficult to sort	x		
May damage the target catch	x		
Insufficient storage facilities	x		

C.6: Marketing and utilisation of bycatch

How is retained bycatch marketed?	Method	Yes	No	Comment of description
	Via normal market channels	x		
	Intervention or purchase by the Government		x	
	Other 1: Please specify			
	Other 2: Please specify			
Describe whether prices and demand <u>for bycatch species</u> have changed over the last 5 years:		*Prices increased because bycatch fishes are used for food , prices comparing with other fishes are more acceptable for low income people*		
Describe the post-harvest 'chill chain' for retained bycatch and compare and contrast with that for target species. ***For instance is bycatch as well iced, boxed and handled? Are the rates of post-harvest spoilage the same? If not, please briefly describe why.***		All fishes are treated the same way, because they are for food ,and have their values		

C.7: Incidental bycatch of other animals

Do any of your fisheries catch seabirds?	**Yes**		**No**		**Don't know**	x	*If yes, please describebelow (e.g., vessel and gear types, frequency, species affected, magnitude of impacts on populations).*
	It is normal, some seabirds during looking for fish to eat - falls and trapped in gillnet.						
Do any of your fisheries catch marine animals (e.g., turtles, dugong, dolphins, and whales)?	**Yes**	**x**	**No**	x	**Don't know**		*If yes, please describebelow (e.g., vessel and gear types, frequency, species affected, magnitude of impacts on populations).*
	May be some time , but never keeping them ,						

D. Abandoned, lost and otherwise discarded fishing gear (ALDFG)

This section assesses the extent to which fishing gear is abandoned, lost and otherwise discarded in each RECOFI country.

D.1 Main fisheries where ADLFG occurs

Gear type	Is ALDFG a major issue with this fishery (put x in 1 box)				If an issue, please describe the nature of ADLFG for each applicable fishery e.g., whether it is abandoned, lost or discarded, in what circumstances this occurs, and any estimates of losses
	Major	Minor	None	n/a	
Shrimp bottom trawl		x			May be due to old ropes ,
Gill nets	x				Due to bad weather ,bad handling
Traps – gargour	x				Bad weather easy to draft and lost
Traps - hadhra				x	
Finfish bottom trawl				x	
Small pelagic purse seine				x	
Tuna purse seine				x	
Bottom longline				x	
Surface longline				x	
Hooks and lines				x	
Other 2 (specify)				x	

D.2: Information on ADLFG

Have there been any scientific studies or workshops on ADLFD?	If yes, briefly describe the studies / workshops and provide references if published.
	no
Is there any monitoring or recording of gear loss?	If yes, provide information on recording systems e.g., by observers, logbooks, gear sales etc.?
	No

D.3: Reasons for abandoning, discarding or losing fishing gear

What are the main reasons for abandoning, losing or discarding fishing gear?	Reason (put x in yes or no)		Yes	No	Any other reasons for ADLFG
	Abandoned	IUU fishing			
		Gear is illegal, so is often abandoned			
	Discarded	Gear takes up too much space on vessel			
		No facilities for disposing of gear on land			
	Lost	Gear damaged by other fishing boats (gear conflict)	x		
		Bad weather	x		
		Fishing gear not well marked or lit	x		
		Poor fishing ground	x		

D.4: Existing management mechanisms to control ADLFG and its impacts

What management mechanisms are currently used to prevent ADLFG?	Mechanism (put x in yes or no)	Yes	No	If yes, please describe
	Regulations for marking and lighting of static gear		x	
	Spatial zoning of different gears to reduce conflict		x	
	Use of GPS and other techniques to locate gear		x	
	Waste disposal facilities at fishing ports for old nets, etc.		x	
	Use of biodegradable materials to reduce ghost fishing		x	
	Gear recovery programmes		x	

E. Habitat impacts of fishing gear

E.1 Information and monitoring of the impact of fishing gear on the marine environment

Have there been any scientific studies or workshops on the impact of fishing gear on the environment?	*Please briefly describe the studies / workshops and provide references if published:*
	no
Is there any routine monitoring or recording of the impact of fishing gear, its impact on the environment and the time taken for habitat recovery?	*Provide information on recording systems e.g., by dive surveys, ROV surveys, etc.*
	no

E.2: Policy and Regulations on the environmental impact of fishing gear

Is there any national policy[3] specifically on fishing methods and their impact of the environment?	*Please note titles and dates of written policy documents which specifically refer to bycatch management, including discarding. If possible, summarise main policy elements referring to bycatch and discarding.*
	no
Are there any laws and regulations specifically to manage the environmental impact of fishing gear on the marine environment?	*Please note titles and dates of relevant rules and regulations. These could include (i) gear specifications, (ii) time restriction and (iii) geographic restrictions for particular gear types that might damage the marine environment.*
	no

[3] Policy is a statement of political vision

BYCATCH AND OTHER ENVIRONMENTAL IMPACTS OF FISHING IN THE RECOFI REGION

KUWAIT: NATIONAL STATUS QUESTIONNAIRE

Introduction and purpose of survey

The extensive tropical coastal areas of the RECOFI and GCC region have supported commercial and artisanal fisheries for many decades. At the same time, some of these fisheries are characterized by high bycatch, much of which is comprised of juveniles of ecologically important and economically valuable species and which is often discarded. Moreover, excessive use of trawling in areas of fragile or vulnerable habitats may also have unwanted impacts.

In light of the above concerns and in response to requests from RECOFI members to reduce the impacts of fishing on the marine environment, a regional workshop has been proposed over 9 – 12 December 2012. To be held in Kuwait, this workshop will lead to the development of a road map on how bycatch can be more effectively managed and how to reduce impacts of fishing on the environment. This workshop will synthesize the current knowledge on bycatch in the RECOFI / GCC region and consider priority follow up actions.

The purpose of this survey is to assist the RECOFI members to present the national status of bycatch and other environmental effects of fisheries following a common structured approach. It is intended that they will form the basis for the 15 minute presentations to be made on Day 1 of the Kuwait Workshop.

Format of the questionnaire

This is a semi-structured questionnaire. This means in some places we require facts and figures and in others we require more general information.

The questionnaire structure is as follows:

A. **Contact information**
B. **Country fleet details**
C. **Incidental bycatch and discarding**
D. **Abandoned, lost and otherwise discarded fishing gear (ALDFG)**
E. **Habitat impacts of fishing gear**

Who should complete the questionnaire?

Sections A and B can be completed by the fisheries administration. However the rest of the questionnaire will need to be completed by persons from both Government and the private sector e.g., those with practical experience of dealing with bycatch and discards. It is suggested that a small working committee is convened to go through each question from Section C onwards and formulate joint responses.

If you have any questions on how to answer this questionnaire, please contact Tim Huntington (FAO consultant) by email at tim@consult-poseidon.com ***or Dr Haider A. Murad (PAAF)*** drhmurad@paaf.gov.kw

Key definitions:

Target catch: those species that are primarily sought by the fishermen in a particular fishery. The subject of directed fishing effort in a fishery. There may be primary as well as secondary target species.

Bycatch: part of a catch of a fishing unit taken incidentally in addition to the target species towards which fishing effort is directed. If possible name the main species being caught, of if these are not recorded, the main types of bycatch e.g., finfish, crustaceans, other invertebrates. Bycatch is either retained or discarded (see definitions below).

- **Retained bycatch**: the part of the bycatch that is landed.
- **Discarded bycatch**: that portion of the bycatch that is returned to the sea as a result of economic, legal, or personal considerations. Also known as 'discards'.

ALDFG: collective term for fishing gear that has been abandoned, lost or otherwise discarded (see separate glossary entries). Often referred to as 'derelict fishing gear' in literature.

- **Abandoned fishing gear**: fishing gear that is deliberately left at sea with no intention by fishers to retrieve it, for whatever reason.
- **Lost fishing gear**: the accidental loss of fishing gear at sea.
- **Discarded fishing gear**: fishing gear or parts thereof that is deliberately thrown overboard without any intention for further control or recovery.

Mobile gear: fishing gear that is towed by a vessel to displace and capture fish. Sometimes called active or towed gear. Examples include trawls and dredges.

Static gear: fishing gear that is placed in one fixed location, usually through anchors and buoys, so that it traps or ensnares passing fish. Includes types of nets, pots and traps.

Please make any comments about the above definitions:

A. Contact information

Country name:	Kuwait
Name(s) of author(s)	Dr Haider Ali Murad
Author's organisation:	Public Authority for Agriculture Affairs and Fish Resources
Lead author contact details:	Tel.: +965 22254111/8
	Email: drhmurad@paaf.gov.kw
	Mobile tel: +965 66470017

B. Country fleet details

B.1: Please provide information on your licensed fishing gears (2009)

Primary gear (note that not all gear types are applicable to each country)	No. of vessels which use gear	Vessel length (m)	Vessel power (hp)	Vessel BTR	Distance from coast (x in box(es))			
					0 – 3 nm	3-12 nm	12-200 nm	>200 nm
Industrial shrimp trawl	30	20 – 32			P[1]	x	x	
Artisanal shrimp trawl	39	14 - 23			P	x	x	
Gill nets (wooden)	68	14 - 23			P	x	X	
Gill nets (fibreglass)	563	7			P	X		
Traps – gargour (wooden)	19	14 - 23			P	x	X	
Traps – gargour (fibre)	131	7			P	X		
Finfish bottom trawl	0							
Small pelagic purse seine	0							
Tuna purse seine	0							
Surface longline	0							
Others (please specify)								

B.2: Which of the following management mechanisms apply to your shrimp & finfish trawl fleets

Mechanism	Yes	No	If yes, please describe
Licensing of gear and / or vessels	**x**		Must be licensed.
Gear restrictions or prohibitions / regulations	**x**		Cod end mesh size restrictions (45 mm).
Areas of operation / times of operation / seasons	**x**		0-3 miles banned. No time restrictions. Shrimp season Sept – end of Jan / Feb
Prohibitions in species / sizes landed	**x**		Minimum landing sizes (fish only). No species restrictions
Use of satellite-based VMS		**x**	Under consideration
Logbook reporting requirements	**x**		Required by all licensed vessels, but rarely actually applied

[1] P Prohibited (except for recreational fisheries).

C. Incidental bycatch and discarding

This section looks at what fisheries in your country have a significant incidental bycatch.

C.1: List of fisheries with bycatch

For each gear type used in your country, please list the main species groups that are (i) targeted, (ii) retained as bycatch and (iii) discarded. Where possible, please estimate the annual volume targeted, caught as bycatch or discarded for each fishery.

C1.1: Shrimp and finfish bottom trawls (all hull materials)

Target species		**Retained bycatch species**		**Discarded species**	
Key species groups	***Tonnes per year***	***Key species or species groups***	***Tonnes per year***	***Key species or species groups***	***Tonnes per year***
8. Penaeus semisulcatus 9. Metapemeaus affinis 10. Parapenaeus styliferous 11. xx 12. xx 13. xx 14. xx	1,500 – 2,500	22. Otolithes spp. 23. Liza spp. 24. Nemipterus spp. 25. Johnius spp. 26. Sphyraena spp. 27. Saurida spp. 28. Other misc.	170 t	8. Arius spp. 9. Sharks 10. Guitar fish & rays 11. Mixed fish 12. xx 13. xx 14. xx	50,000 – 100,000
Year or period of data	1991 to 2005	1987/88 & 1989/90		1987/88 & 1989/90	
Type of data[2]	Documented (species & volumes)	Research observations (species and volumes)		Research observations (species) and our estimates (volume)	
Source of data	National fisheries statistics & Ayoub *et al*, 2005[3]	Ye & Al Foudari, 2000[4]		Ye & Al Foudari, 2000	

Advice on filling this table:

7. This table is indicative only, so please use approximate figures.
8. If figures on bycatch and discard volumes are not available, please make estimates based on any research or observer information.
9. If no such information exists, please leave blank.

[2] Type of data: Please state whether (i) **Documented** (in official statistics), (ii) **Research observations** or (iii) **estimates**

[3] Al Ayoub, Al Hussaini & Ali Al Baz (2005). Application of bycatch reduction devices to Kuwait's shrimp fishery. KISR Project 2000-1207-03

[4] Ye & Al Foudari (2000). Bycatch and discards of the Kuwait shrimp fishery. Fisheries Research 45 (1): 11-21

C1.2: Other fishing gears

Please try to estimate the proportions of the retained not-target bycatch and the discarded bycatch. Industry experience will be very useful here.

Gear type	Target catch		Retained, non-target bycatch			Discarded bycatch		
	Key species (list up to 5)	***Approx. annual volume (t)***	***As an estimate, how does the volume compare to the target catch?***		***Key species (list up to 5)***	***As an estimate, what proportion of the total catch is discarded?***		***Key species (list up to 5)***
Gill nets	Zobaidy (*Pampus argetius*), suboor (*T. ilisha*), khubbat (*S. guttatus*), nagrur (*Pomadays kaakan*), nuwaibi (*Otilithes ruber*), maid (*Liza* spp.)		Less	x		<10%	x	
			Same			10-50%		
			More			>50%		
Traps – gargour	Hamour (*Epinephelus* spp.,) nagrur (*P. kaakan*), sheim *Acanthopagarus latus*), farsh (*Plectorhincus pictus*) & sheiry (*Lethrinus* spp.)		Less	x		<10%	x	
			Same			10-50%		
			More			>50%		
Small pelagic purse seine	Not applicable		Less			<10%		
			Same			10-50%		
			More			>50%		
Tuna purse seine	Not applicable		Less			<10%		
			Same			10-50%		
			More			>50%		
Surface longline	Not applicable		Less			<10%		
			Same			10-50%		
			More			>50%		
Hadra trap			Less			<10%		
			Same			10-50%		
			More			>50%		

C.2: Information on by-catch and discards

Are the species and volumes of <u>bycatch</u> <u>routinely</u> recorded or estimated, and if so, how?	**Yes**	**No**	*If yes, please provide information on recording systems e.g., by observers, landing records, logbooks, etc.?*
		x	
Are the species and volumes of <u>discards</u> <u>routinely</u> recorded or estimated, and if so, how?	**Yes**	**No**	*If yes, please provide information on recording systems e.g., by observers, discard records, logbooks, etc.?*
		x	
Have there been any scientific studies or workshops on bycatch?	*Please briefly describe the studies / workshops and provide references if published:* Ye & Al Foudari, 2000 (bycatch and discards of the Kuwait shrimp fishery. Fisheries Research 45 (1): 11-21 Al Ayoub, Al Hussaini & Ali Al Baz (2005). Application of bycatch reduction devices to Kuwait's shrimp fishery. KISR Project 2000-1207-03		
Has there been any length / frequency analysis of bycatch?	None		

C.3: Policy and Regulations on Bycatch

Is there any national policy[5] specifically on bycatch and its management?

Yes	No	*If yes, note titles and dates of written policy documents which specifically refer to bycatch management, including discarding. If possible, summarise main policy elements referring to bycatch and discarding.*
	x	

Possible mention in the Strategic Plan (1988 - 2008). Is currently being updated.

Are there any laws and / or regulations <u>managing bycatch and discarding</u>?

Yes	No	*If yes, include (i) <u>seasonal limits</u> (e.g., when bycatch rates might be high), (ii) <u>spatial zones</u> or <u>geographic areas</u> where fishing is restricted or prohibited, (iii) <u>gear specifications</u> or use that is specifically designed to minimise bycatch and discards. Please also note the titles of any key law / regulations*
	x	

There are catch restrictions e.g., mesh restrictions, minimum landing sizes, spatial restrictions on trawler activity, seasonal restrictions all come under the General Fisheries Law (46/1980) and its subsequent decrees. However **these are all aimed at managing the target species** (mainly shrimp) not the bycatch and discard species. There is thus a conflict here, as they may actually increase the level of bycatch and discard.

Do any vessels use any form of bycatch reduction device (BRD) and/ or turtle exclusion device (TED)?

Yes	No	*If yes, please describe below (e.g., vessel and gear types, BRD / TED descriptions, proportion of fleet using these, etc).*
	x	

Has been evaluated under research conditions but as yet not adopted by the industry e.g., Al Ayoub, Al Hussaini & Ali Al Baz (2005). Application of bycatch reduction devices to Kuwait's shrimp fishery. KISR Project 2000-1207-03

[5] Policy is a statement of political vision.

C.4: With shrimp trawlers, why is there a bycatch?

Is the following statement applicable to your shrimp trawl fishery (yes / no)	**Yes**	**No**	**Describe any other reasons for catching and retaining bycatch**
Could not avoid catching bycatch e.g., gears are unselective	**X**		Retained bycatch rates may increase over the shrimp season as the availability of shrimp drops.
Vessel owners think that the use of BRDs / TEDs may restrict the catch	**X**		
BRDs & TEDs are too expensive to fit		**X**	
BRD / TED technology not available locally	**X**		
Training in BRD / TED use not available	**X**		
Bycatch has a useful economic value that has a major contribution to vessel earnings.	**x**		
Bycatch has a useful economic value that has a minor contribution to vessel earnings.	**X**		

C.5: Reasons for discarding practises

Are the following statements the reasons for your bycatch discards?	Yes	No	Please state any other reasons for discarding bycatch
Has no market value	**X**		
Has market value but fish is too small	**X**		
Quota is exceeded		**X**	
Too difficult to sort	**X**		
May damage the target catch	**x**		
Insufficient storage facilities	**x**		

C.6: Marketing and utilisation of bycatch

How is retained bycatch marketed?	Method	Yes	No	Comment of description
	Via normal market channels	x		Auctioned in normal way
	Intervention or purchase by the Government		x	
	Other 1: Please specify			
	Other 2: Please specify			
Describe whether prices and demand <u>for bycatch species</u> have changed over the last 5 years:		Prices have doubled over the past five years. Demand is mainly from expatriates whose number is increasing.		
Describe the post-harvest 'chill chain' for retained bycatch and compare and contrast with that for target species. ***For instance is bycatch as well iced, boxed and handled? Are the rates of post-harvest spoilage the same? If not, please briefly describe why.***		Target catch and retained catch is treated the same. With low value species, less ice might be used, possibly leading to higher spoilage rates and a poorer quality product.		

C.7: Incidental bycatch of other animals

Do any of your fisheries catch seabirds?	**Yes**		**No**		**Don't know**	x	*If yes, please describe below (e.g., vessel and gear types, frequency, species affected, magnitude of impacts on populations).*
	No information is available. Maybe an issue in gillnets with piscivorous migratory seabirds?						
Do any of your fisheries catch marine animals (e.g., turtles, dugong, dolphins, and whales)?	**Yes**	**x**	**No**		**Don't know**		*If yes, please describe below (e.g., vessel and gear types, frequency, species affected, magnitude of impacts on populations).*
	Shrimp trawlers occasionally catch marine animals, such as turtles. Gillnets can also entangle turtles which then drown.						

D. Abandoned, lost and otherwise discarded fishing gear (ALDFG)

This section assesses the extent to which fishing gear is abandoned, lost and otherwise discarded in each RECOFI country.

D.1 Main fisheries where ADLFG occurs

Gear type	Is ALDFG a major issue with this fishery (put x in 1 box)				If an issue, please describe the nature of ADLFG for each applicable fishery e.g., whether it is abandoned, lost or discarded, in what circumstances this occurs, and any estimates of losses
	Major	Minor	None	n/a	
Shrimp bottom trawl		x			Whole net loss is rare, but damage can be common.
Gill nets	X				
Traps – gargour	X				
Traps - hadhra			X		
Finfish bottom trawl				X	
Small pelagic purse seine				X	
Tuna purse seine				X	
Bottom longline		x			Illegally used. May be deliberately discarded.
Surface longline				X	
Hooks and lines	x				Especially from recreational fishery.
Other 2 (specify)					

D.2: Information on ADLFG

Have there been any scientific studies or workshops on ADLFD?	If yes, briefly describe the studies / workshops and provide references if published.
	2 unpublished studies (NEED REFERENCE FROM MOHAMMED)
Is there any monitoring or recording of gear loss?	If yes, provide information on recording systems e.g., by observers, logbooks, gear sales etc.?
	Not yet, but regulation in 2008 that all gears must be marked and labelled (but not enforced).

D.3: Reasons for abandoning, discarding or losing fishing gear

What are the main reasons for abandoning, losing or discarding fishing gear?	Reason (put x in yes or no)		Yes	No	Any other reasons for ADLFG
	Abandoned	IUU fishing	x		Longlines discarded as are an illegal gear. Gargour are lost because they are poorly marked and subject to gear conflicts (e.g., towed away by trawlers), theft. Gillnets get entangled in rocky ground, so sheets cut away. Also operated in illegal areas, so often abandoned. Gear marking regulation is not strongly enforced
		Gear is illegal, so is often abandoned	x		
	Discarded	Gear takes up too much space on vessel		x	
		No facilities for disposing of gear on land	x		
	Lost	Gear damaged by other fishing boats (gear conflict)	x		
		Bad weather	x		
		Fishing gear not well marked or lit	x		
		Poor fishing ground	x		

D.4: Existing management mechanisms to control ADLFG and its impacts

What management mechanisms are currently used to prevent ADLFG?	Mechanism (put x in yes or no)	Yes	No	If yes, please describe
	Regulations for marking and lighting of static gear	x		2008 decree
	Spatial zoning of different gears to reduce conflict		x	No demarcated trap, net and trawl areas. Is some informal community arrangements, esp. on seasonal basis.
	Use of GPS and other techniques to locate gear	x		Most carry GPS, esp. larger vessels, esp. for gargour.
	Waste disposal facilities at fishing ports for old nets, etc.		?	
	Use of biodegradable materials to reduce ghost fishing		x	Not existing but under consideration for gargours.
	Gear recovery programmes	x		But only by *ad hoc* NGO diving groups.

E. Habitat impacts of fishing gear

E.1 Information and monitoring of the impact of fishing gear on the marine environment

Have there been any scientific studies or workshops on the impact of fishing gear on the environment?	*Please briefly describe the studies / workshops and provide references if published:*
	Some studies have identified issues over trawl gears impacting substrate stability but no specific studies conducted.
Is there any routine monitoring or recording of the impact of fishing gear, its impact on the environment and the time taken for habitat recovery?	*Provide information on recording systems e.g., by dive surveys, ROV surveys, etc.*
	No.

E.2: Policy and Regulations on the environmental impact of fishing gear

Is there any national policy[6] specifically on fishing methods and their impact of the environment?	*Please note titles and dates of written policy documents which specifically refer to bycatch management, including discarding. If possible, summarise main policy elements referring to bycatch and discarding.*
	No
Are there any laws and regulations specifically to manage the environmental impact of fishing gear on the marine environment?	*Please note titles and dates of relevant rules and regulations. These could include (i) gear specifications, (ii) time restriction and (iii) geographic restrictions for particular gear types that might damage the marine environment.*
	Some decrees on releasing sea turtles and other endangered species and reporting these interactions e.g., xxxxxxxxxx

[6] Policy is a statement of political vision.

BYCATCH AND OTHER ENVIRONMENTAL IMPACTS OF FISHING IN THE RECOFI REGION

OMAN: NATIONAL STATUS QUESTIONNAIRE

Introduction and purpose of survey

The extensive tropical coastal areas of the RECOFI and GCC region have supported commercial and artisanal fisheries for many decades. At the same time, some of these fisheries are characterized by high bycatch, much of which is comprised of juveniles of ecologically important and economically valuable species and which is often discarded. Moreover, excessive use of trawling in areas of fragile or vulnerable habitats may also have unwanted impacts.

In light of the above concerns and in response to requests from RECOFI members to reduce the impacts of fishing on the marine environment, a regional workshop has been proposed over 9 – 12 December 2012. To be held in Kuwait, this workshop will lead to the development of a road map on how bycatch can be more effectively managed and how to reduce impacts of fishing on the environment. This workshop will synthesize the current knowledge on bycatch in the RECOFI / GCC region and consider priority follow up actions.

The purpose of this survey is to assist the RECOFI members to present the national status of bycatch and other environmental effects of fisheries following a common structured approach. It is intended that they will form the basis for the 15 minute presentations to be made on Day 1 of the Kuwait Workshop.

Format of the questionnaire

This is a semi-structured questionnaire. This means in some places we require facts and figures and in others we require more general information.

The questionnaire structure is as follows:

A. **Contact information**
B. **Country fleet details**
C. **Incidental bycatch and discarding**
D. **Abandoned, lost and otherwise discarded fishing gear (ALDFG)**
E. **Habitat impacts of fishing gear**

Who should complete the questionnaire?

Sections A and B can be completed by the fisheries administration. However the rest of the questionnaire will need to be completed by persons from both Government and the private sector e.g., those with practical experience of dealing with bycatch and discards. It is suggested that a small working committee is convened to go through each question from Section C onwards and formulate joint responses.

If you have any questions on how to answer this questionnaire, please contact Tim Huntington (FAO consultant) by email at tim@consult-poseidon.com ***or Dr Haider A. Murad (PAAF)*** drhmurad@paaf.gov.kw

Key definitions:

Target catch: those species that are primarily sought by the fishermen in a particular fishery. The subject of directed fishing effort in a fishery. There may be primary as well as secondary target species.

Bycatch: part of a catch of a fishing unit taken incidentally in addition to the target species towards which fishing effort is directed. If possible name the main species being caught, of if these are not recorded, the main types of bycatch e.g., finfish, crustaceans, other invertebrates. Bycatch is either retained or discarded (see definitions below).

- **Retained bycatch**: the part of the bycatch that is landed.
- **Discarded bycatch**: that portion of the bycatch that is returned to the sea as a result of economic, legal, or personal considerations. Also known as 'discards'.

ALDFG: collective term for fishing gear that has been abandoned, lost or otherwise discarded (see separate glossary entries). Often referred to as 'derelict fishing gear' in literature.

- **Abandoned fishing gear**: fishing gear that is deliberately left at sea with no intention by fishers to retrieve it, for whatever reason.
- **Lost fishing gear**: the accidental loss of fishing gear at sea.
- **Discarded fishing gear**: fishing gear or parts thereof that is deliberately thrown overboard without any intention for further control or recovery.

Mobile gear: fishing gear that is towed by a vessel to displace and capture fish. Sometimes called active or towed gear. Examples include trawls and dredges.

Static gear: fishing gear that is placed in one fixed location, usually through anchors and buoys, so that it traps or ensnares passing fish. Includes types of nets, pots and traps.

Please make any comments about the above definitions:

A. Contact information

Country name:	Sultanate of Oman
Name(s) of author(s)	Yahya khalfan Al-Hadidi
Author's organisation:	Ministry Of Agriculture &Fisheries
Lead author contact details:	Tel.: +968 24688313
	Email: yahya_hd2@hotmail.com
	Mobile tel: +968 99460468

B. Country fleet details

B.1: Please provide information on your licensed fishing gears (2011)

Primary gear (note that not all gear types are applicable to each country)	No. of vessels which use gear	Vessel length (m)	Vessel power (hp)	Vessel BTR	Distance from coast (x in box(es))			
					0 – 3 nm	3-12 nm	12-200 nm	>200 nm
Industrial shrimp trawl	NA							
Artisanal shrimp trawl	NA							
Gill nets (wooden) Launch+ Tr	704					x	x	
Gill nets (fibreglass) Boats +Tr	18027				x	x		
Traps – gargour (**xx**wooden)								
Traps – gargour (fibre)								
Finfish bottom trawl								
Small pelagic purse seine								
Tuna purse seine								
Surface longline	10		1000-1600				X	
Others (please specify)Coastal Vessels	22	14-30	300-700			X		

B.2: Which of the following management mechanisms apply to your shrimp & finfish trawl fleets

Mechanism	Yes	No	If yes, please describe
Licensing of gear and / or vessels	x		Vessels must be licensed.
Gear restrictions or prohibitions / regulations	x		Trawling prohibited in Oman
Areas of operation / times of operation / seasons		x	
Prohibitions in species / sizes landed	x		
Use of satellite-based VMS	x		All Fishing vessels require (Commercial l& Coastal)
Logbook reporting requirements		x	Commercial fishing vessel requier

C. Incidental bycatch and discarding

This section looks at what fisheries in your country have a significant incidental bycatch.

C.1: List of fisheries with bycatch

For each gear type used in your country, please list the main species groups that are (i) targeted, (ii) retained as bycatch and (iii) discarded. Where possible, please estimate the annual volume targeted, caught as bycatch or discarded for each fishery.

C1.1: Shrimp and finfish bottom trawls (all hull materials)

Target species		**Retained bycatch species**		**Discarded species**	
Key species groups	***Tonnes per year***	***Key species or species groups***	***Tonnes per year***	***Key species or species groups***	***Tonnes per year***
15. XNA 16. x 17. x 18. x 19. x 20. x 21. x		29. xNA 30. x 31. x. 32. x 33. x 34. x 35. x		15. xNA 16. x 17. x 18. x 19. x 20. x 21. x	
Year or period of data					
Type of data[1]	)				
Source of data					

Advice on filling this table:

10. This table is indicative only, so please use approximate figures.
11. If figures on bycatch and discard volumes are not available, please make estimates based on any research or observer information.
12. If no such information exists, please leave blank.

[1] Type of data: Please state whether (i) **Documented** (in official statistics), (ii) **Research observations** or (iii) **estimates**

C1.2: Other fishing gears

Please try to estimate the proportions of the retained not-target bycatch and the discarded bycatch. Industry experience will be very useful here.

Gear type	Target catch		Retained, non-target bycatch			Discarded bycatch		
	Key species (list up to 5)	***Approx. annual volume (t)***	***As an estimate, how does the volume compare to the target catch?***		***Key species (list up to 5)***	***As an estimate, what proportion of the total catch is discarded?***		***Key species (list up to 5)***
Gill nets			Less			<10%		
			Same			10-50%		
			More			>50%		
Traps – gargour			Less			<10%		
			Same			10-50%		
			More			>50%		
Small pelagic purse seine			Less			<10%		
			Same			10-50%		
			More			>50%		
Tuna purse seine			Less			<10%		
			Same			10-50%		
			More			>50%		
Surface longline			Less			<10%		
			Same			10-50%		
			More			>50%		
Hadra trap			Less			<10%		
			Same			10-50%		
			More			>50%		

C.2: Information on by-catch and discards

Are the species and volumes of <u>bycatch</u> <u>routinely</u> recorded or estimated, and if so, how?	**Yes**	**No**	*If yes, please provide information on recording systems e.g., by observers, landing records, logbooks, etc.?*
		x	
Are the species and volumes of <u>discards</u> <u>routinely</u> recorded or estimated, and if so, how?	**Yes**	**No**	*If yes, please provide information on recording systems e.g., by observers, discard records, logbooks, etc.?*
		x	
Have there been any scientific studies or workshops on bycatch?	*Please briefly describe the studies / workshops and provide references if published:*		
Has there been any length / frequency analysis of bycatch?			

C.3: Policy and Regulations on Bycatch

Is there any national policy[2] specifically on bycatch and its management?

Yes	No	*If yes, note titles and dates of written policy documents which specifically refer to bycatch management, including discarding. If possible, summarise main policy elements referring to bycatch and discarding.*
x		

Prohibited bottom trawling in Oman since middle of 2011. Prevent trawl on the basis of large quantities of bycatch and non-target species where ministerial decree No(20/2009) on the prohibition of the use of bottom trawling fishing method

Are there any laws and / or regulations managing bycatch and discarding?

Yes	No	*If yes, include (i) seasonal limits (e.g., when bycatch rates might be high), (ii) spatial zones or geographic areas where fishing is restricted or prohibited, (iii) gear specifications or use that is specifically designed to minimise bycatch and discards. Please also note the titles of any key law / regulations*
x		

marine fishing law and its executive emphasizes the protection of the marine environment and species endangered (turtles, marine mammals) also issued Ministerial Decree No. 24/98 to prevent discarding all kinds of fish that are caught into the sea as that trawls in the past have had specifications in terms of openings mish size and the types of nets to reduce the bycatch

Do any vessels use any form of bycatch reduction device (BRD) and/ or turtle exclusion device (TED)?

Yes	No	*If yes, please describe below (e.g., vessel and gear types, BRD / TED descriptions, proportion of fleet using these, etc).*
	x	

was no longer way of using bottom trawling in Oman

[2] Policy is a statement of political vision

C.4: With shrimp trawlers, why is there a bycatch?

Is the following statement applicable to your shrimp trawl fishery (yes / no)	**Yes**	**No**	**Describe any other reasons for catching and retaining bycatch**
Could not avoid catching bycatch e.g., gears are unselective			NA
Vessel owners think that the use of BRDs / TEDs may restrict the catch			
BRDs & TEDs are too expensive to fit			
BRD / TED technology not available locally			
Training in BRD / TED use not available			
Bycatch has a useful economic value that has a major contribution to vessel earnings.			
Bycatch has a useful economic value that has a minor contribution to vessel earnings.			

C.5: Reasons for discarding practises

Are the following statements the reasons for your bycatch discards?	Yes	No	Please state any other reasons for discarding bycatch
Has no market value	x		
Has market value but fish is too small	x		
Quota is exceeded	x		
Too difficult to sort	x		
May damage the target catch			
Insufficient storage facilities			

C.6: Marketing and utilisation of bycatch

How is retained bycatch marketed?	Method	Yes	No	Comment of description
	Via normal market channels	x		
	Intervention or purchase by the Government			
	Other 1: Please specify			
	Other 2: Please specify			
Describe whether prices and demand <u>for bycatch species</u> have changed over the last 5 years:		*Due to high demand for fisheries products all over the world this influence the Supply to by catch species*		
Describe the post-harvest 'chill chain' for retained bycatch and compare and contrast with that for target species. ***For instance is bycatch as well iced, boxed and handled? Are the rates of post-harvest spoilage the same? If not, please briefly describe why.***				

C.7: Incidental bycatch of other animals

Do any of your fisheries catch seabirds?	**Yes**		**No**	**x**	**Don't know**		*If yes, please describe below (e.g., vessel and gear types, frequency, species affected, magnitude of impacts on populations).*
Do any of your fisheries catch marine animals (e.g., turtles, dugong, dolphins, and whales)?	**Yes**	**x**	**No**	**x**	**Don't know**		*If yes, please describe below (e.g., vessel and gear types, frequency, species affected, magnitude of impacts on populations).* It is prohibited by the law.

D. Abandoned, lost and otherwise discarded fishing gear (ALDFG)

This section assesses the extent to which fishing gear is abandoned, lost and otherwise discarded in each RECOFI country.

D.1 Main fisheries where ADLFG occurs

Gear type	Is ALDFG a major issue with this fishery (put x in 1 box)				If an issue, please describe the nature of ADLFG for each applicable fishery e.g., whether it is abandoned, lost or discarded, in what circumstances this occurs, and any estimates of losses
	Major	Minor	None	n/a	
Shrimp bottom trawl				x	
Gill nets	x				
Traps – gargour		x			
Traps - hadhra					
Finfish bottom trawl		X			
Small pelagic purse seine				X	
Tuna purse seine				X	
Bottom longline	X				
Surface longline	x				
Hooks and lines			X		
Other 2 (specify)					

D.2: Information on ADLFG

Have there been any scientific studies or workshops on ADLFD?	If yes, briefly describe the studies / workshops and provide references if published.
	NA
Is there any monitoring or recording of gear loss?	If yes, provide information on recording systems e.g., by observers, logbooks, gear sales etc.?
	NA

D.3: Reasons for abandoning, discarding or losing fishing gear

What are the main reasons for abandoning, losing or discarding fishing gear?	Reason (put x in yes or no)		Yes	No	Any other reasons for ADLFG
	Abandoned	IUU fishing	x		
		Gear is illegal, so is often abandoned	x		
	Discarded	Gear takes up too much space on vessel			
		No facilities for disposing of gear on land			
	Lost	Gear damaged by other fishing boats (gear conflict)	x		
		Bad weather	x		
		Fishing gear not well marked or lit			
		Poor fishing ground			

D.4: Existing management mechanisms to control ADLFG and its impacts

What management mechanisms are currently used to prevent ADLFG?	Mechanism (put x in yes or no)	Yes	No	If yes, please describe
	Regulations for marking and lighting of static gear		x	
	Spatial zoning of different gears to reduce conflict	x		Using traps is prohibited in some part in oman
	Use of GPS and other techniques to locate gear	x		Fisher man have been starts using GPS
	Waste disposal facilities at fishing ports for old nets, etc.		x	
	Use of biodegradable materials to reduce ghost fishing		x	
	Gear recovery programmes		x	

E. Habitat impacts of fishing gear

E.1 Information and monitoring of the impact of fishing gear on the marine environment

Have there been any scientific studies or workshops on the impact of fishing gear on the environment?	*Please briefly describe the studies / workshops and provide references if published:*
	yes
Is there any routine monitoring or recording of the impact of fishing gear, its impact on the environment and the time taken for habitat recovery?	*Provide information on recording systems e.g., by dive surveys, ROV surveys, etc.*
	Yes, by using inspectors and involve the society committee & time to time using diving to Assessment of the marine environment

E.2: Policy and Regulations on the environmental impact of fishing gear

Is there any national policy[3] specifically on fishing methods and their impact of the environment?	*Please note titles and dates of written policy documents which specifically refer to bycatch management, including discarding. If possible, summarise main policy elements referring to bycatch and discarding.*
	As the Omani marine fishing Law of and its Regulations prohibit the use of many of the equipments in fishing operations
Are there any laws and regulations specifically to manage the environmental impact of fishing gear on the marine environment?	*Please note titles and dates of relevant rules and regulations. These could include (i) gear specifications, (ii) time restriction and (iii) geographic restrictions for particular gear types that might damage the marine environment.*
	A study nearby finished on the environmental effects of the dams, including the effects of Artificial fishing nets and equipment on these reefs

[3] Policy is a statement of political vision

BYCATCH AND OTHER ENVIRONMENTAL IMPACTS OF FISHING IN THE RECOFI REGION

QATAR: NATIONAL STATUS QUESTIONNAIRE

Introduction and purpose of survey

The extensive tropical coastal areas of the RECOFI and GCC region have supported commercial and artisanal fisheries for many decades. At the same time, some of these fisheries are characterized by high bycatch, much of which is comprised of juveniles of ecologically important and economically valuable species and which is often discarded. Moreover, excessive use of trawling in areas of fragile or vulnerable habitats may also have unwanted impacts.

In light of the above concerns and in response to requests from RECOFI members to reduce the impacts of fishing on the marine environment, a regional workshop has been proposed over 9 – 12 December 2012. To be held in Kuwait, this workshop will lead to the development of a road map on how bycatch can be more effectively managed and how to reduce impacts of fishing on the environment. This workshop will synthesize the current knowledge on bycatch in the RECOFI / GCC region and consider priority follow up actions.

The purpose of this survey is to assist the RECOFI members to present the national status of bycatch and other environmental effects of fisheries following a common structured approach. It is intended that they will form the basis for the 15 minute presentations to be made on Day 1 of the Kuwait Workshop.

Format of the questionnaire

This is a semi-structured questionnaire. This means in some places we require facts and figures and in others we require more general information.

The questionnaire structure is as follows:

A. **Contact information**
B. **Country fleet details**
C. **Incidental bycatch and discarding**
D. **Abandoned, lost and otherwise discarded fishing gear (ALDFG)**
E. **Habitat impacts of fishing gear**

Who should complete the questionnaire?

Sections A and B can be completed by the fisheries administration. However the rest of the questionnaire will need to be completed by persons from both Government and the private sector e.g., those with practical experience of dealing with bycatch and discards. It is suggested that a small working committee is convened to go through each question from Section C onwards and formulate joint responses.

If you have any questions on how to answer this questionnaire, please contact Tim Huntington (FAO consultant) by email at tim@consult-poseidon.com ***or Dr Haider A. Murad (PAAF)*** drhmurad@paaf.gov.kw

Key definitions:

Target catch: those species that are primarily sought by the fishermen in a particular fishery. The subject of directed fishing effort in a fishery. There may be primary as well as secondary target species.

Bycatch: part of a catch of a fishing unit taken incidentally in addition to the target species towards which fishing effort is directed. If possible name the main species being caught, of if these are not recorded, the main types of bycatch e.g., finfish, crustaceans, other invertebrates. Bycatch is either retained or discarded (see definitions below).

- **Retained bycatch**: the part of the bycatch that is landed.
- **Discarded bycatch**: that portion of the bycatch that is returned to the sea as a result of economic, legal, or personal considerations. Also known as 'discards'.

ALDFG: collective term for fishing gear that has been abandoned, lost or otherwise discarded (see separate glossary entries). Often referred to as 'derelict fishing gear' in literature.

- **Abandoned fishing gear**: fishing gear that is deliberately left at sea with no intention by fishers to retrieve it, for whatever reason.
- **Lost fishing gear**: the accidental loss of fishing gear at sea.
- **Discarded fishing gear**: fishing gear or parts thereof that is deliberately thrown overboard without any intention for further control or recovery.

Mobile gear: fishing gear that is towed by a vessel to displace and capture fish. Sometimes called active or towed gear. Examples include trawls and dredges.

Static gear: fishing gear that is placed in one fixed location, usually through anchors and buoys, so that it traps or ensnares passing fish. Includes types of nets, pots and traps.

Please make any comments about the above definitions:

A. Contact information

Country name:	Qatar
Name(s) of author(s)	Khalid Jassim Al-Khalaf
Author's organisation:	Fisheries Department
Lead author contact details:	Tel.: +
	Email: khd004@hotmail.com
	Mobile tel: +97455571229

B. Country fleet details

B.1: Please provide information on your licensed fishing gears (2009)

Primary gear (note that not all gear types are applicable to each country)	No. of vessels which use gear	Vessel length (m)	Vessel power (hp)	Vessel BTR	Distance from coast (x in box(es))			
					0 – 3 nm	3-12 nm	12-200 nm	>200 nm
Industrial shrimp trawl								
Artisanal shrimp trawl								
Gill nets (Large Boats;King fish)	189	12-18	200-600				x	
Gill nets (fibreglass)								
Traps – gargour(Large Boats)	262	12-18	200-600				x	
Traps – gargour (fibre)								
Finfish bottom trawl								
Small pelagic purse seine								
Tuna purse seine								
Surface longline								
Others (Large Boats; multi gear)	44	12-18	200-600			x		
Others (Speed Boats; multi gear)	947	5-12	40-750		x	x	x	

B.2: Which of the following management mechanisms apply to your <u>shrimp & finfish trawl fleets</u>

Mechanism	Yes	No	If yes, please describe
Licensing of gear and / or vessels			
Gear restrictions or prohibitions / regulations			
Areas of operation / times of operation / seasons			
Prohibitions in species / sizes landed			
Use of satellite-based VMS			
Logbook reporting requirements			

C. Incidental bycatch and discarding

This section looks at what fisheries in your country have a significant incidental bycatch.

C.1: List of fisheries with bycatch

For each gear type used in your country, please list the main species groups that are (i) targeted, (ii) retained as bycatch and (iii) discarded. Where possible, please estimate the annual volume targeted, caught as bycatch or discarded for each fishery.

C1.1: Shrimp and finfish bottom trawls (all hull materials)

Target species		**Retained bycatch species**		**Discarded species**	
Key species groups	***Tonnes per year***	***Key species or species groups***	***Tonnes per year***	***Key species or species groups***	***Tonnes per year***
22. x 23. x 24. x 25. x 26. x 27. x 28. x		36. x 37. x 38. x. 39. x 40. x 41. x 42. x		22. x 23. x 24. x 25. x 26. x 27. x 28. x	
Year or period of data					

Advice on filling this table:

13. This table is indicative only, so please use approximate figures.
14. If figures on bycatch and discard volumes are not available, please make estimates based on any research or observer information.
15. If no such information exists, please leave blank.

Type of data[1]	)		
Source of data			

[1] Type of data: Please state whether (i) **Documented** (in official statistics), (ii) **Research observations** or (iii) **estimates**

C1.2: Other fishing gears

Please try to estimate the proportions of the retained not-target bycatch and the discarded bycatch. Industry experience will be very useful here.

Gear type	Target catch		Retained, non-target bycatch			Discarded bycatch		
	Key species (list up to 5)	***Approx. annual volume (t)***	***As an estimate, how does the volume compare to the target catch?***		***Key species (list up to 5)***	***As an estimate, what proportion of the total catch is discarded?***		***Key species (list up to 5)***
Gill nets (King fish)	Scomberomorus commerson (Kanaad) Sphyraena flavicauda (Jid) Carangoides malabaricus (Zubaidi) Carangoides gymnostethus (Hamaam) Euthynnus affinis (Tabaan)	4539	Less	x	Rachycentron canadum (Siken) Argyrops spinifer (Koffar) Carangoides chrysophrys (Saal) Scomberoides commersonnianus (Dal'ah)	<10%		NIL
			Same			10-50%		
			More			>50%		
Traps – gargour	Lethrinus nebulosus (Sh'ari) Epinephelus coioides (Hamour) Carongoides bajad (Jash) Gnathanodon speciosus (Rebeeb) Siganus canaliculatus (Saafi)	3643	Less		Epinephelus bleekeri (Semaan) Carangoides chrysophrys (Saal) Lutjanus malabaricus (Hamra) Acanthopagrus bifasciatus (Fasker) Diagramma picta (Farsh)	<10%		NIL
			Same	x		10-50%		
			More			>50%		
Multi Gears (Large Boat)	Lethrinus nebulosus (Sh'ari) Rhabdosargus haffara (Qurqufan) Gerres longirostris (Bedha) Gnathanodon speciosus (Rebeeb)	116	Less	x	Crenidens crenidens(Battana) Scomberoides commersonnianus (Dal'ah) Portuntus pelagicus (Kobkob)	<10%		NIL
			Same			10-50%		
			More			>50%		
Multi Gear (Speed Boats)	Scomberomorus commerson (Kanaad) Rhabdosargus haffara (Qurqufan) Gerres longirostris (Bedha) Lethrinus nebulosus (Sh'ari) Siganus canaliculatus (Saafi)	1335	Less		Carongoides bajad (Jash) Atule mate (Karari) Scomberoides commersonnianus (Dal'ah) Diagramma picta (Farsh)	<10%		NIL
			Same	x		10-50%		
			More			>50%		
Surface longline			Less			<10%		
			Same			10-50%		
			More			>50%		
Hadra trap			Less			<10%		
			Same			10-50%		
			More			>50%		

C.2: Information on by-catch and discards

Are the species and volumes of <u>bycatch</u> <u>routinely</u> recorded or estimated, and if so, how?	**Yes**	**No**	*If yes, please provide information on recording systems e.g., by observers, landing records, logbooks, etc.?*
Are the species and volumes of <u>discards</u> <u>routinely</u> recorded or estimated, and if so, how?	**Yes**	**No**	*If yes, please provide information on recording systems e.g., by observers, discard records, logbooks, etc.?*
Have there been any scientific studies or workshops on bycatch?	*Please briefly describe the studies / workshops and provide references if published:*		
Has there been any length / frequency analysis of bycatch?			

C.3: Policy and Regulations on Bycatch

Is there any national policy[2] specifically on bycatch and its management?	**Yes**	**No**	*If yes, note titles and dates of written policy documents which specifically refer to bycatch management, including discarding. If possible, summarise main policy elements referring to bycatch and discarding.*
Are there any laws and / or regulations managing bycatch and discarding?	**Yes**	**No**	*If yes, include (i) seasonal limits (e.g., when bycatch rates might be high), (ii) spatial zones or geographic areas where fishing is restricted or prohibited, (iii) gear specifications or use that is specifically designed to minimise bycatch and discards. Please also note the titles of any key law / regulations*
Do any vessels use any form of bycatch reduction device (BRD) and/ or turtle exclusion device (TED)?	**Yes**	**No**	*If yes, please describe below (e.g., vessel and gear types, BRD / TED descriptions, proportion of fleet using these, etc).*

[2] Policy is a statement of political vision

C.4: With shrimp trawlers, why is there a bycatch?

Is the following statement applicable to your shrimp trawl fishery (yes / no)	**Yes**	**No**	**Describe any other reasons for catching and retaining bycatch**
Could not avoid catching bycatch e.g., gears are unselective			
Vessel owners think that the use of BRDs / TEDs may restrict the catch			
BRDs & TEDs are too expensive to fit			
BRD / TED technology not available locally			
Training in BRD / TED use not available			
Bycatch has a useful economic value that has a major contribution to vessel earnings.			
Bycatch has a useful economic value that has a minor contribution to vessel earnings.			

C.5: Reasons for discarding practises

Are the following statements the reasons for your bycatch discards?	Yes	No	Please state any other reasons for discarding bycatch
Has no market value			
Has market value but fish is too small			
Quota is exceeded			
Too difficult to sort			
May damage the target catch			
Insufficient storage facilities			

C.6: Marketing and utilisation of bycatch

How is retained bycatch marketed?	Method	Yes	No	Comment of description
	Via normal market channels			
	Intervention or purchase by the Government			
	Other 1: Please specify			
	Other 2: Please specify			
Describe whether prices and demand <u>for bycatch species</u> have changed over the last 5 years:				
Describe the post-harvest 'chill chain' for retained bycatch and compare and contrast with that for target species. ***For instance is bycatch as well iced, boxed and handled? Are the rates of post-harvest spoilage the same? If not, please briefly describe why.***				

C.7: Incidental bycatch of other animals

Do any of your fisheries catch seabirds?	**Yes**		**No**		**Don't know**		*If yes, please describe below (e.g., vessel and gear types, frequency, species affected, magnitude of impacts on populations).*
Do any of your fisheries catch marine animals (e.g., turtles, dugong, dolphins, and whales)?	**Yes**	**x**	**No**		**Don't know**		*If yes, please describe below (e.g., vessel and gear types, frequency, species affected, magnitude of impacts on populations).*

D. Abandoned, lost and otherwise discarded fishing gear (ALDFG)

This section assesses the extent to which fishing gear is abandoned, lost and otherwise discarded in each RECOFI country.

D.1 Main fisheries where ADLFG occurs

Gear type	**Is ALDFG a major issue with this fishery (put x in 1 box)**				**If an issue, please describe the nature of ADLFG for each applicable fishery e.g., whether it is abandoned, lost or discarded, in what circumstances this occurs, and any estimates of losses**
	Major	**Minor**	**None**	**n/a**	
Shrimp bottom trawl					
Gill nets					
Traps – gargour					
Traps - hadhra					
Finfish bottom trawl					
Small pelagic purse seine					
Tuna purse seine					
Bottom longline					
Surface longline					
Hooks and lines					
Other 2 (specify)					

D.2: Information on ADLFG

Have there been any scientific studies or workshops on ADLFD?	If yes, briefly describe the studies / workshops and provide references if published.
Is there any monitoring or recording of gear loss?	If yes, provide information on recording systems e.g., by observers, logbooks, gear sales etc.?

D.3: Reasons for abandoning, discarding or losing fishing gear

What are the main reasons for abandoning, losing or discarding fishing gear?	Reason (put x in yes or no)		Yes	No	Any other reasons for ADLFG
	Abandoned	IUU fishing			
		Gear is illegal, so is often abandoned			
	Discarded	Gear takes up too much space on vessel			
		No facilities for disposing of gear on land			
	Lost	Gear damaged by other fishing boats (gear conflict)			
		Bad weather			
		Fishing gear not well marked or lit			
		Poor fishing ground			

D.4: Existing management mechanisms to control ADLFG and its impacts

What management mechanisms are currently used to prevent ADLFG?	Mechanism (put x in yes or no)	Yes	No	If yes, please describe
	Regulations for marking and lighting of static gear			
	Spatial zoning of different gears to reduce conflict			
	Use of GPS and other techniques to locate gear			
	Waste disposal facilities at fishing ports for old nets, etc.			
	Use of biodegradable materials to reduce ghost fishing			
	Gear recovery programmes			

E. Habitat impacts of fishing gear

E.1 Information and monitoring of the impact of fishing gear on the marine environment

Have there been any scientific studies or workshops on the impact of fishing gear on the environment?	*Please briefly describe the studies / workshops and provide references if published:*
Is there any routine monitoring or recording of the impact of fishing gear, its impact on the environment and the time taken for habitat recovery?	*Provide information on recording systems e.g., by dive surveys, ROV surveys, etc.*

E.2: Policy and Regulations on the environmental impact of fishing gear

Is there any national policy[3] specifically on fishing methods and their impact of the environment?	*Please note titles and dates of written policy documents which specifically refer to bycatch management, including discarding. If possible, summarise main policy elements referring to bycatch and discarding.*
Are there any laws and regulations specifically to manage the environmental impact of fishing gear on the marine environment?	*Please note titles and dates of relevant rules and regulations. These could include (i) gear specifications, (ii) time restriction and (iii) geographic restrictions for particular gear types that might damage the marine environment.*
	As per Ministerial Decree in 1998 1) Stoppage of new fishing licences of Speed Boats(tarads) and Large Boats(launches) 2) Decreasing the fishing effort by limiting the landings(3 landings/vessel/month)during April-June every year 3) Size limits applied as minimum legal length for major commercial species As per Ministerial Decree no 19 in the year 1994 1) Prohibited bottom trawling 2) Prohibited trammel net 3) Prohibited Mono filament gill nets 4) Prohibited drift nets As per Ministerial Decree no 23 in the year 2010 1) Prohibited Saw fish fishing

[3] Policy is a statement of political vision.

BYCATCH AND OTHER ENVIRONMENTAL IMPACTS OF FISHING IN THE RECOFI REGION

SAUDI ARABIA: NATIONAL STATUS QUESTIONNAIRE

Introduction and purpose of survey

The extensive tropical coastal areas of the RECOFI and GCC region have supported commercial and artisanal fisheries for many decades. At the same time, some of these fisheries are characterized by high bycatch, much of which is comprised of juveniles of ecologically important and economically valuable species and which is often discarded. Moreover, excessive use of trawling in areas of fragile or vulnerable habitats may also have unwanted impacts.

In light of the above concerns and in response to requests from RECOFI members to reduce the impacts of fishing on the marine environment, a regional workshop has been proposed over 9 – 12 December 2012. To be held in Kuwait, this workshop will lead to the development of a road map on how bycatch can be more effectively managed and how to reduce impacts of fishing on the environment. This workshop will synthesize the current knowledge on bycatch in the RECOFI / GCC region and consider priority follow up actions.

The purpose of this survey is to assist the RECOFI members to present the national status of bycatch and other environmental effects of fisheries following a common structured approach. It is intended that they will form the basis for the 15 minute presentations to be made on Day 1 of the Kuwait Workshop.

Format of the questionnaire

This is a semi-structured questionnaire. This means in some places we require facts and figures and in others we require more general information.

The questionnaire structure is as follows:

A. **Contact information**
B. **Country fleet details**
C. **Incidental bycatch and discarding**
D. **Abandoned, lost and otherwise discarded fishing gear (ALDFG)**
E. **Habitat impacts of fishing gear**

Who should complete the questionnaire?

Sections A and B can be completed by the fisheries administration. However the rest of the questionnaire will need to be completed by persons from both Government and the private sector e.g., those with practical experience of dealing with bycatch and discards. It is suggested that a small working committee is convened to go through each question from Section C onwards and formulate joint responses.

If you have any questions on how to answer this questionnaire, please contact Tim Huntington (FAO consultant) by email at tim@consult-poseidon.com***or Dr Haider A. Murad (PAAF)*** drhmurad@paaf.gov.kw

Key definitions:

Target catch: those species that are primarily sought by the fishermen in a particular fishery. The subject of directed fishing effort in a fishery. There may be primary as well as secondary target species.

Bycatch: part of a catch of a fishing unit taken incidentally in addition to the target species towards which fishing effort is directed. If possible name the main species being caught, of if these are not recorded, the main types of bycatch e.g., finfish, crustaceans, other invertebrates. Bycatch is either retained or discarded (see definitions below).

- **Retained bycatch**: the part of the bycatch that is landed.
- **Discarded bycatch**: that portion of the bycatch that is returned to the sea as a result of economic, legal, or personal considerations. Also known as 'discards'.

ALDFG: collective term for fishing gear that has been abandoned, lost or otherwise discarded (see separate glossary entries). Often referred to as 'derelict fishing gear' in literature.

- **Abandoned fishing gear**: fishing gear that is deliberately left at sea with no intention by fishers to retrieve it, for whatever reason.
- **Lost fishing gear**: the accidental loss of fishing gear at sea.
- **Discarded fishing gear**: fishing gear or parts thereof that is deliberately thrown overboard without any intention for further control or recovery.

Mobile gear: fishing gear that is towed by a vessel to displace and capture fish. Sometimes called active or towed gear. Examples include trawls and dredges.

Static gear: fishing gear that is placed in one fixed location, usually through anchors and buoys, so that it traps or ensnares passing fish. Includes types of nets, pots and traps.

Please make any comments about the above definitions:

A.Contact information

Country name:	Saudi Arabia
Name(s) of author(s)	Hathal Albishi , Radda Alzahrani , Osama Alahmdi , Waleed Kremli
Author's organisation:	Ministry of Agriculture
Lead author contact details:	Tel.: +96614055851
	Email: nas2_2@hotmail.com
	Mobile tel: +966505515905

B. Country fleet details

B.1: Please provide information on your licensed fishing gears (2009)

Primary gear (note that not all gear types are applicable to each country)	No. of vessels which use gear	Vessel length (m)	Vessel power (hp)	Vessel BTR	Distance from coast (x in box(es))			
					0 – 3 nm	3-12 nm	12-24 nm	>200 nm
Industrial shrimp trawl		12-20				v	V	X
Artisanal shrimp trawl		9-20				v	v	
Gill nets (wooden)								
Gill nets (fibreglass)								
Traps – gargour (wooden)								
Traps – gargour (fibre)								
Finfish bottom trawl								
Small pelagic purse seine	9	15-20	450-750	5		V		
Tuna purse seine								
Surface longline								
Others (please specify)		5-20	45-450	2-5	v	v	v	

B.2: Whichof the following management mechanisms apply to yourshrimp & finfish trawl fleets

Mechanism	Yes	No	If yes, please describe
Licensing of gear and / or vessels	**v**		Evrey fishing pot must have licence for the Gaer vessel , fishermen
Gear restrictions or prohibitions / regulations	**v**		Cod end mesh size restrictions (38 mm).
Areas of operation / times of operation / seasons	**V**		0-3 miles banned. Night time restructions. Shrimp season oug – end of jan
Prohibitions in species / sizes landed	**V**		Small landing sizes (shrimp) . fish (no size)
Use of satellite-based VMS		**X**	
Logbook reporting requirements	**V**		Force

C. Incidental bycatch and discarding

This section looks at what fisheries in your country have a significant incidental bycatch.

C.1: List of fisheries with bycatch

For each gear type used in your country, please list the main species groups that are (i) targeted, (ii) retained as bycatch and (iii) discarded. Where possible, please estimate the annual volume targeted, caught as bycatch or discarded for each fishery.

C1.1: Shrimp and finfish bottom trawls (all hull materials)

Target species		**Retained bycatch species**		**Discarded species**	
Key species groups	***Tonnes per year***	***Key species or species groups***	***Tonnes per year***	***Key species or species groups***	***Tonnes per year***
29. Penaeus semisulcatus 30. Metapemeaus affinis 31. Parapenaeus styliferous	9275	1.Pluswning Crabs 2.Whit Cattle fish 3.Fin Fish	2710 819 901	1.	150.000 – 400.000
Year or period of data	2009	2009		2009	
Type of data[1]	Documented (species & volumes)	All the studies and research very old		All the studies and research very old. But there scientific report for using reduction Devices in shrimp trawl fishers. Written by mr. Krimly walled khaled	
Source of data	All the studies and research very old				

Advice on filling this table:

16. This table is indicative only, so please use approximate figures.
17. If figures on bycatch and discard volumes are not available, please make estimates based on any research or observer information.
18. If no such information exists, please leave blank.

[1] Type of data: Please state whether (i) **Documented** (in official statistics), (ii) **Research observations** or (iii) **estimates**

C1.2: Other fishing gears

Please try to estimate the proportions of the retained not-target bycatch and the discarded bycatch. Industry experience will be very useful here.

Gear type	Target catch		Retained, non-target bycatch			Discarded bycatch		
	Key species (list up to 5)	***Approx. annual volume (t)***	***As an estimate, how does the volume compare to the target catch?***		***Key species (list up to 5)***	***As an estimate, what proportion of the total catch is discarded?***		***Key species (list up to 5)***
Gill nets			Less			<10%		
			Same			10-50%		
			More			>50%		
Traps – gargour			Less	x		<10%	X	
			Same			10-50%		
			More			>50%		
Small pelagic purse seine	Not applicable		Less			<10%		
			Same			10-50%		
			More			>50%		
Tuna purse seine	Not applicable		Less			<10%		
			Same			10-50%		
			More			>50%		
Surface longline	Emperors ,Narrow barredsm, Barracuda, Groupers, Sea Breams, Scads/Jacks, Glueen.		Less	x		<10%	X	
			Same			10-50%		
			More			>50%		
Hadra trap	Not applicable		Less			<10%		
			Same			10-50%		
			More			>50%		

C.2: Information on by-catch and discards

Are the species and volumes of bycatchroutinelyrecorded or estimated, and if so, how?	**Yes**	**No**	*If yes, please provide information on recording systems e.g., by observers, landing records, logbooks, etc.?*
	V		Its estimated wthen The total catch of all Gears by landings ,(By Boxes) and mesh size.
Are the species and volumes of discardsroutinelyrecorded or estimated, and if so, how?	**Yes**	**No**	*If yes, please provide information on recording systems e.g., by observers, discard records, logbooks, etc.?*
		X	
Have there been any scientific studies or workshops on bycatch?	*Please briefly describe the studies / workshops and provide references if published:*		
	No we dont have		
Has there been any length / frequency analysis of bycatch?	None by lock seet		

C.3: Policy and Regulations on Bycatch

Is there any national policy[2] specifically on bycatch and its management?	**Yes**	**No**	*If yes, note titles and dates of written policy documents which specifically refer to bycatch management, including discarding. If possible, summarise main policy elements referring to bycatch and discarding.*
		X	
Are there any laws and / or regulations <u>managing bycatch and discarding</u>?	**Yes**	**No**	*If yes, include (i) <u>seasonal limits</u> (e.g., when bycatch rates might be high), (ii) <u>spatial zones</u> or <u>geographic areas</u> where fishing is restricted or prohibited, (iii) <u>gear specifications</u> or use that is specifically designed to minimise bycatch and discards. Please also notethe titles of any key law / regulations*
		X	
Do any vessels use any form of bycatch reduction device (BRD) and/ or turtle exclusion device (TED)?	**Yes**	**No**	*If yes, please describebelow (e.g., vessel and gear types, BRD / TED descriptions, proportion of fleet using these, etc).*
		X	

[2] Policy is a statement of political vision

C.4: With shrimp trawlers, why is there a bycatch?

Is the following statement applicable to your shrimp trawl fishery (yes / no)	**Yes**	**No**	**Describe any other reasons for catching and retaining by catch**
Could not avoid catching bycatch e.g., gears are unselective	v		The by catch had economical flue and sold by the fisherman. The vessel owners dos not use any reduction devices. Only retaining by catch
Vessel owners think that the use of BRDs / TEDs may restrict the catch	v		
BRDs & TEDs are too expensive to fit	V		
BRD / TED technology not available locally	V		
Training in BRD / TED use not available	V		
Bycatch has a useful economic value that has a major contribution to vessel earnings.	V		
Bycatch has a useful economic value that has a minor contribution to vessel earnings.		x	

C.5: Reasons for discarding practises

Are the following statements the reasons for your bycatch discards?	Yes	No	Please state any other reasons for discarding bycatch
Has no market value	V		Quota is not applied in Saudi Arabia
Has market value but fish is too small	V		
Quota is exceeded		x	
Too difficult to sort	V		
May damage the target catch	V		
Insufficient storage facilities	v		

C.6: Marketing and utilisation of bycatch

How is retained bycatch marketed?	Method	Yes	No	Comment of description
	Via normal market channels	v		
	Intervention or purchase by the Government		x	Open Market
	Other 1: Please specify			
	Other 2: Please specify			
Describe whether prices and demand <u>for bycatch species</u> have changed over the last 5 years:		*No*, Especially *for some by catch (craps , cattle fish) , sea Bream , etc....*		
Describe the post-harvest 'chill chain' for retained bycatch and compare and contrast with that for target species. ***For instance is bycatch as well iced, boxed and handled? Are the rates of post-harvest spoilage the same? If not, please briefly describe why.***		Yes, by catch is as will iced , boxed and handled the rates of post-harvest spoilage is not the same		

C.7: Incidental bycatch of other animals

Do any of your fisheries catch seabirds?	**Yes**		**No**	x	**Don't know**		*If yes, please describebelow (e.g., vessel and gear types, frequency, species affected, magnitude of impacts on populations).*
	Rarely						
Do any of your fisheries catch marine animals (e.g., turtles, dugong, dolphins, and whales)?	**Yes**	**x**	**No**		**Don't know**		*If yes, please describebelow (e.g., vessel and gear types, frequency, species affected, magnitude of impacts on populations).*
	But the regulations force the fisher men to return them back to sea alive						

D. Abandoned, lost and otherwise discarded fishing gear (ALDFG)

This section assesses the extent to which fishing gear is abandoned, lost and otherwise discarded in each RECOFI country.

D.1 Main fisheries where ADLFG occurs

Gear type	Is ALDFG a major issue with this fishery (put x in 1 box)				If an issue, please describe the nature of ADLFG for each applicable fishery e.g., whether it is abandoned, lost or discarded, in what circumstances this occurs, and any estimates of losses
	Major	Minor	None	n/a	
Shrimp bottom trawl			v		
Gill nets		v			Most of them are Abandoned and fishing by self
Traps – gargour	v				There are issues of Abandoned and lest traps some are taken from there fishermen the rest is kept in the sea.
Traps - hadhra					
Finfish bottom trawl			v		Not used by fishermen
Small pelagic purse seine				v	
Tuna purse seine				v	
Bottom longline				v	
Surface longline			v		
Hooks and lines			v		
Other 2 (specify)					

D.2: Information on ADLFG

Have there been any scientific studies or workshops onADLFD?	If yes, briefly describe the studies / workshops and provide references if published.
	No studs had been don in Saudi Arabia but same workshops had been attended Especially in UAE and roam
Is there any monitoring or recording of gear loss?	If yes, provide information on recording systems e.g., by observers, logbooks, gear sales etc.?
	No , There is no registration or control

D.3: Reasons for abandoning, discarding or losing fishing gear

What are the main reasons for abandoning, losing or discarding fishing gear?	Reason (put x in yes or no)		Yes	No	Any other reasons for ADLFG
	Abandoned	IUU fishing			
		Gear is illegal, so is often abandoned	v		
	Discarded	Gear takes up too much space on vessel		v	
		No facilities for disposing of gear on land	v		
	Lost	Gear damaged by other fishing boats (gear conflict)	V		
		Bad weather	V		
		Fishing gear not well marked or lit		V	
		Poor fishing ground		v	

D.4: Existing management mechanisms to control ADLFG and its impacts

What management mechanisms are currently used to prevent ADLFG?	Mechanism (put x in yes or no)	Yes	No	If yes, please describe
	Regulations for marking and lighting of static gear		v	
	Spatial zoning of different gears to reduce conflict			
	Use of GPS and other techniques to locate gear	v		Most of the dhow fishermen (lunch)
	Waste disposal facilities at fishing ports for old nets, etc.			
	Use of biodegradable materials to reduce ghost fishing		v	
	Gear recovery programmes		v	

E. Habitat impacts of fishing gear

E.1 Information and monitoring of the impact of fishing gear on the marine environment

Have there been any scientific studies or workshops onthe impact of fishing gear on the environment?	*Please briefly describe the studies / workshops and provide references if published:*
	Yes, but not by ministry of agriculture , some studs had been by Armco and Research Institute at King Fahd University of Petroleum and Minerals
Is there any routine monitoring or recording of the impact of fishing gear, its impact on the environment and the time taken for habitat recovery?	*Provide information on recording systems e.g., by dive surveys, ROV surveys, etc.*
	Yes, but not by the ministry of agriculture, and also by (KAUST) in the red sea

E.2: Policy and Regulations on the environmental impact of fishing gear

Is there any national policy[3] specifically on fishing methods and their impact of the environment?	*Please note titles and dates of written policy documents which specifically refer to bycatch management, including discarding. If possible, summarise main policy elements referring to bycatch and discarding.*
	Yes, in the regulations there are Written not on selecting fishing gear which are friendly at environment and previous to that there are regulation on the gears use for fishing
Are there any laws and regulations specifically to manage the environmental impact of fishing gear on the marine environment?	*Please note titles and dates of relevant rules and regulations. These could include (i) gear specifications, (ii) time restriction and (iii) geographic restrictions for particular gear types that might damage the marine environment.*

[3] Policy is a statement of political vision

BYCATCH AND OTHER ENVIRONMENTAL IMPACTS OF FISHING IN THE RECOFI REGION

UNITED ARAB EMIRATES: NATIONAL STATUS QUESTIONNAIRE

Introduction and purpose of survey

The extensive tropical coastal areas of the RECOFI and GCC region have supported commercial and artisanal fisheries for many decades. At the same time, some of these fisheries are characterized by high bycatch, much of which is comprised of juveniles of ecologically important and economically valuable species and which is often discarded. Moreover, excessive use of trawling in areas of fragile or vulnerable habitats may also have unwanted impacts.

In light of the above concerns and in response to requests from RECOFI members to reduce the impacts of fishing on the marine environment, a regional workshop has been proposed over 9 – 12 December 2012. To be held in Kuwait, this workshop will lead to the development of a road map on how bycatch can be more effectively managed and how to reduce impacts of fishing on the environment. This workshop will synthesize the current knowledge on bycatch in the RECOFI / GCC region and consider priority follow up actions.

The purpose of this survey is to assist the RECOFI members to present the national status of bycatch and other environmental effects of fisheries following a common structured approach. It is intended that they will form the basis for the 15 minute presentations to be made on Day 1 of the Kuwait Workshop.

Format of the questionnaire

This is a semi-structured questionnaire. This means in some places we require facts and figures and in others we require more general information.

The questionnaire structure is as follows:

A. Contact information

B. Country fleet details

C. Incidental bycatch and discarding

D. Abandoned, lost and otherwise discarded fishing gear (ALDFG)

E. Habitat impacts of fishing gear

Who should complete the questionnaire?

Sections A and B can be completed by the fisheries administration. However the rest of the questionnaire will need to be completed by persons from both Government and the private sector e.g., those with practical experience of dealing with bycatch and discards. It is suggested that a small working committee is convened to go through each question from Section C onwards and formulate joint responses.

If you have any questions on how to answer this questionnaire, please contact Tim Huntington (FAO consultant) by email at tim@consult-poseidon.com ***or Dr Haider A. Murad (PAAF)*** drhmurad@paaf.gov.kw

Key definitions:

Target catch: those species that are primarily sought by the fishermen in a particular fishery. The subject of directed fishing effort in a fishery. There may be primary as well as secondary target species.

Bycatch: part of a catch of a fishing unit taken incidentally in addition to the target species towards which fishing effort is directed. If possible name the main species being caught, of if these are not recorded, the main types of bycatch e.g., finfish, crustaceans, other invertebrates. Bycatch is either retained or discarded (see definitions below).

- **Retained bycatch**: the part of the bycatch that is landed.
- **Discarded bycatch**: that portion of the bycatch that is returned to the sea as a result of economic, legal, or personal considerations. Also known as 'discards'.

ALDFG: collective term for fishing gear that has been abandoned, lost or otherwise discarded (see separate glossary entries). Often referred to as 'derelict fishing gear' in literature.

- **Abandoned fishing gear**: fishing gear that is deliberately left at sea with no intention by fishers to retrieve it, for whatever reason.
- **Lost fishing gear**: the accidental loss of fishing gear at sea.
- **Discarded fishing gear**: fishing gear or parts thereof that is deliberately thrown overboard without any intention for further control or recovery.

Mobile gear: fishing gear that is towed by a vessel to displace and capture fish. Sometimes called active or towed gear. Examples include trawls and dredges.

Static gear: fishing gear that is placed in one fixed location, usually through anchors and buoys, so that it traps or ensnares passing fish. Includes types of nets, pots and traps.

Please make any comments about the above definitions:

A. Contact information

Country name:	**United Arab Emirates**	
Name(s) of author(s)	**Eisa Abdelkarim Alyafei**	
Author's organisation:	**Marine Environment Research Centre / Ministry of Water and Environment**	
Lead author contact details:	Tel.:	**+971 67655881**
	Email:	**ealyafee@moew.gov.ae**
	Mobile tel:	**+971 506467891**

B. Country fleet details

B.1: Please provide information on your licensed fishing gears (2009)

There is no separation between the fishing gear for each vessel

Primary gear (note that not all gear types are applicable to each country)	No. of vessels which use gear	Vessel length (m)	Vessel power (hp)	Vessel BTR	Distance from coast (x in box(es))			
					0 – 3 nm	3-12 nm	12-200 nm	>200 nm
Industrial shrimp trawl								
Artisanal shrimp trawl								
Gill nets (wooden)								
Gill nets (fibreglass)								
Traps – gargour (wooden)								
Traps – gargour (fibre)								
Finfish bottom trawl								
Small pelagic purse seine								
Tuna purse seine								
Surface longline								
Others (please specify)								

B.2: Which of the following management mechanisms apply to your <u>shrimp & finfish trawl fleets</u>

Trawl fishing is forbidden in the United Arab Emirates

Mechanism	Yes	No	If yes, please describe
Licensing of gear and / or vessels			
Gear restrictions or prohibitions / regulations			
Areas of operation / times of operation / seasons			
Prohibitions in species / sizes landed			
Use of satellite-based VMS			
Logbook reporting requirements			

C. Incidental bycatch and discarding

This section looks at what fisheries in your country have a significant incidental bycatch.

C.1: List of fisheries with bycatch

For each gear type used in your country, please list the main species groups that are (i) targeted, (ii) retained as bycatch and (iii) discarded. Where possible, please estimate the annual volume targeted, caught as bycatch or discarded for each fishery.

C1.1: Shrimp and finfish bottom trawls (all hull materials)

Target species		**Retained bycatch species**		**Discarded species**	
Key species groups	***Tonnes per year***	***Key species or species groups***	***Tonnes per year***	***Key species or species groups***	***Tonnes per year***
32. x 33. x 34. x 35. x 36. x 37. x 38. x		43. x 44. x 45. x. 46. x 47. x 48. x 49. x		29. x 30. x 31. x 32. x 33. x 34. x 35. x	
Year or period of data					
Type of data[1]	)				
Source of data					

Advice on filling this table:

19. This table is indicative only, so please use approximate figures.
20. If figures on bycatch and discard volumes are not available, please make estimates based on any research or observer information.
21. If no such information exists, please leave blank.

[1] Type of data: Please state whether (i) **Documented** (in official statistics), (ii) **Research observations** or (iii) **estimates**

C1.2: Other fishing gears

Please try to estimate the proportions of the retained not-target bycatch and the discarded bycatch. Industry experience will be very useful here.

Gear type	Target catch		Retained, non-target bycatch			Discarded bycatch		
	Key species (list up to 5)	***Approx. annual volume (t)***	***As an estimate, how does the volume compare to the target catch?***		***Key species (list up to 5)***	***As an estimate, what proportion of the total catch is discarded?***		***Key species (list up to 5)***
Gill nets	***Scomberomorus commerson*** ***Thunnus sp.*** ***Auxis thazard*** ***Euthynus affinis***		Less	√		<10%		
			Same			10-50%		
			More			>50%		
Traps – gargour	***Lethrinus sp.*** ***Epinephelus sp.*** ***Carangoid bajad*** ***Siganus canaliculatus***		Less	√	***Lutjanus sp.*** ***Arius thalassinus***	<10%		
			Same			10-50%		
			More			>50%		
Small pelagic purse seine	***Sardinella sp.*** ***Stolephorus heterolopus***		Less	√	***Megalapsis cordyla*** ***Jelly fish***	<10%		
			Same			10-50%		
			More			>50%		
Tuna purse seine	***Sardinella sp.*** ***Rastrelliger kanagurta*** ***Scomberomorus commerson*** ***Auxis thazard***		Less	√		<10%		
			Same			10-50%		
			More			>50%		
Surface longline			Less	√		<10%		
			Same			10-50%		
			More			>50%		
Hadra trap	***Portunus sp.*** ***Lutjanus sp.*** ***Siganus canaliculatus*** ***Acanthopagrus latus***		Less	√		<10%		
			Same			10-50%		
			More			>50%		

C.2: Information on by-catch and discards

Are the species and volumes of <u>bycatch</u> <u>routinely</u> recorded or estimated, and if so, how?	**Yes**	**No**	*If yes, please provide information on recording systems e.g., by observers, landing records, logbooks, etc.?*
		√	
Are the species and volumes of <u>discards</u> <u>routinely</u> recorded or estimated, and if so, how?	**Yes**	**No**	*If yes, please provide information on recording systems e.g., by observers, discard records, logbooks, etc.?*
		√	
Have there been any scientific studies or workshops on bycatch?	*Please briefly describe the studies / workshops and provide references if published:*		
	No		
Has there been any length / frequency analysis of bycatch?	**No**		

C.3: Policy and Regulations on Bycatch

Is there any national policy[2] specifically on bycatch and its management?	**Yes**	**No**	*If yes, note titles and dates of written policy documents which specifically refer to bycatch management, including discarding. If possible, summarise main policy elements referring to bycatch and discarding.*
		√	
Are there any laws and / or regulations <u>managing bycatch and discarding</u>?	**Yes**	**No**	*If yes, include (i) <u>seasonal limits</u> (e.g., when bycatch rates might be high), (ii) <u>spatial zones</u> or <u>geographic areas</u> where fishing is restricted or prohibited, (iii) <u>gear specifications</u> or use that is specifically designed to minimise bycatch and discards. Please also note the titles of any key law / regulations*
		√	
Do any vessels use any form of bycatch reduction device (BRD) and/ or turtle exclusion device (TED)?	**Yes**	**No**	*If yes, please describe below (e.g., vessel and gear types, BRD / TED descriptions, proportion of fleet using these, etc).*
		√	

[2] Policy is a statement of political vision

C.4: With shrimp trawlers, why is there a bycatch? No trawlers

Is the following statement applicable to your shrimp trawl fishery (yes / no)	**Yes**	**No**	**Describe any other reasons for catching and retaining bycatch**
Could not avoid catching bycatch e.g., gears are unselective			
Vessel owners think that the use of BRDs / TEDs may restrict the catch			
BRDs & TEDs are too expensive to fit			
BRD / TED technology not available locally			
Training in BRD / TED use not available			
Bycatch has a useful economic value that has a major contribution to vessel earnings.			
Bycatch has a useful economic value that has a minor contribution to vessel earnings.			

C.5: Reasons for discarding practises

Are the following statements the reasons for your bycatch discards?	**Yes**	**No**	**Please state any other reasons for discarding bycatch**
Has no market value	√		
Has market value but fish is too small			
Quota is exceeded			
Too difficult to sort			
May damage the target catch			
Insufficient storage facilities			

C.6: Marketing and utilisation of bycatch

How is retained bycatch marketed?	**Method**	**Yes**	**No**	**Comment of description**
	Via normal market channels			
	Intervention or purchase by the Government			
	Other 1: Please specify			
	Other 2: Please specify			
Describe whether prices and demand <u>for bycatch species</u> have changed over the last 5 years:				
Describe the post-harvest 'chill chain' for retained bycatch and compare and contrast with that for target species. ***For instance is bycatch as well iced, boxed and handled? Are the rates of post-harvest spoilage the same? If not, please briefly describe why.***				

C.7: Incidental bycatch of other animals

Do any of your fisheries catch seabirds ?	**Yes**		**No**	√	**Don't know**		*If yes, please describe below (e.g., vessel and gear types, frequency, species affected, magnitude of impacts on populations).*
Do any of your fisheries catch marine animals (e.g., turtles, dugong, dolphins, and whales)?	**Yes**	√	**No**		**Don't know**		*If yes, please describe below (e.g., vessel and gear types, frequency, species affected, magnitude of impacts on populations).* **Turtles accidentally fished by Beach-sein and are returning again to the sea.**

D. Abandoned, lost and otherwise discarded fishing gear (ALDFG)

This section assesses the extent to which fishing gear is abandoned, lost and otherwise discarded in each RECOFI country.

D.1 Main fisheries where ADLFG occurs

Gear type	Is ALDFG a major issue with this fishery (put x in 1 box)				If an issue, please describe the nature of ADLFG for each applicable fishery e.g., whether it is abandoned, lost or discarded, in what circumstances this occurs, and any estimates of losses
	Major	Minor	None	n/a	
Shrimp bottom trawl					
Gill nets					
Traps – gargour		**X**			**Lost**
Traps - hadhra					
Finfish bottom trawl					
Small pelagic purse seine					
Tuna purse seine					
Bottom longline					
Surface longline					
Hooks and lines					
Other 2 (specify)					

D.2: Information on ADLFG

Have there been any scientific studies or workshops on ADLFD?	If yes, briefly describe the studies / workshops and provide references if published.
	No.
Is there any monitoring or recording of gear loss?	If yes, provide information on recording systems e.g., by observers, logbooks, gear sales etc.?
	No.

D.3: Reasons for abandoning, discarding or losing fishing gear

What are the main reasons for abandoning, losing or discarding fishing gear?	Reason (put x in yes or no)		Yes	No	Any other reasons for ADLFG
	Abandoned	IUU fishing			
		Gear is illegal, so is often abandoned			
	Discarded	Gear takes up too much space on vessel			
		No facilities for disposing of gear on land			
	Lost	Gear damaged by other fishing boats (gear conflict)	√		
		Bad weather	√		
		Fishing gear not well marked or lit			
		Poor fishing ground			

D.4: Existing management mechanisms to control ADLFG and its impacts

What management mechanisms are currently used to prevent ADLFG?	Mechanism (put x in yes or no)	Yes	No	If yes, please describe
	Regulations for marking and lighting of static gear	√		
	Spatial zoning of different gears to reduce conflict			
	Use of GPS and other techniques to locate gear	√		
	Waste disposal facilities at fishing ports for old nets, etc.			
	Use of biodegradable materials to reduce ghost fishing	√		
	Gear recovery programmes			

E. Habitat impacts of fishing gear

E.1 Information and monitoring of the impact of fishing gear on the marine environment

Have there been any scientific studies or workshops on the impact of fishing gear on the environment?	*Please briefly describe the studies / workshops and provide references if published:*
Is there any routine monitoring or recording of the impact of fishing gear, its impact on the environment and the time taken for habitat recovery?	*Provide information on recording systems e.g., by dive surveys, ROV surveys, etc.*

E.2: Policy and Regulations on the environmental impact of fishing gear

Is there any national policy[3] specifically on fishing methods and their impact of the environment?	*Please note titles and dates of written policy documents which specifically refer to bycatch management, including discarding. If possible, summarise main policy elements referring to bycatch and discarding.*
Are there any laws and regulations specifically to manage the environmental impact of fishing gear on the marine environment?	*Please note titles and dates of relevant rules and regulations. These could include (i) gear specifications, (ii) time restriction and (iii) geographic restrictions for particular gear types that might damage the marine environment.*

[3] Policy is a statement of political vision

APPENDIX 7

Concept for a Regional Action Plan for managing the environmental impacts of fishing in the RECOFI region

Context

It is well recognized that the shrimp-directed bottom trawl fisheries have a major bycatch of fish, juvenile shrimp and other benthic organisms. Among various types of fishing, shrimp trawling is the biggest contributor with the highest ratio of bycatch to shrimp catch, 5:1 in temperate and subtropical waters and 10:1 in tropical waters (Slavin, 1982; Ye et al, 2000[28]).

In the RECOFI region Kuwait, Saudi Arabia and Iran all have industrial shrimp trawl fleets, with Iraq and Bahrain both having artisanal trawling fleets. Qatar, the UAE and Oman have all banned shrimp trawling. According to information collected for the Kuwait 9-12 December 2012 workshop on bycatch management and low impact fishing, discard rates varied but suggested that up to 95% of Kuwait and Saudi's catch by shrimp trawlers may be discarded, accounting for over 300 000 tonnes of discards annually from the northern Gulf alone. With shrimp catch per unit effort declining, and a greater quantity of previously unwanted catch being landed as fish prices continue to climb, it is recognised that this situation is clearly unsustainable.

Abandoned, discarded and lost fishing gear (ALDFG) is also an issue of concern throughout the Gulf and Sea of Oman. The extensive and largely unregulated use of large fish traps (known locally as *gargoor*) targeting high value species such as groupers (*Epinephelus* spp.), emperors (*Lethrinus* spp.), and rabbit fish (*Siganus* spp.) inevitably leads to high gear losses and possible ghost fishing. Large volumes of gillnets are also used, and old netting panels are frequently abandoned or discarded, as few ports have any form of gear disposal facilities.

In summary, the main environmental issues for fisheries in the RECOFI region can be summarized as:

- Large, but unreported and unquantified discards of unwanted species from shrimp trawl fisheries;
- Growing levels of unsustainable fishing, including the increasing capture and utilization of species characterized as bycatch, as a result of the rising demand for fish and growing human populations in the region;
- The physical impact of bottom trawls on sensitive and vunerable habitats;
- Lack of measures to limit fishing capacity heightens risk of over-fishing;
- Lack of industry awareness of fishing impacts, with low incentive for responsible practices, especially for foreign labor;
- Considerable amounts of static gear loss due to conflicts with other fishing gears, a lack of marking due to the risk of theft and poor weather conditions that lead to the misplacement or distintegration of gear sets.

A Workshop on Bycatch Management and Low Impact Fishing held in Kuwait City, from the 9 to 12 December 2012 provided the first opportunity for regional discussions on these issues. The workshop included presentations of current status analyses by each country, as well as a review of work on bycatch reduction conducted to date, mainly by Kuwait, Iran and Bahrain. Analysis of the core problems by participants in the workshop led participants agree the nature and magnitude of common fisheries-related environmental issues within the region, and the needs and possible solutions to these issues. The workshop discussions formed the basis for this concept for a Regional Action Plan for Managing the Environmental Impacts of Fishing in the RECOFI Area.

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[28] Slavin, J.W., 1982. Utilization of shrimp bycatch. In: IDRC (Ed.), Fish bycatch - bonus from the sea. Report of a Technical Consultation on Shrimp Bycatch Utilization (IDRC-198e), Ottawa, pp. 21-28;

Ye, Y., A.H. Alsaffar & H.M.A. Mohammed, 2000. Bycatch and discards of the Kuwait shrimp fishery. Fisheries Research 45 (2000) 9-19

Based on the Workshop discussions, the participants agreed the following over-arching goal and primary objectives:

Goal

- to ensure the long-term livelihoods of those involved in the fisheries sector through the adoption of responsible fishing practises.

Primary objectives

- To prioritize responsible fishing through embedding the Ecosystem Approach to Fisheries (EAF) in relevant national policies;
- Minimize the impact of trawling on the seabed and reduce the impact on sensitive species, both target and non-target;
- Providing a rational approach for reducing excessive bycatch, discards and minimizing gear loss;
- Adopting a comprehensive approach that recognises the differing environmental, economic and social conditions of the various fisheries within the region;
- Awareness-raising, training and commitment of all stakeholders to sustainable fishing.

Precursors

Participants recognised that regional action would not be able to take place unless certain activities and requirements were met in advance:

- Development of concept into detailed project design;
- National approval design by RECOFI Member States;
- National and / or regional (e.g., RECOFI) request for technical support from FAO;
- Establishment of RECOFI Regional Action Plan Managing the Environmental Impacts of Fishing (RAPMEIF Working Group);
- Research and secure potential funding. Potential funding partners include:
    - National and regional funding agencies e.g., Arab Fund for Economic & Social Development, Qatar Foundation, Islamic Development Bank, Kuwait Foundation for Advancement of Science
    - National research funding agencies,
    - Private sector e.g., petroleum companies,
    - Environmental funds, NGOs, philanthropists
- Research and engage possible technical partners in the region e.g., Saudi ARAMCO for GIS assistance and seabed mapping data.

RECOFI Regional Action Plan Managing the Environmental Impacts of Fishing

This Regional Action Plan has been designed to take place over three stages, these being (1) a regional analysis and diagnostic phase, (2) an implementation phase including four separate action plans, and (3) a consolidation phases where the outputs and findings from the action plans were converted into long-term gains, such as embedding the technical and managerial solutions into appropriate regional and national legislation and fisheries management planning initiatives. These three stages are described in more detail below.

Stage 1: Regional Analysis and Diagnostic Phase

This first stage is required to ensure that the subsequent action planning is based on reasonable information and analysis. At present there is very little known about the true nature of catch composition and in particular, discard composition and rates, and both these need to be characterised before developing suitable action plans.

1.1 Regional Baseline Analysis

- Bycatch rates and composition (landings-based)
- Discard rates and composition (observer-based)
- Socio-economic and market information (survey)
- Compilation of current information (meta-database & GIS)

1.2 Diagnosis and Environmental Risk Assessment

- Identification of vulnerable species in the retained and discarded bycatch and nomination of key indicator species for subsequent monitoring
- Identification of specific fleets (gear / vessel type / species combinations) that pose a particularly high risk to retained and discarded species.

1.2 Action Plan Design and Development

- Based on 1.1 and 1.2 above, the development of regional action plans designed to address specific environmental issues associated with shrimp trawling and ALDFG in the RECOFI region.
- Review of potential technical and management options available, together with a preliminary cost-benefit analysis of technical and other options for bycatch management.
- Design of monitoring and evaluation mechanisms for the Regional Action Plan, including targets, process and outcome indicators and a coherent reporting structure. This might include the use of the Logical Framework Analysis (LFA) approach in Action Plan design.

Stage 2: Implementation Phase

This second stage will see the implementation of four possible action plans identified as priority areas by the 2012 Kuwait Workshop. It is recognised that the number and nature of these will be reviewed over Stage 1 as more concrete information comes to light.

Action Plan 1: Addressing shrimp trawl discards and vulnerable retained bycatch in the Northern Gulf

- Research testing of BRDs and / or TEDs;
- Pilot-testing testing and tuning of BRDs, TEDs and responsible fishing practises under commercial conditions;
- Extension and training for BRD / TED use by fishers;
- Standardise fishing gear specifications across the region.

Action Plan 2: Addressing the abandonment, loss and discard of fishing gear in the RECOFI Region

- Gear marking and location;
- Technical measures to reduce ‘ghost’ fishing;
- Damaging lost gear recovered;
- Marine litter management;
- Limiting gear numbers (gillnets and traps).

Action Plan 3: Enabling regional spatial planning of fishing activities[29]

- Minimising gear conflicts through zoning;
- Establish a regional focal point for GIS-based marine spatial planning;
- Leverage technical assistance and seabed data from oil companies operating in the Gulf;
- Critical habitat mapping;
- Feasibility of regional VMS coverage for high risk fleets.

Action Plan 4: Building awareness of fisheries-related marine environmental issues in key sector actors

- Identification of, and engagement with, stakeholders representing high risk fisheries;
- Developing specialist awareness-building messages for high risk local and expatriate fishing groups in the RECOFI area;
- Build consumer awareness of environmental issues in fisheries;
- Develop positive incentives for responsible fishing with pilot testing;
- Possible implementation mechanism.

Stage 3: Consolidation Phase

This final stage of the Regional Action Plan is designed to ensure that the pilot-level activities in the previous stage are rolled out over the rest of the region and embedded into both regional commitments and where necessary, national legislation. It is expected that this will include the following:

- Roll out of BRD / TED gear modifications with incentives for voluntary adoption and if appropriate, made mandatory for high risk fisheries;
- Harmonisation of regional legislation governing gear selectivity;
- Extend current zoning to encompass offshore area, possibly supported by VMS and similar approaches, to address impacts on vulnerable habitats and gear conflicts;
- Roll out of techniques to reduce the abandonment, loss and discard of fishing gear with incentives for voluntary adoption and if appropriate, made mandatory for high risk fisheries;
- Implement gear limits and capacity reduction for high risk fisheries;
- Extend successfully piloted incentives for responsible fishing.

Outcomes and Key Performance Indicators (KPIs)

It is important that action plan design in Stage 1.3 includes a monitoring and evaluation process. Previous experience of regional initiatives suggests it is important to define outcomes, targets, inputs and activities at an early stage, and to ensure that these are well followed and any short-falls addressed immediately to ensure that overall regional action planning is not compromised.
A number of ideas for potential KPIs are provided below:

- Industry uptake of BRD / TEDs;
- Target and non-target catch stock status;
- Retained bycatch and discard ratios;
- Economic indicators: e.g., cost: earnings and market-based indicators.

[29] RECOFI is in the latter stages of developing a Regional Spatial Planning Development Programme for
Marine Capture Fisheries and Aquaculture. This is a component of the approved work plan of RECOFI and the subject of a recent FAO/RECOFI meeting (25-27 November 2012) in Cairo) group. Therefore this Action Plan could petietnaly be included or merged into this regional programme.

The Workshop on Bycatch Management and Low-impact Fishing held in Kuwait City, the State of Kuwait, on 9–12 December 2012 was convened to develop the concept of a Regional Action Plan on how bycatch can be more effectively managed and to reduce impacts of fishing on the environment. The meeting reviewed the current knowledge on bycatch in the Regional Commission for Fisheries (RECOFI)/Gulf Cooperation Council region and considered priority follow-up action. The workshop adopted a draft concept document in the form of a Regional Action Plan for managing the environmental impacts of fishing in the RECOFI region.

Workshop participants agreed that the primary objective a regional action plan was to ensure the long-term livelihoods of those involved in the fisheries sector through the adoption of responsible fishing practices and that elements of the plan should interalia: (i) prioritize responsible fishing through embedding the ecosystem approach to fisheries (EAF) in relevant national policies, (ii) minimize the impact of trawling on the sensitive habitats and reduce the impact on vulnerable species, both target and non-target, (iii) provide a rational approach to fleets for reducing bycatch, discards and gear loss, (iv) adopt a comprehensive approach that recognizes the differing environmental, economic and social conditions of the various fisheries within the region, (v) raise awareness, train and incentivize stakeholders about sustainable fishing Workshop participants also agreed that the stages of the regional action plan should include as a priority: a regional analysis and diagnosis followed by action implementation.