



Convention on the Conservation of Migratory Species of Wild Animals

Secretariat provided by the United Nations Environment Programme



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CALL FOR INFORMATION IN FOLLOW-UP OF CMS RESOLUTION 9.18 ON BY-CATCH

**Response from UNEP/CMS Office – Abu Dhabi
Addressing dugong by-catch**

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United Nations Environment Programme

Convention on the Conservation of
Migratory Species of Wild Animals

UNEP/CMS OFFICE – ABU DHABI
United Arab Emirates



Briefing Note on Addressing Impacts from Bycatch¹ on Dugongs

Dugongs are a threatened species of high genetic biodiversity value. Being long-lived, slow breeding and dependent on seagrasses which are restricted to coastal habitats and often under increased pressure from human activities, dugongs are particularly vulnerable to anthropogenic impacts including incidental capture, or bycatch, in fisheries gear.

Dugongs are incidentally caught in fishing gear throughout much of their range, where this is one of the largest and most widespread threat. Dugongs are caught incidentally in purse seine nets, bay nets, trap nets, beach seine nets, shark nets, trawl nets, fish traps, bag nets, long lines and fish weirs.

Acknowledging the extent of the impact of bycatch on dugong population, there are two specific objectives of Conservation and Management Plan of the Memorandum of Understanding on the Conservation and Management of Dugongs and their Habitats throughout their Range:

Objective 1 – Reduce direct and indirect causes of dugong mortality

1.1 Identify, assess and evaluate the threats to dugong populations and develop appropriate measures to address these threats

1.2 Reduce to the greatest extent practicable the incidental capture and mortality of dugongs in the course of fishing activities

Similar specific objectives are also contained in the sub-regional Conservation and Management Plan for Dugongs and their Habitats in the Western Indian Ocean:

Objective 3 – Reduce direct and indirect causes of dugong mortality

3.1 Identify, assess and evaluate threats to dugong populations and develop appropriate measures to address these threats

3.2 Reduce incidental capture and mortality of dugongs

¹ While species caught incidentally are commonly referred to as bycatch, this term is misleading for dugongs as it may be inferred the animals so-caught are discarded. In developing countries, most dugongs caught as bycatch are retained for food and their by-products.



Approach and Strategy to address Bycatch of dugongs

The Secretariat to the *UNEP/CMS Memorandum of Understanding of the Conservation and Management of Dugongs and their Habitats throughout their Range* (Dugong MoU) is taking a regional approach to address the need for more information and to identify solutions to address the impact of bycatch on dugongs.

The Secretariat has adopted a strategy which includes:

- Development of a low technology, low cost and statistically robust approach – the Standardised Dugong Catch/Bycatch Survey Questionnaire – to obtain updated standardised information on dugong distribution, trends in relative abundance, key habitats and impacts to populations. The questionnaire is available for download at: http://www.cms.int/species/dugong/dugong_noticeboard.htm.
- Development of a Project Manual and Data Upload file to complement the standardised survey tool and assist Range States in project implementation. The manual is available to be downloaded from the above website and the data upload file will be available in the near future.
- Provision of technical support and coordination to range states, including appointment of a Technical Advisor to provide technical advice and guidance to project partners in relation to use of the survey questionnaire, sampling protocol and methodology.
- Implementation of projects using the standardised survey methodology in over twenty range states to date in the Pacific Islands, South East Asia, South Asia and UAE. The standardised surveys will be implemented in other range states in the South Western Indian Ocean and North Western Indian Ocean before the end of 2010. The survey methodology is also being used independently in several countries.
- Threat and Risk Assessment: Technical advice will be sought to use the data obtained to conduct regional/global spatial risks assessment. The expert opinion of the world authority on dugongs, Professor Helene Marsh and others will be sought to provide the best available information on the global status of dugongs.
- Development of Mitigation/Management Toolbox: Expert opinions will be sought from key experts to develop a Toolbox for mitigation and management, including the identification and assessment of the appropriate tools to address key threats and risk to dugongs. This will require identification of pilot projects with best potential to deliver conservation outcomes.
- Fund Raising: With the assistance of the technical experts and support of the Signatory States and collaborating partners, funding will be sought from donors to implement projects to:
 - Expand the conduct of surveys using the Standardised Dugong Catch/Bycatch Survey Questionnaire to remaining dugong range states;
 - Run trial projects in range states to mitigate/manage threat/risks using the tools identified.





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Potential Benefits

The regional approach to addressing bycatch of dugongs has a number of additional benefits including:

- Supporting Signatory States of the Dugong MoU in decision making and priority-setting based on the most appropriate and best available information, methods and solutions to address bycatch of dugongs.
- Building and enhancing regional cooperation amongst range states of the Dugong MoU to address a key threat to a threatened migratory species.
- Opportunities to address shared conservation synergies, including incidental capture in fisheries gear, with other marine megafauna including turtles, inshore cetaceans and manatees.
- The Mitigation and Management Toolbox being developed for dugong will include a range of current approaches, including gear modification, spatial and temporal management as well as bio-economic approaches. Innovative approaches for performance-based direct conservation schemes such as environmental mortgages, which allow low-income communities to leverage their equity in environmental assets for access to financial service in exchange for environmental stewardship. Such tools may have wider application to a range of species, including turtles, inshore cetaceans and manatees.





RATIONALE FOR THE STANDARDISED DUGONG CATCH/BYCATCH QUESTIONNAIRE

The rationale for development of a standardised questionnaire and sampling methodology was to address the need for scientific data to initiate conservation actions. However, most data on the distribution and abundance of dugongs and their habitats is not suitable for designing effective conservation actions. In addition, collecting such information using scientific techniques such as aerial surveys is beyond the capacity of most countries.

We developed an alternative and cost-effective approach to interview fishers to identify ‘dugong trouble spots’ where the number of dugongs and the threats to their existence are high. We recognised the need to be able to identify the areas where the likelihood of dugongs being killed is greatest by hunting, capture in fishing gear and vessel strike, so that dugongs can be protected in their key habitats.

This information on dugongs and the threats to their existence can be combined in a geographical information system (GIS) to identify ‘dugong trouble spots’ and enable local people to explore the ways in which the risks to dugongs and their habitats can be reduced.

The conduct of standardised, culturally appropriate surveys can be done quickly, efficiently and cost effectively. The relatively low cost could facilitate multiple, “longitudinal” surveys at particular locations to assess changes over time, as well as collection of comparable data from a number of locations and range states.

In addition, the survey we propose is designed to collect data not only for sirenians (e.g. dugongs and manatees), but also sea turtles and cetaceans. Since the latter groups face similar conservation threats to those that jeopardize sirenians, the value of the surveys for identifying and focusing conservation actions extends far beyond that for sirenians alone.

Risk is a combination of the likelihood of something happening and the consequences of it happening. The likelihood of a dugong interacting with a fisher in an area generally increases with the number of dugongs and the number of fishers using gear that catches dugongs. The consequences of the interaction are greatest when adult dugongs, particularly females, are killed.

To be effective, surveys must be conducted consistently and at the scale of whole countries. The survey will enable future efforts to concentrate on action to ensure that there are dugongs, cetaceans, and sea turtles are around for the next generation.





UNEP/CMS OFFICE – ABU DHABI
United Arab Emirates

STANDARDISED DUGONG CATCH/BYCATCH QUESTIONNAIRE

Interviewer Name: _____ Date: _____ Data Sheet Serial Number: _____
Town: _____ Province: _____

INTRODUCTION STATEMENT

Note: Reading this statement to the interviewee is compulsory. It ensures all interviews are treated equally.

My name is _____. I work for a project run by the _____, which is an organization based in _____ (*insert location*) that supports research to help protect the ocean for fishers and wildlife. The goal of this project is to learn more about capture of dugongs and any other marine wildlife in coastal fisheries of _____ (*insert location*). In most countries where dugongs and other marine mammals and sea turtles occur, numbers are small and believed to be declining. If we wait too long before initiating conservation actions, they will have disappeared before we get the data to understand the problem. We need to be able to identify the areas where the likelihood of dugongs being killed is greatest due to hunting, capture in fishing gear and vessel strikes, so that dugongs can be protected. We hope that your participation in this study will help us learn more about this. Information from our research could be used to help reduce the capture of dugongs, sea turtles and marine mammals, maybe through community support for our goals, or possibly through more effective regulations and enforcement. Your participation in this survey is voluntary and confidential. We will not record your name or any personal information you share with us unless this is ok with you. Individual answers will be collated and reported on as a group to provide a general idea of current status, and we will absolutely not share your individual answers to anyone outside of the research team. You do not have to answer questions you do not want to.

INTERVIEWEE BACKGROUND

Note: Please tick the boxes to the left of any questions not asked. Provide appropriate ID charts and maps for interviewee to point to during the interview.

- 1. Name: _____
- 2. Age: _____
- 3. Gender: Male Female
- 4. Have you previously participated in interviews related to:
Fishing Marine Mammals MPAs Ecotourism Sea Turtles Other None
When did you participate? _____
Describe: _____
- 5. For how many years has fishing been your occupation? _____
- 6. Were your parents fishers? Yes No Grandparents? Yes No
- 7. Is fishing the main way you earn a living? Yes No
- 8. Is fishing the only way you earn a living? Yes No
If No, what is (or are) your other occupation(s)? _____
- 9. Which months do you normally fish (out of the last 12)? _____
(if seasonal, indicate season start and end)



Please tick the boxes to the left of any questions not asked. Provide appropriate ID charts and maps for interviewee to point to during the interview.

10. How many days each week do you fish? _____ days (low season) _____ days (peak season)
11. What is your position on the boat? The captain A crew member We have no fixed positions
12. How many fishers, including yourself, work on the boat? _____
13. How long is the boat? _____
(Note to interviewer: convert and provide answer in meters)
14. Is the boat motorized? Yes No (if yes) Inboard Outboard
15. What is the horsepower of the motor? _____

DUGONG CATCH / BYCATCH

16. Have you ever seen a dugong? Yes No
Do you have another name for it? _____
17. Tell me about the difference between a dugong and a dolphin? _____
18. How long do you think a dugong lives? _____ Don't know
19. How do you see dugongs? Seen while fishing Seen while travelling to fishing areas
Accidentally caught in nets Hunted Stranded on the beach
(Note to interviewer: Refer to and complete attached table and mark all locations on maps)
20. Do you have any dugong specialists in your village? Yes No Who? _____
21. How frequently have you seen dugongs? Never Once in my life Only a few times in my life
Frequently Every year for the last five years
In the last year, only once several times every month every week every day .
22. Have people in your community ever hunted dugongs? Yes No Don't Know
(if yes) How many (hunters)? _____ For how long? _____
Do they do so now? Yes No Don't Know
23. Do people from other villagers / communities hunt dugongs? Yes No Don't Know
Who? _____ What village? _____ Any other details? _____
24. Compared to when you started fishing, are there more , less , or the same number of dugongs captured in fishing gear? Don't Know (Note to interviewer: based on actual numbers, not perception)
If more or less common, why do you think this? _____
25. Do you know of any areas where dugongs regularly occur? Yes No
Where are these dugong areas?: _____
(Note to interviewer: also indicate on maps)
26. Do these dugong areas change over time? Yes No Don't Know
27. Have you ever seen dugongs calving? Yes No When? _____ (what month?)
Where did you see them calving? (use maps)? _____
28. How many dugongs do you think might live in the important dugong areas? 1 <10 >10
Don't Know
29. When do you see dugongs? (indicate months or seasons where possible): _____
30. When was the last time you saw a dugong? _____ (if long time ago note the year)
31. Did you catch any dugongs in the last year? Yes No (accidentally or hunted)

Please tick the boxes to the left of any questions not asked. Provide appropriate ID charts and maps for interviewee to point to during the interview.

- If yes, how many in the last year? 1-2 ≤10 >10 Specifics (if available): _____
- Was this is a typical number to catch in a year? Yes No
- If no, was it higher or lower than usual? Higher Lower
32. How many in the last five years? 0 1-2 ≤10 >10 Specifics (if available): _____
- How many in your life? 0 1-2 ≤10 >10 Specifics (if available): _____
33. What do you do (or would you do) with a dugong if you caught one? (*do not lead interviewee*)
- Eat Sell Use as Bait Other Use Discard (*dead*) Release (*alive*)
34. Have you ever found or heard of dugongs stranded on the shore? Yes No (*explain stranded*)
- Or have you ever found or heard of dugongs dead at sea? Yes No
- If yes, where (*also indicate on maps*)? _____
- When and how many? _____
- What happened to the animal? _____
35. What would you do or did you do if you found a stranded dugong? _____

PERCEPTIONS

36. Compared to when you started fishing, do you think there are more dugongs , less , or the same numbers of dugongs ? I don't know
- If more or less, why do you think this? _____
- (*Note to interviewer: Try to determine what other impacts may be driving the trend*)
37. Do you think there will always be dugongs in the sea? Yes No Don't Know
- If yes or no, why? _____
38. Do you think having dugongs around is important? Yes No Don't know Why? _____
39. Do you know what seagrass areas are? Yes No (*Note to Interviewer: show graphics*)
- Are there any seagrass areas around here? Yes No Don't know Where? _____
- (*Note to Interviewer: mark on maps*)
- Do you fish in these seagrass areas? Yes No
- Are these seagrass areas important for anything else? Yes No Why? _____
40. It is illegal to (intentionally) kill a dugong? Yes No Don't know
- What about by accident (maybe caught in a net unintentionally)? Yes No Don't know
41. Are any areas routinely / periodically patrolled? Frequently Infrequently Never Don't know
42. If yes, are penalties ever imposed? Frequently Infrequently Never Don't know
43. Are there any local customs, beliefs, legends or rituals or stories related to dugongs? Yes No
- If yes, please describe: _____
- _____
- Where / from whom did you hear this? _____
44. Additional stories / incidents you wish to report: _____
- _____
- _____

Please tick the boxes to the left of any questions not asked. Provide appropriate ID charts and maps for interviewee to point to during the interview.

FISHERY INFORMATION

Note to interviewer: Respondent should answer these questions to describe his/her individual experience, not that of their community. Use illustrations to assist where necessary.

Habitat Codes: (D) Deep Water; (C) Coral; (S) Seagrass; (F) Fine Sediments; (M) Mangroves; (R) Rocks; (E) Estuaries; (U) Unknown

45. What type of fishing gear do you use?

Longline Only Mostly Sometimes Season: _____

(many hooks) Habitat: _____ Target: _____

Bottom longline Only Mostly Sometimes Season: _____

(many hooks set at depth) Habitat: _____ Target: _____

Hook and line Only Mostly Sometimes Season: _____

(one or few hooks) Habitat: _____ Target: _____

Purse seine Only Mostly Sometimes Season: _____

(or surround nets) Habitat: _____ Target: _____

Beach seine Only Mostly Sometimes Season: _____

Habitat: _____ Target: _____

Trawl nets Only Mostly Sometimes Season: _____

(or other towed net) Habitat: _____ Target: _____

Traps Only Mostly Sometimes Season: _____

Habitat: _____ Target: _____

Gill or trammel nets Only Mostly Sometimes Season: _____

Habitat: _____ Target: _____

Do you tend the nets when they are in the water? Yes No

How long do you leave the nets in the water? _____ hours

Do you fish during the day or night ?

What is the position of the gear? Surface Midwater Bottom

Describe the net: Length _____ Depth _____ Mesh size _____

Other (describe): _____

Only Mostly Sometimes Season: _____

Habitat: _____ Target: _____

46. In what places do you normally fish? _____

(Use prepared road maps, charts, Google maps and have interviewee point out areas)

Do you use different gears in different areas? Yes No If yes, please describe: _____

(Use prepared road maps, charts, Google maps, and have interviewee point out areas)

47. Do people in your village / community target sharks? Yes No No, but they are occasionally landed

Please elaborate: _____

(Note to interviewer: This can be area sensitive)

Please tick the boxes to the left of any questions not asked. Provide appropriate ID charts and maps for interviewee to point to during the interview.

SEA TURTLE CATCH / BYCATCH

(Optional if time permits and interviewee is keen)

48. Have you ever seen sea turtles? Yes No Do you have another name for them? _____
49. What species of turtles do you see? Green Hawksbill Olive Ridley Loggerhead
Flatback Leatherback Don't know
- Do you know the difference between these turtle species? Yes No Don't know
(Note to Interviewer; Show ID chart or graphics)
- Please describe: _____
- Do they have different names? If yes, please list: _____ (determine for each species)
50. How long do you think a turtle lives? _____ Don't know
51. Do you have any turtle experts in your village? Yes No Who? _____
52. What about in other villages? Yes No Who? _____ What village? _____
53. How do you see turtles? Seen while fishing Seen while travelling to fishing areas
Coming ashore to lay eggs Accidentally caught in nets Hunted Stranded on the beach
(Note to interviewer: Refer to and complete attached table and mark all locations on maps)
54. How frequently have you seen turtles? Never Once in my life Only a few times in my life
Frequently Every year for the last five years
In the last year, only once several times every month every week every day
55. Have people in your community ever hunted turtles? Yes No Don't Know
If yes, how many? _____ For how long? _____
56. Do they do so now? Yes No Don't Know
57. Do people from other villagers / communities hunt turtles? Yes No Don't Know
Who? _____ What village? _____ Any other details? _____
58. Compared to when you started fishing, are there more , less , or the same number of turtles captured in fishing gear? Don't Know (Note to interviewer: based on actual numbers, not perception)
If higher or lower, why do you think this? _____
59. Do you know of any areas where turtles regularly occur? Yes No
Where are these turtle areas? _____
(Note to interviewer: also indicate on maps)
60. Do these turtle areas change over time? Yes No Don't Know
61. Do you see mating turtles? Yes No When? _____ Where (use maps)? _____
62. How many turtles do you think might live in these areas? <10 >10 >100 Don't Know
63. When do you see turtles? (indicate months or seasons): _____
64. When was the last time you saw a turtle? _____ (if a long time ago note the year)
65. Did you catch any turtles in the last year? Yes No
If yes, how many in the last year? 1-2 ≤10 >10 What species? (if available): _____
Was this is a typical number to catch in a year? Yes No

Please tick the boxes to the left of any questions not asked. Provide appropriate ID charts and maps for interviewee to point to during the interview.

66. How many in the last five years? 0 1-2 ≤10 >10 Specifics (*if available*): _____
67. How many in your life? 0 1-2 ≤10 >10 Specifics (*if available*): _____
68. What do you do (or would you do) with a turtle if you caught one?
Eat Sell Use as Bait Other Use Discard (*dead*) Release (*alive*) (*do not lead interviewee*)
(*Note differences by species where possible and if available*)
69. Have you ever found or heard of turtles stranded on the shore? Yes No (*explain stranded*)
Or have you ever found or heard of turtles dead at sea? Yes No
If yes, where (*also indicate on maps*)? _____
When and how many? _____
What happened to the animal? _____
70. What would you do or did you do if you found a stranded turtle? _____
71. Compared to when you started fishing, do you think there are more turtles , less , or the same numbers of turtles ? I don't know
If more or less, why do you think this? _____
(*Note to interviewer: Try to determine what other impacts may be driving the trend*)
72. Do you think there will always be turtles in the sea? Yes No Don't Know
If yes or no, why? _____
73. Do you think having turtles around is important? Yes No Why? _____
74. It is illegal to (intentionally) kill a turtle? Yes No Don't know
What about by accident (maybe caught in a net unintentionally)? Yes No Don't know
75. Are there any local customs, beliefs, legends or rituals or stories related to turtles? Yes No
If yes, please describe: _____

Where / from whom did you hear this? _____

Please tick the boxes to the left of any questions not asked. Provide appropriate ID charts and maps for interviewee to point to during the interview.

DOLPHIN CATCH / BYCATCH

(Optional if time permits and interviewee is keen)

76. Have you ever seen dolphins? Yes No Do you have another name(s) for them? _____
(list by species)
77. What species of dolphins do you see (*describe*)? _____
Any other cetaceans (*describe*)? _____ Don't know
78. How long do you think dolphins live? _____ Don't know
79. Do you have any dolphin experts in your village? Yes No Who? _____
80. What about in other villages? Yes No Who? _____ What village? _____
81. How do you see dolphins? Seen while fishing Seen while travelling to fishing areas
 Accidentally caught in nets Hunted Stranded on the beach
Are these areas different by species? Yes No Don't Know
If yes, please explain: _____
(Note to interviewer: mark locations on maps by species)
82. How frequently have you seen dolphins? Never Once in my life Only a few times in my life
Frequently Every year for the last five years
In the last year: Only once Several times Every month Every week Every day
83. Compared to when you started fishing, are there more , less , or the same number of dolphins captured in fishing gear? Don't Know (Note to interviewer: based on actual numbers, not perception)
If higher or lower, why do you think this? _____
84. Do you know of any areas where dolphins regularly occur? Yes No
Where are these dolphin areas?: _____
(Note to interviewer: also indicate on maps)
85. Do these dolphin areas change over time? Yes No Don't Know
86. How many dolphins do you think might live in these areas? <10 >10 >100 Don't Know
87. When do you see dolphins? (*indicate months or seasons*): _____
88. When was the last time you saw one? _____ (*if long time ago note the year*)
89. Did you catch any dolphins in the last year? Yes No
If yes, how many in the last year? 1-2 ≤10 >10 Specifics (*if available*): _____
Was this is a typical number to catch in a year? Yes No
90. How many in the last five years? 0 1-2 ≤10 >10 Specifics (*if available*): _____
91. How many in your life? 0 1-2 ≤10 >10 Specifics (*if available*): _____
92. What do you do (or would you do) with a dolphin if you caught one? (*do not lead interviewee*)
Eat Sell Use as Bait Other Use Discard (dead) Release (alive)
93. Have you ever found or heard of dolphins stranded on the shore? Yes No (*explain stranded*)
Or have you ever found or heard of dolphins dead at sea? Yes No
If yes, where (*also indicate on maps*)? _____

Please tick the boxes to the left of any questions not asked. Provide appropriate ID charts and maps for interviewee to point to during the interview.

When and how many? _____

What happened to the animal? _____

94. What would you do or did you do if you found a stranded dolphin? _____

95. Compared to when you started fishing, do you think there are more dolphins , less , or the same numbers of dolphins ? I don't know

If more or less, why do you think this? _____

(Note to interviewer: Try to determine what other impacts may be driving the trend)

96. Do you think there will always be dolphins in the sea? Yes No Don't Know

If yes or no, why? _____

97. Do you think having dolphins around is important? Yes No Why? _____

98. It is illegal to (intentionally) kill a dolphin? Yes No Don't know

What about by accident (maybe caught in a net unintentionally)? Yes No Don't know

99. Are there any local customs, beliefs, legends or rituals or stories related to dolphins? Yes No

If yes, please describe: _____

Where / from whom did you hear this? _____

CONFIDENTIAL INTERVIEWER COMMENTS

100. How open and honest did the fisher seem about answering bycatch questions?

Very open/honest Somewhat open/honest Not honest

101. How interested and engaged did the fisher seem with interview?

Very interested Moderately interested Bothered/ Not interested

102. How certain did the fisher seem about answers to numerical questions?

Very sure Reasonable sure Unsure

103. How comfortable were you about the respondents' ability to discriminate between the species

Very comfortable Reasonable Not comfortable

104. Why do you think this? _____

105. Please indicate why (if any) questions were not asked _____

