Inter-American Convention for the Protection and Conservation of Sea Turtles

CIT-CC13-2016-Tec.12

Report on the characterization of sea turtle strandings information in the IAC region

Introduction

Several events of sea turtle mortality have been reported in Central and South America in recent years. In a short period of time there have been a number of dead or dying turtles, causing concern in the region. Some of these events have been investigated in different degrees, while others have been poorly documented. Understanding the causes of the mortality causing these sporadic strandings or mortality events is essential for the identification and mitigation of threats faced by sea turtles. These efforts require improved coordination and communication among those working with sea turtles in different countries.

In light of these events, the Stranding Working Group of the IAC Scientific Committee agreed to prepare a questionnaire for the characterization of the information on sea turtle strandings and mortality events in the IAC region. This document includes an analysis of the responses of the Scientific Committee members to this questionnaire.

Questionnaire objectives

Compile existing information on the capabilities and existing procedures to address strandings and unusual mortality events (UME) of sea turtles in the IAC Parties. **Stranding** is understood as an event where a sea turtle dead or alive appears on the coast or nearby, but it is unable to return to the ocean on its own means, it could be a result of natural or human causes. Strandings can be classified as single or massive events depending on the number of individuals involved. Massive strandings involve two or more individuals stranded at the same time and space. **Unusual mortality events** (UME) differ from massive strandings, in the notorious increment in magnitude of the event or the noticeable change in the nature of the event at the location, compared to the casuistry reported to the event area. A UME can represent a change in the morbidity, mortality or stranding occurrence in space or time; or change in the species affected, sex or age of the animals, compared to previous records. The study and understanding of these unusual mortality events are of great importance because they can be used as indicator of the environmental health.

Questionnaire format

While evaluating the ability and capacity to respond to UME is the priority of this work, understanding the mechanisms to address strandings in each country, will provide an understanding of the resources available to respond to these events. This information will be used to identify the regional assets and needs related to training, protocol development and technical capabilities. The ultimate goal of this effort is the improvement of coordination and capacity to conduct research and understanding the causes of sea turtle strandings in the IAC member countries. The questionnaire consists of 23 questions and is divided into five sections:

1) Field Response (8 questions), 2) Necropsies (7 questions), 3) Laboratory capacity (3 questions), 4) Coordination (4 questions), and 5) Needs (1 question). See Annex 1

Methodology for analysis of the information

The questionnaire was sent to the Scientific Committee delegates of the 15 IAC members and a total of 13 responses were received: Argentina, Brazil, Belize, Caribbean Netherlands (Bonaire, St. Eustatius), Chile, Costa Rica, Ecuador, Guatemala, Honduras, Mexico, Panama, Peru and United States. The information sent was analyzed including all responses to identify the strengths and weaknesses of the region, particularly in terms of capacity to respond to strandings, coordination and technical capabilities. The response rate was calculated for each question; and a pie chart on those percentages was produced.

The IAC countries were grouped into 5 regions to identify regional stranding needs. Grouping the countries was done for the purpose of carrying out the analysis on a geographical basis. See Annex 2.

Results

Section 1 (8 questions): Field Response.
The results of the analysis in this section show a high percentage (over 80%) in the responses that indicate the existence of a " strength" on issues related to the way the stranding information is documented, the use of specific forms, the existence of specific groups that respond to unusual mortality events and organizations linked to strandings monitoring. On the other hand, a low percentage (less than 50%) in the responses indicates the existence of a "weakness" on issues related to communication between different groups responding to strandings in each country. See the graphics in Annex 3.

Section 2 (7 questions): Necropsies.
The results of analysis of this section show percentages greater than 70% in the responses indicating ”strength" on issues related to those conducting necropsies (professional personnel), the use of specific necropsy forms, collection of samples, and necropsies on stranded turtles are done. Moreover, a high percentage (over 70%) was found that indicate a "weakness", in the question of the percentage to estimate the total necropsies that are performed in stranded turtles it is not greater than 10% of turtles which necropsies are practiced on the total stranded animals. See the graphics in Annex 4.

Section 3 (3 questions): Laboratory capacity.
The result of the analysis in this section shows a high percentage (over 90%) in responses indicating a "strength" in the question regarding the existence of laboratories for diagnostic studies on sea turtles. Moreover, a high percentage (over 75%) in the answers implies, the existence of a "weakness" in the question regarding payment for veterinary diagnostic services; as the cost is often a limiting factor for some groups. See graphics in Annex 5.

Section 4 (4 questions): Coordination.
The result of the analysis of this section shows, a high percentage (over 90%) in the responses indicating a "strength" in the capacity and response mechanisms in a mortality event. On the other hand, it was found a low percentage (not exceeding 20%) in the response indicating a

"weakness" in the question related to the frequency of communication between neighboring countries in case of mortality events of marine life; the option regular communication is 20%, indicating that there is little communication to coordinate actions for mortality events or for the exchange of information. See graphics in Annex 6.

Section 5 (1 question): Needs.
In order to analyze the needs of the IAC Parties on strandings, we grouped the questionnaires received on 5 geographical regions following criteria: 1) Brazil, Uruguay and Argentina (ASO Region); 2) Ecuador, Peru and Chile (PSO Region); 3) Panama, Costa Rica, Venezuela and the Netherlands Caribbean (AS – AC Region); 4) Mexico, Guatemala, Honduras and Belize (AC Region); and 5) USA (AN Region). See graph in Appendix 7.

There is no bias in the answers to any region that indicates a particular need over another. In general, it stands at 20% as a priority the need for training of human resources in necropsies and stranding response. 14.8% reflects the need to improve national and international coordination to respond to unusual mortality events and strandings. Related needs to improve capacities in diagnostic research in 7 areas (infectious and parasitic diseases, pathology, toxicology, fisheries analysis, detection outcrops toxic algae and physical oceanography) was 40.3% of the needs.

Preliminary Conclusions

Based on the "strengths" found in this analysis, there is a basis for supervision of unusual mortality events or stranded sea turtles in most IAC Parties. This strength is based capacity to respond in the field, the ability to perform necropsies, the availability of veterinary diagnostic laboratories and the existing coordination capacities and mechanisms in response to an unusual mortality event. However, according to the "weaknesses" found, there is a need to improve aspects of national and international communication on these issues; increase the number of turtles that are studied with necropsy of the total of dead stranded turtles. It is important to consider extending the geographical range of strandings monitoring zones; thus increasing the number of turtles that necropsy is practiced on. Finally, the economic cost associated with diagnostic studies to determine the cause of death of these events, it is often a major constraint. The diagnosis to analyze the causes of mass mortality is not related to what can be feasible only from veterinary medicine. It is important to encourage the creation of interdisciplinary and multidisciplinary groups to include in the analysis of strandings environmental aspects and impacts of human activities.

Recommendations

• Develop a "directory of specialists" in strandings and unusual mortality events in sea turtles, which can be consulted in an emergency, to provide the best advice and guide to collect of information required for effective diagnosis.

• Develop a directory of professionals in each country (veterinarians and biologists working with marine fauna strandings) specialized on sea turtle health, or wildlife, who will be the liaison to the "directory of specialists", to facilitate the communication and provide effective counseling in the field.

• Develop procedure protocols (strandings, necropsy, sampling, etc.) by region (where necessary), including their environmental, anthropogenic and biological peculiarities of each region, as well as previous reports of strandings and unusual mortality events of sea turtles.

• Promote strandings and necropsy training. These activities are an effective complement to improve monitoring of sea turtle strandings.

• Promote at the national level the organization of stranding networks in order to standardize procedures and sampling protocols, as well as to improve and strengthen coordination and communication between the different working groups.

• Promote within the framework of regional meetings between neighboring countries, opportunities for discussion and communication concerning stranding and unusual mortality events of sea turtles.

Acknowledgment
We thank the members of the stranding working group, delegates of Costa Rica (coordinator), Argentina, Ecuador, Brazil, the United States, Peru, Chile, Panama and Guatemala, and experts who provided advice to this group including Dr. Brian Stacy who provided suggestions and prepared the first draft of the questionnaire that was analyzed in this document.

Annex 1 - Questionnaire for the Characterization of the Information on Sea Turtle Stranding and Mortality Events in the IAC Region

Objective: Compile available information on current capacity and procedures to address sea turtle strandings and unusual mortality events (UME) within IAC member countries. Stranding is understood as an event where a sea turtle dead or alive appears in the coast or nearby, but it is unable to return to the ocean on its own means, it could be a result of natural or human causes.

Part I
FIELD RESPONSE
Country:

1. Which of the following best describes documentation of sea turtle strandings in your country?
    a. Sea turtle strandings are not routinely documented.
    b. Strandings are routinely documented, but there are extensive coastal areas with little or no attention.
    c. Strandings are systematically documented in the majority of the coastal areas
    d. Other, please explain:

2. Who documents sea turtle strandings in your country (Please highlight all that apply)?
    a. Nobody
    b. Government agencies
    c. Non-governmental organizations (NGO's) University
    d. Public
    e. Other, please explain:

3. Do those responding to strandings fill out a specific data form or forms?
    a. Yes (please provide an example form)
    b. No

4. How are data from stranding forms collected or managed? (Choose one option)
    a. The data are not collected or managed by anyone.
    b. Data are collected and managed in a decentralized manner by area. Please explain and list the relevant organizations that do this.
    c. Data is centrally collected and managed. Please explain and provide examples of relevant organization that do this.
    d. Data are centrally managed and by zone (or provinces). Please list the relevant organizations that do this.

5. Which of the following options better describes the communication among different groups that respond to strandings (Choose one option)
    a. There is little or no communication among groups
    b. Communication occurs once in a while
    c. Organizations involved in strandings communicate in a structured and regular manner.
    d. Other, please explain.

6. Does any organization in your country respond to unusual wildlife mortality events (not necessarily turtles)? If so, please explain.
7. Does any organization in your country do beach monitoring for sea turtles or other purposes? If so, please specify if they are governmental agencies, research centers, NGO´s or others.
8. Is there any institution in your country responsible for organizing and managing collected data during mortality events and sea turtle strandings?
    a. Yes (Which?)
    b. No

PART II
NECROPSIES

9. Do you necropsy sea turtles that are found stranded? (Choose one)
    a. Yes (please proceed to questions 10-15)
    b. No (Please skip to section on coordination)

10. Which of the following best characterizes necropsy activities in your country? (Choose one)
    a. Necropsies are done only on animals brought into captivity for rehabilitation or captive raised animals.
    b. Necropsies are done on both captive animals and animals found dead in the wild.
    c. Necropsies are done only in animals found dead in the wild.

11. Which percent of the turtles stranded in your country, do you estimated how many are necropsied? (Choose one)
    a. 0-1%
    b. >1-5%
    c. >5-10%

d. >10%
e. Don't know

12. Who conducts necropsies (Please highlight all that apply)?
    a. Veterinarians
    b. Biologists
    c. Trained volunteers
    d. Other, please explain.

13. Which of the following best describes the conditions under which necropsies are conducted? (Choose one)
    a. Most (>90%) necropsies are done in the field.
    b. Most (>90%) necropsies are done at designated facilities.
    c. Necropsy activities include a combination field examinations and necropsies conducted at designated facilities.

14. Do those conducting necropsies fill out a specific data form or forms? (Choose one)
    a. Yes (if so, please provide an example)
    b. No

15. When necropsies are done, how samples are saved? Please highlight all that apply.
    a. No samples are saved (please proceed to coordination section)
    b. Samples are saved frozen
    c. Samples are saved in formalin
    d. Samples are saved for genetics
    e. Other

PART III
LABORATORY CAPACITY

16. Are there laboratories in your country that can process tissues from sea turtles for laboratory analysis? (Choose one)
    a. Yes (please answer questions 17-18)
    b. No (please skip to coordination).

17. Please, list the types of tests that laboratories in your country are capable of performing for sea turtle samples (highlight all that apply):
    a. Histopathology
    b. Microbial culture
    c. Virus culture
    d. Toxicology
    e. Parasitology
    f. Clinical pathology (hematology and blood chemistry)

18. Do these laboratories charge you for their services?
    a. Yes
    b. No

PART IV
COORDINATION

19. If a mass sea turtle mortality event occurs in within your country, is there a structured mechanism to quickly respond and document such an event?
    a. Yes (Please answer questions 20-22)
    b. No (End survey)

20. If a mortality event occur within your country, which of the following best describes the capacity to respond?
    a. There is very limited or no ability to respond or document such events.
    b. Basic documentation is possible in some areas, but there is limited or no ability to necropsy animals or collect samples.
    c. Basic documentation, necropsy, and sample collection are possible, but capacity is limited in large areas.
    d. Capacity exists for basic documentation, necropsy, and sample collection in most areas.

21. Which of the following best describes the distribution of resources available to respond to a mortality event in your country? (Choose one option)
    a. There are no specifically identified resources.
    b. Trained personnel and basic equipment are available in one or a few areas.
    c. Trained personnel and basic equipment are available in some or all regions.

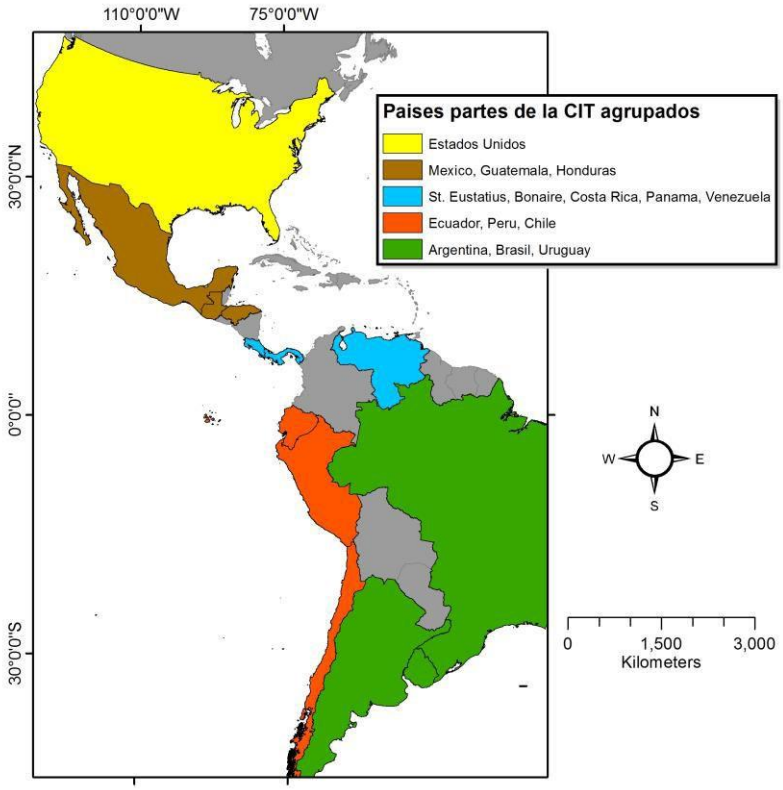
22. How often do you communicate with your peers in neighboring countries on sea turtle strandings?
    a. Never
    b. Occasionally
    c. Regularly

PART V
NEEDS

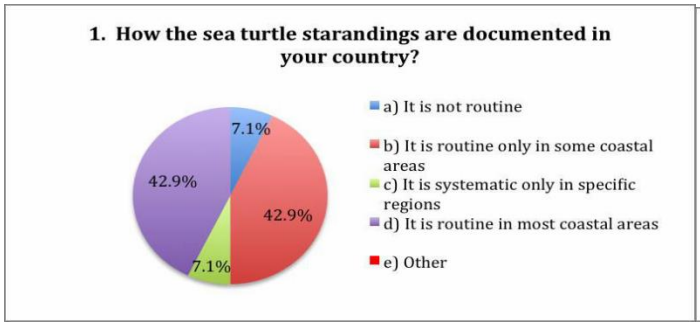
23. With regard to investigation of causes of strandings and mortality events, what do you consider the greatest needs: (Highlight all that apply)
    a. Training in stranding documentation and response
    b. Training in necropsy
    c. Protocols for data collection and sampling
    d. Data organization and management
    e. National coordination
    f. International coordination
    g. Adequate facilities to maintenance, study and rehabilitation of sea turtles (Rescue and rehabilitation centers)
    h. Technical capacity (Choose all that apply)
        a. Fisheries monitoring/analyses
        b. Harmful algae bloom detection/analyses
        c. Veterinary medicine/pathology

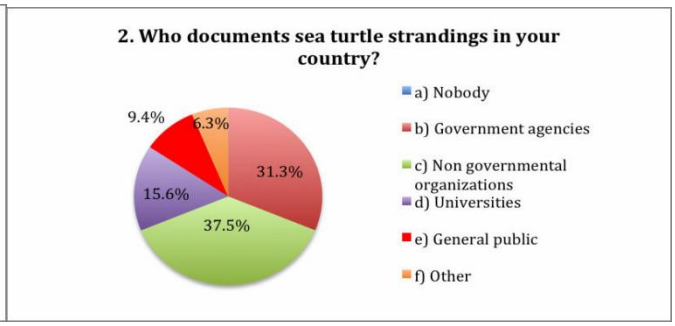
d. Infectious disease
e. Toxicology
f. Physical oceanography
g. Other, please explain:

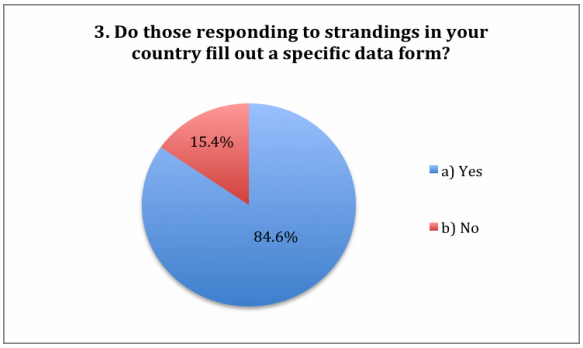
Annex 2- Map of the regions for the questionnaire analysis

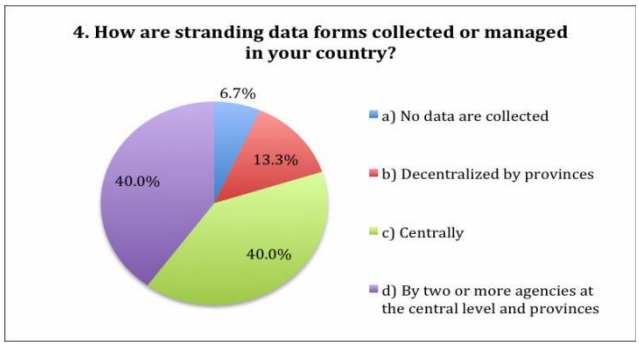


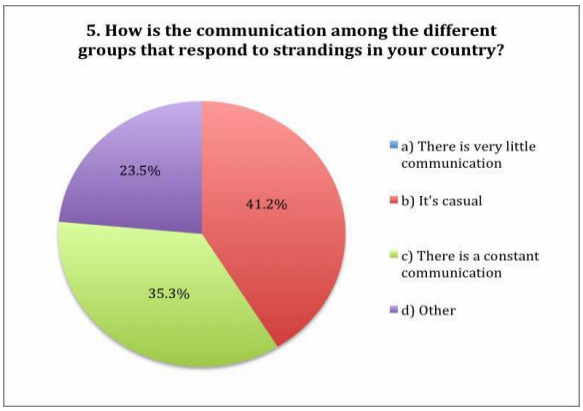
Annex 3- Graphs on Part I: Field Response

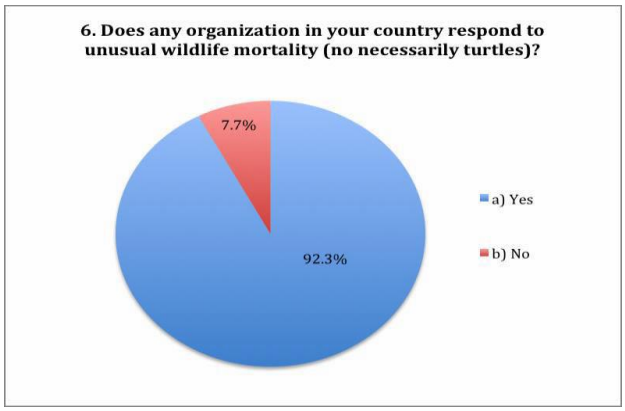


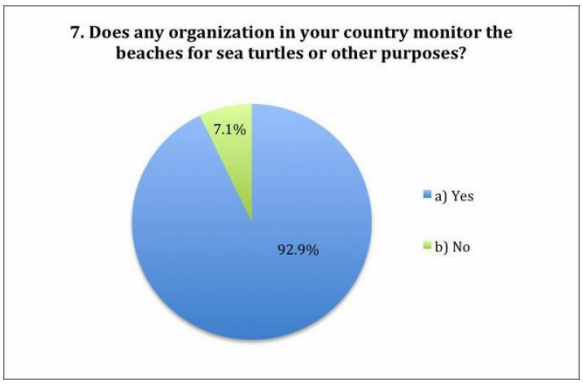


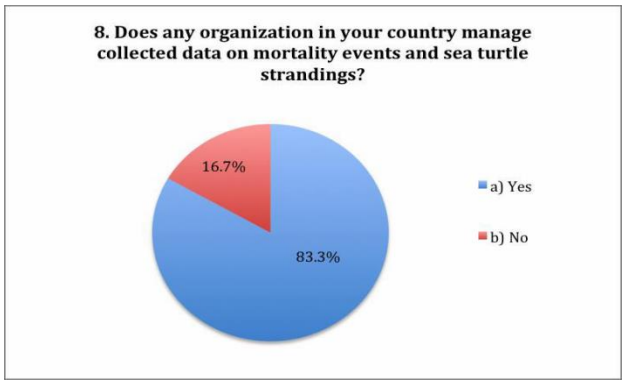




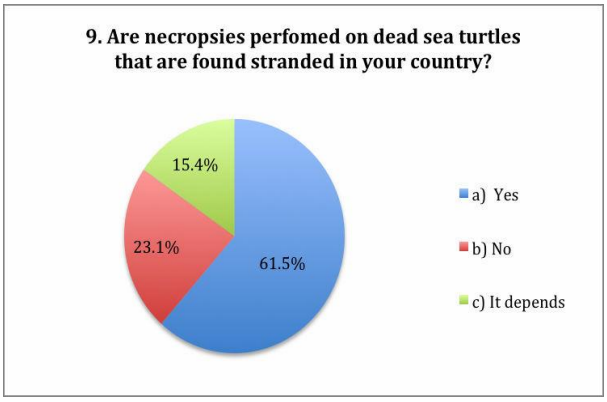


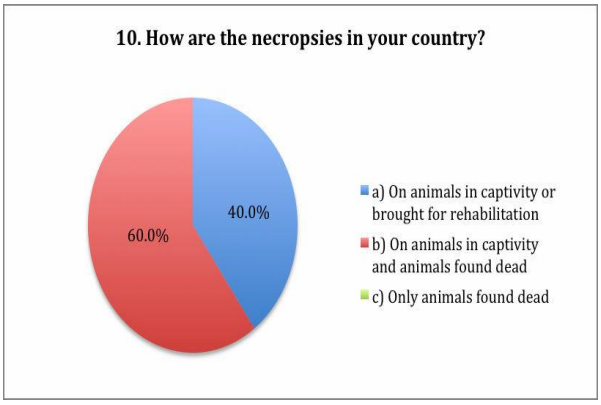




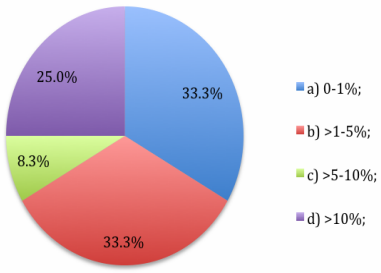


Annex 4- Graphs on Part II: Necropsies

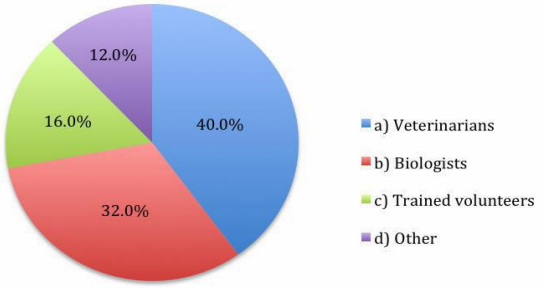




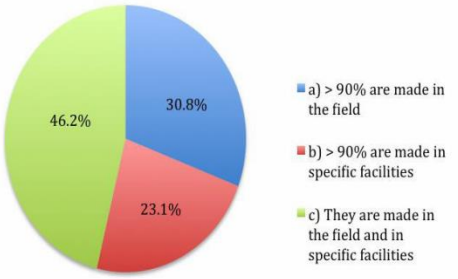
11. Which percent of the stranded turtles are necropsied in your country ?



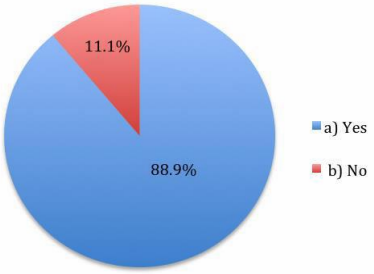
12. Who conducts necropsies in your country?



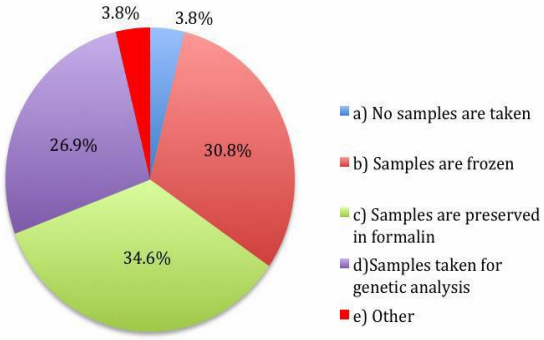
13. What are the conditions under which necropsies are conducted in your country?



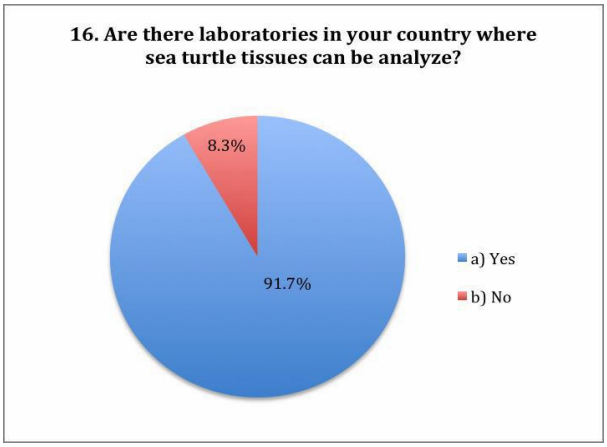
14. When performing a necropsy in your country, are specific data form filled out?

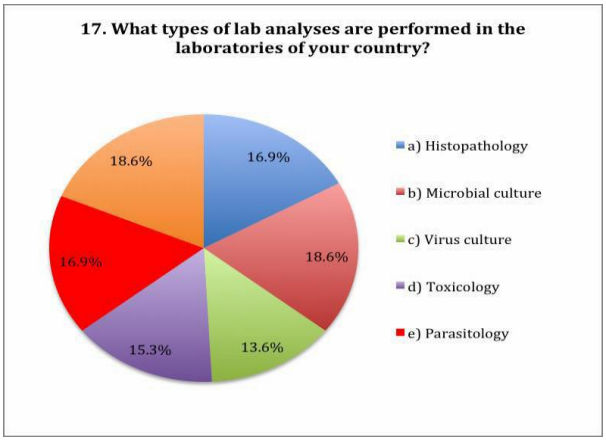


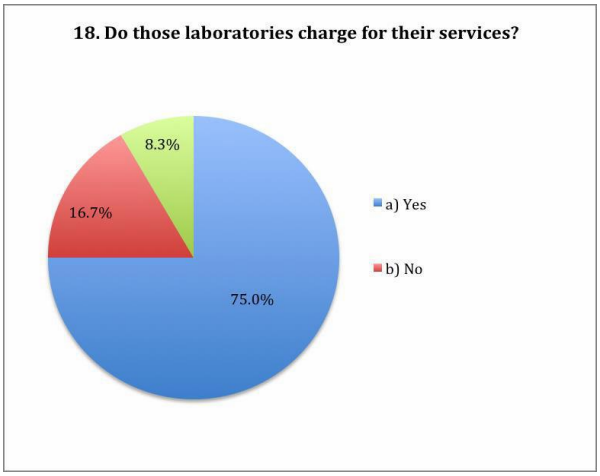
15. When performing a necropsy in your country, how samples are saved?



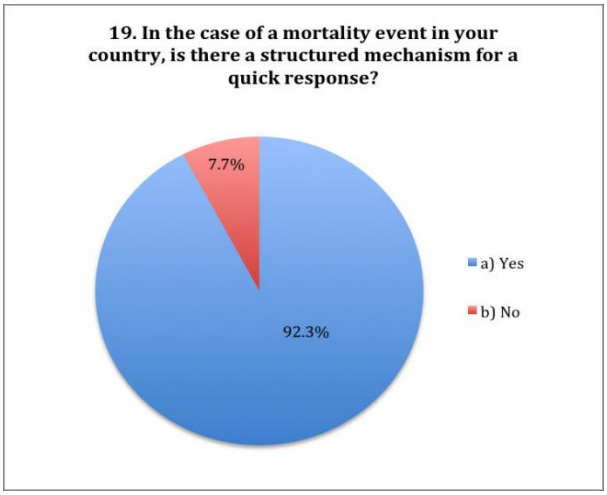
Annex 5- Graphs on Part III: Laboratory Capacity

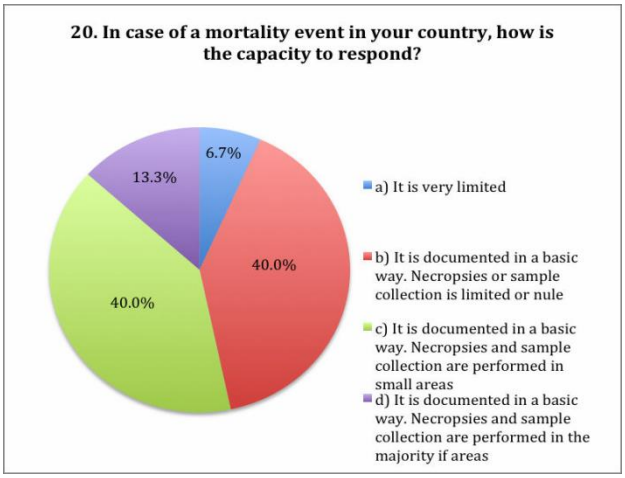


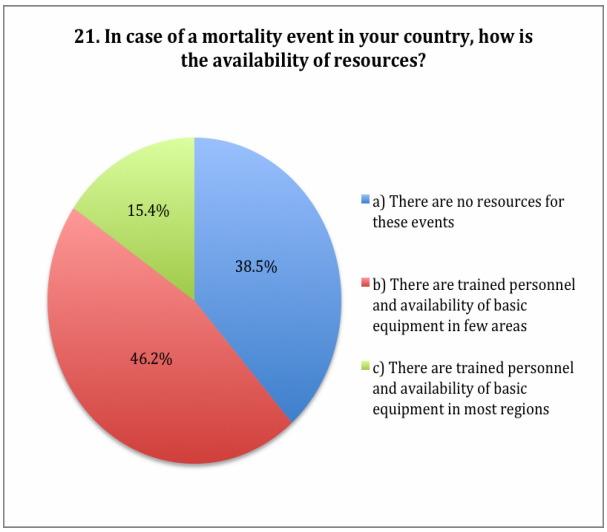


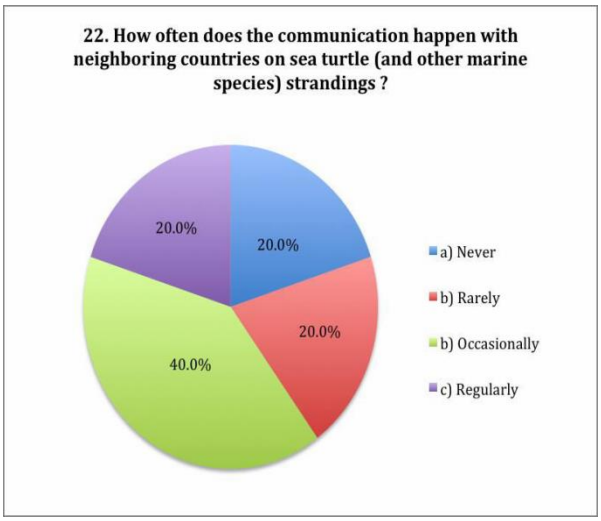


Annex 6- Graphs on Part IV: Coordination









Annex 7 – Graphs on Part V: Needs