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

12th Scientific Committee Meeting

Viña de Mar, Chile, October 27-29, 2015

CIT-CC12-2015-Doc.5

Report of the Twelfth Meeting of the IAC Scientific Committee

1. Welcome Remarks

The Twelfth Meeting of the Scientific Committee (SC12) of the Inter-American Convention for the Protection and Conservation of Sea Turtles (IAC) was held in Viña del Mar, Chile in the O'Higgins Hotel. The welcome remarks were given by Mr. Claudio Bernal, Scientific Director of Instituto de Fomento Pesquero (IFOP), Mr. Diego Alejandro Albareda, IAC Scientific Committee Chair; and Ms. Verónica Cáceres Chamorro, IAC's Secretary *Pro Tempore*.

2. Election of the Rapporteur

Ms. Rocio Varas (Chile) was appointed as the rapporteur with the help of the Secretariat *Pro Tempore*. This report was translated to English by Ingrid Yañez.

3. Adoption of the Agenda and Introduction of Participants

The agenda was adopted with the additional inclusion of the following topics (Annex I): a) Presentation by Ecuador and Mexico on sea turtle stranding, b) US and the Secretariat *Pro Tempore* requested to include under other business the review of the IOSEA–IAC document on illegal trade of sea turtles, c) SC Chair proposed to discuss under other business the IAC participation in the 36th International Sea Turtle Symposium in 2016.

The meeting was attended by delegates and advisors from 14 IAC Parties, and accredited observers from The Leatherback Trust, WWF and the Inter-American Association for Environmental Defense (AIDA) (Annex II).

4. Report of the Chair of the IAC Scientific Committee

Dr. Diego Albareda (Argentina) presented a summary of the implementation of the 2015 Committee's Work Plan with its inter-sessional activities carried out by the Working Groups (WG) in the areas of: Climate Change, Fisheries Interactions, Strandings, Marine Debris and Annual/Index Beaches Reports. Emphasis was placed on the Resolutions adopted by COP7 on the Eastern Pacific (EP) Leatherback turtle and the Loggerhead turtle, as well as the compliance with them based on the report that the Consultative Committee of Experts (CCE) presented to the 7th Conference of the Parties (COP7). The Chair

recommended that during the meeting, the committee has in mind and focus on the Resolutions adopted by the COP in order to effectively support the compliance by each Party.

5. Presentation on Sea Turtle Conservation in Chile

The following Chilean researchers and collaborators gave presentations: Mr. Jorge Azócar from Fisheries Development Institute, Mr. Walter Sielfeld Kowald from Arturo Pratt University, Ms. Rocio Alvarez-Varas from QARAPARA Sea Turtles Chile, Mr. Miguel Donoso from Pacifico Laud, and Mr. Peter Dutton from NOAA in collaboration with Pacifico Laud.

The summary of the presentations is in Annex III.

6. Report of activities of the IAC Secretariat *Pro Tempore* and Resolutions adopted at COP7

Ms. Verónica Cáceres Chamorro provided an overview of the Secretariat *Pro Tempore* activities and the results of the COP7. In the presentation, she highlighted the following aspects:

a) In the COP7 three resolutions were approved: Exceptions of Costa Rica, Eastern Pacific (EP) Leatherback Turtle Conservation and Loggerhead Turtle Conservation

b) International Cooperation: A joint document on sea turtle trafficking has been drafted along with the IOSEA Secretariat to be submitted to the CITES Standing Committee Meeting in 2016. The collaboration with the Convention on Migratory Species (CMS) in the implementation of the action plan for the loggerhead turtle (*Caretta caretta*) as indicated in the resolution adopted by the COP will be continued. Participation in Convention on Biological Diversity (CBD) meetings on issues related to marine debris and marine spatial planning.

c) Financial Resources Management: A proposal submitted by the IAC Secretariat PT to the Marine Turtle Conservation Fund (MTCF-USFWS) was approved in 2015, which is applied to support the IAC committees meetings.

d) Support to the WG: The Secretariat *Pro Tempore* currently provides support to 10 WG of the Scientific and Consultative Committees that work in an inter-sessional way.

7. Report of the Eighth Meeting of the Consultative Committee of Experts (CCE8)

Mr. Paul Hoetjes, CCE Chair (Caribbean Netherlands) presented a summary of the results of CCE8. The preparation of three Resolutions for the COP7 was highlighted. The most discussed topics were: the financial implications of the EP Leatherback Resolution and the level of compliance with the resolutions by the IAC Parties. Modifying the IAC Annual Report and the recommendation for the removal of the table on compliance with Climate Change Resolution in that report were also discussed.

8. Report of the Fisheries Interactions Working Group

Mr. Francisco Ponce (Chile), Fisheries WG coordinator made his presentation describing the work done in the inter-sessional period. As a result of the survey on trawling fisheries targeted at non-crustacean species, 10 out of 15 countries responded, where only 3 (US, Argentina and Brazil) indicated interaction

with sea turtles in this fishery. Countries that have not yet sent their survey will be requested again to fill out the survey in order to include this missing information into the general analysis. Once the results include all countries, the WG will issue its recommendations.

Delegates requested additional time to complete the survey because it takes time to collect information from fisheries agencies. It was recommended to make the request for this information to the CCE, which has delegates working in fisheries agencies.

Delegates discussed what is the best format to fill out surveys, either an online tool or the traditional method (Word document). The advantages of online tools, such as the filling and analysis speed, plus that the content cannot be altered (does not allow editing) were considered. The disadvantages included informatics security issues considering that some offices do not allow the installation of software and some delegates feel it is not a secure method for sharing information. It was proposed to use documents in Word or PDF that allows editing.

Agreement: Send surveys on trawling fisheries directed to non-crustacean species in a Word document or PDF format that allows editing to SC delegates of Uruguay, Mexico, Panama and Peru, with December 1st 2015 as deadline. The Fisheries WG will present results in SC13.

9. Scientific Committee Activities on the Loggerhead Turtle Resolution

A working group was formed to follow up on the Loggerhead Turtle Resolution CIT-COP7-2015-R3 with the following members**:** US (Jeff Seminoff, coordinator), Ecuador (Eduardo Espinoza), Brazil (Neca Marcovaldi and Alex Santos), Francisco Ponce (Chile), Kirah Foreman (Belize), Carolina Montalvan (Honduras) and Caribbean Netherlands (Julia Horrocks). The Loggerhead WG will prepare the report on the status of IAC region *Caretta caretta* populations as indicated by the resolution.

Delegates from Ecuador, US and Chile recommended taking advantage of the synergies with the CMS Action Plan and the information contained in the 2015 Marine Turtle Specialist Group Report (MTSG, IUCN) for this species. It was suggested to establish a formal agreement with these groups to use their information. Work plan and activities of this group were approved in the plenary and are included in section 17 of this report.

Agreement: Loggerhead WG was formed and its work plan developed in order to prepare the report of the *Caretta caretta* populations' status to submit to COP8 in 2017. To facilitate access to the information, Secretariat *Pro Tempore* will start communication with CMS and MTSG requesting collaboration for the report. It was agreed that IAC SC members who are also MTSG members would facilitate the procedure.

10. Scientific Committee Activities on the EP Leatherback Resolution CIT-CC12-2015-Doc.2

The SC Chair presented the document sent by EP Leatherback WG containing topics to be included in the report to be prepared for COP according to Resolution CIT-COP7-2015-R2. He reminded participants that EP Leatherback WG consists of members of both IAC Committees and that is needed coordinated actions between the WGs with activities mentioned in EP Leatherback Resolution to work together.

Agreement: Document CIT-CC12-2015-Doc.2 (Annex IV) was approved with SC edits and will be sent to the Leatherback WG with the recommendation to focus on the conservation priorities.

Agreement: Fisheries WG will support the implementation of the EP Leatherback Resolution with an analysis identifying areas where leatherbacks interact with fisheries to be presented at the next meeting SC13.

11. Progress report on the implementation of the IAC's recommendations with respect to the exceptions of Guatemala, Panama and Costa Rica

Costa Rica:

The delegate of Costa Rica, Mr. Didiher Chacón, presented on the progress in implementing the Resolution of exceptions for the use of *L. olivacea* eggs at Playa Ostional. The delegate presented the criteria/indicators for selection of the best method between the two current methods (Chavez-Morera and Valverde) to estimate abundance of nesting females in Playa Ostional, which are sample type, error, variability, methodology sensitivity, sampling area, history and published methodology. The delegate requested SC recommendations on these selection criteria, which will be discussed in the Nesting Beaches WG.

The US delegate, Dr. Jeff Seminoff, said the Valverde methodology has much scientific weight as it is solid and has been validated for many years. He recommended that the chosen method collect data that can be compared with nesting data from previous years in order to avoid loss of information. The delegate from Caribbean Netherlands (Julia Horrocks) suggested the use of drones may improve the estimation. She noted that this allows work at night because drones have infrared cameras and perhaps it could be useful to validate the methods.

The Nesting/Index Beaches WG reviewed the criteria proposed by Costa Rica to choose the appropriate methodology and its recommendations were approved in plenary.

Agreement: SC recommended the inclusion of two additional criteria to analyze the methods of population abundance estimation in Ostional: 1) Ease of application and 2) How are they compared with the methods implemented in Escobilla, an arribada beach in Mexico.

Panama:

Mr. Marino Abrego (Panama), on behalf of the Environmental Authority of Panama (ANAM) presented the progress in the implementation of Resolution CIT-COP6-2013-R1 and the activities of Panama, including the development of Situational Diagnosis of the Isla Cañas Wildlife Refuge (RVSIC), the implementation of the sea turtle monitoring program, the 10 years financial proposal, the adaptation of RVSIC hatchery, and tagging program of nesting females. Additionally, in coordination with the Aquatic Resources Authority of Panama (ARAP), the project "Oyster Farm and commercialization" in Isla Cañas is being carried out. Oyster farming is an alternative provided by ARAP to coastal villagers to provide food and jobs, improve their economy and reduce the exploitation of other water resources. This activity is an alternative to avoid the commercialization of sea turtle eggs outside the protected area.

Guatemala:

Mr. Edson Flores (Guatemala) on behalf of the National Protected Areas Council (CONAP) presented the progress in the implementation of Resolution CIT-COP6-2013-R1. He mentioned the expansion of three protected areas, training workshops for hatchery managers to improve their management in the Pacific Coast, patrols to reduce mortality by incidental or directed fishing, awareness to the population of the delivery of 20% share for the conservation and protection of olive ridley turtle eggs and approval by the National Council for Protected Areas (Resolution 05-20-2014) of the update on the National Strategy for Sea Turtle Management and Preservation in Guatemala.

US delegates suggested that the progress in implementing the Resolution should be presented next year based on specific items in the resolution to facilitate SC evaluation of progress. Every year, good information is presented but as it is not organized, monitoring of progress in implementing the recommendations of Resolution CIT-COP6-2013-R1 is difficult.

The delegate of US, Ms. Yonat Swimmer, presented 3 formats for preparing the progress report on the implementation of the Resolutions of Exceptions. These formats were edited and approved for use by SC.

Delegates congratulated the speakers for their efforts in compliance with the recommendations for their exceptions and agreed to send a letter to the respective countries encouraging them to continue these efforts.

More details of the presentations on exceptions are provided in Annex V.

Agreement: SC requested Panama, Guatemala and Costa Rica to submit a summary on the progress of implementation of Resolution on Exceptions in the agreed format corresponding to the progress in the first 3 years and 2 years (as applicable) after the Resolution was adopted. This report should be sent to the Secretariat *Pro Tempore* 45 days before the next meeting SC13. It was also agreed to send a note to the Focal Points of the 3 countries with SC comments on the progress up to date.

12. Discussion of the technical document on strategies for mitigating the impact of climate change on nesting beaches habitats CIT-CC12-2015-Tec.10

Dr. Julia Horrocks (Caribbean Netherlands) as coordinator of the Climate Change WG presented the technical document prepared by the group. She remarked that the recommendation made by CCE to COP7 to remove the table on compliance of the climate change resolution included in the IAC Annual Report may have been a premature decision since it only was used in the 2014 Annual Report, which is too little time to assess the value of the form in monitoring compliance of this resolution by the Parties. Dr. Julia Horrocks highlighted that the Climate Change Resolution is very important, especially to island regions, and the information on compliance should be properly documented.

CCE Chair said that although they had recommended removing the climate change table from the Annual Report, he recommended that the SC should request that the CCE reconsider this decision. The delegate from Caribbean Netherlands proposed an alternative could be to include indicators on climate change compliance in the index beaches table of the IAC Annual Report if the decision was not reversed.

The delegate from the US proposed the development of a new form to send periodically to Parties that would allow climate change data from index beaches to be analyzed by the SC.

The Climate Change WG developed its work plan for 2016 and it is included in section 17 of this report.

Agreement: Document CIT-CC12-2015-Tec.10 (Annex VI) was approved as technical document. This information will be sent to the IAC Focal Points with the recommendation to be used as a guide in implementing the Climate Change Resolution CIT-COP-2009-R5.

Agreement: SC Chair will request to the CCE to reconsider removal of the table of compliance with the Climate Change Resolution from the IAC Annual Report.

Agreement: WG comprised by Caribbean Netherlands (coordinator) and US will revise the index beach table that already exists in Annex 2 of the IAC Annual Report to collect information on monitoring of climate change parameters, if the CCE does not reverse its decision to remove the table of compliance of the climate change resolution from the Annual Report.

Agreement: Climate Change WG will develop a form that will request information from the Parties periodically to allow analysis of climate change data collected at index beaches. They will use information contained in the 2014 IAC Annual Reports on compliance with the Climate Change resolution to develop the form and will present their findings in the SC13.

13. Marine Debris and their Impact on Sea Turtles CIT-CC12-2015-Tec.11

Mr. Diego Albareda (Argentina), as coordinator of the Marine Debris WG presented the technical document CIT-CC12-2015-Tec.11, which highlights the negative impacts of marine debris on marine turtles, and provides a summary of information available on the issue to guide IAC Parties in the implementation of their mitigation of marine debris strategies .

The delegate from Peru, Mr. Jorge Zuzunaga, proposed that at the next meeting each country report how they are addressing the problem, which program and activities are being carried out, etc.

Agreement: Document CIT-CC12-2015-Tec.11 (Annex VII) was approved as IAC technical document and will be available on the IAC website.

14. Results of sea turtle stranding questionnaire in the IAC region

Mr. Didier Chacon (Costa Rica), as coordinator of the WG presented the results of the stranding characterization in the IAC region. He shared the results from 13 countries that completed the questionnaire. The results are a diagnosis of the situation in each country. It was noted that in most countries, the stranding are documented through questionnaires (85%) and generally this work is carried out by government agencies and NGOs. Also, in general they use special forms to record the events. Communication between the various working groups varies by country. In most countries there are organizations that respond to stranding events, and indicate that nesting beaches are monitored. 61.5% indicated that they perform necropsies, and that the majority is carried out on animals found on the beaches. 40% of the necropsies are mostly performed in the field and carried out by veterinarians. In 90% of the cases, forms are used and samples for analysis (histopathology, culture, toxicology, parasitology,

etc.) are taken. In most cases there are laboratories, and in 75% of cases the services provided are charged. The communication between neighbor countries is variable and among the most important needs are necropsy training and coordination/collaboration among countries to share information. The main weaknesses are: a) Poor communication between the competent organizations, limiting the exchange of information b) Lack of human and technological capacity.

Stranding WG developed its 2016 work plan, which was approved in plenary and it can be found in section 17 of this report.

Agreement: Stranding WG will prepare a technical document, deepening the preliminary analysis carried out for SC12, supplemented by the recommendations that emerged from its analysis, to be presented in SC13.

Ecuador Presentation – Stranding

Mr. Eduardo Espinoza (Ecuador) reported that in 2015, 113 turtles were reported stranded. Of that number 28 occurred in mainland Ecuador. All sites were outside of protected areas. Some animals were necropsied, while others were taken to recovery places where they were released after treatment. The cause of death could not be determined in most of them due to the state of decomposition. The leading cause of death is injuries caused by interaction with fishing vessels; affecting leatherback and green turtles. Ecuador has developed its data collection forms based on the WG recommendations and works with a local veterinarian, training and community awareness activities for school children. They have trained volunteers from the local community. An alert phone number has been created where community members, environmental police, navy, lifeguards can call and then receive instructions from biologists to address stranding cases.

The Secretary *Pro Tempore* congratulated Ecuador for their efforts in attending the stranding events using the material provided by the IAC Scientific Committee.

Mexico Presentation

Dr. Heriberto Santana (Mexico) made a presentation on stranding in the Gulf of Ulloa region, BCS, Mexico-*Caretta caretta* and made a reference to the mass stranding in 2010-2011. In the presentation, he emphasized that CONAPESCA issued an agreement in 2015 to establish the fishing refuge zone and measures to reduce fishery interactions with sea turtles in the western coast of Baja California Sur. The stranding events have occurred intermittently and cyclically in several species. There are many communities that depend on fishing, and loggerhead turtles have been affected tremendously, but there is no clarity on the specific causes of death due to the advanced state of decomposition of the stranded animals.

The US delegate congratulated Mexico for their progress addressing the stranding cases of *Caretta caretta*, especially the implementation of on-board video monitoring systems. Also they welcomed the closure of areas in Gulf of Ulloa where the sea turtles have interactions with fisheries, and then make them into reserve. It is a very important step for the conservation of this species. In a year, Mexico has developed a strong management plan in the Gulf of Ulloa, and welcomes this effort.

15. SC Working Groups

Participants begin their work in groups according to the following topics: 1) Nesting/Index Beaches, 2) *Caretta caretta* WG, 3) Fisheries Interactions WG, 4) Stranding WG, 5) Climate Change WG, 6) IOSEA-IAC document on Sea Turtle Illegal Trade WG.

16. Presentation of the Reports and Results of the Working Groups

The coordinators of each WG presented their reports and work plans in the plenary. The Scientific Committee approved their proposed inter-sessional activities 2015-16.

17. SC Work Plan 2016

The delegate of Honduras Ms. Carolina Montalván responsible for updating the SC Work Plan (2015-2016), presented a proposal taking into account the contributions of each WG. The plenary approved the SC Work Plan CIT-CC12-2015 CC-Doc.3 (Annex VIII) and the work plan of each of the SC Working Groups (Annex IX).

18. Review and validation of the IAC Annual Report format

The delegate of US Dr. Jeff Seminoff requested SC opinion on the use of the table annex 3 of the IAC Annual Report that collects information on foraging areas of sea turtles. He said that to collect all US foraging information is an extensive task. He asked if this is the case for other countries, and if there is clarity and usefulness on the need to collect this information each year. He asked to present the table less frequently once the use of information within the SC is defined.

After listening to various opinions, it was agreed that table 3 of the Annual Report on foraging areas information would be reviewed.

Agreement: EP Leatherback, Loggerhead, Fisheries and Stranding WGs will use the information available in the table annex 3 of the Annual Report for the achievement of their respective inter-sessional activities, and simultaneously make an analysis of the usefulness of the information in this annex as a working tool. The result of this evaluation will be discussed in SC13.

19. Other Business / Collaboration with other International Organizations

- Collaboration with other International Organizations - IOSEA - IAC: The document on sea turtle traffic in the regions of IOSEA and IAC will be presented at the CITES Standing Committee Meeting in 2016. The Working Group composed of Dr. Julia Horrocks (Caribbean Netherlands), Mr. Didiher Chacón (Costa Rica) and Mr. Paul Hoetjes (CCE Chair) will forward the document to the IAC Secretariat PT who will share with the Secretariat of IOSEA, including the IAC edits.

- International Sea Turtle Symposium - Peru 2016: It was agreed to organize the IAC participation in the international sea turtle symposium with an agenda item at the RETOMALA meeting.

20. Approval of SC12 Recommendations and Agreements

The SC12 Recommendations and Agreements document CIT-CC12-2015-Doc.4 (Annex X) was approved in plenary.

21. Election of next meeting location

The Government of Belize offered to host the next meeting of the IAC Scientific Committee (SC13) in August 2016 (exact dates to be determined). The delegates thanked Belize for the generous offer.

22. Closing remarks

The SC Chair concluded the meeting with his final remarks with gratitude from all participants to the host country and the meeting organizers in IFOP and the Chilean Fisheries Under - Secretariat.

ANNEX I. Agenda CIT-CC12-2015-Doc.1

Agenda 12th IAC Scientific Committee Meeting
October, 2015, Viña del Mar, Chile

DAY /TIME	AGENDA ITEM	Presenter
Day 1		
8:30 am	Registration	
9:00 am	1. Welcome and Opening Remarks	Claudio Bernal – IFOP Diego Albareda - SC Chair Veronica Caceres- IAC Secretary PT
9:20	2. Election of meeting rapporteur	Diego Albareda – SC Chair
9:30	3. Adoption of the Agenda and introductions of participants	
9: 40	4. Summary of 11th Scientific Committee Meeting	
10:00	5. Sea Turtle Conservation Activities in Chile	IFOP, University Arturo Pratt, QARAPARA, and Pacífico Laúd
10:30	Coffee	
10:45	6. Report on Activities of the Secretariat *Pro Tempore* and Resolutions adopted in COP7	Veronica Caceres –IAC Secretary *Pro Tempore*
11:00	7. Summary of 8th Consultative Committee Meeting	Paul Hoetjes, CCE Chair
11:20	8. Report of fisheries interactions inter-session Working Group *The coordinator will provide a summary of activities*	Francisco Ponce -WG Coordinator
12:00	Lunch break	
1:00 pm	9. Loggerhead Turtle Resolution activities for the Scientific Committee Working Group Formation	
1:30	10. East Pacific Leatherback Resolution activities for the Scientific Committee	
2:00	11. Report progress on implementation of IAC recommendations on exceptions by Guatemala, Panama and Costa Rica	Delegates from Guatemala, Panama and Costa Rica
3:00	Coffee	
3:20	12. Discussion of technical document on mitigation strategies to reduce the impact of climate change on	Julia Horrocks- WG Coordinator

	nesting beaches	
4:00	Session adjourn	
	DAY 2	
9:00 am	13. Discussion of technical document on marine debris and impact to sea turtles	D. Albareda
9:20	14. Results from stranding surveys in IAC region and other work from WG	Didiher Chacon / D. Albareda
10:00	Coffee	
10:15	15. Working Groups formation and discussions by topic: – Loggerhead WG - Nesting data WG *2 working groups meet before lunch break*	
12:00	Lunch break	
1:00 pm	Continue Working Groups formation and discussions by topic - Fisheries WG - Strandings WG - Sea Turtle traffic IOSEA-IAC	
3:00	Coffee	
3:20	16. Presentation of Working Groups Reports The rapporteurs of the WGs present their reports and work plan to the plenary (two groups) Loggerhead WG- *Work plan for group* Nesting WG- *Proposal for dates to turn in IAC Annual Report*	WG Rapporteurs
5:00	Session adjourn	
	DAY 3	
9:00 am	Continue presentations Working Groups Reports -Strandings: Next steps for SC - Fisheries : Results from survey on trawl fisheries for species other than crustaceans	WG Rapporteurs
10:30	Coffee	
10:45	17. Update the Scientific Committee Work Plan (2016)	Work Plan Working Group
11:00	18. Review and validation of IAC Annual Report format	
12:00	Lunch break	
1:00 pm	19. Other business *Participants are invited to raise any other issue not included in the preceding agenda items, but relevant to the scope of the meeting.*	
1:40	20. Adoption of Recommendations and Agreements of meeting	SC Chair
2:40	Coffee	
3:00	21. Preparation of next meeting (SC13) Delegates are invited to propose locations and preliminary dates for the next meeting	SC Chair
3:30-4:00	22. Closing remarks	IAC SC Chair

ANNEX II. Participant List CIT-CC12-2015-Inf.1

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ANNEX III. Sea Turtle Conservation – Chile - Presentations

Jorge Azócar from Fisheries Development Institute (IFOP, Instituto de Fomento Pesquero) gave a presentation on the IFOP activities regarding sea turtle research and conservation in Chile. The presentation described biological sampling of sea turtles by observers on board of industrial and artisanal longline fleets.

Walter Sielfeld Kowald (Tortumar Chile) on behalf of the University Arturo Pratt presented on the conservation of green/black turtle *Chelonia mydas* in northern Chile. He mentioned the work on Chipana beach (Tarapaca region) and Chinchorro beach (Arica and Parinacota regions). The study concluded that the main cause of death of turtles is drowning and shell fractures, most likely associated with purse seine fishing for anchovy. In future studies, they expect to accurately estimate the population of green turtles feeding in those areas in northern Chile.

Rocio Alvarez-Varas from QARAPARA Sea Turtles Chile shared her experiences in four areas: Research, Stranding/Rehabilitation, Environmental Education and Outreach. She mentioned the Bahia Salado Project (Atacama region, in northern Chile), which is the southernmost area for black turtle *Chelonia mydas* in the Eastern Pacific (EP), where they monitor sea turtles and their habitats since 2013 (ecology and health studies). Also they have been disseminating their activities in this particular region in workshops and scientific meetings.

Miguel Donoso from Pacifico Laud presented a progress report of the project on fisheries characterization in Chile, which interacts with EP leatherback turtles. Project funded by MTCF-CIT-Under Secretariat of Fisheries/Chile. The objective is to understand the distribution of the leatherback in the EP and its interaction with fisheries in Chile. The study area goes from Arica to Lebu. The methodology includes the use of a survey to obtain information on bycatch. The results indicate that the leatherback turtle interact with artisanal purse seine fisheries at the port of Antofagasta, and also with longliners. In the future the idea is to continue train fishermen, in order to improve their practices on releasing sea turtles caught incidentally (emphasizing in the ports where most interaction occurs). It has been noticed that there is willingness on their part (fishermen) to apply best practices.

Peter Dutton from NOAA presented on genetic studies of mitochondrial markers in leatherback turtles sampled in Chile. The results show that in the Pacific there are two stocks, one in the Western Pacific and one in the Eastern Pacific. NOAA has been working with scientists from Chile for more than 10 years, producing very important results to better understand sea turtle populations in Chile.

ANNEX IV. CIT-CC12-2015-Doc.2

Proposed contents of the Leatherback Working Group Report to monitor the Resolution on the Conservation of the Leatherback turtle (*Dermochelys coriacea*) in the Eastern Pacific (CIT-COP7-2015-R2)

The 7th Conference of the Parties (COP7) during their meeting in Mexico in June 2015, adopted the Resolution on the Conservation of the Leatherback turtle (*Dermochelys coriacea*) in the Eastern Pacific

(CIT-COP7-2015-R2). In this resolution among other things, IAC Parties are requested to agree on the five-year strategic actions detailed in the Annex 1 of the resolution. Furthermore, the IAC Scientific and Consultative Committees, in collaboration with the Secretariat *Pro Tempore* and other Parties, are requested to evaluate the implementation of those strategic actions through annual meetings of the working group appointed by the Committees, to prepare a consolidated report to the COP, Focal Points and Secretariat *Pro Tempore*. This evaluation will be conducted with the support of the Leatherback Working Group (WG) annual report.

The objective of this group is to monitor/evaluate the implementation of Resolution CIT-COP7-2015-R2, guide Parties in the areas where they need to improve the implementation and report to the COP on this.

The Leatherback WG presents to the 12th Scientific Committee Meeting (SC12) a proposal of the contents of the report that the Leatherback WG must prepare following the mandate in the aforementioned resolution. The group requests to the SC12 their comments and recommendations on the proposed contents to create a report to be submitted to the IAC Conference of the Parties.

This document was prepared by Joanna Alfaro (Coordinator/Sectoral CCE), Laura Sarti (Mexico), Earl Possardt (USA), Jorge Zuzunaga (Peru), Evelyn Paredes (Peru), Francisco Ponce (Chile), and Diego Amorocho (Sectoral CCE).

Proposed contents of the Report to monitor the Resolution on the Conservation of the East Pacific leatherback turtle

1) Background/Introduction: a brief introduction of the report contents, who are the members of the working group, and what period of time the report corresponds (e.g. data submitted for the period from May 2013 to December 2013).

2) Leatherback WG Activities: would include the outcomes of the group annual meeting (i.e. meeting or conference call, number, dates, participants, important meeting notes).

3) Leatherback WG Agreements: products of the WG activities.

4) Results of the evaluation of compliance with the Resolution on the Conservation of the Leatherback turtle (*Dermochelys coriacea*) in the Eastern Pacific (CIT-COP7-2015-R2) based on the IAC Annual Reports of the Parties within the range of the resolution (include years of annual reports). This includes measures that the Parties have taken to mitigate the impacts on nesting beaches and fisheries (documentation obtained from the Annual Reports, or officially requested to the Parties).

5) Review other reliable information sources on Eastern Pacific Leatherback (e.g. peer reviewed scientific papers, press releases, reported by the Parties) and, if appropriate, include these records in the report prepared by the Leatherback WG.

6) Compile from the Annual Reports of the Parties, detailed information (i.e. new technologies, implementing agencies, mitigation measures, fisheries sampled, working methods), and to the extent possible discuss and include indicators of results.

7) Annual status of the nesting populations at the index beaches: identify the optimal and minimum information to be included in this section. Identify those index beaches that should be included and the

Parties where they are located. Use to the extent possible the document of the Nesting Beaches Working Group (CIT-CC10-2013-Tec.5).

8) Based on the Annual Reports, provide a table of records (stranding and at sea) of Eastern Pacific Leatherback presence (mortality, sighting, entanglement), and define the optimal information to be included for each event (i.e. date, location, coordinates, condition).

9) Leatherback WG Recommendations to improve the implementation of the Resolution.

ANNEX V. Report on Exceptions from Costa Rica, Panama and Guatemala

PROGRESS REPORT ON THE IMPLEMENTATION OF RESOLUTION CIT-COP6-2013-R1, ON EXCEPTIONS UNDER ARTICLE IV (3A AND B) FOR SUBSISTENCE HARVESTING OF *Lepidochelys olivacea* EGGS, IN PANAMA.

PREPARED BY THE DEPARTMENT OF COASTAL AND SEAS BIODIVERSITY, DIRECTORATE OF INTEGRATED MANAGEMENT OF COASTAL AND SEAS, MINISTRY OF ENVIRONMENT, REPUBIC OF PANAMA

Presentation by Mr. Marino Abrego

Regarding the request for a report of the activities undertaken by Panama in advance to comply with the Resolution on exceptions adopted by the IAC, to be presented at the 12th IAC Scientific Committee Meeting, we communicate the following:

1. As of December 2014, a consulting period began: Development of situational diagnosis of Isla Cañas Wildlife Refuge, Implementation of a sea turtle monitoring program, and Adequacy of a sea turtle hatchery.
2. As a result of the consulting period the following products were achieved:
    a. Situational Diagnosis of the refuge which included a Participatory Rural Assessment, a Rapid Ecological Assessment and an Identification of Conservation Objects with the purpose of been considered for the future development of Isla Cañas Wildlife Refuge Management Plan.
    b. Training workshops for community members:
        i. Research, Management and Monitoring Techniques on Sea Turtles (2 workshops).
        ii. Fisheries and Threats.
        iii. Monitoring and Work Techniques with Sea Turtles.
        iv. Introduction and consultation on the Protocol of Subsistence Harvesting of sea turtle eggs. It has not been approved, but it was discussed with the community.
    c. Program Implementation on Sea Turtles Monitoring and Operational Plan Proposal for the first three years, and Economic Proposal for the Program Implementation for long term (10 years).
        i. Community members were trained to undertake monitoring and beach patrols from January to April 2015, during the solitary nesting season.
        ii. Delimitation and zoning of 14 kilometers of beach and natural nesting area, every 100 meters.

iii. Tagging program of nesting females began.

d. Construction of two artificial hatcheries, 13m x 6m, located in two sectors of the beach with capacity for 156 nests each. All materials for patrols, monitoring and manufacture of anti-aphids mesh cylinders for the nest protection were provided.

After completion of the consultancy, the following was achieved:

1. Hiring a biologist who currently coordinates and gives continuity of the Monitoring Program with the voluntary cooperation of community members and students from the University of Panama.
2. Presence of two additional police officers (members of the Ecological Police) who participate and are in charged of the Surveillance and Control Program.
3. Relevant information is gathered in a scientific manner that contributes to the compliance of the IAC recommendations.
4. Additionally, in coordination with the Aquatic Resources Authority of Panama (ARAP), the project "Farming and commercialization of oysters" on Isla Cañas has been performed. This activity is conducted in conjunction with Aquaculture, Fisheries and Agro-touristic Association of Isla Cañas (ACPAT). Thanks to the knowledge and training provided by officials of the ARAP's Research and Development Directorate, the oyster's farming have been running since 2014. Shellfish farming is a low cost activity, since the food for oysters is zero, while in others farms such as shrimp or fish is very expensive. Members of the association perform periodic cleaning of the oyster's baskets where they grow until they get the right size to be sold. Oyster farming is an alternative that ARAP provides to coastal residents in order to provide food and work, improve their economy and rationalize the exploitation of other marine resources. It constitutes an alternative to avoid the commercialization of sea turtle eggs outside of the protected area.

PROGRESS REPORT ON THE IMPLEMENTATION OF RESOLUTION CIT-COP6-2013-R1, ON EXCEPTIONS UNDER ARTICLE IV (3A AND B) FOR SUBSISTENCE HARVESTING OF *Lepidochelys olivacea* EGGS, IN GUATEMALA.

PREPARED BY THE NATIONAL COUNCIL OF PROTECTED AREAS (CONAP)
Presentation by Mr. Edson Flores (CONAP)

CONAP as the governing body of the marine turtle resource and representative of Guatemala to the IAC, following up the exception granted to Guatemala, actively participated in actions to strengthen conservation and protection of sea turtles through various activities such as:

- Continue with the implementation of Resolution No. 01-21-2012, in which an authorization is granted to take only olive ridley (*Lepidochelys olivacea*) eggs.
- Training workshops for hatchery managers to improve handling practices of olive ridley eggs in hatcheries of the Pacific Coast.
- Guidelines for activities of olive ridley hatchlings releases, used as mechanisms for public awareness.
- Patrols carried out by DIPESCA, CONAP and INAB with the aim of reducing mortality caused by incidental or directed fishing, raise public awareness on the corresponding 20% share of conservation and habitat protection. Financial support for the project GEF-Marino (UNDP).
- Implementation of three areas and expansion of two (including terrestrial and marine environment) Monterrico, Sipacate-Naranjo, Manchón Guamuchal, Hawaii, Las Lisas-La Barrona. Funded by project GEF-Marino.

- 47 cases of stranding have been documented in 5 locations in the Pacific Coast, using an established stranding form.
- CONAP through Resolution 05-20-2014 approves the update of the National Strategy for Management and Conservation of Sea Turtles Guatemala.
- CONAP authorities will review all aspects before the final socialization of "Normative for the Management and Conservation of Sea Turtles."

PROGRESS REPORT ON THE IMPLEMENTATION OF RESOLUTION CIT-COP7-2015-R1, ON EXCEPTIONS UNDER ARTICLE IV (3A AND B) FOR SUBSISTENCE HARVESTING OF *Lepidochelys olivacea* EGGS, IN COSTA RICA.

Presentation by Mr. Didiher Chacon

Regarding the exception for the use of *Lepidochelys olivacea* eggs in the National Wildlife Refuge Ostional, the Ministry of Environment and Energy (MINAE) in alliance with other partners has approved a new five-year plan which includes among other things the creation of a technical advisor committee, convened and consulted with the Ministry of Water, Coastal and Wetlands. This committee has designed and discussed five criteria to discern the method to monitor Ostional beach. These criteria are:

1. Sample type
2. Error
3. Variability
4. Methodology sensitivity/accuracy/realistic
5. Sampling area
6. Background
7. Methodology publishing

The presentation and explanation of these criteria have the purpose to get the IAC Scientific Committee endorsement and ultimately determine the monitoring methodology.

With respect of tracing eggs obtained in Ostional, only two types of bags (12 eggs and 200 eggs) will be manufactured. These bags will have a logo and be made out of oxo-degradable plastic in order to be destructed almost immediately and annul the re-use by the black market. Logos on stationary have been changed, and it has been proposed that a watermark is included to make them unique. Regulations on social donations of eggs have been proposed, and they will be approved by SINAC and ADIO.

For coordination purposes, an arribada alert will be activated via electronic media and given the facts of "tourist invasion" occurred in last September, control mechanisms have been proved and established.

The design of the indicators of abundance and hatching success is under work.

The following work plan has been set:

1. 12/15/15, Form a committee to evaluate methodologies for monitoring Ostional beach.
2. 3/31/16, Invitation to defend methodologies.
3. 6/1/16, Conclusion of methodology assessment.
4. 8/30/16, Report to the IAC on methodology selection.

ANNEX VI. CIT-CC12-2015-Tec.10 Climate Change

Mitigation strategies to reduce the impact of climate change on nesting beaches

This document was prepared by the Climate Change Working Group of the IAC Scientific Committee, and it contains recommendations on: a) the minimum environmental data to collect from the index beaches identified by the IAC Parties to allow monitoring of climate change impacts on the habitat and b) mitigation strategies to reduce the impact of climate change on nesting beaches. The goal of this document is to be used by IAC Parties in the implementation of the Resolution CIT-COP4-2009-R5 on climate change adaptation of sea turtle habitats.

1. Nesting behavior in sea turtles

Sea turtles lay their eggs in clutches in sandy beaches, and egg incubation occurs within a 10^{o}C thermal tolerance range of about 25-27 ^{o}C to 33-35^{o}C, which varies with species and populations (Ackerman 1997). Embryos may be more sensitive to the time spent at a potentially stressful temperature than to the temperature alone (Howard et al. 2014). Incubation duration decreases with increasing temperature within the thermal tolerance range (Ackerman 1997). Air temperature at the sand surface affects nest temperature (Standora & Spotila 1985;Ackerman et al. 2004), with factors that influence solar radiation exposure and absorption, such as aspect and shading from vegetation (Horrocks & Scott 1991), sand colour (Hays et al. 2001), distance of the clutch from the sea (Fuentes et al 2009, Girondot & Kaska 2015), nest depth, and season (Davenport 1997; Baker-Gallegos et al. 2009) all potentially impacting the incubation temperature that eggs experience. Aside from these physical factors that affect beach temperatures, eggs generate their own metabolic heat during development and this varies with clutch size and section of the clutch (Broderick et al. 2001). High temperatures during incubation have been associated with decreased oxygen levels which have been linked to smaller sized hatchlings with reduced locomotor abilities that may affect emergence from the nest, and expose them to higher predation both during sea-finding and in the initial swim offshore (Matsuzawa et al. 2002; Segura & Cajade 2010; Howard et al. 2014).

The characteristics used by females to select nest sites on the beach are still not well understood. Most sea turtles show high fidelity, with the nesting habitat used by an adult female located within the region where she was born (Miller 1997), and nesters typically returning to nest within 5 km of their previous nests (Miller et al. 2003). Leatherbacks tend to place their nests more widely than other species (e.g. Witt et al. 2008). Nearshore bathymetry is a likely factor in determining the point of emergence on the beach (Provancha & Ehrhart 1987), but females may choose the location for egg deposition based on slope, distance inland from the high water mark, sand humidity, sand particle size, temperature and/or presence of vegetation *inter alia*. For most sea turtle species, these cues lead females to nest at higher beach elevations (Horrocks & Scott 1991; Wood and Bjorndal 2000; Santos et al. 2015) well above the high tide line, in sand that is stable for long enough to allow successful incubation. On developed beaches, built structures impeding access to suitable sites and artificial lights are likely to play a role in nest site selection (Reece et al 2013). On beaches where landward migration of beaches is prevented by human development, coastal squeeze occurs. This will have increasingly serious implications for nesting females as sea levels rise (Mazaris et al. 2009).

1.2 Temperature-dependent sex determination

Sex of sea turtles is determined by the temperature eggs experience during the middle third of development, with more females being produced at higher temperatures and more males at lower temperatures (Yntema & Mrosovsky 1982). The temperature range over which sex ratios shift from 100% male to 100% female varies between marine turtle species and between populations, but in general the range is small (1–4^{o}C), suggesting that even small increases in temperature will result in profound changes in sex ratios produced (Poloczanska et al. 2009). The pivotal temperature is defined as the temperature that produces a 1:1 sex ratio. Pivotal temperatures for sea turtle species found within the IAC region is shown in Table 1. It is notable that although there is small variation in pivotal temperatures from area to area, there is little overall latitudinal variation in pivotal temperatures.

Table 1. Pivotal temperatures (^{o}C) of several sea turtle species (from Ackerman 1997; *Glen & Mrosovsky 2004; #Chevalier et al. 1999; Marcovaldi et al. 2014)

Species	Pivotal temperature ^{o}C
Chelonia mydas	28.26
Caretta caretta	28.74
Lepidochelys olivacea	29.13
Eretmochelys imbricata	29.2*-29.32
Dermochelys coriacea	29.5

2. Climate change impacts on nesting habitat

In all except the low-emissions scenario, global temperatures at the end of the 21st century are likely to be at least 1.5°C higher, relative to 1850–1900. In the two higher emissions scenarios, global warming is likely to be 2°C and could rise by 2.6–4.8°C by 2100, if the IPCC's highest emissions scenario occurs (IPCC Fifth Assessment Report (AR5) 2014). Global sea levels have been rising 2.8–3.6 mm per year since 1993, and a rise of between 0.26 and 0.82 m is predicted by 2081-2100 for the various emissions scenarios in IPCC AR5. Rising sea levels will reduce the availability of nesting beaches on low lying coastlines or small islands, and where coastal development and beach armoring prevents landward migration of beaches (Fish et al. 2005, 2008). Continuing development of coastlines without allowing for alternative areas for sea turtle nesting threaten sea turtle populations if current areas become unsuitable or unusable. The spatio-temporal coincidence of marine turtle nesting with regions affected by hurricanes and tropical storms, suggests that cyclical loss of nesting beaches, decreased hatching success and lower hatchling emergence success could also occur with greater frequency (Fuentes et al. 2011). Air temperatures correlate with sand temperature (Laloë et al. 2014), and air temperatures have already reached or are close to reaching all-female producing temperatures at many Caribbean and Atlantic nesting beaches. A predicted reduction in tropical rainfall may exacerbate predicted rises in air temperatures further. It is important to note that any increased skew towards female hatchlings will lead to increased recruitment of females to the adult population and so a likely increase in nesting numbers for decades to come, but that reduced numbers of adult males on the breeding grounds will reduce genetic variability and may potentially impact clutch fertility in the longer term (Laloë et al. 2014).

2.1 Behavioral responses to climate change

Although sea turtles have presumably expanded into higher latitudes in the past, as temperatures rose during interglacial periods (see Bowen et al. 1993), how sea turtles will respond to loss of suitable nesting beaches on the time scale predicted is not well understood. Species with lower nest-site fidelity (e.g. leatherback turtles) may adapt more readily. For example, leatherback turtle nests are now being recorded at their most northerly extreme in a decade of monitoring (Rabon et al. 2003). Females may adapt the timing of the nesting season to suit changing thermal conditions at existing beaches, or they may expand their range into previously unsuitable areas for nesting if the latter beaches become thermally suitable (Hawkes et al. 2007, 2009; Pike et al 2006). Warmer temperatures for a greater number of months of the year may also allow an extension of the nesting season for some species or even year-round nesting (Yasuda et al. 2006). However, the behavioral responses of females depend on there being some areas on existing beaches where temperatures remain suitable or beaches available in new areas of suitable nest temperatures. Females with nesting experience have been shown to select a higher proportion of successful nest sites on a beach than inexperienced females (Pfaller et al. 2008), and therefore modification of nesting behavior potentially could occur quite rapidly.

3. Recommendations

3.1 Collection of environmental data relevant to monitoring of index beach habitats

Monitoring of beach profiles, sand temperature and potential threats to the back beach, together with regular photo-documentation of the beach, are the minimum activities recommended to monitor for climate related impacts and for baseline records.

Not all index beaches may be monitored on a regular basis, but environmental data of all index beaches should be collected at least once during the nesting season to provide a baseline for subsequent comparison.

For monitored beaches, data other than temperature should be collected every 3 months, but at least twice per year (e.g. beginning and end of the nesting season or the nest monitoring period). Temperature data should ideally be collected year round to monitor beach viability for nesting and to assess impacts of earlier or later nesting.

3.1.1 Beach profiles

Beach profiles can be used to measure *slope* and *beach width*. Beach width is a simple measure of sand accretion and erosion.

Permanent reference markers (i.e. trees, or structures located high enough above the beach to be unaffected by the highest storm tides) should be established to ensure that profiles are measured at exactly the same point along a pre-set compass heading perpendicular to the sea to allow comparison over time. Profile data should be recorded at low tide.

Either the Emery method or the Abney method (see Table 2 for manuals that describe both methods) for beach slope can be used, as they are comparable with each other. Ideally, Parties should choose one method and use it consistently at a particular location.

The number of transects should be influenced by how dynamic the beach is and its length. If it is a stable beach, one transect per kilometer would be sufficient, if it is an unstable beach, more frequent transects would be needed.

The number of transects chosen and the frequency should be based on the resources available.

Parties with index beaches on the Atlantic and Pacific coasts should establish environmental monitoring at beaches on both coasts.

3.1.2 Temperature

Temperature readings can be taken along the same permanent transect(s) established above or at several points along the length and width of the beach which differ in levels of shade or sand characteristics.

Sand temperatures should be taken at the sand surface and at average nest depth. Air temperature should be taken 1–1.5 m above the sand surface. If dataloggers are utilized, the distance of the datalogger from nearest vegetation and the high tide line should be recorded. The Temperature Monitoring Manual (Table 2) provides details on how to set up a temperature monitoring programme.

Table 2. Recommended manuals for collection of environmental data relevant to monitoring of index beach habitats

Reference	Contents	URL link
Guidelines for Monitoring Beach Profiles (Fish, M.R. 2011. Guidelines for monitoring beach profiles. WWF, San Jose, 16 pp	The Abney and Emery methods for beach profiling are explained with useful diagrams.	http://awsassets.panda.org/downloads/beach_profile_monitoring__web_.pdf
Sandwatch Manual UNESCO. 2010. Sandwatch: adapting to climate change and educating for sustainable development. Paris: UNESCO (Available in Spanish, English, Portuguese and French).	The Abney method for measuring beach profiles is explained and a simple programme to plot beach profile data is provided. This manual was primarily designed to quantify how environmental change on beaches will affect coastal communities. Less emphasis was put into the development of tools and methods that might enable a	http://www.sandwatch.ca/images/stories/food/SW%20Docs/Sandwatch%20-%20Spanish%20-%202012.pdf

	better understanding of how coastline change would affect biodiversity.	
Sea Turtle Nesting Beach Characterization Manual Varela-Acevedo, Elda, Karen L. Eckert, Scott A. Eckert, Gillian Cambers and Julia A. Horrocks. 2009. Sea Turtle Nesting Beach Characterization Manual, p.46-97. In:Examining the Effects of Changing Coastline Processes on Hawksbill Sea Turtle (*Eretmochelys imbricata*) Nesting Habitat, Master's Project, Nicholas School of the Environment and Earth Sciences, Duke University. Beaufort, N. Carolina USA. 97 pp.	This manual describes methods to characterize nesting beaches (including beach profiling using the Abney method) and how to evaluate the vulnerability of sea turtle nesting beaches to climate change. The manual includes definitions and lists of equipment needed to take measurements. It has now been incorporated into Sandwatch and is available on their website.	www.widecast.org/Resources/Docs/Varela Acevedo_et_al_2009_Nesting_Beach_Characterization_Manual.pdf
Temperature Monitoring Manual Baker-Gallegos J., M.R. Fish & C. Drews. 2009. Temperature monitoring manual. Guidelines for Monitoring Sand and Incubation Temperatures on Sea Turtle Nesting Beaches. WWF report, San José, pp. 16	This manual provides specific details on how to set up a temperature monitoring programme on a nesting beach. Its objectives are to describe the thermal conditions of the beach and how they are affected by shading, moisture, sand grain size, and albedo *inter alia*, and how to standardize the methodology for the collection of temperature data. It also provides guidelines on how to establish temperature monitoring in hatcheries.	http://awsassets.panda.org/downloads/temperature_monitoring__manual.pdf

3.1.3 Back beach habitat characteristics

What is behind the beach and what % of the back beach is affected should be estimated. Habitat characteristics could include native beach vegetation, mangrove, forest, buildings, sea defenses, road etc.

3.1.4 Photographs of the beach

Beaches should be photo-documented every year.

3.2 Recommended mitigation strategies to protect sea turtle nesting beaches

The following strategies include many of those proposed by Fuentes et al. (2012), but in some cases they are modified. Fuentes et al. (2012) separated strategies into Recommended and Potential, and emphasized that some of the potential strategies could have costs to sea turtle reproductive output. They provide a list of the critical gaps in information that need to be filled in order to understand the risks posed by some of the potential management strategies. Many of these strategies require the collection of baseline data prior to implementation and the socio-cultural context of each region should be considered in deciding the most appropriate mitigation strategies. Priority should be given to strategies that maintain suitable natural nesting conditions and areas.

3.2.1 Protect index beaches from development to reduce likelihood of coastal squeeze.

Incorporate climate change scenarios into land use planning.

Establish or enforce existing set back regulations.

Ban permanent shoreline hardening structures and replace with soft options like vegetation.

Utilise managed retreat and rolling easements to allow space for index nesting beaches to migrate landwards. This may require incentives for landowners.

Prohibit sand removal from beaches.

3.2.2 Ensure that there are beaches or areas of beach where females can choose microclimates conducive to nesting and production of males

Identify and legally protect male-producing beaches.

If index beaches are found to be female-producing, cooler beaches within the region where females of the same population unit nest, should be protected.

Conserve, revegetate or plant beach vegetation.

3.2.3 Reduce nest temperatures *in situ*

Reduce incubation temperature through planting vegetation, artificial shading (Patino-Martinez et al. 2012) or addition of lighter coloured beach sediment on the surface of nests.

Watering nests may help to reduce temperatures (Naro-Maciel et al. 1999) and increase hatch success and hatchling size in areas experiencing lower rainfall than normal (Hill et al. 2015). However, watering could also cause excessive cooling, impede gas exchange or increase fungal infections.

These approaches require a good understanding of beach conditions, such as the thermal profile of the beach, the pivotal temperature and the sex ratio of the population. Consideration needs to be given to timing and materials used. For instance, as rainfall is important in cooling beach temperatures, it is important to consider the permeability of the material/fabric when considering shade structures (Fuentes & Jourdan 2015). All interventions require careful monitoring to determine their impact on hatching success and sex ratio.

3.2.4 Relocate eggs

Egg relocation can be used as a tool to increase hatching success and control sex ratios, but egg relocation may increase movement-induced mortality and, if nest site selection is heritable, may increase survival of eggs from nesters that consistently choose poor nest sites and whose eggs would ordinarily not survive (Pfaller et al. 2009).

Move eggs to areas of the same beach (e.g. under vegetation) or neighboring beaches with suitable incubating temperatures.

Move eggs to hatcheries. Concentrating release of hatchlings into smaller areas can increase mortality of hatchlings in the initial swim offshore (Stewart & Wyneken 2004), and the impacts of transplanting eggs on nest site selection by hatchlings once they reach adulthood are not well understood.

3.2.5 Restore eroding beaches and create new beaches

It may become necessary to install offshore breakwaters and groynes to counteract sand loss due to rising sea levels or storm erosion. Note though that breakwaters must be designed so that they do not impede access of females to the beach, and that groynes may have the unwanted impact of starving sand from adjacent nesting beaches.

Potentially, beaches with suitable temperatures could be artificially created by selecting orientation, aspect, slope and sediment colour. Sand nourishment must use sand from an appropriate source, and be of the correct grain size. Note though that sand nourishment can create escarpments that make beaches inaccessible to sea turtles, can cause sand compaction and can alter the gaseous and hydric environment that eggs are incubating in (Grain et al. 1995).

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ANNEX VII. CIT-CC12-2015-Tec.11 Marine debris

Marine Debris Impacts on Sea Turtles

Due to the increase in scientific information on marine debris and sea turtles warning about the growth of the problem in the IAC region, delegates at the 7th Consultative Committee of Experts (CCE7) considered the inclusion of the impacts of marine debris on sea turtles and their habitats in the IAC agenda. At the meeting, representatives of the NGO sector, along with delegates from the USA, Ecuador, Brazil and Argentina, highlighted the importance of this problem. It was agreed to request the IAC Scientific Committee to prepare a technical document on the effects of marine debris on marine turtles and their habitats, using the scientific information available and information provided by the IAC Parties. This document was prepared by the marine debris working group at the 11th meeting of the IAC Scientific Committee and edits were finalized at the Committee's 12th meeting.

This document summarizes the main negative effects that marine debris has on the health of sea turtles and their habitats. It also contains a brief description of the international instruments that address this issue. The objective of this document is that IAC Parties use it to guide their efforts in the implementation of measures to reduce the negative impact of marine debris on sea turtles and their habitats. The purpose is not only to recommend bibliography but, it is also to recommend IAC Parties to use it in their training programs which will facilitate that the information and strategies adopted internationally to prevent and reduce marine debris is informed to the public. Finally, the document provides a set of strategies focused on the prevention and reduction of marine debris that could be used as a reference by the IAC Parties.

Introduction

Marine debris includes any anthropogenic, manufactured or processed solid material, regardless of its size, discarded, disposed of, or abandoned in the environment, including all materials discarded into the sea, on the shore, or brought indirectly to the sea by rivers, sewage, storm water or winds (UNEP/CMS, 2011, UNEP/NOAA, 2011). This definition is not limited to plastic objects, but also encompasses other types of materials such as textiles, metal, glass, paper, construction materials, as well as dangerous materials such as asbestos, ammunitions, medical waste and discarded gear from fishing activities.

Although a wide range of materials are constitute marine debris, most items fall in a small number of types such as glass, metal, paper and plastic; last being the most abundant and the one with most interaction with marine organisms (Secretariat of the Convention Biological Diversity, 2012). The characteristics of plastic such as its durability, lightness and low economic cost, make it very convenient for a large-scale manufacturing of products for daily use (Vegter 2014).

Marine debris occurs in all oceans of the world, at all latitudes and depths and is of global concern, and their impacts are being reported in 663 marine species (Secretariat of the Convention on Biological Diversity, 2012). The pollution of coastal and marine ecosystems by debris and its interactions with biodiversity is a complex, multi-sector problem with economic, social and environmental implications. In terms of the environmental implications, marine debris is considered a major factor contributing to the loss of biodiversity and is one of the least understood and most complex to study (National Research Council, 2008).

Interactions of marine debris with sea turtles and their habitats

Given the many types of marine debris, their interactions with sea turtles and their habitats have been classified in two different ways: Ingestion and Entanglement/Entrapment.

- **Ingestion:** Marine debris ingestion, especially small-sized plastic, has been reported to occur in all sea turtle species, in all geographic areas and in all life stages (Gonzalez Carman, 2013; Schuyler et al., 2013; Secretariat of the Convention on Biological Diversity, 2012; National Research Council, 2008). Recent studies suggest that the probability of plastic ingestion by green turtles (*Chelonia mydas*) and leatherbacks (*Dermochelys coriacea*) has significantly increased over the last decade (Schuyler et al., 2013). For example, in a study performed in the Southwestern Atlantic on juvenile green turtles, 90% of the 62 specimens examined had ingested anthropogenic debris (Gonzalez Carman, 2013). Similarly, a high percentage of ingestion was reported in Florida, USA (Bjorndal, 1994) and Brazil (Bugoni et al, 2001). Marine debris ingestion may have lethal and sub-lethal effects, both of which have significant importance for sea turtles species. Ingestion may result in blockage of the digestive tract by foreign objects, which is the main lethal effect caused by marine debris. The ingestion of plastic bags may also cause an obstruction in the digestive tract, causing injuries to the mucosa/lining and altering its normal functioning. This can cause malfunctioning in buoyancy control, preventing turtles from submerging and feeding normally. This in turn causes a gradual deterioration in the turtles' physical state, which leads eventually to death. Gastrointestinal perforation caused by hooks or hard plastics, generates chronic infection, peritonitis and septicemia, which in many cases can kill turtles. (McCauley & Bjorndal 1999). Additionally, the ingestion of debris can cause poisoning as a result of toxic constituents that can be absorbed and accumulated in the body. Micro plastics (plastics size <5 mm) are particularly easily ingested by a variety of species distributing contaminants in to the trophic chain. Marine debris ingestion may not only cause lethal effects on sea turtles because of the obstruction of the digestive tract. Other research has shown sub-lethal effects of marine debris ingestion as a consequence of nutrient dilution (McCauley & Bjornda1999). This happens when ingested debris, which has no nutrients, takes up so much room in the stomach, that nutrient depletion results. Nutrient depletion directly affects growth and reproductive rate; thereby seriously affecting sea turtles populations and their conservation (McCauley & Bjornda1999).

- **Entanglement/Entrapment:** Nowadays, entanglement with marine debris is internationally recognized as a threat to many marine species; affecting at least 135 species, including snakes, turtles, seabirds, pinnipeds, cetaceans and sirenians (Udyawer et al, 2013). Many forms of marine debris like packages, ropes, tires and abandoned fishing gear pose series threats to sea turtles; after being caught in this debris, the individual's mobility is diminished and some drown while others die of starvation or are easy prey for predators. Also, lacerations can lead to death by sepsis.

Marine debris may also cause the alteration, degradation or destruction of key marine and coastal habitats used by sea turtles for foraging and nesting. There are studies referring to the impact of waste accumulation in different types of habitats. For example, the plastic waste accumulation in intertidal habitats alters key physical and chemical processes as the availability of light and oxygen (Goldberg 1997), as well as temperature and water movement (Carson et al. 2011). Furthermore, on sandy beaches micro plastic accumulation can change the permeability and temperature of the sediments, with consequences for the animals showing the condition of temperature-dependent sex determination, as some reptiles (Carson et al. 2011). Coral reefs are also affected by marine debris; mainly fishing gear remains as nets and lines (Richard et al. 2011). Debris may be used as dispersal substrates for invasive species allowing rafting over large areas. Although the marine debris issue has not been exhaustively studied, the existing information on its impact on sea turtle species is sufficient to support the need for immediate action to be taken to control and mitigate it.

International instruments related to marine debris

Several conventions and international organizations are addressing this issue, and have produced global legal instruments and voluntary agreements for the prevention and management of marine debris, of both terrestrial and marine origin. Those instruments that specifically regulate different sources of marine debris are:

- *The Conference of the Parties to the Biological Diversity Convention* (CBD COP10) has generated a global framework describing the impact of human activities on marine biodiversity. CBD COP10 stressed the urgent need to assess and monitor the impacts and risks arising from human activities on coastal and marine biodiversity, as well as to work collaboratively with other organizations to address this problem. Furthermore, the CBD Secretariat published a technical document (CDB Technical Series No.67) on the impact of marine debris on biodiversity.

- *The Convention on Migratory Species (CMS)* adopted a Resolution (UNEP/CMS Res.10.4) about marine debris. This Resolution recommends the Parties develop and implement their own action plan, which should be directed towards the negative impacts of marine debris within the jurisdiction of the Convention. It also instructs the Scientific Council to identify information gaps in the management of marine debris and its impacts on migratory species, as well as to identify the best practices for garbage management on board commercial ships, among other recommendations. It also requests the Secretariat to form linkages with other international instruments (IMO, FAO, UNEP) to promote synergies, thereby avoiding duplication and maximizing efforts to reduce the impact of marine debris on migratory species.

- *The International Convention for the Prevention of Pollution from Ships (MARPOL)* and its Annex V that prohibits the discharge and disposal of all types of garbage at sea.

- *The Honolulu Strategy*, made at the 5th International Conference on Marine Debris held in Hawaii in March 2011, is a comprehensive framework for an integrated and collaborative global effort, to reduce the ecological, sanitary and economic impacts of marine debris worldwide. The Honolulu Strategy focused on three main objectives, and provides a list of potential actions that could be implemented under each of the strategies.

Existing strategies for the management of marine debris

The management and reduction of marine debris is complicated to resolve unilaterally due to the complex nature of the issue. In order to understand the problem it is important to understand that: the accumulation of debris occurs in habitats far from the source, their persistence in the environment is very long, there is a lack of a regulatory framework for the manufacturing chain that considers the negative impact it has on the environment once discarded (extended producer responsibility) there is a high clean-up cost. Because of this, global measures taken to prevent the problem focus on prevention at source to reduce the amount of debris that goes into the sea and to reduce the amount of sea-based debris introduced into the sea from abandoned vessels and offshore platforms among others. Beside, actions have been identified to prevent debris accumulation. Among the main strategies identified by The *Honolulu Strategy* for the prevention and reduction of marine debris are:

- Implementation of education and outreach programs on i) the importance of reducing, reusing and recycling materials in order to avoid/reduce the production of debris; ii) the importance of keeping streets, storm drains and other areas near rivers and other waterways, free of debris; iii) raising awareness among boaters and other interest groups on the importance of properly stowing their debris on board and avoiding disposing of materials at sea.

- Creation of local and international legal frameworks aimed at strengthening legislation to support management, prevention and reduction of marine debris, along with capacity building to apply these regulatory frameworks.

- Promotion of periodic clean-up campaigns in critical areas such as watersheds, rivers and other waterways to reduce the accumulation of garbage that may end up in the sea.

- Use of infrastructure to improve rainwater management and reduce the discharge of solid waste into waterways.

Additional resources

The following links contain documents that will provide more information on the effects of marine debris on marine biodiversity.

UNEP/NOAA, (2011). The Honululu Strategy. A Global Framework for Prevention and Management of Marine Debris.pp. 57

http://www.unep.org/esm/Portals/50159/Honolulu%20Strategy%20Final.pdf

Secretariat of the Convention on Biological Diversity and the Scientific and Technical Advisory Panel—GEF (2012). Impacts of Marine Debris on Biodiversity: Current Status and Potential Solutions. Montreal, Technical Series No. 67, 61 pages.

https://www.cbd.int/doc/publications/cbd-ts-67-en.pdf

Amigos del Mar Program (CPPS) is a regional initiative promoted by the Permanent Commission of the South Pacific (CPPS) under the Regional Program for Integral Management of Marine Debris in the Southeast Pacific. The objective of this initiative is to develop environmental awareness among students/teachers of middle and high school, as well as the fishing community to encourage their participation in the search for sustainable and environmentally friendly solutions to combat the problem generated for waste ending in the sea.

http://amigos-del-mar.net/index.php/m-amigos-del-mar

CMS / UNEP: Project Resolution on the management of marine debris, based on three studies that were conducted according to the instruction in UNEP/CMS/Resolution 10.4 Marine Debris. This link includes three technical reports (Inf.27, 28 and 29)

http://www.cms.int/es/node/5936

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ANNEX VIII. Scientific Committee Work Plan 2016 - CIT-CC12-2015-Doc.3

Actor	Topic	Proposed Action	Expected Result	Time frame
Scientific Committee	Exceptions	1) Follow up on the implementation of the recommendations made by SC12 about the Costa Rica exception. 2) Follow up the progress of Guatemala and Panama exceptions. 3) Send a letter of recognition to the relevant authorities of the three countries regarding the activities of Guatemala, Costa Rica and Panama in compliance with its exceptions	1) Present a report in the SC13 meeting on the Costa Rica, Guatemala and Panama exceptions according to the new format proposed by the Scientific Committee for each country. 2) Scientific Committee Chair will report to Consultative Committee of Experts on progress of the follow up on the exception to Costa Rica, Panama and Guatemala as part of the Scientific Committee activities report at the Consultative Committee of Experts meeting.	2016
Scientific Committee, Secretariat *Pro Tempore*	IAC Website & Newsletter	1) Send relevant news on a monthly basis to the Secretariat *Pro Tempore* for the IAC's Newsletter.	1) Updated news in the IAC's website, and regular publication of the IAC's Newsletter.	Permanent
Fisheries Working Group	Fisheries	1) Request information on the transfer mechanisms used by the competent bodies for the implementation of the recommendation of the use of manuals on sea turtle on board handling practices.	1) Report from IAC Focal Points describing the mechanism used by relevant authorities to enforce the recommendation of the SC (2016).	2016
Fisheries Working Group	Fisheries	1) Update the list of Turtle Excluder Devices (TED) that are being utilized.	1) Summary table with a list of TEDs that are being utilized up to date presented in 2016.	2016

Fisheries Working Group	Fisheries	1) Re-send the survey on trawl fisheries to countries that haven't sent their information (Ecuador, Mexico, Panama, Peru, Uruguay). 2) Prepare a report with survey results and recommendations.	1) Report on trawl fisheries for species other than crustaceans that have interaction with sea turtles. Report should contain the diagnostic results of interactions and be presented in the SC13.	Inter-sessional 2016
Stranding Working Group	Stranding	1) Complete the stranding survey report with information from Venezuela and Belize. 2) Develop a directory of specialists linked to strandings. 3) Develop a directory of local professionals in each country. 4) Select and recommend necropsy manuals and sampling protocols. 5) Select and recommend operating models for stranding networks.	1) Technical Document on strandings in the IAC region presented in SC13.	Inter-sessional, next meeting SC13 2016
Nesting Working Group, Scientific Committee	Conservation status of index nesting beaches	1) Compile annual information of nesting at index beaches using the form developed and analyze these data periodically (every 5 years). 2) Evaluate the conservation status of sea turtle populations in the region, based on the best scientific available information.	1) Compilation format updated with the information submitted by the IAC's parties. 2) Preliminary Analysis Report 2015-2016 on index nesting beaches presented in SC13. 3) Report on the analysis of the index nesting beaches 2009-2018 presented at COP9.	Permanent

Climate Change Working Group	Climate Change	1) Draft a format of a periodic request of quantitative data on climate change parameters to be monitored by the Parties. 2) Request to the Consultative Committee of Experts to reconsider the removal of the climate change table in the Annual Report. Additional columns will be added in table of Annex 2 (table of nesting) of the IAC Annual Report to collect information on climate change.	1) Report with analysis of climate change data from the 2014 Annual Report presented in CC13 2) Format to gather climate change data included in the IAC Annual Report (either in compliance with the Resolution or in accompanying table).	2016
Scientific Committee	Work Plan	1) Develop and update the Scientific Committee Work Plan following IAC guidelines and the COP Resolutions.	1) Bi-annual Scientific Committee Work Plan prepared with actions, timetable and responsible.	Permanent
Scientific Committee	Collaboration with other organizations and Strategic Alliances	1) Develop recommendations to enhance synergies and mechanisms for collaborative work with other related organizations to meet the IAC objectives. 2) Review of the Scientific Committee Work Plan to include themes and mechanisms to improve cooperation with the Focal Points and other agencies.	1) Include in the Scientific Committee Work Plan themes and mechanisms to improve the collaboration between IAC Focal Points and other organizations such as SPAW, IATTC, CPPS, Ramsar, CITES. 2) Identification of synergies with similar organizations to share information (SPAW, IATTC, CPPS, WIDECAST, ICCAT, RAMSAR, SWOT, ICAPO, ASO, WWF, CBD, CMS, ACAP, TLT-The Leatherback Trust).	2016
Scientific Committee	IAC Annual Reports	1) Analyze the technical information included in the IAC Annual Reports.	1) Analysis of technical information included in the IAC Annual Reports.	2016
Scientific Committee	Projects	1) Develop and analyze recommendations about high priority projects for funding and other support needed to achieve the IAC objectives.	1) Recommendations for high priority projects when needed.	2016

Scientific Committee, Secretariat *Pro Tempore*	COP and Consultative Committee of Experts Recommendations	1) Address COP and Consultative Committee of Experts requests, and make recommendations accordingly.	1) Make recommendations to the COP and Consultative Committee of Experts as needed.	2015, 2016
Scientific Committee	IAC technical documents	1) Develop technical documents as needed.	1) Technical documents available at the IAC's website and shared within the IAC Parties.	2016
Scientific Committee, Secretariat *Pro Tempore*	IAC Expert Directory	1) Update and maintain the directory of experts in areas within the IAC interest.	Updated directory available at IAC's website.	2016
Scientific Committee, Eastern Pacific Leatherback Working Group, Fisheries Working Group	Eastern Pacific Leatherback *Dermochelys coriacea*	1) Collect and standardize existing information. 2) Develop formats on leatherback bycatch. 3) Establish formal agreement among those providing information (agencies, countries, etc.) and Leatherback Trust for the use of information. 4) Request to the IATTC data on turtle bycatch in the fishing fleet. 5) Develop a format for the data that will be requested to the IATTC.	1) Progress report on the definition of areas of interactions between Eastern Pacific leatherback turtles and fishing activities presented in SC13.	2016

Scientific Committee, Loggerhead Working Group	Loggerhead turtle *Caretta caretta*	1) Compile relevant information from IUCN, CMS, IOSEA, ESA reports. 2) Develop agreements with organizations mentioned in point 1. 3) Integrate information from IAC Annual Reports. 4) Identify what information is needed from the IAC member countries and other countries in the loggerhead distribution range and request it through the Secretariat *Pro Tempore*. 5) Develop a matrix of threats and prioritize them. 6) Send a draft of nesting beaches threats and components to every IAC country to provide an opportunity to include additional or important data. 7) Develop recommendations for conservation actions. 8) Include specific text about IAC in the report. 9) Final review of the report by Loggerhead Working Group. 10) Presentation, discussion and approval of the draft report of the loggerhead assessment in SC13. 11) Presentation of draft to the Consultative Committee of Experts 30 days before the 2017 meeting. 12) Address comments received by the Consultative Committee of Experts and sent final report to the COP 45 days before the 2017 meeting. 13) Develop a document on loggerhead status in IAC countries.	1) Draft document assessing the loggerhead turtle in the IAC region for CC13. 2) Final report on the status of all loggerhead turtle populations in the IAC region and recommendations sent to COP8, 2017.	2016

WORK PLAN AND INTER-SESSIONAL ACTIVITIES OF THE CLIMATE CHANGE WORKING GROUP

Members of the Working Group: Caribbean Netherlands (Chair), Chile, Peru and USA

Proposed actions

1. Development of a draft form designed for periodic requests of quantitative data on the climate change parameters monitored by Party countries.

2. If the Consultative Committee of Experts declines the request to reconsider the removal of the revised Climate Change Resolution compliance table from the IAC Annual Report, additional columns in the existing Annex II table will be drafted to collect some of the same information.

Expected Result

1. A new form to be sent periodically to the IAC Focal Points for consideration of the Scientific Committee at its next meeting in 2016.

2. The Climate Change Resolution compliance form will be replaced in the Annual Report or draft columns for consideration at the next Scientific Committee meeting (SC13) for inclusion during the periodic review of the Annex II table of the IAC Annual Report.

Other actions

Scientific Committee through Secretariat *Pro Tempore* requests reconsideration of CCE decision to remove the Climate Change Resolution Table from the Annual Report.

FISHERIES WORKING GROUP

Interessional Work Plan 2015 - 2016

Members of the Fisheries Working Group (Fisheries WG): Francisco Ponce (Chile)(Coordinator), Johanna Moreira (Ecuador), Jorge Zuzunaga (Perú), Heriberto Santana Hernández (México), Diego Albareda (Argentina) y Marino Abrego (Panamá), Antonio Palma Inostroza (Chile), Representantes de Tortumar – Chile, Carlos Guerra Correa (CREA - UA - Chile), Patricia Zárate (Chile), Marco Soto Diaz (Chile) y Rocio Alvarez Varas (Qarapara Tortugas Marinas Chile - Chile)

Observers present at the discussion: The Leatherback Trust and the Interamerican Association for Environmental Defense (Asociación Interamericana para la defensa del Ambiente, AIDA).

Topics discussed at the meeting

1. Update of the Turtle Excluder Devices (TEDs) list.
2. Continue the work on the interaction between trawl fisheries not directed at crustaceans and sea turtles.
3. Advance the implementation of the Resolution on the Conservation of Eastern Pacific Leatherback CIT-COP7-2015-R2.

4. Follow up on the recommendation of the Scientific Committee to the IAC Parties on the use of best practice manuals for handling sea turtles on board of fishing vessels.

Work Plan

1) Update of the TEDs list.

   This activity will be carried with information on the IAC Annual Reports. At the moment not all the 2015 reports have been received. The WG agreed to do this work inter-sessionally (Diego Albareda will coordinate it).

2) Continue the work on the interaction between trawl fisheries not directed at crustaceans and sea turtles (inter-sessionally work).

   Send the survey again in Word format to the Scientific Committee delegates that have not sent their response to the survey. Once the answers are received, the WG will analyze the information and will prepare a report with recommendations to be presented at the next Scientific Committee meeting in 2016 (SC13).

3) Advance the implementation of the Resolution on the Conservation of the Eastern Pacific Leatherback CIT-COP7-2015-R2 (inter-sessional work. Results will be presented at SC13).

   Progress of this work will be reported at the next Scientific Committee meeting (SC13) in 2016.

   It is necessary that the Fisheries WG is engaged in the activities carried out in the context of Resolution CIT-COP7-2015-R2. To this end, it was agreed to work in the identification of the zones with greater interaction between fishing activities and leatherbacks in the Eastern Pacific, using available information (Ecuador, Peru and Chile fisheries information will provide information). The following activities will be carried out:

   a. Design and approve formats for collecting Eastern Pacific leatherback bycatch data.
      George Shillinger (The Leatherback Trust) will send to the Fisheries WG in December 2016 a table with fields and requirements to integrate and analyze data. This stage will be completed during a Fisheries WG meeting to be held at the ISTS Sea Turtle Symposium in Peru in 2016, taking advantage of the participation of many of the WG colleagues and researchers in the symposium. The Institute of the Sea - Peru (Instituto de Ciencias del Mar de Perú, IMARPE) could provide a venue for the meeting where the above mentioned table for data collection will be discussed. This requires to contact Joanna Alfaro (Eastern Pacific Leatherback WG Coordinator of the IAC CCE) to coordinate the meeting.

   b. Establish a formal agreement for the use of the information.
      A procedure to formally use of data received from different sources needs to be agreed. This will be discussed with George Shillinger (The Leatherback Trust) and each country that will provide data due to the different requirements of data sharing for each country.

   c. Request to Secretariat *Pro Tempore* to make arrangements with the Inter-American Tropical Tuna Commission (IATTC) in order to obtain information on Eastern Pacific leatherback

turtle bycatch in the tuna fleet. The Fisheries WG will inform to the Secretariat *Pro Tempore* which is the specific information needed for this request. The data collection tables to be agreed at the Peru meeting (as specified in activity "a") will provide that information.

d. The NGO Leatherback Trust and Chile will work on a joint project to attach satellite transmitters on leatherback turtles in the Eastern Pacific, using commercial fishing operations of the Chilean fleet targetting swordfish and other associated species.

4) Follow up with the recommendation of the Scientific Committee to the IAC Parties on the use of best practice manuals for handling sea turtles on board of fishing vessels.

Ask the IAC Focal Points, through the Secretariat *Pro Tempore*, to share the mechanisms used to implement the recommendation (transfer and dissemination of technical documents prepared by the SC) and to report back to the SC if there has been any feedback.

LOGGERHEAD WORKING GROUP REPORT AND WORK PLAN

The members of the Loggerhead Working Group include representatives from Brazil, Caribbean Netherlands, Belize, Chile, Ecuador, Guatemala, Honduras, and US (Chair). Additional participants in the Loggerhead Working Group discussion at the 12th IAC Scientific Committee Meeting included representatives from WWF, AIDA, and the Chilean Sea Turtle Network.

The Mission of the Loggerhead Working Group is directly related to Element 3 of the Loggerhead Resolution CIT-COP7-2015-R3: 3) Request to the IAC Scientific Committee to develop a summary report of the status of all loggerhead populations in the IAC area every four years. This summary report should draw on existing reviews such IUCN Red List assessments, major regional status reviews and information provided in countries' annual reports. The Secretariat *Pro Tempore* will work with the Scientific Committee and other relevant organizations to identify the most efficient ways to develop this summary report. Based on this summary report, the IAC Scientific Committee in consultation with Consultative Committee of Experts will identify the main actions for the IAC Parties to undertake to improve the conservation status of all loggerhead turtles. The first report should be submitted to the IAC Conference of the Parties by 2019.

The Work Plan of Loggerhead Working Group is as follows:

1. Compile information from existing assessment documents:
    a. IUCN Red List
    b. CMS
    c. ESA
    d. IOSEA
2. Develop appropriate agreements with institutions for data/text sharing.
3. Integrate information from annual reports.
4. Determine what information is needed from other countries and request this through the IAC Secretariat *Pro Tempore.*
5. Develop a threat matrix to identify highest priority threats
    a. use info from Wallace et al. threats paper as a baseline
6. Send draft of threat and nesting beach components back to each country for final opportunity to provide any missing or key data.
7. Develop recommendations for conservation actions.
8. Add IAC-specific supporting text to document:
    a. Introduction
    b. Conclusions
    c. Recommendations
9. Final review of document by the Loggerhead Working Group.
10. Presentation, discussion and approval of draft loggerhead assessment at the 13th Scientific Committee meeting.
11. Submission to the Consultative Committee of Experts no later than 30 days prior to their 2017 meeting (which usually occurs in the 1st quarter).
12. Address comments received by the Consultative Committee of Experts and submit to the COP no later than 45 days prior to their 2017 meeting.
13. Submission to IAC by 2017 Conference of the Parties*

* as early as possible in the process we will try to get recommendations/draft document to the Consultative Committee (meetings are 1st quarter of each calendar year)

NESTING BEACH WORKING GROUP REPORT AND WORKPLAN

The members of the Nesting Beach Working Group (NBWG) group include representatives from Belize, Brazil, Chile, Ecuador, Guatemala, Honduras, Caribbean Netherlands, and US (Chair). Additional participants in the Nesting Beach Working Group discussion at the 12th IAC Scientific Committee Meeting included representatives from WWF and the Chilean Sea Turtle Network.

The Nesting Beach Working Work was asked to address three primary tasks during the 12th Scientific Committee Meeting. These included:

1) Evaluate the current deadline for submitting Annual Reports of the Parties to the IAC Secretary;
2) Examine the criteria used to evaluate the two primary methods for estimating olive ridley turtle *arribada* nesting abundance in Ostional, Costa Rica; and
3) Determine if and how the climate change questions that were included in the 2014 Annual Reports should be reinserted into the Annual Reports.

1. Evaluate current deadline for Annual Reports

The Nesting Beach Working Group was asked by the Consultative Committee and the COP to determine if there was a need to change the submission deadline for the Annual Reports, and if so, what that new date would be. It was our understanding that the CCE had some concern that the current reporting date did not allow for full nesting season data to be reported within a given report and that for species/populations with winter nesting seasons the 30 April report would result in only partial nesting season data being presented. The NBWG examined the nesting seasons for all sea turtles nesting within the IAC region. It was abundantly clear that nesting occurs year round in the IAC region and thus, there was no ideal date for all countries. The NBWG also acknowledged that it is important that they review the most recent annual reports to see how the current submission date may or may not impact the quality of data being presented or the ability of the NBWG to distinguish sequential nesting seasons. There was some consideration about moving the reporting date to the end of the calendar year (15 December) and that data for the most recent full nesting season be presented. There was concern by several NBWG members that data are reported on a calendar year basis and even within countries, the internal reporting mechanism does not report full nesting seasons but rather the nesting levels for the entire preceding year. Members also voiced concerns about the difficulty in having governments and data collectors change their current reporting mechanism. After much thoughtful discussion the NB Working Group determined that at the present time, there is no need to change the Annual Report date. **We also agreed that after reviewing the Annual Reports inter-sessionally prior to the 13th Scientific Committee Meeting, the NBWG would discuss the Annual Reports and at the meeting we will revisit the issue of reporting deadline and reconsider if the reporting date should be changed.** Among the things we will consider are 1) should the date be changed and 2) should the annual reports ask for nesting abundance on a monthly basis (this would make it easier to determine the total abundance for a nesting season in those cases where such data are separated between two sequential annual reports).

2. Examine *arribada* abundance estimation methods

There are 7 criteria that have been proposed by the Costa Rica Commission to evaluate the Ostional *arribada* abundance estimation techniques developed by Chavez *et al* (currently used by UCR for estimation at Ostional) and by Valverde *et al* (used at Nancite, Costa Rica and elsewhere worldwide). These criteria include sample type, error, variability, methodology sensitivity, sampling area, background, and methodology publishing. **After thoughtful discussion, the NBWG agreed that there are two**

additional criteria that we would like the Commission to consider in their evaluations. These include 1) The ease of application of the estimation technique (i.e., if there are not sufficient personnel resources, even the best technique is not useful), and 2) What is the comparability of the two techniques with those methods being implemented at the *arribada* nesting beach of Escobilla, Mexico.

The recommendation above was given to the SC Delegate from Costa Rica who will report back to the SC next year on the results of the implementation of the criteria to evaluate the Ostional *arribada* abundance estimation techniques.

3. Evaluate the addition of climate change information in IAC Annual Report

The NBWG agreed to work with the Climate Change working group to explore the possibility of adding information on monitoring of climate change parameters in the existing table of index beaches in the Annex 2 of the IAC Annual Report.

STRANDING WORKING GROUP INTERSESSIONAL WORK PLAN 2015-2016

Stranding Working Group members: Costa Rica (Coordinator), Ecuador, Chile, Peru, Mexico and Argentina.

1. Complete the analysis of the stranding surveys including information from Belize and Venezuela.

2. Compile a "directory of specialists" on strandings and unusual events of sea turtle mortality, which may be consulted in case of an emergency, to provide the best advice on the collection and analysis of information.

3. Compile a "directory of local professionals" in each country (veterinarians and biologists working with strandings) specialized in sea turtles or wildlife health, to serve as liaison with the "directory of specialists", in order to facilitate communication and provide effective advice in the field. To meet this goal, the IAC Secretariat *Pro Tempore* will request the information from the Scientific Committee.

4. Make a selection and recommend necropsy manuals and sampling protocols for diagnostic to provide reference material for IAC Parties to use or to help them develop their own for those countries that do not yet have them.

5. Make a selection and recommend models of "stranding networks", for IAC Parties that do not have them to provide the information necessary for their use or to develop their own model of stranding network.

6. Prepare a Technical Document with the analysis of the results of the stranding surveys, recommendations and additional information (directory of specialists, directory of local professionals, necropsy manuals, sampling protocols and models of stranding networks) to be presented at the SC13.

ANNEX IX. SC12 Agreements and Recommendations - CIT-CC12-2015-Doc.4

Recommendations and Agreements of the 12th IAC Scientific Committee Meeting (SC12)

Implementation of the Resolutions on Exceptions submitted by Costa Rica, Panama and Guatemala

1) There are seven criteria that have been proposed by Costa Rica exceptions committee to evaluate the Ostional *arribada* abundance estimation techniques/methodology developed by Chavez *et al* (currently used by UCR for estimation at Ostional) and by Valverde *et al* (used at Nancite, Costa Rica and elsewhere worldwide). These criteria include sample type, error, variability, methodology accuracy, sampling area, background information, and if methodology has been published. After a thoughtful discussion, the Scientific Committee recommends to Costa Rica to take into consideration two additional criteria in the evaluations. These criteria are: 1) The ease of application of the estimation technique (i.e., if there are not sufficient personnel resources, even the best technique is not useful), and 2) How the two techniques compare with those methods being implemented at the *arribada* nesting beach of Escobilla, Mexico.

2) Guatemala, Panama and Costa Rica will be asked to submit 45 days before the 13th IAC Scientific Committee Meeting (CC13, 2016), a progress report on implementation since their exceptions took effect until 2016. The objective is to evaluate the compliance with Resolution CIT-COP6-2013-R1, Resolution CIT-COP7-2015-R1 and make recommendations. This report will also be sent to the IAC Consultative Committee of Experts. The report should follow the format suggested by the Scientific Committee at its 12th meeting which will be sent by the Secretariat *Pro Tempore* to the IAC Focal Points of each country no later than December 1st, 2015. The Resolutions Working Group of the IAC Scientific Committee will review the report.

3) The IAC Scientific Committee Chair will send a letter to the three countries expressing the SC recognition of their work in following up the implementation of the IAC recommendations for their exceptions and requesting to prepare their report for next year.

Loggerhead Turtle Resolution CIT-COP7-2015-R2

4) A working group was formed to monitor the implementation of Loggerhead Turtle Resolution with the following members: Jeff Seminoff (USA, Coordinator), Neca Marcovaldi and Alex Santos (Brazil), Julia Horrocks (Caribbean Netherlands), Eduardo Espinoza (Ecuador), Jorge Azócar (Chile), Kirah Forman (Belize), Edson Flores (Guatemala), Carolina Montalvan (Honduras).

5) It was agreed that the Loggerhead Working Group prepare the summary report of the status of all loggerhead populations per Resolution CIT-COP7-2015-R2 to be presented at COP8, in 2017.

6) The Work Plan of Loggerhead Working Group was approved; it includes (more details in the work plan):

- Activity 1: Define the format and content of the report.
- Activity 2: Compile information from existing assessment documents (MTSG-IUCN, IAC Annual Reports, CMS Loggerhead Action Plan), identify needed additional information and request it to Scientific Committee and Focal Points members for June 1, 2016.
- Activity 3: Prepare a draft report on the status of loggerhead populations to be presented at 13th Scientific Committee Meeting.

7) It was agreed that the IAC Scientific Committee will facilitate an arrangement to allow the cooperation in information exchange between the IAC and other groups such as the IUCN Marine Turtle Specialists Group in order to obtain the information needed for the report requested by the COP.

Eastern Pacific Leatherback Resolution CIT-COP7-2015-R2

8) The document submitted by the Eastern Pacific Leatherback Working Group with the contents for the report for assessing the implementation of the five-year strategic actions of Resolution CIT-COP7-2015-R2 was approved.

9) It was agreed that the Fisheries Working Group of the IAC Scientific Committee will provide input to the report and the implementation of the Resolution CIT-COP7-2015-R2 by providing information on identification of critical areas in the range of the leatherback turtle in the Eastern Pacific Ocean where a spatial and temporal management is needed to reduce bycatch and/or directed take of leatherback turtle. It was agreed to collaborate with the NGO The Leatherback Trust in carrying out a joint analysis to identify and compile the information available.

Climate Change and Sea Turtles

10) The document CIT-CC12-2015-Tec.10 "Mitigation strategies to reduce the impact of climate change on nesting beaches" (Annex VI, SC12 Report) was adopted as a technical document of the Scientific Committee. This document will be sent to the IAC Focal Points with the recommendation to be used as a guide in implementing the Climate Change Resolution CIT-COP-2009-R5, and it will be available on the IAC website.

11) It was agreed that the Scientific Committee Chair would make a request to the Consultative Committee of Experts to reconsider the removal of the Climate Change Resolution table from the IAC Annual Report. If the Consultative Committee of Experts does not accept the request, the Climate Change Working Group of the Scientific Committee will explore the possibility of adding information on monitoring of climate change parameters in the existing table of index beaches in the Annex 2 of the IAC Annual Report and create a new reporting format to send periodically to IAC Parties to collect information of climate change on index beaches.

12) It was agreed that the Climate Change Working Group will analyze information on climate change from 2014 IAC Annual Reports and will report their findings at the SC13.

Marine debris and its Impacts on Sea Turtles

13) The document CIT-CC12-2015-Tec.11 "Marine debris and its impacts on sea turtles" (Annex VII, SC12 Report) was adopted as a technical document of the Scientific Committee. This will be sent to the IAC Focal Points and will be available on the IAC website.

Sea Turtle Stranding

14) It was agreed that the Stranding Working Group will prepare for CC13 a technical document based on the information from the preliminary analysis presented at the SC12 with the results collected in the survey about characterization of sea turtle stranding in the IAC region. The document will also include a directory of international and local experts with experience in dealing with strandings, recommendations on manuals and protocols for conducting necropsies and sampling. The work plan of this working group was approved at the meeting (Annex VIII, SC12 Report).

Fisheries interactions with Sea Turtles

15) The work plan of the Fisheries Working Group was approved (Annex VIII, SC12 Report). It was agreed that the Working Group will include in its agenda the objectives of the East Pacific Leatherback

Resolution, in order to carry out the activities listed above in support to the Eastern Pacific Leatherback Working Group.

16) It was agreed that the Working Group will prepare a report on sea turtle interactions and trawl fisheries not directed at crustaceans with the information of all IAC countries to be presented at the SC13. It is requested that countries that have not sent this information to the WG coordinator do so as soon as possible.

17) It was agreed to request the IAC Focal Points to inform to the Secretariat *Pro Tempore* the mechanisms used by the relevant authorities in each country to carry out the advice of the Scientific Committee in the case of the recommendations of best practice manuals for sea turtles on board fishing vessels.

IAC Annual Reports and Index Beaches

18) Following up on COP7 request, the Nesting /Index Beach Working Group of the Scientific Committee after a preliminary analysis of the nesting dates of the six sea turtle species in the IAC region, reached a conclusion that the nesting occurs throughout the year in the region, therefore the Scientific Committee recommended to keep the actual deadline to submit the IAC Annual Report of April 30 of each year.

19) The Nesting /Index Beach Working Group will review the data reported by countries in the IAC Annual Reports corresponding to one year of nesting, and they will present the analysis in the SC13 in order to discuss whether it is necessary to change the Annual Report submission date to improve the nesting data that Parties are reporting.

20) It was agreed to review the table in Annex 2 on index nesting beaches of the IAC Annual Report to consider the need for inclusion of climate change information in that table. The results will be presented at SC13.

21) It was agreed to review and validate the Table 3 of the IAC Annual Report which asks for information about foraging areas for sea turtles. To do this the Working Groups of Pacific Leatherback, Loggerhead, Fisheries and Stranding, will use information available on this table for their inter-sessional activities, and simultaneously they will make an analysis of the utility of the information on this table. The results of the usefulness of this table will be discussed at SC13.

Work Plan 2015-2016

22) SC12 updated the Work Plan for 2016 (CIT-CC12-2015-Doc.3) (Annex VIII, SC12 Report) adding the inter-sessional activities for the working groups.

Other issues

Collaboration with other International Organizations - IOSEA – IAC - CITES

23) IAC Working Group formed by Ms. Julia Horrocks (Caribbean Netherlands), Mr. Didiher Chacon (Costa Rica) and Mr. Paul Hoetjes (CCE Chair) made edits and additions to the document titled *Illegal take of and Trade in Marine Turtles* in the regions of IOSEA and IAC. The document will be submitted jointly by IAC-IOSEA Secretariats as an information document to the CITES 66th Standing Committee Meeting in 2016.

International Sea Turtle Symposium - Peru 2016

24) The Consultative Committee of Experts and the Scientific Committee will prepare the IAC participation at the ISTS (International Sea Turtle Symposium) including an agenda item at the RETOMALA meeting.

25) The Scientific Committee fisheries working group agreed to organize a meeting during the ISTS international sea turtle symposium (those delegates attending the symposium), with the objective of advancing the agenda of inter-sessional work proposed in the SC12, mainly in relation to the identification of critical area of leatherback distribution in the Eastern Pacific Ocean where a spatial and temporal management is needed to reduce bycatch.

Location and dates of the 13th IAC Scientific Committee Meeting (SC13)

26) The Government of Belize offered its sponsorship to host the SC13. The next meeting will be in August, 2016 in Belize. The exact dates are to be arranged with the host country.