Inter-American Convention for the Protection and Conservation of Sea Turtle
18th Meeting of the IAC Scientific Committee
November 3-5, 2021 – Videoconference

CIT-CC18-2021-Doc.11

SC18 Chair: Ms. Lezlie Bustos, Delegate from Chile
SC18 Vice chair: Mr. Heriberto Santana, Delegate from Mexico

Report 18th Meeting of the IAC Scientific Committee (SC18)

The Eighteenth Meeting of the Inter-American Convention for the Protection and Conservation of Sea Turtles Scientific Committee (SC18) was held via videoconference using Zoom Pro, on November 3-5, 2021. The meeting began at 10:00 am EST.

The delegates from 15 IAC Parties and their advisors, observers from Canada and Trinidad and Tobago Government, Intergovernmental Organizations the Agreement for the Conservation of Albatrosses and Petrels (ACAP), Permanent Commission of the South Pacific (CPPS) and the Inter-American Tropical Tuna Commission (IATTC), and IAC accredited observers participated in the meeting for a total of 58 participants. The countries represented were Argentina, Belize, Brazil, Chile, Costa Rica, Dominican Republic, Ecuador, Guatemala, México, Panama, Peru, Honduras, United States, Uruguay, and Venezuela. (*Annex I – Participants List CIT-CC18-2021-Inf.1).*

The following recommendations and agreements were adopted from the discussions at the SC18 meeting:

18th Meeting of the IAC Scientific Committee Recommendations and Agreements

1) Adoption of the SC18 Agenda

The agenda was adopted with inclusion under other items of the review and update the membership of the Scientific Committee Working Groups, per request of SC Chair, and the process to increase IAC membership with an update in the process for Colombia, per request of observer from ASOCAPEL. The IAC Secretariat was the meeting rapporteur. (*Annex II - Agenda CIT-CC18-2021-Doc.1)*

2) Implementation of the Scientific Committee SC Work Plan 2020-2021 and Update of the SC Work Plan 2022-2023

The Scientific Committee Chair, Ms. Lezlie Bustos presented the SC compliance report (*Annex III- SC Activities Report CIT-CC18-2021-Doc.2),* highlighting the intersessional activities of the SC Working Groups (WG): 43 actions were fully implemented, from those 13 were implemented in 2021, and 29 were implemented in 2022. This is equivalent to 89% of activities produced results

including those discussed at the SC18 meeting). The activities in progress are 3% and the ones that were not implemented 8%. The SC wok plan was updated including the activities proposed by the SC Working Groups that are in the agreements and recommendations of the SC18, and that results will be presented to IAC Conference of the Parties (COP10.2) in 2022 (*Annex IV – Workplan CIT-CC18-2021-Doc.3)*

The following activities were included in the SC Work Plan:

1. SC18 Chair will prepare a report to be presented to the Consultative Committee (CCE) and IAC COP10.2 including the exceptions review process with a timeline from 2011-2021, this is to show the follow up of the IAC after five years of the exception's resolution implementation by Costa Rica, Panama and Guatemala.
2. Present Proposal for Resolutions on Exceptions for Costa Rica, Guatemala and Panama, and the Proposal for Resolution of the Impact of Fisheries on sea turtles, for consideration of CCE and COP10.2
3. Present recommendations of Technical Document "IAC Index Nesting Beach Data Analysis (2009-2020)" to IAC COP 10.2. The SC will continue to include data from IAC Annual Report 2021 to 2023 to this document as pertinent.
4. Update Technical Document "Recommendations of Manuals for Best Practices for Handling Sea Turtles on Board Fishing Boats" CIT-CC11-2014-Tec.8, with recommendations of new manuals recently published.
5. Update of technical document "Status of Loggerhead Turtles (*Caretta caretta)* within Nations of the IAC"
6. Preparation of preliminary Manual/ Guidelines on best practices for safe handling and release for sea turtles incidentally caught in fisheries, for review by the SC19 in 2022.
7. Present recommendations from IAC Technical Documents, working group reports and Scientific Committee recommendations to IAC COP10.2 under the topic of sea turtle conservation status. The documents include Data analysis to report interactions between sea turtles and longline industrial fisheries (IAC Annual Reports 2020 and 2021), Best Practices to Monitor Sand Temperature on Sea Turtle Nesting Beaches, Report on the Eastern Pacific leatherback Project in Lambayeque Peru, and Report on Index nesting beaches.
8. Continue collaboration of SC members in project 2nd phase EASI-Fish model for East Pacific Leatherback, and other Intergovernmental Organizations such as ACAP, CPPS and SPAW.
9. Prepare a format to evaluate the implementation of the exception management plan for Costa Rica, Panama and Guatemala (this is subject to the adoption of the exception resolution at COP)
10. Specific activities to work with ACAP were included to collaborate under the IAC-ACAP MoU.

Regarding activities from the 2019 work plan that have not been implemented, specifically IAC collaboration with MTSG-IUCN, the coordinator the delegate from Argentina requested

this topic to continue to be included in the SC work plan, and that more time is granted to obtain results.

3) Presentation of the Consultative Committee Report (CCE)

The CCE Chair Mr. Eduardo Ponce gave a progress report of the CCE work plan, and the activities that both committees collaborated with in the past year such as the review of exceptions, the small scale fisheries working group, and the drafting by CCE of the new proposal for a resolution for the East Pacific Leatherback that will be presented to COP10.2

4) Proposal for a new Resolution on Exceptions for Guatemala, Panama and Costa Rica

The Chair presented the exceptions timeline (2011-2021) with the process carried out by the Scientific and Consultative Committee to evaluate the implementation of the resolution of exceptions for Costa Rica, Panama and Guatemala. With the support of the IAC Secretary Ms. Verónica Cáceres, a summary was presented to reflect the advice that the IAC Committees provided to the countries that presented their exceptions. The Secretary stressed that the process began in 2011, with the adoption by the IAC COP of the Resolution CIT-COP5-2011-R2, with the procedure in cases when exceptions exist. The follow-up to the implementation of the respective resolutions in Panama, Guatemala and Costa Rica has been through the reports that these countries have periodically submitted to the IAC.

The delegates of Guatemala, Panama, and Costa Rica, presented the proposed resolution for their countries, and their thoughts on the process that each have carried out in the past five years of implementation as follows:

Guatemala

The delegate of Guatemala Ms. Airam López, explained that in this country the exception area is the entire Pacific Coast, with participation of more than 100 communities of scarce resources, which use wildlife for subsistence, and for sea turtles they only make use of eggs. The exception in Guatemala under the IAC as provided a mechanism for the management of the egg harvest since 2013, when the when the Council of Protected Areas (CONAP) implemented official regulations based on Resolution CIT-COP6-2013-R1. Guatemala previously had an internal resolution that prohibited the consumption of all species of sea turtles and their eggs, except for the eggs of *Lepidochelys olivacea*, the IAC Resolution helped to strengthen the sustainable management for subsistence. One of the most important conservation mechanisms in Guatemala was the implementation of the *L. olivacea* egg conservation quota of 20% of the extracted eggs, which must be given to sea turtle nurseries. The Government of Guatemala periodically has submitted reports to the IAC to with the results of the effectiveness of this conservation mechanism.

Ms. Lopez indicated that the IAC has always supported the improvement of the analysis of data and egg management techniques in the nursery in order to increase hatching success, as well as to facilitate that local communities understand the importance of this management to avoid the decrease of the population of *L. olivacea.*

For Guatemala, it is of vital importance to have a resolution to manage the exception, therefore the new proposed resolution will strengthen management measures with the Ministry of Environment and the Fisheries Authority, guiding decision-making. The new resolution provides only recommendations for Guatemala, and it is separated from the resolution for Panama, as they are different cases, as the exception in Guatemala is for the entire Pacific coast, and that of Panama is focused on a single area.

The United States congratulated Guatemala on the conservation efforts reflected in the increase in abundance of *L. olivacea* in the past year. The 20% conservation quota the country has established seems to be effective to manage this exception. He acknowledged the good management in the nurseries, and stressed the importance of the IAC is a good mechanism to promote sea turtle conservation in countries.

Panama

The delegate of Panama Mr. Marino Abrego said that the area for the exception in the use of eggs for local consumption and commercialization is only in Isla Cañas. This is an area of 14 km of beach where 25 - 30 families benefit from this activity. When Panama ratified the IAC in 2008, the conservation measures were restrictive in Isla Cañas, so considering the needs of the families in this communities, the request for the exception was made to IAC for Isla Cañas, which a Wildlife Refuge. The exception allows for management focused on the extraction and commercialization of eggs only in Isla Cañas, while in the rest of the country is prohibited. Although there is still illegal commercialization of eggs, the Resolution of Exception of the IAC supports the coordinated work with several Governmental Authorities such as Protected Areas and the Direction of Coasts and Seas of the Ministry of Environment of Panama. The recommendations Panama received from the IAC have been implemented in a gradual process, and those that have not yet been implemented, are included in the new resolution that is in review at this meeting.

The Ministry of Environment of Panama hired a consultant to prepare the management plan for the exception for use of *L. olivacea* eggs in Isla Cañas, that is expected to be approved by the Panama environmental authorities in the first semester of 2022. The management plan includes a strategy to obtain data to determine the sustainability of the egg use, and recommendations focused on improving human and financial resources to implement the plan and the Resolution for the Exception. The efforts in Panama continue to obtain reliable information to support the management of the exception to prevent a negative impact on the *L. olivacea* population.

Costa Rica

The delegate of Costa Rica Mr. Didiher Chacón explained the process in Ostional the place of the exception the “arribada” of *L. olivacea*. This is an event where female sea turtles synchronize their metabolism to lay the eggs coming out on the beach in big numbers per night, this causes the density of nests to exceed 11 nests per square meter on the beach. These eggs need 45 days to hatch, while the next “arribada” may occur the next night, or the next month, this behavior causes the loss of the eggs laid in the first arribada event. In the 80s, the authorities of Costa Rica supported the organization of the community of Ostional to avoid the loss of the sea turtle eggs

laid in the first arribada event, since then the community of Ostional has made a sustainable use of eggs from the first arribada, this is the only place where the exception is allowed. However, it has been a challenge to manage for Costa Rica, since there are other beaches where the species nests, and for this reason there are regulations so that eggs from beaches outside Ostional are not sold in the market illegally.

Ostional is a National Wildlife Refuge, where the use of *L. olivacea* eggs dates back to the 80s, long before the declaration of the protected area. The Association of Integral Development of Ostional is the community group that takes the eggs from the first hours of the arribada, in this way overexploitation is prevented. Costa Rica has a five-year plan for the management of this exception. The management plan that is reviewed and updated every five years with the input of the community of Ostional. The management plan was in place prior to the IAC Exception resolution. One of the management measures implemented to comply with the first IAC Exception Resolution was to select one method for monitoring nesting and estimating the nesting population in Ostional. Once the method was chosen was included in the revised five-year management plan of the exception in Ostional. The need to update the current resolution on exception is to include other measures.

The resolution proposals for exceptions in Costa Rica, Panama and Guatemala take into consideration the recommendations of the Scientific and Consultative Committee of Experts, given to the countries five years after the first resolution on exception. In the case of Panama and Guatemala the goal of the updated resolution is to focus on the need to provide a management plan for the exception in a three-year timeframe. In the case of Costa Rica, the goal of the new exception resolution is to continue with the implementation of the five-year management plan that already exists. For the three countries, there will be a system of evaluation of the implementation of the management plan every five years with the support of the Scientific Committee and the Consultative Committee of Experts. The SC18 congratulated the delegates of the three countries for the remarkable progress in the implementation of their resolutions and the management of their exceptions under their government's guidance almost 9 years ago from the time they were presented to IAC, and for Costa Rica even longer than that.

The SC18 reviewed the proposals to amend the Resolution on exceptions in Costa Rica, Panama and Guatemala that were prepared by each country. Edits were included from de delegation of Ecuador regarding the allocation of financial resources to implement the exception management plan. The text was modified to reflect the spirit of urging countries to the extent of their possibilities to provide financial resources for the implementation of the exception management plan. The IAC Scientific Committee is a technical committee; therefore, it is not its scope to propose language that might be considered mandatory to the countries in financial matters. Language was included to clarify that Costa Rica will report its population trend analyses *of L. olivacea* in Ostional as necessary in the Evaluation Report of the Management Plan every five years. This will allow early warnings to be detected. The following agreements were adopted regarding the resolution proposal on exceptions for the three countries:

Agreement 1: The Scientific Committee (SC18) adopted the proposal of Resolutions for Exception for Guatemala, Panama and Costa Rica to be presented for consideration to the Consultative Committee of Experts and IAC COP10.2. If the proposed resolutions are adopted,

they will replace the previous ones. *(Annex V - Documents CIT-CC18-2021-Doc.4 / CIT-CC18-2021-Doc.5 / CIT-CC18-2021-Doc.6 and exception process timeline)*

Agreement 2: The Scientific Committee Exception Working Group will prepare a format to be used for the Evaluation Report of the Exception Management Plan for the 3 countries. This activity will be included in the SC work plan subject to adoption of the exception resolution by IAC COP10.2.

Agreement 3: The process to review comments made by the IAC Committees to the proposed resolutions was agreed as follows: the Chair of the Scientific Committee (SC) together with the Secretariat, will send the proposals for the resolutions on exceptions and the resolution fisheries impacts on sea turtles adopted in SC18, to the Chair of the Consultative Committee of Experts (CCE) and the members of the CCE on 10 November 2021. Comments will be received until 10th December 2021. The Scientific Committee will have until January 10th, 2022, to answer and / or clarify questions from comments received from CCE. The most current versions of the resolution proposals be officially circulated no later than January 30, 2022, to the CCE15 meeting to be considered on for adoption, and subsequent presentation to COP10. 2.

FISHERIES AND INTERACTIONS WITH SEA TURTLES

5) Report on the "Analysis of data from observers on interactions between sea turtles and industrial longline fisheries in the IAC countries (IAC Annual Reports 2020 and 2021)- *WG Fisheries Dr. Heriberto Santana*

Dr. Heriberto Santana, Vice President of the Scientific Committee and delegate of Mexico presented the analysis of the IAC Parties data on interactions between sea turtles and industrial longline fisheries, this includes data of the IAC Annual Report 2020 and 2021. This report does not include the maps of the fishing operation areas of the IAC countries, because the polygons produced with the information provided to the IAC does not accurately reflect the IAC countries fishing areas, and could cause a misunderstanding. After consultations with countries, it was decided that the most appropriate way forward is to ask countries to submit their own maps of their fishing operation areas to the IAC Secretariat to be included in this report.

The author of the analysis also referred to the hook type reported by IAC countries that are not standardized according to the IATTC hook catalog. The recommendation of using this catalog is included in the IAC Annual Report instructions, however countries have not followed it. He asked again that countries use this catalog when reporting to IAC. He stressed that even with the limited number of years of data, the analysis was carried out to show the potential that the Scientific Committee has to work with the fisheries data reported by IAC Countries. The idea in the future is to carry out a comprehensive analysis that allows the inclusion of all the factors involved in the interaction of industrial longlines and sea turtles.

One of the findings from the analysis as Dr. Santana indicated is that the highest interaction rates were recorded in the Pacific Ocean with 90% of the interactions with sea turtles that were released back to the ocean alive. The document recommends asking IAC Parties to report data for smaller vessels in the IAC Annual Report to improve the analysis. The conclusions and

recommendations can be found in the full report included in Annex VI of this document. *(Annex VI - CIT-CC18-2021-Doc.7 Analysis of data from observers on interactions between sea turtles and industrial longline fisheries in the IAC countries)*

The United States commented on the need to clarify the importance of the type of bait and its effect on bycatch rates, as in the United States there is a mandate requiring the use of the hook C18 hook in their longline fisheries. Observations in this study with this hook type could be misleading. It will be important to review the hook combinations and interaction rates in the analysis to clarify. It was agreed that the United States and Mexico will include final editions to clarify the bait types, hook combination and catch rates. The final document will be ready before February 2022 to be presented to COP10.2. The definitive version of this document is included in Annex VI in the SC18 report.

The Chair of the SC congratulated the work of the delegate of Mexico in this relatively new process that is being carried out with descriptive data reported in the IAC Annual Report, and that it is expected that over the years and with more data available, a more robust and standardized analysis will be done to address the impact of all the factors of the long line fishery together.

The delegate from the Agreement for the Conservation of Albatrosses and Petrels (ACAP) Dr. Marco Favero said that this organization is on the way to establish catch and mortality rates for sea birds in fisheries, and understanding the effort that this type of analysis takes, he congratulated and acknowledged the work of IAC Scientific Committee to make progress in this challenging issue. One of the drawbacks found in ACAP is the stratification of both temporal and spatial data as they are data that may be biased to certain areas at certain times of the year. He asked Mexico's vision on this, and mentioned that there is interest from ACAP to collaborate with IAC in this work.

Dr. Santana indicated that the information requested from IAC countries is for the entire year, and most longline fisheries are reporting 100% of observed data. However, there is potential to take advantage of information coming from other fisheries that also have observed data, but this information comes from smaller vessels (less than 20 m in length). Including this data will improve the analysis and will increment the spatial data available. The inclusion in the IAC Annual Report of the data from smaller vessels is a recommendation from this analysis.

The Chair of the SC indicated that from this analysis it is recommended that the format in the IAC Annual Report in the fisheries section allows reporting information from longline vessels that have observers on board for vessels less than 20 m in length, so that the countries that have this information available are able to provide their data.

Panama and Venezuela mentioned that they are doing efforts to obtain information with the support of the fisheries authority. Chile indicates that they have information on longline vessels smaller than 20 meters that they can provide, which would help strengthen the analysis. Ecuador indicates that they have observers on board mother ships (nodrizas) that collect information from smaller fiberglass ships, therefore they can provide information on the interaction of sea turtles with vessels smaller than 20 m. Costa Rica indicated that if the requirement allows for distinct

size of the vessels, they would have the potential to provide the information when observers are on board.

The Chair of the SC clarifies that the recommendation aims to allow for more information to be available for the analysis of the Scientific Committee that could be provided by observed longline fisheries from vessels smaller than 20 meters if available.

The Scientific Committee approved the recommendations in the report (*Annex VI- CIT-CC18-2021.Doc.7),* which includes the request for information on the longline fishery with vessels smaller than 20 m in length.

Agreement 4: The Secretariat will send the IATTC hook catalog to the IAC countries as a reminder to use it for reporting standardized hook information in the IAC Annual Report.

Agreement 5: It is recommended to include a field in the IAC Annual Report in the section of fisheries data to report observed longline fishery for vessels less than 20 m in length, provided this date is available. This information will be analyzed in the longline fisheries report by the Scientific Committee.

Agreement 6: IAC countries that provide data to the IAC Annual report on sea turtle interactions with industrial longline fisheries, are requested to provide their maps with the polygons of the areas of fishing of their longline fleets (preferably in ArcGIS format). In case it is not possible for them to draw up such maps, the countries can send the geographical coordinates corresponding to the perimeter of the polygons, using WGS84 georeferencing for the IAC Fisheries Working Group - Peru and Mexico to develop such maps.

Agreement 7: the recommendations of document CIT-CC18-2021-Doc.7 "*Analysis of data from observers on interactions between sea turtles and industrial longline fisheries in the IAC countries (Annual Reports 2020 and 2021*)" were adopted by the IAC Scientific Committee to be presented to COP10.2.

6) Update of the Technical Document on Recommendation for Manuals for Best Practices for Sea Turtles on Board Fishing Vessels *WG -Fisheries – Ms. Jennifer Suárez and Ms. Lezlie C Bustos*

The delegate of Ecuador, Jennifer Suárez, presented the process carried out by the Fisheries - WG to review manuals that have been published in recent time, about 10 manuals were consulted. As a result, the manuals selected are the ones that contain most information that will facilitate their use. (Annex VII – CIT-CC18-2021-Doc.10)

The working group recommends the inclusion two additional manuals, in the IAC technical document from 2014, these are: the "Guide for the Assessment and Mitigation of Incidental Catch of Sea Turtles and Other Higher Predators in Artisanal Fisheries" and the "Sea Turtle Handling Guidelines". The WG recommends developing a guide for IAC that compiles the strengths of the published manuals, this guide will provide a standardized summary on best practices for handling

and releasing sea turtles on board fishing vessels, to be used for the fisheries sector of IAC members.

The delegate of Ecuador thanked the delegates of the Fisheries -WG for the collaborative work. The Chair of the SC added that the idea to create a compiled manual came from the lack of aggregated information on best practices that can be applied to many fisheries.

Agreement 8: SC18 approved the recommendation of the Fisheries Working Group to prepare IAC guidelines for best practices for the handling and release of sea turtles on board fishing vessels and to present a draft proposal to SC19.

Agreement 9: Include the manuals that have been selected as the most comprehensive "Guide for the Assessment and Mitigation of Incidental Catch of Sea Turtles and Other Higher Predators in Artisanal Fisheries", the "Sea Turtle Handling Guidelines" in the IAC technical document CIT-CC11-2014-Tec.8. The report of the Fisheries -WG on this matter is in Annex VII of the SC18 meeting report.

7) Proposal for Resolution on impacts of fisheries on sea turtles

The Chair of the SC indicated that in the last years the Scientific Committee made considerable progress in different aspects related to the interactions between fisheries and sea turtles. Although Resolution COP3/2006/R2 "Reduction of Adverse Impacts of Fisheries" refers to these issues, the SC - Fisheries Working Group recognized the need to update the resolution to include more specific guidelines. Therefore, the Fisheries WG presents the changes to the resolution for consideration by SC18.

The SC18 carried discussed the updates proposed in the Resolution, which incorporated the work that the SC has been doing until now, including analysis of information on sea turtles interactions with industrial longline fisheries, gradual implementation of mitigation measures of sea turtle bycatch, and increase of data collection that will provide support on the important role of technical recommendations so that the Scientific Committee can request quantitative information from IAC Parties to be reviewed every five years to draft recommendations to IAC Parties, as required. *Proposal for Resolution on impacts of fisheries on sea turtles (Annex VIII – CIT-CC18-2021-Doc.8*

Agreement 10: The SC18 adopted the proposal for the fisheries resolution CIT-CC18-2021-Doc.8 for consideration by the Consultative Committee of Experts, and COP10.2. This resolution proposal will be sent to the CCE on 10 November with a deadline for comments until December 10th, 2021. The Scientific Committee will have time until January 10, 2022, to provide clarification to comments from the CCE. The resolution proposal will be considered for adoption at the 15th meeting of the Consultative Committee of Experts.

8) Report on program for the best practices for the release of East Pacific Leatherback turtles incidentally caught in the gillnet fisheries in Lambayeque Peru - Update 2021
Fisheries WG– Dr. Javier Quiñonez

The delegate from Peru Dr. Javier Quiñonez / IMARPE member of the Fisheries WG presented updates with the activities carried out in 2021 regarding the project on best practices for the release of East Pacific Leatherback turtles incidentally caught in the gillnet fisheries in Lambayeque Peru (*Annex IX – CIT-CC18-2021-Doc.9).*

The recommendation from the SC18 based on this report is to ask that this program is extended to the areas of Tumbes and Pisco in Peru. To this effect the SC18 Chair and the Secretariat will send a letter to the IAC Focal Point in Peru to acknowledge the important conservation work carried out, and to urge that this program is also implemented in other areas in Peru as indicated in the recommendation.

The United States congratulated the efforts and the important contribution of the conservation of each East Pacific leatherback. Brazil asked if it is feasible to include spatial management measures as in the report it is noted that that the observations are stational in a period of the year, in the areas where the project is implemented. The delegate from Peru said that the spatial management is difficult to implement because there are subsistence fishing areas for the local community, this is why the best option is to work with the local fishermen in best practices to release incidentally caught turtles with the support of David Sarmiento from IMARPE, who is the person that implements this project with the fisherman and it has been successful and the fisherman are engaged. The observer from the Government of Canada Dr. Michael James, congratulated the important work that Peru is carrying out, considering that working with the fishing communities has big challenges, as it is necessary to build trust, and recognized the significant importance of this work as it has high value for the species conservation, and the building of a good relationship with the fishing communities.

Agreement 11: The SC18 supports the recommendation to Peru regarding the importance to replicate this program in Tumbes and Pisco in Peru. The following message will be transmitted to Peru Focal Point: The IAC Scientific Committee recognizes the importance of the project: "Best practices for the release of East Pacific Leatherback turtles incidentally caught in the gillnet fisheries in Lambayeque -Peru", not only for the conservation of leatherbacks, but also for the capacity building and outreach to the local artisanal fisherman. The IAC Scientific Committee recommends implementing this program in other areas in Peru where there are reports of incidentally caught leatherback turtles, and invites other IAC countries to replicate this initiative as well.

SEA TURTLE NESTING BEACHES

9) Update of Report "Data analysis of IAC Index Nesting Beaches (2009-2020)" CIT-CC18-2021-Tec.19 *Nesting data WG- Dr. Jeffrey A. Seminoff and MSc. Luz Rodriguez*

M.Sc. Luz Rodríguez presented the updated technical document "Data analysis of IAC Index Nesting Beaches (2009-2020)". This update was done earlier than scheduled by the SC, due to a request of the IAC Conference of the Parties COP10. (*Technical document in Annex X – CIT-CC18-2021-Tec.19)*

In the updated version there are changes of index beaches from Mexico (removal of beaches, per request of the Focal Point), and changes to the index beaches in Ecuador and Honduras. Two recommendations were added asking IAC Parties to keep reporting on the same index beaches to continue with the data provided in the report from earlier years, and to include a data entry line in the IAC Annual report that allows identification of the year that the nesting monitoring begins and ends. The Secretariat will inform IAC Parties that to obtain robust results in this analysis it is necessary that this document is updated every five years, and then next update will be in 2023.

Dr. Jeffrey A Seminoff delegate from the United States co-author of the document, highlighted the importance of the work of all involved in the data collection in IAC index nesting beaches, due to their efforts IAC has gradually compiled the information in the report, which allows to build nesting trends. He pointed out that the data provided by IAC countries might be sensitive, and that IAC has resolution CIT-COP9-2019-R4 with a process for data access and use, so that the data in the report can be managed with the necessary protection according to what IAC Parties request.

The nesting trend for *Chelonia mydas* observed in Tortuguero, Costa Rica, was discussed to clarify if there should be a concern. Costa Rica said that there might be a probability that this trend might reflect the exploitation of green sea turtle done by Miskito in Nicaragua, of approximately 10 000 turtles/year, this could be causing a decrease of the population that was expected in Tortuguero in the first decade of 2000. Costa Rica will review the data provided.

Agreement 12: The recommendations in the "Data analysis of IAC Index Nesting Beaches (2009-2020)" were adopted and the document will be presented to IAC COP10.2.

CLIMATE CHANGE AND SEA TURTLES

10) Review Technical Document "Best Practices for Monitoring of Temperature in Nesting Beaches." CIT-CC18-2021-Tec.18 *Climate Change Working Group-Dr. Julia Horrocks (Coordinator)-Presenter Dr. Jeff Seminoff*

Dr. Jeffrey A Seminoff member of the Climate Change Working Group and co-author presented the Technical Document "Best Practices for Monitoring of Temperature in Nesting Beaches." The document was improved with feedback from the participants of the workshop organized by IAC the Permanent Commission of the South Pacific (CPPS in Spanish), that was held in the framework of the Sea Turtle Day celebration on June 16th, 2021. This is a living document, and it will have changes as the IAC Climate Change Pilot Project develops in time. It is recommended to IAC Parties involved in the climate change pilot project (Costa Rica, Mexico, USA, Dominican Republic, Ecuador, and Panamá) use this document to guide their work. *(Annex XI CIT-CC18-2021-Tec.18 Technical Document Climate Change)*

Agreement 13: The SC18 adopted the technical document "Best Practices for Monitoring of Temperature in Nesting Beaches." CIT-CC18-2021-Tec.18. The recommendations will be presented at IAC COP10.2

CONSERVATION STATUS *Caretta caretta*

11) Update on the Technical Document Conservation status *Caretta caretta* – *MSc. Kirah Foreman and Dr. Jeffrey A Seminoff*

M.Sc. Kirah Foreman delegate from Belize presented the outline of the loggerhead turtle (Caretta caretta) technical document, and highlighted the need that IAC countries provide recent data for this species to do the update of the original document prepared in 2016. This report is a request from an IAC Resolution, and it has to be presented to IAC COP10.2. Costa Rica suggested sources of information for this species for Honduras with the representative of WIDECAST, however the delegation from Honduras said that they requested the information and were told that not nesting has been recorded of the species in recent years. The IAC Secretariat asked the SC delegations to provide the information for this report through their Focal Points.

Agreement 14: The IAC Secretariat will send a reminder to IAC Focal Points to send the information to update the technical document "Conservation status *Caretta caretta"* with deadline December 15th, 2021. If the information is nr received, the working Group United States/Belize will use other sources to obtain information, those will be mentioned in the report. The working group will prepare the technical document by the **first week of February 2022** for SC review (2 weeks), and after that it will be submitted to IAC COP10.2 as requested in the IAC Resolution. The document will be shared with IAC Consultative Committee for information.

COLLABORATION WITH REGIONAL INTERNATIONAL ORGANIZATIONS

12) Report on implementation of collaboration IAC-IATTC- Model EASI-FISH for EP Leatherback. *Dr. Bryan Wallace (CCE IAC), and IATTC Staff Dr. Jon Lopez and Dr. Shane Griffins*

The progress report was presented by Dr. Bryan Wallace, Dr. Jon Lopez, and Dr. Shane Griffins, there is a working group with members from the Scientific and Consultative Committee of IAC countries as well as IATTC that have been meeting in 2021 almost once a month to provide data for the project, review the model parameters etc. The project now has all the data needed from 16+ countries and the EASI-Fish model and the habitat distribution model are in process of preparation by IATTC experts. They expect to present the analysis at IATTC SAC meeting and IAC COP10 in 2022.

It was suggested that the members of the working group begin to prepare recommendations for what is needed for the third phase of this project EASI-FISH for leatherback turtle, as it will be important to continue this collaboration with the MoU IAC-IATTC, and this recommendation should be given to both organizations.

ACAP delegate Dr. Marco Favero congratulated IAC for their collaboration on this project with IATTC, and considers that ACAP has a lot of lessons to learn from this experience. He recognized the effort and challenges of data aggregation from all countries, this is an interesting project for ACAP to consider for replication.

Presentation on Sea Turtle Conservation measures from the perspective of RFMOs - *Dr. Manuel Correia (Co-Chair of IATTC Bycatch Working group)*

The SC18 thanks and recognizes Dr. Correia for the information in his presentation that provides valuable insights and increase the understanding of the negotiations at the RFMOs such as IATTC and ICCAT regarding bycatch of endangered species. The recommendations adopted at ICCAT and IATTC will be taken into consideration in the IAC draft resolution on the impact of fisheries on sea turtles.

13) Collaboration with Albatross and Petrels Agreement (ACAP)-*MSc. Diego Albareda*

The delegate from Argentina MSc. Diego Albareda coordinator of this topic in the SC, proposed two activities to work with ACAP. One is electronic monitoring of fisheries for the SC to prepare a document addressing this matter, and the second a report on geographical areas of common interest ACAP-IAC, and the revised text for the renewal of the MoU. Argentina proposes to include the activities in the SC18 workplan (*Annex XII- Proposed activities IAC-ACAP*). The delegate from ACAP Dr. Marco Favero agrees to include his participation in these activities in the IAC SC work plan in the framework of the MoU.

Agreement 15: To include in the SC work plan the activities proposed by the coordinator IAC-ACAP delegate from Argentina, to implement IAC-ACAP MoU in 2022.

-Expected Result Activity 1: Technical document with guidelines for electronic monitoring for fisheries focused on sea turtles.
-Expected Result activity 2: Report with geographic areas of interest for ACAP -IAC - revised text for renewal of MoU.

14) Activities of the Permanent Commission of the South Pacific (CPPS) and their Sea Turtle Technical Committee – *Ms. Zuleika Pinzon (CPPS)*

Ms. Zuleika Pinzon delegate from CPPS gave a presentation of the workplan of the sea turtle Technical Committee of this organization, and proposed possible areas of collaboration with IAC under the Memorandum of Understanding. She made a reference to the fruitful collaboration with IAC in 2021 by celebrating together one week with activities in celebration Sea Turtle Day 2021 including the virtual workshop on climate change and sea turtles that took place on June 16th, 2021.

Agreement 16: The topics for collaboration with CPPS are the celebration of Sea Turtle Day 2022, and subject to consultation and approval by CCPS the collaboration on the Guide for best practices for sea turtles that interact with fishing operations.

15) Membership of IAC SC Working Groups

The SC Chair asked the Committee to update their membership and allow opportunity to make changes in the coordinators and /or members.

Agreement 17: The IAC Scientific Committee Working Groups have the following structure:

WG Exceptions: Coordinator Costa Rica, M.Sc. Didiher Chacon while consultations are conducted with CONAP Guatemala regarding coordination by MSc. Airam Lopez
Members: M.Sc. Didiher Chacon (Costa Rica), Dr. Julia Horrocks (Caribbean Netherlands), Dr. Cecilia Baptisttote (Brazil), Ms. Airam López (Guatemala), Mr. Marino Abrego (Panama), and Dr. Laura Sarti (Mexico´s Delegate to the Consultative Committee).

WG Fisheries – Coordinator Mexico Dr. Heriberto Santana
Members-Perú, Chile, Uruguay, México, and Ecuador

WG Nesting- Coordinator USA Dr. Jeffrey Seminoff
Members- Ecuador and USA

WG Climate Change- Coordinator Caribbean Netherlands Dr. Julia Horrocks
Members- USA, Caribbean Netherlands, Panamá, Costa Rica, Rep. Dominicana, Ecuador, México. Brazil asked to leave the WG.

WG *Caretta* - Coordinator Belize MSc. Kirah Foreman
Members- USA, Mexico, Brazil, Perú and Belize

WG Northwest Atlantic Leatherback- Coordinator USA Ann Marie Lauritsen (CCE member)
Members: Dominican Republic and Belize

The observers attending the meeting asked to be allowed to participate in the working groups, it was explained to them that the IAC does not have an official mechanism at the moment for this, and that their interest is appreciated.

Agreement 18: The CCE and SC will endeavor to work in preparing a proposal for a mechanism to facilitate the collaboration with IAC accredited observers in the Convention Working Groups.

16) Preparation of the next Scientific Committee meeting (SC19)

The situation to prepare the SC19 will be evaluated depending on how the COVID-19 pandemic evolves, and there are financial resources available to decide on the format to convene the meeting. The members of the SC are asked to consult with their countries the possibility to host the next SC meeting in person. The proposed date for SC19 is October 2022.

Annexes

Annex I – Participants List CIT-CC18-2021-Inf.1
Annex II - Agenda CIT-CC18-2021-Doc.1
Annex III - Report on the Scientific Committee Implementation of Activities 2020-2021 CIT-CC18-2021-Doc.2
Annex IV - Work Plan CIT-CC18-2021-Doc.3.
Annex V- Proposal of Resolution on Exceptions CIT-CC18-2021-Doc.4 / CIT-CC18-2021- Doc.5 / CIT-CC18-2021-Doc.6 and Exceptions Process Timeline.
*Annex VI - **Analysis of** observer data regarding interactions between sea turtles and industrial longline fisheries of the IAC Countries - CIT-CC18-2021-Doc.7*
Annex VII - Review and Update of the Recommendations on Manuals for Best Practices for Sea Turtles on Board Fishing Vessels CIT-CC18-2021-Doc.10
Annex VIII - Proposal of Resolution on the reduction of adverse impacts of fisheries on Sea Turtles CIT-CC18-2021-Doc.8
Annex IX - Project on the release of leatherback (Dermochelys coriacea) turtles in Lambayeque´s gillnet fishing fleet. CIT-CC18-2021-Doc.9
Annex X - Data Analysis of IAC Index Nesting Beaches (2009-2020) CIT-CC18-2021-Tec.19–
Annex XI - Best Practices to Monitor Sand Temperature on Sea Turtle Nesting Beaches CIT-CC18-2021-Tec.18
Annex XII- Progress report on the implementation of activities IAC-ACAP CIT-CC18-2021-Doc.12.
Annex XIII – SC18 Agreements – CIT-CC18-2021-Doc.13
Annex IV – SC18 Photos

ANNEX I – Participants List SC18 / CIT-CC18-2021-Inf.1

No.	COUNTRY	NAME	ORGANIZATION	E-MAIL
	DELEGATES			
01	Argentina	Diego Albareda	Presidente Comité Científico/Scientific Committee Chair	diego.albareda@gmail.com
02	Argentina	Romina Smeraldi	Ministerio de Relaciones Exteriores	smk@mrecic.gov.ar
03	Belice	Kirah Forman	Belize Fisheries Department	kirahforman@yahoo.com
04	Brazil	Cecilia Baptistotte	Tamar-ICMBIO Center	cecilia.baptistotte@icmbio.gov.br
05	Brazil	Erick Santos	Tamar-ICMBIO Center	erik.santos@icmbio.gov.br
06	Costa Rica	Didiher Chacon Chaverri	WIDECAST América Latina	dchacon@widecast.org
07	Chile	Lezlie Bustos	Subsecretaría de Pesca	lbustos@subpesca.cl
08	Chile	Paula Salinas		
09	Ecuador	Jennifer Suarez	Parque Nacional Galápagos MARN	jmsuarez@galapagos.gob.ec
10	Ecuador	Marco Herrera	Instituto Publico de Investigaciones en Acuicultura y Pesca	mherrera@institutopesca.gob.ec
11	Ecuador	Victor Cevallos	Dirección de Políticas pesqueras y acuícolas	vcevallosl@produccion.gob.ec
12	Ecuador	Victor Chocho	Dirección de Biodiversidad MARN	victor.chocho@ambiente.gob.ec
13	Ecuador	Beatriz Ladines	MARN	beatriz.ladines@ambiente.gob.ec

No.	COUNTRY	NAME	ORGANIZATION	E-MAIL
	DELEGATES			
14	Ecuador	Alberto Proaño	Parque Nacional Galápagos MARN	aproano@galapagos.gob.ec
15	Ecuador	Eduardo Espinoza Herrrera	Parque Nacional Galápagos MARN	eespinoza@galapagos.gob.ec
16	Honduras	David Jaen	Analista Ambiental/ Dirección General de Biodiversidad (DIBIO)	david_jaen@yahoo.com
17	Honduras	Scarlett Inestroza	Analista Ambiental / Dirección General de Biodiversidad (DIBIO)	caly_2_3@hotmail.com
18	Guatemala	Airam López Roulet	CONAP – Sección de Recurso Hidrobiológicos	hidrobiologicosconap@gmail.com
19	México	Heriberto Santana	Instituto Nacional de Pesca - INAPESCA	heriberto.santana@inapesca.gob. mx
20	Panamá	Marino Abrego	Ministerio de Ambiente de Panamá – Dir. Costas y Mares	meabrego@miambiente.gob.pa
21	Panamá	José Julio Casas	Ministerio de Ambiente de Panamá – Dir. Costas y Mares	jcasas@miambiente.gob.pa
22	Perú	Javier Quiñones	Instituto del Mar de Perú - IMARPE	jquinones@imarpe.gob.pe
23	Perú	Jennifer Chauca	Instituto del Mar de Perú - IMARPE	jchauca@imarpe.gob.pe
24	República Dominicana	Cristiana De La Rosa	Viceministerio de Recursos Costeros y Marinos	cristiana.delarosa@ambiente.gob. do
25	Uruguay	Cecilia Lezama	DINARA	clezama@mgap.gub.uy
26	United States	Jeffrey Seminoff	NOAA	Jeffrey.seminoff@noaa.gov
27	United States	Yonat Swimmer	NOAA	Yonat.Swimmer@noaa.gov
28	United States	Jared Milton	U.S. Department of State	MiltonJR@state.gov
29	Venezuela	Carliz Díaz	Ministerio del Poder Popular para el Ecosocialismo	carlizdiaz@gmail.com
	COP CHAIR			
30	Costa Rica	Rotney Piedra	SINAC- Costa Rica Presidente de la COP	rotney.piedra@sinac.go.cr
	CONSULTATIVE COMMITTEE OF EXPERTS			
31	México	Eduardo Ponce	CONANP Presidente CCE	jponce@conanp.gob.mx
32	United States	Bryan Wallace	Sectorial Científico CCE	bryanpwallace@gmail.com
	OBSERVERS AND INTERNATIONAL ORGANIZATIONS			
33	Canada	Michael James	Fisheries and Oceans Canada / Government of Canada	mike.james@dfo-mpo.gc.ca
34	Canada	Katherine Hastings	Fisheries and Oceans Canada / Government of Canada	katherine.hastings@dfo-mpo.gc.ca
35	Canada	Robynn Laplante	Fisheries and Oceans Canada / Government of Canada	Robynn-Bella.Smith-Laplante@dfo-
36	Trinidad &Tobago	Kaila Clarke-Mendes	EMA/ Environmental Management Authority	KClarke-Mendes@ema.co.tt
37	United States	Jon Lopez	IATTC	jlopez@iattc.org
38	United States	Shane Griffiths	IATTC	sgriffiths@iattc.org
39	Argentina	Marco Favero	Agreement on the Conservation of Albatross and Petrels - ACAP	mafavero@icloud.com

No.	COUNTRY	NAME	ORGANIZATION	E-MAIL
	DELEGATES			
40	Ecuador	Monica Machuca	Comisión Permanente del Pacifico Sur CPPS	mmachuca@cpps-int.org
41	Panamá	Zuleika Pinzon	Comisión Permanente del Pacifico Sur CPPS	
42		Manuel Correia	Cochair IATTC Bycatch working Group	manuelcorreia.a@gmail.com
IAC ACREDITED OBSERVERS				
43	Argentina	Laura Prosdocimi	Ministerio de Agricultura, Ganadería y Pesca	lprosdo@yahoo.com.ar
44	Argentina	Sofia Jones	Facultad de Ciencias Naturales y Museo, Universidad Nacional de La Plata (UNLP)	sjones@fcnym.unlp.edu.ar
45	Argentina	Karina Cecilia Álvarez	Fundación Mundo Marino	karinacecialvarez@gmail.com
46	Argentina	Victoria González Carman	INIDEP	vgcarman@gmail.com; vgcarman@inidep.edu.
47	Costa Rica	Magie Rodríguez Esquivel	AIDA	mrodriguez@aida-americas.org
48	United States	Royal Gardner	Stetson University College of Law	Gardner@law.stetson.edu
49	United States	Erin Okuno	Stetson University College of Law	okuno@law.stetson.edu
50	United States	Katherine Pratt	Stetson University College of Law	kpratt2@law.stetson.edu
51	United States	Grettel Delgadillo	Humane Society International	gdelgadillo@hsi.org
52	United States	Rebecca Regnery	Humane Society International	rregnery@hsi.org
53	Uruguay	Alejandro Fallabrino	Karumbé	afalla7@gmail.com
54	Colombia	Alvaro Andrés Moreno	ASOCAPEL	almorenomunar@gmail.com
55	Venezuela	Hedelvy Guada	WIDECAST	
	IAC SECRETARIAT			
56	CIT	Verónica Cáceres	Secretary PT CIT	secretario@seaturtle.org
57	CIT	Luz Helena Rodríguez	CIT	asistentecit@gmail.com
58	CIT	Paul Schiftan	Interpreter	pschiftan@yahoo.com
59	CIT	Marco Zavala	Interpreter II	

ANNEX II – Agenda of the Inter-American Convention for the Protection and Conservation of Sea Turtles (IAC) 18th Consultative Committee Meeting - CIT-CC18-2021-Doc.1

Date: 3, 4 and 5 November 2021
Time: 10:00 AM to 2:30 PM - Washington DC
Videoconference: ZOOM Pro – Link will be sent only to registered participants
Chair SC18: Ms. Lezlie Camila Bustos
Vicechair SC18: Dr. Heriberto Santana

Preliminary Agenda SC18

Day 1 / Time 10:00 am EST – 2:30 PM EST (Washington DC)

10:00 – 10:30 a.m. Participants access to the videoconference
Platform: Zoom with simultaneous interpretation

10:30 – 11:00 a.m. Welcome remarks, introduction of participants, adoption of the agenda an election of rapporteur - *Ms. Lezlie Camila Bustos, Scientific Committee Chair SC18*
CIT-CC18-2021-Doc.1 Agenda
CIT-CC18-2021-Inf.1 Participants List

COMPLIANCE WITH THE SCIENTIFIC COMMITTEE WORK PLAN 2020-2021 PROGRESS, AND RESULTS

11:00 – 12:00 p.m. Report on intersessional activities and results according to the SC Work Plan. *Ms. Lezlie Camila Bustos, SC18 Chair*
CIT-CC18-2021-Doc.2 – Activities Report

12:00 – 12:30 p.m. Updating of the Scientific Committee Work Plan
CIT-CC18-2021-Doc.3 – Work Plan 2022-2023

12:30 – 01:00 p.m. Break

01:00 – 01:30 p.m. Report on the Consultative Committee of Experts – CCE14
Dr. Eduardo Ponce, CCE Chair
CIT-CCE14-2021-Doc.9 – Report CCE14

EXCEPTIONS

01:30 – 02:30 p.m. Review proposals for draft Resolution for Exception in Costa Rica, Panama, and Guatemala to be presented at COP10-Part II.
CIT-CC18-2021-Doc.4, CIT-CC18-2021-Doc.5, CIT-CC18-2021 Doc.6. Exceptions Process Timeline
SC Delegates from Costa Rica, Panama, and Guatemala.

Day 2 / Time 10:00 am EST – 2:30 PM EST (Washington DC)

FISHERIES INTERACTIONS WITH SEA TURTLES

10:00 -10:30 a.m. Adoption of the updated report on the "Analysis of the IAC Parties data reporting interactions between sea turtles and industrial longline fisheries (IAC Annual Reports 2020 and 2021) to present it to the COP10-II. CIT-CC18-2021-Doc.7.
Fisheries WG-Dr. Heriberto Santana, SC Vice Chair.

10:30 – 11:00 a.m. Progress report on the update of the Technical Document on Recommendation for Manuals for Best Practices for Sea Turtles on Board Fishing Vessels. CIT-CC18-2021-Tec.8
Fisheries WG-Ms. Jennifer Suárez and Ms. Lezlie C Bustos.

11:00 – 12:00 p.m. Discussion on the Draft Resolution on impacts of fisheries on sea turtles. CIT-CC18-2021-Doc.8
Fisheries WG-Ms. Lezlie C Bustos

12:00 – 12:30 p.m. Break

12:30 – 01:00 p.m. Report on program to quantify release of East Pacific Leatherback from gillnet fisheries in Lambayeque Peru, update 2021
Fisheries WG– Dr. Javier Quiñonez

NESTING BEACHES

01:00 – 01:30 p.m. Update of technical document "Data analysis of IAC Index Nesting Beaches (2009-2020)" to present it to the COP10-II. CIT-CC18-2021-Tec.19
Nesting data WG- Dr. Jeffrey Seminoff and Luz Rodriguez

CLIMATE CHANGE

01:30 – 02:00 p.m. Technical Document "Best Practices for Monitoring of Temperature in Nesting Beaches." CIT-CC18-2021-Tec.18
Climate Change Working Group-Dr. Julia Horrocks

LOGGERHEAD TURTLE CONSERVATION STATUS

02:00 – 02:30 p.m. Update Technical Document "Conservation Status of Loggerhead Turtles (*Caretta caretta*) within Nations of the IAC
Caretta caretta WG - Dra. Kirah Foreman and Dr. Jeffrey A Seminoff

Day 3 / Time 10:00 am EST – 2:30 PM EST (Washington DC)

COLLABORATION WITH REGIONAL INTERNATIONAL ORGANIZATIONS

10:00 – 10:30 a.m. Report on collaboration strategies with RFMOs: implementation of collaboration IAC-IATTC Model EASI-FISH for East Pacific Leatherback *Dr. Bryan Wallace (IAC-CCE delegate), and Dr. Jon Lopez and Dr. Shane Griffins - IATTC Scientists*

10:30 – 11:30 a.m. Sea Turtles in the framework of the Regional Fisheries Management Organizations. *Dr. Manuel Correia*

11:30 – 12:00 p.m. Report on implementation of activities with the Agreement on the Conservation of Albatrosses and Petrels. *M. Sc. Diego Albareda*

12:00 – 12:30 p.m. Activities of the Sea Turtle Technical Committee of the Permanent Commission of the South Pacific. *Ms. Zuleika Pinzón - CPPS*

12:30 – 01:00 p.m. Break

RECOMMENDATIONS FROM THE SCIENTIFIC COMMITTEE

01:30 – 01:30 p.m. Adoption of agreements and recommendations from the SC18 meeting

OTHER BUSINESS

01:30 – 02:00 p.m. Other business
a) Scientific Committee Working Groups
b) Process to support the increase of the IAC membership

02:00 – 02:15 p.m. Preparation of the next meeting (SC19)

02:15 – 02:30 p.m. Closing remarks

ANNEX III – Report on the Scientific Committee Implementation of Activities 2020-2021 CIT-CC18-2021-Doc.2

CIT-CC18-2021-Doc.2

Report on the Implementation of the Scientific Committee Work Plan 2020-2021

The following document is presented by the Scientific Committee Chair and the Secretary¸ and lists the status of the activities agreed during the SC17 (2020), COP10 (2021), and SC18 (2021) of the Inter-American Convention for the Protection and Conservation of Sea Turtles included in the IAC Scientific Committee Work Plan 2019-2021. The status of the activities is defined as green "completed"; yellow is in progress, and red "no action". The items in blue are for discussion at the CC18-2021. The symbol "✓" shows the year the activity was completed.
The list is organized by theme and divided into two columns, 1) the activity and 2) explanation for the status shown by the respective color. As agreed by the COP9 this report will be presented at the Scientific Committee meetings and the Conference of Parties.
Recommendation: The Scientific Committee (CC18 - 2021) adopts the following activities to include them in the work plan 2021-2023:

1. Prepare report to Consultative Committee (CCE) with the process that undertook the SC to review the exceptions for Costa Rica, Panama, and Guatemala in support of the resolution proposals by the countries. (Activity for implementation in the work plan)
2. Draft Resolutions on the exceptions Costa Rica, Guatemala and Panama to be presented for consideration to CCE and COP10.
3. Presentation to IAC COP10 of update of the "IAC Parties Data analysis to report interactions between sea turtles and longline industrial fisheries (IAC Annual Reports 2020 and 2021)"
4. Decide with the Consultative Committee to include a format in IAC Annual Report to collect data on sea turtle interactions data in gillnet fisheries. (Activity for implementation in the work plan)
5. Proposal of IAC Fisheries Resolution to be presented to CCE and COP10.2 as appropriate.
6. Present to IAC COP 10.2 Technical document "IAC Index Nesting Beach Data Analysis (2009-2020)"
7. Technical Document "Best Practices to Monitor Sand Temperature on Sea Turtle Nesting Beaches" adopted at CC18 and recommendations presented to COP10.2
8. Continue collaboration of SC members in project 2nd phase EASI-Fish model for East Pacific Leatherback, including a distribution model and vulnerability assessment for the species, and presentation of results to the COP IAC. (Activity in work plan).
9. Presentation at the COP10.2 of Report on the Eastern Pacific leatherback Project in Lambayeque updated to 2021 and.
10. Update of technical document "Recommendations of Manuals for Best Practices for Handling Sea Turtles Onboard Fishing Boats". (Activity for implementation in work plan).
11. Preparation of preliminary Manual on best practices for handling and release for sea turtles incidentally caught in fisheries, for review by the 2022 Scientific Committee.

12. Update of technical document “Status of Loggerhead Turtles (*Caretta caretta)* within Nations of the IAC”
13. Report on sea turtle status through technical reports from SC at the COP10.2
14. Decide on specific activity to work with SPAW identified according to the list of proposals presented at the SC17 (CIT-CC17-2020-Doc.15 – Annex XII) (Activity for implementation in work plan).
15. Recommendations to IAC Parties on actions to continue monitoring illegal trade (CITES) presented to the COP10.2
16. Decide what to do with the items that are pending since more than two meetings ago (in red in the work plan).

Inter-American Convention for the Protection and Conservation of Sea Turtles
18th Meeting of the Scientific Committee
November 3-5, 2021

CIT-CC18-2021-Doc.2

Report on the Implementation of the Scientific Committee Work Plan 2020-2021

The following document is presented by the Scientific Committee Chair and the Secretary¸ and lists the status of the activities agreed during the SC17 (2020), COP10 (2021), and SC18 (2021) of the Inter-American Convention for the Protection and Conservation of Sea Turtles included in the IAC Scientific Committee Work Plan 2019-2021. The status of the activities is defined as green "completed"; yellow is in progress, and red "no action". The items in blue are for discussion at the CC18-2021. The symbol "✓" shows the year the activity was completed.

The list is organized by theme and divided into two columns, 1) the activity and 2) explanation for the status shown by the respective color. As agreed by the COP9 this report will be presented at the Scientific Committee meetings and the Conference of Parties.

To complete these activities, report, the Scientific Committee working groups have carried out the following meeting during the inter-sessions period 2020-2021:

Fisheries (4 meetings), Exceptions (7 meetings), *Caretta caretta* (1 meeting), Climate Change (2 meetings), Nesting (2 meetings).

SCIENTIFIC COMITTEE			2020	2021
	Proposed Activities	**Status – November 4 2021**		
Exceptions				
1	Panama presents its 5-years report on the implementation of the exception to the COP9 and the Scientific Committee SC16 Meeting in 2019.	Panama presented its 5-year report on the implementation of its Exception at the COP9 and SC16-2019.	✓	
2	The Exceptions Working Group (WG) submits recommendations to Panama´s 5-years report to the Consultative Committee. Due Date: May 15th, 2020.	Exceptions WG submitted recommendations to CCE and subsequently to Panama. Submission Date: September 3rd, 2020.	✓	
3	Meeting with Panama Focal Point from Ministry of Environment and Focal Point from Ministry of Foreign Affairs, the IAC Chairs of the SC, CEE, and COP, and representative of Exceptions WG, to discuss the recommendations on exceptions and answer questions from Panama related to the next steps to prepare the Exception Management Plan.	The meeting took place on October 12, 2020.	✓	

SCIENTIFIC COMITTEE			2020	2021
	Proposed Activities	**Status – November 4 2021**		
4	Panama will prepare a work plan including how they will implement the recommendations from SC and CCE, the opportunities, and challenges. This Work plan will be shared with the Exception working Group by December 2020.	Work plan included in the draft Resolution for the Exception in Panama presented to the CC18-2021		✓
5	**Recommendations from COP:** Panamá presents the exception management plan to the Scientific Committee.	Panama reported to the SC16 that the preparation of the management plan is still in progress. Panama will present an update to the SC18 2021 and the COP10.2		
6	Panama presents a Draft Resolution on its Exception considering the recommendations from the Scientific and Consultative Committee to the Exceptions WG and the SC18 for their approval.	Draft Resolution on the exceptions in Panama presented for adoption by the SC18.		✓
7	**Recommendations from COP:** Guatemala presents its management plan and the 5-years report on the implementation of the exception for reviewing by the Scientific Committee SC17-2020.	Guatemala presented the following document to the SC17 on August 20, 2020: 1) 5-years progress report on the implementation of the resolution on exceptions CIT-COP6-2013-R1 Report 2016-2019 2) PRODUCT 2: Olive ridley (*Lepidochelys olivacea*) in Guatemala´s Pacific Coast. 3) PRODUCT 3: Proposal on economic alternatives to meet subsistence needs to reduce the harvest of olive ridley's eggs to a sustainable level. 4) PRODUCT 5: Assessment of items in Resolution CIT-COP6-2013-R1	✓	
8	Exceptions WG reviews the documents submitted by Guatemala to assess compliance with the Resolution´s requirements.	The exceptions WG did not present recommendations to Guatemala at the SC17 or CCE14. Recommendations were submitted in June 2021 to the Consultative Committee and Guatemala. Responsible: Delegates from Argentina, Costa Rica, Caribbean Netherlands, Brazil, Panama, Guatemala, and Mexico (CCE).		✓
9	Guatemala presents a Draft Resolution on its Exception considering the recommendations from the Scientific and Consultative Committees to the Exceptions WG and the SC18 for their approval.	Draft Resolution on the exceptions in Guatemala presented for adoption by the SC18.		✓

SCIENTIFIC COMITTEE			2020	2021
	Proposed Activities	**Status – November 4 2021**		
10	Costa Rica presents its 5-year report on the implementation of the exception for reviewing by the Scientific Committee SC17-2020.	Costa Rica presented the document "Costa Rica progress report on the exceptions resolution CIT-COP7-2015-R1" on July 20, 2020, to the SC Chair and the Secretary *PT*. The report was submitted to the Exceptions WG.	✓	
11	Exceptions WG reviews Costa Rica´s 5-years progress report on the implementation of the exceptions Resolution, to assess compliance with the Resolution´s requirements.	Exceptions WG presents recommendations to Costa Rica at the 17th Scientific Committee meeting CC17-2020. The Exceptions WG did not present recommendations to Costa Rica at the SC17 or CCE14. Recommendations were submitted in May 2021 to the Consultative Committee and Costa Rica. Responsible: Delegates from Argentina, Costa Rica, Caribbean Netherlands, Brazil, Panama, Guatemala, and Mexico (CCE).		✓
12	Recommendations to the Exceptions five-year report will be submitted to Guatemala and Costa Rica Focal Points through the Secretary *PT* and discussed in two meetings, one for each country.	The final document was submitted and discussed with the Focal Points from Costa Rica, in May 2021, and from Guatemala, in August 2021.		✓
13	Costa Rica presents a Draft Resolution on its Exception considering the recommendations from the Scientific and Consultative Committees to the Exceptions WG and the SC18 for their approval.	Draft Resolution on the exceptions in Guatemala presented for adoption by the SC18.		✓
14	The SC Chair presents the three Exceptions draft resolution with a preamble on the reviewing process of the implementation of the exception in Panama, Guatemala and Costa Rica tot the Consultative Committee and the IAC 10th Conference of Parties in 2022.	The SC Chair prepares a presentation of the process in each country to the SC18, CCE15 and the COP 10.2. SC Chair presents the draft resolutions from the three countries to the COP10.2.		✓
IAC Website and News Bulletin				
15	Monthly, the Scientific Committee will provide news relevant to IAC Parties to the Secretary for the IAC Newsletter.	News updated on the website. Four news bulletins were posted in 2020 and two in 2021. More proactivity from the Parties sending their national news to the Secretary is required.	✓	✓

SCIENTIFIC COMITTEE			2020	2021
	Proposed Activities	**Status – November 4 2021**		
Fisheries				
16	**Recommendation from CCE to SC:** Develop a method to analyze data on interactions between sea turtles and industrial longline (Fisheries section of 2020 IAC Annual Report)	Fisheries WG prepared a presentation and recommendations on the method to analyze data included in the Annual Report for the consideration of the Scientific Committee SC17 Products: Database to analyze the IAC Annual Report longline data. Responsible: Delegate from Mexico	✓	
17	The Scientific Committee reviews the report and database to analyze the Annual Report Fisheries section data (Interactions between sea turtles and longline) proposed by WG. The Fisheries WG member and delegate from Mexico will prepare the report on industrial longline data analysis to the CCE14.	The SC provides recommendations to Fisheries WG on the method to analyze the Annual Report Fisheries data at the Scientific Committee 17th Meeting SC17-2020. Report presented to the Consultative Committee CCE14-2021.	✓	✓
18	The Fisheries WG delegate from Mexico will update the report on longline fisheries data analysis including 2019 and 2020 data.	First update of the graphs and data was presented to the SC17 (2020). Second update was presented to SC18 (2021) to then present it to the COP10.2 (2022).	✓	✓
19	**Recommendations from CCE to SC:** Develop a data collection form and a method to analyze data on the interaction between sea turtles and gillnets.	Fisheries WG prepared a report and presentation for the consideration and recommendations from the SC17. Product: **Form** to collect data on gillnet interactions with sea turtles and **Database** to analyze gillnets data. Responsible: Delegate from Ecuador	✓	
20	The Scientific Committee reviews the form, database, and methodology to analyze data on interactions between sea turtles and gillnets at the SC17-2020.	The Scientific Committee (USA, Caribbean Netherlands, and Guatemala) provided recommendations to Fisheries WG regarding the form and database for gillnets data at the SC17-2020.	✓	
21	Fisheries WG reviews recommendations to adjust the gillnets database and data form to present them to the CCE in 2021	Fisheries WG (Chile and Ecuador) presented the form and database for gillnets to the CCE14, and it was not adopted. An alternative of a joint work between Scientific and Consultative committees was decided.	✓	✓
22	The SC and CCE Fisheries WGs will prepare a methodological proposal to gather information on interactions between sea turtles and gillnets.	The SC Fisheries in agreement with the Consultative Committee should indicate the deadline and time frame for this activity.		

SCIENTIFIC COMITTEE			2020	2021
	Proposed Activities	**Status – November 4 2021**		
23	**Recommendations from the COP:** Review the IAC Annual Report table to monitor Fisheries Resolution and prepare a list of priority information and recommendations.	SC Chair presents recommendations from Mexico and Chile fisheries WG delegates to the SC, which are included in the SC16 report - CIT-CC16-2019-Doc.10 to the COP10.2-2022	✓	
24	Fisheries WG presents a proposal to update IAC Resolution COP3/2006/R-2 to the Scientific Committee on the Reduction of Adverse Fisheries Impacts in 2021.	Draft to update the IAC Resolution prepared preparation by the Fisheries WG, considering the SC16 report - CIT-CC16-2019-Doc.10 to present it at the SC18 - 2021 Scientific Committee and the Consultative Committee 2022. Responsible: Delegate from Chile.		✓
25	Fisheries WG proposes to draft the IAC Manual for best practices in safe handling and release of sea turtles incidentally caught in fishing operations.	Discussion at SC18 on how to carry out the drafting of IAC Manual for best practices in safe handling and release of sea turtles incidentally caught in fishing operations, by an analysis of manuals that already exist. The proposal from the WG is to prepare a first draft of the manual for SC19. Responsible: Delegate from Ecuador		
Index Beaches Conservation Status				
26	**Recommendation from COP**: Collect information on annual nesting in the IAC Parties index beaches and analyze it every 5 years	The WG was formed by the IAC Scientific Committee. Dr. Jeff Seminoff (USA Delegate) and the Secretariat have been preparing the updates of this document since 2014. The WG presented the Technical Document update on IAC index beaches nesting 2009-2020 to the Scientific Committee 2021 and the COP 10 – 2022.		
Climate Change				
27	**Recommendation from COP:** Climate Change WG, and delegates in charge of the pilot project implementation from the USA, Ecuador, Costa Rica, Mexico, and Panama held their 1st meeting on August 12, 2020, to present their progress and challenges in the implementation of the Pilot Project on environmental data to monitor climate change impacts.	WG presents a progress report on the implementation of the pilot project and the next steps resulting from the meeting with the project implementation team at CC17 - 2020.	✓	

SCIENTIFIC COMITTEE			2020	2021
	Proposed Activities	**Status – November 4 2021**		
28	The United States, Costa Rica, and Mexico begin collecting information on environmental parameters in the second half of 2020.	The United States, Costa Rica, and Mexico present a progress update at the WG 2nd meeting in 2020.	✓	
29	The second WG meeting on the implementation of the pilot project is scheduled for the third week of January 2021.	Climate Change WG prepares a 2nd meeting report with recommendations to begin the project implementation in the first quarter of 2021.		✓
30	WG will present a progress report on the implementation of the Pilot Project at the SC18. WG prepares a technical document on temperature and beach profiles, with feedback from the exchange of experiences workshop held on June 16, 2021, in collaboration with Permanent Commission of the South Pacific.	Climate Change WG presented a technical document on beach temperature measurement for adoption by the SC18. (2021)		✓
Eastern Pacific Leatherback *Dermochelys coriacea*				
31	Members of the Scientific Committee and the EP Leatherback Task Force from Costa Rica, the United States, Mexico, and Peru provide comments to the document under the IAC-IATTC MoU "Vulnerability status and efficacy of potential conservation measures for the east Pacific leatherback turtle (*Dermochelys coriacea*) stock using the EASI-Fish approach". Coordination: Dr. Bryan Wallace Activity following Resolution IATTC C-19-04 to mitigate impacts on sea turtles which includes components provided by the IAC.	Document "Vulnerability status and efficacy of potential conservation measures for the east Pacific leatherback turtle (*Dermochelys coriacea*) stock using the EASI-Fish approach (**Phase one)** presented at the IATTC Bycatch working group meeting on June 4th, 2020.	✓	
32	The Scientific Committee recommends the implementation of the EASI-Fish model second phase on habitat distribution. It is recommended to present the results at the COP10.	The delegates from Costa Rica, Chile, Ecuador, Mexico, Panama, Peru and the USA, shared information from their national fisheries agencies to include in the EASI-Fish second phase through the IAC Secretariat. A working group with members from the SC, CCE and IATTC technicians was formed to implement the **Second Phase.** The group has met in 2020 and 2021 to prepare a -Leatherback habitat distribution model and -the EASI-Fish Phase II.	✓	✓

SCIENTIFIC COMITTEE			2020	2021
	Proposed Activities	**Status – November 4 2021**		
		The WG coordinator has provided updates to the CCE14 and the SC18. Objective: Present the EASI-Fish Phase II at the IATTC and IAC COPs in 2022.		
33	Prepare a stranding and necropsy standard protocol adapted to the Eastern Pacific leatherback.	The SC delegate from Peru prepared a stranding and necropsy protocol and presented it to the SC17. Available on the IAC Website.	✓	
34	Peru develops a project to measure the number of leatherbacks releases from gillnet fisheries for a year in the region of Lambayeque. Following the implementation of the EP Leatherback Resolution.	SC Delegate from Peru presented this activity´s report to the SC17 to recommend the implementation of similar activities in the countries where the EP leatherback resolution is applicable. The SC Peru´s delegate presented an update of the report including 2021 data to the SC18 to present it to the COP10.2. Recommends that IAC countries within the EP Leatherback range consider implementing similar strategies within the framework of the EP Leatherback Resolution CIT-COP7-2015-R2 Baula OPO.	✓	✓
35	Develop a strategy for a training on sea turtles handling and release in small scale fisheries, which will be replicated in the EP Parties within the framework of the EP Leatherback Resolution, and the IAC Fisheries Resolution.	As part of the strategy, the Fisheries WG will update the technical document on Handling Sea Turtles Onboard Fishing Boats (Tec.8) as the first step to develop a training module. Responsible: Ecuador´s delegate. An update of this activity will be presented at the SC18 (2021). The Secretariat will make a space on the IAC website where all documents and cited material are available (References for best practices on sea turtle handling and release).		✓
Northwest Atlantic Leatherback *Dermochelys coriacea*				
36	**Recommendation from COP** – Scientific Committee prepares a table on compliance with the Northwest Atlantic Leatherback Resolution for adoption at the SC16 and inclusion in the IAC annual report.	Table prepared by the SC16 adopted and submitted to the CCE. Table adopted by CCE and included in the current IAC Annual Report.	✓	

SCIENTIFIC COMITTEE			2020	2021
	Proposed Activities	**Status – November 4 2021**		
37	**Recommendation from COP** - SC prepares a form to report data of Northwest Atlantic Leatherback bycatch in longline fisheries for adoption at SC16 and inclusion in the IAC Annual Report,	The delegate from the US prepared a form report data on longline fisheries bycatch which was adopted by the SC and the CCE including all sea turtle species. The form is available in the IAC Annual Report fisheries section since 2020.	✓	
38	**Recommendation from COP** - The Scientific Committee identifies areas critical for the protection of the Northwest Atlantic Leatherback and recommends those areas' protection to the IAC Parties.	SC prepare the Technical Document CIT-CC17-2020-Tec.16 on critical areas for the Northwest Atlantic Leatherback which **will be included in the COP10.2 agenda**	✓	
39	NW Atlantic Leatherback WG Leatherback prepares a technical document based on document CIT-CCE5-2012-Tec.3, to be used as a tool to approach countries that are not IAC members within the range of the NWA Leatherback.	Document prepared by SeaLife Law and WWF Canada adopted by the SC17 as Technical Document CIT-CC17-2020-Tec.17 and available on the IAC website.	✓	
Green Turtle *Chelonia mydas*				
40	**Recommendation from COP**: Technical Document CIT-CC15-2018-Tec.15 "Green Turtle (*Chelonia mydas*) Nesting Trends in the Eastern Pacific Ocean: Status Update and Conservation Priorities" prepared by WG formed by Ecuador, Chile, United States, and Peru.	The technical document on Green Turtles status was presented and adopted by the CCE and is available on the IAC website.	✓	
Sea Turtle Conservation Status				
41	Propose an IAC technical documents standard form guideline.	The SC Chair presents a draft form for adoption at the SC18 meeting. This item was eliminated from work plan as technical documents have all different formats.		
42	**Recommendation from COP:** Update report CIT-CC13-2016-Tec.13: Status of Loggerhead Turtles Within Nations. According to the IAC Resolution, this reported is updated every 4 years. Working Group: Mexico, Brazil, Belize, USA. Coordinator USA and Belize.	The *Caretta caretta* WG will provide and update on the status of this report to the SC18.		

SCIENTIFIC COMITTEE			2020	2021
	Proposed Activities	**Status – November 4 2021**		
43	**Recommendation from COP:** Members of the Scientific Committee that belong to the MTSG-IUCN promote an approach for joint work between the IAC and MTSG-IUCN, SWOT, or other organizations related to the convention, to collaborate with information on sea turtle's conservation status that allows the SC to make recommendations to the COP.	The delegate from Argentina will establish a procedure to collaborate with IUCN MTSF and SWOT. The US delegate suggested the potential to collaborate with SWOT on the IAC index beaches report. No action on this item for the last two years will be reported to the COP10.2 Responsible: Delegate from Argentina		
44	Delegate from Argentina sends a communication to the MTSG Chair.	No action		
45	**Recommendation from COP:** Collect available information on sea turtle conservation status.	The SC Chair reports to the COP10.2 that among the SC functions, the SC has prepared and updated technical documents that provide information on sea turtles conservation status since 2011, such as: -Index nesting beaches data analysis -Longline bycatch data analysis. -Conservation status of *Caretta caretta*, *Eretmochelys imbricata*, *Chelonia mydas,* and *EP* and NW Atlantic *Dermochelys coriacea.* These technical documents are prepared by request of the COP and the SC as needed.	✓	✓
Collaboration with Other Organizations and Strategic Alliances				
46	Work topics within the IAC-ACAP MOU	Work topics IAC-ACAP presented by the delegate from Argentina and adopted at the SC17.	✓	
47	Establish a Working Group at the SC17, responsible for developing a strategy to implement activities with ACAP.	Working group recommends a specific activity to implement the IAC-ACAP MoU. Working Group: Argentina, Chile, Peru, Mexico, and Ecuador. Coordinator: Argentina		
48	Implementation of IAC -ACAP MoU according to topics proposes at the SC17 (2020). See the meeting report doc.15.	Working Group reports on the results from the collaborative activity with ACAP that was implemented. (No implementation in 2020-2021) The WG Coordinator had a meeting with ACAP´s delegate and identify priority activities that were presented to the SC18 2021 to include them in the work plan. Responsible: Delegate from Argentina		

SCIENTIFIC COMITTEE			2020	2021
	Proposed Activities	**Status – November 4 2021**		
49	**Recommendation from COP**: present to COP the results from the joint activity implemented along with the Agreement on the Conservation of Albatrosses and Petrels (ACAP)	SC Chair presents results to COP No action on this item since 2020		
50	Proposal by COP Chair: Scientific Committee identifies a collaborative activity based on the Wetlands Convention Sea Turtle Resolution. The IAC scientific committee identifies a collaborative activity.	The Dominican Republic presented recommendations. Responsible: Ms. Cristiana de la Rosa delegate from The Dominican Republic. The Dominican Republic presented its data for sharing with Ramsar Secretariat and establish updating the information and maps in technical document CIT-CC10-2013-Tec.6 “Wetlands of International Importance and Sea Turtle Conservation”. The IAC Secretariat consulted feasibility with Ramsar´s Secretary obtaining a favorable response. There has not been further answer from Ramsar Secretariat to move forward.	✓	
51	Proposal for activities to develop with the SPAW Protocol at SC17-2020.	Belize and Caribbean Netherlands prepared recommendations of the activities to carry out under IAC-SPAW MoU, included in the SC17 work document (Annex 12). Responsible: Kirah Forman, delegate from Belize.	✓	
52	The SC and CCE members who are part of the NWA Leatherback working group will present a report on the joint work with SPAW delegates.	The Scientific Committee delegates will participate in this IAC collaborative working group along with the USA delegate to the CCE and SPAW delegate Ms. Olga Koubrak.		
53	ICCAT: Review the 2013 MoU proposal with ICCAT and adjust it to present it to the CCE.	Secretary presented the MoU proposal to CCE, editions were made, and the draft is under ICCATs Secretariat review (2020) MoU IAC –ICCAT adopted in Nov 2021	✓	✓

SCIENTIFIC COMITTEE			2020	2021
	Proposed Activities	**Status – November 4 2021**		
54	Scientific Committee will make a recommendation to the Conference of Parties on conservation actions in the region based on CITES document which was prepared with the participation of the IAC SC technicians – *"Status, scope, and trends of the legal and illegal international trade in marine turtles, its conservation impacts, management options, and mitigation priorities"*	The WG CITES-IAC will prepared the **SC18 recommendations to the COP10.2** based on the Inter-American subregion recommendations on the CITES report on sea turtle trade, and on decisions 17.222 and 17.223 on hawksbill -aligned with Resolution CIT-COP8-2017-R2- and other sea turtles, including implementation mechanisms in all the IAC Convention countries as they are all CITES members.	✓	
55	**Recommendation from COP:** Coordinator (SC Vice-chair and Leatherback WG) will follow-up on the strategy to work with RFMOs adopted by the SC14 to inform the Scientific Committee and the IAC Parties.	Refer to No. 31 (Document EASI-Fish)	✓	✓
56	**Recommendation from COP:** Review Scientific Committee Work Plan to include items that improve and activate cooperation with international organizations	No recommendations on identified synergies have been made.	✓	
Annual Report				
57	Analyze technical information in IAC Annual Reports.	*Refer to Number 18. The following documents result from this analysis: *Analysis on interactions between sea turtles and industrial longline in the IAC Parties (2020-2021). *Data Analysis of IAC index nesting beaches (2009-2020) *Loggerhead turtle conservation status (*Caretta caretta*) in the IAC Countries.	✓	✓
58	Document with suggestions for WCMC regarding Annual Report tables adaptation to the online system. Responsible: Annual Report WG (Brazil, Mexico, USA, and Chile), working with the Secretary for the system development and implementation.	Online report 2021 adapted, following the WG suggestions.	✓	✓

SCIENTIFIC COMITTEE			2020	2021
	Proposed Activities	**Status – November 4 2021**		
59	United States, Chile, Brazil, and Mexico work with the Secretariat *PT* and WCMC to adapt fisheries data collection tables to the IAC Annual Report online system.	Tables on interactions with industrial longline adapted to the online report. The online system has been tested by 14 IAC countries. Five training workshops on the use of the online platform have been carried out (2020, 2021): Brazil, Costa Rica, and the United States (Workshop 1), Peru and Ecuador (Workshop 2), Chile, Guatemala, Dominican Republic, and Venezuela (Workshop 3), Argentina, Uruguay, and Mexico (Workshop 4), and Caribbean Netherlands and Belize (Workshop 5). 11 online Annual Reports were submitted in 2021.	✓	✓
Projects				
60	**Recommendation from COP:** Prepare recommendations of high priority projects to obtain funding, and other activities required to meet the IAC objectives.	The second phase of the IAC-IATTC project on the EASI-Fish model was recommended.	✓	
IAC Experts Directory				
61	**Recommendation from COP:** Update the directory of experts on the IAC areas of interest.	Experts Directory updated on the website to April 20, 2021. http://www.iacseaturtle.org/docs/Directorio_de_Expertos_2021_Directory_of_Experts_2021.pdf	✓	
Capacity Building				
62	Technical support from SC members in workshops and training on subjects that the Parties identified and for which funding is available.	Climate Change WG workshop: Exchange of experiences: Actions to record the impact of climate change on sea turtles, perspectives from the beach. Workshop carried out by the Climate Change WG on June 16, 2021.		✓
Recommendations from COP and Consultative Committee of Experts				
63	Address the COP and Consultative Committee of Experts requests and make recommendations accordingly.	Refer to the numbers indicating recommendations from the COP and/or the CCE in this document.		

SCIENTIFIC COMITTEE			2020	2021
	Proposed Activities	**Status – November 4 2021**		
IAC Technical Documents				
64	Prepare technical documents as needed.	Technical document CIT-CC15-2018-Tec.15 on Green Turtles (See. No. 40) on the IAC website. Documents for adopted SC18 2021: • Update on index beaches • Best practices to measure temperatures at nesting beach • Update on *Caretta caretta (pending)*	✓	✓
Scientific Committee Work Plan				
65	Update the Scientific Committee Work Plan following IAC guidelines and COPs Resolutions.	Work Plan updated at the 17th Scientific Committee meeting, 2020 Work Plan updated at the 18th Scientific Committee meeting, 2021	✓	✓

ANNEX IV – Work Plan CIT-CC18-2021-Doc.3.

CIT-CC18-2021-Doc.3

IAC SCIENTIFIC COMMITTEE WORK PLAN 2021-2023

This document includes the IAC Scientific Committee Work Plan 2021-2023. Texts in blue show activities to be completed by the Committee, and in green, activities that were completed or will be completed for the meeting (SC18). Activities that haven´t changed or are permanent remain in black. This work plan will be presented at the 10th Conference of the Parties COP10.2 in June 2022.

Actor	Topic	Proposed Action	Expected Results	Time Frame
EXCEPTIONS				
Exceptions WG and delegate from Panama	**Recommendation from COP**; Draft Resolution Panama Exception	1) **Panama** presents draft Resolution on Exceptions based on the Scientific and Consultative Committees recommendations for adoption by the SC18.	1) New Resolution on Exception in Panama adopted by the SC18.	1) 2021
Exceptions WG and delegate from Guatemala	**Recommendation from COP**; Draft Resolution Guatemala Exception	2) **Guatemala** presents draft Resolution on Exceptions based on the Scientific and Consultative Committees recommendations for adoption by the SC18.	2) New Resolution on Exception in Guatemala adopted by the SC18.	2) 2021
Exceptions WG and delegate from Costa Rica	**Recommendation from COP**; Draft Resolution Costa Rica Exception	3) **Costa Rica** presents draft Resolution on Exceptions based on the Scientific and Consultative Committees recommendations for adoption by the SC18.	3) New Resolution on Exception in Costa Rica adopted by the SC18.	3) 2021

Actor	Topic	Proposed Action	Expected Results	Time Frame
Chair Scientific Committee (SC)	Presentation to CCE 15 and COP10.2	4) CC Chair presents a report on the process to review the implementation of the Exception in these three countries, which supports the draft Resolutions on Exceptions prepared by Costa Rica, Guatemala, and Panama to present them to the COP	4) SC Report on Exceptions presented to the CCE and the COP10.2 and Resolutions on Exceptions adopted by the CCE15 to present them for the consideration of the IAC Parties at the COP10.2.	4) 2021-2022
Exceptions WG	Assessment of Panama, Costa Rica and Guatemala exception management plan every five years.	5) The Exceptions WG prepare a form with elements to assess each country exception management plan every five years. The assessment form is presented in 2022 to the SC19.	5) Form to assess the exception management plan in every country, approved by the SC and agreed with the countries with exceptions.	5) 2022-2023
IAC WEBSITE AND NEWS BULLETIN				
Scientific Committee, and Secretariat	IAC website and news bulletin	1) Every month, the SC will provide news relevant to IAC Parties to the Secretary for the IAC Newsletter.	1) Updated news in the IAC website, and regular publication of the IAC's News Bulletin	Permanent
FISHERIES				
Fisheries WG	Interactions with industrial longline fisheries	1) Preliminary analysis of interactions between sea turtles and industrial longlines based on the form adopted by the SC16 (Fisheries table of 2020 Annual Report). Responsible: Mexico - Dr. Heriberto Santana. 2) Present Report to COP10.2 with data from annual reports (2020, 2021, 2022)	1) Recommendations from the SC18-2020 to the analysis on interactions between sea turtles and industrial longline (2020-2021). 2) Report and recommendations presented to the COP10.2 with data from annual reports 2020, 2021 and if information is available, from 2022.	1) SC18-2021 2) 2022

Actor	Topic	Proposed Action	Expected Results	Time Frame
SC and CCE Fisheries WG	Interactions with gillnets	3) The SC and CCE Fisheries WG Will develop a methodological proposal to gather information on interactions between sea turtles and gillnets.	3) Recommendation of methodological proposal to the Scientific and Consultative committees to gather information on interactions between sea turtles and gillnets.	3) 2021-2023
Fisheries WG; Chile and México.	**Recommendation from COP;** Fisheries information in the annual report	4) Review of the annual report table on fisheries and preparation of a report on the information required from the Parties.	4) Recommendation of fisheries Resolution (Fisheries Table in Annual Report) presented to the COP10.2 included in report CIT-CC16-2019-Doc.10	4) SC18 – 2021 y 2022.
Fisheries WG; Chile´s delegate	Fisheries and Sea Turtles Resolution	5) Prepare updated Draft Resolution for Fisheries interactions and Sea Turtles, considering the recommendations presented by Chile and Mexico to the SC16.	5) Updated draft Resolution for Fisheries adopted by the SC18, to be presented to CCE and COP10.2.	5) SC18 – 2021 and 2022.
Fisheries WG; Ecuador´s delegate	Manual for best practices for safe handling and release for sea turtles that interact with fishing gear	6) Prepare IAC Best practices Manual for best practices for safe handling and release of sea turtles that interact with fishing gear.	6) Preliminary version of the IAC Manual on best practices for safe handling and release of sea turtles incidentally captured in fisheries, for review by the Scientific Committee in 2022.	6) SC19 -2022
CONSERVATION STATUS IN INDEX NESTING BEACHES				

Actor	Topic	Proposed Action	Expected Results	Time Frame
Nesting WG	**Recommendation from COP**; Conservation Status in Index Nesting Beaches	1) Collect information on annual nesting in index beaches using the form developed by the SC, and the IAC Annual Report. The Technical Document on IAC Index Beaches is updated every 5 years. Next update in 2023.	1) Update of technical document 19, IAC index nesting beaches data analysis 2009-2020 done by request of the COP10.2 presented to the SC18-2021 and COP10.2 2) Technical Document with IAC index nesting beaches data analysis 2009-2022 to present to the Scientific Committee 2023 and the COP.	1) 2021-2022 2) 2023
CLIMATE CHANGE				
Climate Change WG (USA, Costa Rica, Caribbean Netherlands, Ecuador, Mexico, Panama, and Dominican Republic).	Climate Change; Pilot Project	1) Monitor and support the countries that are implementing the pilot project. 2) Organize two annual meetings to assess progress and keep electronic communications. 3) Present the final report on the implementation of the Pilot Project to the Scientific Committee 2025.	1 y 2) Progress report from countries implementing and by the group coordinator. 3) Report on the implementation of the pilot project.	1) 2021-2023 2) Permanent 3) 2025
Climate Change WG	Climate Change; Pilot Project	4) Prepare technical document CIT-CC18-2021-Tec.18 “Best Practices to Monitor Sand Temperature on Sea Turtle Nesting Beaches” including feedback from the workshop “Exchange of experiences: Actions to record the impact of climate change on sea turtles, perspectives from the beach.”	4) Technical document adopted by the SC18.	4) 2021-SC18

Actor	Topic	Proposed Action	Expected Results	Time Frame
EASTERN PACIFIC LEATHERBACK *Dermochelys coriacea*				
Fisheries and EP Leatherback WG	EP Leatherback, IATTC, and EASI-Fish	1) The Scientific Committee and EP Leatherback Task Force Members from Costa Rica, United States, Mexico, and Peru provide comments to the document "Vulnerability Status and Efficacy of Potential Conservation Measures for the East Pacific Leatherback Turtle (*Dermochelys Coriacea*) Stock Using the EASI-Fish Approach"	2) Document "Vulnerability Status and Efficacy of Potential Conservation Measures for the East Pacific Leatherback Turtle (*Dermochelys Coriacea*) Stock Using the EASI-Fish Approach" presented at the IATTC Working Group on Bycatch annual meeting on June 4, 2020.	1) 2020
Fisheries and EP Leatherback WG	EP Leatherback, IATTC, and EASI-Fish	2) The Scientific Committee (Chile, Costa Rica, Ecuador, Mexico, Panama, Peru, and the United States) share information to implement the second phase of the EASI-Fish and to develop a habitat distribution model and recommends a presentation of results to the IAC COP10.2. 3) SC Members become part of the EASI-Fish working group.	2 y 3) Publication with the results from the EASI-Fish model (second phase) including the distribution model and the vulnerability status assessment and presentation of results to the IAC COP10.2	2) 2020 y 2021 3) 2022
Fisheries and EP Leatherback WG; Peru	Project in Lambayeque, Peru EP Leatherback	4) Peru reported on the project Eastern Pacific leatherback turtle best practices to for handling and release from drift nets in Lambayeque. 5) Include presentation of the project in the COP10.2 agenda.	4) SC18 provided recommendations to the project report to release EP leatherback turtles in Lambayeque-Peru. 5) Presentation of the Project at the COP10.2	4) CC18-2021 5) COP10.2
Fisheries WG	EP Leatherback, handling and	6) Update technical document Tec.8 on manuals for handling and release of sea turtles onboard fishing boats.	6) Update of Document Tec.8 on manuals for handling and release of sea turtles adopted by SC18.	6) 2021-SC18

Actor	Topic	Proposed Action	Expected Results	Time Frame
	release, small scale fisheries,			
SEA TURTLE CONSERVATION STATUS				
Caretta caretta WG (Mexico, Belice, Brazil, and USA).	*Caretta caretta;* conservation status report; Update 2021.	1) Update report CIT-CC13-2016-Tec.13: Status of Loggerhead Turtles (*Caretta caretta)* Within Nations of the IAC every 4 years according to Resolution CIT-COP7-2015-R3.	1) Reported updated in 2021 to present it to the CCE18 and the COP10.2. PENDING	1) 2021
Argentina	**Recommendation from COP**; collaboration with organizations; sea turtles conservation status.	2) Meeting IAC- MTSG-IUCN to identify: 1) mechanism to cooperate 2) topics of common interest. Responsible: Argentina	2) Partnership with the IUCN-MTSG presented to the SC19, and report to COP10.2	2) 2021-2022
Scientific Committee Chair	**Recommendation from COP**. Sea turtle's conservation status.	3) Collect information available on sea turtle's conservation status, when required. 4) Present Recommendations on sea turtle's conservation status using technical documents to the COP.	3 and 4) Recommendations on sea turtle conservation status developed for the IAC Parties, when required, as technical documents such as: • **Doc. Tec.3:** Eastern Pacific Leatherback Turtles (*Dermochelys coriacea*): a Summary of Current Conservation Status, Challenges and Opportunities • **Doc. Tec.13**: Status of Loggerhead Turtles Within Nations of the IAC • **Doc. Tec.14**: IAC Index Nesting Beach Data Analysis (2009-2018) • **Doc. Tec.15**: Green Turtle (*Chelonia mydas*) Nesting Trends in the Eastern Pacific Ocean: Status Update and Conservation Priorities	3) Permanente 4) COP 10.2 - 2022

Actor	Topic	Proposed Action	Expected Results	Time Frame
			• **Doc. Tec.16**: Critical Areas for the Conservation of the Northwest Atlantic Leatherback Turtle (*Dermochelys coriacea*). • **Doc. Tec.17:** Northwest Atlantic Leatherback Turtles (*Dermochelys coriacea*): A Summary of Current Conservation Status, Challenges, and Opportunities. • Conservation Status of Hawksbill Turtles in the Wider Caribbean, Western Atlantic and Eastern Pacific Regions. • **Doc. Tec.18**: Best practices to measure Temperature • **Doc. Tec. 19:** IAC Index Nesting Beach Data Analysis (2009-2021)	
COLLABORATION WITH OTHER ORGANIZATIONS AND STRATEGIC PARTNERSHIPS				
Argentina - Coordinator Working Group (Chile, Peru, Mexico, and Ecuador).	**Recommendation from COP**; Collaboration MoU with ACAP; joint work topics	1) **ACAP**: Define topics to work within the framework of the Memorandum of Understanding IAC - ACAP. Responsible: Argentina 2) Form a working group to develop a strategy to implement activities jointly with ACAP.	1) Topics identified to work jointly with ACAP in the SC17 report. 2) Collaboration activity with ACAP implemented through a strategy designed by the Scientific Committee WG.	1) 2019-2020 2) 2020 – 2022
Argentina (Coordinator) y GT Pesquerías	Establish the guidelines for sea turtles captures electronic monitoring.	1)Review ACAPs guidelines on fisheries electronic monitoring (SBWG10 Doc 14 Rev 1) 2)Identify electronic monitoring guidelines for sea turtles captures. 3)Exchange meeting between ACAP and IAC specialists.	Technical document with guidelines for Electronic Monitoring for sea turtle captures. SC19 Meeting (2022)	2022
Argentina (Coordinator) –	Identify potential geographic areas of common	Work meetings and review of the IAC - ACAP documents.	Report on geographic areas of common interest for ACAP and the IAC, presented to the SC19.	2022

Actor	Topic	Proposed Action	Expected Results	Time Frame
Dr. Marco Favero (ACAP)	interest and relevant to ACAP and the IAC.			
Argentina (Coordinator) – Dr. Marco Favero (ACAP)	Review and updated the IAC-ACAP MoU Text, for renewal in the period 2023-2028. Identify work guidelines IAC-ACAP (2023 – 2028)	Work meetings and review of the IAC - ACAP documents.	Text for the IAC-ACAP MoU 2023-2028. SC 19 Meeting (2022). Document with work guidelines IAC-ACAP (2023-2028).	2022
Scientific Committee and Secretary	Collaboration MoU with Ramsar; **Recommendation from COP**; joint activity.	3) RAMSAR: Based on the Ramsar Convention on Wetlands Resolution on Sea Turtles, the Scientific Committee identifies a collaborative activity.	3) Document on wetlands of importance for sea turtles IAC-RAMSAR updated when RAMSAR is available to do it.	3) 2021-2022
SPAW WG (Belize – coordinator- Panama, USA, Dominican Republic, Caribbean Netherland)	Collaboration MoU with SPAW; Collaboration MdE con SPAW; joint work topics	4) **SPAW**: Identify common issues to work with the SPAW Protocol. Responsible: WG MoU SPAW – IAC (Belize –coordinator-, Panama, USA, Dominican Republic, Caribbean Netherlands)	4) A specific activity to work with SPAW identified according to the list of proposals presented at the SC17 (CIT-CC17-2020-Doc.15 – Annex XII)	4) 2022
Scientific Committee and Costa Rica´s delegate	Collaboration with CITES; sea turtle's illegal trade; hawksbill	5) **CITES**: Prepare recommendations for IAC Parties, based on CITES report on sea turtle trade and decisions	5) Recommendations to IAC Parties on actions to continue monitoring illegal trade (CITES) presented to the COP10.2	5) 2021

Actor	Topic	Proposed Action	Expected Results	Time Frame
		17.222 and 17.223 on hawksbills and other sea turtles.		
Scientific Committee	**Recommendation from COP**; Strategy to collaborate with RFMOs; IATTC	6) Follow up on the collaboration strategy with RFMOs adopted by the SC14.	6) Report on collaboration strategy with RFMOs (i.e., EASI-Fish).	6) 2019 -2022
Scientific Committee	**Recommendation from COP**; Synergies with International Organisms.	7) Include subjects that improve and activate collaboration with international organisms.	7) Recommendations on synergies identified.	7) Permanent
ANNUAL REPORTS				
Scientific Committee	Annual Reports	1) Analyze the IAC Annual Report technical information.	1) Report on the analysis of technical information from the IAC Annual Reports with recommendations to the Parties when needed.	1) Permanent
Scientific Committee	Annual Report Format	2) Assess the Annual Report current questionnaire.	2) Recommendations of changes to the Annual Report questionnaire as needed. 3) Annual Report questionnaire updated accordingly with the new resolutions adopted at the COP10.2	2) Permanent 3) 2022
PROJECTS				
Scientific Committee	**Recommendation from COP**; High priority projects; Recommendations	1) Recommend high priority projects to apply for funds and other resources needed to achieve the IAC objectives.	1) Projects proposals developed by the Scientific Committee when needed. Recommendations on high priority projects when needed.	1) Permanent

Actor	Topic	Proposed Action	Expected Results	Time Frame
EXPERTS DIRECTORY				
Scientific Committee, Secretary	**Recommendation from COP**; IAC Experts Directory	1) Review and update the IAC Expert Directory.	1) Updated directory available on IAC's website.	1) Permanent
CAPACITY BUILDING				
Scientific Committee	Capacity building	1) Support from Scientific Committee members in workshops and training on topics identified by IAC Parties and those for which funding is available.	1) Strengthening capacities on topics related to sea turtles in the IAC Parties.	Permanent
RECOMMENDATIONS COP AND CONSULTATIVE COMMITTEE				
Scientific Committee	Recommendations from COP and CCE	1) Address the COP and Consultative Committee of Experts requests and make recommendations accordingly.	1) Recommendations submitted to the COP and the Consultative Committee of Experts, as needed.	Permanent
TECHNICAL DOCUMENTS				
Scientific Committee	Technical documents	1) Develop technical documents as needed 2) IAC Best practices Manual for safe handling and release of sea turtles, first draft presented to SC19.	1) Technical documents available at the IAC's website and shared with IAC Parties.	Permanent
SCIENTIFIC COMMITTEE WORK PLAN				
Scientific Committee	SC Work Plan	1) Update the SC Work Plan following IAC guidelines and the COPs Resolutions.	1) Scientific Committee biennial work plan including actions, timetable, and responsibilities.	Intersession 2021-2023

ANNEX V- Proposal of Resolution on Exceptions CIT-CC18-2021-Doc.4 / CIT-CC18-2021-Doc.5 / CIT-CC18-2021-Doc.6 and Exceptions Process Timeline.

PANAMA

CIT-CC18-2021-Doc.4

Proposed Resolution on Exceptions under Article IV (3a and b) for Subsistence Harvesting of *Lepidochelys olivacea* Eggs in Panama

Prepared by José Julio Casas*, Marino Abrego*, Osvaldo Rosas*, Israel Tejada*, and Alexander Montero*
*Ministry of Environment Panama – IAC Technical Focal Point

This resolution proposal has been drafted by the Panama delegation. The proposal includes language from the current exception resolution CIT-COP6-2013-R1, and language that refers to the recommendations from the Scientific and Consultative Committees and IAC Exceptions Working Group that were given to the Panama Focal Point, after review of the 5 years exception report, presented by the Government of Panama in 2019. The Panama delegation in agreement with IAC Exception WG recommended a resolution only for Panama that will update and replace the exception resolution from 2013.

This proposal was adopted by the SC18 and has been submitted for review by the Consultative Committee of Experts next meeting in 2022, to subsequently present it to the COP10.2.

Paragraph in black text was taken from the original resolution that is in place
Paragraph with NEW TEXT in blue is proposed by the Scientific Committee

CIT-CC18-2021-Doc.4

Proposed Resolution on Exceptions under Article IV (3a and b) for Subsistence Harvesting of *Lepidochelys olivacea* Eggs in Panama

RECALLING that Article IV of the Convention, paragraph 2a states that the Parties have prohibited the intentional capture, retention or killing of, and domestic trade in, sea turtles, their eggs, parts or products;

FURTHER RECALLING that Article IV, paragraph 3a states that each Party may allow exceptions to satisfy economic subsistence needs of traditional communities, taking into account the recommendations of the Consultative Committee of Experts established pursuant to Article VII, provided that such exceptions do not undermine efforts to achieve the objective of this Convention;

NOTING that the fifth Conference of Parties, adopted the procedures for cases where exceptions exist (CIT-COP5-2011-R2);

CONSIDERING that *Lepidochelys olivacea* is classified by the International Union for Conservation of Nature (IUCN) as vulnerable;

ACKNOWLEDGING that all other species of sea turtles classified as "endangered, vulnerable and critically endangered" by IUCN, must be protected from any negative impacts resulting from an exception;

RECOGNIZING that *Lepidochelys olivacea* on the beaches of the Eastern Pacific (Mexico to Panama) is the only turtle species that can tolerate a carefully controlled amount of egg harvesting, and only when the population to be harvested has demonstrated the status of "*recovery or verifiable stability*;*"*

CONSIDERING that these exceptions existed prior to Panama becoming a Party to the IAC, and today remains under the control of the relevant governmental organizations;

RECOGNIZING that Panama has informed, in its IAC Annual Reports over the last five years, a sustained progress in the implementation of the recommendations in Resolution CIT-COP6-2013-R1 on Exceptions under Article IV (3a and b) for Subsistence Harvesting of *Lepidochelys olivacea* Eggs in Guatemala and Panama; **(NEW TEXT)**

TAKING INTO ACCOUNT the recommendations to Panama by the IAC Scientific Committee and Consultative Committee of Experts at the 14th meeting of the Consultative Committee of Experts, regarding Panama's five year report on the implementation of the Resolution CIT-COP6-2013-R1, that indicates that some protection measures in Panama have already been implemented, while others need more time to do so, and that it is necessary to develop specific Resolutions to the exception that are in accordance with the national reality of each country included in the initial Resolution; **(NEW TEXT)**

CONSIDERING that to support the continuous implementation of conservation measures for the species in the exception, Panama must finalize the process of preparing and establishing a management plan for the exception in accordance with IAC Article IV (3a and b) of IAC. **(NEW TEXT)**

THE TENTH CONFERENCE OF THE PARTIES OF THE INTER-AMERICAN CONVENTION FOR THE PROTECTION AND CONSERVATION OF SEA TURTLES

RESOLVES:

1. Grant a maximum of three (3) additional years, from the date this resolution is approved, for the Government of Panama to establish the Management Plan for the Exception for the Harvest of *Lepidochelys olivacea* Eggs for Cañas Island. (NEW TEXT)

2. The Exception Management Plan should include the recommendations from the IAC Scientific Committee and Consultative Committee of Experts adopted at 14th Consultative Committee of Experts Meeting in Annex I of this resolution. (NEW TEXT)

3. Recommend that Panama applies the precautionary approach by implementing the protection measures that support the IAC objectives, in accordance with the national laws and considering what is established in the exception Resolution, and continue to consult with the IAC Scientific Committee and Consultative Committee of Experts while the country establishes its Exception Management Plan so that the exception meets the requirements of Article IV (3) of the Convention. (NEW TEXT)

4. Panama must continue to report on its exception in the IAC Annual Report.

5. The IAC Scientific and Consultative Committees will continue to review the progress of the implementation of this resolution and will report to the Conference of Parties on this progress, every five years.

6. Panama will present a proposal of its Exception Management Plan to the IAC Scientific Committee in 2022. This proposal should be consulted with the Consultative Committee of Experts. Both Committees should make a statement within the following four (4) months. Panama will receive this statement and modify the proposal when applicable. (NEW TEXT)

7. The Exception Management Plan should be assessed every 5 years by the IAC Scientific Committee and Consultative Committee of Experts; thus, Panama must prepare an Assessment Report for the Exception Management Plan including the status of implementation and compliance with the plan and report timely any modifications to the information presented. **(NEW TEXT)**

8. The Assessment Report for the Exception Management Plan should describe the strategies developed to address the variables that affect data collection; description of nest selection criteria, the criteria to define arribadas with estimated number of nests that can be harvested, and the implementation of measures to reduce in water threats such as bycatch to sea turtles. (NEW TEXT)

9. The IAC Scientific Committee and Consultative Committee of Experts will develop a form with the minimum information and data contents to be included in the Assessment Report for the Exception Management Plan. **(NEW TEXT)**

10. Urge the Government of Panama to secure and assign in the short term, the human and financial resources necessary for drafting and implementation of the Exception

Management Plan for Cañas Island. **(NEW TEXT)**

This resolution repeals and replaces the IAC Resolution on Exceptions under Article IV (3a and b) for Subsistence Harvesting of *Lepidochelys olivacea* eggs in Guatemala and Panama CIT-COP6-2013-R1 in its entirety. **(NEW TEXT)**

ANNEX I: **The Exception management Plan for the harvest of *Lepidochelys olivacea* eggs for Cañas Island should include:**

1. Objectives and indicators that allow the monitoring in Cañas Island for the bodies of this Convention, to obtain reliable data that allow the population trend analysis to be used in used in establishing a management program and decision making for the management of the exception.

2. A nesting survey protocol that includes standardized monitoring of sea turtle nesting activity (nesting and hatching success), and the number of hatchlings produced in protected nests in hatcheries and *in situ*). The data should be used to analyze nesting trends, in order to demonstrate the sustainability of the harvesting and assess the stability of the population over the long-term. This protocol can be evaluated every five years, and changes made as needed. (NEW TEXT)

3. An egg harvest protocol that includes monitoring the level of *Lepidochelys olivacea* eggs being harvested and those levels should prove to be sustainable, and therefore, monitoring protocols must be in place to assess the stability of the population over the long-term. This protocol must include the criteria for assigning eggs to the community (family census, IDs, among others). The level of sea turtle eggs harvested should prove to be sustainable. (NEW TEXT)

4. Actions to strengthen the co-management of the harvest with the Cañas Island community, including training of participants.

5. Efforts to increase activities to strengthen sea turtle protection efforts, through alternative livelihood productive activities for non-consumptive use, nest and nesting female protection, and best practices for the hatcheries operating in communities surrounding Cañas Island.

6. The recommendations from the Scientific Committee and Consultative Committee in the 14th Meeting of the Consultative Committee included in report CIT-CCE14-2021-Doc.9. (NEW TEXT)

GUATEMALA

CIT-CC18-2021-Doc.6

Proposed Resolution on Exceptions under Article IV (3a and b) for Subsistence Harvesting of *Lepidochelys olivacea* Eggs in Guatemala

Prepared by Guatemala Delegation*
*Commission of Natural Protected Areas– IAC Technical Focal Point Guatemala

This resolution proposal has been drafted by the Guatemala delegation. The proposal includes text proposed by the 18th Scientific Committee meeting. The text takes into account the IAC Scientific Committee and Consultative Committee recommendations, and IAC Exceptions Working Group (WG) regarding Guatemala's 5-year exception report, presented by the Government of Guatemala on May 2020. The Government of Guatemala, in agreement with IAC Exception WG, recommended preparing a resolution only for Guatemala that will update and replace the exception resolution adopted in 2013.

Editorial Note:
Paragraph in black was taken from the original resolution that is in place.
Paragraph with NEW TEXT is proposed for the consideration of the IAC Consultative Committee and the COP.

CIT-CC18-2021-Doc.6

Proposed Resolution on Exceptions under Article IV (3a and b) for Subsistence Harvesting of *Lepidochelys olivacea* Eggs in Guatemala

RECALLING that Article IV of the Convention, paragraph 2a states that the Parties have prohibited the intentional capture, retention or killing of, and domestic trade in, sea turtles, their eggs, parts or products;

FURTHER RECALLING that Article IV, paragraph 3a states that each Party may allow exceptions to satisfy economic subsistence needs of traditional communities, taking into account the recommendations of the Consultative Committee of Experts established pursuant to Article VII, provided that such exceptions do not undermine efforts to achieve the objective of this Convention;

NOTING that the fifth Conference of Parties adopted the procedures for when exceptions exist (CIT-COP5-2011-R2);

CONSIDERING that *Lepidochelys olivacea* is classified as vulnerable, by the International Union for Conservation of Nature (IUCN);

ACKNOWLEDGING that all other species of sea turtles classified as "endangered, vulnerable and critically endangered" by IUCN must be protected from any negative impacts resulting from an exception;

RECOGNIZING that *Lepidochelys olivacea* on the beaches of the Eastern Pacific (Mexico to Panama) is the only turtle species that can tolerate a carefully controlled amount of egg harvesting, and only when the population to be harvested has demonstrated the status of "recovery or verifiable stability;"

CONSIDERING that these exceptions existed prior to Guatemala becoming a Party to the IAC, and today remains under the control of the relevant governmental organizations;

RECOGNIZING that Guatemala has informed in its IAC Annual Reports over the last five years a sustained progress in the implementation of the recommendations in Resolution CIT-COP6-2013-R1 on Exceptions under Article IV (3a and b) for Subsistence Harvesting of *Lepidochelys olivacea* Eggs in Guatemala and Panama; **(NEW TEXT)**

RECOGNIZING that Guatemala has laws and regulations in place to support the implementation of the IAC resolution on exception, including the update to the Resolution on the Conservation quota of *Lepidochelys olivacea* eggs, that established a conservation quota of 20% based on the recommendation from the IAC Scientific Committee, and that Guatemala has expressed its intention to gradually increase this quota according to what the country's conditions allow; **(NEW TEXT)**

TAKING INTO ACCOUNT the recommendations to Guatemala by the IAC Scientific Committee and Consultative Committee of Experts at the 14th Meeting of the Consultative Committee of Experts (Meeting Report CIT-CCE14-2021-Doc.9), regarding Guatemala's five year report on the implementation of the Resolution CIT-COP6-2013-R1, that indicates that some protection measures in Guatemala have already been implemented, while other measures need more time to do so, and that it is necessary to develop separate Resolutions to the exceptions that are in accordance with the national reality of each country included in the initial Resolution; **(NEW TEXT)**

CONSIDERING that to support the continuous implementation of conservation measures for the species in the exception, Guatemala must finalize the process of preparing and establishing a management plan for the exception in accordance to IAC Article IV (3a and b) of IAC. **(NEW TEXT)**

THE TENTH CONFERENCE OF THE PARTIES OF THE INTER-AMERICAN CONVENTION FOR THE PROTECTION AND CONSERVATION OF SEA TURTLES

RESOLVES:

1. Grant a maximum of three (3) additional years, from the date this resolution is approved, for Guatemala´s Protected Areas National Council to establish the Management Plan for the Exception for the Harvest of *Lepidochelys olivacea* Eggs, based on the outline in Annex I of this resolution. (NEW TEXT)

2. The Exception Management Plan should include the recommendations from the IAC Scientific Committee and Consultative Committee of Experts adopted at the 14th Consultative Committee of Experts Meeting in Annex II of this resolution. (NEW TEXT)

3. Recommend that Guatemala applies the precautionary approach by implementing the protection and monitoring measures in Annex III of this resolution, in accordance with the national laws and considering what is established in the exception Resolution, and to Continue consulting with the IAC Scientific and Consultative Committees while the Country establishes its Exception Management Plan so that the exception meets the requirements in Article IV (3) of the Convention. **(NEW TEXT)**

4. The level of *Lepidochelys olivacea* sea turtle eggs being harvested under an exception must be proven to be sustainable; therefore, the monitoring protocols included in the Exception Management Plan, must be in place to assess the stability of the population in the long-term. These protocols must include nesting trends in order to support the sustainability of the harvesting proposed.

5. Guatemala must continue to report on its exception in the IAC Annual Report.

6. The IAC Scientific and Consultative Committees will continue to review the progress of the implementation of this resolution and will report to the Conference of Parties on this progress, every five years.

7. Guatemala will present a proposal of its Exception Management Plan to the IAC Scientific Committee in 2022. This draft/proposal should be consulted with the Consultative Committee of Experts. Both Committees should make a statement within the following four (4) months. Guatemala will receive this statement and modify the proposal when applicable. **(NEW TEXT)**

8. The Exception Management Plan should be assessed every 5 years by the IAC Scientific Committee and Consultative Committee of Experts; thus, Guatemala must prepare an Assessment Report for the Exception Management Plan with the status of implementation and compliance with the plan and report timely any modifications to the information presented. **(NEW TEXT)**

9. The IAC Scientific Committee and Consultative Committee of Experts will develop a form with the minimum contents to be included in the Assessment Report for the Exception Management Plan. **(NEW TEXT)**

10. Urge the Government of Guatemala to according to their capabilities, secure and assign human and financial resources necessary for drafting and implementation of the Exception Management Plan. (NEW TEXT)

This resolution repeals and replaces the IAC Resolution on Exceptions under Article IV (3a and b) for Subsistence Harvesting of *Lepidochelys olivacea* eggs in Guatemala and Panama CIT-COP6-2013-R1 in its entirety. (NEW TEXT)

ANNEX I – Recommended outline for Guatemala's Exception Management Plan

1. State of knowledge (regarding the exception)
2. Area of implementation of the exception (study area)
    a. Map with location of nesting beaches and hatcheries.
3. Species description (Biology and ecology)
    a. Including nesting season, nesting peaks, size of nests (maximum, minimum, average), the month to month and annual register of nests, hatching success in hatcheries, among other data considered relevant.
4. Conservation status and threats
5. Conservation measures
    a. Legal framework
    b. Hatcheries
    c. Conservation quota
6. Strategic Plan
    a. Management plan objectives
    b. Criteria to assess compliance with the objectives.
    c. Best practices in hatcheries management
    d. Olive ridley (*Lepidochelys olivacea*) monitoring program in Guatemala Pacific Coast (Product 2 prepared by CONAP) – Include goals, timeline, and strategies.
    e. Traceability program - Include goals, timeline, and strategies.
    f. Current and future financial mechanisms
    g. Success/sustainability indicators (environmental and socioeconomic)

ANNEX II – Recommendations from the IAC Scientific Committee and Consultative Committee of Experts

1. On the Exception Management Plan

It is recommended that, to manage the exception on Guatemala´s Pacific Coast, the Protected Areas National Council organize and complete the information to be presented to the IAC, by the establishment of the Exception Management Plan, including at least the structure in Annex I, to be presented in one year at the 2022 Scientific Committee meeting.

2. On the Conservation Quota

It is recommended to report the hatchling success rate and calculate the production of hatchlings in hatcheries to monitor that the 20% conservation quota remains sustainable.

3. On Management of Nesting Beaches and the Population Monitoring Program

It is recommended to establish a method to monitor the indicators that determine the status of the *Lepidochelys olivacea* nesting population for enough time that allows for detection of variations in recruitment due to egg harvest. If resources for monitoring all nesting beaches are not sufficient, index beaches with higher nesting should be prioritized.

It is recommended to ensure that the data collection methods are standardized. Similarly, there should be an effort to differentiate between nests (with eggs inside) and false crawls on the index beaches.

It is recommended to continue monitoring nesting tracks trends on the index beaches (with 20% of the eggs buried in the hatcheries) for at least another five years, with daily censuses of tracks in established areas within determined periods.

It is requested that, for both the Exception Management Plan and the Assessment Report on the Exception Management Plan presented to the IAC, include an analysis of the nest and egg collection effort with the variables that influence it, such as the availability of financial resources, increased effort of volunteering, an increase in the purchase of eggs from hatcheries, among other reasons, but not necessarily by the presence of larger number of nests.

It is recommended to establish management measures for the conservation quota and for hatcheries for the period between January and June, as during these months, outside the peak in nesting activity there is an almost total collection of eggs by the community.

It is recommended to consider a strategy included in the Exception Management Plan for the hatcheries where the complete nests are protected and be monitored *in situ on* a feasible protected section of the beach, prioritizing those beaches with higher nesting numbers (south-east section of the coast). As an alternative, it is recommended to carry out *in situ* protection during the rainy

months, when temperatures are favorable for hatching success, as a measure to offset exploitation along the coast.

4. On Hatcheries Management

It is recommended that the Exception Management Plan and the progress report, include the number of nests per month, showing the number of nests protected in the hatchery, hatching and emergence success in hatcheries.

It is recommended to record a representative sample of nests (two or more years) comparing *in situ* temperatures with *ex situ* (nests relocated in hatcheries) temperatures in the nests in the rainy and dry seasons.

It is recommended to estimate the ratio of females to males produced in the hatcheries, using dead hatchling and an incubation temperature analysis to determine a correlation between mortality and sex, which could be a bias, and use mitigation measures to reduce the female bias.

It is recommended that the number of nests collected per collector is recorded and used as a condition for *parlameros* (collectors) to receive their payment for the eggs, and to then obtain an estimate of the number of nests harvested on the different beaches.

5. On Social and Economic Sustainability and the search for economic alternative activities to sea turtle eggs harvest

It is recommended to include in the exception management plan and the exception progress report to the IAC, the social and economic income trends over time (sustainability indicators).

It is recommended to design a budget indicating the resources required to keep control and surveillance of *arribada* events, harvest, and trade of eggs.

6. On Traceability

It is recommended to include in the exception management plan a traceability procedure for both the eggs collected for consumption and the eggs going to hatcheries, to establish the number of clutches and the number of eggs commercially traded.

It is recommended to maintain a record of sea turtle eggs seizures and a temporal analysis using indicators (for example: number of eggs seized due to poaching, number of sanctions, inspection coverage, percentage of prosecutions, and others) to estimate the number of eggs illegally traded and to assess how this impacts *Lepidochelys olivacea* population.

It is recommended to engage in an Exchange of experiences between the technical personnel in charge of exceptions in Costa Rica, Panama and Guatemala to share protocols on the subject of traceability of eggs collected within the framework of the exception.

ANNEX III – Recommendations presented by Guatemala (Product 5- Assessment of items proposed in resolution CIT-COP6-2013-R1) adopted by the IAC Scientific Committee Exceptions Working Group

- Continue monitoring nesting tracks on the Pacific coast of Guatemala in the seven beaches monitored. If, due to financial constraints, it is not possible to maintain nesting tracks monitoring at all sites, nesting monitoring of Hawaii should be maintained, as it is the site with the longest time frame of monitoring, from which useful extrapolations can be made.

- Assess the relationship between the movements of the Central American Thermal Dome with respect to the observed gradient of greater nesting in the eastern Pacific coast of Guatemala.

- Strengthen management of the hatcheries on the Pacific coast as they prove to be an effective conservation tool for sea turtles in the country.

- Update the conservation quota receipts that should include a section identifying the number of eggs, the number of nests from which the eggs were collected, the means of obtaining (purchase, exchange), the collection beach, and other relevant information."

- CONAP must ensure that the minimum conservation quota of 20% is met throughout the year and not only during the nesting season (July-December), in those sites where nesting occurs throughout the year. For this, it is essential that the hatcheries can receive eggs throughout the year, or at least those hatcheries managed directly by CONAP, as well as the hatcheries of El Banco and Hawaii. Other hatcheries administrators should report the nests that they receive during the year.

- CONAP should train all those in charge of hatcheries, so that they properly fill out the conservation quota receipts for olive ridley eggs use in all their three sections.

- CONAP must verify at the final point of sale of olive ridley eggs (restaurants, ceviche eateries, etc.) that sellers have their respective proof of final delivery that ensures the legal source of the eggs.

- Considering that the annual amount allocated by the hatcheries to purchase eggs for conservation is around Q500,000 -USD 64,880 (estimated)- it would be feasible for CONAP to negotiate a conservation incentives program for the collectors, which funds are exclusively for hatcheries to purchase eggs for conservation. This would bring several benefits since that money would start an economic spillover effect among the coastal communities of the Pacific Coast and would enable hatcheries to invest their income from hatchling releases and donations in improving and maintaining hatchery infrastructure, purchasing priority equipment for monitoring, and investing in other sea turtle conservation activities.

- The implementation of these recommendations must be documented and analyzed to be included as part of the Annual Report to the IAC.

COSTA RICA

CIT-CC18-2021-Doc.5

Resolution on the Exceptions under Article IV (3a and 3b) for subsistence harvesting of *Lepidochelys olivacea* eggs in Costa Rica

Prepared by M.Sc. Rotney Piedra, M.Sc. Didiher Chacon, and Administración del Refugio Nacional de Vida Silvestre Ostional and Consejo Local del Refugio (CIMACO).

This resolution proposal was drafted by the Costa Rica delegation, and includes text from the current exception resolution CIT-COP7-2015-R1 and new text that refers to the recommendations from the Scientific and Consultative Committees and IAC Exceptions Working Group given to Costa Rica after review of the 5 years exception report, presented by the Government of Costa Rica in 2020. The Costa Rica delegation in agreement with the IAC Exception WG recommended preparing an updated resolution that will replace the exception resolution from 2015.

The 18th Scientific Committee Meeting adopted the Exceptions Resolution proposal under Article IV (3a and b) for subsistence harvesting of *Lepidochelys olivacea* eggs in Costa Rica and has presented it for the consideration of the IAC Consultative Committee and the COP10.2.

Editorial Note: Text in black was taken from resolution in place CIT-COP7-2015- R1. New text in blue is proposed by Scientific Committee.

Proposal of Resolution on the Exceptions under Article IV (3a and 3b) for subsistence harvesting of *Lepidochelys olivacea* eggs in Costa Rica

CIT-CC18-2021-Doc.5

RECALLING that Article IV of the Convention, paragraph 2a states that the Parties have prohibited the intentional capture, retention or killing of, and domestic trade in, sea turtles, their eggs, parts or products;

FURTHER RECALLING that Article IV, paragraph 3a states that each Party may allow exceptions to satisfy economic subsistence needs of traditional communities, taking into account the recommendations of the Consultative Committee of Experts established pursuant to Article VII, provided that such exceptions do not undermine efforts to achieve the objective of this Convention;

NOTING that at the 5th Conference of the Parties, adopted the procedures for cases where exceptions exist were adopted (CIT-COP5-2011-R2);

ACKNOWLEDGING that all species of sea turtles classified as “endangered, vulnerable and critically endangered” must be protected from any negative impacts resulting from an exception;
CONSIDERING *Lepidochelys olivacea* is classified as vulnerable, by the International Union for the Conservation of Nature (IUCN);

RECOGNIZING that *L. olivacea* on the beaches of the Eastern Pacific Ocean (Mexico to Panama) is the only turtle species that can tolerate a controlled amount of egg harvesting, and only when the population to be harvested has demonstrated to be in a status of "recovery or verifiable stability;"

CONSIDERING that this exception existed prior to Costa Rica becoming a Party of the IAC, and today remains under the control of the different relevant governmental organizations;

CONSIDERING that the IAC Conference of the Parties approved the exception in Costa Rica by resolution CIT-COP7-2015-R1; (NEW TEXT)

CONSIDERING that Costa Rica has a Five Year Plan for the Management and Conservation of Olive ridleys turtle in the Ostional Wildlife Refuge (Management Plan) *(pending to include link o reference to plan here*), that is evaluated, updated and authorized every five years; (NEW TEXT)

CONSIDERING that Costa Rica has selected and implements the sampling method to monitor indicators that allow the determination of the population status of Olive ridleys *(Lepidochelys olivacea);* (NEW TEXT)

CONSIDERING that the technical information presented by Costa Rica in its Progress Report on the implementation of the exception for 2015-2020 reviewed by the IAC Scientific Committee in their 17th meeting, and the IAC Consultative Committee of Experts (CCE) in their 14th meeting, determined that Costa Rica has fulfilled the four measures established in Resolution CIT-COP7-2015-R1; (NEW TEXT)

CONSIDERING that the Scientific and Consultative Committees recommended new measures to improve the implementation of the Exception in Costa Rica. (NEW TEXT)

THE TENTH CONFERENCE OF THE PARTIES OF THE INTER-AMERICAN CONVENTION FOR THE PROTECTION AND CONSERVATION OF SEA TURTLES RECOMMENDS THE FOLLOWING MEASURES TO COSTA RICA TO MEET THE REQUIREMENTS OF ARTICLE IV (3) REGARDING EXCEPTIONS:

1. Costa Rica will continue managing its exception according to their five-year plan Management Plan. This Management Plan must include the recommendations given by the Scientific Committee, and the Consultative Committee of Experts in its 14th meeting (CCE Meeting Report CIT-CCE14-2021-Doc.9) and Annex I in this resolution. **(NEW TEXT)**

2. The Exception Management Plan should be assessed every 5 years by the IAC Scientific Committee and Consultative Committee; thus, Costa Rica must prepare an Assessment Report for the Exception Management Plan with the status of implementation and compliance with the plan and report timely any modifications to the information presented. **(NEW TEXT)**

3. Costa Rica when pertinent, will prepare data analysis of population trends, and the population indexes addressed, and will provide recommendations and conclusions regarding the exception management in its five-year Assessment Report for the Exception Management Plan to present to IAC. (NEW TEXT)

4. In order to determine the status of the nesting population of *L. olivacea* in Ostional and the impact of the egg harvest, Costa Rica will continue to monitor additional indicators including number of neonates (a recruitment index), and hatching success/reproductive output of the clutches. Costa Rica will implement a five-year evaluation and make the pertinent adjustments to ensure the egg harvest is sustainable.

5. In order to maintain its social and health responsibility, as *L. olivacea* eggs are sold for human consumption, Costa Rica will undertake every five years, a microbiological and biochemical study about the sanitary viability of *L. olivacea* eggs for human consumption. (NEW TEXT)

6. Costa Rica must continue to report on its exception in the IAC Annual Report.

7. The IAC Scientific and Consultative Committees will continue to review the progress of the implementation of this resolution and will report to the Conference of Parties on this progress, every five years.

8. The Assessment Report for the Exception Management Plan should describe the strategies developed to address the variables that affect data collection; description of nest selection criteria; the criteria to define arribadas with estimated number of nests that can be harvested, and the implementation of measures to reduce in water threats such as bycatch to sea turtles. (NEW TEXT)

9. The IAC Scientific Committee and Consultative Committee of Experts will develop a form with the minimum content to be included in the Assessment Report for the Exception Management Plan. **(NEW TEXT)**

10. Urge the Government of Costa Rica to continue to secure and assign human and financial resources necessary for the implementation of the Exception Management Plan. (NEW TEXT)

This resolution repeals and replaces the IAC Resolution on Exceptions under Article IV (3a and b) for Subsistence Harvesting of *Lepidochelys olivacea* eggs in Costa Rica CIT-COP7-2015-R1 in its entirety. (NEW TEXT)

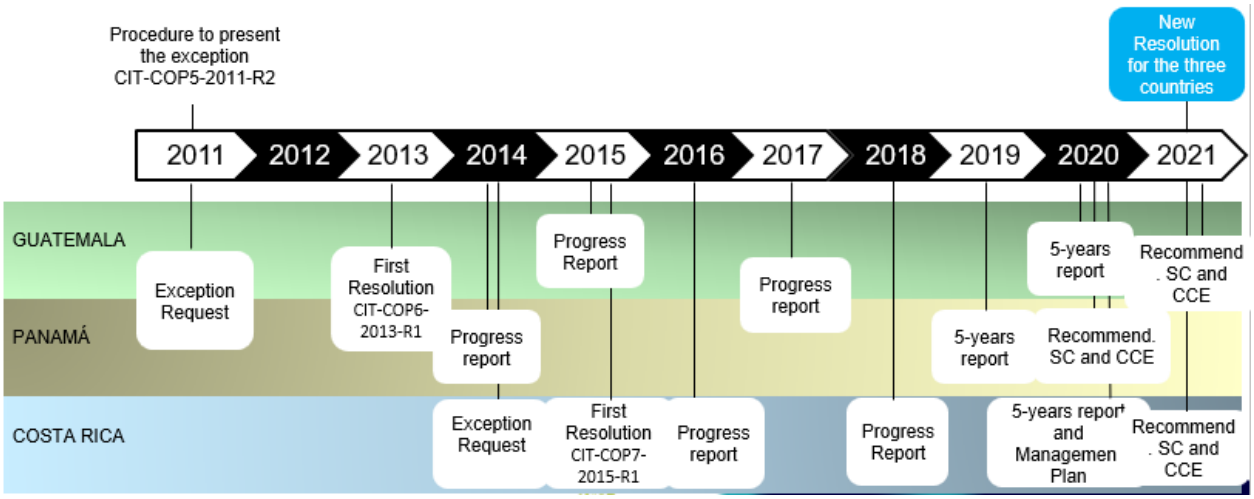
ANNEX I: Recommendation from the IAC Scientific Committee and Consultative Committee of Experts regarding the management of the Exception in Costa Rica **(NEW TEXT)**

1. The Exception Management Plan must include a budget and a cost analysis to ensure the implementation of the Plan.

2. To prevent illegal trade of eggs from other *L. olivacea* populations and other sea turtle species, Costa Rica must continue with the process of development, implementation, and evaluation annually of the traceability plan from the beach to the final distributor.

3. In its Assessment Report for the Management Plan Costa Rica will report on the investment of the economic resources generated by the commercialization of eggs on the human wellbeing, improvements to the community, and the total number of beneficiaries that are involved in the *arribada* process, as well as the requirements for participation and compliance with the established measures in the exception Management Plan. (NEW TEXT)

IAC EXCEPTIONS TIMELINE 2011-2021



****

ANNEX VI - Analysis of observer data regarding interactions between sea turtles and industrial longline fisheries of the IAC Countries (2020-2021)

CIT-CC18-2021-Doc.7

Analysis of observer data regarding interactions between sea turtles and industrial longline fisheries of the IAC Parties (2020-2021)

By
Dr. Heriberto Santana*
M. Sc. Sergio Paul Padilla Galindo
***INAPESCA-Mexico´s Delegate to the IAC Scientific Committee and member of the Scientific Committee Working Group**

Executive Summary

The analysis of the data provided by the IAC Parties in the 2020 and 2021 Annual Reports Fisheries section: "IAC Form to report interactions between sea turtles and industrial longline fisheries vessels greater than 20 meters in length" included several aspects of the interactions with sea turtles reported by six fisheries with observers on board. Patterns of interactions with sea turtles are observed as a result, including variations typical of industrial longlines according to the type of fishery, their relationship with the type of set, types of hooks and bait used, as well as their impact on the sea turtles released condition: alive, dead, or unknown. Although these are preliminary results, they show the main aspects that should be addressed to mitigate the harmful effects of the fisheries components on sea turtles.

Introduction

As part of the 2020 and 2021 Annual Reports Fisheries section "IAC Form to report interactions between sea turtles and industrial longline fisheries vessels greater than 20 meters in length", from now on "Longline Form", and according to Resolutions CIT-COP9-2019-R2, CIT-COP7-2015-R2, and COP3/2006/ R-2, some IAC countries reported specific data on the characteristics of their industrial longline fisheries. The form is similar to that used by the Inter-American Tropical Tuna Commission (IATTC) to report industrial longline fisheries that are members of this Regional Fisheries Management Organization (RFMO). Through the analysis of the data in the Longline Form, it is expected to identify the characteristics of the industrial longlines interacting with sea turtles during their fishing operations, and to make recommendations to strengthen the measures required to ensure compliance with the IAC objectives. This report includes a grouped data analysis of 2019 and 2020 fishing operations, and it is expected that the methodology used, serves to standardize the analysis of the accumulative data from subsequent years.

Methods

The database used for the analysis was developed with information reported by three countries (Ecuador, Mexico, United States) conducting industrial longline fishing operations with onboard observers. It is important to highlight that the data provided in the Annual Reports Longline Forms in 2020 and 2021 correspond to the 2019 and 2020 fishing operations. In some cases, it was necessary to consult those who reported the data to clarify some uncertainties or questions about the information provided. Given that the coordinates provided in the Annual Report Longline Form produced polygons that included areas outside of where the fleets actually operate, the map showing this information was excluded, and IAC Focal Points from each country will be requested to provide maps of their actual fishing operation areas instead, which will be included as an Annex of this report.

After discussing it with the IAC Scientific Committee Fisheries Working Group (Fisheries WG), it was considered that this analysis should focus on analyzing the impacts of the components and characteristics of the industrial longlines on sea turtles using the data reported. This way, when the impacts of these fisheries are identified in the results, they will also show the common effects of the characteristics reported. Dynamic tables were used to summarize and organize the data, including the six sea turtle species in the IAC region as well as the types of interactions. Interaction rates by species were compared using the metric catch per unit of effort (CPUE; Shimada & Shaefer, 1956; Gulland, 1964; Large, 1992; Fréon & Misund, 1999). The ratio of the number of sea turtle (catch) to thousands of hooks used (effort) was used to represent bycatch rates to standardize the results with the values found in most of the literature (Vega et al., 2015, Swimmer et al., 2010, 2017; Domingo et al., 2006, Bolten and Bjorndal, 2005, Valeiras and Camiñas, 2001). The analysis emphasizes bycatch rates by type of fishery, region (Pacific or Atlantic), type of set (shallow or deep), type of hook and bait, and their impact on the sea turtles released alive, dead or in a condition unknown.

Results

The database includes the information reported in the 2020 and 2021 IAC Annual Reports by Ecuador, Mexico and the United States, from which six fisheries were identified, including (1) swordfish and sharks, (2) tuna, (3) swordfish, (4) sharks, (5) large pelagic fishes, and (6) tuna and sharks. Table 1 shows some basic characteristics of these fisheries, where not all countries reported interactions with sea turtles.

Table 1. Basic characteristics of industrial longlines identified from the data reported by the IAC Parties in their 2020 and 2021 Annual Reports. Note: This analysis only considered the fisheries reporting the number of hooks used and sea turtles, recorded by observers.

No.	REGION	TARGET SPECIES	YEAR OF OPERATION	No. OF OBSERVED HOOKS*	TOTAL INTERACTIONS**
1	PACIFIC	SWORD FISH AND SHARK	2019	348162	22
2	ATLANTIC	TUNA	2019	1424256	3
3	PACÍFIC	SWORD FISH AND SHARK	2019	400000	22
4	ATLÁNTIC	SWORD FISH AND SHARK	2019	140000	13
5	PACÍFIC	SWORD FISH	2019	190000	4
6	PACÍFIC	TUNA	2019	2591000	7
7	PACÍFIC	LARGE PELAGIC FISHES	2019	345504	60
8	PACÍFIC	SHARK	2020	137669	0
9	ATLÁNTIC	TUNA	2020	1442879	4
10	ATLÁNTIC	SWORD FISH	2020	93000	3
11	ATLÁNTIC	TUNA AND SHARK	2020	59000	0
12	PACÍFIC	SWORD FISH	2020	552000	13
13	PACÍFIC	TUNA	2020	8738000	13

*Number of hooks reported by scientific observers' onboard vessels.
**Number of sea turtle that interacted with the fishery reported.

During the fishing operations reported in 2020 and 2021, the industrial longline fisheries recorded a total observed bycatch of 164 sea turtles of the six species found in the IAC region. The loggerhead turtle (*Caretta caretta)* had the highest interaction with 68 individuals, followed by the green turtle (*Chelonia mydas*) and the olive ridley (*Lepidochelys olivacea*) with 33 individuals of each species, the hawksbill turtle (*Eretmochelys imbricata*) with 16 individuals, the leatherback turtles (*Dermochelys coriacea*) with 10 and the Kemp´s ridley (*Lepidochelys kempii*) with 4. Table 2 shows that 89.6% of the turtles that were observed to interact with industrial longlines were released alive and 9.2% were released dead.

Table 2. Number of observed sea turtles captured incidentally, by species and type of interaction in industrial longline fishing operations, reported by IAC Parties in 2020 and 2021. The values in brackets represent the percentages of turtles released alive, released dead, and unknown condition, respectively.

Species	Released alive	Released dead	Unknown condition	Total	%
Caretta caretta	64	4	0	68	41.46
Chelonia mydas	32	1	0	33	20.12
Lepidochelys olivacea	21	10	2	33	20.12
Eretmochelys imbricata	16	0	0	16	9.76
Dermochelys coriacea	10	0	0	10	6.10
Lepidochelys kempii	4	0	0	4	2.44
Total	147 (89.6%)	15 (9.2%)	2 (1.2%)	164	100

Figure 1 shows the six species of sea turtles' bycatch in the Atlantic and Pacific regions. The highest interaction rate was recorded in the Pacific, and *Caretta caretta* had the highest values,

followed by *Chelonia mydas* and *Lepidochelys olivacea*; *Eretmochelys imbricata* and *Dermochelys coriacea* had the lowest interaction rates in this region. In the Atlantic, *Eretmochelys imbricata* and *Dermochelys coriacea* were the species with the highest rate of interaction, followed by *Lepidochelys kempii* and *Caretta caretta*.

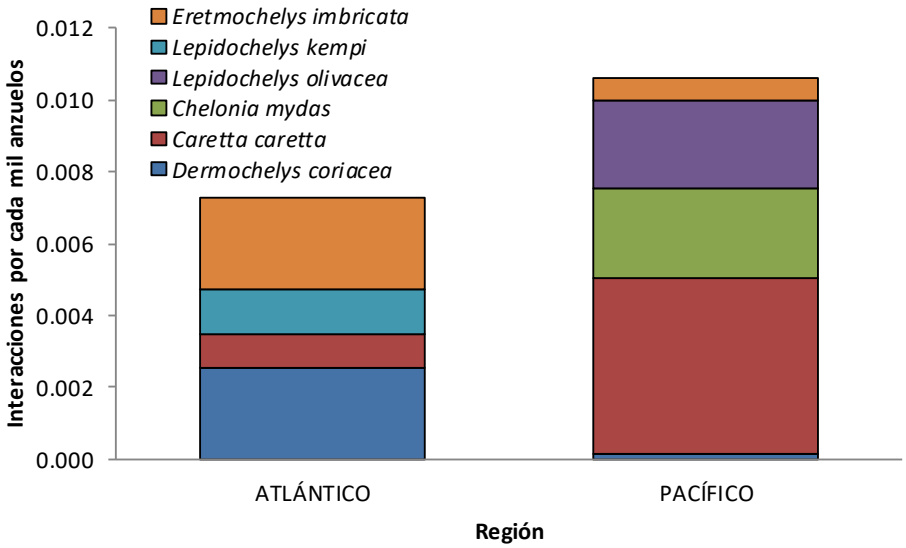


Figure 1. Interaction of the six sea turtle species per a thousand of hooks by region, reported in the 2020 and 2021 Annual Reports. Interacciones por cada mil anzuelos=Interactions per thousand hooks; Atlántico = Atlantic; Pacifico = Pacific.

The type of interactions with regards to turtles' fate are recorded in the Pacific and Atlantic regions in Figure 2. The sea turtles released dead or in unknown condition recorded in the Pacific region were greater than the Atlantic region, with values hardly visible in the corresponding column.

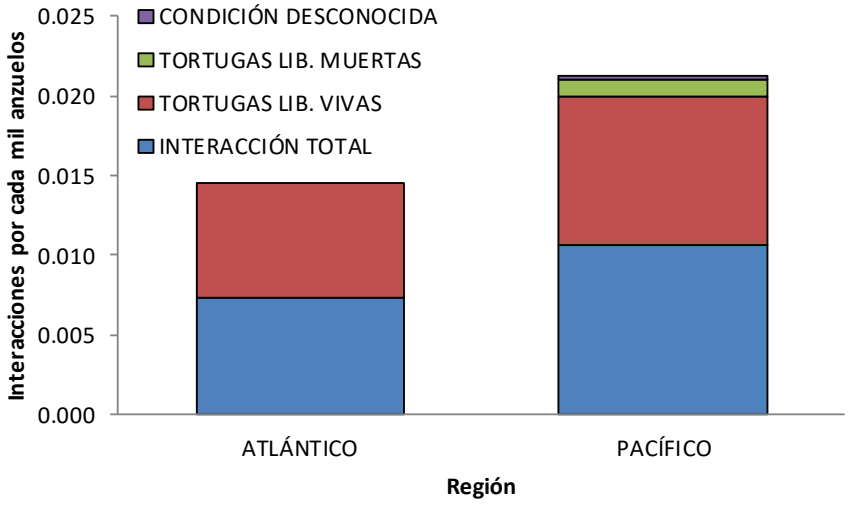


Figure 2. Type of sea turtle interaction per thousand hooks by region, reported in 2020 and 2021 Annual Reports. Condición desconocida = unknown condition; tortugas lib. muertas = sea turtles released dead; tortugas lib. vivas = sea turtles released alive; interacción total = total interactions.

The bycatch rates of the six species of sea turtle in the four types of fisheries identified in Figure 3 that reported bycatch, show that the Large Pelagic Fish fishery is the one with the highest values, and that the green turtle (*Chelonia mydas*) had the highest observed interaction rates, followed by the olive ridley (*Lepidochelys olivacea*), the hawksbill turtle (*Eretmochelys imbricata*), and the loggerhead (*Caretta caretta*). It is worth highlighting sea turtle interactions were not reported in two fisheries, Tuna-Shark and Shark. In the Swordfish and Swordfish-Shark fisheries, *Caretta caretta* had the highest interaction rates. The tuna fishery reported low values of interaction with *Caretta caretta* and *Lepidochelys olivacea*.

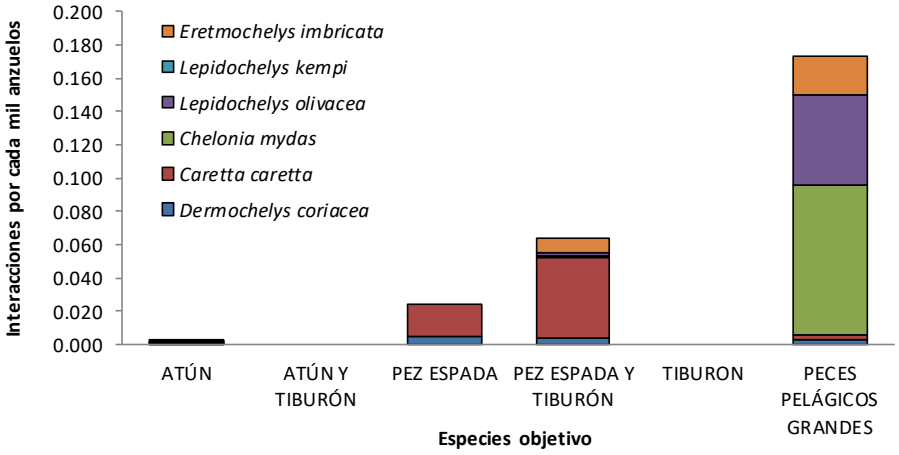


Figure 3. Bycatch rates of the six species by type of fishery reported in the Annual Reports 2020 and 2021. Interacciones por cada mil anzuelos = Interaction per thousand hooks; Especies objetivo = Target Species; Atún = Tuna; Atún y Tiburon = Tuna and Shark; Pez Espada = Sword Fish; Pez Espada y Tiburon = Sword Fish and Shark; Tiburon = Shark; Large Pelagic Fish.

Figure 4 shows the condition in which sea turtles incidentally caught were released in the four fisheries that reported bycatch. Recall that Tuna-Shark and Shark fisheries did not report sea turtle interactions. Low bycatch rates of sea turtles released dead and in unknown condition were identified in the Tuna, Swordfish, and Swordfish-Shark fisheries. Low bycatch rates of sea turtles released in unknown condition were reported by the Large Pelagic Fish and Swordfish-Shark fisheries respectively.

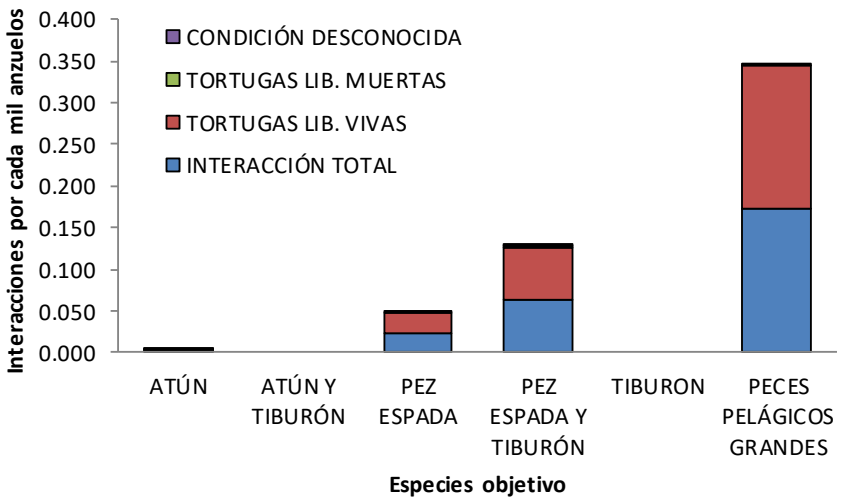


Figure 4. Sea turtles released condition after incidental captures per thousand hooks by type of fishery reported in the 2020 and 2021 Annual Reports. Interacciones por cada mil anzuelos = Interaction per thousand hooks; Especies objetivo = Target Species; Atún = Tuna; Atún y Tiburon = Tuna and Shark; Pez Espada = Sword Fish; Pez Espada y Tiburon = Sword Fish and Shark; Tiburon = Shark; Large Pelagic Fish. Sea turtle interactions were not reported for the Tuna-Shark and Shark fisheries.

Figure 5 shows the interaction rate with sea turtles by type of set, where it is evident that the highest bycatch rates were in shallow sets, catching *Caretta caretta*, *Chelonia mydas* and *Lepidochelys olivacea*. Interaction rates for *Caretta caretta* and *Lepidochelys olivacea* only were recorded when deep sets were deployed. It is important to note that these deep set interactions rates may change if and when sea turtle interactions are reported for the Tuna-Shark and Shark fisheries.

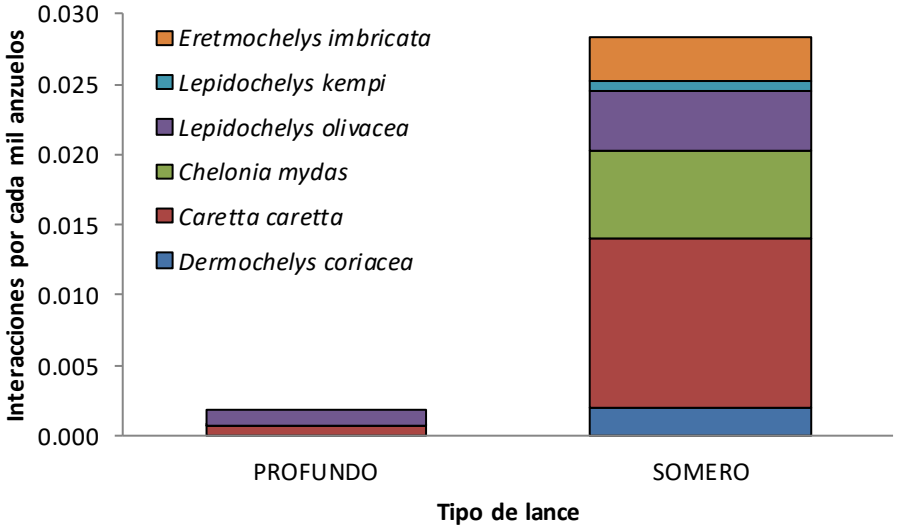


Figure 5. Bycatch rates of the six sea turtle's species by type of set, reported in the 2020 and 2021 Annual Reports. Tipo de lance = Type of Set; Interacciones por cada mil anzuelos = Interactions per thousand hooks; Profundo = Deep; Somero = Shallow.

Figure 6 shows the condition of sea turtles that interacted with industrial longlines where, although bycaught sea turtles were released dead in both shallow and deep sets, mortality rates were higher in the deep sets.

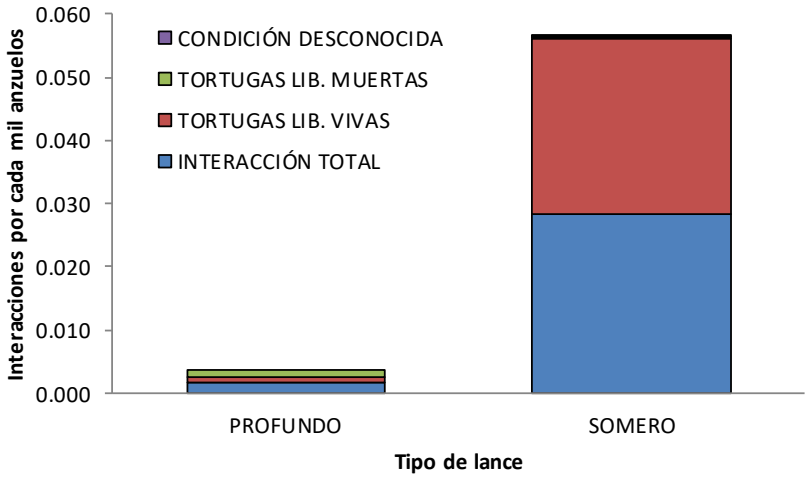


Figure 6. Type of sea turtle interaction per thousand hooks by type of set, reported in the 2020 and 2021 Annual Reports. Interacciones por cada mil anzuelos = Interaction per thousand hooks; Condicion desconocida = unknown condition; tortugas lib. muertas = sea turtles released dead; tortugas lib. vivas = sea turtles released alive; interacción total = total interactions; profundo = deep; somero = shallow; tipo de lance = type of set.

Figure 7 shows observed bycatch rates by type of hook used in industrial longline fisheries. The highest incidental catch rates were obtained when a combination of distinct types of hooks (C-16, J-4, J-36, and J-38) was used. This combination also showed interactions with the five species of sea turtles found in the Pacific region, and the highest bycatch rates for *Chelonia mydas*, *Lepidochelys olivacea* and *Eretmochelys imbricata. Caretta caretta* was the species with the highest bycatch rates with most hooks, with the exception of the C-06 hooks. The highest values of interaction for this species were recorded with the J-8 hook, followed by the C-18. Bycatch rates of *Dermochelys coriacea* were minimum and recorded with the C-16 hook, and the combination of C-16, J-4, J-36 and J-38 and C-18 hooks. It is important to note that there is inconsistency in the labeling of the different hook types, due to the fact that not all countries reported hook types using labels in the IATTC hook catalog (although this instruction is included in the IAC Annual Report). Future updates of this report will consolidate hook type labels to facilitate direct comparisons among countries.

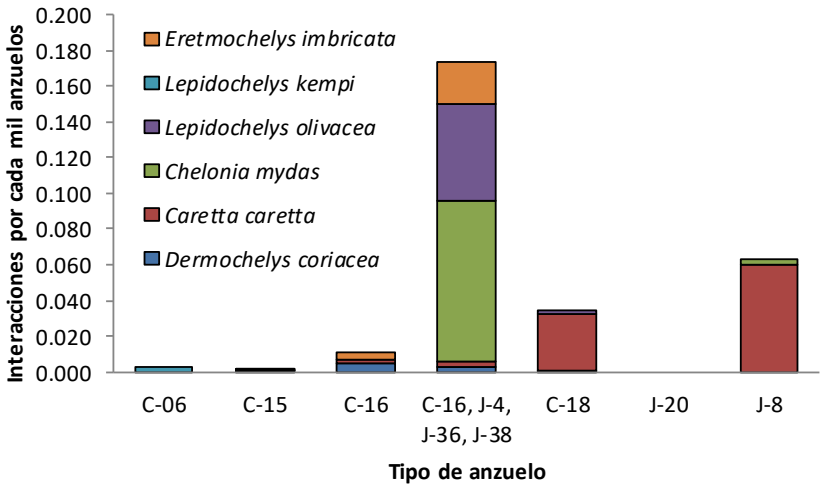


Figure 7. Bycatch rates of the six sea turtle species by type of hook reported in the 2020 and 2021 Annual Reports. Interacciones por cada mil anzuelos = Interaction per thousand hooks; Tipo de anzuelos = Type of hook.

The interactions by type of hooks used show that despite the highest values from the combination of hooks C-16, J-4, J-36 and J-38, the number of sea turtles released alive was the same as the values of total interactions. Low bycatch rates were recorded in sea turtles released dead with hooks type J-8, C-15, and C-18 (Figure 8). However, additional data and further analysis is needed to clarify bait types for each fishery and how often each bait type is used per hook type.

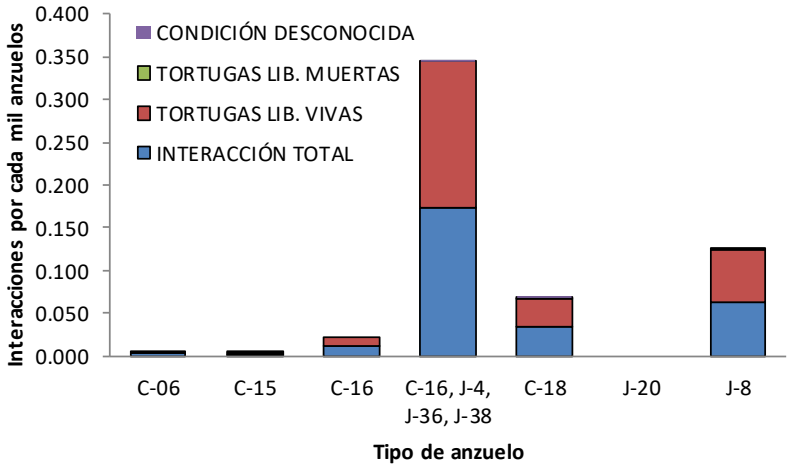


Figure 8. Type of interaction with sea turtle per thousand hooks by type of hook reported in the 2020 and 2021 Annual Reports. Interacciones por cada mil anzuelos = Interaction per thousand hooks; Tipo de anzuelos = Type of hook. Condicion desconocida = unknown condition; tortugas lib. muertas = sea turtles released dead; tortugas lib. vivas = sea turtles released alive; interacción total = total interactions.

The interaction of the types of bait with the six species of sea turtles (Figure 9) show that the combination skipjack, squid, and others (BAR – CAL-OTR) resulted in the highest bycatch rates, with *Chelonia mydas* being the most impacted species, followed by *Lepidochelys olivacea* and *Eretmochelys imbricata*. Squid was the bait that ranked second in bycatch rates on *Eretmochelys imbricata* and *Dermochelys coriacea*. The figure also shows that *Caretta caretta* was reported when four types of bait were used, but in small numbers. The bigeye (ojon in Spanish) was the only type of bait where interactions with Kemp´s ridley (*Lepidochelys kempii*) were recorded.

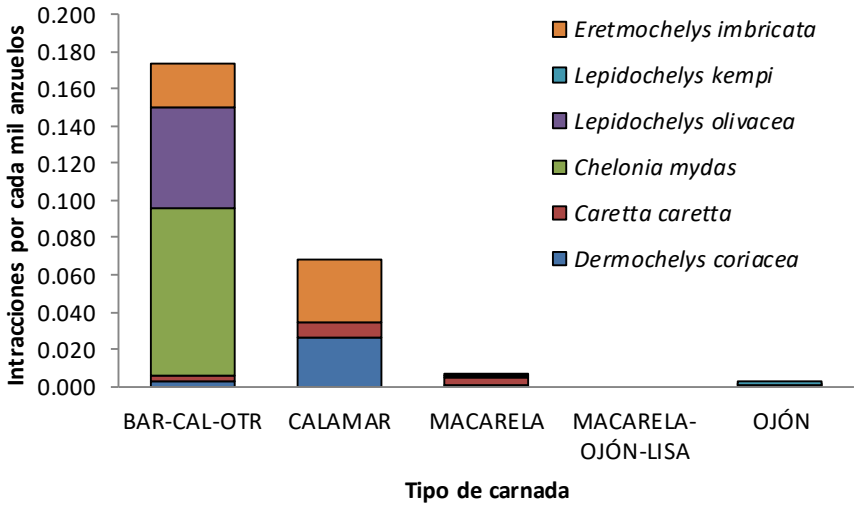


Figure 9. Bycatch rates of the six sea turtle's species per type of bait, reported in the 2020 and 2021 Annual Reports. Interacciones por cada mil anzuelos = Interaction per thousand hooks; Tipo de carnada = Type of bait. BAR-CAL-OTR = skipjack-squid-other; CALAMAR = squid; MACARELA = mackerel; MACARELA-OJON-LISA = mackerel-bigeye-mullet; OJON = bigeye.

Figure 10 shows sea turtles bycatch rates and their release condition by type of bait. It can be observed that in baits with higher interactions (BAR-CAL-OTR and only SQUID) the total bycatch rates are similar to the rates of the turtles released alive. The mackerel shows the lowest bycatch rates for sea turtles released dead, and the skipjack, squid, other and mackerel show interactions with sea turtles released under unknown condition.

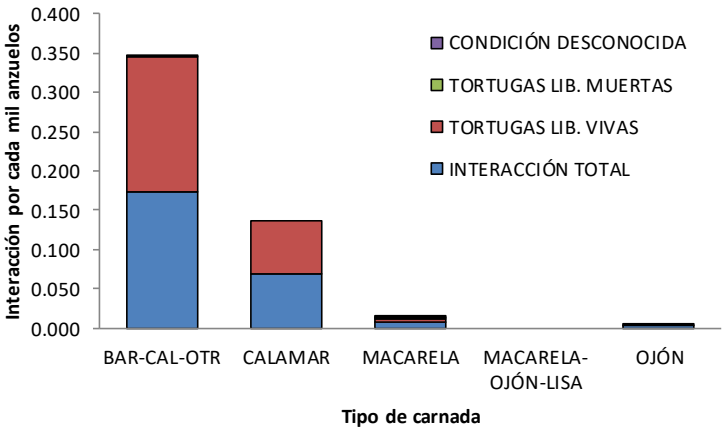


Figure 10. Type of interaction per thousand hooks by bait used reported in 2020 and 2021 Annual Reports. Interacciones por cada mil anzuelos = Interactions per thousand hooks; Tipo de carnada = Type of bait. BAR-CAL-OTR = skipjack-squid-other; CALAMAR = squid; MACARELA = mackerel; MACARELA-OJON-LISA = mackerel-bigeye-mullet; OJON = bigeye

Discussion

As in the 2020 report, the results and conclusions in this document should be interpreted as preliminary but without underestimating their importance and interpreting them in terms of their usefulness for the protection and conservation of sea turtles regarding the industrial longline fisheries components. It is evident that as interannual data accumulates, it will be possible to improve the statistical analyzes and methodologies to determine which are the most significant components and the interaction trends, so that protection and conservation measures can be recommended in each case.

As in all analyzes involving data from separate locations, countries report the geographic coordinates of their fishing operation areas for mapping purposes. However, although it has been foreseen that the coordinates are reported in the Longline Form as maximum and minimum Latitudes and Longitudes, for some particular cases the polygons produced in the analysis exceed the actual operating areas. Therefore, while we work to improve these analysis frameworks, countries with industrial longline fisheries that reported information will be asked to provide their own maps of the areas of fishing effort, which will be included as annexes to this report when they are available.

Given that this work focuses on bycatch rates as the number of sea turtles per thousand hooks, it is worth mentioning that bycatch rates vary between 0.001 and 0.174, which are relatively low compared to those in the literature (Valeiras and Camiñas 2001, Domingo et al. 2005, Bolten and Bjorndal 2006, Gilman & Huang 2017, Swimmer et al. 2017). However, as already mentioned, this report only includes two years of accumulated data (2019 and 2020), and the information may be underestimated due to the brief period, small number of countries that reported information for

the analysis, and the incorporation of bycatch minimization measures (i.e., large circle hooks, whole fin fish bait) for some fisheries reported.

As in the previous analysis, it was found that most of the sea turtles interacting with industrial longline components were released alive, which could mean progress in favor of the conservation of these species by the use of measures that reduce mortality (e.g., large circle hook size and total length of line longer than any float line length). It also indicates the high degree of awareness of the fishermen participating in these fisheries. However, there is great difficulty to determine post-capture survival of sea turtles, an issue on which many organizations are working. This has highlighted the importance of training fishing crews in best practices for safe handling and release of sea turtles that are incidentally captured, as well as providing vessels with appropriate tools and equipment to avoid severe damage and thus enhance sea turtles' chances of post-release survival.

Regarding the sea turtle species most impacted by the interactions with industrial longlines, *Caretta caretta* stands out, with more presence in the Pacific than in the Atlantic. It is worth mentioning that multiple *Caretta caretta* sub-populations have been identified worldwide (Wallace et al. 2010), and the sub-populations occurring in the South Pacific, which nests in Australia and New Caledonia, is considered Critically Endangered by the IUCN (Limpus and Casale, 2015). The following two species with highest impact are *Chelonia mydas* and *Lepidochelys olivacea*, in the Pacific region only. The number of hawksbill turtles (*Eretmochelys imbricata*) was the same in both regions, but interactions rates were higher in the Atlantic. The leatherback turtle *Dermochelys coriacea* was also found in both regions, but both the number of individuals and the bycatch rate were higher in the Atlantic. It is important to mention that *Lepidochelys kempii*, which is only found in the Atlantic, had the lowest interaction rate.

Two characteristics of the fisheries that are worth highlighting are the type of fishery and the type of set used, as each showed significant differences in bycatch rates. The fishery combining shark-billfish-tuna as target species, was the one with the highest bycatch rates impacting *Chelonia mydas*. In the swordfish-shark and swordfish fisheries, it was *Caretta caretta* that had the highest bycatch rates. As for the sets, the shallow set was showed highest bycatch catch rates, although the fishing effort as the number of hooks was only 31% of the total. However, the highest rate of interaction with turtles released dead was with deep sets.

Hooks are one of the most documented longline components regarding impact on sea turtles (Gilman and Huang, 2017, FAO, 2004; Watson et al. 2005; Bolten and Bjorndal, 2006). The results from this analysis are consistent with that, as "J" hooks can cause more damage to sea turtles easily hooking deep in the body, where the hook is not visible, and difficult to unhook. The contrary happens with large circular hooks that, when shallow-hooked as is commonly the case, are easily released, either manually or using some simple tools. It is worth mentioning that the observed bycatch rate values are relatively low and obtained with limited data, to be considered definitive.

As for the turtles released dead, these were recorded on hooks J-8, C-15, and C-18 respectively. It is likely that fishing depth plays a key role, however, given the high number of turtles captured dead in deep set gear. It is necessary to emphasize on the need to report the hooks according to the IATTC codes, characteristics, and classification, since there were cases that hooks cannot be identified by their characteristics.

The type of bait is another longline component widely documented regarding its impact (Gilman & Huang, 2017, Bolten and Bjorndal, 2006). The "skipjack-squid-others" combination was the one that, in addition to having the highest bycatch rates, also interacted with five of the sea turtle species found in the Pacific region. The two species of sea turtles that interacted the most with this bait combination were *Chelonia mydas* and *Lepidochelys olivacea.* It is worth highlighting that the bait that follows in order of interaction is the squid, with the highest interaction values were recorded for the leatherback turtle (*Dermochelys coriacea*). However, all the turtle released dead were recorded when mackerel was the bait, which could also be a component of the type of fishery (i.e., deep set). Additional data will enable a more robust analysis to examine the difference in survival rates between turtles interacting with shallow set vs. deep set fisheries, fish vs. squid bait, etc.

We want to highlight the importance of the progress made obtaining information on the interactions between the industrial longline fisheries components and sea turtles. However, some IAC countries have pointed out having data collected by observers onboard longline fisheries vessels targeting sharks, swordfish, tuna etc., which are less than 20 m in length, and have not reported them in the IAC Annual Report as it only considers data from vessels greater than 20 m in length. It is reasonable that data from vessels less than 20 m in length may be useful to make the analyzes on interactions with sea turtles more robust, therefore the IAC Scientific Committee Fisheries WG considers it important that this information is requested in the IAC Annual Report, prior agreement with the IAC Parties.

Conclusions

The highest sea turtle bycatch rates were recorded in the Pacific Ocean (0.011 turtles per thousand hooks).

90% of the interactions were with sea turtles released alive (0.017 turtles per thousand hooks).

Caretta caretta was the species with highest bycatch rates (0.006 turtles per thousand hooks) and was the only one interacting with all fisheries.

Sea turtles released dead were only reported in the Pacific region including *Lepidochelys olivacea* (10), *Caretta caretta* (4) and *Chelonia mydas* (1) reported.

Dermochelys coriacea and *Eretmochelys imbricata* were the species with the most interactions per thousand hooks (0.003 each) in the Atlantic.

The large pelagic, and swordfish-shark fisheries had the highest interaction rates (0.064 and 0.024 turtles per thousand hooks, respectively).

Shallow sets had the highest bycatch rates interacting with all the IAC region sea turtle species

Deep sets had the highest bycatch rates of sea turtles released dead (0.0011 turtles per thousand hooks).

Additional data will enable more robust analyses that are necessary in order to understand single factor effects such as bait and hook types on rates of interaction and mortality for sea turtles in IAC longline fisheries. Such analyses will be presented in a future update of this report.

Recommendations

Request data from longline fisheries vessels less than 20 m in length in which observers participate in the IAC Annual Report Longline Form.

Provide for easier comparisons in sea turtle bycatch patterns among countries by ensuring the consistent use of labels used to describe hook type and size. This may involve consolidating the use of hook type/size labels as presented in the IATTC hook catalog

Include in the IAC Annual Report "*Form to report interactions between sea turtles and industrial longline fisheries*" a field to specify the length of the observed vessels divided in to greater than 20 and less than 20 m, and if it is the case indicate both. This will allow IAC Countries where there are observed longline fisheries to include their data from vessels of varied sizes to enrich future analyzes by the Scientific Committee. If this change is approved, it is recommended to remove the word "industrial" from the form´s name, as well as request these information for the second half of 2022.

Urge countries with observed longline fisheries to provide information on interactions with sea turtles in the following IAC Annual Reports longline forms. This recommendation aims to strengthen the results of the interactions analyzes, and provide recommendations to support the implementation of the IAC Resolutions.

Request the IAC Party Countries to provide maps of their longline fishing fleet operation areas, which will be attached to this report to present it to the Consultative Committee and the COP.

We recommend to IAC countries reporting information in the longline fisheries section of the IAC Annual Report, to provide to the IAC Secretariat the maps with their polygons showing where your longline fishing fleet operates (format ArcGis). In case the country cannot prepare the maps, as an alternative we ask to provide the coordinates of the perimeter of the polygon, using the georeference WGS84. With this information, the IAC fisheries Working Group members from Mexico and Peru will prepare them.

The IAC Scientific Committee and its Fisheries WG recommend updating this report every five years to inform the Conference of Parties. The preliminary report will be presented to the COP10.2 in 2022, and the first complete report in 2024.

Notes to be considered for the next report:
Note: It is recommended for the next report to add to Table 1. shallow vs deep set comparison.
Note: It is recommended in Figure 8 clarify bait type for each hook.

References

Bolten A, Bjorndal K. 2005. Experiment to evaluate gear modification on rates of sea turtle bycatch in the swordfish longline fishery in the Azores—Phase 5. Final Project Report. Archie Carr Center for Sea Turtle Research, University of Florida, Gainesville, Florida, USA

FAO. 2004. Informe de la Consulta de Expertos sobre la Interacción entre las Tortugas Marinas y las Pesquerías en un Contexto Ecosistémico. Roma, Italia, 9-12 de marzo de 2004. *FAO Informe de Pesca*. No. 738. Roma, FAO. 2004. 40p.

Fréon, P. & O.A. Misund. 1999. Dynamics of pelagic fish distribution and behaviour: effects on fisheries and stock assessment. Blackwell Science, Oxford, 348 pp.

Gilman, E, Zollett, E., Beverly, S., Nakano, H., Shiode, D., Davis, K., Dalzell, P., Kinan, I., 2006b. Reducing Sea turtle bycatch in pelagic longline gear. Fish and Fisheries 7(1): 2-23.

Gilman E.L. & H-G Huang. 2017. Review of effects of pelagic longline hook and bait type on sea turtle catch rate, anatomical hooking position and at-vessel mortality rate. Reviews in Fish Biology and Fisheries (Rev Fish Biol Fish).

Gulland, J.A. 1964. Catch per unit effort as a measure of abundance. Rapp. P-v. Réun. Cons. int. Explor. Mer, 155: 8-14.

Large, P.A. 1992. Use of a multiplicative model to estimate relative abundance from commercial CPUE data. ICES. J. Mar. Sci., 49: 253-261.

Limpus, C. & Casale, P. 2015. *Caretta* (South Pacific subpopulation). In The IUCN Red List of Threatened Species 2015: e.T84156809A84156890.

http://dx.doi.org/10.2305/IUCN.UK.2015-4.RLTS.T84156809A84156890.en

Shimada B.M. & M.B. Shaefer 1956. A study of changes in fishing effort, abundance, and yield for yellowfin and skipjack tuna in the eastern tropical Pacific Ocean. Inter-Amer. Trop. Tuna Comm. Bull., 1: 351- 421.

Swimmer Y, R. Arauz, J. Wang, J. Suter, M. Musyl, A. Bolaño and A. López. 2010. Comparing the effects of offset and non-offset circle hooks on catch rates of fish and sea turtles in a shallow longline fishery Aquatic Conserv: Mar. Freshw. Ecosyst. 20: 445–451 (2010).

Vega A. J., Y. A. Robles P., F. Quezada, O. Quintero y L. Montes. 2015. Evaluación preliminar de la captura incidental de tortugas marinas por la pesquería artesanal en el Golfo de Chiriquí. Tecnociencia, Vol. 17, N°1

Wallace, B.P., A.D. DiMatteo, B.J. Hurley, E.M. Finkbeiner, A.B. Bolten, M.Y. Chaloupka, B.J. Hutchinson, F.A. Abreu-Grobois, D. Amorocho, K.A. Bjorndal, J. Bourjea, B.W. Bowen, R. Briseño Dueñas, P. Casale, B.C. Choudhury, A. Costa, P.H. Dutton, A. Fallabrino, A. Girard, M. Girondot, M.H. Godfrey, M. Hamann, M. López-Mendilaharsu, M.A. Marcovaldi, J.A. Mortimer, J.A. Musick, R. Nel, N.J. Pilcher, J.A. Seminoff, S. Troëng, B. Witherington, and R.B. Mast. 2010. Regional Management Units for marine turtles: A novel framework for prioritizing conservation and research across multiple scales. PLOS ONE 5(12): e15465

Watson J, Epperly S, Foster D, Shah A.2005. Fishing methods to reduce sea turtle mortality associated with pelagic longlines. Can J Fish Aquat Sci 62:965–981

Swimmer Y, Gutierrez A, Bigelow K, Barceló C, Schroeder B, Keene K, Shattenkirk K and Foster DG. 2017. Sea Turtle Bycatch Mitigation in U.S. Longline Fisheries. Front. Mar. Sci. 4:260. doi: 10.3389/fmars.2017.00260.

Valeiras J. y J.A. Camiñas. 2001. Captura accidental de tortugas marinas en las pesquerías españolas de palangre de pez espada y túnidos. Instituto Español de Oceanografía. Centro Oceanográfico de Málaga, Spain. Libro de resúmenes del IIº Simposium de la Sociedad Española de Cetáceos.

****

ANNEX VII - Review and Update of the Recommendations on Manuals for Best Practices for Sea Turtles on Board Fishing Vessels

CIT-CC18-2021-Doc.10

Review and Update the Recommendations on Manuals for Best Practices for Sea Turtles on Board Fishing Vessels

By

Biologist Jennifer Suarez[1] and Engineer Leslie Bustos[2]

[1]Galapagos National Park -Member of the IAC SC Fisheries Working Group

[2]Chile´s Fisheries Undersecretariat – IAC SC Chair and Member of the Fisheries WG

This document was prepared by Inter-American Convention for the Protection and Conservation of Sea Turtles Scientific Committee Fisheries Working Group, with the purpose of providing an update and to complement the information in the IAC Technical Document CIT-CC11-2014-Tec.8 prepared by the Fisheries WG in 2014, on recommendation of available literature on Manuals on Best Practices for Handling Sea Turtles Incidentally Caught in Fishing Operations published in recent years. The contents of the reviewed manuals (their strengths and what they lack) are highlighted here from the perspective of a regional use, and it is recommended the need to elaborate a compilation of the information for a manual for the IAC that contains all the strengths identified in the literature review that was carried out.

The SC18 adopted the recommendations of manuals of best practices for handling sea turtles incidentally caught in fishing operations identified in this document, which are in line with the needs of the region, to include them in the Technical Document CIT-CC11-2014-Tec.8 updates. The SC18 adopted the recommendation for the Fisheries WG to prepare a compilation of information for the Convention´s Manual on Best Practices for Sea Turtles on Board of Fishing Vessels, bringing together all the strengths found in the recent literature, to compile them in a single document to ease the use by the IAC Countries. The Fisheries WG will provide the Secretariat with the digital files of the manuals revised to upload in the IAC web site for consultation.

Review and Update the Recommendations on Manuals for Best Practices for Sea Turtles on Board Fishing Vessels

This document has been prepared by the Fisheries Working Group of the Scientific Committee of the Inter-American Convention for the Protection and Conservation of Sea Turtles (IAC); containing information and recommendations from manuals on onboard handling techniques of incidentally caught sea turtles that have been recently published. This is intended to update and complement the information contained in the technical document CIT-CC11-2014-Tec.8 prepared by the Fisheries WG in 2014. To prepare this document, the Fisheries Working Group did an exhaustive review of the literature updated until 2021 on the subject, in order to compile, analyze and recommend the manuals that best suit the characteristics of the region. This document brings to the reader's attention the manuals on best practices of handling sea turtles incidentally caught in fishing operations published in recent years, including brief description of their contents (their strengths and what they lack) from the perspective of regional use. This exercise shows the need to develop a manual for the IAC that compiles the strengths identified in the literature review that was carried out.

This exercise resulted in the identification of new, more recent manuals that are recommended for inclusion in the update of the technical document of CIT CIT-CC11-2014-Tec.8.

Introduction

In accordance with Article IV of the IAC, Parties shall seek appropriate and necessary measures for the conservation and protection of sea turtles and their habitats. These measures include both promoting environmental education and disseminating specific information and minimizing the damage or death of sea turtles during fishing activity. The IAC Resolution adopted in 2006 Mitigating the Adverse Impacts of Fisheries on Sea Turtles COP3/2006/R-2, urges IAC Parties to endorse the Food and Agriculture Organization of the United Nations (FAO) "Guidelines for Reducing Sea Turtle Mortality due to Fishing Operations", to reduce sea turtle mortality from fishing operations, and to consider, as appropriate, the recommendations provided by the Scientific and Consultative Committees of the Convention.

The international guidelines proposed in 2004 by FAO establish the need to release in a timely and correct manner any incidentally caught sea turtle and must also have the necessary equipment to do so. On the other hand, they also establish the need for educational material to instruct fishermen through trainings and workshops, on the appropriate procedures. This applies to mitigation and management measures in trawl, longline, purse seine and gill fisheries to avoid/reduce bycatch and/or help the animal be returned to the water with as little damage as possible.

Within this framework and the activities established by IAC Fisheries WG to be presented at the 18th meeting of the Scientific Committee, the Fisheries WG agreed to carry out an exercise of review and update the available literature on the subject, based on the document prepared in 2014 / CIT-CC11-2014-Tec.8, to be updated with the review of some of the existing manuals on

procedures to handle incidentally caught sea turtles in different types of fisheries in the region. The objective of this exercise is to support the standardization of best practices for sea turtle on board, by recommending manuals that are representative of the region's fisheries, and to support IAC Parties in the implementation of the IAC Resolution for the Mitigation of Adverse Impacts of Fisheries on sea turtles, which can be applied to capacity building programs to the sectors where this is relevant.

Results

For the collection of the material for this analysis, a bibliographic search of updated manuals was carried out on the Internet. As a result, 10 documents were pre-selected. To evaluate the content of the manuals, a criteria assessment table was made taking into account 5 different categories, which in total contain 27 criteria, which were considered necessary for a sea turtle best practices manual, below are the categories with the number of criteria: 1. General content (considers 6 criteria), 2. Species information (considers 7 criteria), 3. Crew/fisherman safety (considers 4 criteria), 4. Handling of sea turtles according to fishing gear (considers 4 criteria) and 5. Specific procedures with the turtle (consider 6 criteria).

Considering all the categories mentioned, we recommend that a manual must have at least 3 fundamental categories: Species information, Handling of sea turtles according to fishing gear and Specific procedures with the turtle. This work is done considering that so far there is not a single manual or standard document that is being used consistently within the framework of the OROPs and the IAC. Below are the results obtained according to the analysis of the different categories:

In summary, a review of 10 manuals was carried out, of which 3 has in detail the procedures for more than 2 fisheries, 3 manuals are exclusive for Longline, 3 manuals for purse seine and 1 manual for gillnets. Below in Table 1, the names of the manuals and the scores for the 5 categories are detailed.

Table 1. Manuals names and scores according to the category

N° of Manual	Name of Manual	1	2	3	Total	4	5	Type of Fishery
Document 1	Sea turtle Handling Guidelines	7	1	4	12	5	3	**Longline**
Document 2	Guide for fishermen on sea turtle handling.	4	3	4	11	5	2	**Longline, trammel, and trawl.**
Document 3	Guide for sea turtle proper handle and release in longline fisheries.	6	1	3	10	4	2	**Longline**
Document 4	Guide on good practices for handling of sea turtles incidentally captured in the Mediterranean fishing activities.	4	3	1	8	2	0	**Longline, trammel and trawl.**
Document 5	Guide on good practices for safe handling and release of non-target marine fauna in purse seine.	2	1	5	8	5	3	**Purse seine**
Document 6	Guide for patterns on sustainable fishing practices on longline vessels.	6	1	4	11	6	3	**Longline**

N° of Manual	Name of Manual	1	2	3	Total	4	5	Type of Fishery
Document 7	Training guide for observers of purse seine fisheries.	1	1	1	3	5	3	**Purse seine**
Document 8	Guide on good practices to reduce sharks and rays' mortality incidentally captured by tropical tuna purse seine vessels.	0	1	0	1	1	1	**Purse seine**
Document 9	Manual on good practices for artisanal fisheries operations.	6	1	2	9	2	0	**Trammel**
Document 10	Guide to assess and mitigate sea turtle bycatch and other top predators in artisanal fisheries.	7	4	3	14	5	1	**Longline, trammel, purse seine, trawl.**

Considering the 3 fundamental categories of contents in a manual, it was evident that the Manual "Guide for the Assessment and Mitigation of Incidental Catch of Sea Turtles and Other Higher Predators in Artisanal Fisheries" had the highest score (14 criteria), followed by the manual "Sea turtle Handling Guidelines" (12 criteria).

When we reviewed each categories, it is evident that the manuals with more information regarding to turtle taxonomy ,were the two manuals mentioned above (7 criteria for each), while for the procedure regarding fishing gear, the manual "Guide for the Assessment and Mitigation of Incidental Catch of Sea Turtles and Other Higher Predators in Artisanal Fisheries" continues to be the best one with the description of procedures for 4 fishing gears, and followed by the manuals "Guide for fishermen on the management of sea turtles" and "Guide of good practices for the handling of incidentally caught sea turtles in fishing activities in the Mediterranean" with the inclusion of best practices for 3 fishing gears.

With regard to Specific Procedures with turtles, the manual that includes more information from: Active, inactive, dead, with markings, process to report bycatch and recovery techniques is the manual "Guide of good practices for the safe handling and release of non-target marine fauna caught in purse seines" with 5 criteria, followed by the manuals "Sea turtle Handling Guidelines", "Guide for fishermen on the management of sea turtles" and "Guide for fisherman on sustainable fishing practices with longliners" with 4 criteria.

Based on the category of General Content where the criteria of: updated techniques, clarity in the description of procedures, regional applicability, recommendations, which is illustrative and presents formats for data recording, the manuals with higher scores are: "Guide for fisherman on sustainable fishing practices with longliners" with 6 criteria, followed by 5 manuals: "Sea turtle Handling Guidelines", "*Guía para pescadores sobre el manejo de las tortugas marinas*", "Guide of good practices for the safe handling and release of non-target marine fauna caught in purse seines", *Guía de entrenamiento para observadores de pesquerías de cerco*" y "*Guía para la Evaluación y Mitigación de capturas incidentales de tortugas marinas y otros predadores superiores en pesquerías artesanales*" with 5 criteria.

Regarding safety measures for the crew, it was evident that manuals that only include one fishery, present better information on this, for it the 4 manuals here are the ones with higher scores: “Sea turtle Handling Guidelines”, “Guide of good practices for the safe handling and release of non-target marine fauna caught in purse seines”, “Guide for fisherman on sustainable fishing practices with longliners” and “Guía de entrenamiento para observadores de pesquerías de cerco”.

In general, the goal of these manuals is to establish guidelines and basic procedures for the handling of sea turtles on board that have been caught in fisheries; this is a tool of first response for fishermen. Most of this material selected for this document has been prepared by organizations in IAC member countries, which shows a regional fisheries context and their interaction with sea turtles.

Fisheries included in the manuals:

- Long-line fisheries
- Trawling fishery
- Gill net fisheries
- Purse seine fishery

Detail of technical criteria used to assess the manuals:

General content

1. Up-to-date techniques (modern, new, etc.)
2. Clarity in the description of the procedures
3. Regional applicability
4. Recommendations
5. Illustrative (highly descriptive graphs)
6. Forms to gather information

Species information

1. General identification keys
2. Leatherback turtle specific identification
3. Green turtle specific identification
4. Hawksbill turtle specific identification
5. Loggerhead turtle specific identification
6. Olive ridley turtle specific identification
7. Kemp´s ridley turtle specific identification

Fishermen/crew safety

1. Personal protection specific equipment
2. Include recommendations for the crew safety during the handling process.
3. Specifies prohibited handling practices

4. Specifies basic tools for handling onboard

Specific Procedures for the Sea Turtle

1. Procedures when Active
2. Procedures when Inactive
3. Procedures when Dead
4. Procedures when the turtle is tagged
5. Procedures to report bycatch
6. Recovery techniques

Handling of sea turtles

1. Handling according to the fishing net Gillnet/Trammel
2. Handling according to the Trawl Net
3. Handling according to the Purse Seine
4. Handling according to the Longline

Recommendations

Considering the aspects evidenced in each of the manuals analyzed, the IAC Scientific Committee Fisheries Working Group suggests including in the updated of the Technical Document CIT-CC11-2014-Tec.8 the 2 manuals highest scores: "Guide for the Assessment and Mitigation of sea turtle bycatch of sea turtles and other top predators in artisanal fisheries" and "Sea turtle Handling Guidelines". Also considering the use of the other 5 manuals that presented high ratings in different categories, with the objective that the best recommendations are covered, proper handling of sea turtles is carried out on board the vessel, and training of fishing groups can be carried out in each of the member countries.

As a recommendation from the assessment carried out by the Fisheries Working Group, it is essential to work on the standardization of a single document where best practices and recommendations of sea turtle handling on board vessels are found, considering all the criteria and categories used for the assessment of this manuals.

Acknowledgments

We appreciate the contributions from the technical document CIT-CC11-2014-Tec.8, which we used to produce this document, prepared by the members of the IAC Fisheries WG back then. We thank the current members of the IAC Fisheries WG, Heriberto Santana, Lezlie Bustos, Cecilia Lezama, Javier Quiñonez, and Manuel Hernández for supporting the document main author, Ms. Jennifer Suarez, reviewing the material for the assessment.

References

References reviewed for this assessment

- Belize High Seas Fisheries Units. 2021. Sea Turtle Handling Guidelines. 18p.
- Córdova, F., Acuña, N., Alfaro, E., Alfaro, J. y Manguel. J. 2020. Guía para la evaluación y mitigación de capturas incidentales de tortugas marinas y otros depredadores superiores en pesquerías artesanales. Perú, 120p.
- FAO and ACCOBAMS. 2020. Guía De Buenas Prácticas Para La Manipulación De Tortugas Marinas Capturadas Incidentalmente En El Curso De Actividades Pesqueras En El Mediterráneo. Rome, Italy. 8p.
- Gerosa, Guido, and Monica Aureggi. 2005. "Guía para Pescadores sobre el Manejo de las Tortugas Marinas Manual del Profesor." *Programa de las Naciones Unidas para el Medio Ambiente Plan de Acción del Mediterráneo Centro de Actividad Regional para Zonas Especialmente Protegidas. CHELON-Programa de Investigación y Conservación de las Tortugas Marinas. Túnez Cedex–Tunicia. 50p*.
- International Seafood Sustainability Foundation. 2016. Guía de entrenamiento para observadores de pesquerías de cerco. 93p.
- International Seafood Sustainability Foundation. 2016. Guía para patrones sobre prácticas de pesca sostenible con busques palangreros. Segunda edición. 47p.
- Poisson F., Vernet A.L., Séret B., Dagorn L., 2012. Good practices to reduce the mortality of sharks and rays caught incidentally by the tropical tuna purse seiners. UE FP7 project #210496 MADE, Deliverable 7.2., Convention DPMA 33246, CAT "Requins", 30p.
- ProDelphinus. *En preparación.* Guía de Buenas Prácticas para la Manipulación y Liberación Segura de Fauna Marina No Objetivo Capturada en Redes de Cerco. Perú: 120p.
- Programa Nacional de Innovación en Pesca y Acuicultura y ProDelphinus. *s.f.* Manual de Buenas Prácticas en las Faenas de Pesca Artesanal. Subproyecto PNIPA-PES-SEREX-PP-000127. 13p.
- WWF., Acorema., SERFOR., Ministerio de Agricultura y Riego del Perú, Submon, Ecoceánica y EcoPacific. *s.f.* Protegiendo a las tortugas marinas. Guía para la adecuada manipulación y liberación de tortugas marinas en las pesquerías de espinel. 27p.

Manuals recommended in the document CIT-CC11-2014-Tec.8

- Document IATTC – 87 – 03d. Recomendaciones del personal para medidas de conservación en el Océano Pacífico Oriental, 2014.

- Recommendation by ICCAT amending recommendation 10.09 on the by catch of sea turtles in ICCAT fisheries (13 – 11).

- Secretaría CIT (2006). Pesquerías y Tortugas Marinas. Mayo 2006, San José, Costa Rica.

- FAO. Informe de la Consulta Técnica sobre la Conservación de las Tortugas Marinas y la Pesca. Bangkok, Tailandia, 29 de noviembre-2 de diciembre de 2004. FAO Informe de Pesca. No. 765. Roma, FAO. 2005. 33p

- Convención Interamericana para la Protección y Conservación de las Tortugas Marina (CIT). 2011. Manual Sobre Técnicas de Manejo para la Conservación de las Tortugas Marinas en Playas de Anidación. CIT-CC8-2011-Tec.2. 52 pp.

****

ANNEX VIII – Proposal of Resolution on the reduction of adverse impacts of fisheries on Sea Turtles

CIT-CC18-2021-Doc.8

Proposal of Resolution on the Reduction of the adverse impacts of fisheries on sea turtles

*Prepared by Lezlie Camila Bustos**

*Fisheries Undersecretariat Chile – Member of the IAC SC Fisheries Working Group

This resolution proposal is presented by the IAC Scientific Committee Fisheries Working Group. The proposal includes language from the current resolution COP3/2006/R-2 (text in black), and new language (text in blue) suggested by the Scientific Committee 18th Meeting. The new text addresses the need to collect reliable quantitative information regarding sea turtles' interaction with fisheries that can be analyzed by the IAC Scientific Committee to prepare recommendations to IAC Parties. The goal is to update the fisheries resolution from 2006.

The 18th Scientific Committee Meeting adopted proposed Resolution on adverse impacts of fisheries on sea turtles, which has been presented to the IAC Consultative Committee and the COP10.2 for consideration.

Proposal of Resolution on the Reduction of the adverse impacts of fisheries on sea turtles

CONSIDERING that the incidental capture of sea turtles in fisheries is a serious threat to the conservation of these species, which contributes to the reduction in their populations; (NEW TEXT)

TAKING INTO ACCOUNT that some Parties of the IAC Convention are also Parties to the Inter-American Tropical Tuna Commission (IATTC) and the International Commission for the Conservation of Atlantic Tunas (ICCAT), which have updated their adopted measures to mitigate the impact of tuna fisheries on sea turtles, by the approval of Resolution IATTC C-19-04, noting also C-04-05 (Modified) of the year 2005, and C-04-07 of the year 2004, and Resolution ICCAT 03-11 of 2003, and Recommendation on the bycatch of sea turtles in ICCAT fisheries Rec.10-09;

TAKING INTO CONSIDERATION that the Minutes of the 4th Meeting of the IATTC Working Group on Bycatch, as well as their subsequent meetings, reports incidental capture of sea turtles and their mortality in longline fisheries in the Eastern Pacific Ocean basin;

TAKING INTO ACCOUNT that the Fisheries Committee (COFI) of the United Nation's Food and Agriculture Organization (FAO) endorsed the Technical Consultation on sea turtle conservation and fisheries during their 26th session held in Rome of 2005 and urged their members and the Regional Fisheries Management Organizations (RFMO) to immediately apply the recommendations outlined in the document "Guidelines to Reduce Sea Turtle Mortality in Fishing Operations";

TAKING INTO ACCOUNT the Resolution of the International Sea Turtle Society, adopted at the 26th Symposium on April 7th of 2006 in Greece, supporting the adoption and implementation of the guidelines of the United Nations Food and Agriculture Organization (FAO) to reduce the mortality of sea turtles induced by fishing operations;

CONSIDERING that the IAC Parties have established the mandatory use of Turtle Excluder Devices (TEDs) and other measures for shrimp trawling in their respective legislations and that the use of such devices and said measures has been effective in reducing incidental capture of sea turtles in trawl fisheries;

CONSIDERING that some of the Parties are carrying out experiments with circular hooks and baits in longline fisheries that have shown signs of being effective in reducing incidental capture and mortality of sea turtles;

CONSIDERING that these actions are in agreement with the objectives of the Inter-American Convention for the Protection and Conservation of Sea Turtles;

RECOGNIZING the need that all IAC Parties that have interactions with sea turtles in their fisheries, must take the necessary measures to reduce the incidental capture and mortality of these species in fishing operations; (New Text)

CONSIDERING that in the IAC Annual Report, the Parties provide information on sea turtle incidental catch for the long line fleet operating in IAC Area, with the goal of generating analysis of the impacts of fisheries and interactions with sea turtles, and provide recommendations to IAC Parties. (New Text)

THE TENTH CONFERENCE OF THE PARTIES OF THE INTER-AMERICAN CONVENTION FOR THE PROTECTION AND CONSERVATION OF SEA TURTLES RESOLVES TO:

INCORPORATE the "Guidelines to Reduce Sea Turtle Mortality in Fishing Operations", of the United Nations Food and Agriculture Organization (FAO), to reduce the mortality of sea turtles induced by fisheries operations, and consider, as appropriate, recommendations integrated by the Scientific and Consultative Committees of the Convention.

URGE IAC Parties to provide the information required in the data collection forms approved by the Scientific and Consultative Committees that are included in the IAC Annual Report, with the purpose of obtaining quantitative information that allows for the measurement of the interactions and impacts of fishing gear on sea turtles. (New Text)

ENCOURAGE all IAC Parties whose fisheries have interactions with sea turtles to gradually prioritize among their work program, the following measures to mitigate sea turtle incidental capture: (New Text)

a. Systematically collect statistically reliable data of sea turtle incidental catch and stranding. (New Text)

b. Improve monitoring programs in the fisheries to systematically and consistently collect information on sea turtle incidental capture though the use of on-board observers and/or electronic monitoring, capacity building to increase port/community surveys and interviews, and fisheries reports. (New Text)

c. Implement monitoring programs with onboard observers and /or electronic monitoring in the fisheries that impact sea turtles and that are not currently observed, taking into consideration the financial and practical feasibility. (New Text)

d. Make efforts to implement or improve the application of mitigation measures in place to reduce sea turtle incidental capture and mortality in fisheries, based on the best scientific information available. (New Text)

e. Establish and evaluate national programs for safe handling and release of sea turtles incidentally caught in fisheries, with capacity building for the fisherman with the best practices to reduce the mortality of sea turtles caused by fishing operations. (New Text)

f. Promote research, to identify techniques and /or measures to reduce sea turtle incidental capture in different fishing gear. (New Text)

REQUEST that the Scientific Committee and the Consultative Committee of Experts, in collaboration with the Secretariat and other IAC Parties, prepare standardized forms for data collection to be incorporated in the IAC Annual Report, define methodologies to measure the impacts of fisheries on sea turtles, and provide recommendations as appropriate on the implementation of the measures. The Scientific Committee will prepare a report every five (5) years with the fisheries information provided by IAC Parties in the Annual Report for consideration of the Parties. **(New Text)**

URGE IAC Parties, the Scientific Committee and Consultative Committee of Experts through the Secretariat, to work to identify technical and financial collaboration to implement the

measures to reduce the incidental catch and mortality of sea turtles in fishing operations indicated in this resolution. (New Text)

INSTRUCT the Convention Secretariat to contact non Party States, in the area of the Convention, so that in a cooperative spirit they provide the Secretariat with available data on incidental sea turtle catches in their fisheries.

REQUEST the Secretariat to commence discussions with regional fishery management organizations and other international organizations relevant to the work of the IAC in order to develop Memoranda of Understanding.

This resolution repeals and replaces the IAC Resolution COP3/2006/R-2 Reduction of the adverse impacts of fisheries on sea turtles**,** in its entirety. (New Text)

****

ANNEX IX - Project on the release of leatherback (*Dermochelys coriacea*) turtles in Lambayeque´s gillnet fishing fleet.

CIT-CC18-2021-doc.9

PROJECT ON RELEASE OF LEATHERBACK (*Dermochelys coriacea*) TURTLES IN LAMBAYEQUE´S GILLNET FISHING FLEET

This report was prepared by Dr. Javier Quiñones, Delegate from Peru to the IAC Scientific Committee, in compliance with the Scientific Committee Work Plan activities regarding the implementation of the Resolution CIT-COP7-2015-R.2: Conservation of the Eastern Pacific Leatherback Turtle (*Dermochelys coriacea*) in 2020 and has been updated in 2021. This report has been presented to the 18th IAC Scientific Committee meeting that adopted the recommendations below which will be presented to the IAC Peru´s Focal Point and the COP10.2.

RECOMMENDATIONS

* Expand the awareness program for fishermen using drifting gillnets and deep nets to other regions in the country, focusing on Tumbes and Pisco.

*Expand this type of initiative in other geographical areas with records of leatherbacks bycatch, as well as to other IAC countries within the EP leatherback range (e.g., Ecuador and Chile)

*Use devices to mitigate sea turtles' bycatch such as LED lights and other mitigation measures (silhouettes), as well as modifications in the fishing gear.

*Train artisanal and industrial fishermen on disentanglement, early response and good practices to release sea turtles.

*Implement control, surveillance, and inspection programs by relevant authorities.

*SC Recommendations: The IAC Scientific Committee supports the recommendations to Peru on the importance of replicating this type of programs in other areas of Tumbes and Pisco in Peru. The Scientific Committee recognizes the importance of implementing the Project on the release of leatherback (*Dermochelys coriacea*) turtles in Lambayeque, not only for the conservation of sea turtles but to accomplish the artisanal fishermen awareness in their fishing operations. The Scientific Committee recommends Peru to extend this type of initiative to other geographic areas where there are records of leatherback bycatch, and invites other members of the Convention to replicate these experiences.

PROJECT ON RELEASE OF LEATHERBACK (*Dermochelys coriacea*) TURTLES IN LAMBAYEQUE´S GILLNET FISHING FLEET

Prepared by Dr. Javier Quiñones/IMARPE Perú – IAC Scientific Committee Delegate

BACKGROUND

The Eastern Pacific leatherback (*Dermochelys coriacea*) population has hastily declined in the last years. Reductions have been severe in Costa Rica nesting beaches. Declines have been so rapid, that the 1980s average of 35,356 nests per year in their main nesting beaches throughout the Eastern Pacific (México, Costa Rica y Nicaragua), dropped to an average of 926 nests per year in 2010, meaning a 97.5% decline that has been more evident in the subsequent years. It is evident that at the beginning of the 1990s the declining trend continued showing a cyclic pattern between good and bad years, maybe due to the leatherback's reproductive triennial cycles. However, a given good year is not as good as the previous good year, and a bad year is worse than the previous bad year. This shows that the population is in a critical situation and declines are ongoing despite protection efforts made so far.

Historically, leatherbacks have been reported 3 to 4 hours off San Andres, Pisco (14°S), more frequently between December and March. San Andres fishermen have reported leatherbacks frequency during the summer months when the species is close to the coast feeding on jellyfish. In October 1978, 167 carapaces were found in a canon near Pucusana (12°28´S 76°47´S), a product of summer catches. Therefore Peru´s central coast is known as one of the world's largest *D. coriacea* fisheries areas, with an estimate of 200 individuals caught per year. Between 2000 and 2003, there were 133 leatherbacks caught in Peru, and most of them 76% (101) were caught by coastal gillnets. Most recently, between 2006 to 2015 there were 42 leatherbacks caught in the artisanal fleet of San Andres, Pisco – Tambo de Mora. Likewise, between 2010 and 2014, there were records of 13 leatherback turtles stranded Tambo de Mora - San Andrés, Pisco area, and 8 evidenced human consumption (IMARPE, unpublished data). Capturing leatherback turtles has been banned in Peru since 1976.

The leatherback and the sunfish are among the largest mega-vertebrates in the oceans that despite their sizes and weight feed on gelatinous zooplankton throughout their entire life. Leatherback turtles feed primarily on gelatinous zooplankton throughout all the stages of their ontogenetic development. Most of its preferred prey belongs to the Scyphozoan jellyfish, including the genus *Chrysaora sp., Cyanea sp., Pelagia sp*. among others. Much of the leatherback's distribution is related to "hot-spots" where there is a proliferation of scyphozoan jellyfish.

In Peru leatherback turtles are distributed in three geographic areas, the Department of Tumbes (03°23'S – 04°00'S), the Department of Lambayeque between Punta Aguja and Puerto Eten (06°00'S – 07°00'S), and in the South of Peru in the area between Asia – Tambo de Mora and Pisco (12°30'S – 13°50'S). (Fig 1).

Given this

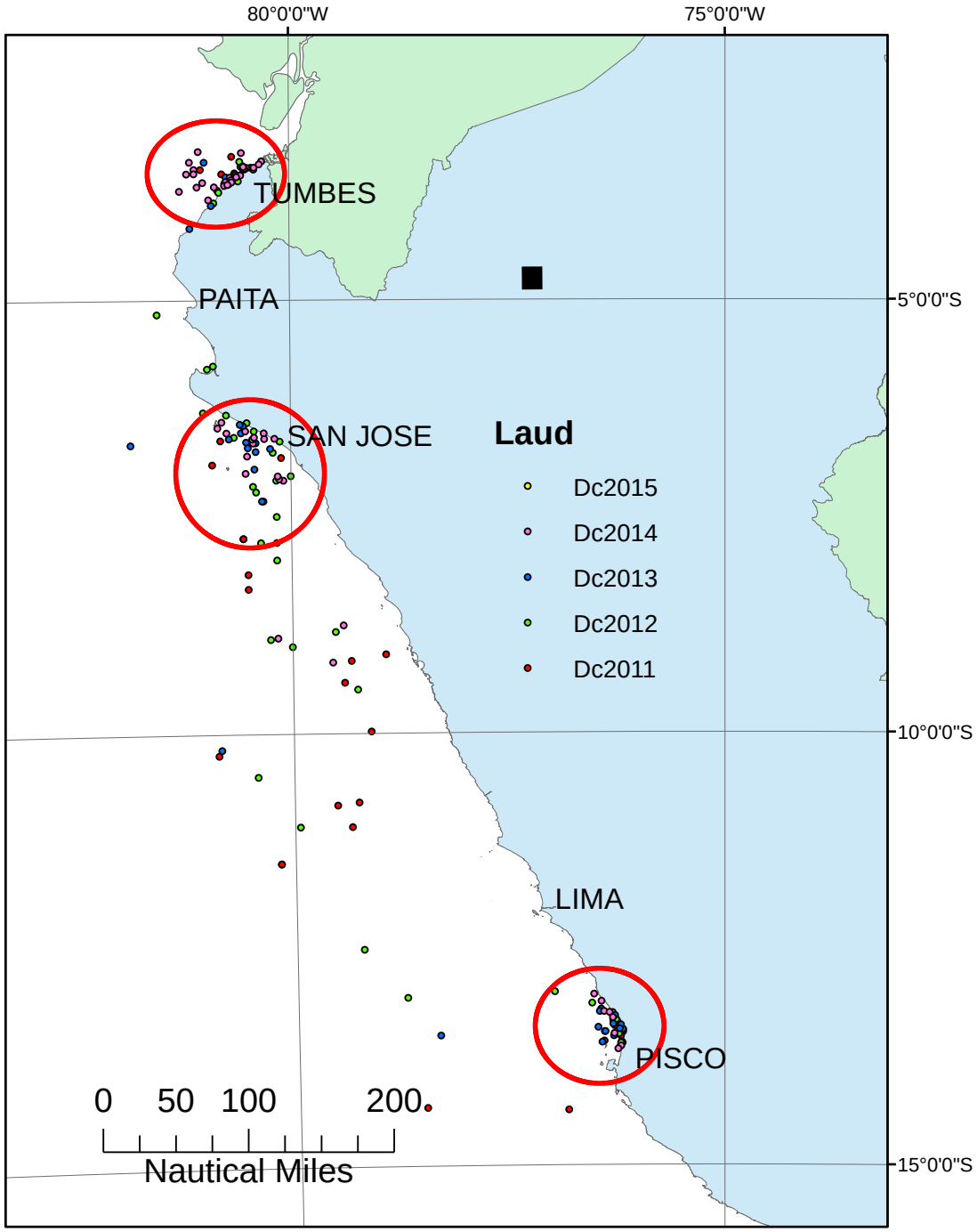


Fig. 1. Leatherback turtles (*Dermochelys coriacea*) distribution in Peru. Tumbes, close to the border with Ecuador; Lambayeque (06° - 07°S) and the Jahuay - Pisco area – Tambo de Mora (12°30's – 13°50'S) in Peru´s South-central coast.

situation, the Instituto del Mar del Peru (IMARPE) jointly with IMARPE Santa Rosa in, has promoted a leatherback turtle release program among artisanal fishermen who use drift gillnets, through a WhatsApp

users network and a local radio show in the community of San Jose (06°46'S; 79°58'W) which is the largest fishing community in Lambayeque. This leatherback release program is implemented and coordinated by San Jose´s fishing port observer through the fisheries technician, Mr. David Sarmiento Barturen, who has wide experience training local fishermen and implementing programs to raise awareness, and on good practices to release sea turtles offshore.

OBJECTIVE

General:

- To mitigate leatherback (*Dermochelys coriacea)* bycatch in Lambayeque´s gillnet fisheries fleet.

Specific:

- Conduct awareness training for artisanal fishermen using gillnets in Lambayeque.
- Gather biological information such as biometry, photo ID and Pit-Tags, as well as determine anthropogenic impacts and causes of death.
- Characterization of vessels and fishing gears with higher leatherback turtles bycatch rates.

INTER-AMERICAN CONVENTION FOR THE PROTECTION AND CONSERVATION OF SEA TURTLES AND THE EP LEATHERBACK RESOLUTION.

Within the framework of the Inter-American Convention for the Protection and Conservation of Sea Turtles ("IAC"), which is an intergovernmental treaty that provides the legal framework for countries in the American Continent to take actions in benefit of these species. The Convention promotes the protection, conservation, and recovery of the populations of sea turtles and those habitats on which they depend, based on the best available data and taking into consideration the environmental, socioeconomic, and cultural characteristics of the Parties. These actions should cover both nesting beaches and the Parties' territorial waters. The IAC adopts resolutions that become Law in the member countries. In the Conference of Parties (COP7) held on June 24-26 in Mexico City, the parties issued the ''Resolution for the Conservation of the Eastern Pacific Leatherback Turtle (*Dermochelys coriacea*)".

The Regional Action Plan to Reverse the Decline of the East Pacific Leatherback (http://savepacificleatherbacks.org) was used as a base for the activities included in the five-years strategic actions below. These activities are divided into five strategies and involve mortality reduction at sea and protection of nesting sites and females to increase reproductive productivity.

The main conservation lines adopted by the IAC parties consultative committee regarding leatherback turtles (*Dermochelys coriacea*) protection and conservation actions are as follows.

1.-Reduce bycatch of adult and sub-adult leatherback turtles in fisheries
2.-Identify areas of high interaction with fisheries of more importance for the leatherback survival
3.- Define and protect important areas for the leatherback turtle survival in different life stages
4.- Eliminate any consumption and illegal use of the leatherback turtle, including parts and derivatives, as well as all kinds of capture, transportation, and trade.
5.- Identify and implement economic alternatives in local communities in areas adjacent to nesting beaches.

METHODS

Study Area

This study was carried out in the Department of Lambayeque coast, and in the south of the Department of Piura, between Illescas massif (06°S) and Puerto Eten (07°S) and between Lobos de Tierra islands (06°26'S; 80°51'W) and Lobos de Afuera islands (06°57'S; 80°43'W). This is one geographic area in the Eastern Pacific where there is a moderate occurrence of leatherback turtles in feeding grounds, hence the importance of conducting the study in this geographic area.

Strategy and data gathering

Within the framework of the resolution and in compliance with our commitments as members of the IAC, the Instituto del Mar del Peru through its decentralized office in Santa Rosa, Chiclayo developed the Project on Leatherback Turtles (*Dermochelys coriacea*) release that started in 2015 as a personal initiative of the environmental technician David Sarmiento, who works at IMARPE´s Santa Rosa coastal lab, involving a series of training to gillnets fishermen from San Jose fishing port (06°46'S; 79°58'S) only 13 km away from Chiclayo. During this training, the fishing community was informed on the importance of protected species conservation and the leatherback critical conservation status due to nesting declines and bycatch in their feeding grounds, such as in Lambayeque.

Characterization of fisheries, fishing gear, and target species

Mr. Sarmiento, with the support of the fishermen´s guilds from San Jose fishing port, began training mainly gillnets seas-fishermen working with drifting multifilament nets with a mesh size between 9¨ to 12¨ thread 36. Their target species are hammer sharks, (*Sphyrna zygaena*), thresher sharks (*Alopias vulpinus* and *Alopias pelagicus*), and the Chilean Eagle ray (*Myliobatis chilensis*). Also, training was provided to fishermen using monofilament coastal nets with a mesh size between 3¨ and 3.5¨ thread 50, which target species are Bonito (*Sarda chilensis*), Salema butterfish (*Peprilus snyderi*), and flathead grey mullet (*Mugil cephalus*).

PRELIMINARY RESULTS

The program began in March 2015 with friendly fishermen sending videos and photos of leatherback turtle released to David, who was collecting the information. To date, 20 specimens have been registered (19 at sea and one stranded dead). Thirteen were released alive (Fig. 2 and 4), and unfortunately, the rest died. It is important to note that due to the local fishermen's inexperience releasing this species at the beginning of the program, there was a greater number of deaths. With time, fishermen improved the technique and from September 2016 to date, only one turtle has been registered dead. Figure 2 shows a map where the turtles were released. A database of release events was created, including gear used, geographical position, specimen alive or dead, fishing area, and additional videos, which are saved in a dropbox file. Most of the individuals are juveniles and sub-adults, but in many cases, the speed of the releasing maneuver did not allow to take length measures.

The habitats where sea turtles' bycatch was recorded were mainly on the continental shelf (52.7%) where ten individuals were recorded, followed by the continental slope (26.4%) with five individuals, and the coastal zone where four individuals were recorded (21%) (Table 1). It must be emphasized that the spatial distribution of these turtles in Lambayeque is clearly coastal, as it is associated with the large numbers of

prey, represented mainly by the scyphozoan jellyfishes *Chrysaora plocamia* and *Pyrosomas*, which are gelatinous tunicate protochordates. It is important to highlight that most turtles were juveniles and sub-adults.

Fig. 2. A leatherback turtle (*Dermochelys coriacea*) released by San Jose´s drifting gillnets fleet. This turtle was released in the fishing area around Lobos de Tierra Island in 2019.

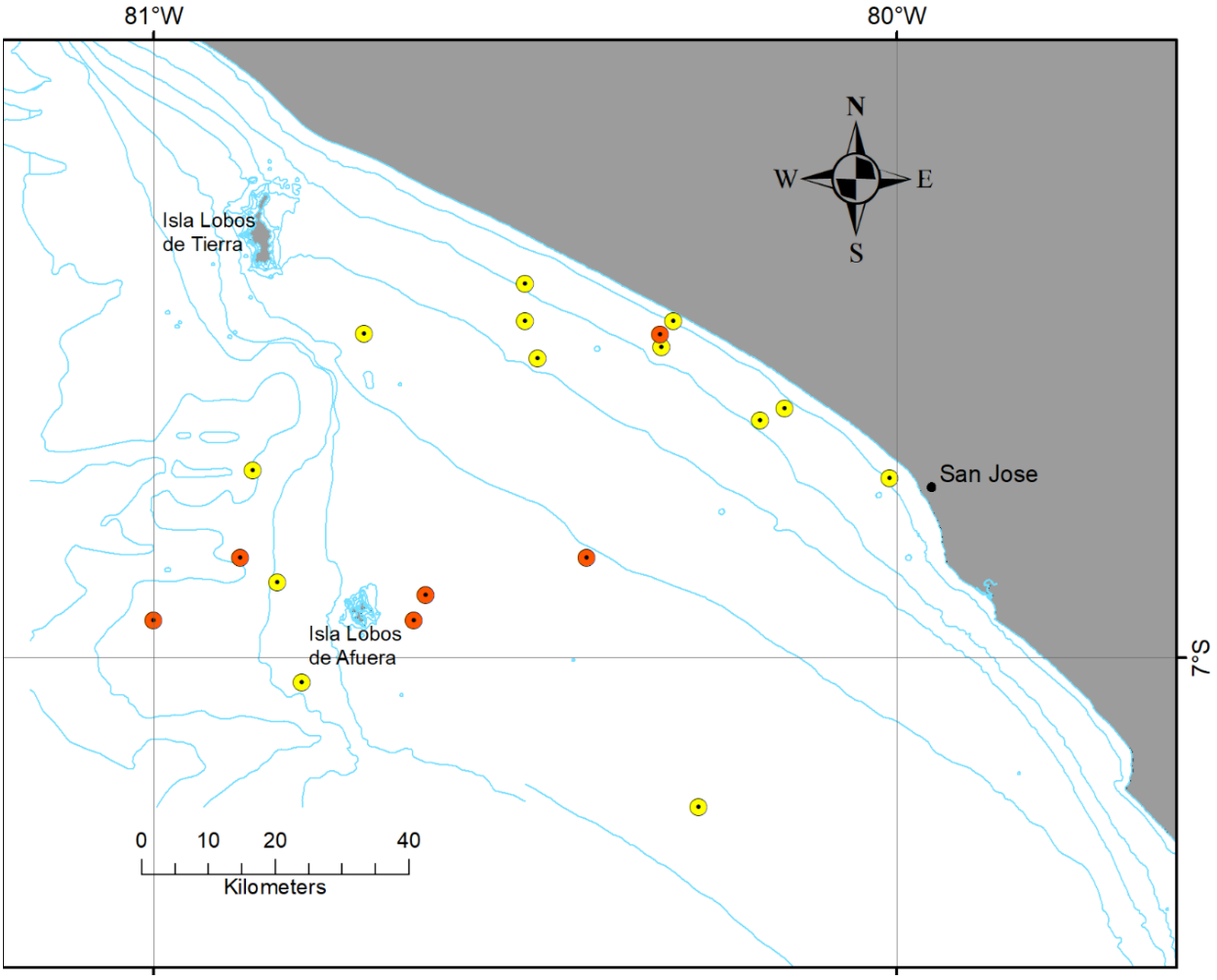


Fig. 3. Leatherback turtles (*Dermochelys coriacea*) in Lambayeque (2015 – 2020) north Peru. Yellow dots are sea turtles released alive and red dots are individuals that unfortunately were dead when the net was retrieved.

Table 1. East Pacific leatherback turtles (*Dermochelys coriacea*) regarding bathymetry during the releasing program (2015 – 2020).

Habitat	**Average depth (m)**	**Depth ranges (m)**	**N° of Leatherback Turtles (%)**
Coastal zone	5.4	(3–10)	4 (21)
Continental shelf	41.2	(15–76)	10 (52.6)
Continental slope	510	(211–867)	5 (26.4)
Total	**157**	**(3–867)**	**20 (100)**

Fig. 4. Leatherback turtle (*Dermochelys coriacea*) released by San Jose´s drifting gillnets fleet, in 2020.

RECOMMENDATIONS

* Expand the awareness program for fishermen using drifting gillnets and deep nets to other regions in the country, focusing on Tumbes and Pisco.

*Expand this type of initiative to other geographical areas with records of leatherbacks bycatch, as well as to other IAC countries within the EP leatherback range (e.g., Ecuador and Chile)

*Use devices to mitigate sea turtles' bycatch such as LED lights and other mitigation measures (silhouettes), such as modifications in the fishing gear.

*Train artisanal and industrial fishermen on disentanglement, early response and good practices to release sea turtles.

*Implement control, surveillance, and inspection programs by relevant authorities.

****

ANNEX X – Data Analysis of IAC Index Nesting Beaches (2009-2020)

The Technical Document CIT-CC18-2021-Tec.19 is available on the IAC website CIT-CC18-2021-Tec.19_Index_Beaches_2009-2021_4_Nov_ENG_Final_WEB.pdf (iacseaturtle.org)

****

ANNEX XI – Best Practices to Monitor Sand Temperature on Sea Turtle Nesting Beaches

CIT-CC18-2021-Tec.18

Available on the IAC Website: http://www.iacseaturtle.org/eng-docs/publicaciones/CIT-CC18-2021-Tec_18%20_Temperature_Best_Practices_ENG_Final_WEB_24jan2022.pdf

Best Practices to Monitor Sand Temperature on Sea Turtle Nesting Beaches

IAC Scientific Committee, Climate Change Working Group
By
Dr. Julia Horrocks and Dr. Jeffrey Seminoff***
The University of the West Indies / NOAA***

Preamble

Each year, Parties to the Inter-American Sea Turtle Convention (IAC) contribute sea turtle nest data from monitored index beaches as part of the IAC Annual Report. Periodically these data are analyzed, and summaries are published as technical reports (e.g., IAC Index Nesting Beach Data Analysis CIT-CC15-2018-Tec.14). Given that index beaches are monitored over multi-year time periods, there may be physical changes due to environmental factors or anthropogenic impacts on the nesting habitat that could cause the number of nests counted to increase or decrease for reasons other than actual changes in population abundance. For instance, the distribution of nesting on a nesting beach can be altered through sand erosion and accretion, as well as changes in vegetation cover or anthropogenic factors such as increased lights visible from the nesting beach, or construction behind the beach. In addition, changes in sand temperature can directly affect hatching success, sex ratio and survival of hatchlings, and may be a cue in nest site selection by nesting females. To date, collection of environmental data on nesting beaches has largely been *ad hoc*, usually as sub-components of other studies at the site. This site –specific study design often means that the collected environmental data cannot easily be used in trend analyses. Standardized collection of environmental data can be useful for documenting the physical characteristics of the index beaches, and if data are collected periodically, can detect changes over time.

To address this information gap regarding environmental data, the Climate Change working group of the IAC Scientific Committee (comprised of Dr. Julia Horrocks *Caribbean Netherlands*; Dr. Jeffrey Seminoff and Ann Marie Lauritsen *USA*; Cecilia Baptistotte *Brazil*; Rotney Piedra *Costa Rica*; Alberto Proaño *Ecuador*; Laura Sarti *México*, Marino Abrego *Panamá* and Cristiana de la Rosa *Dominican Republic*), through consultation with entities within IAC that are studying climate change, has developed this 'best-practices'

document to help guide IAC Parties in their efforts to implement IAC Resolution CIT-COP4-2009-R5 Adaptation of Sea Turtle Habitats to Climate Change. The document incorporates feedback from the participants of the Workshop "Exchange of experiences: Actions to record the impact of climate change on sea turtles, perspectives from the beach", that was co-organized between the IAC Climate Change Working Group, the IAC Secretariat, the South Pacific Permanent Commission (CPPS) and the Action Plan for the Conservation of Marine Areas in the South Pacific, that took place on June 16th, 2021. This workshop was attended by experts from 17 countries of the Americas, including numerous IAC nations.

The document recommends best practices for participating IAC Parties to undertake sand temperature data collection as part of a Pilot Study. If data collection methodology and equipment are standardized across projects, this will allow comparisons to be made between participating Parties. For those Parties participating in the Pilot Study, we are recommending that each project should use similar temperature data loggers and protocols to increase consistency and comparability. Note that this may require replacement or re-purposing of equipment between years. Perhaps of more importance, however, is the value of these data for detecting within-site trends in sand temperature to inform management of nesting beaches in country. Although this document recommends best practices in sand temperature data recording for IAC Parties as part of a specific Pilot Study, it can also be used as reference for other projects looking at the impact of climate change on sea turtle nesting beaches at a larger scale.

This technical document was presented and adopted at the 18th Meeting of the IAC Scientific Committee, which took place from November 3-5th, 2021.

Measuring Sand Temperature

Data collection frequency
It is recommended that continuous temperature data are collected on the index beach every year (see Data logger retrieval), but at minimum every 3 years.

Equipment
Currently, there are a variety of data logger types that are being used in nesting beach sand and incubation temperature research. The most common types are the HOBO Water Temp Pro and the HOBO Pendant data logger. Both are waterproof and will serve as good tools for conducting sand temperature research. The costs are different due to varying data storage capacities and resolution of data recording. The Pro v2 has also been shown to be more accurate than the Pendant loggers in water temperature experiments (Whittier et al 2020). There are other products on the market, but because of the ongoing existing use of these two loggers we encourage future research efforts to use either of these, and to use the same type consistently across years within each index beach. See below for a summary of each.

Hobo water-temp PRO v2 (US$129)

The HOBO Water Temp Pro v2 is durable with 12-bit resolution. Complete with a precision sensor for ±0.2°C accuracy, this logger measures temperatures between -40°C and 70°C (-40°F to 158°F) in air and up to 50°C (122°F) in water. It is waterproof, streamlined case allows for extended deployment in fresh or salt water. Moreover, the Water Temp Pro v2's optical USB interface makes it possible to offload data even while the logger is wet or underwater. A solar radiation shield is required to obtain accurate air temperature measurements in sunlight (RS1 Solar Radiation Shield, assembly required; or M-RSA pre-assembled Solar Radiation Shield).

HOBO Pendant (US$ 42 - 64)

The HOBO Pendant waterproof temperature/light level logger leverages the power of Bluetooth Low Energy (BLE) to deliver accurate temperature and light-level measurements straight to a mobile device with Onset's free HOBO connect app. The temperature range is -20° to 50°C (-4° to 122°F) with an accuracy of ±0.5°C. Measurement resolution is 0.04°C.

Data logger deployment

Data loggers should be programmed to record sand temperatures hourly, so that mean, minimum and maximum temperatures (°C ±SD) per day and per calendar month can be calculated. Data loggers should be activated and deployed in the sand, not within egg clutches. This is because the objective is to characterize the baseline sand temperatures on the beach without the influence of metabolic warming from incubating eggs. For the Pilot Study, it is recommended that data loggers be positioned at least 2 m away from known egg clutches. If the beach is being regularly monitored, any nests laid/or hatching within 2 m of the deployed data logger should be noted.

Ideally, 30 data loggers should be deployed along 10 transects running perpendicular to the high tide mark (Figure 1). However, fewer data loggers can be used (see below), especially for smaller nesting beaches, or beaches on which nesting occurs over only a small portion of the total beach area (Figure 2). Ideally, the data logger location within each transect should be benchmarked (e.g., georeferenced with a GPS), so as to maintain consistency in sampling locations across years. Data logger deployment on each transect should sample zones of the beach where the sea turtle species of interest typically nest, e.g., for hawksbills – both open beach (no shade) and shade (vine and tree shade separately, if possible, as temperatures can differ under these types of vegetation). Distance above the high-water mark (HWM) should be standardized across transects, but it is suggested that no data loggers should be placed closer than 10 m from the HWM to minimize loss of equipment to high seas. This distance from the HWM may not be possible on narrow beaches, however. We recognize that purchase of data loggers can be a challenge. If fewer data loggers are available, be strategic in their placement. For instance, choose locations for deployment in the middle section of the index beach and at either end, at least one in the open beach (no shade) and one under shade (if present). Even a few data loggers will provide information on how the sand temperature varies on the index beach.

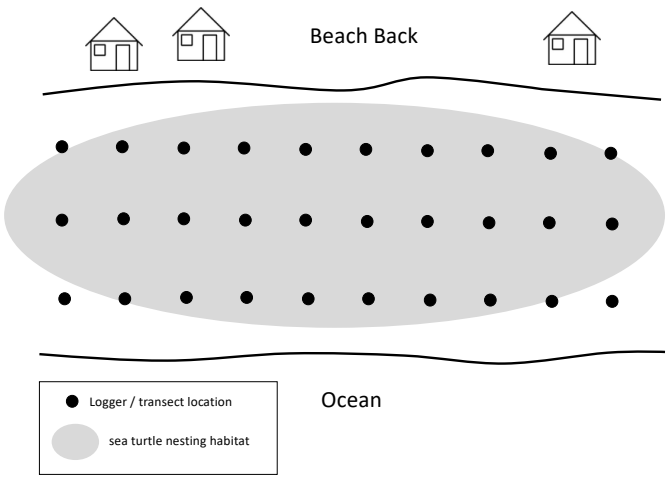


Figure 1. Schematic showing location of 10 temperature data logger transects on a beach with widespread nesting activity. Note that each transect runs perpendicular to the water's edge, and all transects are spaced in equal distances across the entire beach.

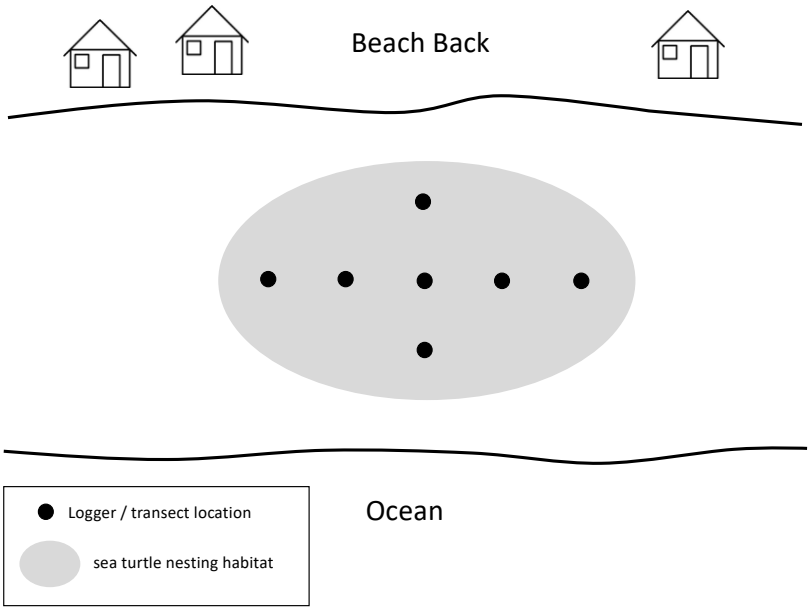


Figure 2. Schematic showing the placement of data loggers on beaches for which nesting is restricted to a small portion of the beach. Typically, these sites require fewer data loggers. At a minimum, as shown here, there should be at least 1 transect placed parallel to the water's edge, and one transect placed perpendicular to the water's edge.

The depth of data logger deployment should be guided by the species that uses the beach for nesting, aiming for the data logger to be positioned to approximate the depth of the middle of a clutch. The suggested data logger depths per species are as follows: hawksbills (35-40 cm), leatherbacks (55-65 cm), greens and loggerheads (45-50 cm), and olive and Kemp's ridleys (30 cm). It is important to bury each data logger at the same depth both within and between years. If more than one species uses the beach, data loggers may be positioned at the appropriate depth for each species.

One method that can be used to deploy the data logger to the correct depth, is to use a 1 m length of gutter downpipe (i.e., about 10 cm diameter PVC pipe), a heavy lump hammer, a piece of flat wood, and a rigid measuring tape. Mark the pipe with a permanent marker pen at the depth you wish to place the temperature logger (e.g., 60 cm). Place the pipe over the sand, put the wood over the end of the pipe and hammer the pipe into the sand until you reach the marked line. Remove the wood, place the palm of your hand over the end of the pipe to create a vacuum, and pull the pipe straight up out of the sand. The sand core should be intact inside. Check the depth of the hole with your tape measure and then place the data logger inside. Place the pipe back over the hole and hammer the pipe so that the sand falls back into the hole. In this way the sand that fills the hole has the same profile as it did when it was removed (Esteban et al 2018). Note that this should not be done if there is a danger of contacting an *in situ* clutch, so, if this method is used, consider deploying data loggers outside of nesting season to avoid piercing any eggs.

Data loggers can be tied to a numbered marker pole or to a tree branch for easy collection. If there is a danger that markers will attract unwanted attention, the tether can be buried across the width of the beach and tied discreetly to a shrub or structure. If any visible structures are likely to attract unwanted

attention, a buried length of caution tape ribbon tied to the data logger can be used to increase relocation probability. Each site should be triangulated and photographed. A geo-position with a hand-held GPS can be taken, but often is not accurate enough to ensure that the data logger can be easily found later.

Data logger Retrieval

Ideally the data loggers should be left *in situ* for one year to allow sand temperatures to be taken both during and outside of the nesting season. This also makes logistical sense for data logger retrieval if the beach is remote. When data loggers are retrieved, the depth of the data logger should be recorded at removal. The data loggers can then be downloaded, the units switched off and, if possible, re-purposed for the next deployment.

Sand albedo

Albedo is the percentage of incident of solar radiation that is reflected by a surface. A darker sand will reflect less solar radiation than lighter sand. Therefore, collecting data on sand albedo will complement data collected by data loggers on sand temperature. A field technique for measuring sand albedo can be found in Hays et al. (2001).

Other environmental characteristics of the index beach

The focus of this best practices document is on the Climate Change Pilot Study measuring sand temperature, but back beach characterization and beach width are also useful parameters that might change between years and thus affect distribution and abundance of nests reported. Brief descriptions of the monitoring of these characteristics and useful references are provided below.

Back beach

Once per nesting season, record the habitat type or land use behind the index beach. This is known as the back beach. Measure the length of the beach and map the length of the beach backed by each of the habitat types or land use categories. For example, some habitat types might be coastal forest, mangrove, or sand dunes, and some land use categories might be buildings, road, carpark, etc. In the absence of a light meter, an indication of light levels can be obtained by counting the number of unshaded light bulbs that can be seen from benchmarked points on the beach. Ambient light intensity (sky glow) can also be assessed using a relatively inexpensive Sky Quality Meter (www.unihedron.com).

Beach width

Beaches can be described by their shape, width, elevation and slope, and changes can occur over days, weeks or longer time periods. Understanding the dynamics of beaches therefore requires regular monitoring over time, and interested Parties should consult the references below, and others, for suitable protocols.

We suggest measuring beach width to determine available nesting beach habitat at the beginning of the nesting season, or at the beginning and end of the nesting season. Note that these will be a snapshot of the condition of the beach at the time the measurements are taken. A transect that runs from the dune or back beach to the water, across the beach perpendicular to the water's edge can be used to measure beach width. Benchmarks should be used to locate transects, i.e., georeferenced with a GPS, or aligned with a specific built structure, or large tree etc. This ensures that the location(s) is constant between the beginning and the end of the nesting season. The width of dry beach on the transect should be recorded. The width of dry beach is measured from the normal high tide line landwards to the point where the substrate becomes too compacted for a turtle to dig or where there is an obstruction which prevents a

sea turtle nesting any further. If the berm is too steep for a sea turtle to climb above the high-water mark, this should be noted.

Additional references

Additional useful reference documents are provided in Appendix 1.

Recommendations from the IAC Scientific Committee

1. Circulate this technical document CIT-CC18-2021-Tec.18 "Best Practices to Monitor Sand Temperature on Sea Turtle Nesting Beaches" with the IAC membership to help guide IAC Parties in their efforts to implement IAC Resolution CIT-COP4-2009-R5 Adaptation of Sea Turtle Habitats to Climate Change, by studying the impacts of climate change on index nesting beaches.

2. For IAC member countries participating in the Climate Change Pilot Project to monitor sand temperature on sea turtle nesting beaches, it is recommended to use this document CIT-CC18-2021-Tec.18 as the guideline to collect data.

3. For IAC member countries participating in the Pilot Project, it is recommended that each project should use similar temperature data loggers and protocols, to increase consistency and comparability. Note that this may require replacement or re-purposing of equipment between years.

Acknowledgements

The IAC Climate Change Working Group wish to thank the South Pacific Permanent Commission (CPPS) and the Action Plan for the Conservation of Marine Areas, and the participants of the Workshop "Exchange of experiences: Actions to record the impact of climate change on sea turtles, perspectives from the beach", for their meaningful contributions to enrich this document.

References

Esteban N, Laloë JO, Kiggen FSPL, Ubels SM, Becking LE, Meesters EH, Berkel J, Hays GC, Christianen MJA (2018). Optimism for mitigation of climate warming impacts for sea turtles through nest shading and relocation. *Sci Rep* 8, 17625, https://doi.org/10.1038/s41598-018-35821-6

Hays, G. C., Ashworth, J. S., Barnsley, M. J., Broderick, A. C., Emery, D. R., Godley, B. J., Henwood, A. and Jones, E. L. 2001. The importance of sand albedo for the thermal conditions on sea turtle nesting beaches. *Oikos* 93: 87-94

IAC (2015). *Mitigation strategies to reduce the impact of climate change on nesting beaches*. CIT-CC12-2015-Tec.10.

Whittier JB, Westhoff JT, Paukert CP, Rotman RM (2020). Use of multiple temperature logger models can alter conclusions. *Water* 12(3): 668. https://doi.org/10.3390/w12030668

Appendix 1. Useful Reference Documents

Baker-Gallegos J, Fish MR, Drews C (2009). *Temperature monitoring manual. Guidelines for monitoring sand and incubation temperatures on sea turtle nesting beaches*. WWF report, San José, 20 pp.

Binhammer, M., Beange, M., and Arauz, R. (2019). Sand temperature, sex ratios and nest success in Olive ridley sea turtles. *Marine Turtle Newsletter* 159: 5-9.

CONANP (2013). *Monitoreo de la temperatura de incubación de nidadas de tortugas marinas*. Protocolo para la evaluación de la temperatura de incubación.

Fish M (2011). *Guidelines for monitoring beach profiles*. WWF report, San José, 16 pp.

Matsuzawa Y, Satp K, Sakamoto W, Bjorndal KA (2002). Seasonal fluctuations in sand temperature: effects on the incubation period and mortality of loggerhead sea turtle pre-emergent hatchlings in Minabe, Japan. *Marine Biology* 140: 639-646.

SINAC (2016). Protocolo PRONAMEC: *Protocolo para el monitoreo ecológico de playas arenosas ante el cambio climático: estudio de caso Refugio Nacional Vida Silvestre Playa Hermosa-Punta Mala*. Proyecto Consolidación de las Áreas Marinas Protegidas. Programa de Naciones Unidas para el Desarrollo (PNUD) y El Fondo para el Medio Ambiente Mundial (GEF), San José, Costa Rica. 35p.

Tanabe LK, Ellis J, Elsadek I, Berumen ML (2020). Potential feminization of Red Sea turtle hatchlings as indicated by in situ sand temperatura profiles. *Conservation Science and Practice* 2 (10) https://doi.org/10.1111/csp2.266

Valverde, R. A., Wingard, S., Gómez, F., Tordoir, M. T., & Orrego, C. M. (2010). Field lethal incubation temperature of olive ridley sea turtle Lepidochelys olivacea embryos at a mass nesting rookery. *Endangered Species Research* 12(1): 77-86.

Varela-Acevedo E, Eckert KL, Eckert SA, Cambers G, Horrocks JA (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.

ANNEX XII – Proposal on IAC-ACAP collaboration

CIT-CC18-2021-Doc.12

Progress report on the implementation of activities with the Agreement on the Conservation of Albatrosses and Petrels

Prepared by

M.Sc. Diego Albareda*

*Delegate from Argentina to the IAC Scientific Committee
Ministry of Environment and Sustainable Development of Argentina

The following document has been prepared, in compliance with the IAC Scientific Committee work plan COP9, to identify collaborative activities between the Agreement on the Conservation of Albatrosses and Petrels (ACAP) and the IAC, within the framework of their Memorandum of Understanding (MoU).

The document follows up on the lines of work in document **CIT-CC17-2020-Doc.12**, where two potential scenarios for joint actions were identified: (1) **local scenario** (jointly addressing common local problems affecting birds and sea turtles), and (2) **international scenario** (a cooperation ACAP – IAC for common agenda issues at RFMOs, other organizations or States).

To this end, there was an informative meeting (videoconference) held between IAC and ACAP members on October 12, 2021.

Participants: Javier Quiñones (Peru), Leslie Camila Bustos (Chile), Alberto Cocos (Chile), Marcelo García (Chile), Aixa Rodriguez Avendaño (Argentina), Jorgelina Oddi (Argentina), Débora Winter (Argentina) y Diego Albareda (Argentina).

Objective: To identify topics of interest to the IAC Scientific Committee, within the framework of the Memorandum of Understanding (MoU); enabling the cooperation between both conventions. To meeting this objective, the IAC and ACAP members reviewed together the issues addressed in the meetings of the Working Groups.

Topic identified: **ACAP Guidelines on Electronic Monitoring Systems for Fisheries** (SBWG10 Doc 14 Rev 1). ACAP recognizes the need for guidelines for electronic monitoring (EM) systems to meet the objectives of monitoring interactions with seabirds. These ACAP guidelines establish EM systems for fisheries designed to meet the specific objectives of monitoring seabirds' interactions with fisheries.

Importance for the IAC: the new IAC Fisheries Resolution (**CIT-CC18-2021-Doc.8**), urge the Parties to prioritize within their work programs the improvement and implementation of programs to monitor information on fisheries interacting with sea turtles by using electronic monitoring, among other technologies.

IAC - ACAP collaborative work proposal: The IAC Fisheries WG will review ACAP's n guidelines for electronic monitoring, using it as the basis for establishing guidelines for electronic monitoring sea turtle captures. It is proposed to hold technical meetings between the IAC and ACAP, to exchange technical information that enables the cooperation, aiming to propose and facilitate the implementation of this methodology at both conventions Parties, as appropriate and according to each country capacities.

Other topics of interest identified by the IAC (Fisheries Group):

- Produce an exchange of information regarding the state of knowledge on the blue-dyed bait (squid) methodology in pelagic longline, as a measure to mitigate seabirds' bycatch.
- Consider the possibility of developing a project between Chile - Peru, to jointly (ACAP - CIT) address artisanal longline fisheries.
- Identify potential geographic areas of common interest and relevance, for both ACAP and the IAC.

It is proposed that the IAC Scientific Committees includes the following in its Work Plan 2021-2022:

Responsible	Item	Proposed Activity	Expected Results	Dates
Argentina (Coordinator) and Fisheries WG.	Establish the guidelines for electronic monitoring of sea turtles captures.	1) Review the document **ACAP Guidelines on Electronic Monitoring Systems for Fisheries** (SBWG10 Doc 14 Rev 2) Identify guidelines for EM of sea turtle captures. 3) ACAP- IAC specialists exchange meeting. 4) Adopt the IAC guidelines for EM of sea turtle captures.	IAC Technical Document with guidelines on EM focused on Sea Turtles.	SC 19 Meeting (2022) presentation of the SC Technical Document.
Argentina (IAC) – Dr. Marco Favero (ACAP)	1) Identify potential geographic areas of common interest and relevance, for both ACAP and the IAC.	1 and 2) Work meetings and review of documents IAC - ACAP	1) Report on geographic areas of common interest between ACAP – IAC 2) Document with working guidelines ACAP – IAC (2023 – 2028)	SC 19 Meeting (2022). Presentation of products 1 and 2.

Responsible	Item	Proposed Activity	Expected Results	Dates
	2) Identify working guidelines IAC – ACAP (2023 – 2028)			

Annex XIII – *SC18 Agreements*

IAC 18th Scientific Committee Meeting Agreements and Recommendations

EXCEPTIONS

Agreement 1: The Scientific Committee (SC18) adopted the proposal of Resolutions for Exception for Guatemala, Panama and Costa Rica to be presented for consideration to the Consultative Committee of Experts and IAC COP10.2. If the proposed resolutions are adopted, they will replace the previous ones. *(Annex V - Documents CIT-CC18-2021-Doc.4 / CIT-CC18-2021-Doc.5 / CIT-CC18-2021-Doc.6 and exception process timeline)*

Agreement 2: The Scientific Committee Exception Working Group will prepare a format to be used for the Evaluation Report of the Exception Management Plan for the 3 countries. This activity will be included in the SC work plan subject to adoption of the exception resolution by IAC COP10.2.

Agreement 3: The process to review comments made by the IAC Committees to the proposed resolutions was agreed as follows: the Chair of the Scientific Committee (SC) together with the Secretariat, will send the proposals for the resolutions on exceptions and the resolution fisheries impacts on sea turtles adopted in SC18, to the Chair of the Consultative Committee of Experts (CCE) and the members of the CCE on 10 November 2021. Comments will be received until 10th December 2021. The Scientific Committee will have until January 10th, 2022, to answer and / or clarify questions from comments received from CCE. The most current versions of the resolution proposals be officially circulated no later than January 30, 2022, to the CCE15 meeting to be considered on for adoption, and subsequent presentation to COP10. 2.

FISHERIES AND INTERACTIONS WITH SEA TURTLES

a) Report on the "Analysis of data from observers on interactions between sea turtles and industrial longline fisheries in the IAC countries (IAC Annual Reports 2020 and 2021)

Agreement 4: The Secretariat will send the IATTC hook catalog to the IAC countries as a reminder to use it for reporting standardized hook information in the IAC Annual Report.

Agreement 5: It is recommended to include a field in the IAC Annual Report in the section of fisheries data to report observed longline fishery for vessels less than 20 m in length, provided this date is available. This information will be analyzed in the longline fisheries report by the Scientific Committee.

Agreement 6: IAC countries that provide data to the IAC Annual report on sea turtle interactions with industrial longline fisheries, are requested to provide their maps with the polygons of the areas of fishing of their longline fleets (preferably in ArcGIS format). In case it is not possible

for them to draw up such maps, the countries can send the geographical coordinates corresponding to the perimeter of the polygons, using WGS84 georeferencing for the IAC Fisheries Working Group - Peru and Mexico to develop such maps.

Agreement 7: the recommendations of document CIT-CC18-2021-Doc.7 "*Analysis of data from observers on interactions between sea turtles and industrial longline fisheries in the IAC countries (Annual Reports 2020 and 2021*)" were adopted by the IAC Scientific Committee to be presented to COP10.2.

Review of Manuals for Best Practices for Sea Turtles on Board Fishing Vessels

Agreement 8: SC18 approved the recommendation of the Fisheries Working Group to prepare IAC guidelines for best practices for the handling and release of sea turtles on board fishing vessels and to present a draft proposal to SC19.

Agreement 9: Include the manuals that have been selected as the most comprehensive "Guide for the Assessment and Mitigation of Incidental Catch of Sea Turtles and Other Higher Predators in Artisanal Fisheries", the "Sea Turtle Handling Guidelines" in the IAC technical document CIT-CC11-2014-Tec.8. The report of the Fisheries -WG on this matter is in Annex VII of the SC18 meeting report.

Proposal for Resolution on impacts of fisheries on sea turtles

Agreement 10: The SC18 adopted the proposal for the fisheries resolution CIT-CC18-2021-Doc.8 for consideration by the Consultative Committee of Experts, and COP10.2. This resolution proposal will be sent to the CCE on 10 November with a deadline for comments until December 10th, 2021. The Scientific Committee will have time until January 10, 2022, to provide clarification to comments from the CCE. The resolution proposal will be considered for adoption at the 15th meeting of the Consultative Committee of Experts.

Report on program for the EP Leatherback release from gillnets in Lambayeque Peru

Agreement 11: The SC18 supports the recommendation to Peru regarding the importance to replicate this program in Tumbes and Pisco in Peru. The following message will be transmitted to Peru Focal Point: The IAC Scientific Committee recognizes the importance of the project: “Best practices for the release of East Pacific Leatherback turtles incidentally caught in the gillnet fisheries in Lambayeque -Peru”, not only for the conservation of leatherbacks, but also for the capacity building and outreach to the local artisanal fisherman. The IAC Scientific Committee recommends implementing this program in other areas in Peru where there are reports of incidentally caught leatherback turtles, and invites other IAC countries to replicate this initiative as well.

NESTING BEACHES

Agreement 12: The recommendations in the “Data analysis of IAC Index Nesting Beaches (2009-2020)” were adopted and the document will be presented to IAC COP10.2.

CLIMATE CHANGE

Agreement 13: The SC18 adopted the technical document "Best Practices for Monitoring of Temperature in Nesting Beaches." CIT-CC18-2021-Tec.18. The recommendations will be presented at IAC COP10.2

LOGGERHEAD CONSERVATION STATUS

Agreement 14: The IAC Secretariat will send a reminder to IAC Focal Points to send the information to update the technical document "Conservation status *Caretta caretta"* with deadline December 15th, 2021. If the information is nr received, the working Group United States/Belize will use other sources to obtain information, those will be mentioned in the report. The working group will prepare the technical document by the **first week of February 2022** for SC review (2 weeks), and after that it will be submitted to IAC COP10.2 as requested in the IAC Resolution. The document will be shared with IAC Consultative Committee for information.

COLLABORATION WITH INTERNATIONAL ORGANIZATIONS

Agreement 15: To include in the SC work plan the activities proposed by the coordinator IAC-ACAP delegate from Argentina, to implement IAC-ACAP MoU in 2022.

Agreement 16: The topics for collaboration with CPPS are the celebration of Sea Turtle Day 2022, and subject to consultation and approval by CCPS the collaboration on the Guide for best practices for sea turtles that interact with fishing operations.

SCIENTIFIC COMMITTEE WORKING GROUPS

Agreement 17: The IAC Scientific Committee Working Groups have the following structure:

WG Exceptions: Coordinator Costa Rica, M.Sc. Didiher Chacon while consultations are conducted with CONAP Guatemala regarding coordination by MSc. Airam Lopez
Members: M.Sc. Didiher Chacon (Costa Rica), Dr. Julia Horrocks (Caribbean Netherlands), Dr. Cecilia Baptisttote (Brazil), Ms. Airam López (Guatemala), Mr. Marino Abrego (Panama), and Dr. Laura Sarti (Mexico´s Delegate to the Consultative Committee).

WG Fisheries – Coordinator Mexico Dr. Heriberto Santana
Members-Perú, Chile, Uruguay, México, and Ecuador

WG Nesting- Coordinator USA Dr. Jeffrey Seminoff
Members- Ecuador and USA

WG Climate Change- Coordinator Caribbean Netherlands Dr. Julia Horrocks
Members- USA, Caribbean Netherlands, Panamá, Costa Rica, Rep. Dominicana, Ecuador, México. Brazil asked to leave the WG.

WG *Caretta* - Coordinator Belize MSc. Kirah Foreman
Members- USA, Mexico, Brazil, Perú and Belize

WG Northwest Atlantic Leatherback- Coordinator USA Ann Marie Lauritsen (CCE member)
Members: Dominican Republic and Belize

Agreement 18: The CCE and SC will endeavor to work in preparing a proposal for a mechanism to facilitate the collaboration with IAC accredited observers in the Convention Working Groups.

18TH SCIENTIFIC COMMITTEE MEETING GROUP PHOTO (SC18)