

TRAINING OF COSTA RICAN LONGLINE FISHERMEN, FISHERY OBSERVERS AND GOVERNMENT AGENCIES TO INCREASE POST- RELEASE SURVIVAL OF INCIDENTALLY CAPTURED SEA TURTLES



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Foundation – May 2016 Sandra Andraka & Mariluz Parga**



Suggested citation:

Andraka, S. and M. Parga. 2016. Training of Costa Rican longline fishermen, fishery observers and government agencies to increase post-release survival of incidentally captured sea turtles. ISSF Technical Report 2016-09. International Seafood Sustainability Foundation, Washington, D.C., USA.

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Acknowledgements

The authors wish to thank all the fishermen, observers, technicians and researches who have actively participated in the training sessions in Costa Rica, teaching us the best ways to learn together, sharing their techniques for handling and releasing turtles aboard fishing vessels, and ultimately contributing to knowing and conserving marine turtles. A special thank to Mauricio González, representative of the Long-line Fishing Sector in Costa Rica, for his support and commitment to make the trainings happen, and to the Fishing Chambers from Guanacaste and Quepos and fishermen from Playa Lagarto for their special collaboration.

The authors would also like to acknowledge the people of INCOPESCA and MINAE/SINAC, who have supported the organization of these sessions: Antonio Porras, Marco Solano, José Miguel Carvajal, Rotney Piedra, Carlos Mario Orrego, Fernando Briceño, Natalia Corrales, Antonio Peña, Daniel Bermúdez, Odalier Quirós and Gerardo Zamora.

These trainings are based in the knowledge and experience acquired over many years, and particularly during the implementation of the “Eastern Pacific Regional Sea Turtle Bycatch Program”. We would like to thank Dr. Martin Hall, of the Inter-American Tropical Tuna Commission (IATTC), and Takahisa Mituhasi, of the University of Kagoshima, formerly of the Overseas Fishery Cooperation Foundation of Japan (OFCF-Japan), for the opportunity to develop this experience with them.

We also thank our colleagues Alvaro Segura (Costa Rica), co-instructor, Lucas Pacheco (Panama) and Liliana Rendón (Ecuador), who have contributed with their knowledge and sharing materials for the sessions.

We would like to thank Verónica Cáceres, Secretary of the Inter-American Convention for the Protection and Conservation of Sea Turtles, for her support to this project.

A special thank to Victor Restrepo for trusting us and giving us the opportunity to continue our work in Costa Rica, the International Seafood Sustainability Foundation for the financial support and Arlene Birt for being able to capture our ideas perfectly and for the delicate design of the t-shirts.

Introduction

Incidental capture of sea turtles is an important problem in fisheries worldwide, and one of the main causes of the decrease of their populations. While effective alternatives to reduce incidental capture are studied and put in place, identifying methods to increase an animal's probability of survival after incidental capture is a priority. There are currently already a number of techniques and procedures which are well known, and which can already be recommended or discouraged in order to increase the chances of an animal surviving the interaction with fisheries. All this information should be passed onto fishermen, fishery observers and government agencies in order to improve marine turtle post-release survival.

Costa Rica is currently very interested to address its problems with fisheries interacting with marine turtles in a proactive and effective way, and wants to work on this issue to comply with the regulations recently put forward by the Government. In November 2014 the Executive Decree N. 38681-MAG-MINAE was published on the "Management for the efficient use of tuna and similar species in the Exclusive Economic Zone of the Costa Rican Pacific" (popularly known as "the Tuna Decree"). This requires, among other regulations, the training of fishermen and fishery observers in these best practices, and the use of adequate equipment and tools on board longline vessels.

Furthermore, the private sector (both producers and seafood exporters) has expressed its compromise to improve its operations towards a responsible and sustainable fishing of large pelagic fish. Two important processes are currently taking place in the country, including: a) the implementation of "the Tuna Decree"; and b) the beginning of a project to improve the mahi-mahi fishery, in response to the demands of the US market, which wants products coming from responsible fisheries. Both cases require the application of measures to mitigate the incidental capture of marine turtles.

Additionally, Costa Rica is a full member of the Inter-American Convention for the Protection and Conservation of Sea Turtles (IAC), which includes several resolutions and recommendations for bycatch mitigation and reporting.

Costa Rica is now in an optimal moment to develop training programs in the best handling techniques of sea turtles on board longline vessels. In order to cater for this compromise and momentum, the organization of several technical workshops was proposed and carried out in this project. These workshops were considered a further step of the Government Fishery Agency (the Costa Rican Institute of Fishing and Aquaculture - INCOPECA) and the Environmental Ministry (MINAE) to engage fishermen, industry, national NGOs and the government inspectors in the protection of marine turtles, trying to find solutions together to improve fishermen's work while minimizing threats to sea turtle conservation.

These training sessions were funded by the International Seafood Sustainability Foundation (ISSF). De-hooking equipment was provided by IAC as matching contribution.

General and specific objectives

The **general objective** of this project was to increase the post-release survival of incidentally captured marine turtles by the Costa Rican longline fishery.

The **specific objectives** were:

1. To train fishermen, observers and managers in the best handling, dehooking, resuscitation and release techniques of incidentally captured marine turtles.
2. To help establish the enabling conditions to improve the mahi-mahi and tuna fisheries.
3. To contribute to the compliance with the country's national and international commitment with the IAC and the Inter-American Tropical Tuna Convention (IATTC) for the reduction of the incidental capture of marine turtles.

Expected results

At the beginning of the project, the expected results were the following:

1. At least 150 fishermen in 5 fishing harbors of Pacific Costa Rica trained in best onboard handling, dehooking, resuscitation and release techniques of sea turtles.
2. At least 3 fishery observers, 1 observer trainer, marine protected area managers of 3 Conservation Areas, and governmental and non-governmental biologists and veterinarians working in sea turtle conservation and fisheries trained in anatomy, injuries and treatment of sea turtles on board vessels.
3. The necessary elements to establish a formal, institutionalized training and guidelines analyzed.
4. The decision makers and authorities at the Government become aware of the implications of national and international compromises (in relation to regulations, agreements and conventions) regarding best practices with sea turtles on board fishing vessels.

Activities carried out and obtained results

1. Training sessions with fishermen

A total of 6 training sessions were organized along the Pacific coast of Costa Rica with fishermen from artisanal longline (small -including hand line fishermen-, medium, or large scale according to their navigation autonomy), gillnet and trawl fishermen. These happened in Cuajiniquil, Playa del Coco, Playa Lagarto-San Juanillo, Puntarenas, Quepos and Golfito (Fig. 1) during the month of March. All sessions were organized and coordinated with the Costa Rican Institute of Fishing and Aquaculture (INCOPECA) and the Environmental Ministry (MINA) to keep them "official", and all assistants received a certificate from the Government. Facilities were provided by Government authorities as "in kind" contribution to the project. Both governmental facilities, as well as places where fishers usually gather, were used.

These were all formal sessions, with fishermen sitting in a room or similar (a sports facility had to be used in Quepos, due to the large number of fishermen attending – Fig. 2). Each session was approximately 3 hours long, with a coffee break scheduled in the middle, and some flexibility was allowed depending on the participants' mood. After a brief introduction to the project and its objectives, carried out by Sandra Andraka (Ecopacifico+), the session started with a simple explanation on the “Tuna Decree” and its requirements, and on the national and international importance of reducing the post-release mortality of incidentally captured turtles; this talk was carried out by a representative of INCOPESCA. Afterwards, Álvaro Segura (Ecopacifico+) talked about the hook-trials completed in Costa Rica between 2004 and 2012, in which 92 longline fishermen voluntarily collaborated, and summarized the results. After the coffee break, Mariluz Parga (Submon) used approximately 1,5 hours to describe in detail the anatomy and physiology of marine turtles, and explain all the best practices, and the reasons behind each of them. The aim of these sessions was not to simply tell fishermen what to do or not to do, but to explain them why, and to empower them with all the necessary knowledge for them to make the best decisions when on the fishing vessel, depending on the different situations they are faced with. This session was fully interactive with fishermen, encouraging them to share their own knowledge and experiences.

These sessions were considered very successful. Fishermen stayed in the training session for the three hours, paid attention to the explanations of the speakers and asked questions. Some of them stayed after the sessions to ask questions more privately. Some fishermen also offered to collaborate further sending pictures and videos of how they handled turtles on board and how they used the new tools.

A complete program of one of the sessions can be seen in Annex 1.

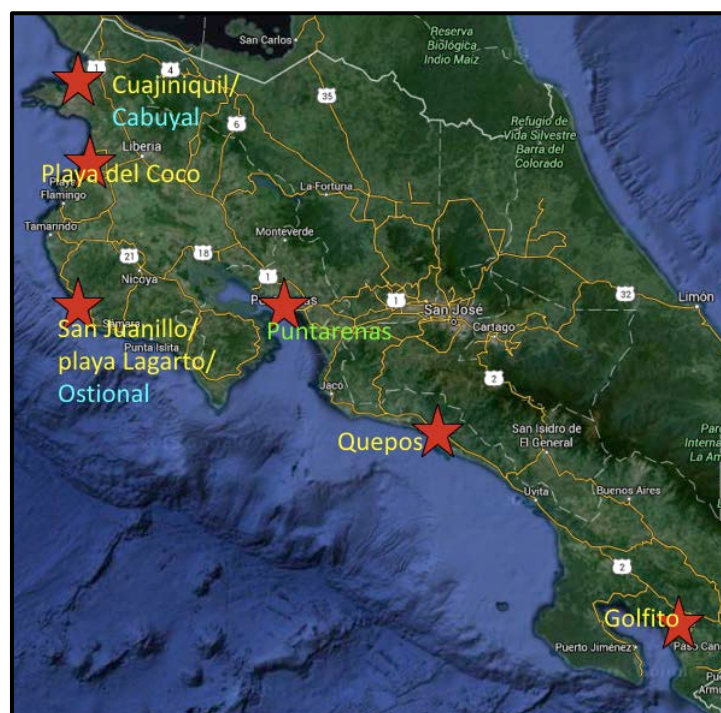


Fig. 1: Map of Costa Rica with the locations of all the training sessions carried out during the project with fishermen (in yellow), and with Government officials, fishery observers and technicians at nesting beaches (in blue). Puntarenas is in green because both type of sessions were organized there.



Fig. 2: Training session in Quepos. Many more fishermen attended than what was expected (over 100), and the session had to be organized in the local sports facility.



Fig. 3: Sandra Andraza opening the training session at the INCOPECA's office in Cuajiniquil. 60% of the longline fleet in the harbor attended.

Table 1. Summary of the 6 training sessions carried out with fishermen, including the locations and number of fishermen.

Location	Facility	Date	# of attendants
Cuajiniquil	INCOPESCA's office	03/14/2016	68
Playa del Coco	Fishermen Chamber Office	03/14/2016	39
Playa Lagarto/San Juanillo	Local school	03/15/2016	14
Puntarenas	INCOPESCA's office	03/28/2016	36
Quepos	Local sport facility	03/30/2014	112
Golfito	Town Hall	03/31/2014	48
6 locations			317

2. Training sessions with government officials, fishery observers, technicians at nesting beaches and academy

Training sessions organized for government officials, fishery observers and technicians had the same structure and duration as those organized for fishermen, but more detail was paid to the hook-removal techniques, which are more alien to them than to fishermen. Such training sessions were organized in Puntarenas, Cabuyal and Ostional (Figure 1 and Table 2). Some government officials participated in the fishermen sessions as well (2 in Cuajiniquil, 3 in Puntarenas, 1 in Quepos and 4 in Golfito) with a total of 93 participants.

In Puntarenas, the largest and most important of these sessions, a special practical session was carried out with the sea turtles at the MINAE's facility "*Parque Marino del Pacífico*"¹, so that both fishery observers and officials could learn how to handle turtles. A practice was also performed using a piece of pig meat, so that attendants could try removing both "J" and circle hooks using the provided dehooking tools. 4 observers participated actively in the training.



Fig. 4: Mariluz Parga and Alvaro Segura explaining differences between "J" and circle hook using local gears.

In Ostional, the training session was held in the facility of the MINAE with the participation of rangers, Coastguard officers, researcher of the University of Costa Rica (UCR) and members of the local association.

As an extra session, a more general information talk, was organized at the Biology School of UCR (University of Costa Rica) in San José, in order to explain university students, scientists and NGOs about the problem of sea turtle incidental catch by longline fisheries, mitigation measures tried around the world and their results, and the justification and conclusions of the project carried out in Costa Rica.

¹ <http://www.parquemarino.org/>



Fig. 5: Technicians of MINAE and INCOPECA practice hook-removal techniques on a piece of meat using the different dehookers.

Table 2. Summary of the 4 meetings carried out for government officials, fishery observers, technicians at nesting beaches and academy, including the locations and number of attendants.

Location	Date	# of attendants
Puntarenas	03/09/2016	24
Playa Ostional	03/15/2016	27
Playa Cabuyal	03/22/2016	8
Universidad de Costa Rica, San José	04/01/2016	23
4 locations		82

3. Dehooking material

One “J” and one “pigtail” dehooker was given out to each captain and owner of longline fishing vessels that attended the training sessions. 128 dehookers were given out in total, half of each type (Table 3). The Inter-American Convention for the Protection and Conservation of Sea Turtles collaborated in the making of these tools in the form of matching funds.



Fig. 6: An INCOPESCA official and the secretary of the Local Fishermen Chamber give out “J” and “pigtail” dehookers to captains and owners of longline vessels.

Table. 3: Dehooking material given out to captains and owners of longline fishing vessels that attended the training sessions.

Location	Material given out
Cuajiniquil	20 J dehookers 20 pigtail dehookers
Puntarenas	19 J dehookers 19 pigtail dehookers
Quepos	70 J dehookers 70 pigtail dehookers
Golfito	19 J dehookers 19 pigtail dehookers

Due to the “Tuna Decree” of Costa Rica, longline vessels will be required to carry such dehooking tools, and a dip-net, in order to improve the handling of captured turtles and reduce post-release mortality. During the training sessions different types of nets were shown to the fishers, so they could get an idea of nets and decide what type could suit them better depending on their vessel and type of operations. One type of each dip-net was given out to INCOPESCA and the local fishermen association to use as a model, so that fishermen can make their own. Apart from the dehookers and the net, fishers working on board high vessels were strongly advised to also carry on board a long-handled line-cutter, and tips on how to make simple and cheap versions were shared with them.



Fig. 7: A) One type of net is shown to fishermen during a training session. B) The two types of net, dehookers and sea turtle model used during trainings with fishermen.

4. T-shirts

During the training sessions one T-shirt was given out to each attending fisher. The T-shirts had a general message for the conservation of marine turtles in the front ("*Salvar tortugas empieza por mi*": Saving turtles starts with me). In the back they had the main key messages on best practices to handle marine turtles on board, such as hauling it on board with a net, not releasing it if weak and unresponsive, or removing the hook with care and using the tools provided.

A total of 350 T-shirts were printed and given out to fishermen and Government officials.



Fig. 8: Front of the T-shirt given out to attending fishers.

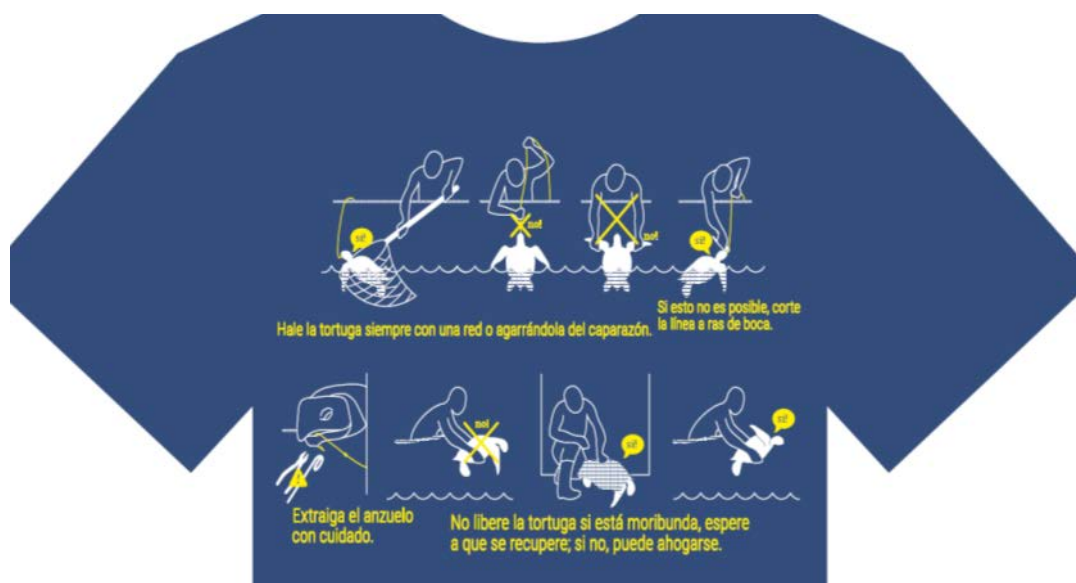


Fig. 9: Detail of the back of the T-shirt given out to attending fishers, with the main turtle handling recommendations.

5. Working sessions with authorities

A special session was held with the INCOPECA's board (a decision-making body) to present the project's background and progress of the training sessions and emphasize the importance for the country to meet the international and national commitments to mitigate sea turtle's bycatch and related mortality. As a result, an agreement has been drafted and will be discussed to establish a formal training for fishermen in these techniques and the requirement to carry all the tools on board, including the long-handled line-cutter, which was not considered originally in "the Tuna Decree". It is planned that compliance of these obligations will be a requisite to obtain sail permission.

The results of the training sessions are being discussed in the Commission for the "Tuna Decree" appointed by the Minister of Agriculture to follow up its implementation and make recommendations.

6. Analysis of data collection systems

The results of the training sessions with fishermen will be included in the next national's report to IAC as part of the country's compromise to report progress on mitigation of incidental capture of sea turtles. Furthermore, sea turtle's bycatch data collection are now included in the new logbook system that INCOPECA is requiring to the fishing sector. Additionally, an observer pilot program is currently underway to implement the IATTC Resolution C-11-08 requiring observer coverage on at least 5% of the fishing effort made by its longline fishing vessels greater than 20 meters length. INCOPECA is using the IATTC recording forms including one for sea turtle interaction data. The data analysis being done at this time includes consideration of how the release is being made from the perspective of what is taught in training.

7. Communication

During the project there has been extensive coverage in the national media and social networks of institutions, fishing industry and other organizations such as the Organization of the Central American Fisheries and Aquaculture Sector (OSPESCA). Figures 10 and 11 show some examples of repercussion in the news. A list of media coverage can be found in Annex 2.



Fig. 10: A) Post in OSPESCA's Facebook and B) Post in "Sector Palangrero Nacional" Facebook.



Fig. 11: Feature about the project by Amalia Rueda, a well-known journalist in Costa Rica.

The voluntary participation of the audiovisual production company “*La Pecera*” <http://www.lapecera.org/blog/> has provided the opportunity to count with professional material of some of the activities. This is being used now to produce a short video about the process. Additionally, a Communication Specialist on Fisheries assisted in press releases’ distribution and media contact.

Conclusions and evaluation of the project

The project has been very successful, with all proposed activities completed in the expected timeframe. All results were fully accomplished, many of them surpassed, such as the number of fishermen reached in the training sessions.

The conclusions of the project are the following:

- Costa Rica was found to be at an excellent moment for the development of the activities of this project due to the requirements of the “Tuna Decree” and the more active participation of MINAE in IAC, which also requires reporting on progress towards mitigation and data on sea turtle bycatch. Another important point of pressure comes from the demands of the international market regarding seafood coming from sustainable sources without illegal fishing.
- For different reasons, fishers were found to be extremely involved in the activities carried out, attending the whole training session and even asking questions and sharing experiences. Large numbers of fishers attended the training sessions in each location, with a special mention to Quepos, where over 100 fishers were present (the session had to be moved over to the local sport facility to accommodate all of them), to Cuajiniquil, where up to 60% of the fleet was present, or to Golifto, where the level of participation usually does not exceed 10 fishermen and in this case reached almost 50. One of the reasons for this high attendance was that fishers were on land, attending the compulsory course “IMO Basic” held by the Learning National Institute (INA).

Many fishermen were truly preoccupied for the turtles they captured, and wanted to make no harm to them and release them in the best possible way. Others were just interested because of the “Tuna Decree” and the obligation to comply with it. Finally, others did understand the implications of the large markets (such as the US one), demanding only fish from “turtle kind” fisheries, on their economy.

- Fishers are the first line of action to protect the populations of marine turtles, and we depend on them to act responsibly. Once at sea, it is difficult to monitor them or to force them to do anything they don’t want to. Therefore, it is critical to obtain a mutual understanding with them and their collaboration. They need to feel respected, and to know that they are a key element of this whole picture.
- Despite the current differences between the two institutions, as usually occurs with fisheries and environment agencies, this initiative has been a meeting point with a common interest

in conservation, improving the management of the fishery and fulfilling the country's commitments.

- Continuous findings on bycatch mitigation techniques and changing in fisheries operations should require refresher courses periodically. Furthermore, although a large number of fishers attended the training sessions, still a large percentage of the fleet remains un-trained. A plan to continue trainings in the country should be put in place and maintained by the national government.

During this project both MINAE and INCOPESCA collaborated on the logistics of the trainings, but nobody was appointed to be specially trained as trainer for future sessions. MINAE's facility "*Parque Marino del Pacífico*" has biologists that practice first aid and recovery of injured sea turtles: they have been suggested as good candidates to be trainers of future training sessions for fishers. However, they would still need to be adequately trained before they are prepared to carry out such trainings effectively.

- A recommendation has been made to include a training session on best handling techniques of sea turtles as part of the "IMO Basic" course held by INA and compulsory for all fishers in Costa Rica.
- The characteristics and measures of dehooking material and dipnets to safely lift sea turtles aboard should have into consideration the species bycaught and vessels conditions.

The suggested immediate next steps are:

- In the short term, participation certificates will be delivered in each port, which have been highly sought after by fishermen to comply with future requirements. A test will be applied to check the level of knowledge acquired.
- Graphics will be made available at INCOPESCA and Fishermen Association offices, with measures of tools and recommendations of materials to be used, so that fishermen can make and use their own tools.
- To have the agreement approved by INCOPESCA's board to formalize the training. A complex process begins now, where governmental institutions have to follow on this project, make decisions "official", and translate them into the correct implementation of official training courses for fishermen. Among the challenges ahead, training trainers is one of the more important ones, and steps will be taken towards this end.
- To present the results to the Commission of the "Tuna decree" and other relevant entities. Additionally, results will be included in the next Annual Report for IAC.

Annexes

Annex 1. Example of program's training for fishermen

Hora (Time)	Actividad (Activity)	Facilitador (Speaker)
10:00-10:10	Apertura y presentación de la agenda. <i>Opening and presentation.</i>	S. Andraka
10:10-10:20	Pesquerías de Costa Rica y sus interacciones con tortugas marinas. Compromisos nacionales e internacionales. <i>Fisheries in Costa Rica and their interactions with marine turtles. National and international compromises.</i>	INCOPECA/ S. Andraka
10:20-10:50	Pesquería de palangre e interacciones con tortugas marinas en Costa Rica: resultados de experimentos con anzuelos circulares y potenciales soluciones. <i>Longline fishery in Costa Rica: results of experiments with circle hooks and potential solutions.</i>	A. Segura
10:50-11:10	Coffee break	Local catering
11:10-12:30	Sesión de Mejores prácticas de manipulación y liberación de tortugas marinas. Conocimiento de los pescadores. <i>Best practices to handle and release sea turtles.</i>	M. Parga y A. Segura
12:30 – 13:00	Firma de lista de participantes. Entrega de equipo por embarcación cierre. <i>Signing of participants and distribution of tools.</i>	INCOPECA S. Andraka
13:00-13:30	Almuerzo	