

Bycatches in Artisanal Fisheries in Developing Countries: Challenges and Approaches to Solutions

Hall, M., Andraka, S., Rendon, L.,
Pacheco, L. and T. Mituhasi.

- **Bycatches are not among the major problems for artisanal and small scale fishers (fuel costs, intermediaries, local depletion, lack of opportunities for the young,)**
- **But they are a serious problem for those interested in conservation and sustainability.**

- **Nesting beaches, haul-out areas, rookeries, reproductive aggregations, foraging areas result in a high density of individuals of vulnerable species, spawners, etc. that encounter a high density of fishing gear in the coastal zone.**
- **Developing successful mitigation programs in these conditions is a challenge, and we'll try to share some of our experiences.**

Figure 1. Global map of exclusive economic zones (green) and high seas (blue) oceanic areas.



White C, Costello C (2014) Close the High Seas to Fishing?. *PLoS Biol* 12(3): e1001826. doi:10.1371/journal.pbio.1001826

<http://www.plosbiology.org/article/info:doi/10.1371/journal.pbio.1001826>

Bycatch in small-scale tuna fisheries

A global study

Robert Gillett
FAO Consultant
The Republic of Fiji

Peckham, S.H., Maldonado Diaz, D., Walli, A., Ruiz, G., Crowder, L.B. & Nichols, W.J. (2007) Small-Scale fisheries bycatch jeopardizes endangered Pacific loggerhead turtles. *PLoS ONE*, 2, e1041. doi:10.1371/journal.pone.0001041.

Peckham, S.H., Maldonado-Diaz, D., Koch, V., Mancini, A., Gaos, A., Tinker, M.T. & Nichols, W.J. (2008) High mortality of loggerhead turtles due to bycatch, human consumption and strandings at Baja California Sur, Mexico, 2003 to 2007. *Endangered Species Research*, 5, 171–183.



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Conservation challenges for small-scale fisheries:
Bycatch and habitat impacts of traps and gillnets

Geoffrey G. Shester*, Fiorenza Micheli

Hopkins Marine Station of Stanford University, 120 Ocean View Blvd., Pacific Grove, CA 93956-5024, USA



Strand Monitoring and Anthropological Surveys Provide Insight into Marine Turtle Bycatch in Small-Scale Fisheries of the Eastern Mediterranean

Author(s): Robin T. E. Snape, Damla Beton, Annette C. Broderick, Burak A. Çiçek, Wayne J. Fuller, Özge Özden, and Brendan J. Godley

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Small-scale fisheries of Peru: a major sink for marine turtles in the Pacific

Joanna Alfaro-Shigueto^{1,2}, Jeffrey C. Mangel^{1,2}, Francisco Bernedo², Peter H. Dutton³, Jeffrey A. Seminoff³ and Brendan J. Godley^{1*}

¹Marine Turtle Research Group, Centre for Ecology and Conservation, University of Exeter, Cornwall Campus, Penryn, Cornwall, TR10 9EZ, UK; ²Pro Delphinus, Octavio Bernal 572-5, Lima 11, Peru; and ³NOAA-National Marine Fisheries Service, Southwest Fisheries Science Center, 8604 La Jolla Shores Drive, La Jolla, CA 92037, USA

Options for solving problem

INTERNATIONAL TOP-DOWN APPROACH

- e.g. U.N. Moratorium of all longlining, gillnetting, trawling that causes sea turtle bycatch

NATIONAL TOP-DOWN APPROACH

- Strict regulations in all countries mandating gear and operational changes

Options for solving problem

**SOLUTION must be adopted on its own merits,
hopefully benefit fishers in some way.**

**SOLUTION must not rely on heavy enforcement,
expensive gear or technology**

CREATIVE,

REGIONAL,

BOTTOM-UP APPROACH

Incentives: find or build

- To get bycatch mitigation process going you need an incentive.

- Artisanal fisheries

- Subsistence

- Domestic consumption

- Can domestic consumers be motivated?

- Can you produce motivated markets? (e.g. tourists, small export markets, etc.)

- Export markets:

- “Sensitive” markets -- Consumers motivated

- “Less sensitive” markets -- Consumers less
concerned

Options for solving problem

REGIONAL BOTTOM-UP APPROACH

- Find or develop an incentive
- Propose a sensible alternative that would reduce bycatch.
- Develop an experimental program with the fishing community in their boats
- If possible implement an observer program.
- Engage the fishing communities

Most likely to succeed

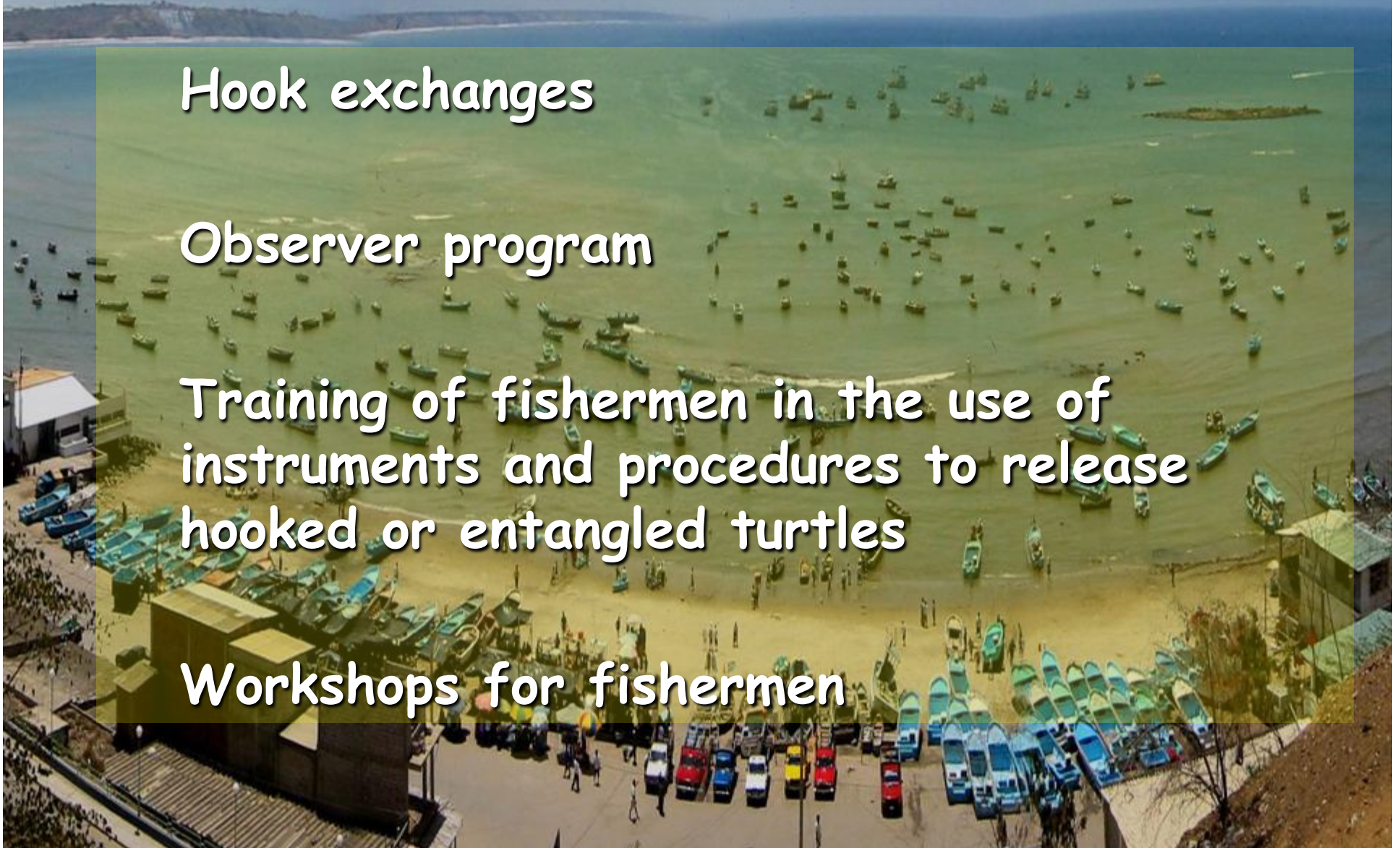
Options for solving problem

Hook exchanges

Observer program

Training of fishermen in the use of instruments and procedures to release hooked or entangled turtles

Workshops for fishermen





The Regional Program to reduce incidental mortality of sea turtles



Get to know the fishing community

Individual operations, cooperatives

Leadership

Organizations

Economic situation

Social interactions

Community structure

Why exchange hooks?

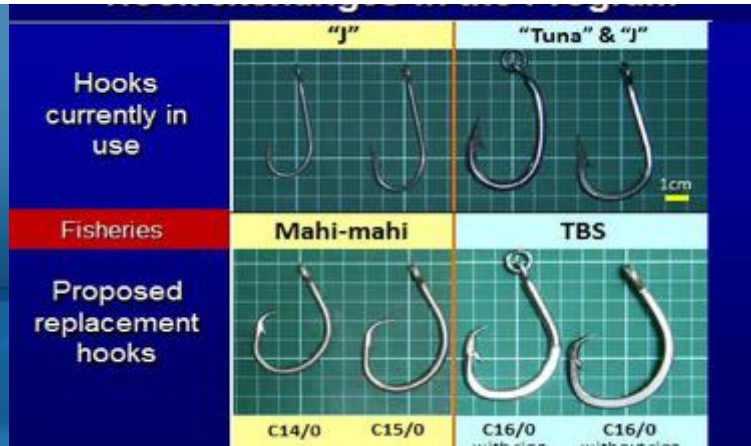
- Catch rates similar or better
- Higher quality of catch – exports, price
- Hooks last very long – savings
- Protects crews from injuries
- Protects future of activity
- Keeps markets open, ecolabels

PREMISES

- Nobody wants to kill sea turtles or drive them to extinction

- Nobody wants to put fishers out of work

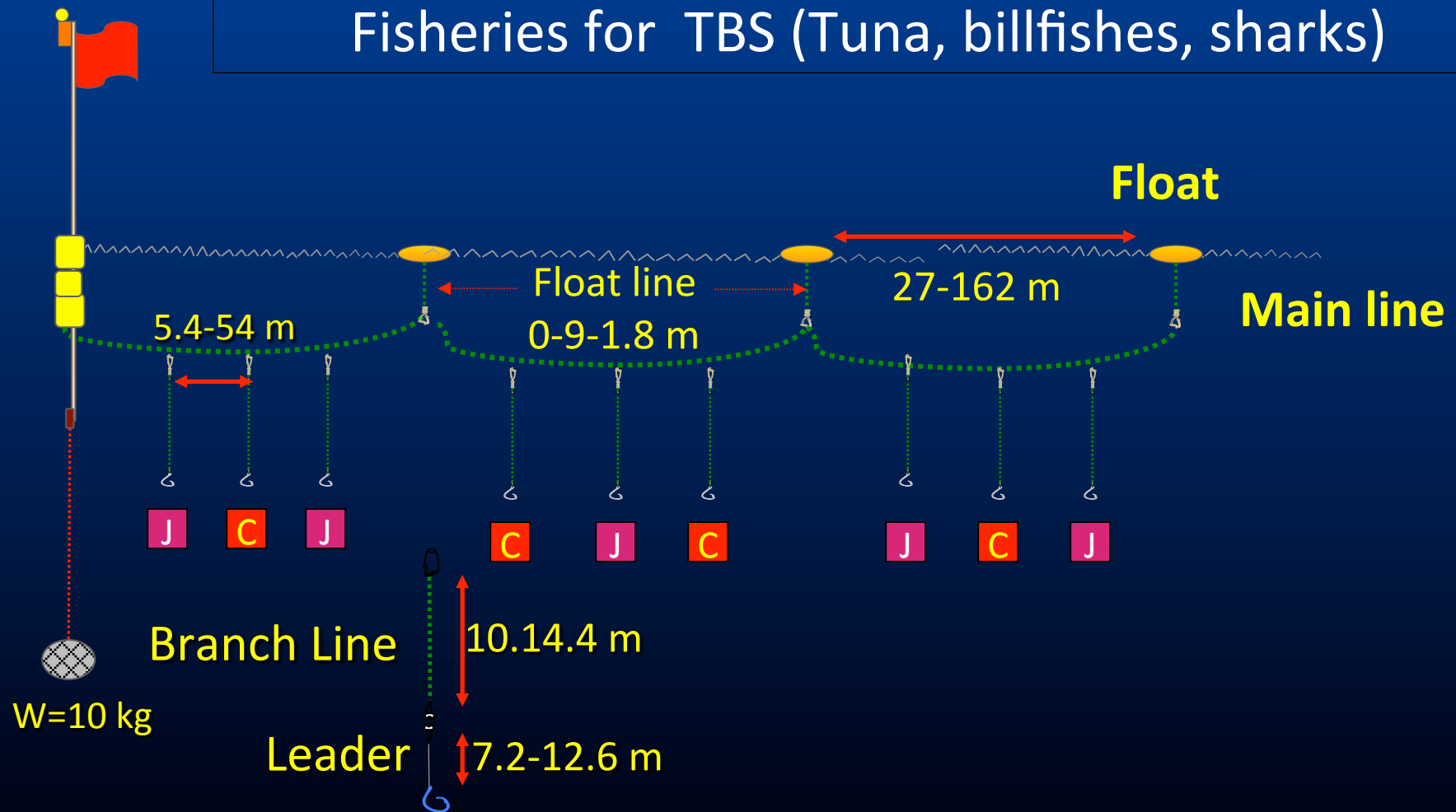
A clear and simple "non-aggression treaty"



Country	Observed trips	Number vessels	Hook sample
Mexico	64	63	5,630
Guatemala	796	87	647,894
El Salvador	84	20	619,35
Nicaragua	45	13	360,50
Costa Rica	252	83	1,109,559
Panama	114	22	924,663
Colombia	231	27	215,342
Ecuador	550	210	513,461
Peru	159	53	458,589
TOTAL	2,295	578	3,973,123

Types of longline gear from eastern Pacific fleets

Fisheries for TBS (Tuna, billfishes, sharks)



Number hooks 250-2000

by Takahisa Mituhasi

Economic incentives for change

- Adoption also needs incentives
 - Eliminate import taxes on mitigation instruments (circle hooks, dehookers, etc.) [Nicaragua, Ecuador, etc.]
 - Facilitate customs procedures. Increase availability.
 - Subsidies for initial replacement of hooks (NGOs, governments, local)
 - Bulk purchases by cooperatives



Solve practical problems



**show the fishers good practices
and explain why**

Identify a minimum set of equipment or simplest gear modifications

Cheap, easily available, sturdy, practical to store and use, allowed to evolve.

Training: certification programs, observers, workshops



Communication

Frequent contacts.

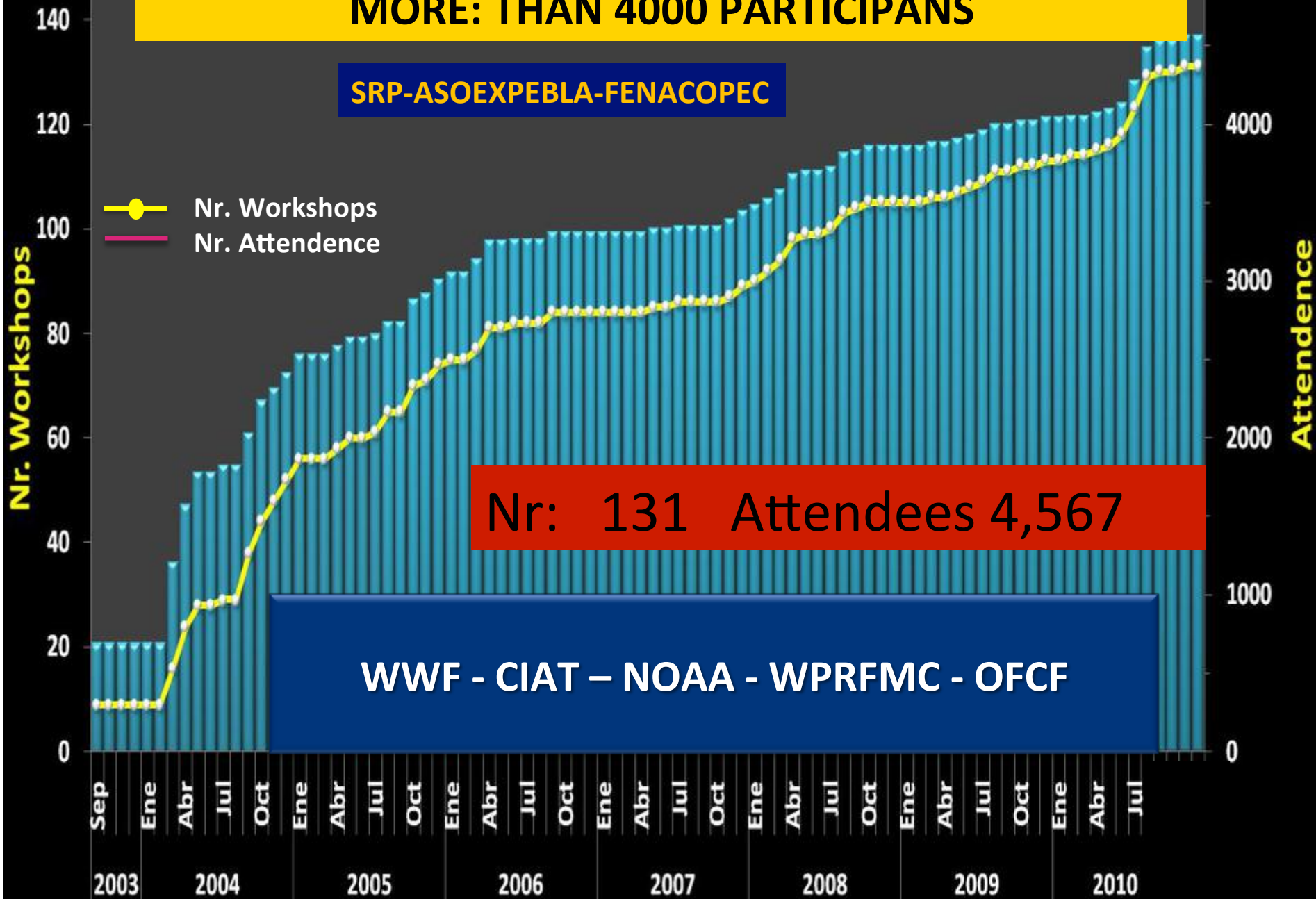
No over-selling or false promises.

Receive feedback and listen to their ideas.

Work with them on adapting the solutions.

**ECUADOR: MORE THAN 140 WORKSHOPS
MORE: THAN 4000 PARTICIPANS**

SRP-ASOEXPEBLA-FENACOPEC



IMPROVING THE SYSTEM

How can we facilitate and channel the action of the creative people in the fishing communities towards the solution of the problems?

How can we optimize the use of resources to reach the fishing communities more effectively?

How can we help strengthen the fishers organizations to take a more active role in mitigation and management?



Fishers Organizations by province

Fuente FENACOPEC, (Marzo,2002)

	Esmeraldas	Manabí	Guayas	El Oro	Galápagos	TOTAL
Cooperatives	43	16	28	12	4	103
Pre-cooperatives	1	2				4
Associations	20	2	7	16	1	46
Pre-associations				1		1
Provincial federations		1				1
National federation			1			1
Others	2	1	1	2	1	7

High % of fishers are INDEPENDENT
Difficult to reach



