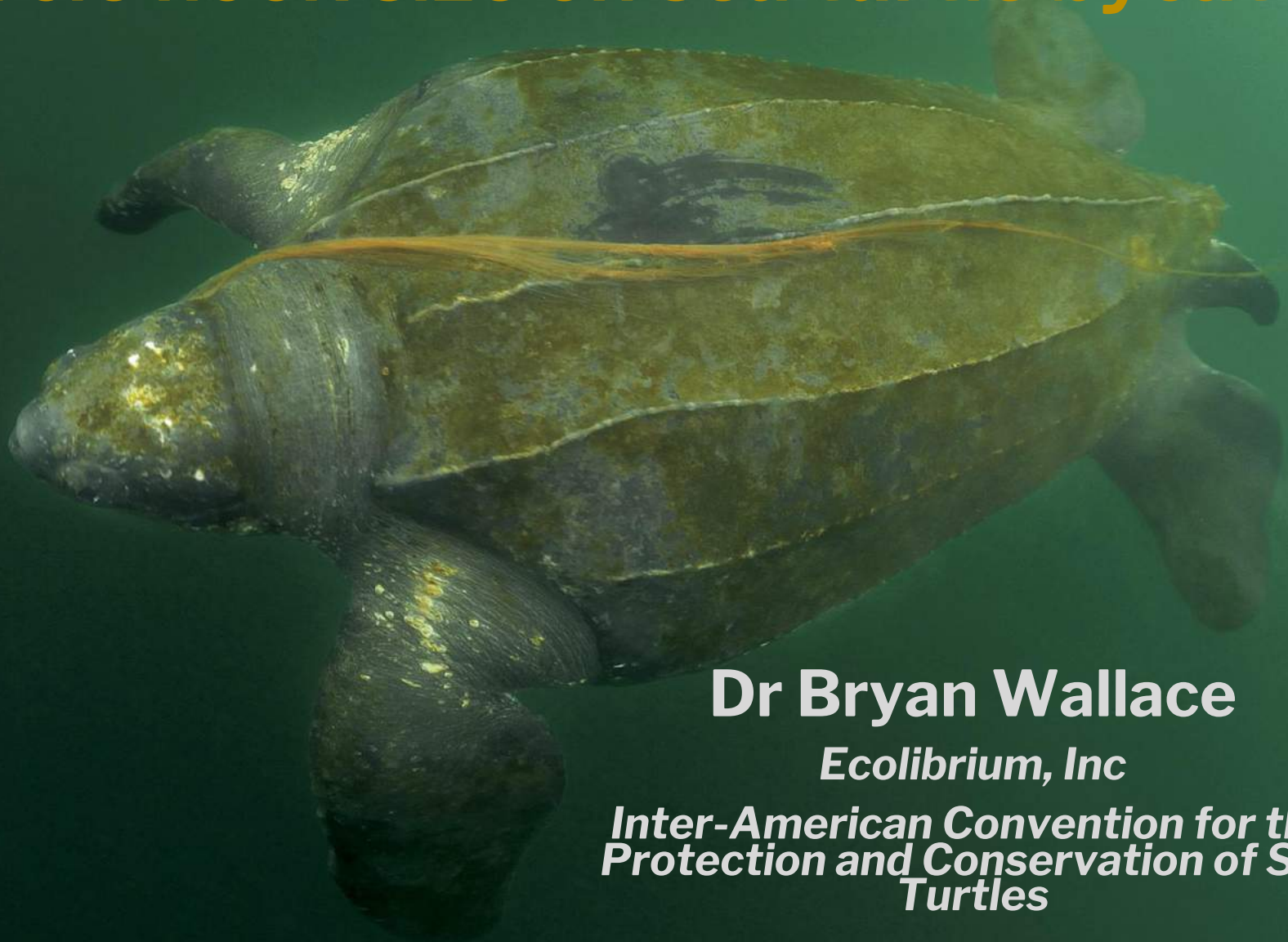


Background information on effects of circle hook size on sea turtle bycatch



Dr Bryan Wallace

Ecolibrium, Inc

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

background

- **Dr. Bryan Wallace**
 - Chair, Leatherback Task Force, Inter-American Convention for the Protection and Conservation of Sea Turtles (IAC)
 - Science Sector Representative, IAC Consultative Committee of Experts
 - Co-Coordinator, Red para la Conservación de la Tortuga Laúd en el Océano Pacífico Oriental (Laúd OPO)
 - Co-coordinator, IATTC-IAC working group to evaluate vulnerability of EP leatherbacks to fisheries



LAÚD OPO
RED LAÚD DEL OCEANO
PACIFICO ORIENTAL



background



MOU BETWEEN IAC AND IATTC (2011) (text at www.iacseaturtle.org)

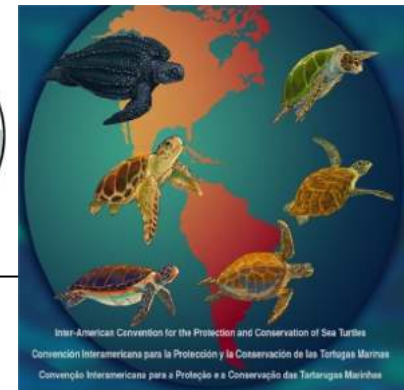
- **OBJECTIVE: To facilitate cooperation between the IATTC and the IAC in order to enhance the conservation of sea turtles in the Eastern Pacific Ocean and reduce incidental by-catch of sea turtle species for IATTC vessels**

AREAS OF COOPERATION

“The IATTC and the IAC may maintain consultations, and carry out joint cooperative activities regarding topics of common interest including, but not limited to, the following areas: ...

- *research on sea turtle by-catch mitigation measures relevant to fishing operations in the IATTC Convention Area;*
- *exchange of expertise, techniques and knowledge relevant to the conservation of sea turtles in the IATTC Convention Area and,*
- *participation in relevant meetings of each organization...”*

background



COMISIÓN INTERAMERICANA DEL ATÚN TROPICAL

94ª REUNIÓN

Bilbao, España

22-26 de julio de 2019

RESOLUCION C-19-04

RESOLUCIÓN PARA MITIGAR LOS IMPACTOS SOBRE LAS TORTUGAS MARINAS

- **“By 2021, the Bycatch Working Group and SAC shall ... provide a recommendation to the Commission for a minimum hook size as well as a schedule for implementing this recommended minimum hook size through a revision to this resolution.”**

objectives of information document

- Summarize available information to inform decision about “large” circle hooks
- Studies about how circle hooks can mitigate bycatch impacts examine:
 - Reduction in interactions, catch rates (more commonly examined)
 - Reduction in severity and mortality of interactions

Bycatch mitigation efficacy of circle hooks relative to tuna or J-hooks: informational paper available on Basecamp (and see Gilman and Huang 2016)

Hook Size	minimum width	References	Decrease sea turtle bycatch	Increase post-release survivability or decrease in injury severity	Study location
C13	3.5 cm	Parga et al. (2015)		X	East Pacific Ocean
C14	3.8 cm	Parga et al. (2015)		X	East Pacific Ocean
C15	4.0 cm	Andraka et al. (2013)	X		Ecuador
		Pacheco (2013)		X	Panama
		Parga et al. (2015)		X	East Pacific Ocean
C16	4.4 cm	Andraka et al. (2013)	X		Panama, Ecuador
		Bolten and Bjorndal (2006)	X	X	Azores
		WCPFC (2017)*	X	X	WCP
		Piovano et al (2009)	X		Mediterranean
		Parga et al (2015)		X	East Pacific Ocean
C17		Santos et al. (2012)*	X		Equatorial South Atlantic
		Santos et al. (2013)*	X		Equatorial South Atlantic
C18	4.9 cm	Andraka et al. (2013)	X		Costa Rica
		Largacha et al. (2005)	X		Ecuador
		Watson et al. (2005)*	X		USA (Atlantic)
		Foster et al. (2012)*	X		USA (Atlantic)
		Swimmer et al (2017)*	X		USA (Atlantic), USA (Hawaii)
		Pacheco et al. (2011)*	X		Equatorial South Atlantic
		Stokes et al. (2012)		X	USA (Atlantic)
		Brazner and McMillan (2008)	X		Canada (Atlantic)
		Epperly et al. (2012)	X		USA (Atlantic)
Parga et al (2015)		X	East Pacific Ocean		

Review of effects of pelagic longline hook and bait type on sea turtle catch rate, anatomical hooking position and at-vessel mortality rate

Eric Gilman  · Hsiang-Wen Huang

- Wider circle hooks vs J and tuna hooks:
 - Reduced catch rates of sea turtle species
 - Reduce proportion that were deeply hooked
 - Circle hooks + fish bait = reduced catch rates
- Improved sea turtle bycatch outcomes were 15/0 or larger, with most studies showing positive effects of hooks 16/0 and 18/0
 - including in the East Pacific Ocean region



Hooking locations in sea turtles incidentally captured by artisanal longline fisheries in the Eastern Pacific Ocean



María L. Parga^a, Maite Pons^b, Sandra Andraka^{c,*}, Liliana Rendón^d, Takahisa Mituhasi^e, Martín Hall^f, Lucas Pacheco^g, Alvaro Segura^h, Michael Osmondⁱ, Nick Vogel^f

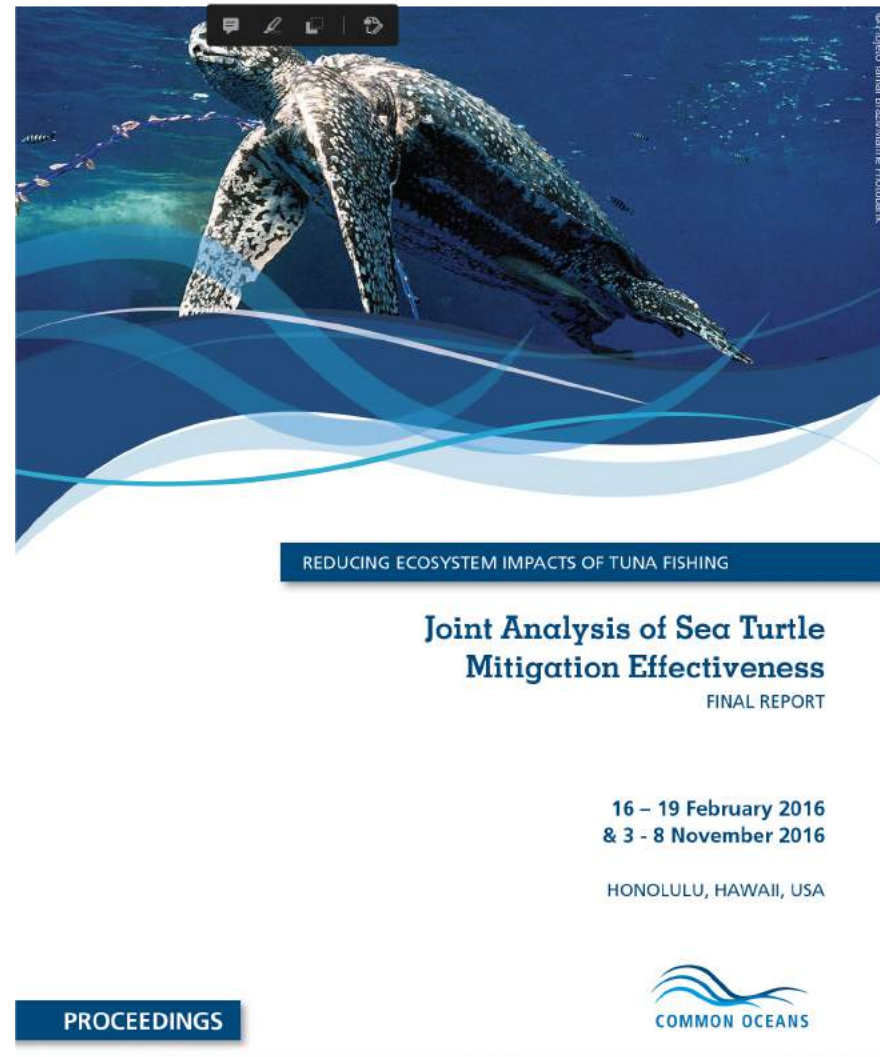
Parga et al. (2015), Pacheco (2013)

- reduced injury severity with larger hooks, especially >40 mm (15/0, 16/0, 18/0)
- reduced injury severity with larger hooks + fish bait
- smaller circle hooks (12/0, 13/0 y 14/0) also baited with fish produced mostly hookings in the lower jaw

- Document that influenced WCPFC turtle resolution
- *“The analysis of observer data found that use of large circle hooks (defined by the workshop as size 16/0 or larger) and the use of finfish bait were associated with significant decreases in interaction rates.”*



PROJECT
Sustainable Management of Tuna Fisheries
and Biodiversity Conservation in the ABNJ



conclusions

- Circle hooks reduce bycatch impacts on sea turtles
- Resolution C-19-04 calls for defining minimum size in 2021
- Reduced catch rates and injury severity with wider circle hooks
- Larger ($\geq 16/0$), wider ($\leq 40\text{mm}$) circle hooks = better outcomes for sea turtles
- Circle hooks WITH fish bait mitigate impacts further

Thank you for your attention and efforts



