

Tropical tuna tagging programs undertaken by IATTC in the eastern Pacific Ocean

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Inter-American Tropical Tuna Commission



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Historical tropical tuna tagging programs undertaken by IATTC

- Tropical tuna tagging experiments by IATTC in the eastern Pacific commenced in 1955, and through 1964 a total of 90,412 skipjack and 59,547 yellowfin were tagged and released throughout the range of the fishery, from northern Mexico to northern Chile. There were 4,781 skipjack (5.3%) and 8,397 yellowfin (14.1%) tags returned from those releases.
 - Most of those tunas were captured, tagged, and released from live-bait pole-and-line vessels, either on regular fishing trips or chartered trips.
 - The program was designed to yield information on the migrations and population structure of SKJ and YFT, and provide estimates of their growth and mortality.
- During 1964 to 1979 there were only a few tuna tagging cruises undertaken on opportunistic or chartered live-bait pole-and-line vessels.
- During 1969 through 1974 there were several tuna tagging cruises undertaken on purse-seine vessels through various types of charter arrangements principally targeting YFT. During those cruises 30,290 YFT were tagged and released, and 1,449 tags returned (4.8%). Tuna tagging cruises continued sporadically aboard purse-seine vessels until 1980.
- During 1979 through 1981 there were several tropical tuna tagging cruises undertaken on chartered live-bait pole-and-line vessels with tagging conducted from Mexico to Ecuador.

Historical tropical tuna tagging programs undertaken by IATTC

Tropical tuna releases and recoveries from IATTC historical tagging campaigns 1955 - 1999

Yellowfin Tuna			Skipjack Tuna			Bigeye Tuna		
Released	Returned	% Returned	Released	Returned	% Returned	Released	Returned	% Returned
110,205	14,746	13.4	127,709	12,881	10.1	612	15	2.5

Tropical tuna tagging programs undertaken by IATTC since 2000

BIGEYE TUNA TAGGING PROGRAM IN THE EQUATORIAL EASTERN PACIFIC 2000 - 2006

- **OBJECTIVES:** Investigation of horizontal and vertical movements, growth, natural mortality, and exploitation rates of bigeye tagged and released with plastic dart and archival tags in the equatorial eastern Pacific
- **VESSEL UTILIZED:** *FV* Her Grace, US west-coast-style live-bait pole-and-line vessel
- **TAGGING CRUISES:** 6 tagging cruises during 2000, 2002-2006; average duration of 81.5 d (68-90 d)
- **AREA OF TAG RELEASES:** 3N to 5S, and 95 to 97W

Selected references:

Schaefer, K.M. and D.W. Fuller. 2009. Horizontal movements of bigeye tuna (*Thunnus obesus*) in the eastern Pacific Ocean, as determined from conventional and archival tagging experiments initiated during 2000-2005. Inter-Amer. Trop. Tuna Comm., Bull., 24(2): 189-248.

Schaefer, K.M., and Fuller, D.W. 2010. Vertical movements, behavior, and habitat of bigeye tuna (*Thunnus obesus*) in the equatorial eastern Pacific Ocean, ascertained from archival tag data. Mar. Bio. 157: 2625-2642.



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Tropical tuna tagging programs undertaken by IATTC since 2000

BIGEYE TUNA TAGGING PROGRAM IN THE EQUATORIAL EASTERN PACIFIC 2000 - 2006

Plastic Dart Tags

Bigeye Tuna			Skipjack Tuna			Yellowfin Tuna		
Released	Returned	% Returned	Released	Returned	% Returned	Released	Returned	% Returned
19174	8249	43.0	3425	563	16.4	2234	405	18.1

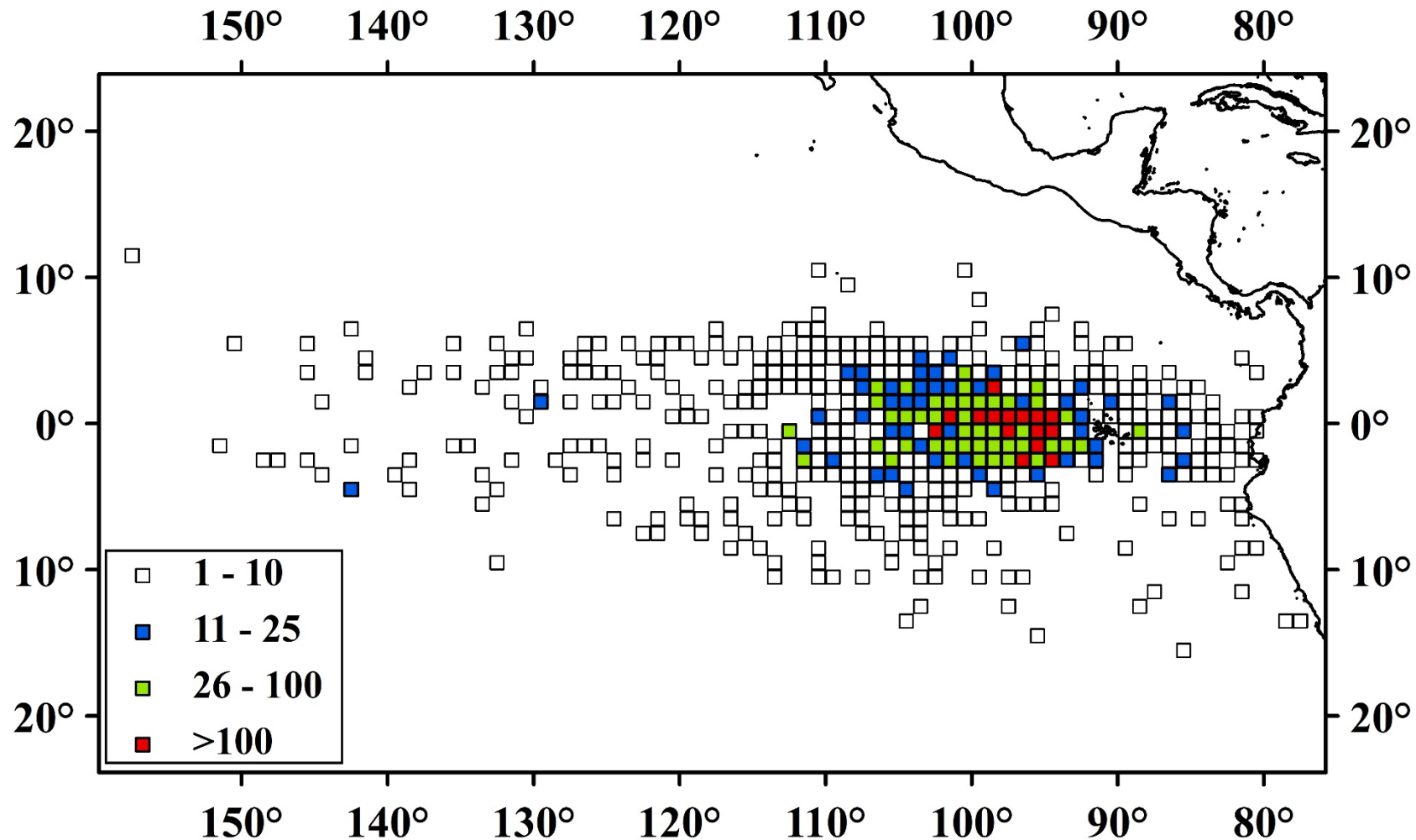
Archival Tags

Bigeye Tuna			Skipjack Tuna			Yellowfin Tuna		
Released	Returned	% Returned	Released	Returned	% Returned	Released	Returned	% Returned
323	162	50.2	134	7	5.2	53	8	15.1

Tropical tuna tagging programs undertaken by IATTC since 2000

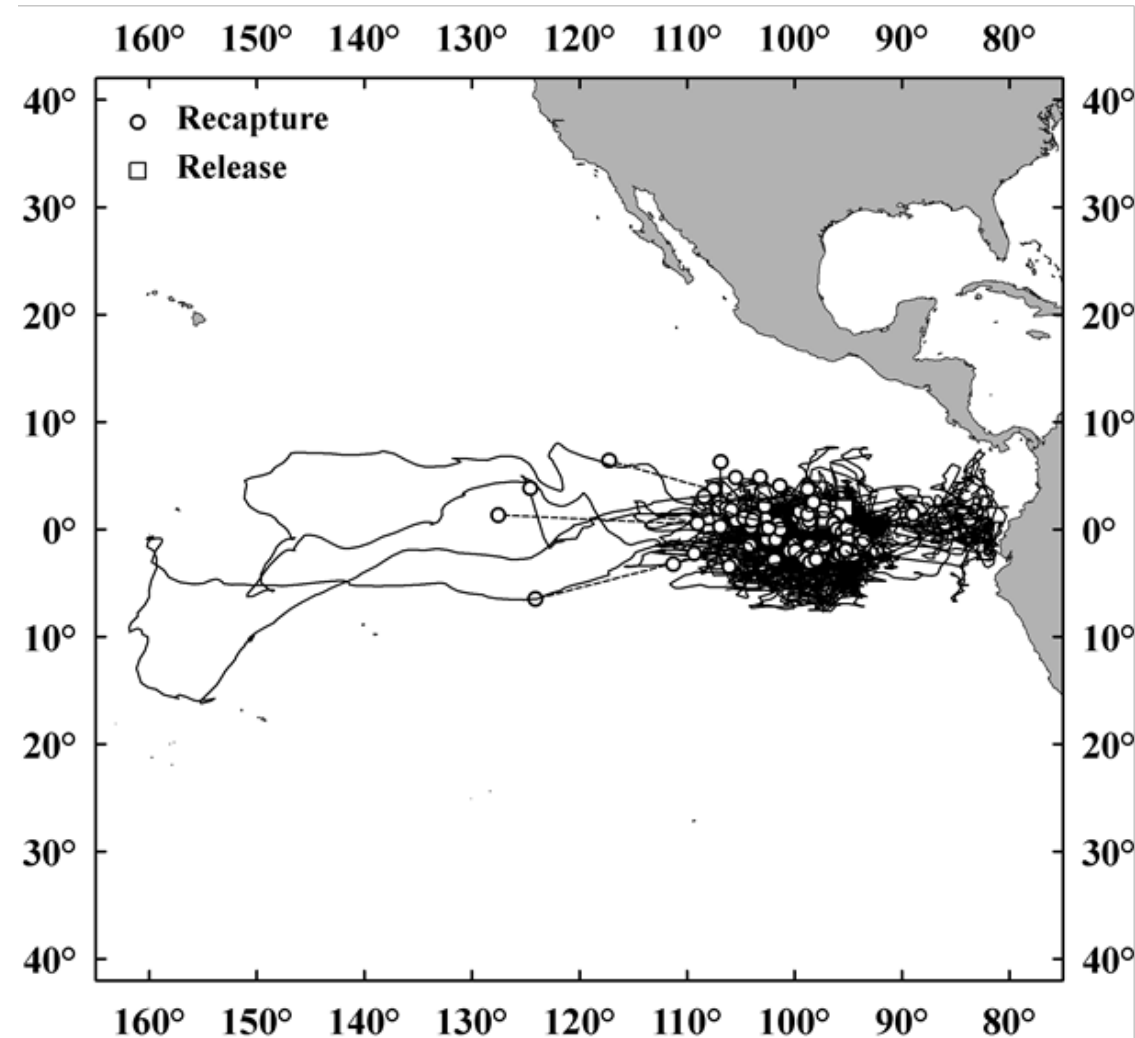
BIGEYE TUNA TAGGING PROGRAM IN THE EQUATORIAL EASTERN PACIFIC 2000 - 2006

Bigeye tuna PDT recoveries, >30 d at liberty $n = 6,730$



Tropical tuna tagging programs undertaken by IATTC since 2000

BIGEYE TUNA TAGGING PROGRAM IN THE EQUATORIAL EASTERN PACIFIC 2000 - 2006 Bigeye tuna AT movement paths, >30d at liberty ($n = 98$)



Tropical tuna tagging programs undertaken by IATTC since 2000

YELLOWFIN TUNA TAGGING PROGRAM; UNDERTAKEN IN COLLABORATION WITH THE TAGGING OF PACIFIC PELAGICS (TOPP) PROGRAM

- **OBJECTIVES:** Quantify and elucidate the horizontal and vertical movements, behavior, and habitat utilization of yellowfin tagged and released with archival tags off Baja, CA, Mexico.
- **VESSEL UTILIZED:** *FV* Shogun and *FV* Royal Star; San Diego based long-range sport fishing vessels
- **TAGGING CRUISES:** 10 tagging cruises during 2002-2008, average duration of 10.2 d (10-11 d)
- **AREA OF TAG RELEASES:** 23 to 31N, and 111 to 119W

Selected reference:

Schaefer, K.M., Fuller, D.W., and Block, B.A., 2011. Movements, behavior, and habitat utilization of yellowfin tuna (*Thunnus albacares*) in the Pacific Ocean off Baja California, Mexico, determined from archival tag data analyses, including unscented Kalman filtering. Fish. Res. 112:22-37.



Tropical tuna tagging programs undertaken by IATTC since 2000

YELLOWFIN TUNA TAGGING PROGRAM; UNDERTAKEN IN COLLABORATION WITH THE
TAGGING OF PACIFIC PELAGICS (TOPP) PROGRAM



Tropical tuna tagging programs undertaken by IATTC since 2000

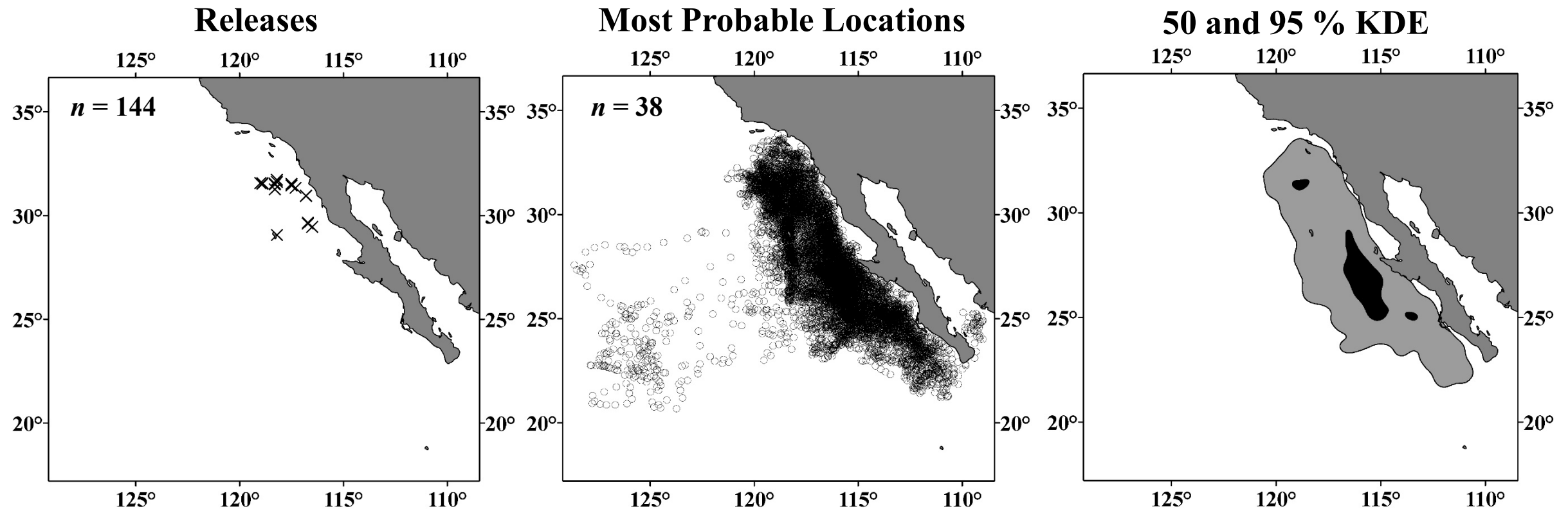
YELLOWFIN TUNA TAGGING PROGRAM; UNDERTAKEN IN COLLABORATION WITH THE TAGGING OF PACIFIC PELAGICS (TOPP) PROGRAM

Archival Tags		
Yellowfin Tuna		
Released	Returned	% Returned
500	260	52.0

Tropical tuna tagging programs undertaken by IATTC since 2000

YELLOWFIN TUNA TAGGING PROGRAM; UNDERTAKEN IN COLLABORATION WITH THE TAGGING OF PACIFIC PELAGICS (TOPP) PROGRAM

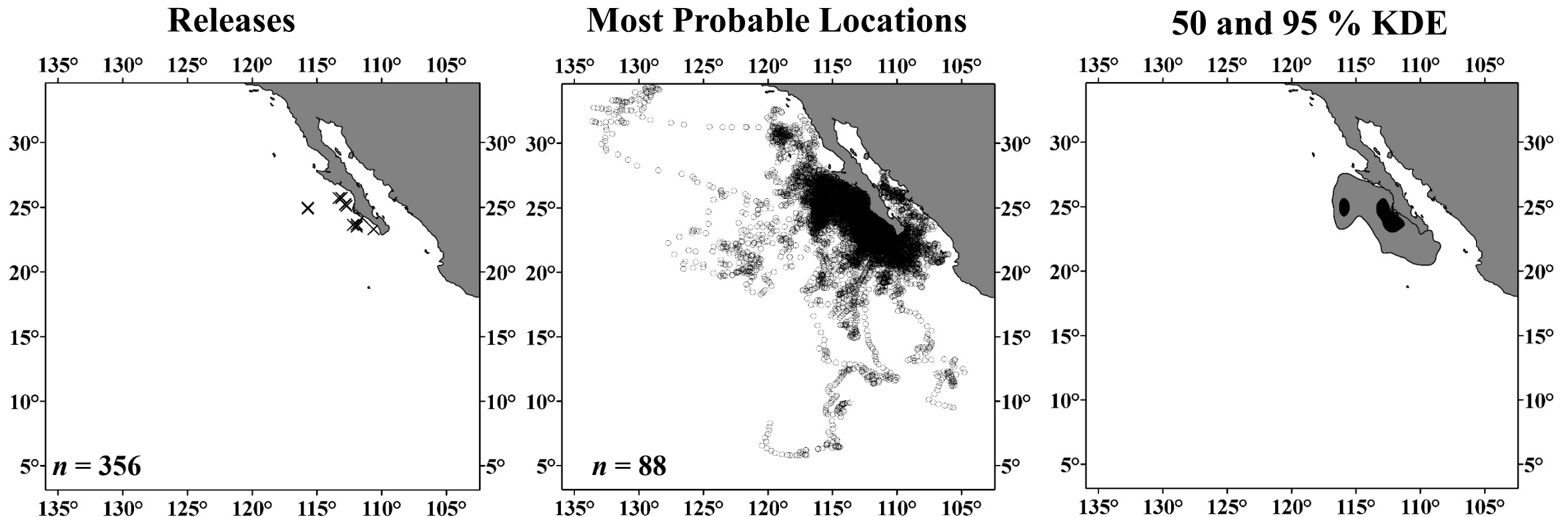
Northern Baja



Tropical tuna tagging programs undertaken by IATTC since 2000

YELLOWFIN TUNA TAGGING PROGRAM; UNDERTAKEN IN COLLABORATION WITH THE TAGGING OF PACIFIC PELAGICS (TOPP) PROGRAM

Southern Baja



Tropical tuna tagging programs undertaken by IATTC since 2000

YELLOWFIN TUNA TAGGING PROGRAM AT THE REVILLAGIGDO ISLANDS, MEXICO

- **OBJECTIVES:** Quantify and elucidate the horizontal and vertical movements, behavior, and habitat utilization of yellowfin tagged and released with archival tags at the Revillagigedo Islands, Mexico
- **VESSEL UTILIZED:** *FV Royal Star*; San Diego based long-range sport fishing vessel
- **TAGGING CRUISES:** 11 tagging cruises during 2006-2011, 17 days/ea
- **AREA OF TAG RELEASES:** 18 to 19N, and 111 to 115W

Selected references:

Schaefer, K.M., D.W. Fuller, and G. Aldana. 2014. Movements, behavior, and habitat utilization of yellowfin tuna (*Thunnus albacares*) in waters surrounding the Revillagigedo Islands Archipelago Biosphere Reserve, Mexico. Fish. Ocean. 23(1):65-82.



Tropical tuna tagging programs undertaken by IATTC since 2000

YELLOWFIN TUNA TAGGING PROGRAM AT THE REVILLAGIGDO ISLANDS, MEXICO



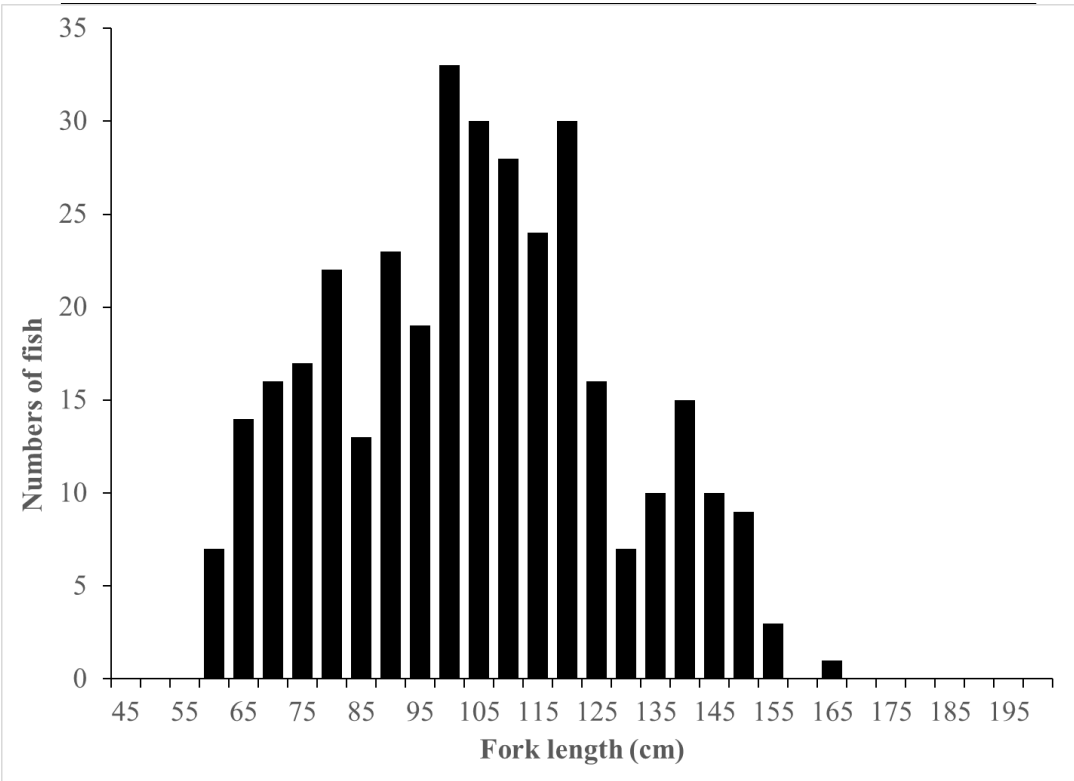
Tropical tuna tagging programs undertaken by IATTC since 2000

YELLOWFIN TUNA TAGGING PROGRAM AT THE REVILLAGIGDO ISLANDS, MEXICO

Archival Tags

Yellowfin Tuna

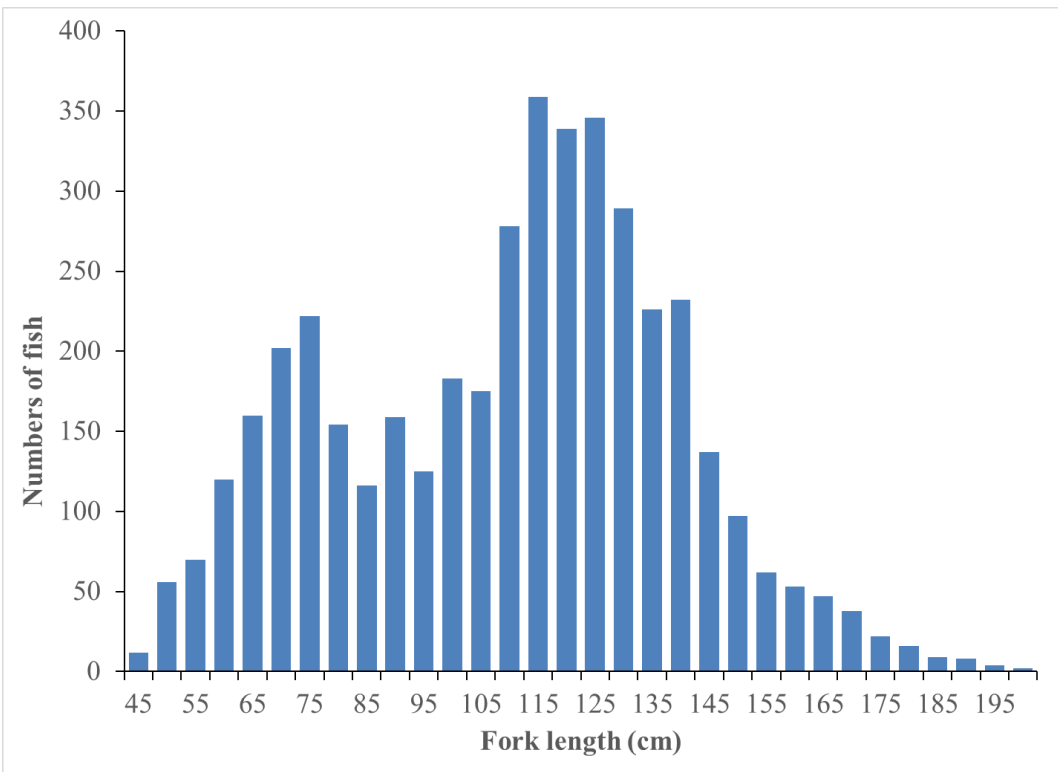
Released	Returned	% Returned
335	99	29.6



Plastic Dart Tags

Yellowfin Tuna

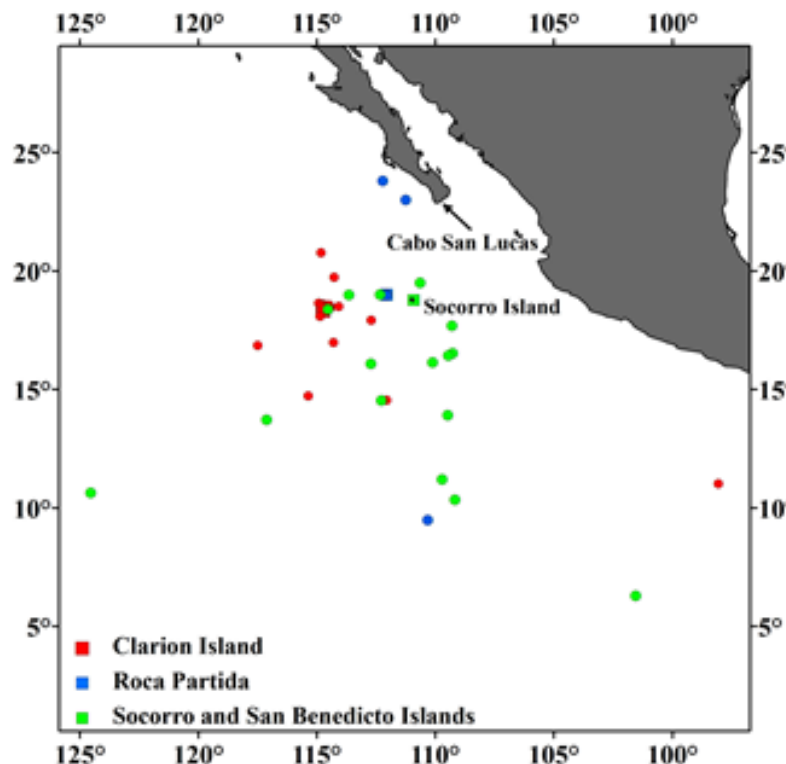
Released	Returned	% Returned
4318	836	19.4



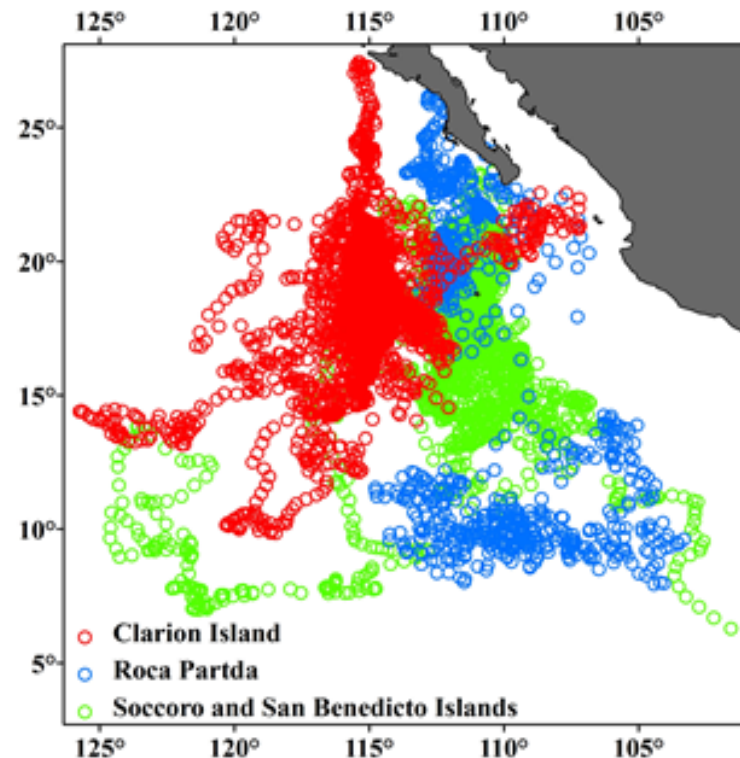
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YELLOWFIN TUNA TAGGING PROGRAM AT THE REVILLAGIGDO ISLANDS, MEXICO

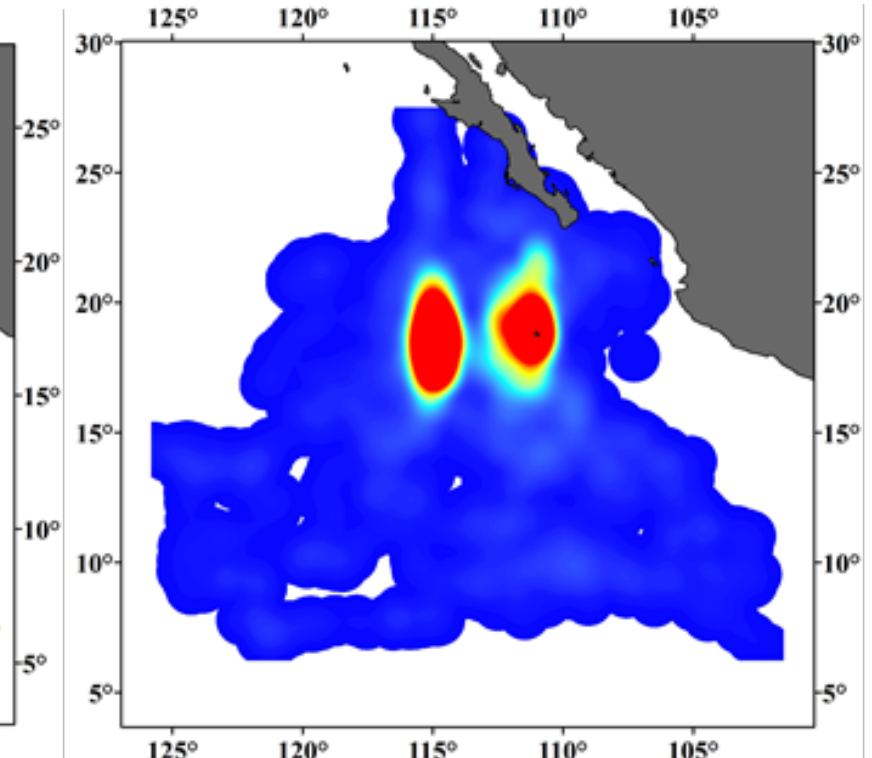
Release and recapture locations for ATs



Most probable locations



Kernel Density Estimates derived from MP locations



Tropical tuna tagging programs undertaken by IATTC since 2000

BIGEYE TUNA TAGGING PROGRAM IN THE EQUATORIAL CENTRAL PACIFIC; UNDETAKEN IN COLLABORATION WITH THE PACIFIC TUNA TAGGING PROGRAM (PTTP)

- **OBJECTIVES:** Investigate horizontal and vertical movements, growth, natural mortality, and exploitation rates of bigeye tagged and released with plastic dart tags and archival tags in the equatorial central Pacific
- **VESSEL UTILIZED:** *FV Double D*, *FV AoShibi Go*, *FV Gutsy Lady 4*; Hawaii based longline vessels, using dangler hook-and-line surface fishing gear, handlines, and rods and reels
- **TAGGING CRUISES:** 4 tagging cruises during 2009-2015, average duration of 45.5d (38-55 d)
- **AREA OF TAG RELEASES:** 8N TO 5S, and 140 TO 157W

Selected references:

Schaefer, K., Fuller, D., Hampton, J., Caillot, S., Leroy, B., and Itano, D. 2015. Movements, dispersion, and mixing of bigeye tuna (*Thunnus obesus*) tagged and released in the equatorial Central Pacific Ocean, with conventional and archival tags. Fish. Res. 161: 336–355.

Fuller, D.W., Schaefer, K.M., Hampton, J., Caillot, S., Leroy, B.M. and Itano, D.G., 2015. Vertical movements, behavior, and habitat of bigeye tuna (*Thunnus obesus*) in the equatorial central Pacific Ocean. Fish. Res. 172:57-70.



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BIGEYE TUNA TAGGING PROGRAM IN THE EQUATORIAL CENTRAL PACIFIC;
UNDETAKEN IN COLLABORATION WITH THE PACIFIC TUNA TAGGING PROGRAM (PTTP)



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UNDETAKEN IN COLLABORATION WITH THE PACIFIC TUNA TAGGING PROGRAM (PTTP)

Plastic Dart Tags

Bigeye Tuna			Skipjack Tuna			Yellowfin Tuna		
Released	Returned	% Returned	Released	Returned	% Returned	Released	Returned	% Returned
12,893	3,913	30.3	478	14	2.9	1,255	128	10.2

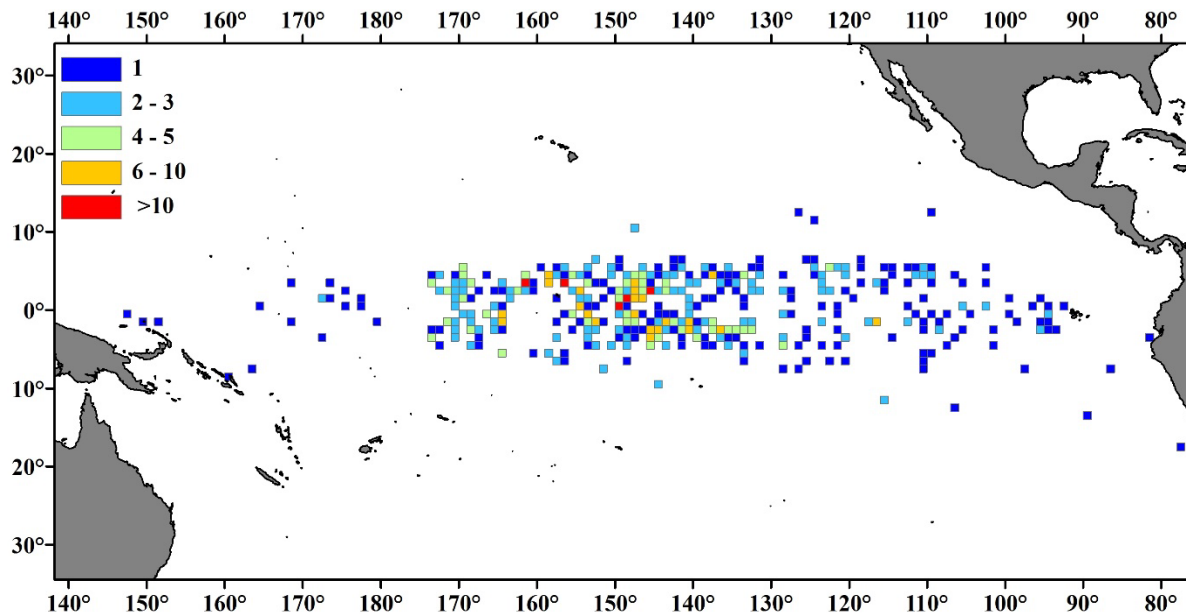
Archival Tags

Bigeye Tuna			Skipjack Tuna			Yellowfin Tuna		
Released	Returned	% Returned	Released	Returned	% Returned	Released	Returned	% Returned
375	78	20.8	30	0	0	186	10	5.4

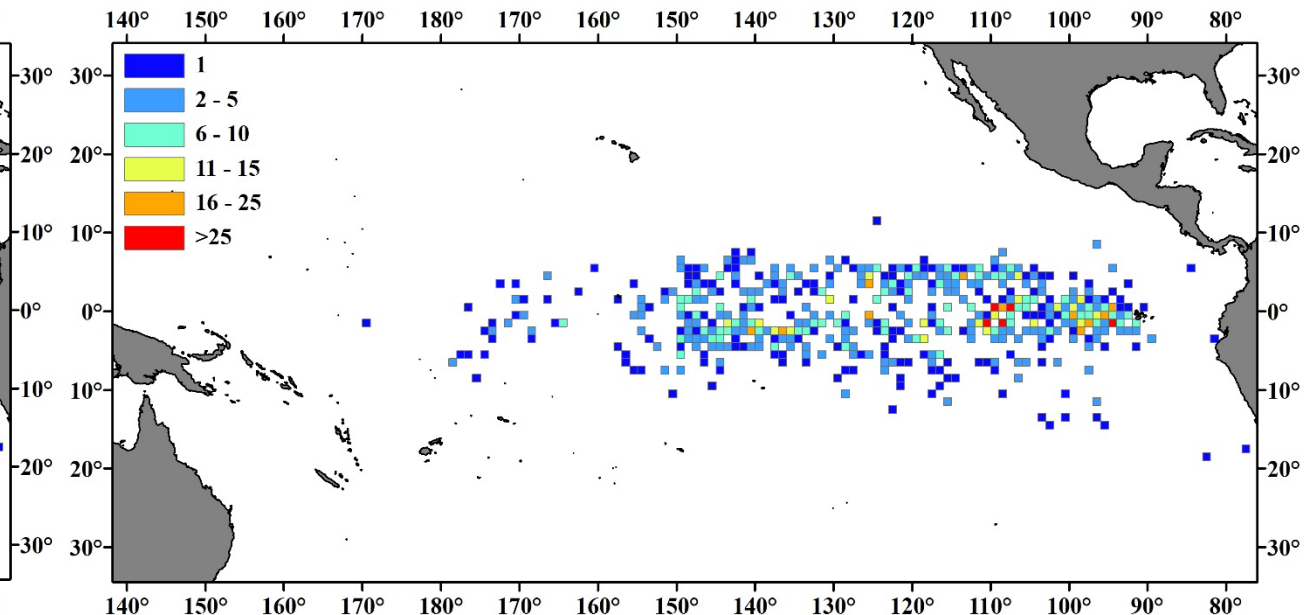
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155°W Releases



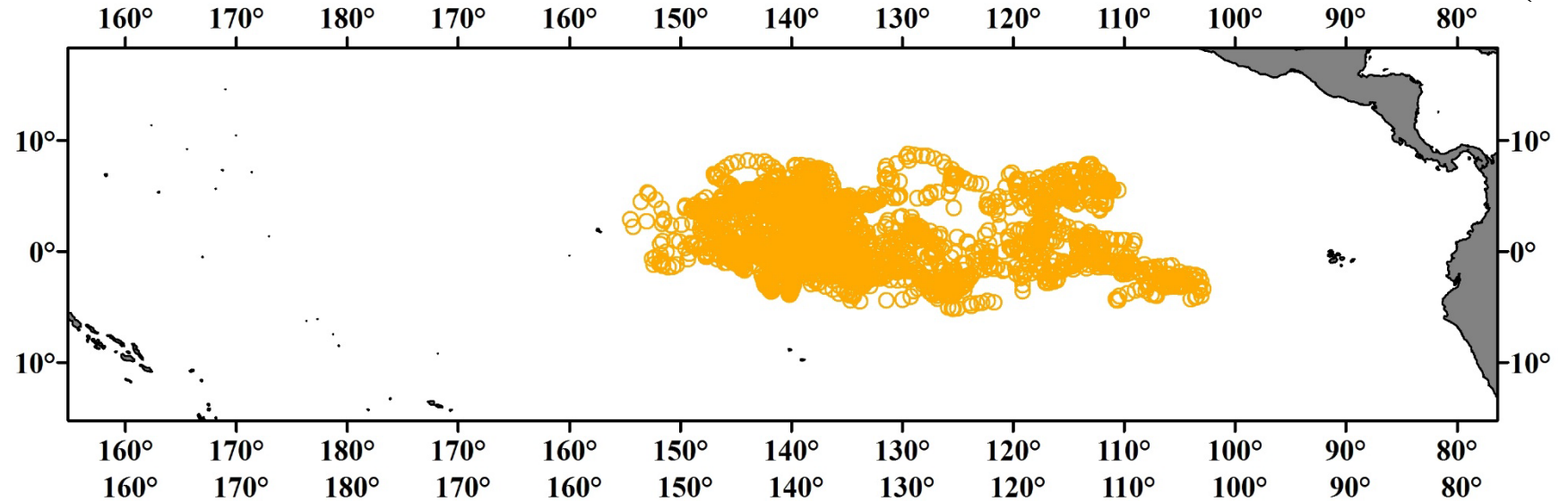
140°W Releases



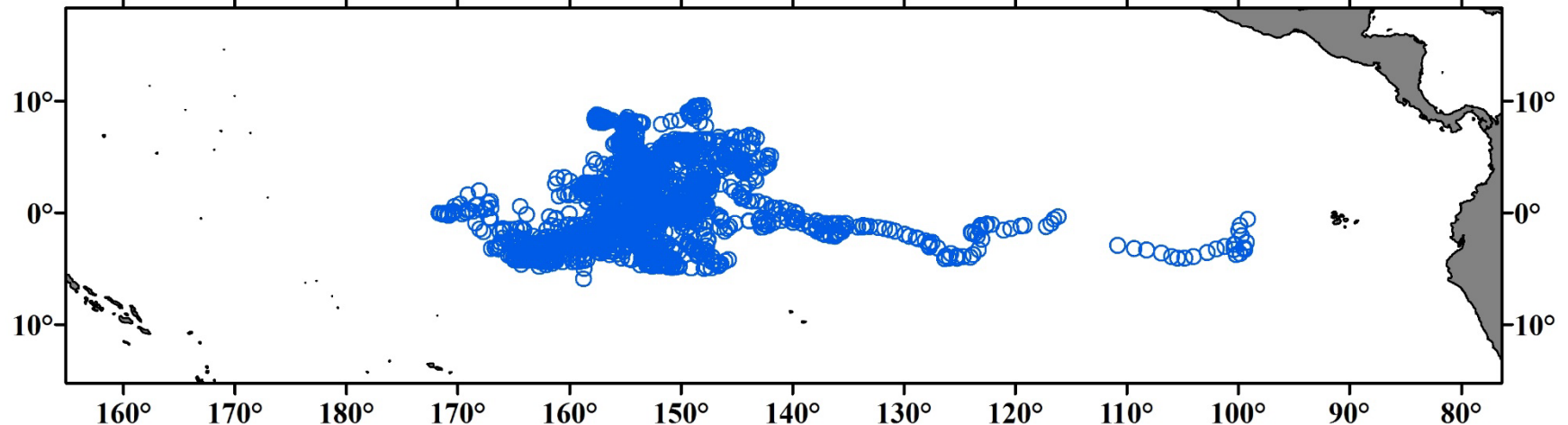
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BIGEYE TUNA TAGGING PROGRAM IN THE EQUATORIAL CENTRAL PACIFIC; UNDETAKEN IN COLLABORATION WITH THE PACIFIC TUNA TAGGING PROGRAM (PTTP)

**Position estimates
derived from Archival
tags in BET released at
the 140W**



**Position estimates
derived from Archival
tags in BET released at
the 155W**





Questions

