



Predicting albatross bycatch-risk hotspots across the North Pacific

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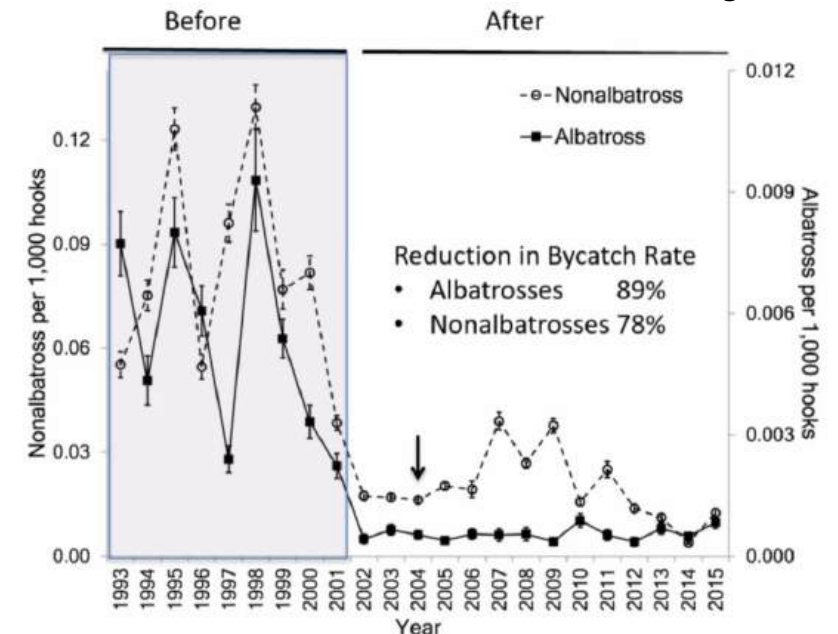


Photo credits: Megan Dalton, NOAA Fisheries, Andres Domingo

Seabird bycatch in North Pacific

- Fisheries regulations in 2000s led to large reductions in bycatch.
- Bycatch mitigation in pelagic longline fisheries often not considered best practice (by ACAP) and observer coverage often very low (<1-5% in some years).
- Many fisheries not monitored, so poor understanding of where bycatch occurs and fleets responsible.
- Within IATTC, no updates to seabird regulations since 2011 (C-11-02).
- Need for improved understanding of dynamics of seabird-fisheries overlap (Seabird Action Plan).

Streamer line use in Alaska demersal longline fleet





Laysan albatross



Black-footed albatross



Short-tailed albatross

Aims

1. Collate albatross tracking data to predict year-round distributions.
2. Overlap with fishing effort data to identify bycatch risk hotspots and fleets responsible.
3. Inform management at international, national and regional scales.

Where?



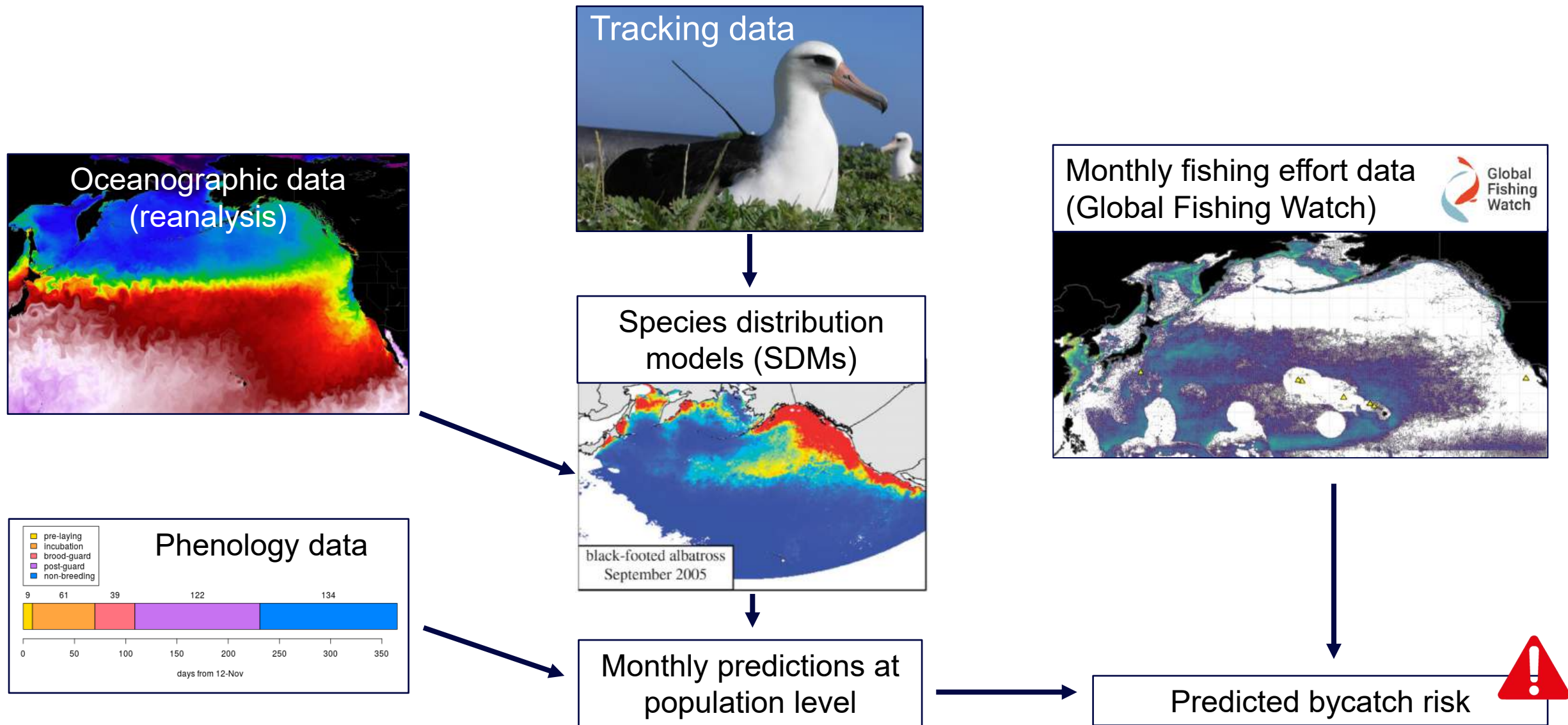
When?



Who?



Methodology



>1,500 tracks
>20 data providers
>20 years data collection
(1997-2019)

Tracking data summary

Laysan albatross



Region	Population	% global pop	Breeding stages	N tracks
NW Hawaiian Is.	Kure (Mokupāpapa)	4.6%	All	63
	Midway (Pihemanu)	72.8%	All	105
	Tern (Kānemiloha'i)	0.4%	All	190
Main Hawaiian Is.	Kaua'i (Waipake & Nai Aina Kai)	<0.1%	Post-brood	192
	O'ahu	<0.1%	All	84
Mexico offshore Is.	Guadalupe	0.2%	Inc., brood, post-brood	266

Black-footed albatross

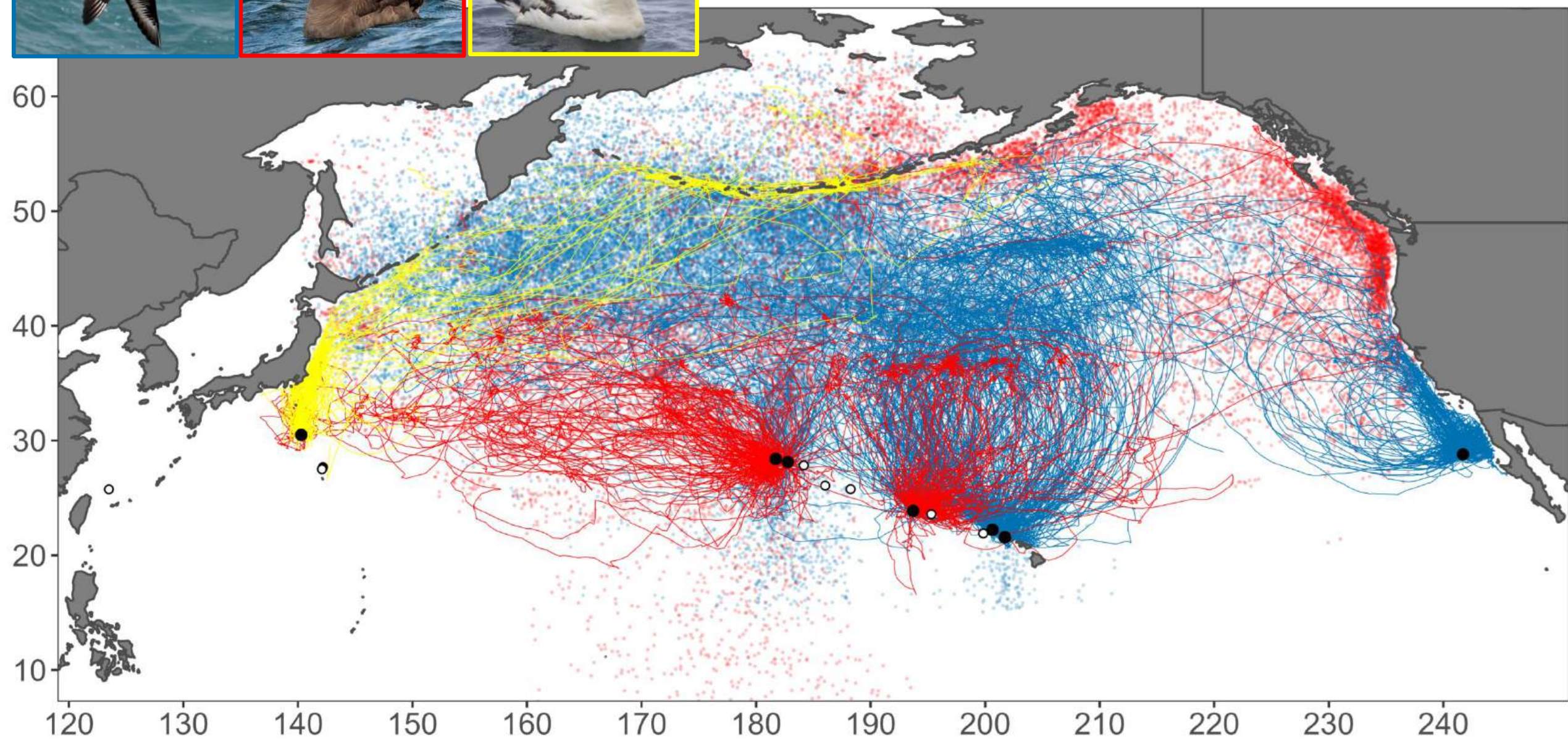


Region	Population	% global pop	Breeding stages	N tracks
Japan offshore Is.	Torishima	2.9%	Brood, post-brood	21
NW Hawaiian Is.	Kure (Mokupāpapa)	4.9%	Post-brood	158
	Midway (Pihemanu)	36.5%	All	79
	Tern (Kānemiloha'i)	7.1%	All	170

Short-tailed albatross



Region	Population	% global pop	Breeding stages	N tracks
Japan offshore Is.	Torishima	c. 85%	All	107



SDM summary

Validation method	Species	N datasets	AUC score (performance)	
			GPS/PTT	Geolocator

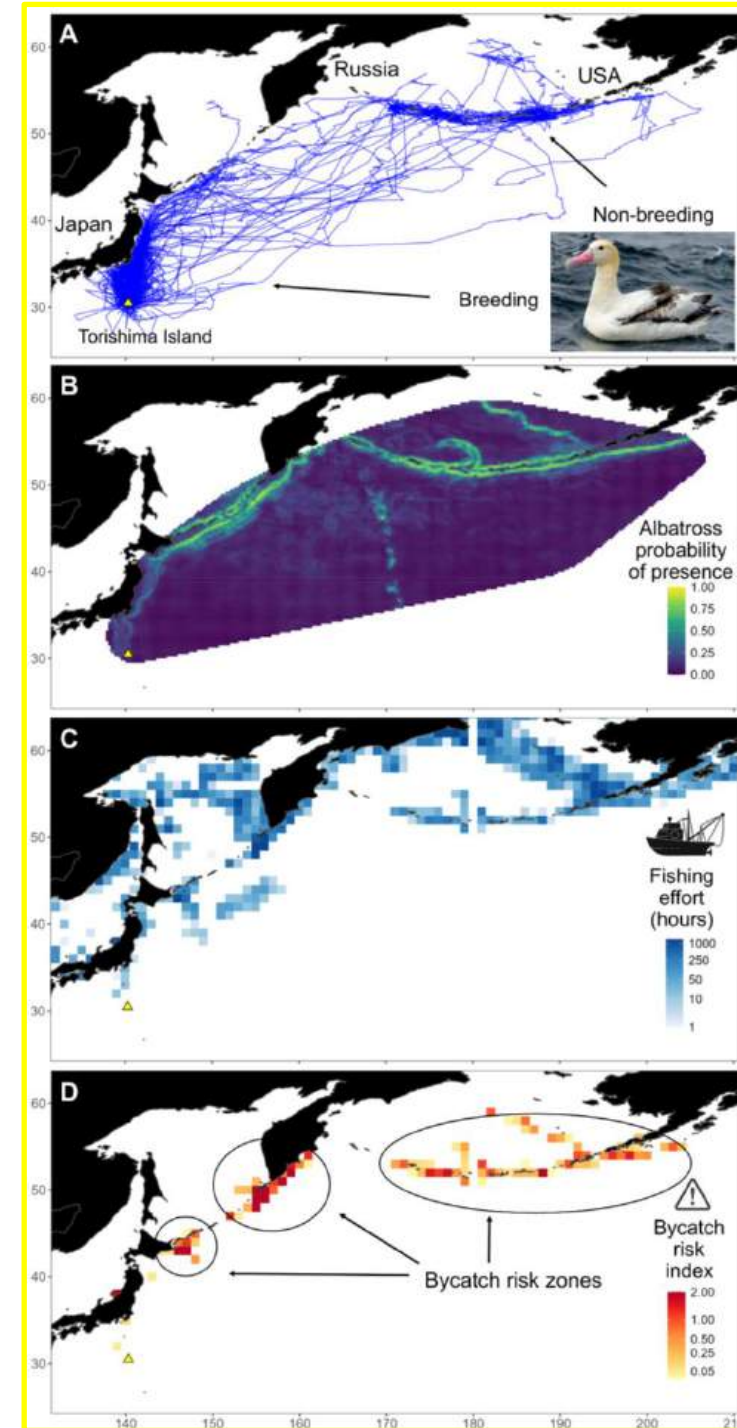
SDM summary

Validation method	Species	N datasets	AUC score (performance)	
			GPS/PTT	Geolocator
Leave-out-70/30	BFAL	11	0.98 (0.95-0.99)	0.82 (0.80-0.84)
	LAAL	24	0.97 (0.94-0.99)	0.80 (0.68-0.86)
	STAL	4	0.96 (0.91-0.99)	-

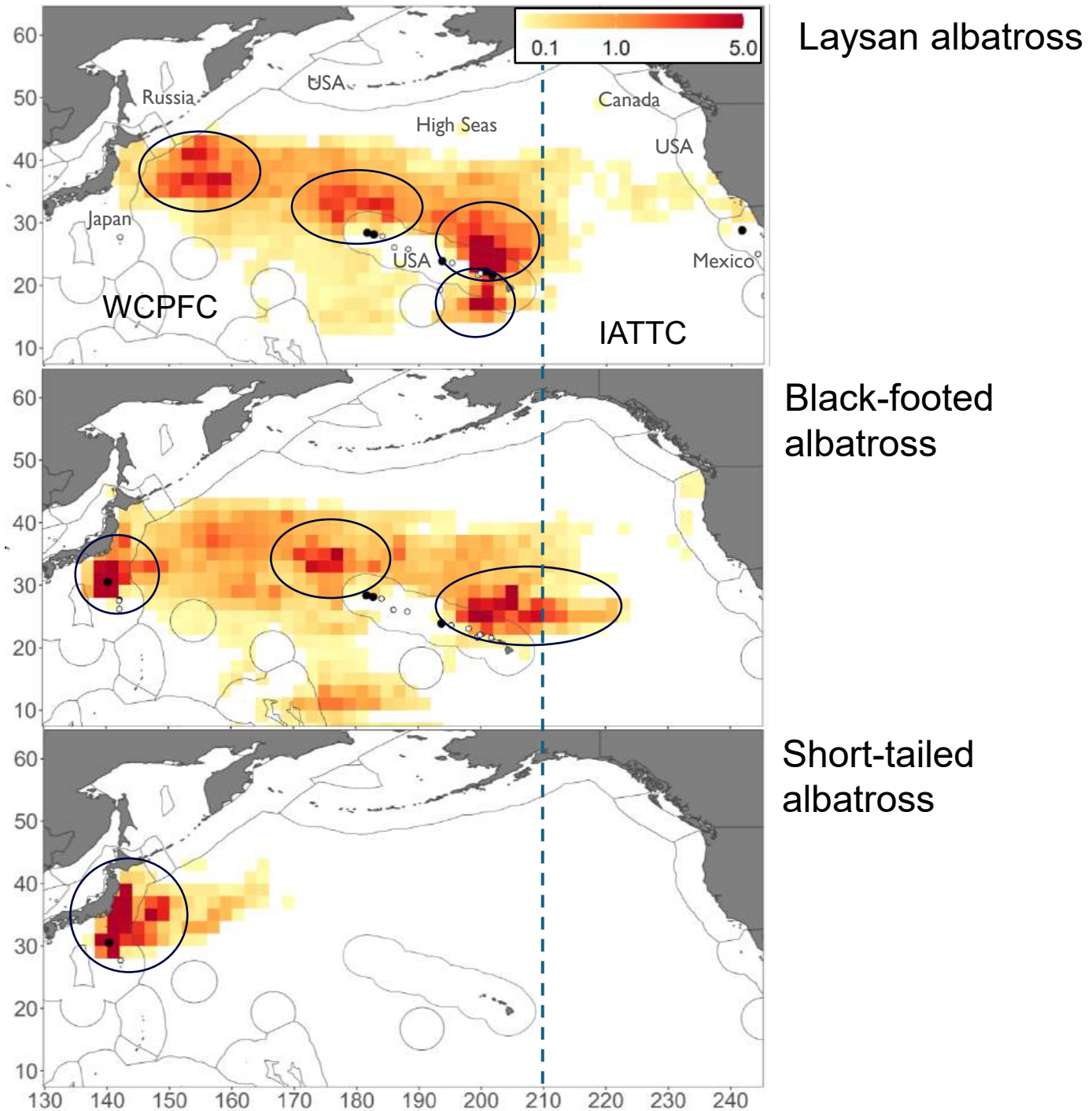
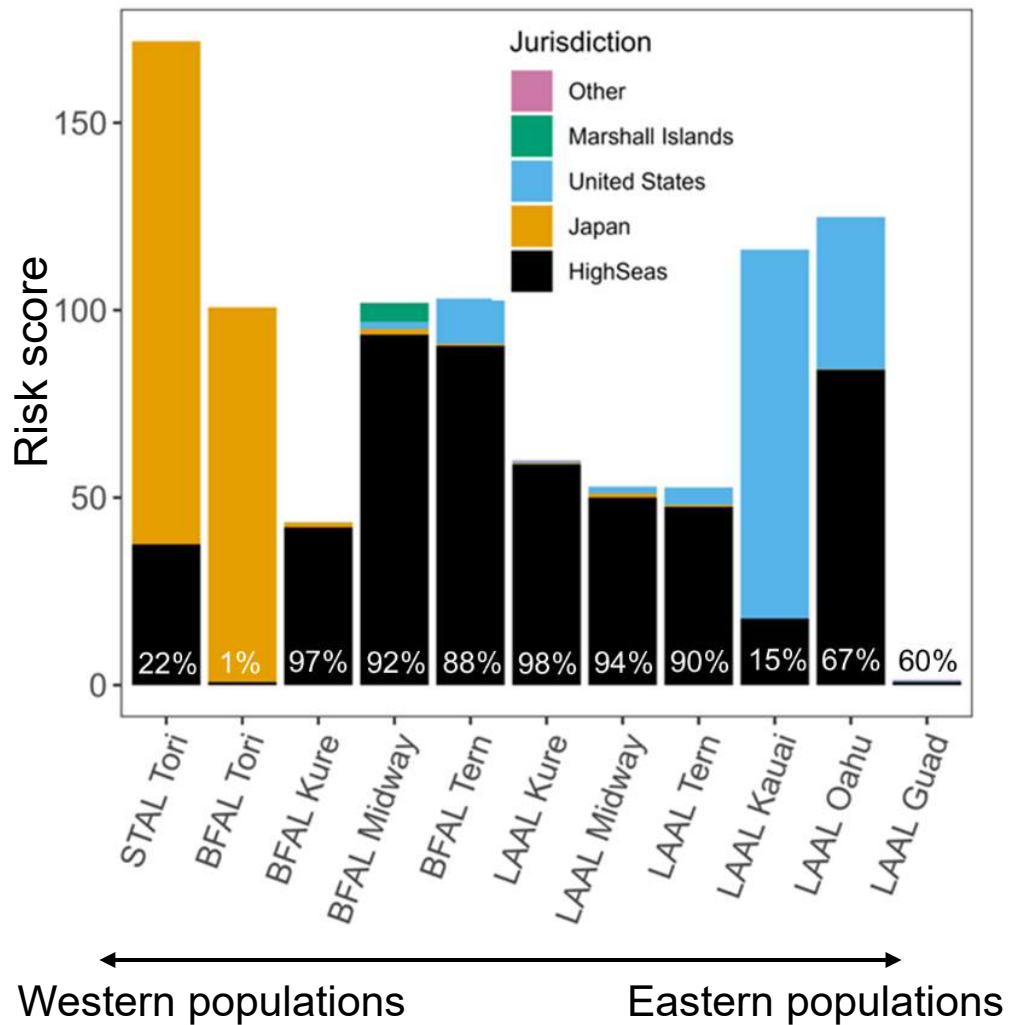
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	STAL	4	0.96 (0.91-0.99)	-
Leave-out-year	BFAL	6	0.95 (0.91-0.97)	0.77 (0.75-0.78)
	LAAL	10	0.95 (0.89-0.98)	0.80 (0.79-0.82)
	STAL	2	0.92 (0.88-0.97)	-

- Model performance was high, and higher for GPS/PTT than geocator datasets.
- Models performed well when predicted across years.



Where?

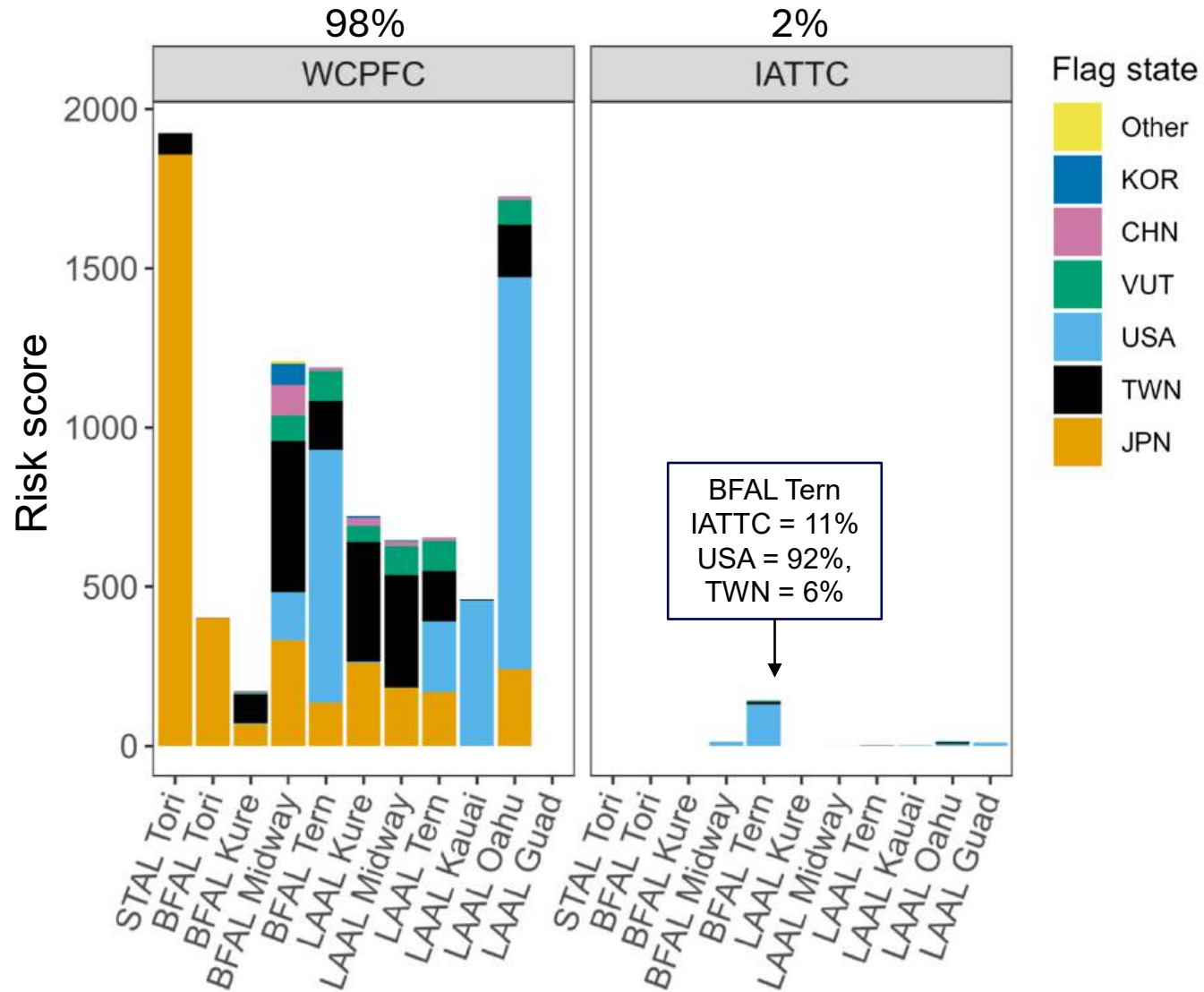




Where?



Who?



Top 3 flag states (Japan, USA and Chinese Taipei) = 91% of risk

WCPFC		IATTC	
Japan	40%	USA	88%
USA	31%	Chinese Taipei	8%
Chinese Taipei	20%	Vanuatu	4%
Vanuatu	5%		
China	2%		

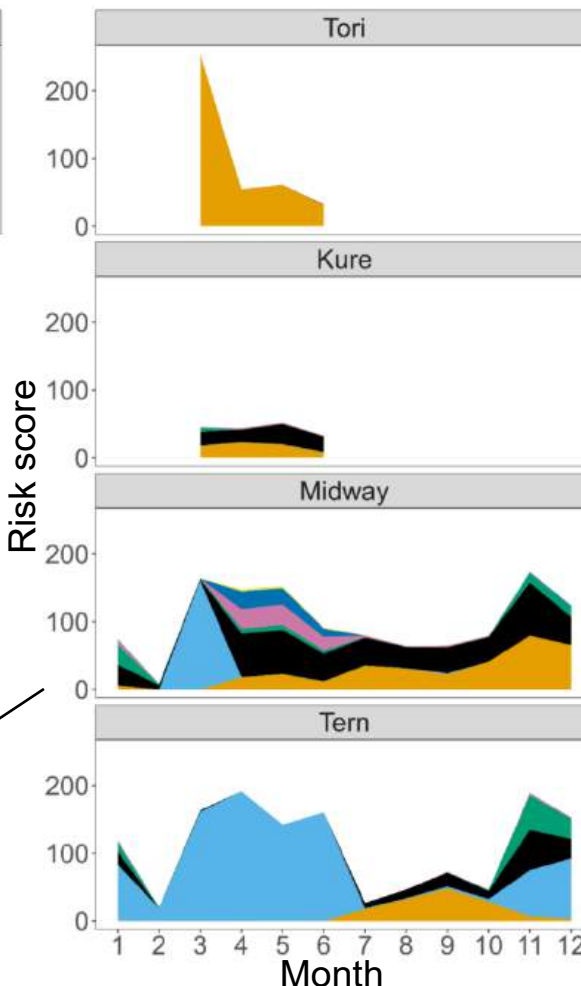
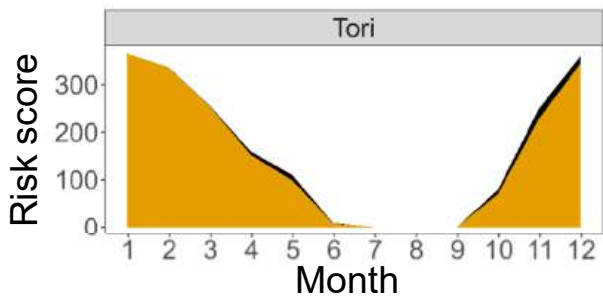


When?

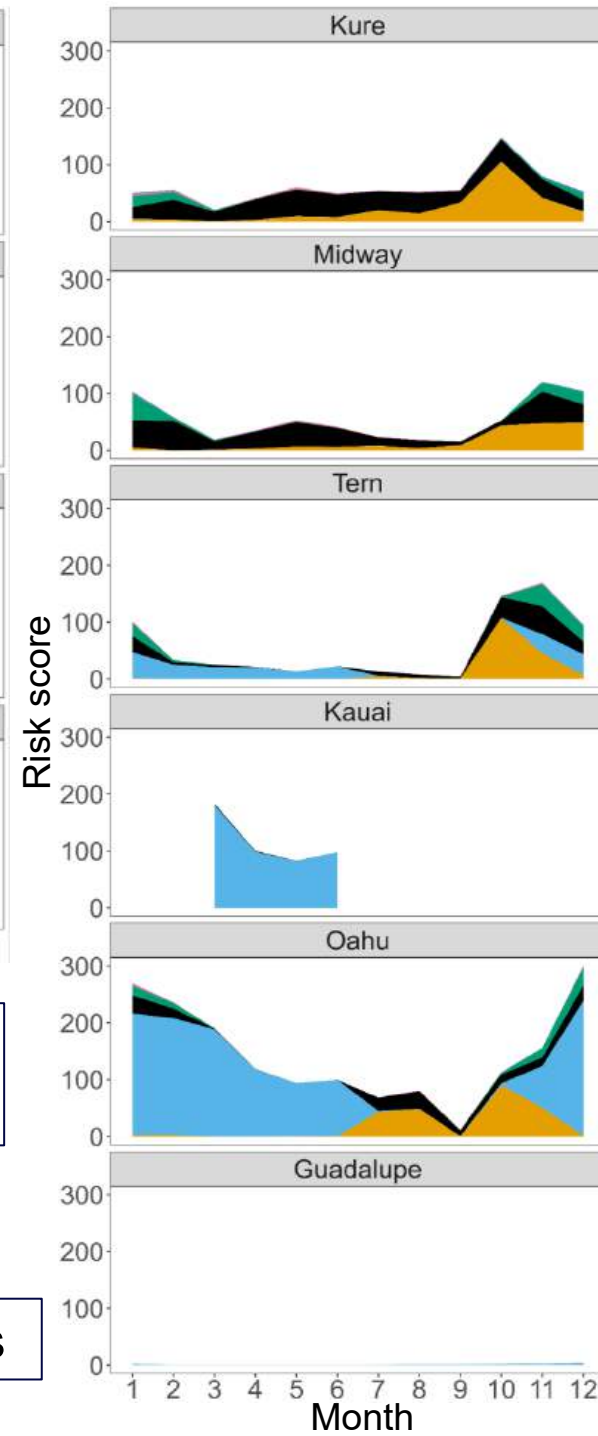
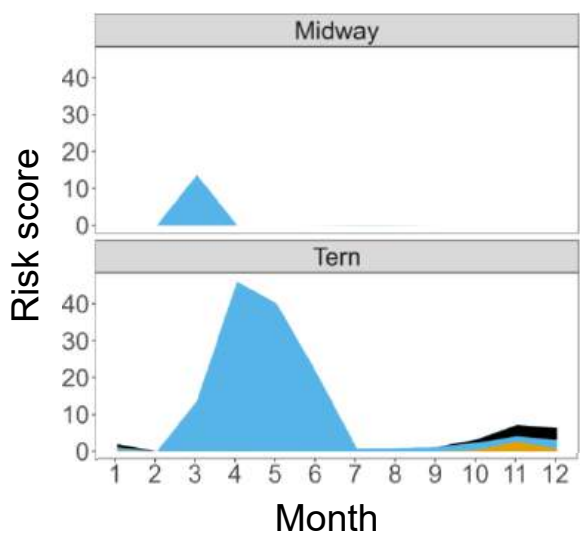


Who?

Flag state



IATTC



Summary



Where?

All Pacific:

- Five hotspots, mostly within High Seas in C & NW subtropical Pacific.
- Mostly WCPFC (98%).

IATTC:

- Mostly one area between 140 and 150°W.



When?

All Pacific:

- Population and fleet-specific
- Mostly during late breeding (winter and spring) for US.
- Year-round for other flag states.

IATTC:

- Late breeding (Mar-June).



Who?

All Pacific:

- Japan, USA and Chinese Taipei = 91% of risk.

IATTC:

- US and Chinese Taipei = 96% of risk.

Recommendations for IATTC EBWG

- Standardization of bycatch mitigation regulations with WCPFC given transboundary nature of seabird movements and fisheries overlap.
- Improved monitoring of bycatch rates, including increases to observer coverage, for the major fishing fleets identified.
- Given the importance of Isla Guadalupe as a climate change refugia for Laysan albatrosses, more comprehensive effort and bycatch data needed to assess risk from Mexican fisheries.



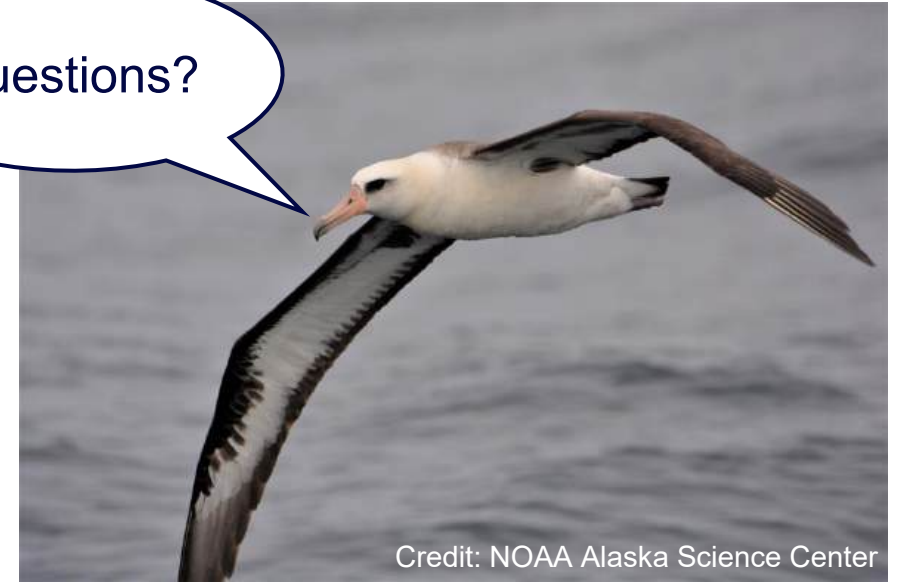
Credit: Andres Domingo

Thanks for listening

Thanks to:

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- Global Fishing Watch.
- All those involved in fieldwork and data collection.

Questions?



Credit: NOAA Alaska Science Center

