

Northwest Atlantic Leatherback bycatch priorities workshop: Introduction



Bryan Wallace
on behalf of workshop steering committee

Background

- Reports of declines among various nesting sites in the Wider Caribbean
- Existing status assessments describe stable and increasing trends
- Convened dataholders to perform an updated trend analyses
- Supported by (U.S.) National Fish and Wildlife Foundation

Background

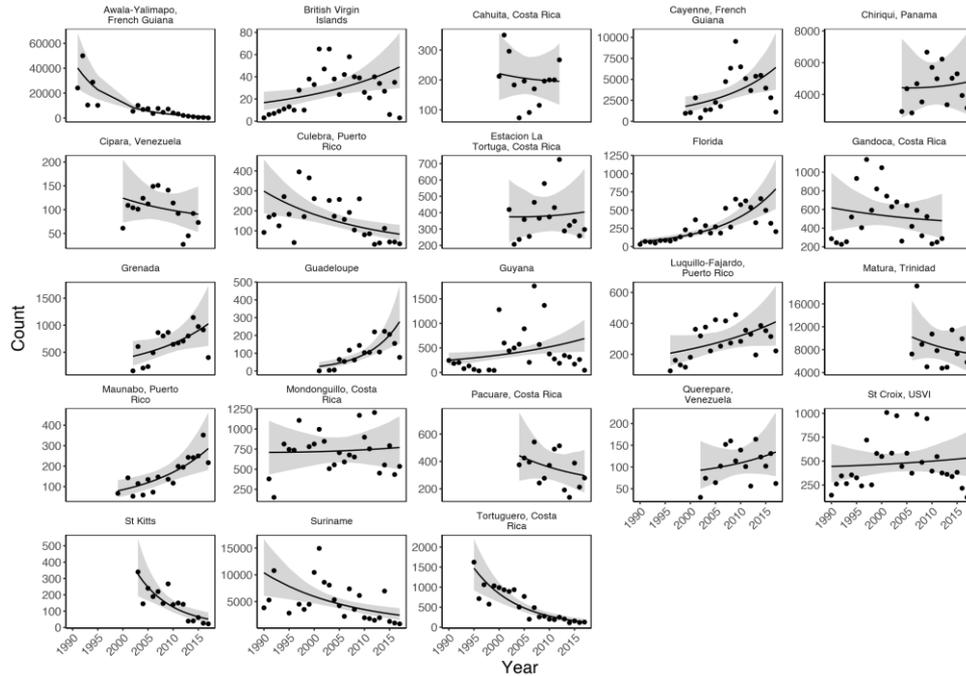
- Data request formally initiated 17 April 2018; first dataset obtained 12 April, last dataset obtained 17 May
- Data received from 17 different countries, ~39 sites
- Those with time-series >10 yr since 1990:
 - 23 sites across 14 countries and territories
 - ~450 site-years
 - >600,000 nests observed
 - People observed average 139 days/yr
 - (>80,000 people-days total)

GOALS of trend analysis

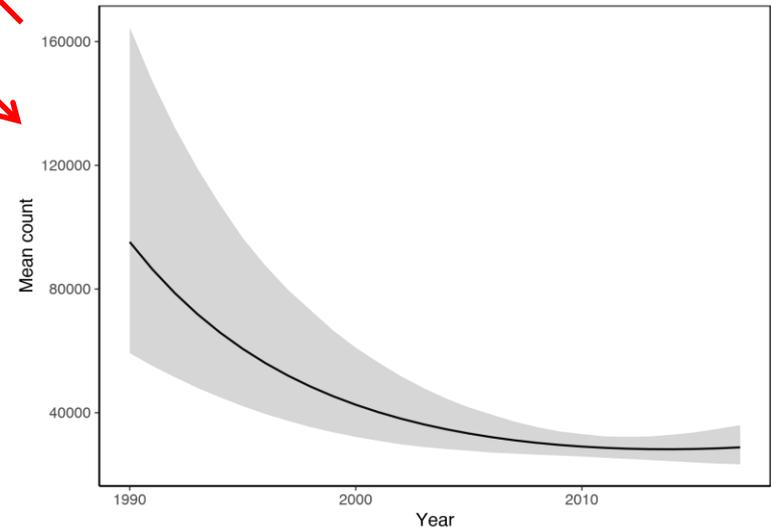
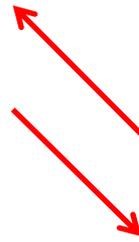
- **Primary Goal: determine regional trend in annual nest counts**
- Other goals: determine trends in annual nest counts at different spatial and temporal scales
- Why?
 - Apparent declines at various sites across the Wider Caribbean
 - More information about threats across the range
 - Provided up-to-date information for funders, managers, et al.

MODELING APPROACH: Hierarchical Bayesian trend analysis

Site-level data & trends



Region-level trend

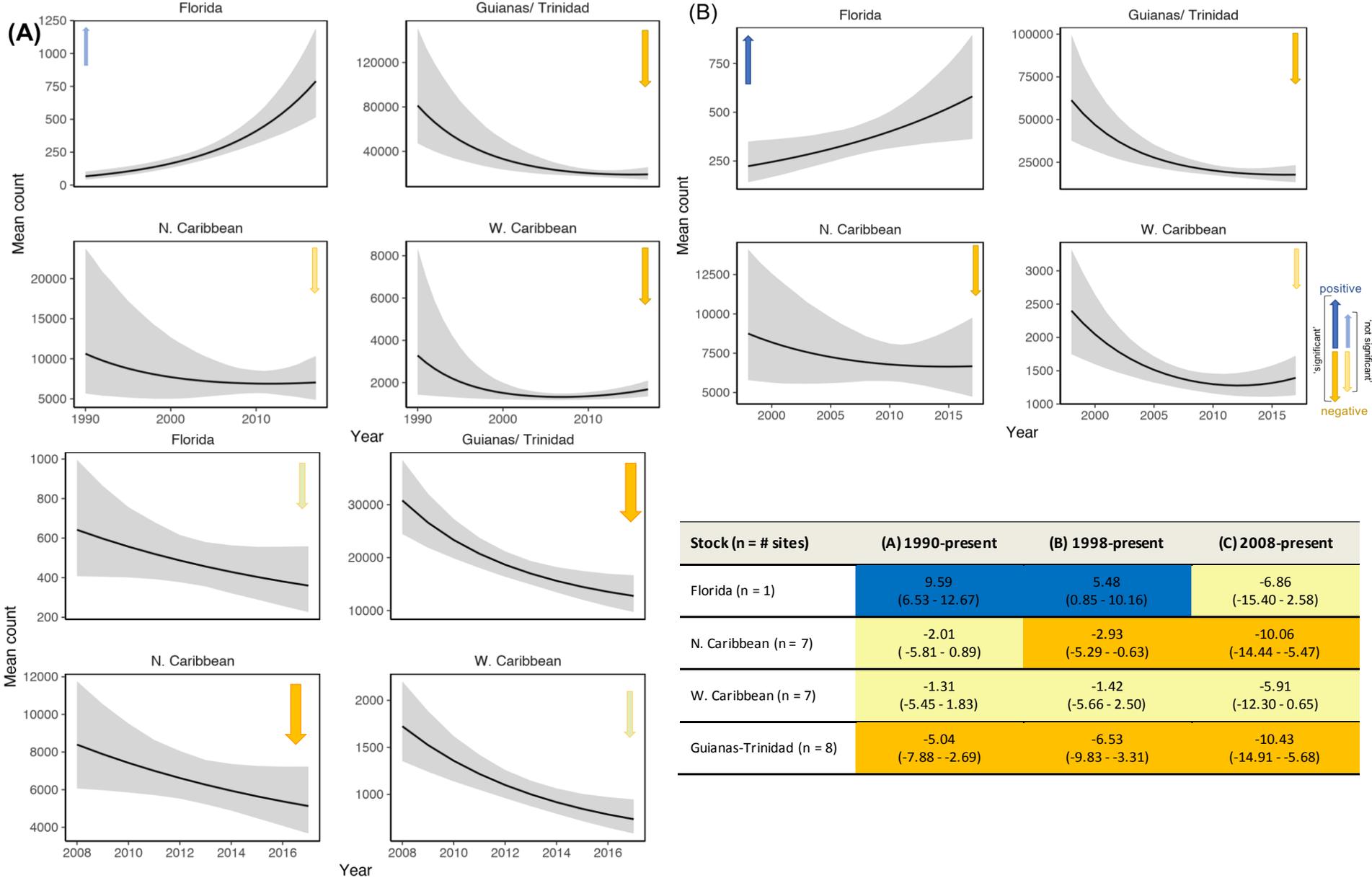


Summary of trends

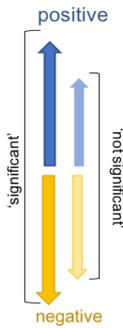
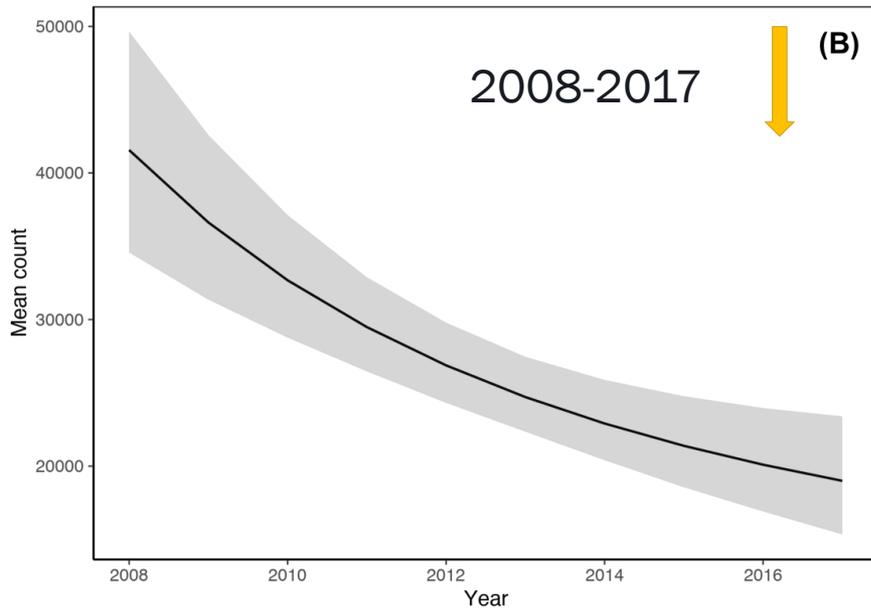
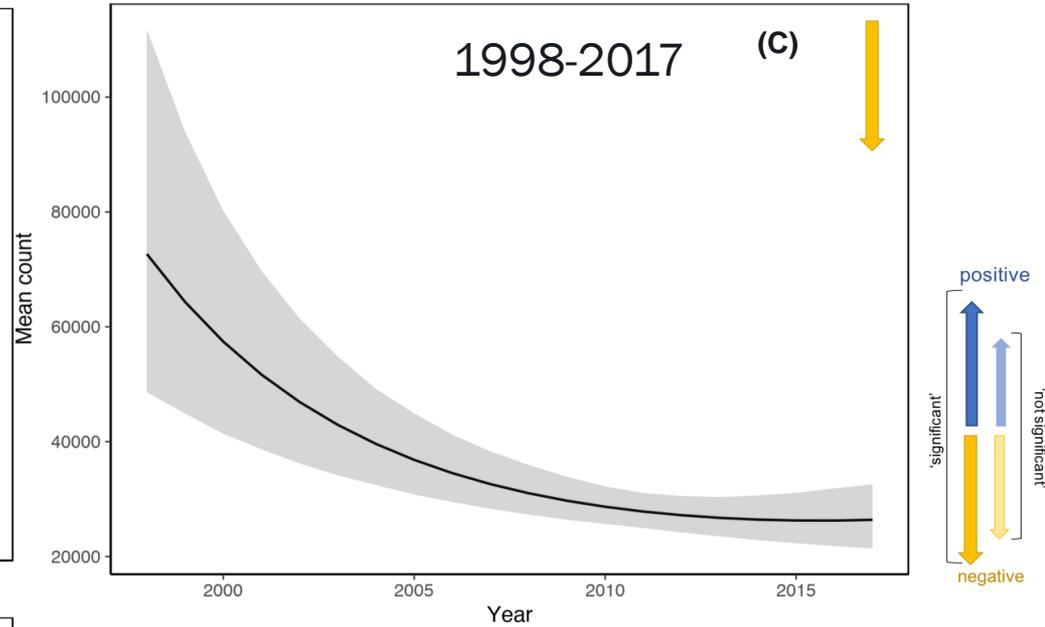
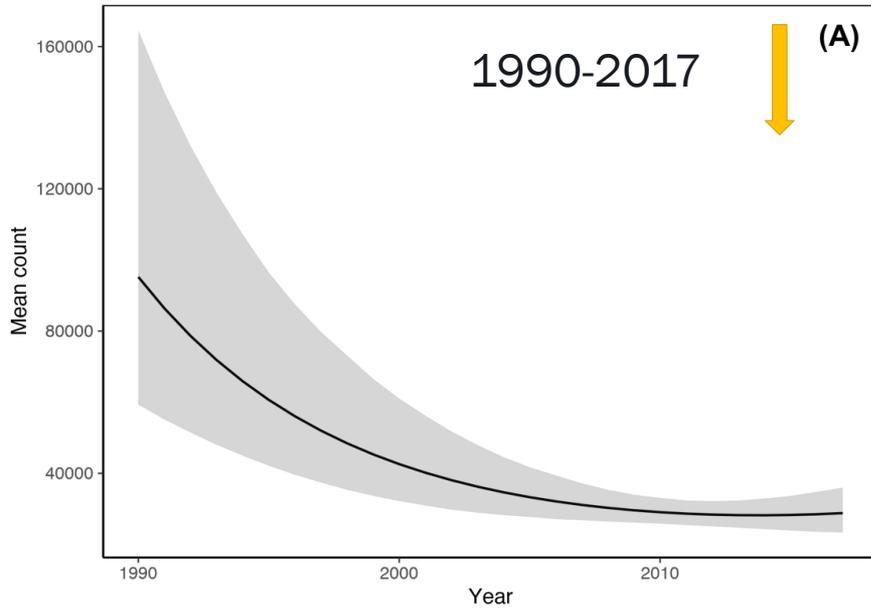
- 1990-present:
Half positive,
half negative
- 1998-present:
more negative
than positive
- 2008-present:
nearly all
negative

Stock	Site	1990-present (n = 23)
Florida	Florida, US	9.59 (6.53 - 12.67)
N. Caribbean	St. Croix, USVI (US)	0.68 (-2.18 - 3.68)
	Tortola, BVI (GB)	0.39 (0.06 - 0.83)
	Culebra, PR (US)	-4.61 (-7.44 - -1.76)
	Luquillo-Fajardo, PR (US)	3.32 (-0.56 - 7.46)
	Maunabo, PR (US)	7.43 (2.76 - 12.47)
	St. Kitts & Nevis	-12.43 (-18.37 - -6.26)
	Guadeloupe (FR)	16.24 (8.46 - 24.63)
W. Caribbean	Pacuare (CR)	-2.97 (-9.53 - 3.83)
	Mondonguillo (CR)	0.35 (-2.62 - 3.31)
	Estacion La, Tortuga (CR)	0.54 (-4.98 - 6.49)
	Tortuguero (CR)	-10.42 (-13.34 - -7.12)
	Cahuita (CR)	-0.97 (-7.51 - 6.04)
	Gandoca (CR)	-1.13 (-4.99 - 2.88)
	Chiriqui (PA)	0.67 (-6.39 - 7.80)
Guianas-Trinidad	Levera (GD)	6.1 (0.27 - 12.29)
	Querepare (VZ)	2.62 (-3.70 - 9.47)
	Cipara (VZ)	-2.06 (-7.75 - 3.62)
	Guyana	3.86 (0.59 - 7.28)
	Suriname	-5.14 (-7.98 - -1.96)
	Awala-Yalimapo, GF (FR) (including remote beaches)	-12.95 (-15.87 - -10.20)
	Cayenne, GF (FR)	7.44 (2.21 - 13.03)
	Matura (TT)	-2.84 (-10.02 - 4.55)

RESULTS: Stock-level trends weighted by site-level abundance



RESULTS: Regional trends weighted by site-level abundance



Regional Trend (n = # sites)	(A) 1990-present (n = 23)	(B) 1998-present (n = 22)	(C) 2008-present (n = 18)
REGIONAL	-4.21 (-6.66 - -2.23)	-5.37 (-8.09 - -2.61)	-9.32 (-12.9 - -5.57)

Working Group Report Conclusions

- **Potential drivers**

- **Anthropogenic impacts**

- Fisheries bycatch close to nesting beaches
 - Fisheries bycatch in foraging areas

- **Habitat loss**

- Beach erosion without creation of new beaches

- **Life history and demographic factors**

- Increasing remigration intervals
 - Long-term cycles and variation in recruitment, breeding periodicity

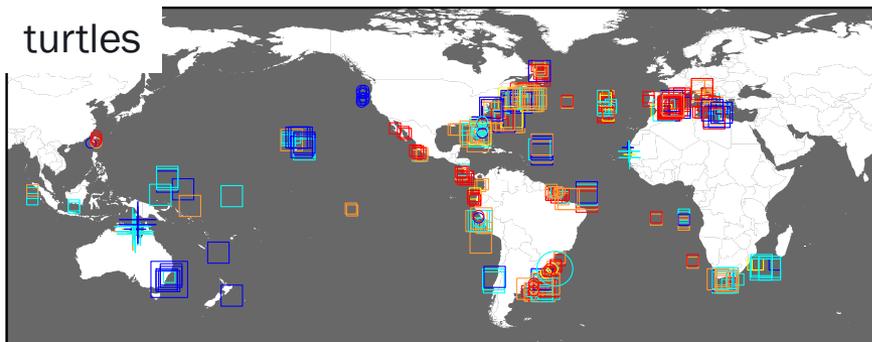
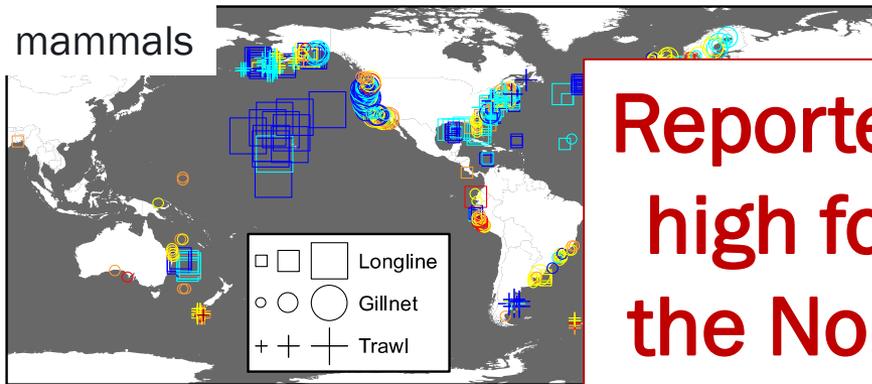
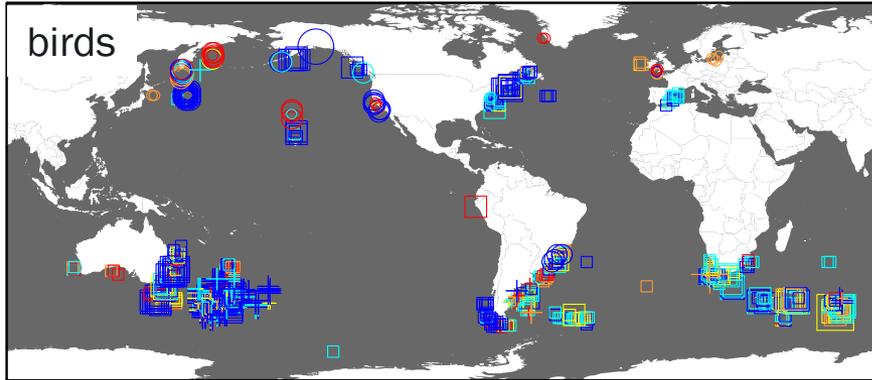
Bycatch



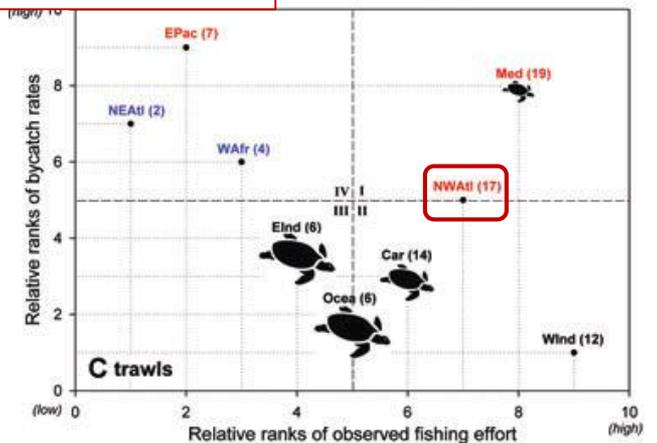
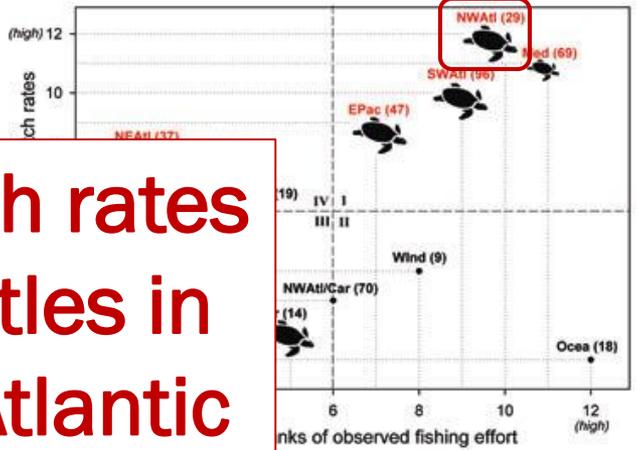
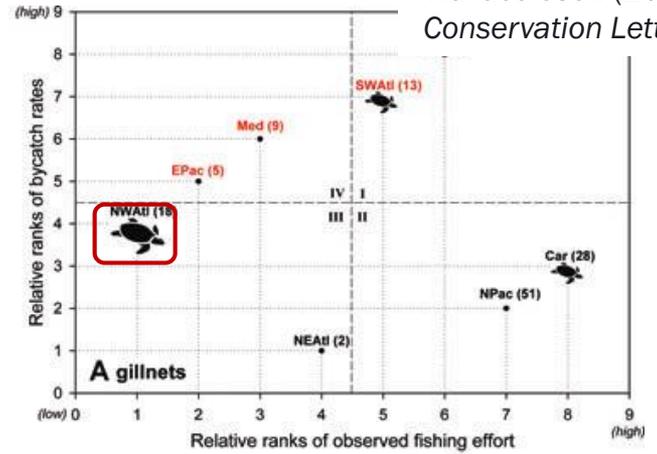
High bycatch and mortality in nearshore/shelf as well as offshore waters

Bycatch in context

Wallace et al. (2010)
Conservation Letters

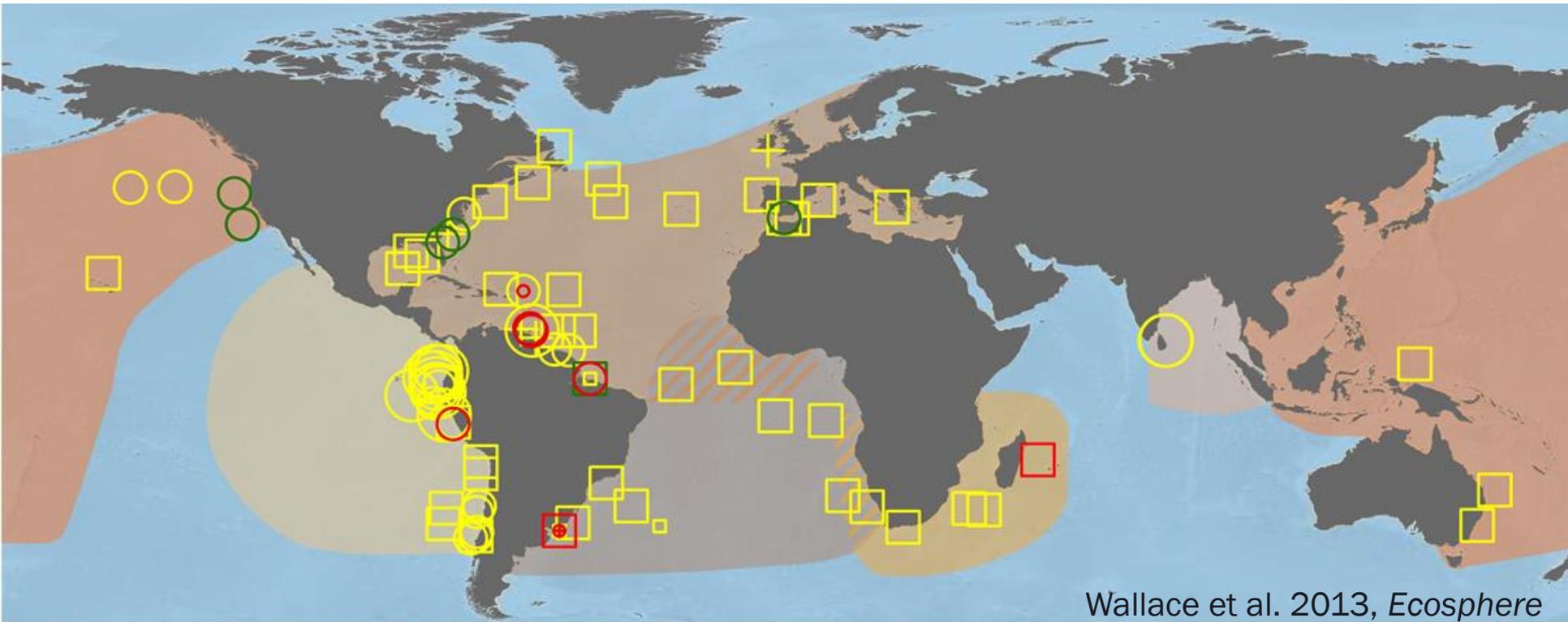


Reported bycatch rates
high for sea turtles in
the Northwest Atlantic



Lewis, Crowder, Wallace et al. (2014) *Proceedings of the National Academy of Sciences*

Northwest Atlantic leatherback bycatch



Wallace et al. 2013, *Ecosphere*



Records with bycatch rates and fishing effort are limited
Nets, longlines, trawls all interact with leatherbacks
In NW Atlantic, high net bycatch rates

Working Group Report Conclusions

- **Potential drivers: bycatch close to nesting beaches**
 - Hundreds per year (Lee Lum 2006; Eckert 2013)
 - Adults (females and males)
 - Mainly net gear, but could be others
 - High concentration of turtles annually increases risk of bycatch
- **Need a regional picture of knowledge, gaps, and priorities**

This workshop

- **National Fish and Wildlife Foundation (USA)**
 - NW Atlantic leatherbacks were a priority population previously
 - Invested significantly in Trinidad bycatch reduction efforts, nesting beach work, etc.
 - Were going to officially move to other priorities, but funded the trends work
 - Now need to know more about the current situation
 - Major issues and opportunities, gaps
 - Priorities regionwide near key nesting beaches
 - Potential work elsewhere



Thanks and good luck!