



Temperature Observations To Avoid Loggerheads (TOTAL) tool



NOAA

COASTWATCH
WEST COAST REGIONAL NODE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



Agenda Item J.1.b

Supplemental SWFSC Presentation 1

June 2023

WELCH ET AL. 2018. ECOLOGICAL INDICATORS.

Environmental indicators to reduce loggerhead turtle bycatch offshore southern California

A temperature-based indicator to guide the timing of a fishery closure that maximizes loggerhead turtle avoidance and minimizes opportunity costs to fishers.

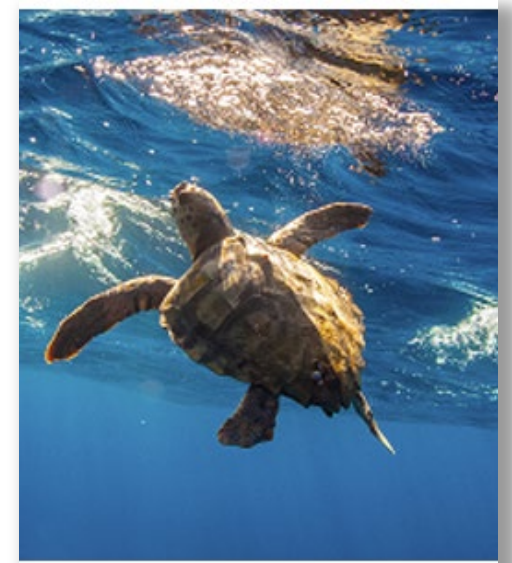
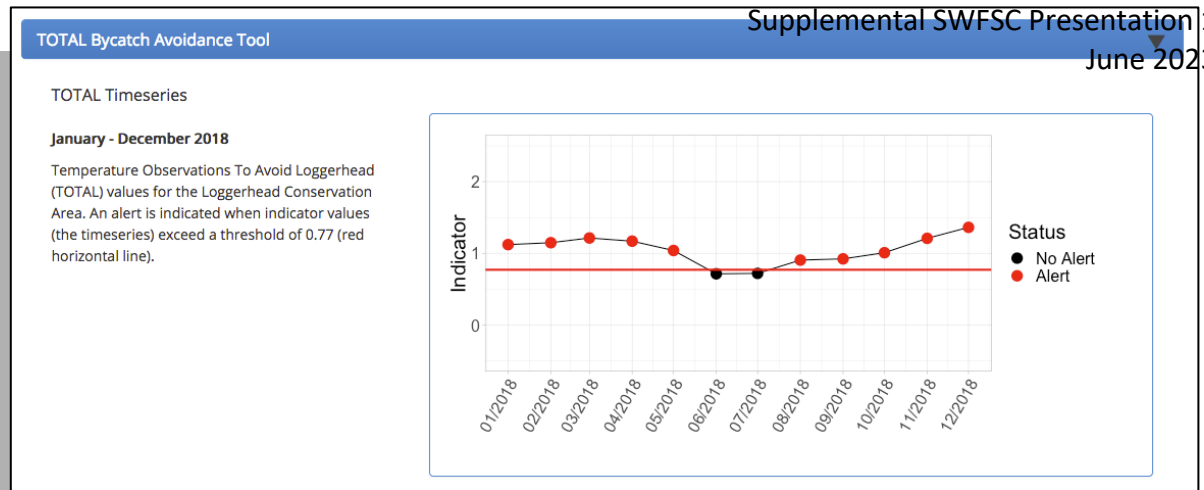


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Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Ecological Indicators

journal homepage: www.elsevier.com/locate/ecolind

Original Articles

Environmental indicators to reduce loggerhead turtle bycatch offshore of Southern California

Heather Welch^{a,b,*}, Elliott L. Hazen^{a,b}, Dana K. Briscoe^{a,c}, Steven J. Bograd^{a,b}, Michael G. Jacox^{b,d}, Tomoharu Eguchi^e, Scott R. Benson^{f,g}, Christina C. Fahy^h, Toby Garfield^e, Dale Robinson^{a,i}, Jeffrey A. Seminoff^e, Helen Bailey^j

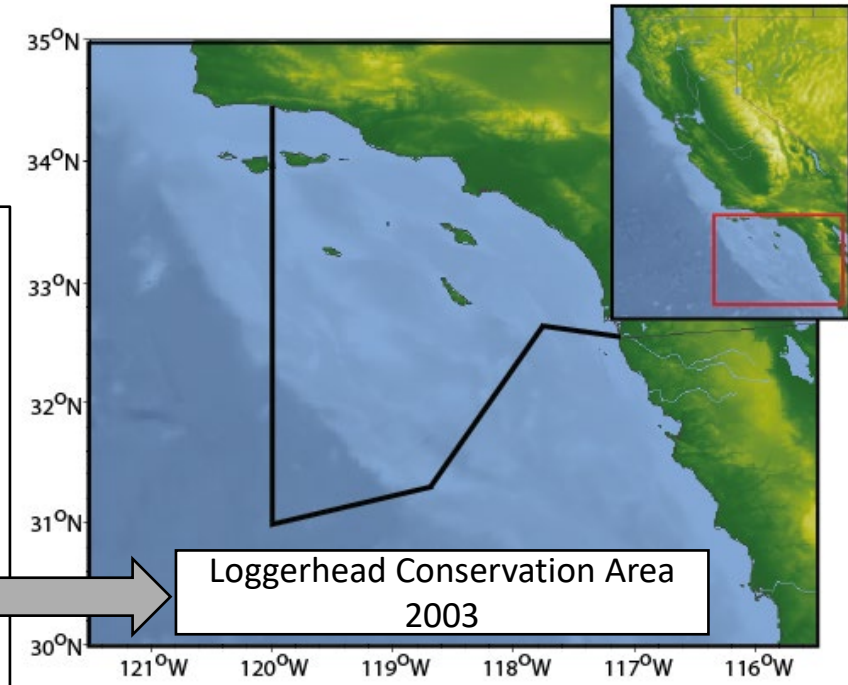
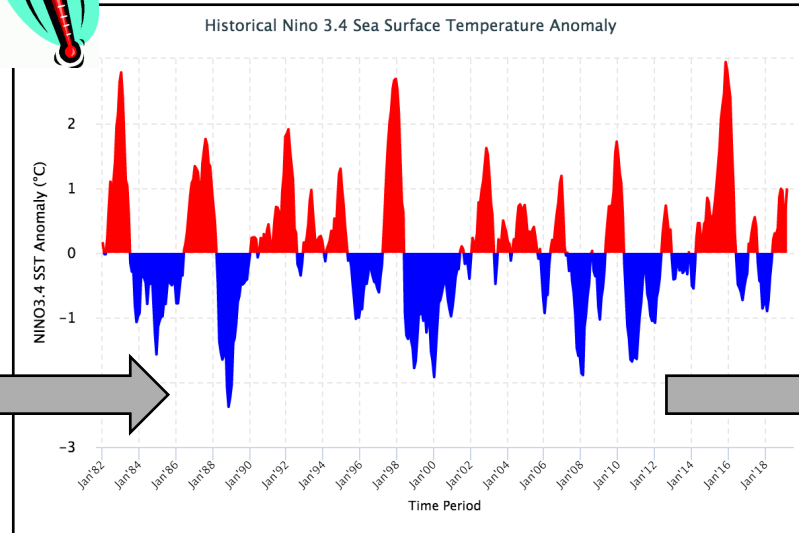
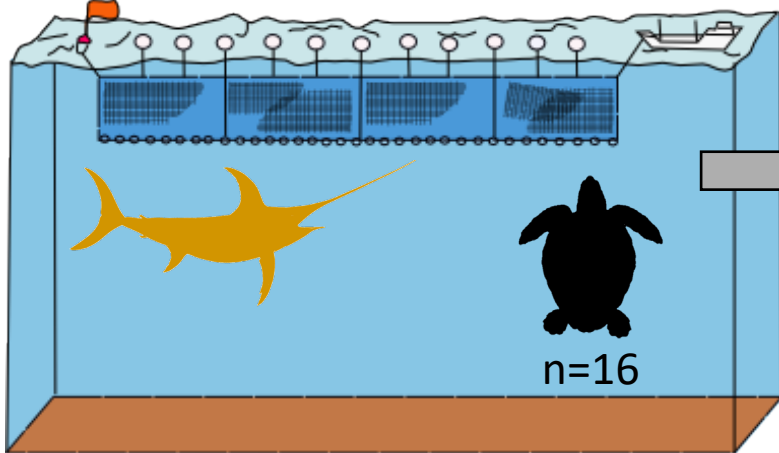
<https://coastwatch.pfeg.noaa.gov/loggerheads/>

@Heather_M_Welch



Temperature Observations To Avoid Loggerheads (TOTAL) tool

Project motivation

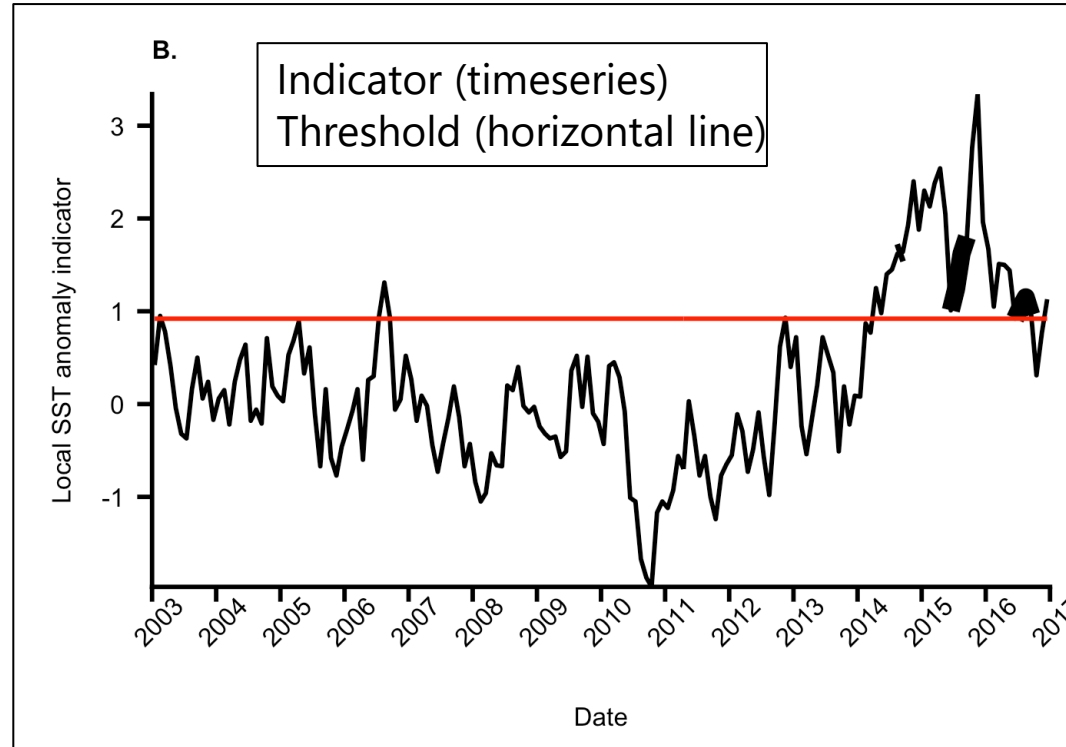
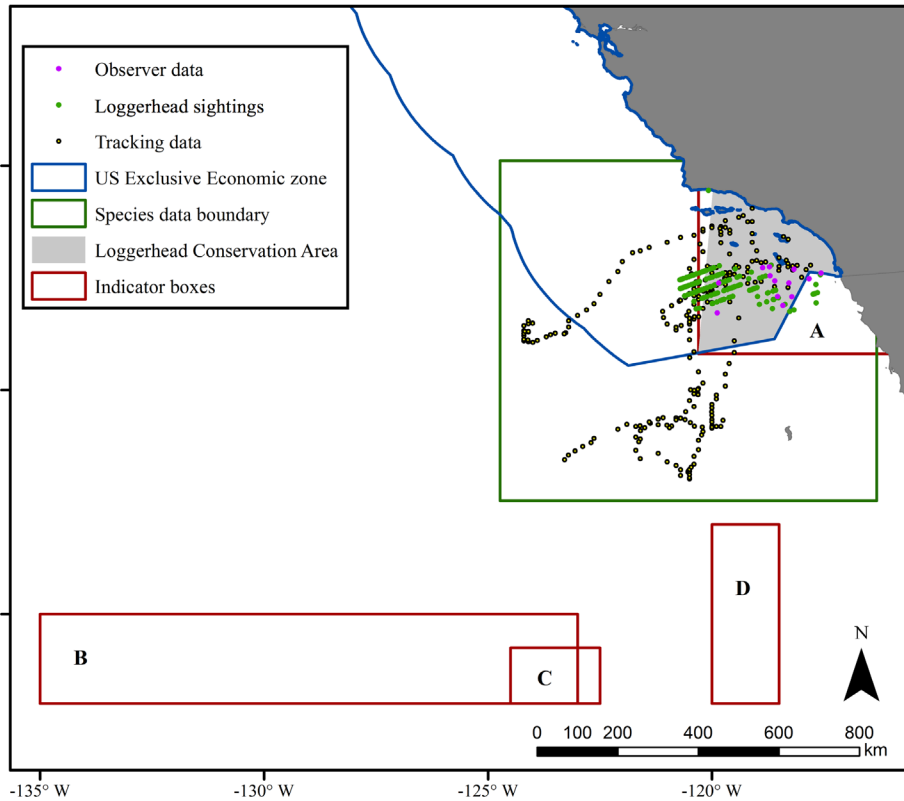


Can we use additional loggerhead distribution datasets collected since 2003 to **refine and quantify the closure rule?**



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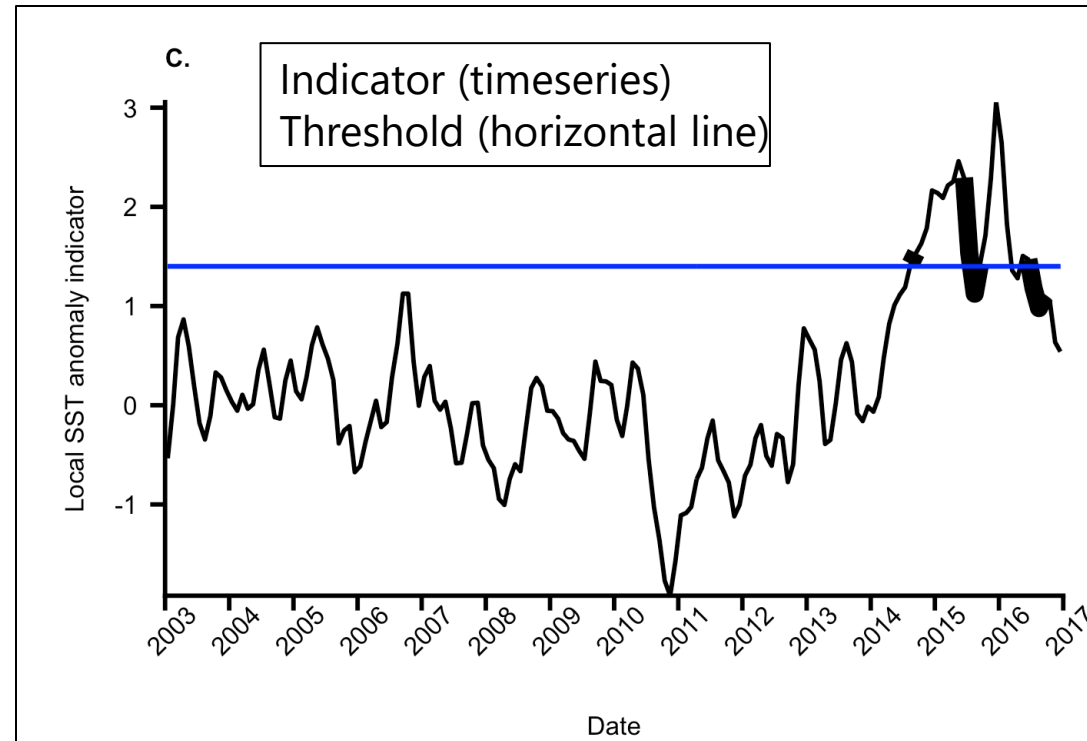
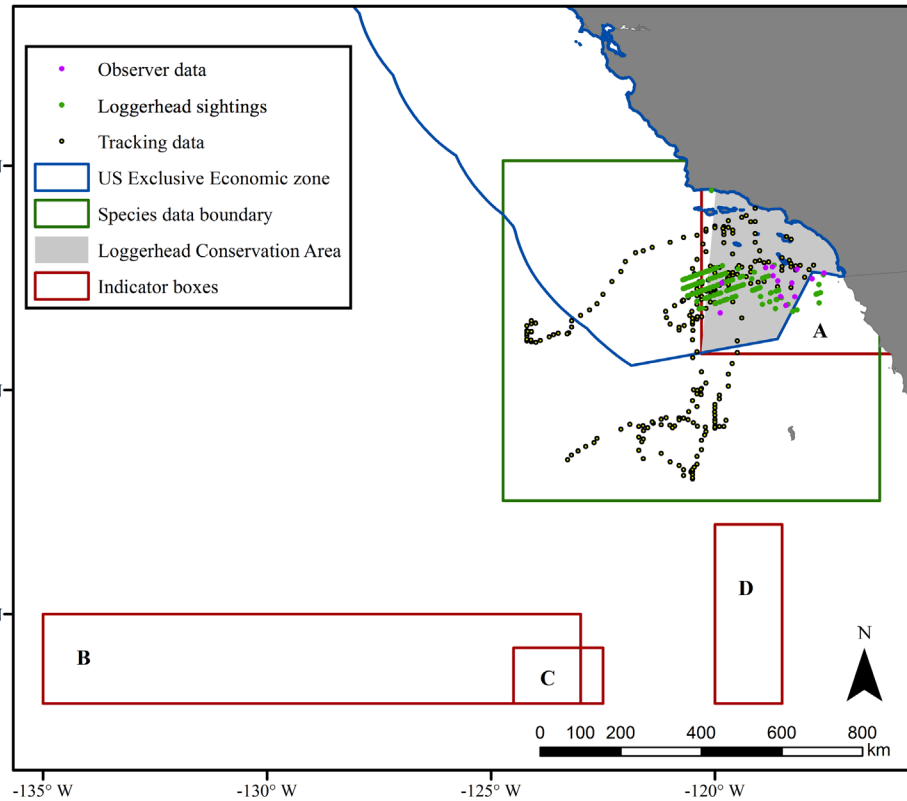
Science behind the tool





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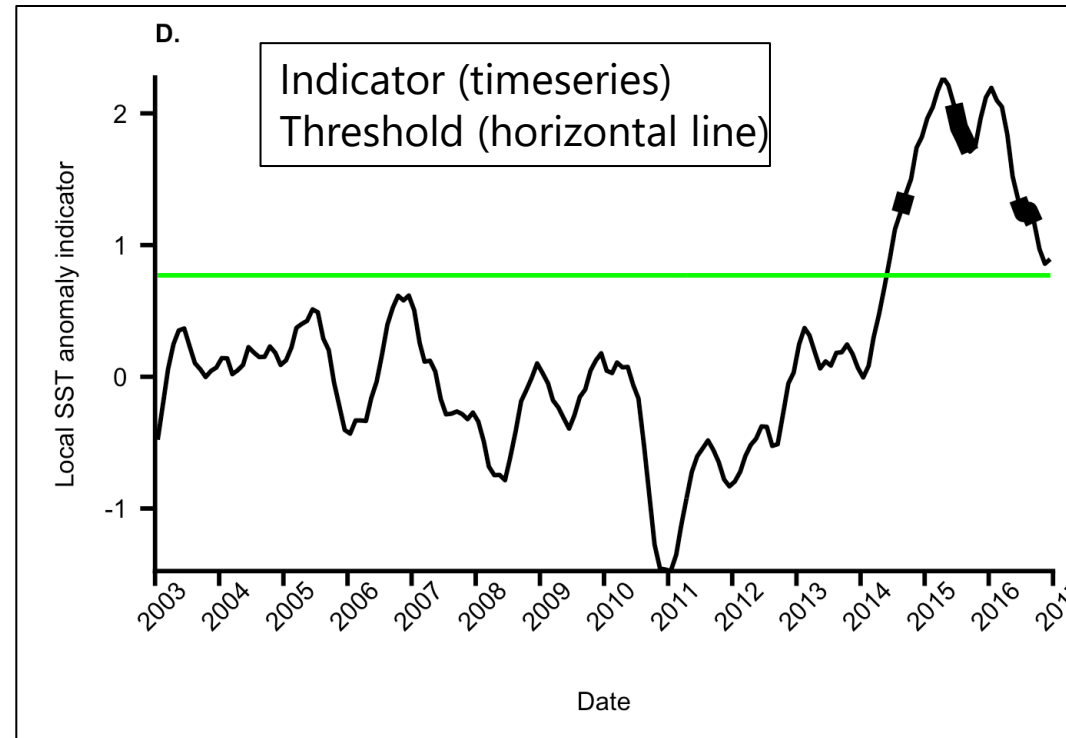
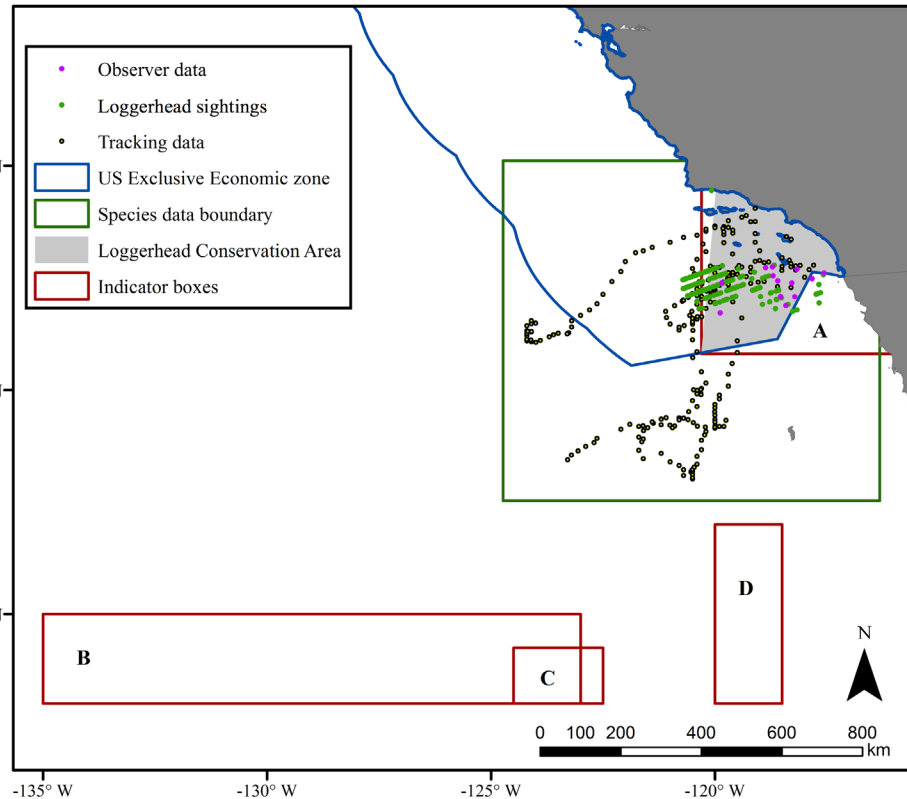
Science behind the tool





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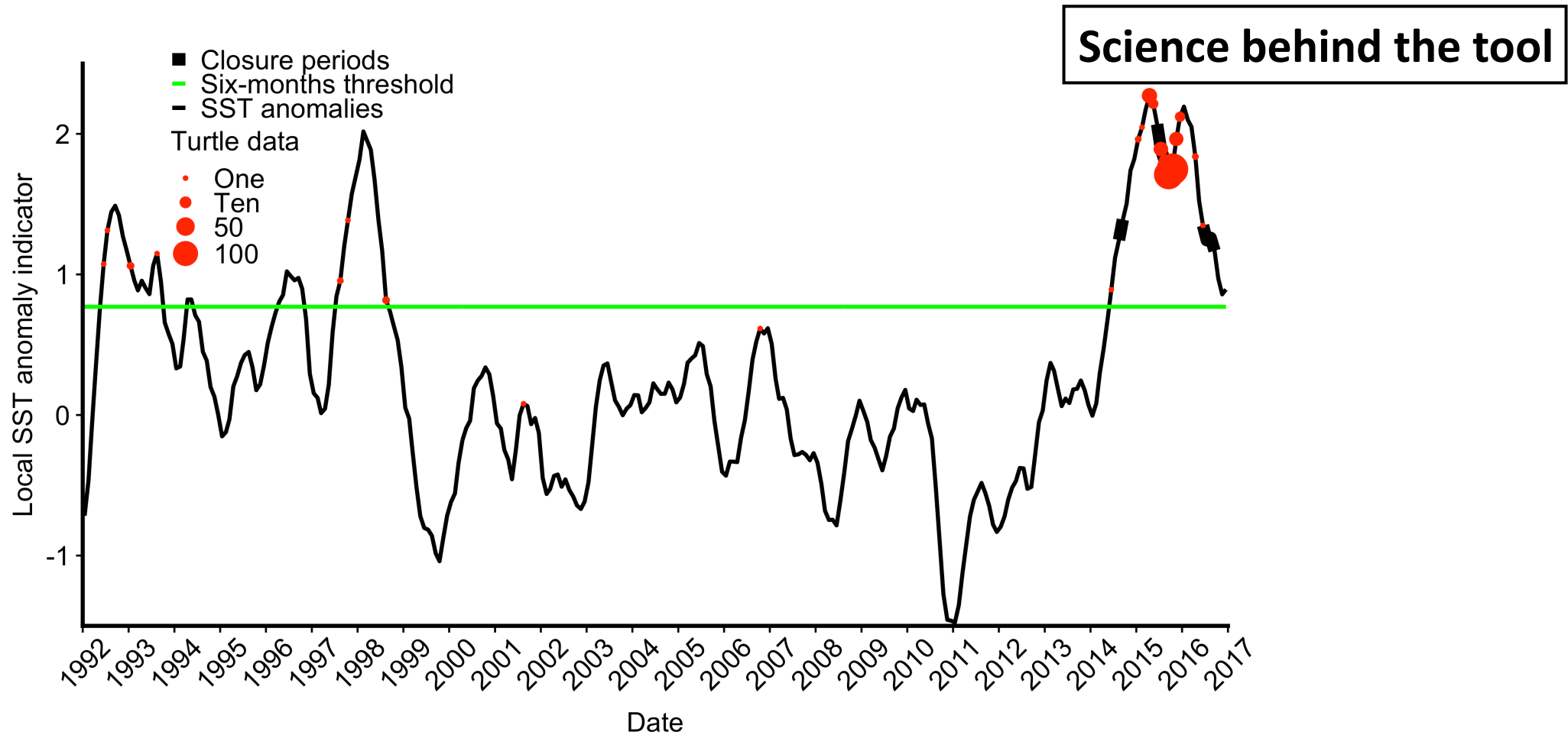
Science behind the tool



Which rule has the **lowest opportunity cost**?
Which rule has the **most overlap** with sighted turtles?
Which rule has the highest **avoidance of historical bycatch**?



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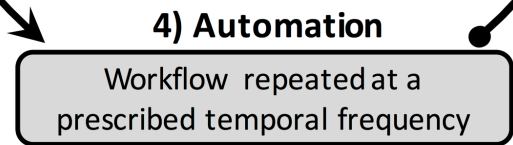
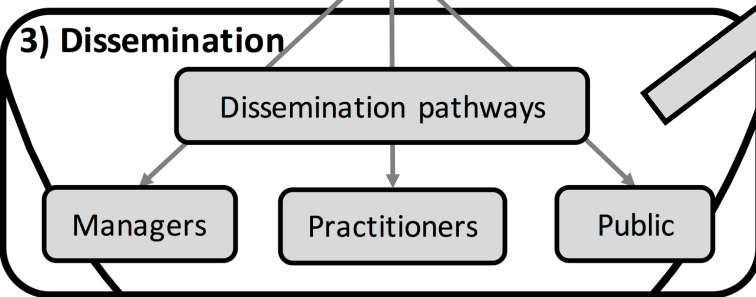
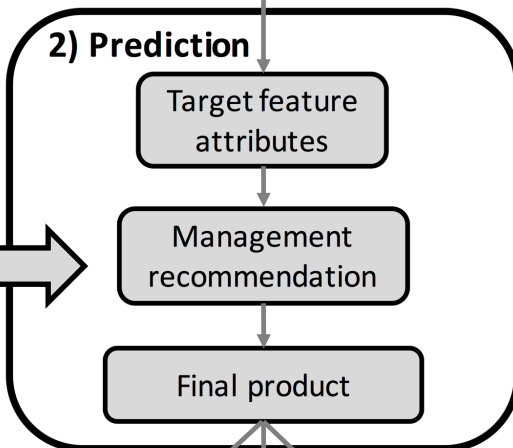
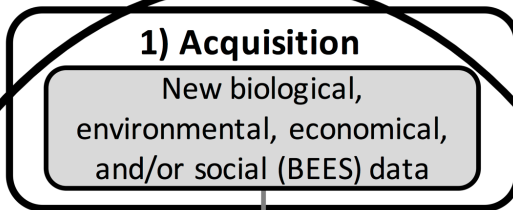
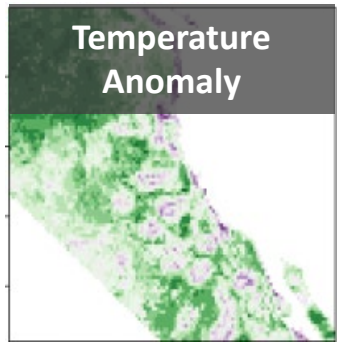


Which rule has the **lowest opportunity cost**? (**19% of the time**)
Which rule has the **most overlap** with sighted turtles? (**100% overlap**)
Which rule has the highest **avoidance of historical bycatch**? (**88% avoided**)

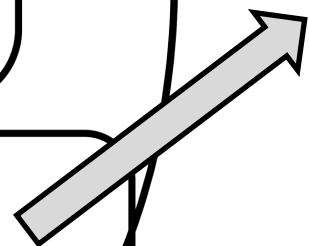
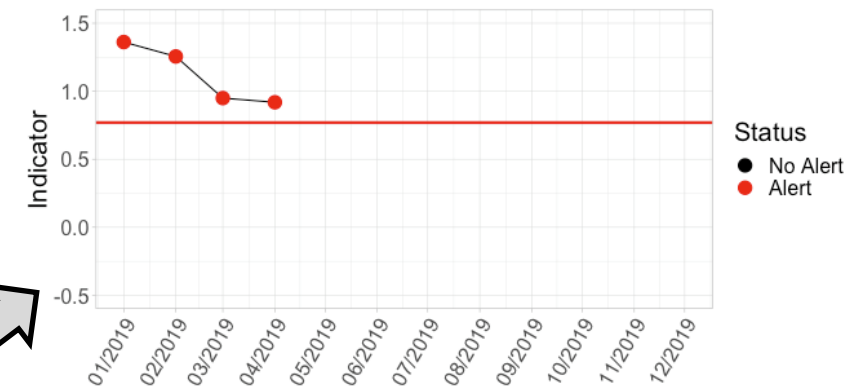
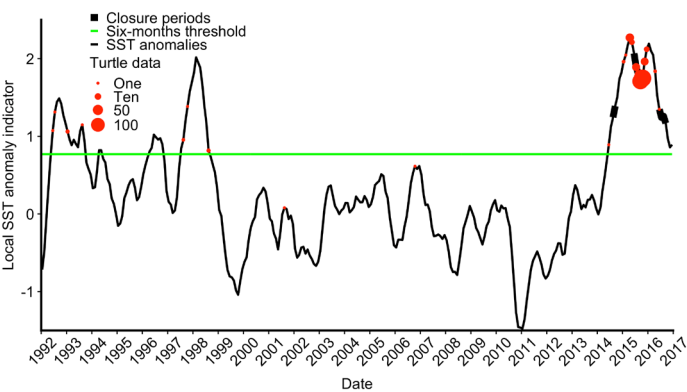


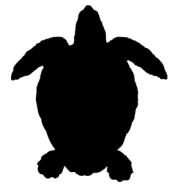
Temperature Observations To Avoid Loggerheads (TOTAL) tool

Tool Operationalization



Best indicator and threshold





Temperature Observations To Avoid Loggerheads (TOTAL) tool

Loggerhead Turtle Conservation

Background Closure Rules Conservation Area Status Data Dashboard

Closure is not in effect

Closer dates: No closure dates have been announced

NMFS has not prohibited fishing with large-mesh drift gillnet gear in the Pacific Loggerhead Conservation Area this year

*Closure status provided by NOAA Fisheries West Coast Regional Office

Environmental Conditions

El Niño Status

Status: El Niño Advisory

Forecast:

Weak El Niño conditions are likely to continue through the Northern Hemisphere spring 2019 (~80% chance) and summer (~60% chance).

Updated: 14 March, 2019

*NOAA's Climate Prediction Center

Closure Area Sea Temperature

	Oct	Nov	Dec	Jan	Feb	Mar
Temperature	19.4	18.7	16.9	15.4	14.9	15
Anomaly	1	1.5	1.4	0.7	0.4	0.6

Recent and historical monthly sea surface temperatures within the Loggerhead sea turtle conservation area. *GHRST MUR dataset

TOTAL Bycatch Avoidance Tool

TOTAL Timeseries

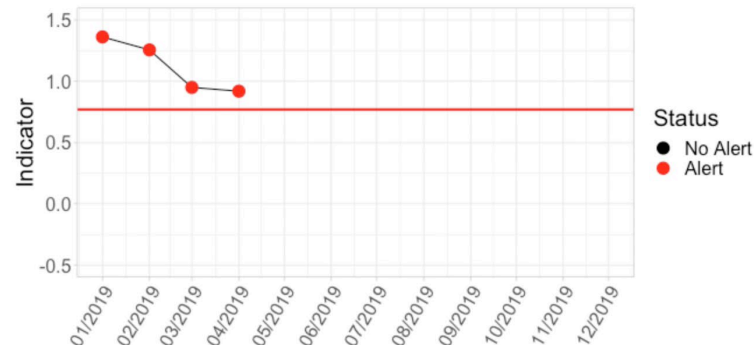
April 2019

Status: Alert

Indicator value: 0.90

Updated: April 9, 2019

This year's Temperature Observations To Avoid Loggerhead (TOTAL) values for the Loggerhead Conservation Area. An alert is indicated when indicator values (the timeseries) exceed a threshold of 0.77 (red horizontal line)



Tool Operationalization

<https://coastwatch.pfeg.noaa.gov/loggerheads/>

Future Steps



Continue aerial surveys for turtles
Monitor alert status

