

SILICON
VALLEY

AMES RESEARCH CENTER

FATE: The drifting **F**ish **A**ggregating device (dFAD) **T**raj**E**ctory modeling tool for marine protected area management

May 2025 – Annual BDEC Meeting

2024-2028 NASA Ecological Conservation Project

With cosponsorship by The Nature Conservancy

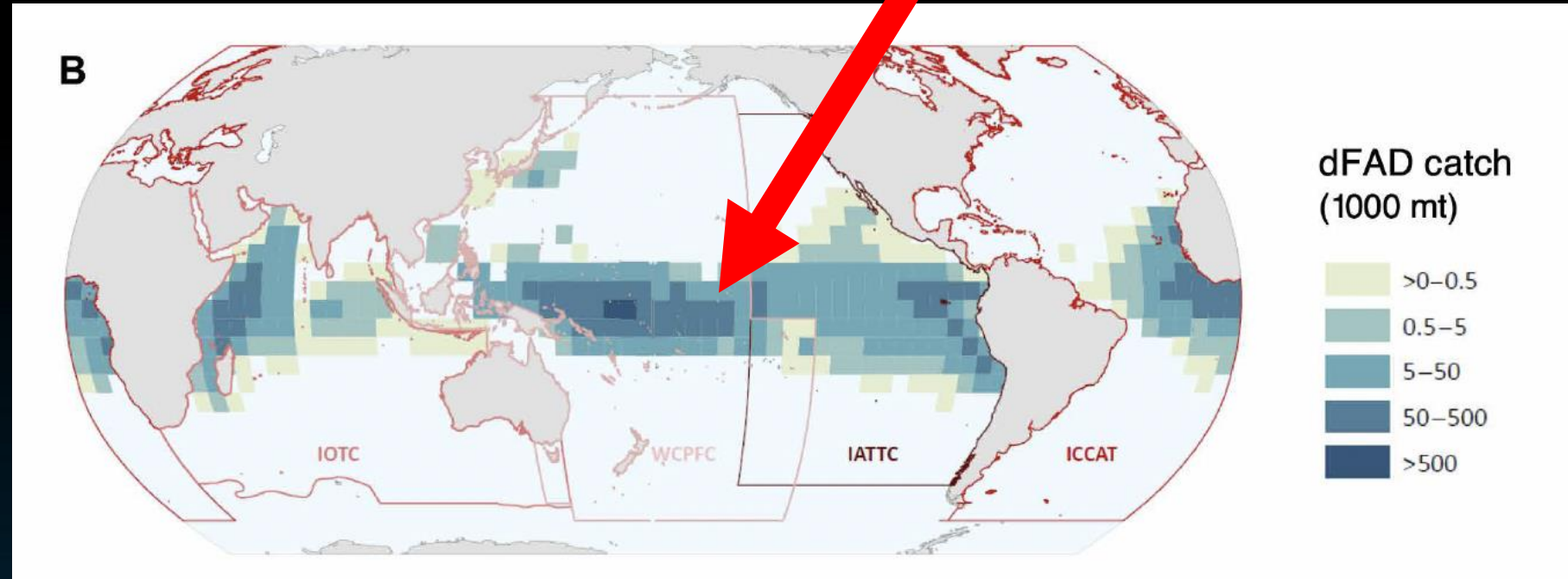
In partnership with the US Fish and Wildlife Service





**A global problem:
dFADs help catch tuna
but harm sensitive coral reef ecosystems**

Annual dFAD deployments
by purse seine tuna fishers: 50,000 in Pacific, 120,000 globally



Palmyra Atoll

Numbers and concern increased dramatically over last 20yrs

Schiller et al. 2025 Sci. Adv. Sci. Adv. 11, eads2902



Negative local impacts on US coral ecosystems

Palmyra Atoll

Marine Protected Area, recently opened for fishing
Pristine coral reef ecosystem + Nursery for valuable commercial fish

dFADs ground on reefs and destroy coral



Intercepting and recovering



Kydd Pollock (TNC)
End User & FAD Watch lead

dFAD are numerous. Which dFAD is the greatest risk and should be recovered?

dFAD drift up to 100 km/day and report position 6 times/day. When should dFAD be monitored or recovered?



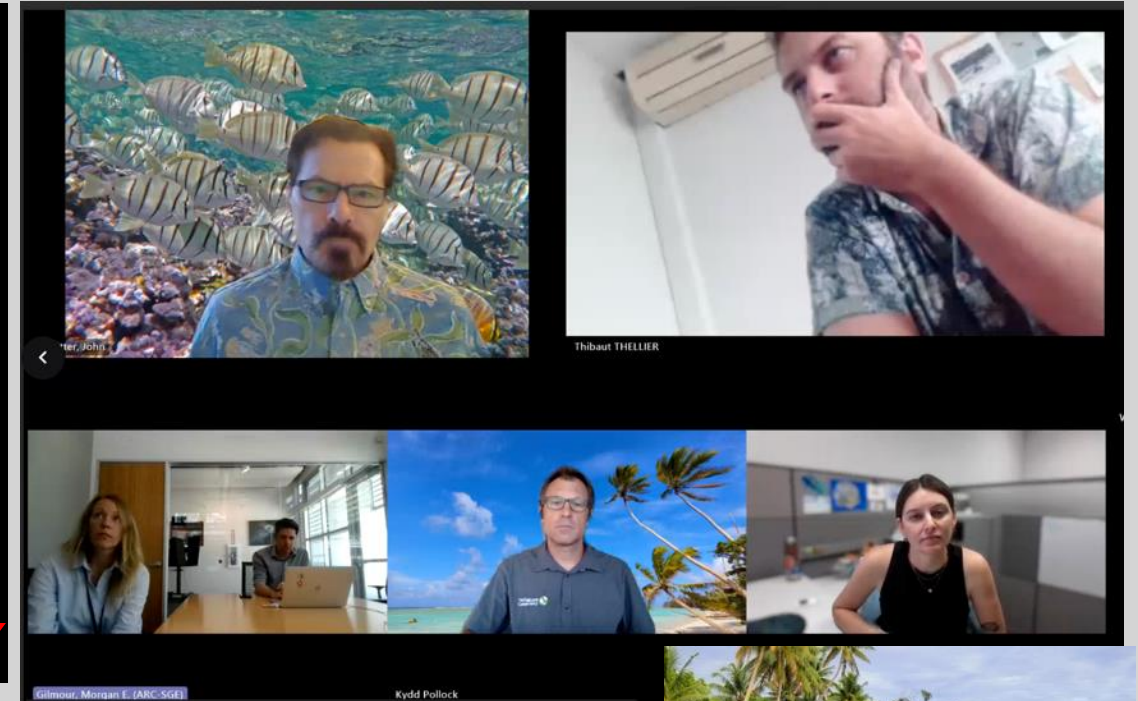
FATE: partnerships

Build a partnership: The Nature Conservancy - Palmyra FAD Watch Lead bring in NASA Ames scientists - equatorial ocean currents and animal tracking/behavior to predict, intercept FADs, and impacts on fish

Co-I Kydd Pollock (The Nature Conservancy)

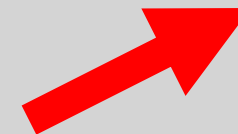


Co-I Morgan Gilmour (NASA Ames)



Convene stakeholders from NASA, US Fish and Wildlife Service, French Polynesian government, Galapagos/Ecuador, etc. to accelerate and scale the solutions to other jurisdictions.

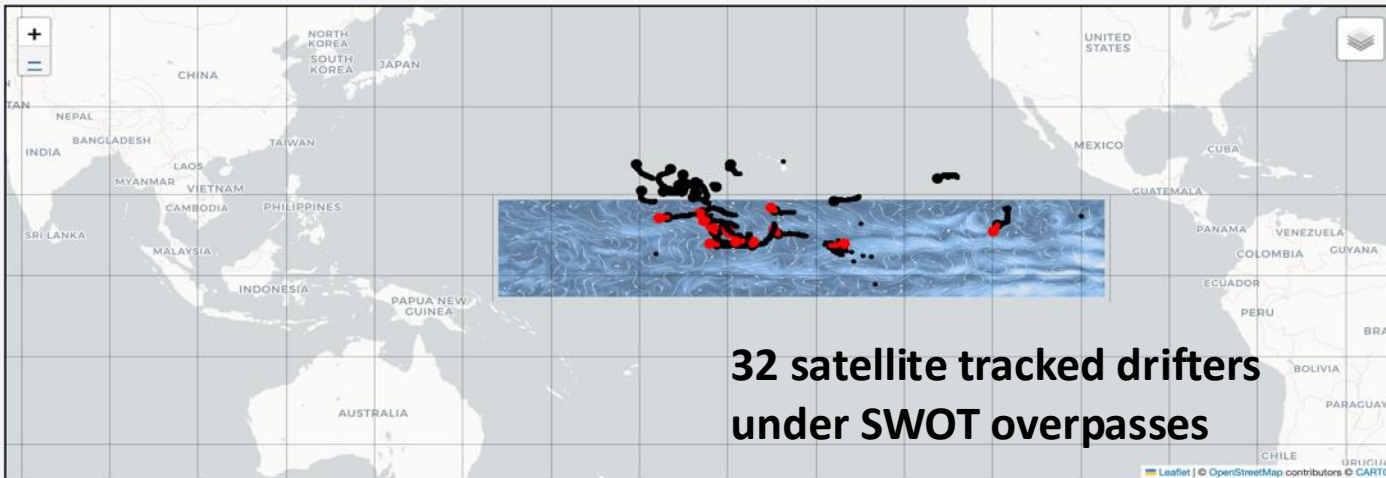
Field Team



FATE: Tech for the User

Real Time TNC-NASA-NOAA Palmyra Drifter Tracks and Forecasts

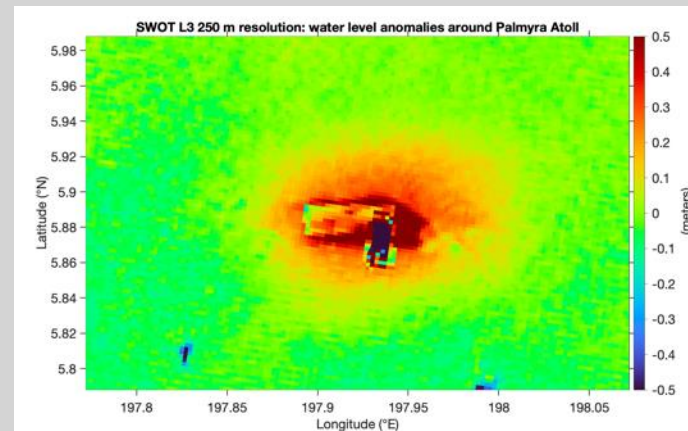
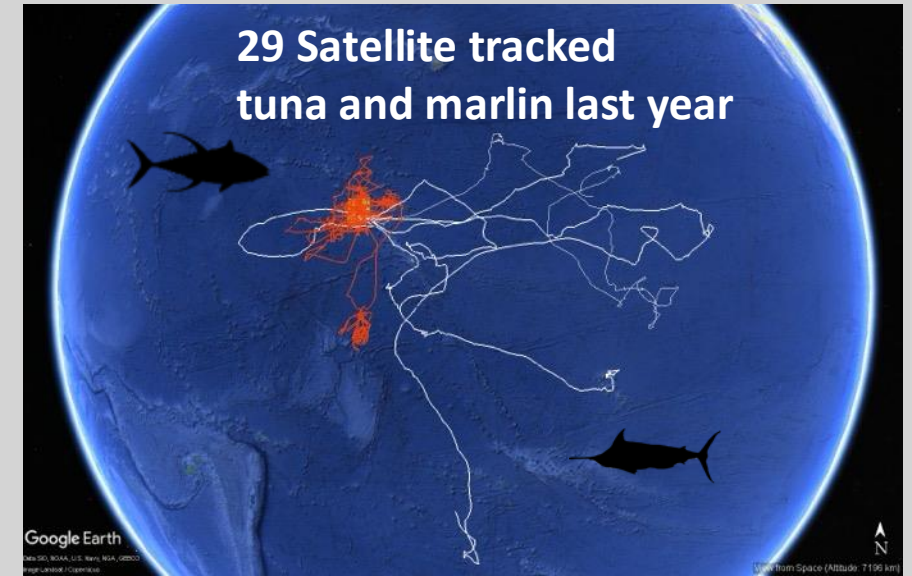
Hourly drifter positions over the last 30 days (black) and 7-day forecasts (red) (Updated every 6 hours)



32 satellite tracked drifters
under SWOT overpasses



29 Satellite tracked
tuna and marlin last year





FATE: Toward impact 2025 to 2028



Refine FATE interface & utility with Kydd
More field work in Aug 2025: tag fish & deploy drifters
Demonstrate conservation impact
Grow the stakeholder community
Looking for a potential NPP applicant to make this their own.