

MARINE MONITOR

Understanding and tracking human activity in nearshore coastal environments

M2[📶]



What is M2

Vessel monitoring platform and software

Uses radar, camera, and other sensors

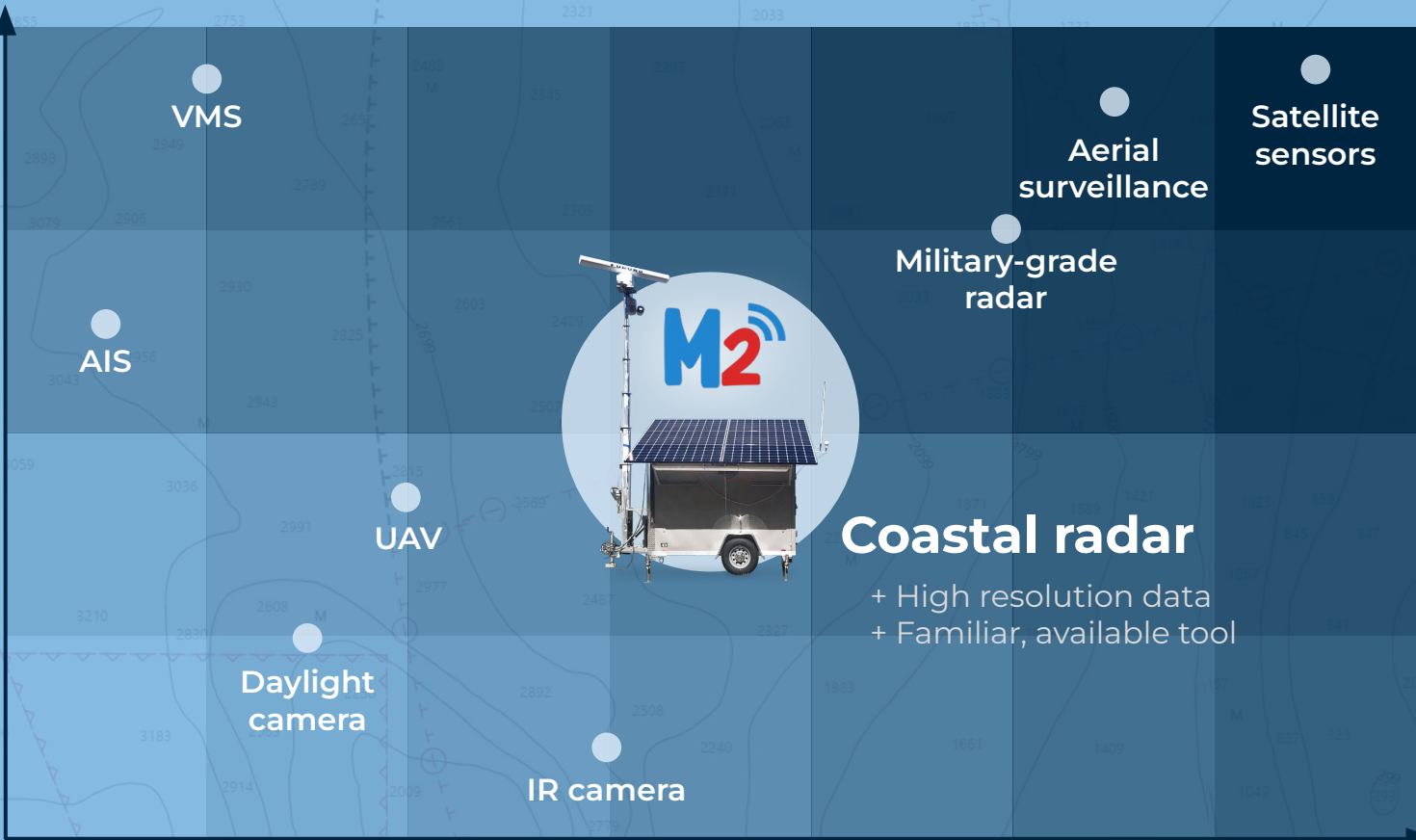
Continuous data collection

Nearshore managed areas

Remote areas



Increasing range



Coastal radar

- + High resolution data
- + Familiar, available tool

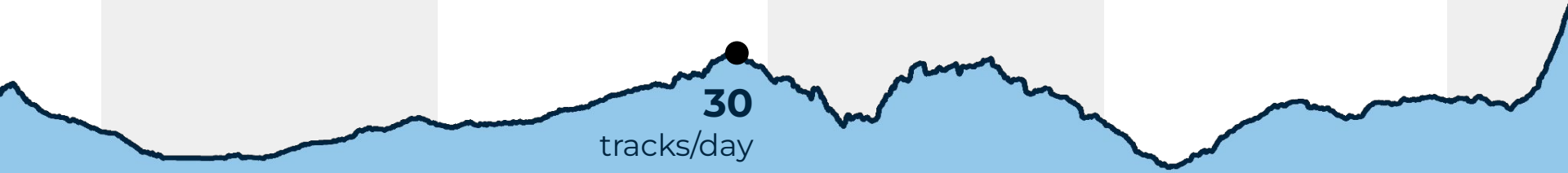
Increasing cost

2020

2021

2022

2023



AIS

30
tracks/day



Beam Reach
Marine Science and
Sustainability School

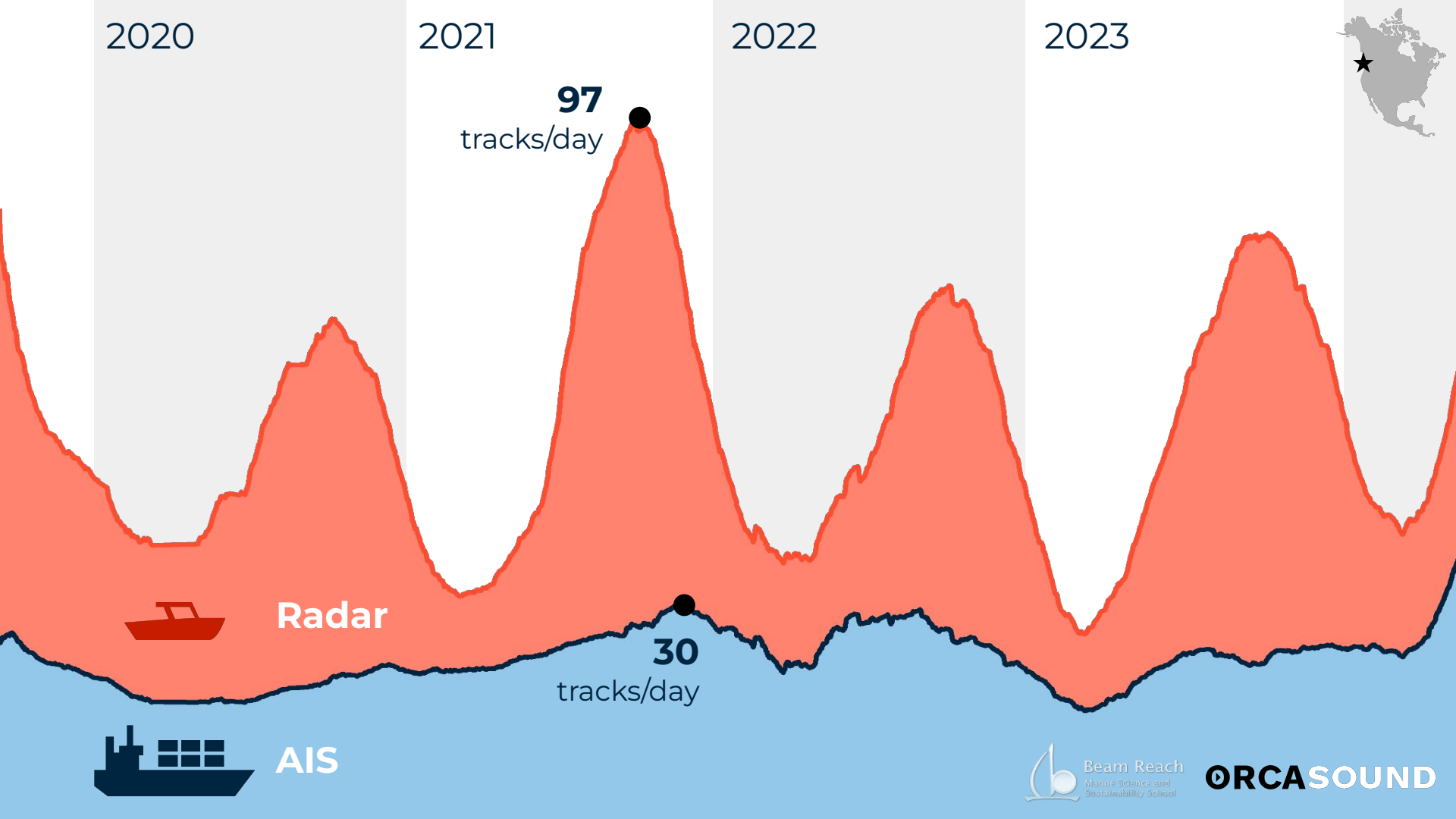
ORCASOUND

2020

2021

2022

2023



Radar

30

tracks/day



AIS

Why M2



Radar + Camera

Participation not required

Track smaller vessels to 5nm

Real-time vessel location and speed

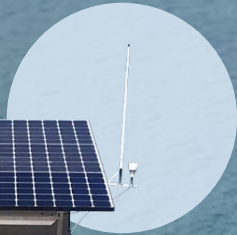
Image capture



protectedseas



Why M2



AIS and VMS Integration

Identify non-participating vessels
AIS Class A and Class B



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"D'Arcy Island Light"

Kelp Reefs

"Kelp Reef Light"

Andrews Bay

Bellevue Pt

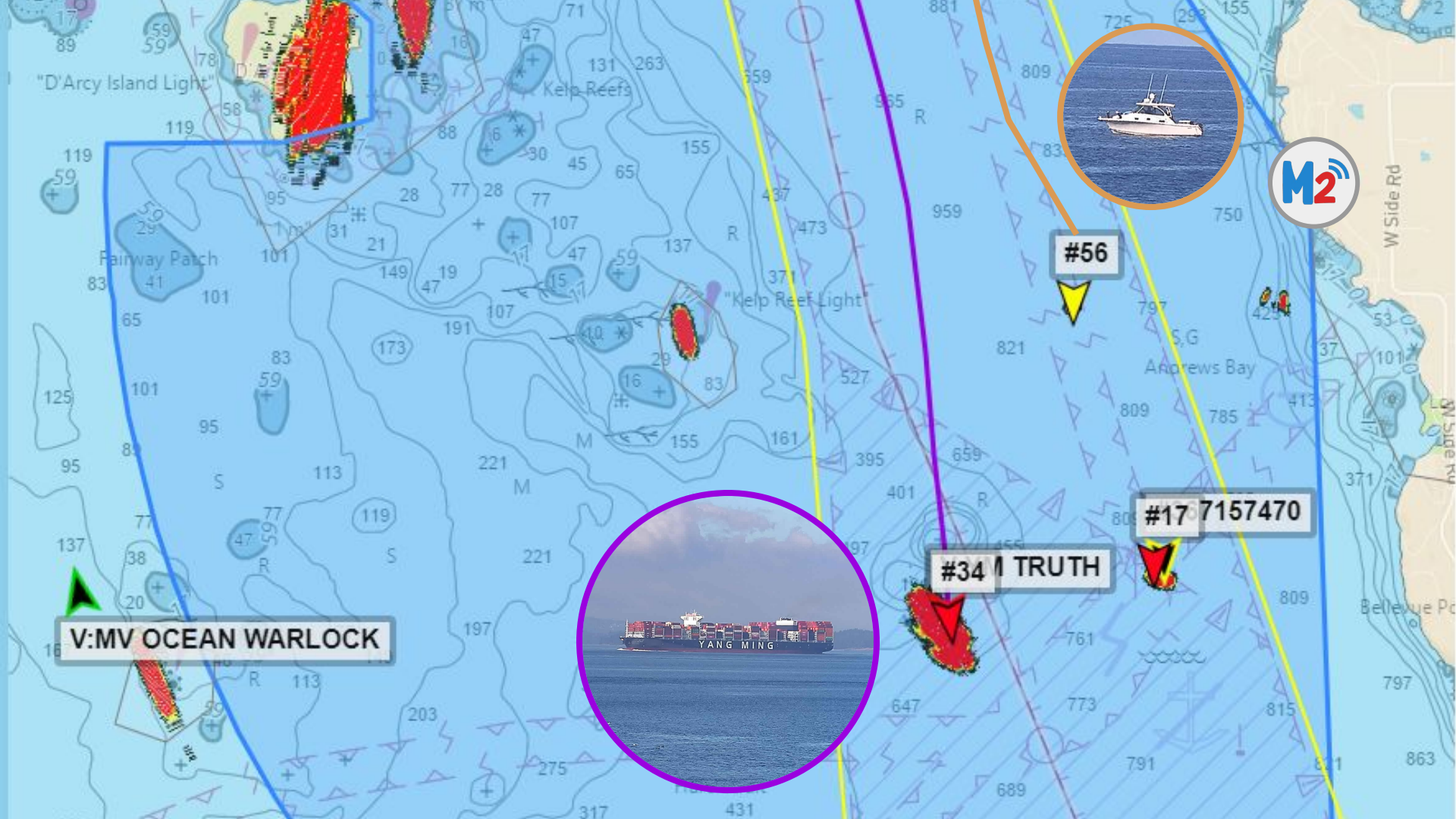
W Side Rd

V: MV OCEAN WARLOCK

#34 TRUTH

#17 7157470

#56



Who Uses M2

Government agencies

MPA managers

Enforcement personnel

NGOs

Research institutions



28

Deployed

4

In Progress



ORCA SOUND



WILDAID

Locations in

- Malaysia
- Tuvalu
- Indonesia
- Palau
- American Samoa

- Mexico
- USA
- Belize
- Costa Rica
- Panama
- Ecuador



Radar + Camera



M2 Control Center



M2 Viewer



Radar



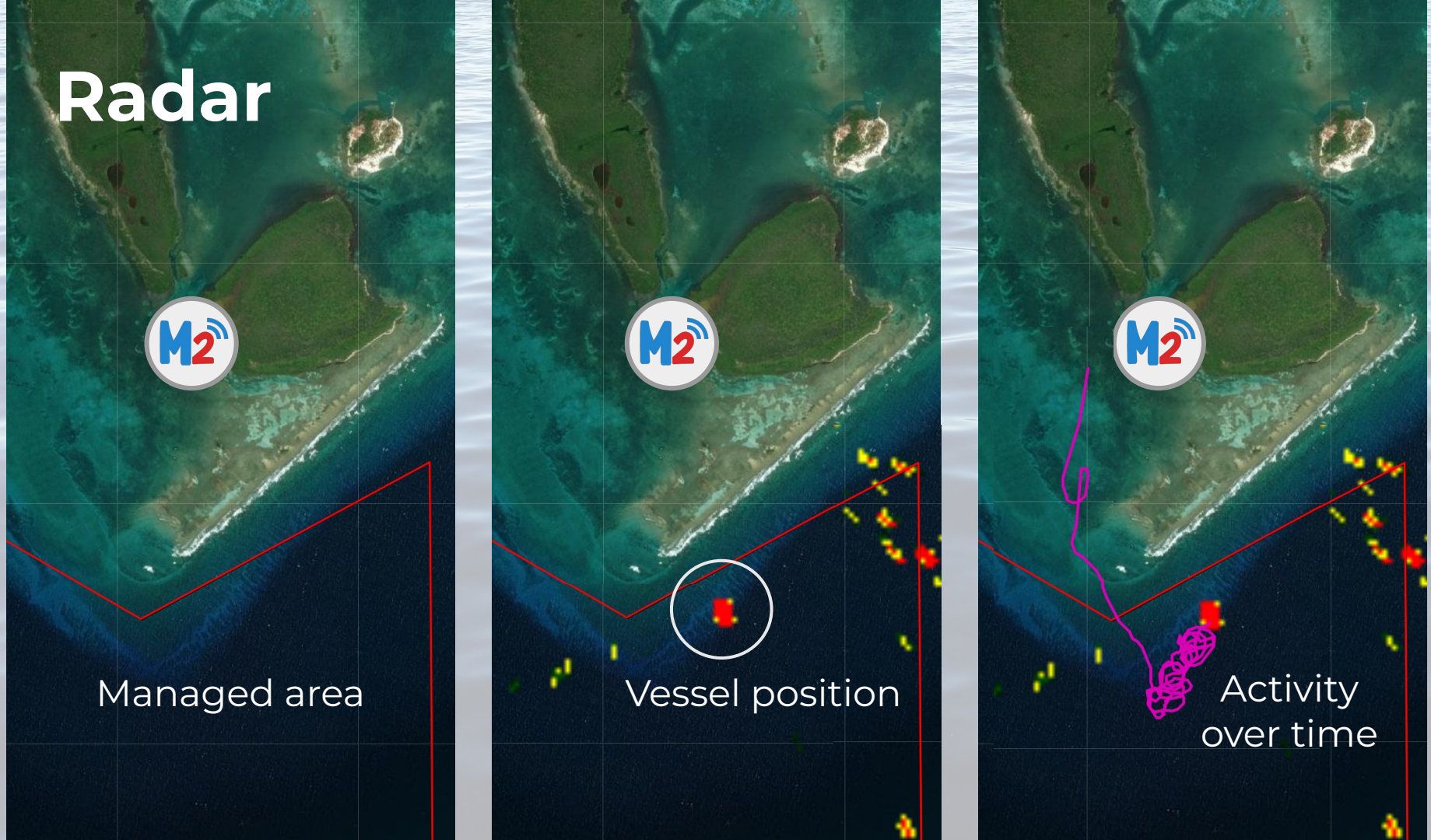
Managed area



Vessel position



Activity
over time



Range

Configured per site

Small vessels

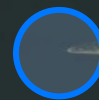
(20 feet = 7 meters)

5 nautical miles

Larger vessels

24 nautical miles*

*tracking limit



Radar range



Radar imagery



10

km



Camera



Range

1 nm

3 nm

5 nm



M2 Viewer

Radar: Belize-Turneffe Atoll

View Options Clear Map

Click to Close

Track: 43-0110-0929 At: 09:32:07 Photo: 1 of 26

Tracks: [8]	Start Time	Duration	Avg Speed	Dist [km]	Triggered	Show on Map
175-0110-1459 [0.986]	01/10/2022, 2:59:31 PM	01:27:37	2.5	14.0	Yes	<input type="checkbox"/>
192-0110-1357 [0.837]	01/10/2022, 1:57:08 PM	01:02:32	2.2	7.5	Yes	<input type="checkbox"/>
148-0110-1320 [0.991]	01/10/2022, 1:20:38 PM	03:06:29	0.4	4.0	Yes	<input type="checkbox"/>
143-0110-0955 [0.973]	01/10/2022, 9:55:30 AM	06:31:37	0.3	6.5	Yes	<input type="checkbox"/>
9-0110-0929 [0.995]	01/10/2022, 9:29:41 AM	03:50:35	0.3	3.7	Yes	<input type="checkbox"/>
43-0110-0929 [0.980]	01/10/2022, 9:29:41 AM	01:01:45	3.4	7.3	Yes	<input checked="" type="checkbox"/>
14-0110-0929 [0.991]	01/10/2022, 9:29:41 AM	02:44:13	2.3	23.2	Yes	<input type="checkbox"/>

Map: Playback: 1/10/2022, 9:33:10 AM Play 20X Show Timeline

M2

11:40

Track 118 Information

Speed: 0.7 knots Course: 25.1° EMAIL TRACK

Coordinates: 37° 47.650' N, 122° 30.280' W

Valid Track: EDIT TAGS

TRACK VIEW PHOTOS UPLOAD PHOTO

V-FABUR

V-FABUR CALIFORNIA

#118

AA m2.protectedseas.net



M2 for Enforcement



Turneffe Atoll, Belize

Belize City



FURUNO

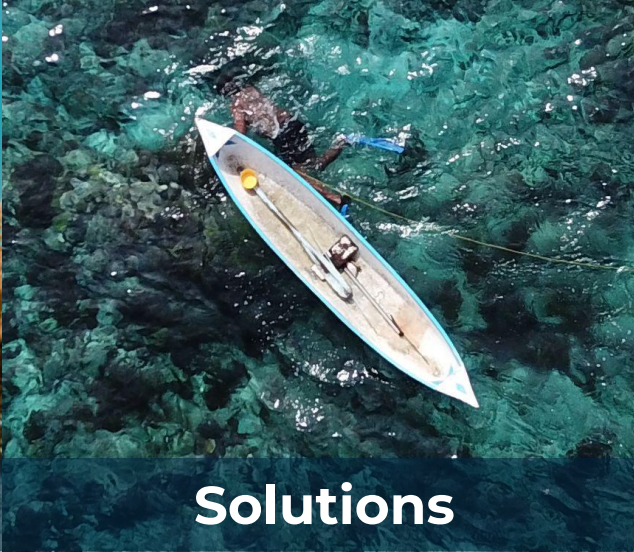


Concerns

Fishing in conservation zones

Tourism and development

Remote location



Solutions

Smaller vessels monitored by radar

Real-time enforcement

Reporting for patrol planning



Success

200+ square kilometers monitored

19 infractions supported in 2023

Southern California, USA



San Diego





Concerns

Recreational fishing and boating

Highly urbanized coastal locations

MPA network effectiveness

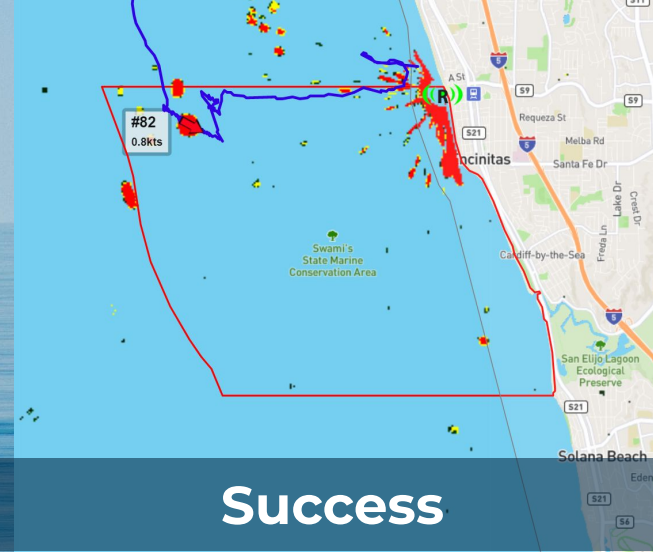


Solutions

Support enforcement with data

Document and share activity reports

Integration of radar and AIS



Success

55+ kilometers of coastline monitored

2 enforcement cases supported in legal proceedings

M2 for Science & Conservation



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OCEAN AND COASTAL
MONITORING SYSTEM
protectedseas M2



M2 for Security



M2 for Safety



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Grant Opportunity

- Regulations and boundaries
- Infrastructure and committed staff
- Support planning and maintenance
- Share reports on activity with M2 staff
- Complete application

What's Included

Site selection and logistics

Full hardware integration

Pre-deployment testing

Onsite installation support

System training

Remote access and control

One year of hosting and tech support



protectedseas



Benefits

Autonomous data collection **24/7**

Integration of **small vessel** information

In-use today by managers

Reliable, established technologies

Monitoring in **remote areas**

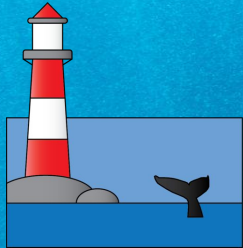
Integration of other sensors

Platform for **collaboration** and **partnerships**



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