

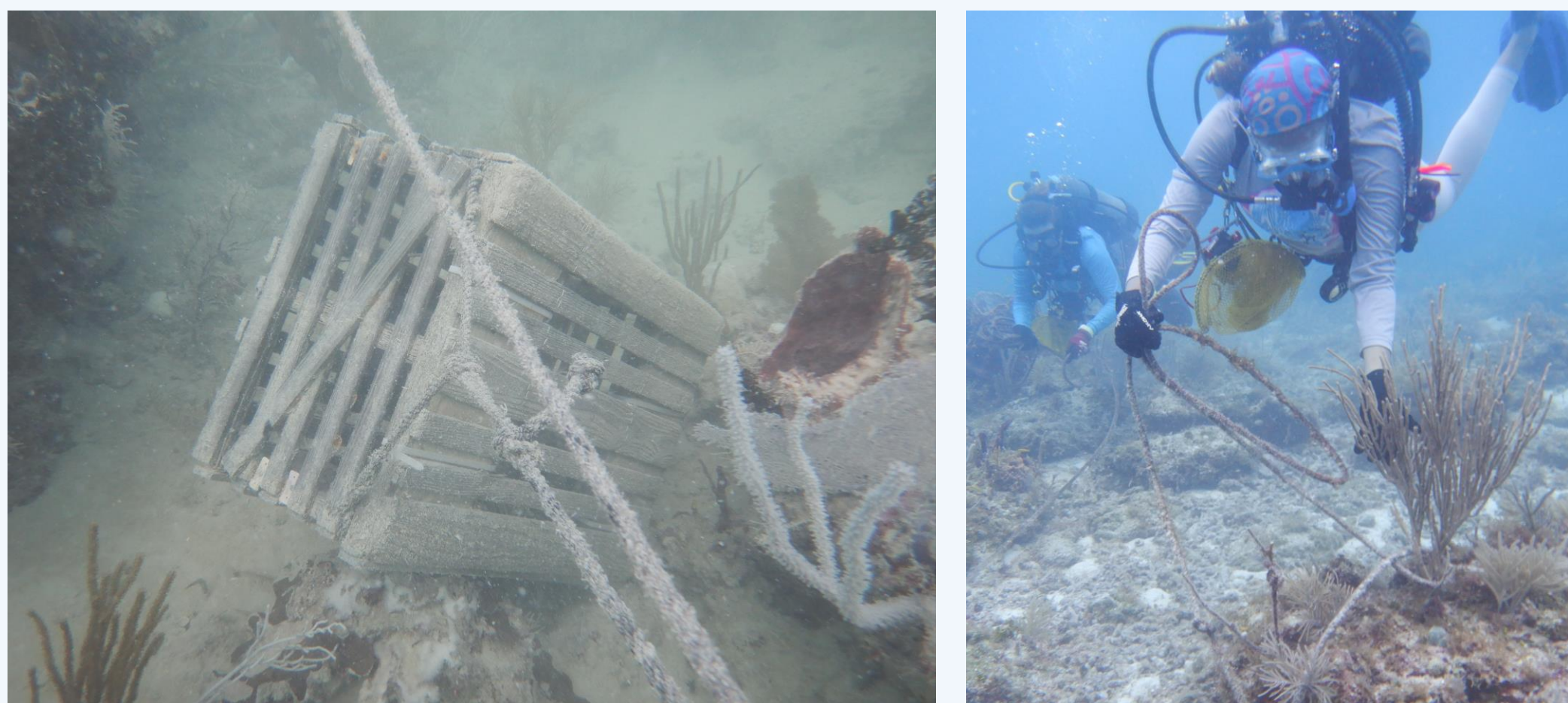


Marine debris characterization of the Marquesas, Florida

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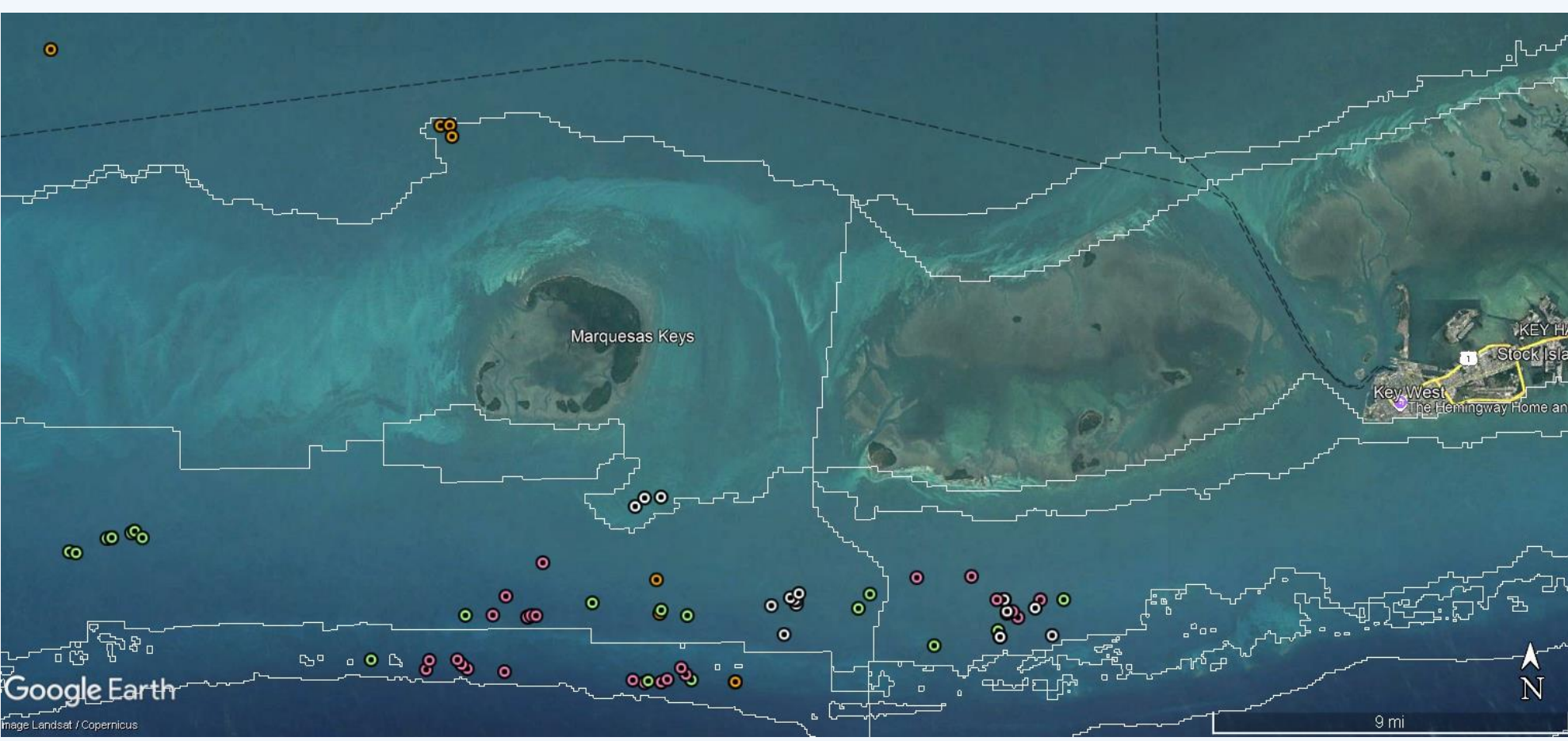
The problem:



Left: Lobster trap crushing an *Orbicella faveolata*, or mountainous star coral, an ESA-listed species in Florida. Right: Divers removing trap line entangled around an *Eunicea flexuosa*, or bent sea rod.

Derelict, lost, or abandoned lobster and stone crab traps and trap line can damage corals, octocorals and sponges, as well as pose an entanglement risk for wildlife and boaters. Derelict traps continue to ghost fish for several years after deployment, and it is estimated derelict lobster traps in the Florida Keys kill over 600,000 lobster every year (Butler and Mathews 2015). A large portion of the ~350,000 traps deployed in Monroe County fish the area known as the Marquesas, between Key West and the Dry Tortugas.

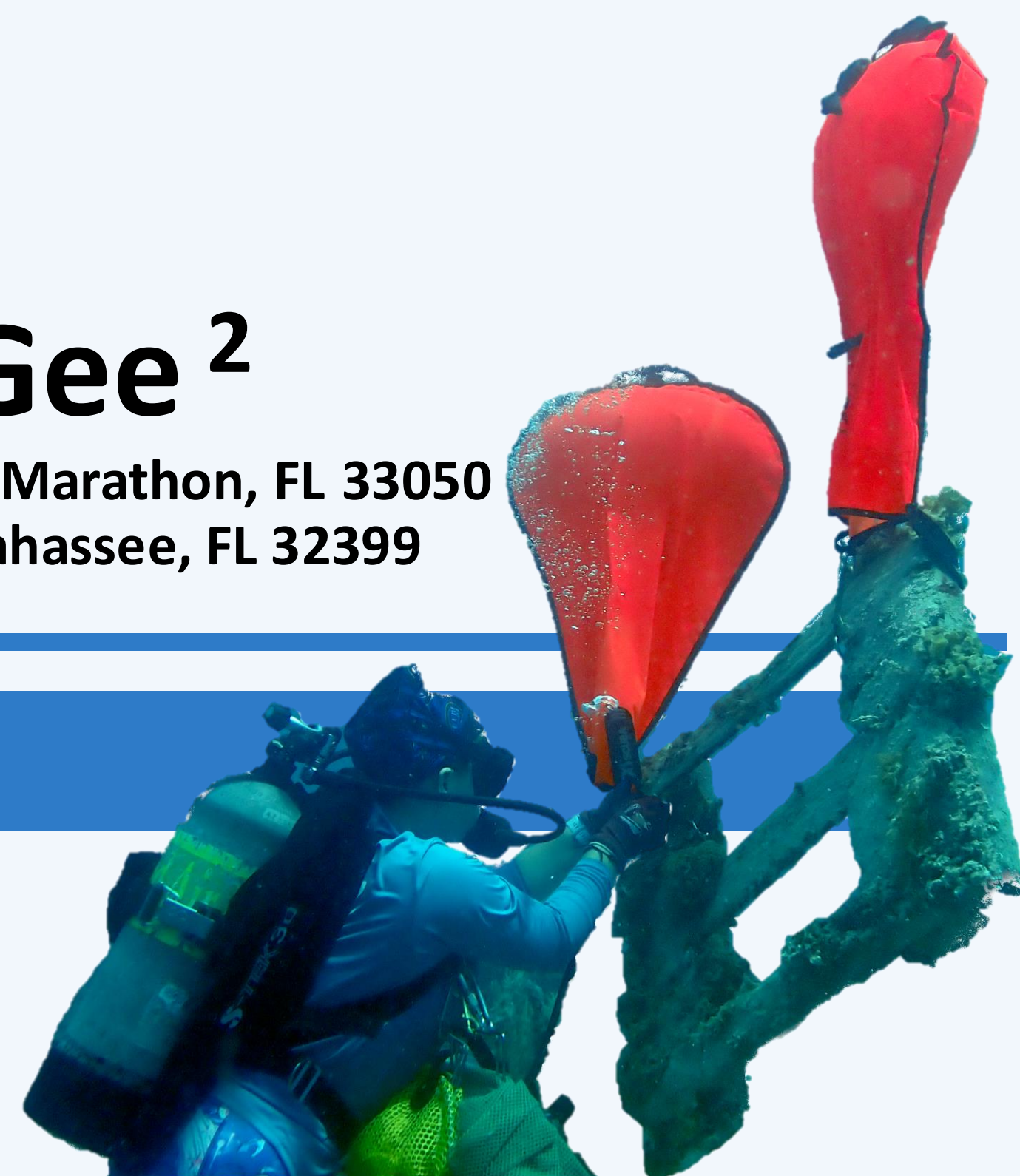
The response:



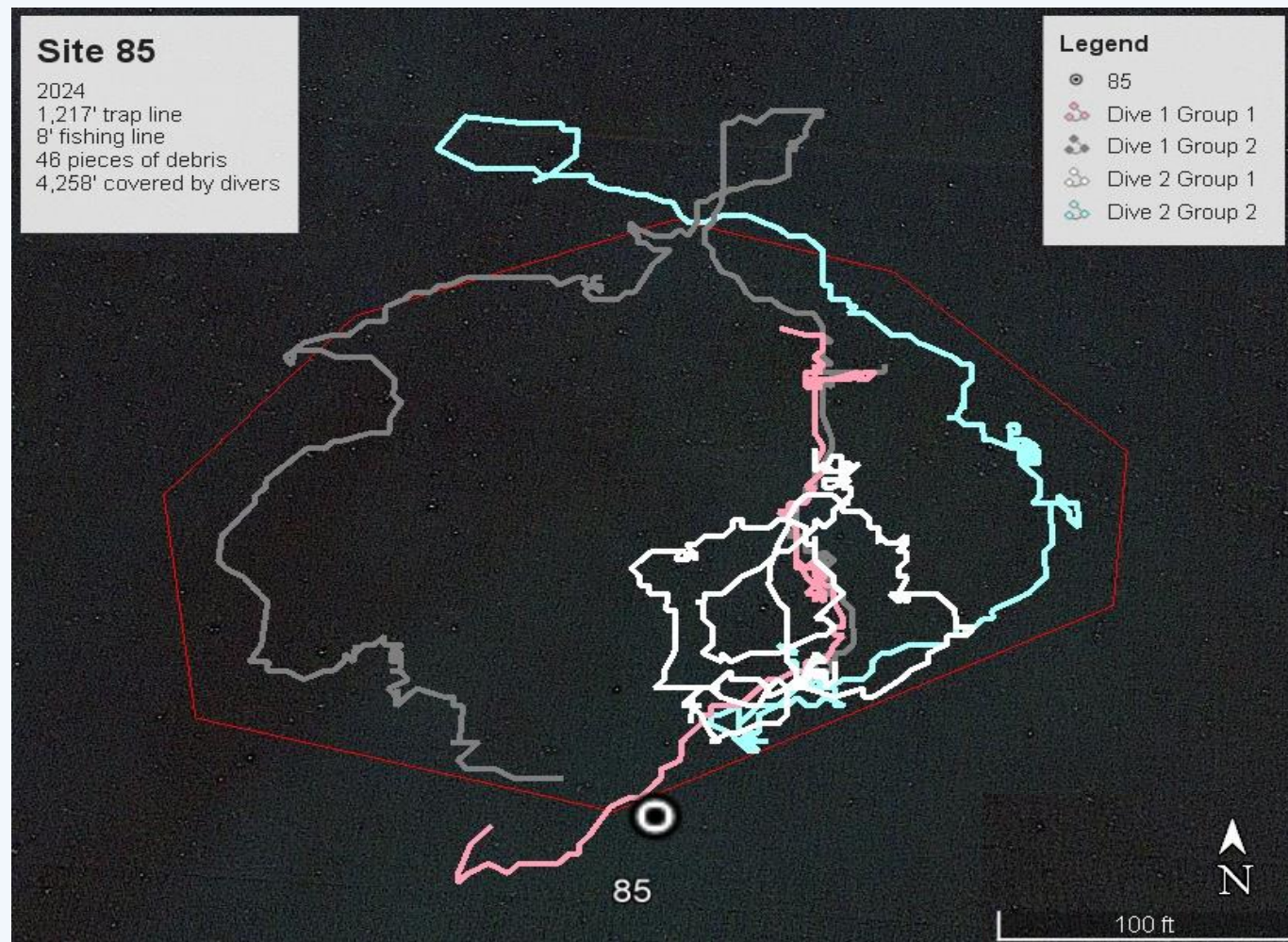
Above: Map of the program area. White lines indicate Habitat Region Zones, as used by the Disturbance Response Monitoring Program. Green: September 2023; White: June 2024; Orange: June 2025; Pink: August 2025.

To recover lost traps and other debris in this area, marine debris removal cruises have occurred since 2023. Debris was primarily recovered through diving, with surface removals conducted opportunistically or when diving was not possible due to weather.

Combined over the four cruises, divers covered 72 sites and spent 269 hours underwater removing marine debris. Data reported here is a combination of all removal efforts.



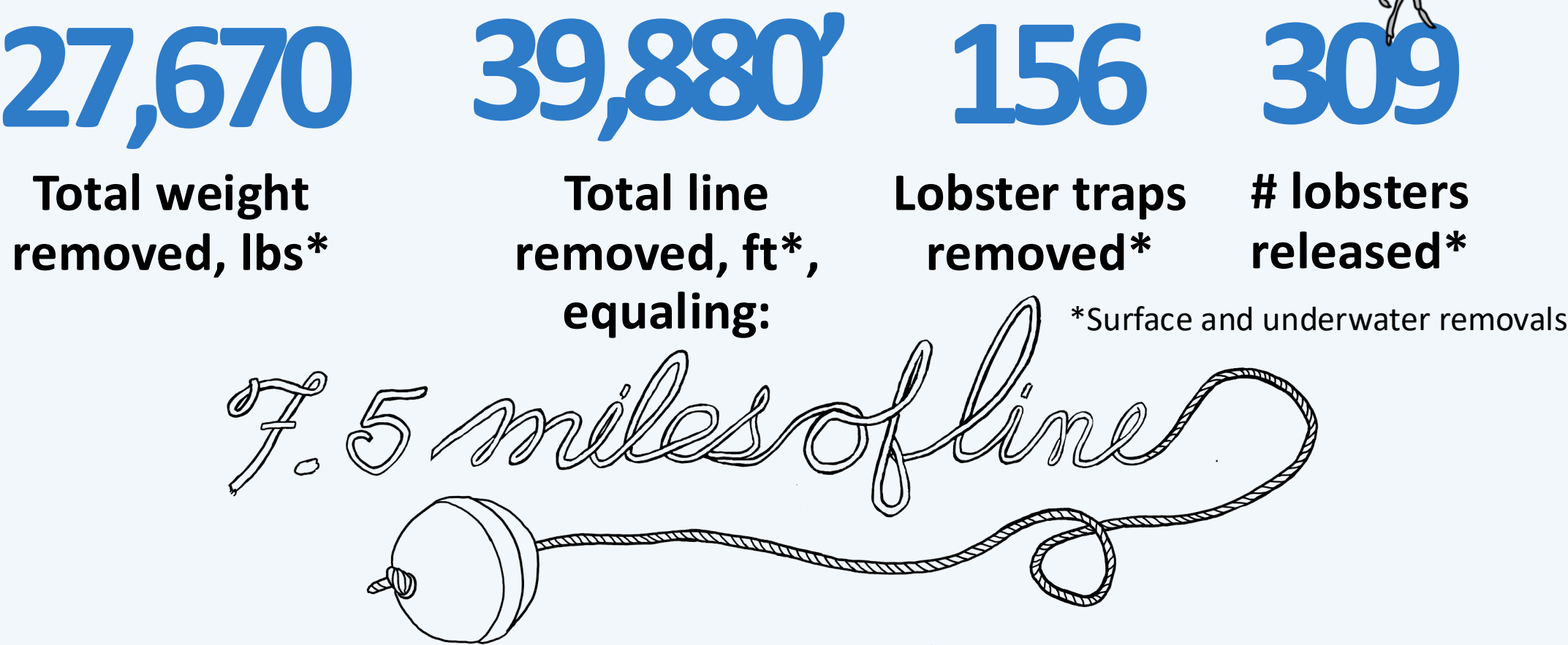
Above: A diver sending up the bottom of a lobster trap with two 50-lb lift bags.



Above: An example of one of the removal sites. Site 85 is a high-rugosity patch reef in the Lower Keys Mid Channel Region-Zone. The red polygon indicates reef habitat as mapped by the Florida Unified Reef Map. Colored lines represent tracks created by diver groups towing a GPS.

The data:

The majority of the marine debris in the Marquesas collected underwater is related to the trap fisheries – 87% of the abundance and 92% of the line debris by length.



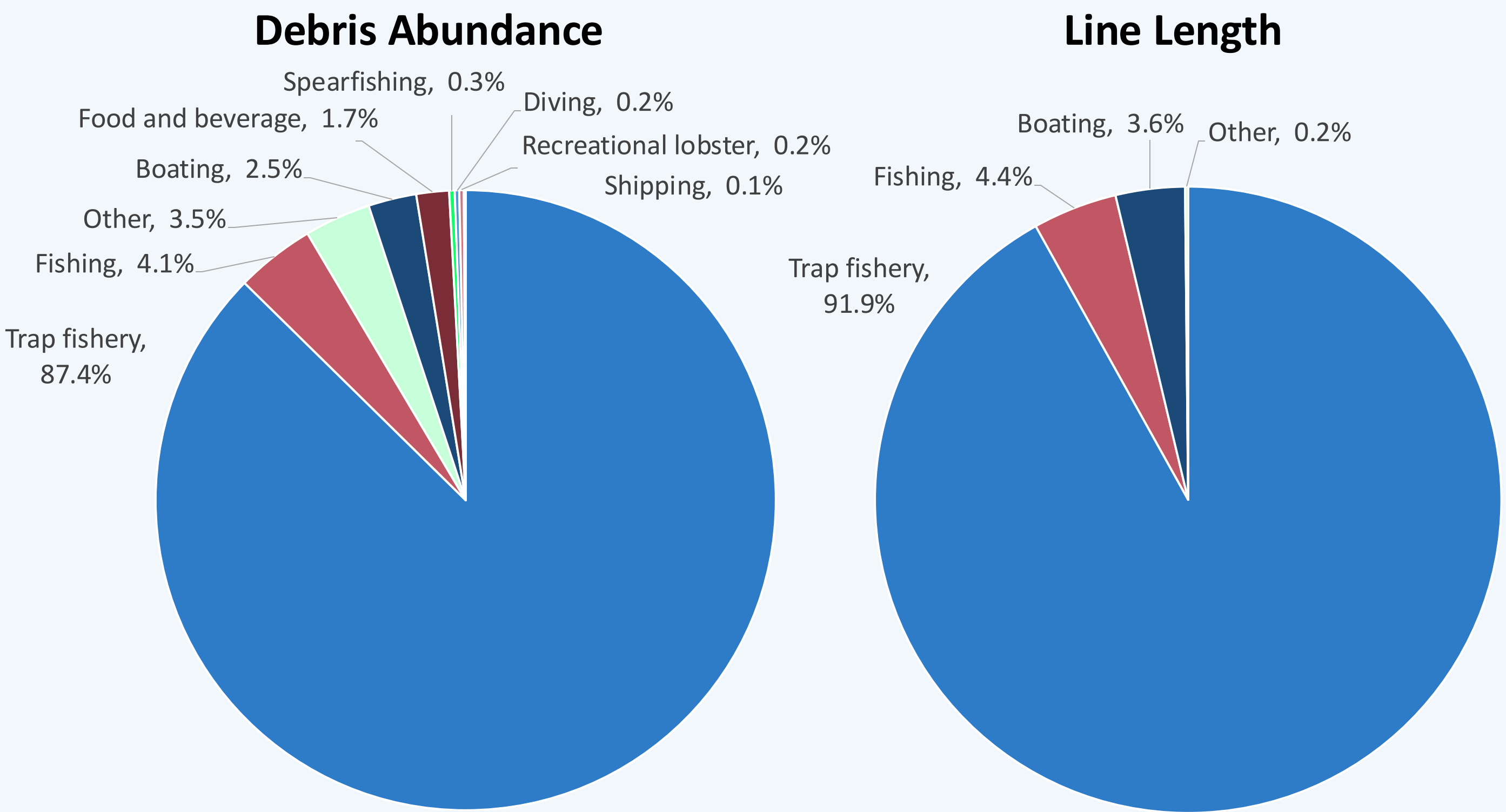
Industry/Type	Tally	Industry/Type	Tally	Industry/Type	Tally	Industry/Type	Tally
Trap fishery	1,845	Boating	53	Other plastic, cont	36	Spearfishing	6
Trap line	798	Anchor line	18	PVC	2	Speargun shaft	4
Trap debris piece	692	Anchor	13	Ziptie	1	Spearfishing stringer	1
Trap ballast	279	Buoy Line	8	Other	20	Zookeeper	1
Trap throat	31	Anchor chain	6	Other metal	5	Diving	5
Lobster trap	30	Boat debris	3	Other fabric	3	Scuba Fin	2
Bait cup	13	Mooring line	2	String	3	Dive weight	1
Stone crab trap	2	Tug boat line	2	Cinder block	2	Other plastic	1
Fishing	88	Boat hook	1	Rebar	2	Scuba tank wrap	1
Fishing line	58	Food and beverage	36	Bed sheet	1	Recreational lobster	5
Fishing leader	9	Beverage bottles	25	Cement weight	1	Tickle stick	3
Nets	7	Food wrapper	7	Lumber and building	1	Lobster net	1
Fishing pole	5	Utensil	2	Metal fragment	1	Lobster noose	1
Fishing hook	3	Can	1	Paper/cardboard	1	Shipping	2
Fishing weight	2	Cup	1	Misc. container	14	Bubblewrap	1
Gaff	2	Other plastic	36	Bag	11	Plastic strapping	1
Eyelet	1	Film fragment	18	Other jug/jar	2	Unidentifiable line	2
West African Octopus Pot	1	Other plastic	12	Bucket	1	Other line	2
		Hard fragment	3				

Above: The types and categories of all debris collected during underwater removals.

Industry/Type	Total Line (ft)
Trap fishery	24,880.50
Trap line	24,880.50
Fishing	1,179.50
Fishing line	1094.5
Fishing leader	77
Nets	8
Boating	967
Anchor line	468
Buoy Line	246
Mooring line	88
Tug boat line	85
Anchor chain	55
Boat debris	25
Other	27
Other metal	18
String	9
Unidentifiable line	16
Other line	16

Above: Types and categories of all line collected during underwater removals.

Underwater debris breakdown by industry:



Underwater debris breakdown by material:

