Final report Oct 2024 comparison of release methods for Red Snapper

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2021-2024, compared survival among release methods at 20 – 50 m depths

Surface release

Drop weight release

Cage release (control)

Compare survival, mortality and emigration from two approaches

Conventional tagging

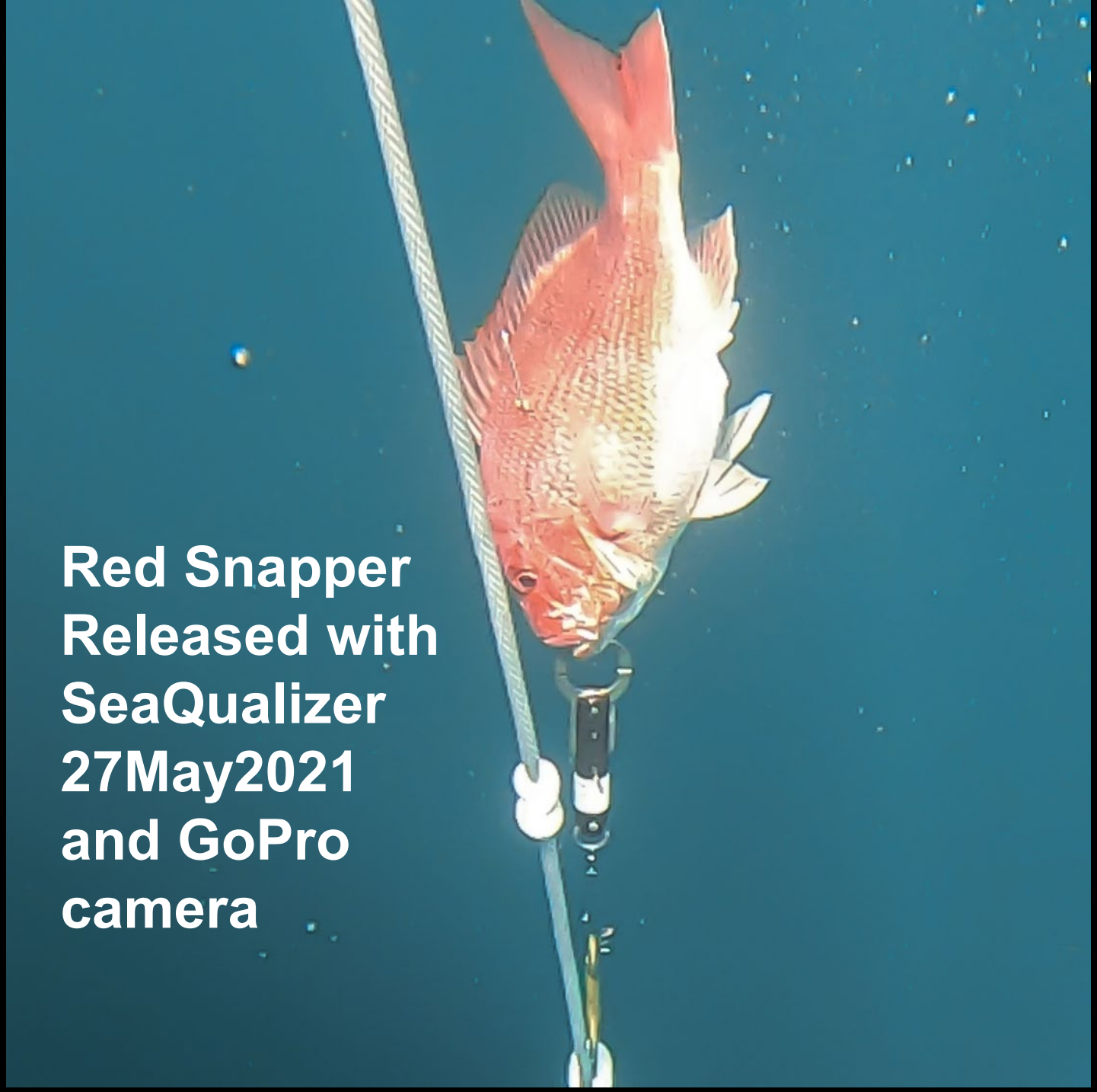
- Survival based on recaptures

Telemetry tracking

- Survival based on tracking patterns


2021-2024
Dart-tag in epaxial muscle
For each of 12 sites:
Attempt 45 to 60 releases
N ≥ 15 - 20 drop-weighted
N ≥ 15 - 20 cage
N ≥ 15 - 20 surface


Drop-wt
release with
SeaQualizer


Red Snapper
Released with
SeaQualizer
27May2021
and GoPro
camera

Cage release

Release cage automatically opens when it reaches the seafloor.

Recapture efforts

Auburn recaptures

- fish trap
- hook-and-line

Fisher recaptures

- hook-and-line

Telemetry tracking

Fish released with external transmitters and Floy tags

Innovasea V16 transmitters

Attached with plastic disks, plastic coated SS wire and SS crimps

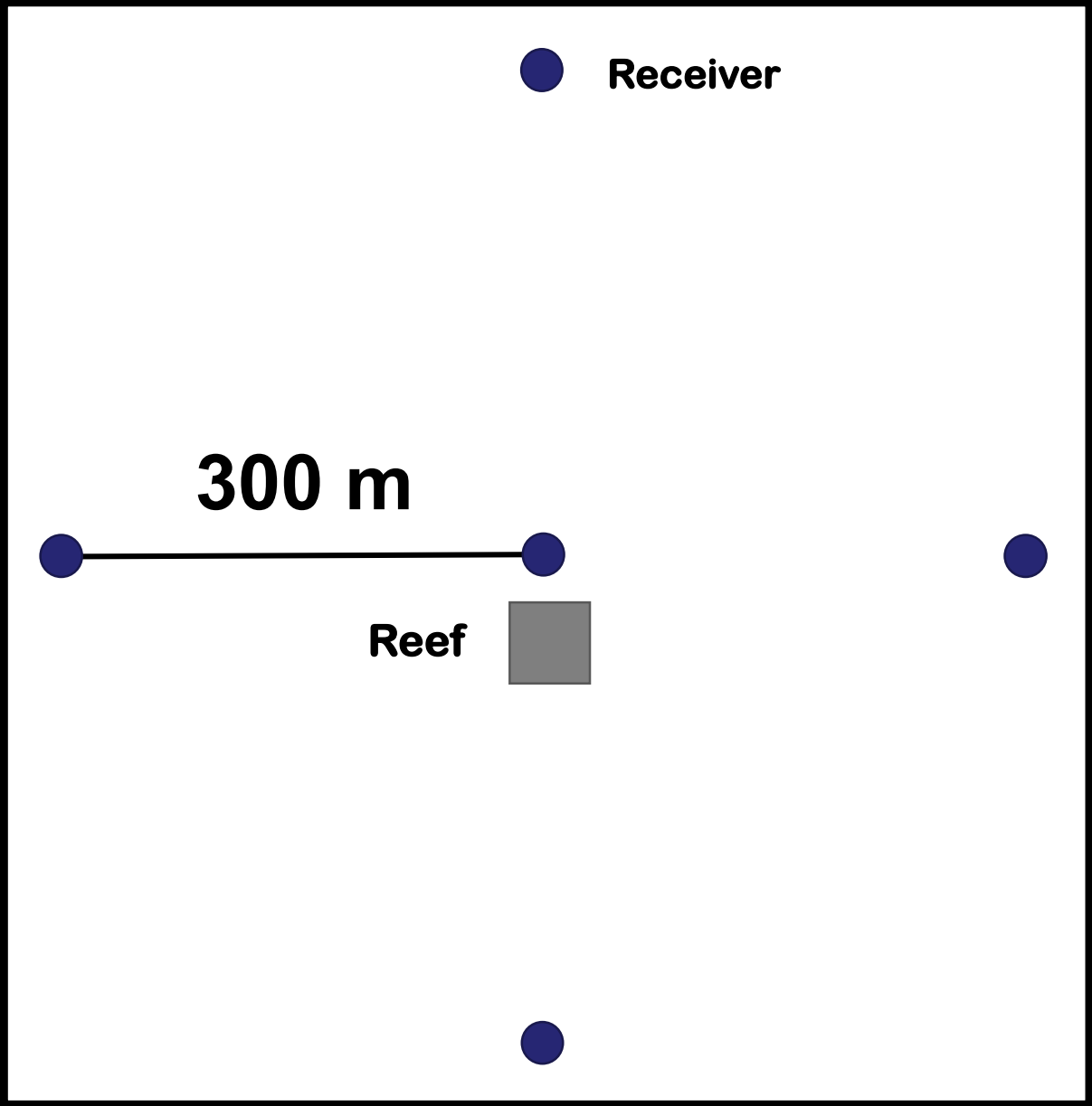
Telemetry tracking

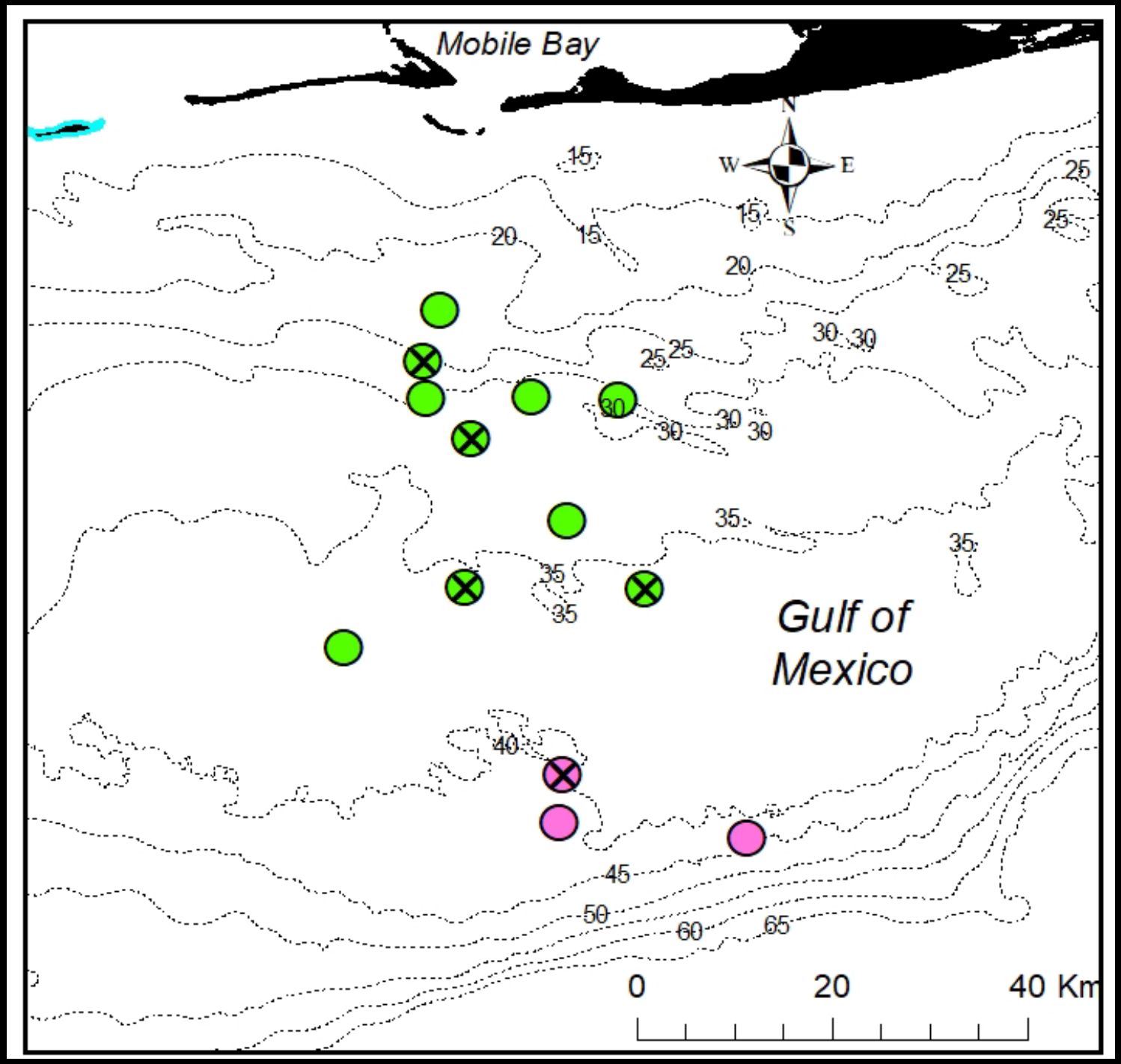
6 VPS tracking sites

Each had 5 Innovasea receivers

surface, drop-wt, and cage releases

Receiver Array

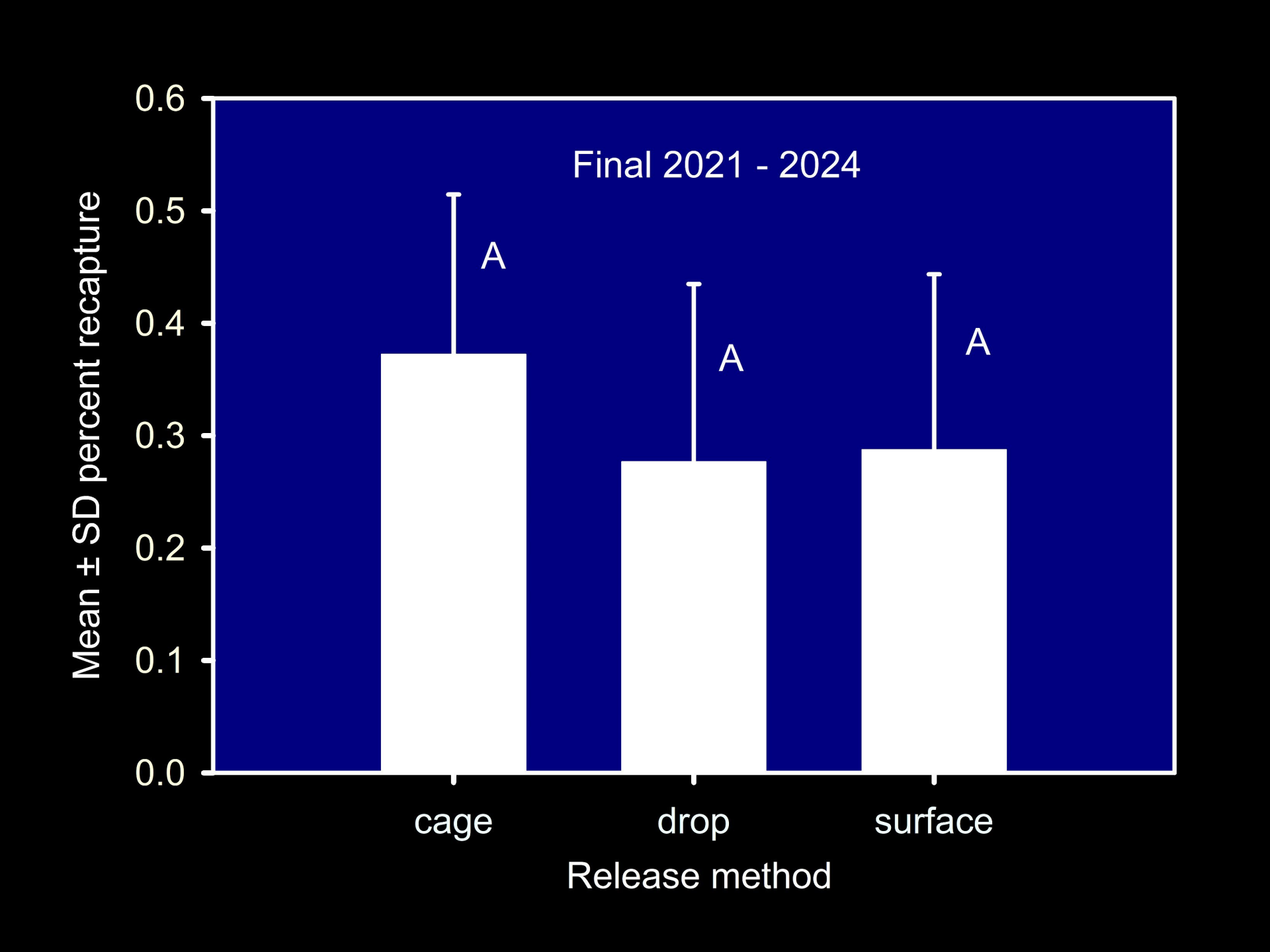


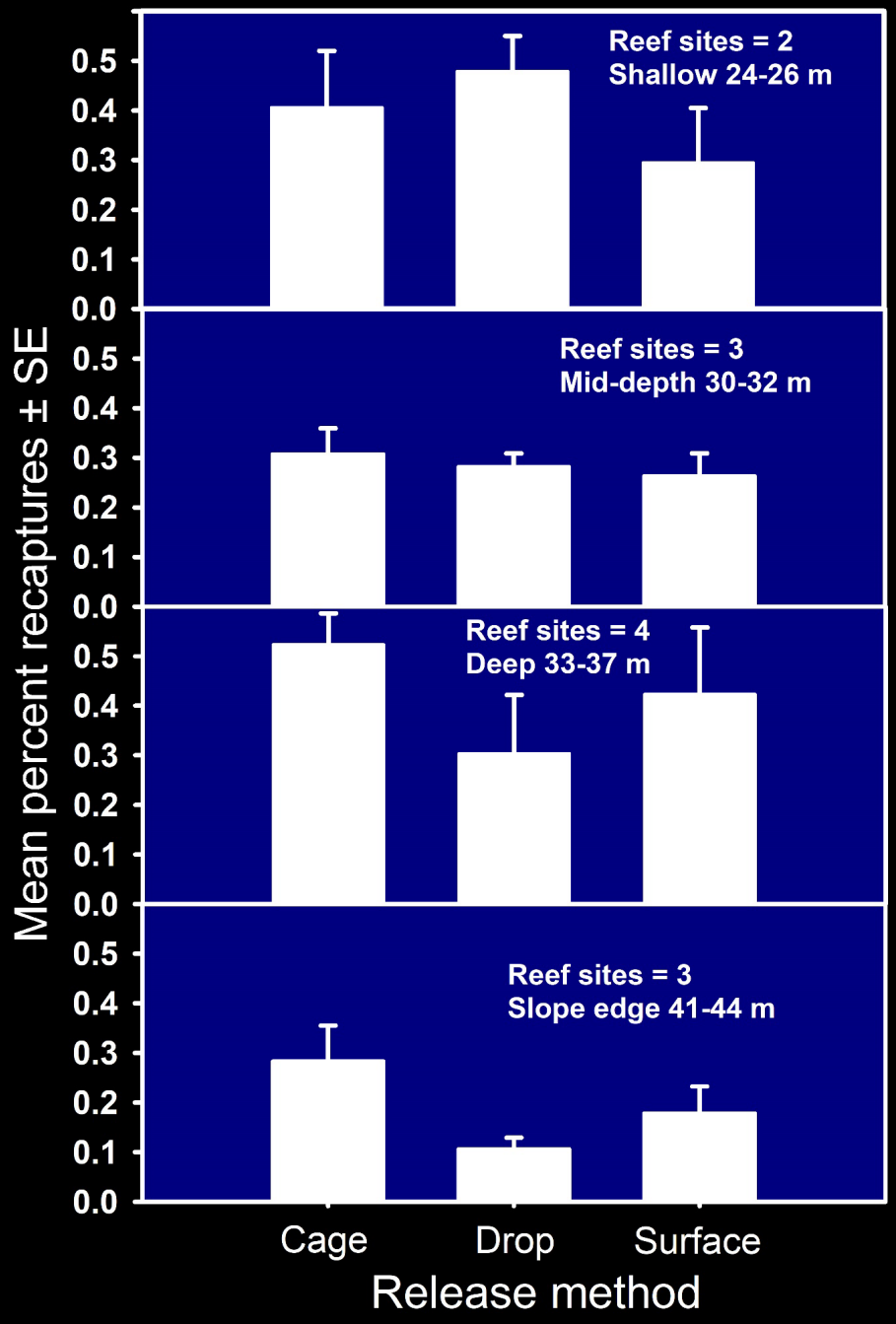

Mobile Bay
N
W
E
S
15
15
15
20
20
25
25
25
25
30
30
30
30
30
35
35
35
40
45
50
60
65
Gulf of
Mexico
0
20
40 Km


Up to May 2024, 215
recaptures

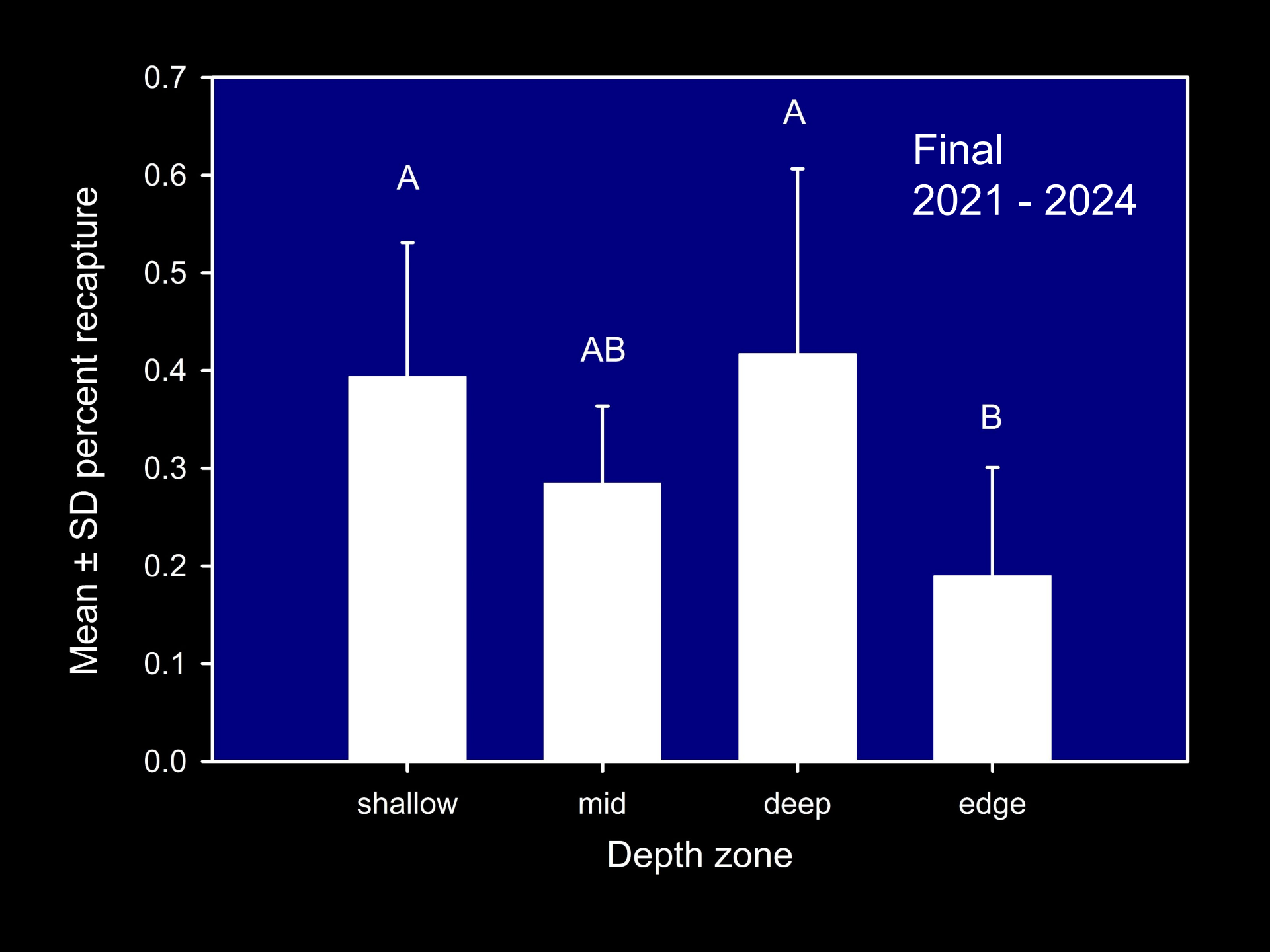
Results to date (Jul 2024)

Release method	Attempted release	Successful release	Recaptures
Cage	304	235	78
Drop wt	227	227	62
Surface	260	260	75
Total	791	722	215


Final 2021 - 2024
Mean ± SD percent recapture
0.6
0.5
0.4
0.3
0.2
0.1
0.0
A
A
A
cage
drop
surface
Release method



Final
2021–2024


Final
2021 - 2024
Mean ± SD percent recapture
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
A
AB
A
B
shallow
mid
deep
edge
Depth zone

Telemetry 2022 - 2024

67 transmitter-tagged fish tracked on 6 sites

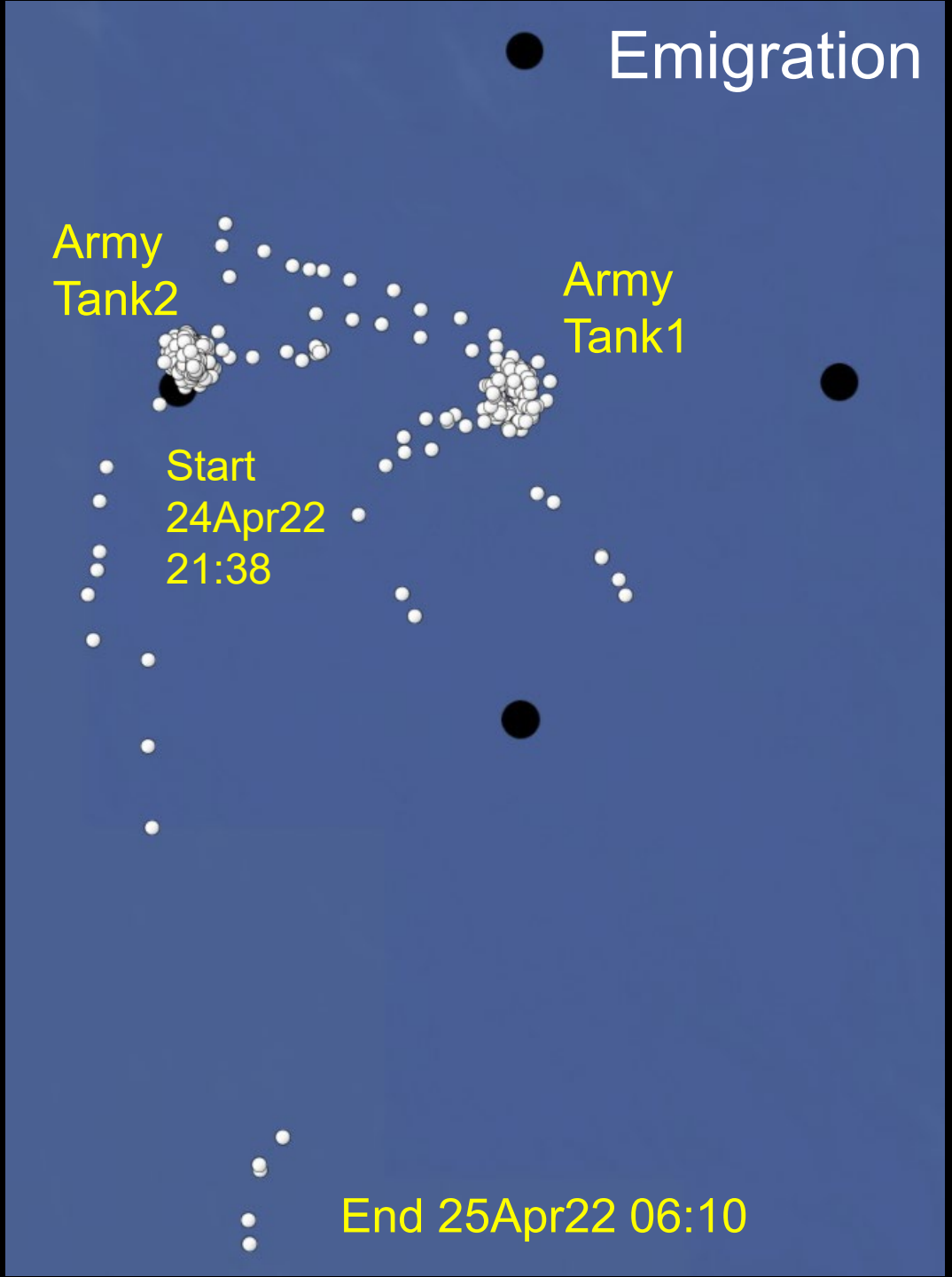
23 cage released
19 surface released
25 drop wt released

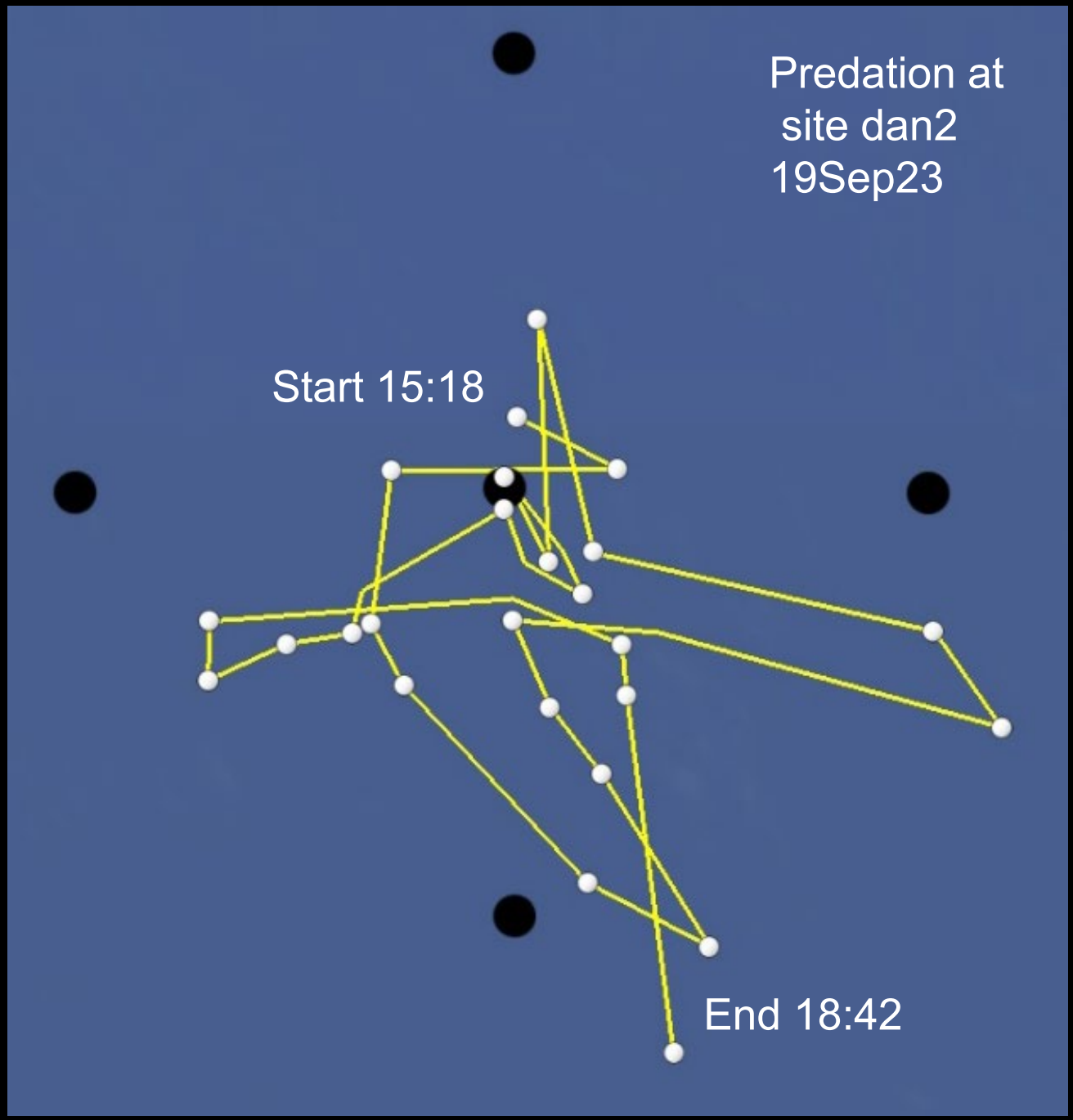
All fates and positions determined.

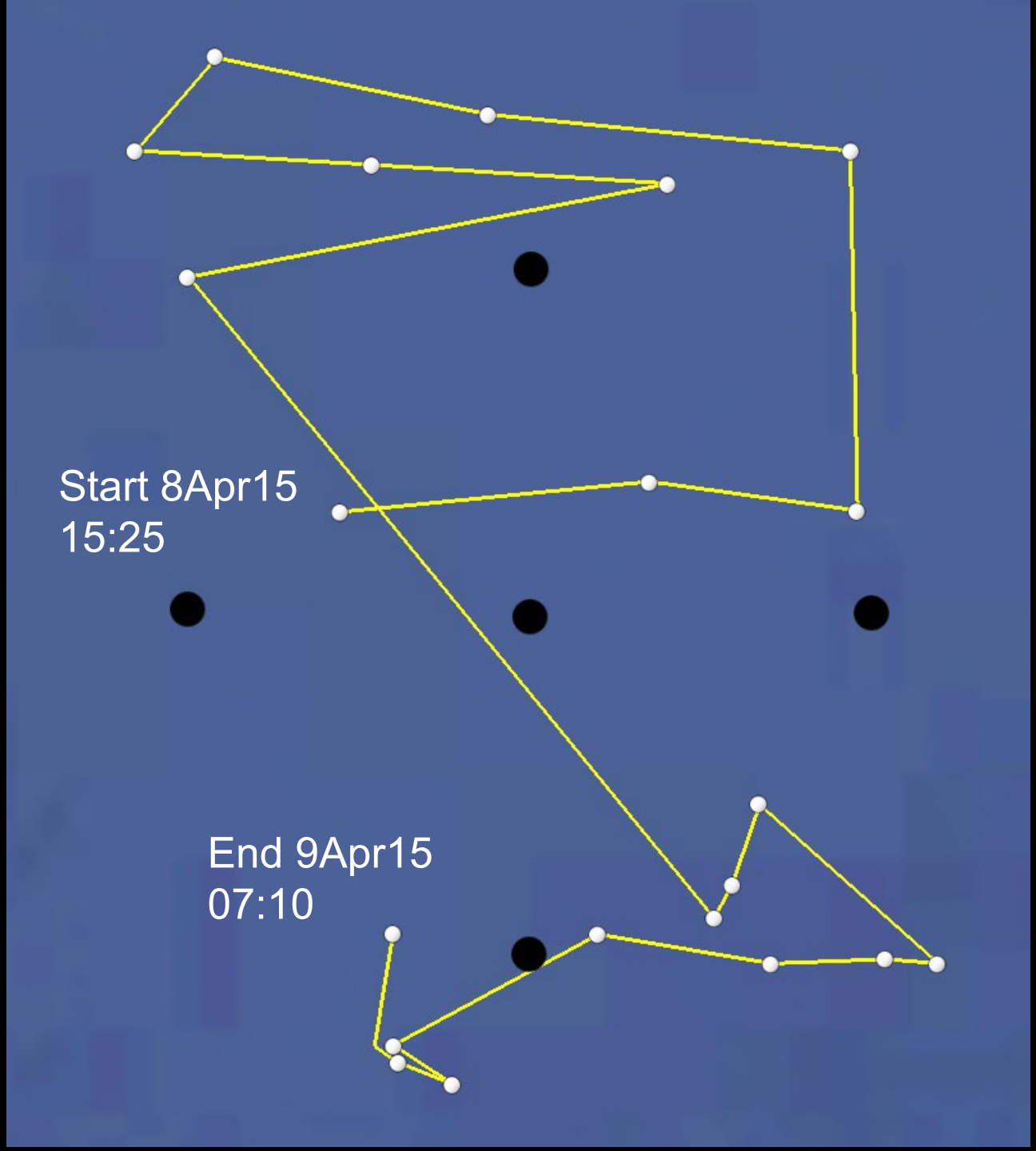
Telemetry 2022 – 2024 by site

Structure	site-name	N	Days Tracked
Army tank	(cc26B)	10	1-72 d
Natural rock	(Nat4)	13	64-224 d
Metal cage	(sims5)	10	57-94 d
Pipeline	(UN52)	1	180 d
Metal cage	(7dec22)	14	12-224 d
Metal cage	(dan2)	11	1-49 d

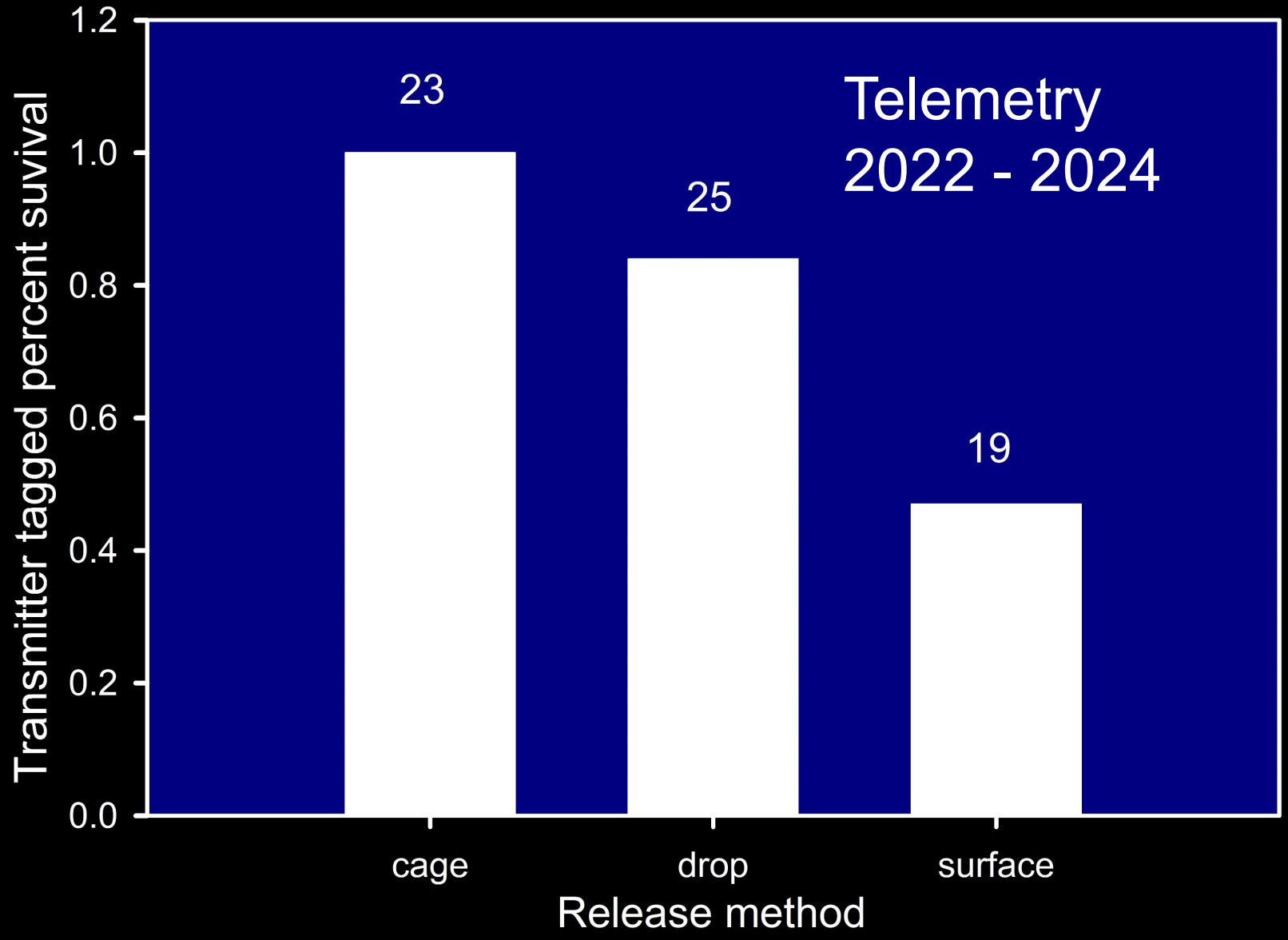

Resident 74 days
3Mar – 16Apr22
Metal cage (Sims5)


Emigration
Army
Tank2
Army
Tank1
Start
24Apr22
21:38
End 25Apr22 06:10


Predation at
site dan2
19Sep23
Start 15:18
End 18:42



Sandbar shark movements


Telemetry
2022 - 2024
23
25
19
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Transmitter tagged percent suvival
cage
drop
surface
Release method

Lab transmitter tag retention 2024

Tag Date	TL mm	Mortality	Captive (d)
25-Apr-24	480	27-May-24	32
25-Apr-24	573	3-Jun-24	39
25-Apr-24	530	30-May-24	35
25-Apr-24	473	3-Jun-24	39
25-Apr-24	524	22-May-24	27
1-May-24	530	26-May-24	25
1-May-24	478	1-Jun-24	31
1-May-24	508	29-May-24	28
1-May-24	575	3-Jun-24	33
1-May-24	479	3-Jun-24	33

Lab transmitter retention study

All transmitter remained firmly attached.

No detectable effects on feeding.

External attachment of transmitters caused abrasion. Not suitable for long term tracking.

1986
1958
wildco

Final conclusions 2022 – 2024 conventional tagging

There was little difference in survival among release methods.

Fisher behavior did not cause bias.

Sample size was robust (722 tagged fish, 215 recaptures).

Fast handling time will increase release survival.

Fast retrieval will also increase survival.

Red snapper cannot better equalize with slow retrieval.

Increased depth reduced survival.

Final conclusions 2022 – 2024, telemetry

There was a significant difference in survival among release methods, with surface released showing the lowest survival.

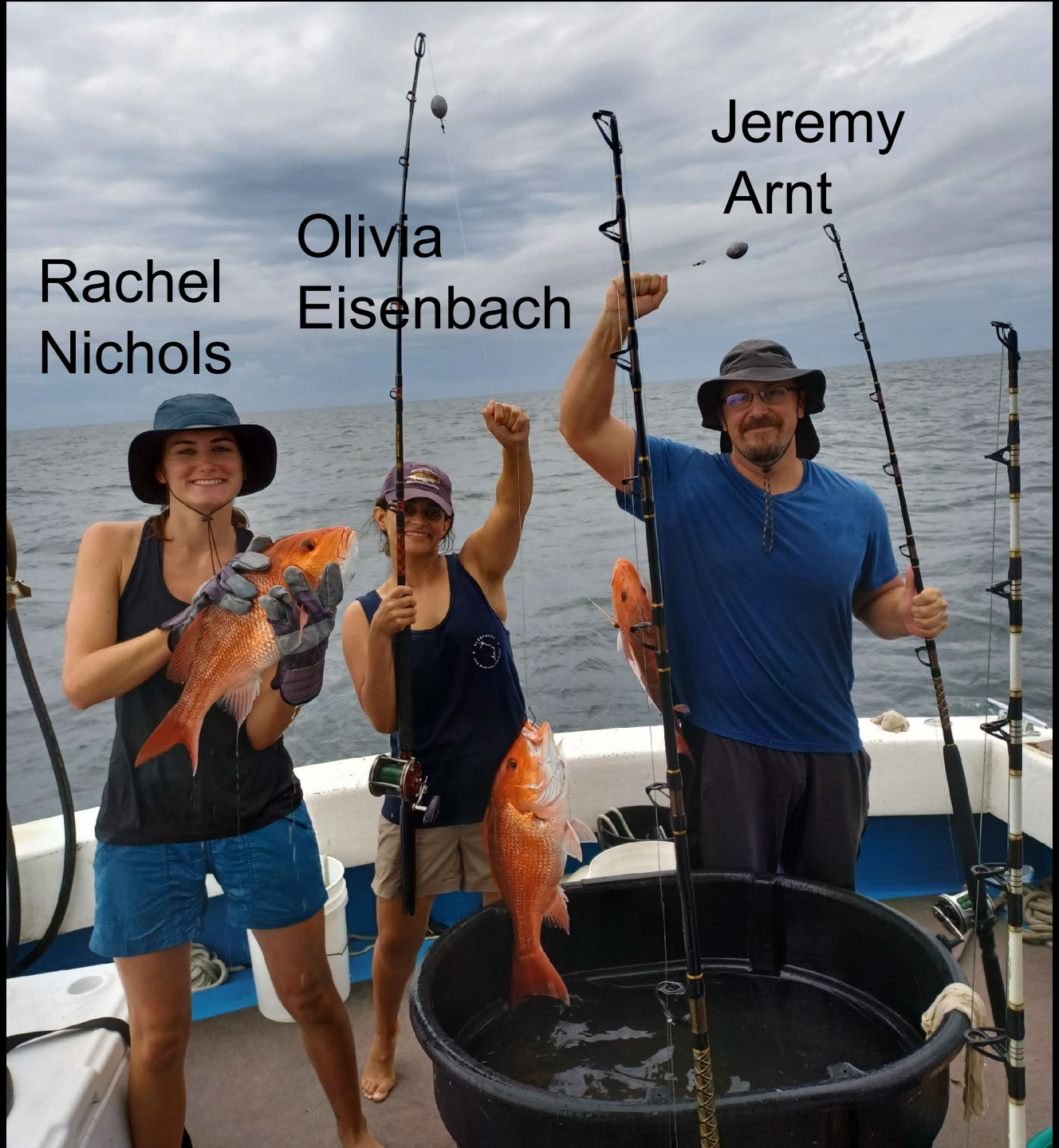
Low surface release survival was likely due to external transmitter attachment, and not release methods.

Predation caused reduced survival, based on tracking patterns.

This predation effect was also supported with the 100 % survival of cage released fish (protected from predators at the time of release).


Shaye Holmberg


Jared Burge
Dan Ellard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