



Desert Star
Systems LLC

Marco Flagg & Jacob Wolf

WHOI Ropeless Fishing Workshop

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Preventing Whale Entanglements while Improving the Pot Fisher's Business:

ARC-1XD A Rope-less Fishing Method

ARC-1XD

- **Environmental Benefits**

- Effective Prevention of Marine Mammal Entanglements
- Ghost Fishing Mitigation (increase in CPUE)

- **Benefits to Fishers**

- Releases for peak market price (lobster and crab)
- Easier fishing in high currents (.75 now 2 knots)
- Gear theft and ship strike protection
- Better time management (fishing, boat maintenance, day off)



ARC-1XD Field Demo (Video)

<https://youtu.be/WeeieRr7sTw>

Fishermen's Experience

- New South Wales Rock Lobster Fishery
- Continuous use since 2013
- 300+ traps, ~1000 years in water
- Some fishers invest heavily & transform their business
- Others try & struggle
- Many more are watching and waiting



Fishermen's Experience

- The ARC-1XD Release is ~99% Effective (Scott Westley)
 - About 97%-98% recovered by remote release, rest talking and grappled with 2% gear snags and 1% release failures.
 - About 1% not talking. Mostly trap moved by bottom trawlers. But release failures such as flooding, battery connector fail, component fail also observed.

Fishermen's Experience

- Getting operations right is the challenge
 - Well serviced acoustics, ropes, floats, bags, boat equipment
 - Well thought out trap deployment & recovery procedure
 - Understanding environment & boat impact on performance

Fishermen's Experience Problems & Solutions

Problem:

After years of good performance, suddenly couldn't talk to most releases.

Solution:

Dive check found boat transducer barnacle coated despite recent haul-out. Transducer is now regularly inspected.

Fishermen's Experience Problems & Solutions

Problem:

Fishing in more shallow water than normal, sometimes it was hard to link to releases.

Solution:

There were also strong winds and currents. In shallow water, transducer coverage cone is smaller, and boat drifted past trap too fast. Steaming against the current/seas solved it.

Fishermen's Experience Problems & Solutions

Problem:

After months of continuing use, almost half of releases reported trigger but floats didn't surface.

Solution:

Barnacles had grown all over releases and bags. Gear is now cleaned between deployments to stop the growth cycle.

Fishermen's Experience Problems & Solutions

Conclusion:

- Experienced support of new fishers is essential to teach
- Be aware of regional differences in conditions and their impact on the system

Common Concerns



Concern

Gear overlay without surface buoy

Solution

Not with the Rope-less Fisher App

Rope-less Fisher App

Ropeless Fisher

Fisher5	1234	.24 nmi
Fisher6	23	.24 nmi
Fisher9	4	.56 nmi
Fisher7	456	.56 nmi
Fisher1	222	.56 nmi
Fisher4	1234	.56 nmi
Fisher8	15	.56 nmi

START DEPLOYMENT

Ropeless Fisher

Fisher Name

Gear Number

Gear Expiration Days

Visibility Range

DEPLOY

Ropeless Fisher

Fisher2 23 .0 nmi

Deployment Information:

Fisher: Fisher2
Gear Number: 3b
Latitude: 36.6777601
Longitude: -121.7620258
Deployed in: Fri Jan 26 14:18:29 PST 2018
Expires in: 0 day/s
Visibility: 0 nmi

CANCEL RELEASE

START DEPLOYMENT

Common Concerns



Concern

Added handling time

Solution

**No added handling time per trap with boat
optimized fishing strategy**

**New broadcast release mode; buoy
automatically surfaces as boat approaches**

Example of 3 man system: F/V-Seeking (NSW)

- Avoid increased handling time per trap
- 3 man system
 - Captain – Release, Range, and Trigger
 - Crew 1 – Bag stuffing and arming, catch tagging and boxing
 - Crew 2 – Trap and bait

Captain: Release Range & Trigger



Crew 1: Bag stuffing & arming, catch tagging and boxing



Crew 2 Trap and bait



Common Concerns



Concern

Cost and maintenance

Solution

Cost offset by business operational advantages

Lower cost version in testing (ARC-2)

Fishery Integration

- Pilot program recommended
 - 3 day class for fishers by Marco Flagg
 - Individual boat integration support
 - Individual training and fine-tuning at sea
- Fishery Association should spearhead pilot program. Community purchasing for lowest cost

Pilot Program



Class and individual support by Desert Star

Pilot Fisher

Pilot Fisher

Fishermen

Fishermen

Fishermen

Fishermen

■ A brighter future for fishers and whales

- Live Demonstrations
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