



Scallop Potting

FISHTEK MARINE 

WHO ARE FISHTEK MARINE?



“An **outcome focussed**, marine technology company that design and manufacture technologies to mitigate environmental issues in commercial fishing.”

Fisheries Scientists

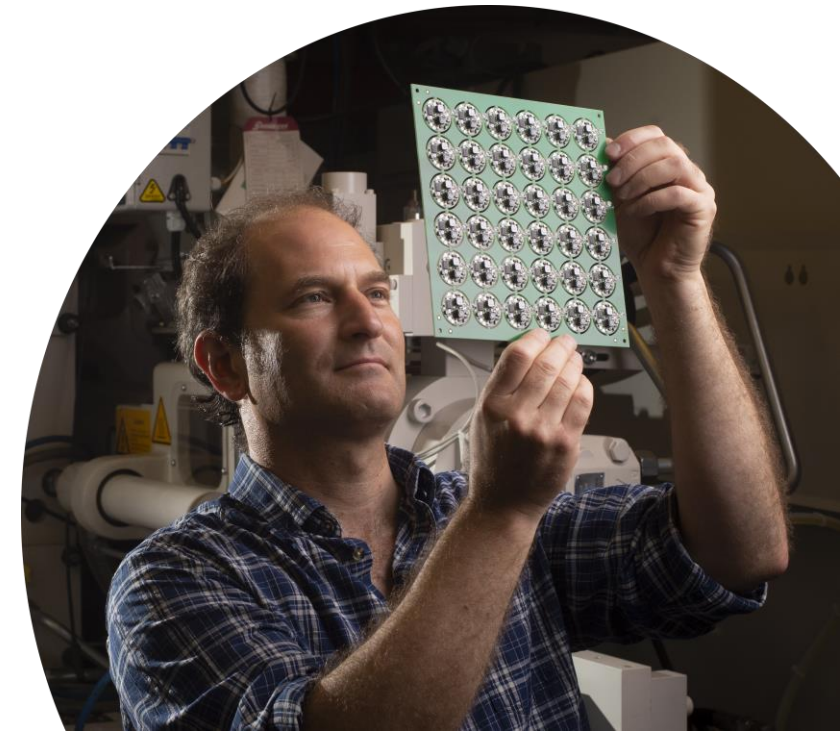
Working with fishermen, fishing representatives, governments, NGOs & universities across the globe

Engineering

Mechanical/electrical engineering
CAD design
Tooling and Injection moulding

Manufacturing & Sales

Production and assembly
Sales and marketing



A CHANCE DISCOVERY

INTRODUCING THE

POTLIGHT

Advanced deep drop fishing light

FISHTEK
MARINE

Increase
your catch
rates



TECHNOLOGY THAT WORKS FOR FISHERMEN AND THE ENVIRONMENT

Advanced deep drop fishing light

Proven to increase catch rates in pot and trap fisheries

Low Cost and Durable
Rapid payback on investment.

Durable
Depth rated to 1200m.

Easy to Use
Fixes to the inside of the pot.

Long Battery Life
500+ hours battery life

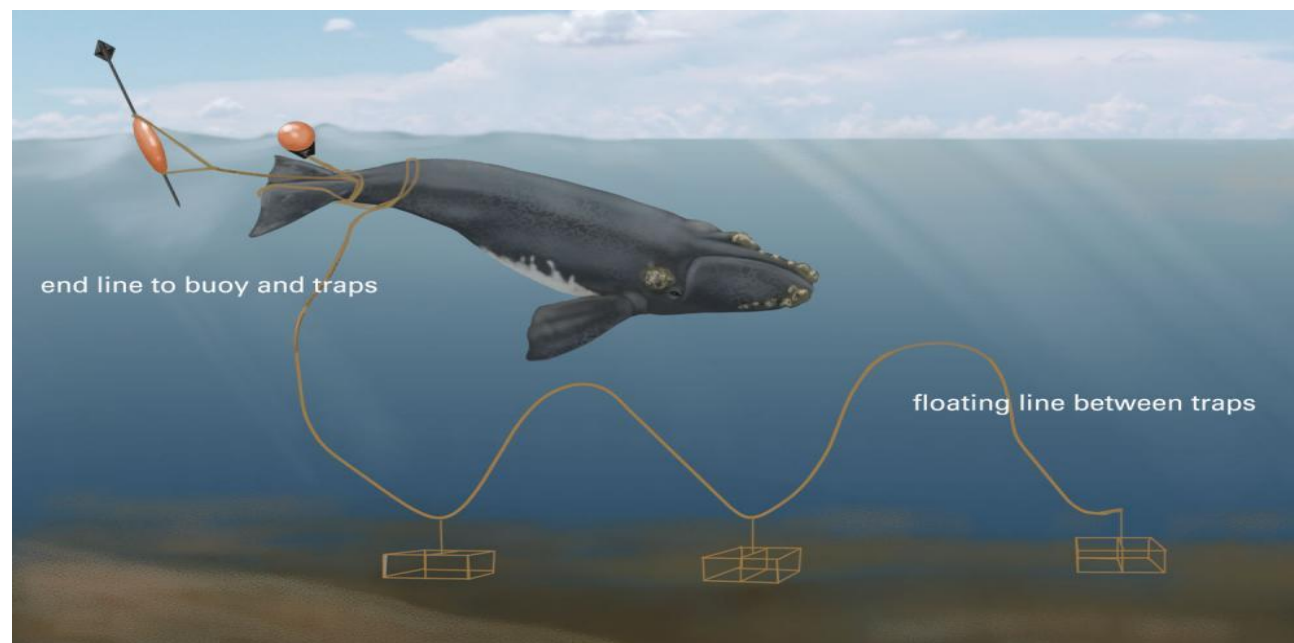
Auto Immersion Switch
On/off in water.



Available in a range of colours:
flashing or constant
Green, white, blue and disco.

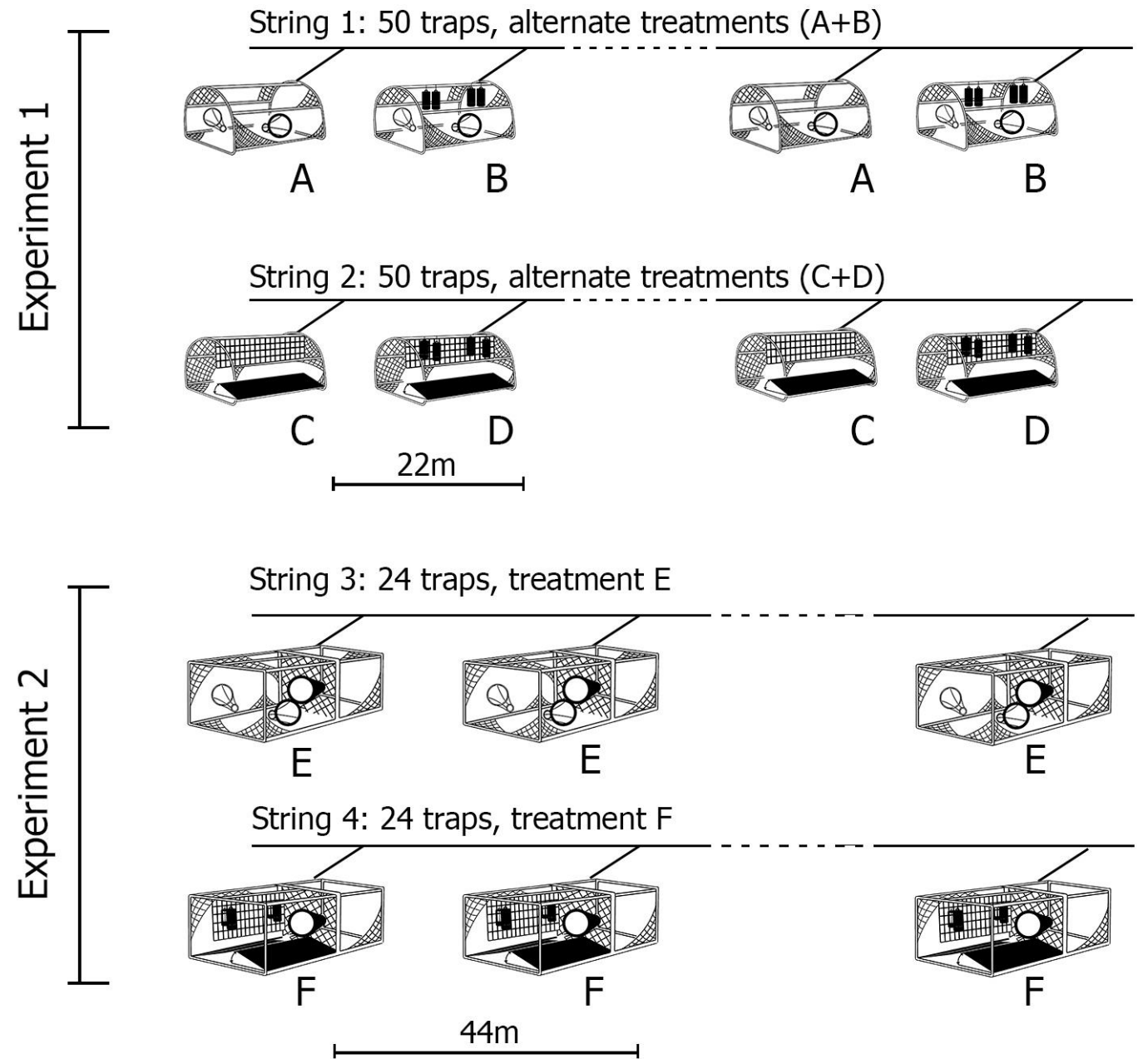
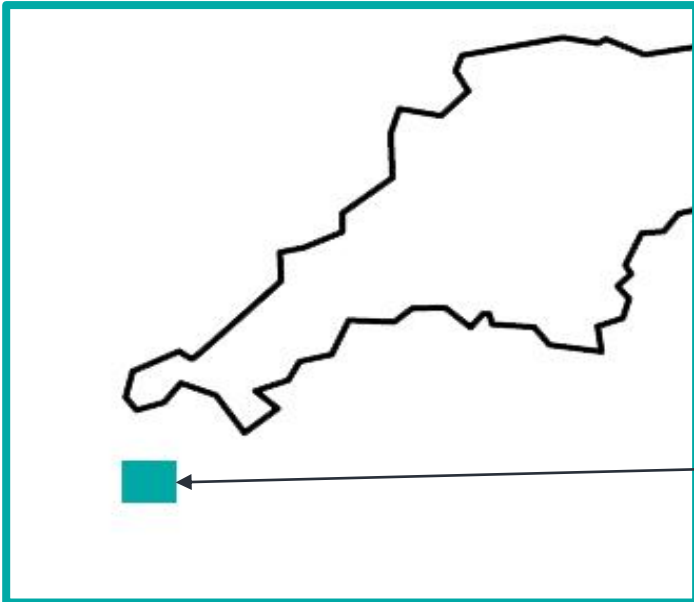


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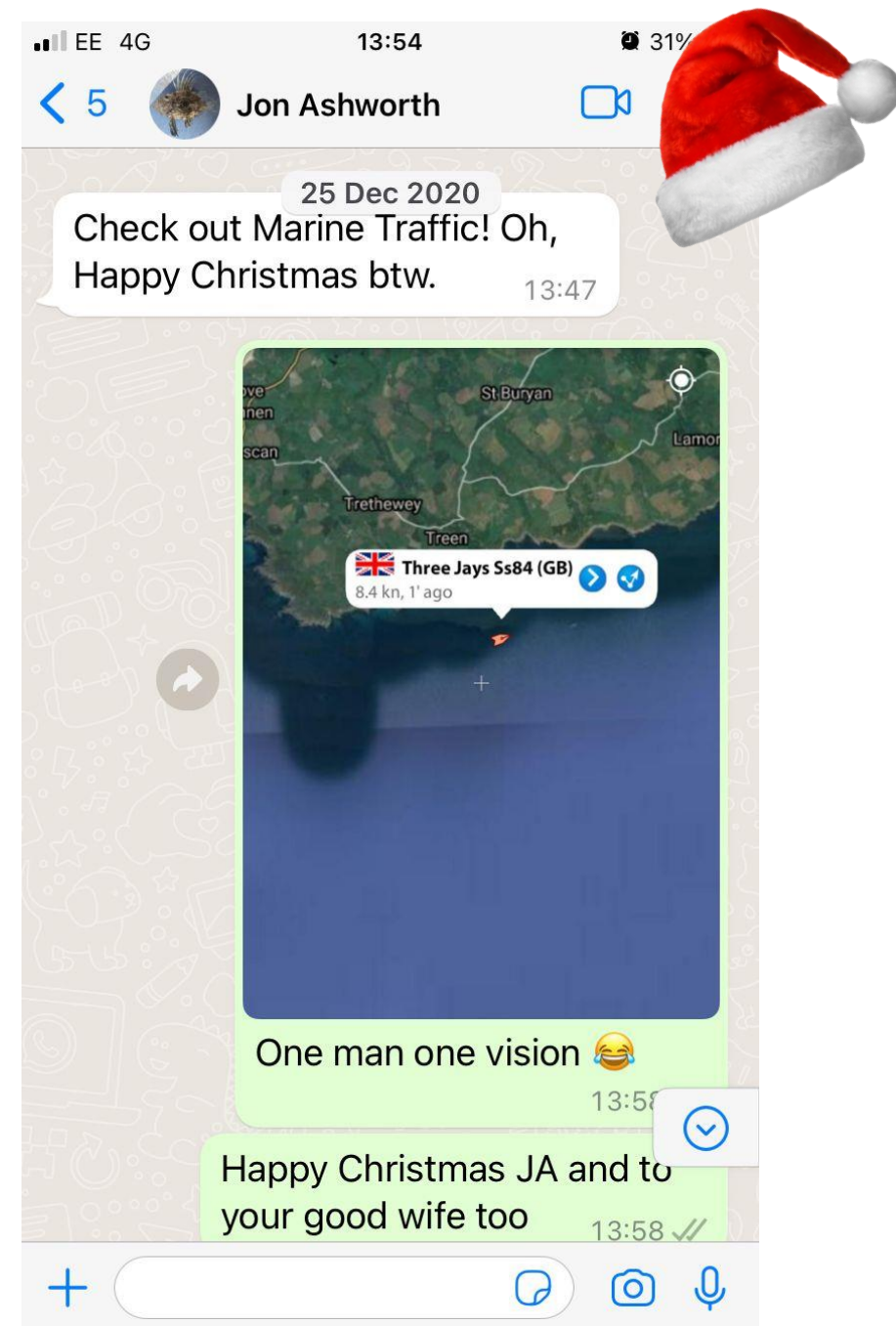




SURVEY DESIGN



KUDOS



KEY FINDINGS

1. King scallop (*Pecten maximus*) swim into crustacean pots when illuminated.
2. Illuminated pots increase CPUE of commercially important spider crab (*Maja squinado*).
3. Pot illumination augments crustacean catches with high-value scallops.
4. Inexpensive modifications to standard crustacean pots facilitate scallop retention.
5. An opportunity for a new, low-impact fishing method for scallops is described.

1 trip, 75 illuminated traps hauled,
100+ retainable (>100mm) scallops.
December 2020, Newlyn.



#ScallopDisco

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Scallop potting with lights: A novel, low impact method for catching European king scallop (*Pecten maximus*)

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ABSTRACT

This paper describes, for the first time, that scallops can be attracted into static fishing gear using LED lights. This novel finding presents an opportunity for the development of a new, low impact fishing method for scallops. Traditionally, wild caught scallops are primarily fished using dredges and trawls. Due to their penetrative nature, the insertion of this towed gear with the seabed can cause significant damage to sensitive marine habitats and species. Diver caught scallops have been a low impact alternative source, however, this sector can only supply limited quantities due to logistical constraints. In this study, we investigate the potential for scallops to be fished using illuminated standard commercial crustacean pots. We assessed the effect of using light in a range of pot designs on scallop, brown crab, lobster and crawfish, and spider crab catches in Cornwall between December 2020 and February 2021. A total of 77 strings were shot, deploying 1886 pots of six treatment types. The fishing grounds used in the trial are traditionally potted for crustaceans and are not renowned scallop beds. Despite this, all treatments with lights retained scallops and of the 518 scallops recorded, 98.6% (n = 516) were caught in pots with lights. A modified parlour pot with lights (treatment 7) caught scallops most effectively, with a maximum catch rate of 19 scallops per string (23-24 pots per string) per 24h, and the maximum number of scallops recorded in a single pot was 24. We show that simple and inexpensive modifications to existing crustacean pots present fishers the opportunity to augment their existing crustacean catches with a low environmental impact, premium scallop product. Further refinement to pot design and the lights are needed to enhance scallop and crustacean retention before a commercially viable fishery can be established. We discuss the opportunities that these new findings present to the fishing industry and marine managers.

1. Introduction

Sea scallops (*Pectinidae*) are wild caught globally, with the top five catching countries (in order by landed weight): USA, France, Canada, Argentina, and the United Kingdoms contributing > 85% of global scallop landings (BAC, 2021). These fisheries are often high value, with operators attracted to the sector by lucrative prices and relatively low operating expenditure compared to other fishing methods (Stewart and Howarth, 2016). Wild caught scallops are primarily fished using mobile gears (dredges and trawls) but are also hand collected by SCUBA divers in smaller quantities. Dredges are the most common fishing method used to extract high value, relatively low mobility species of scallops (e.g. European king scallop, *Pecten maximus*, Atlantic sea scallop, *Placopecten magellanicus*, and Australian southern scallop, *Pecten fumatus*; Dawson et al., 2016; Hansen and Rodgers, 2019). Although dredge designs vary among fisheries, they typically feature metal and mesh collecting bags, towed singly or in gangs of up to 22 dredges aside (Cappell et al., 2016). The Newhaven dredges used in the UK possess a spring-loaded bar of teeth designed to penetrate the substrate and lift the scallops up

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disco' lights leads to new f technique

Scientists hail breakthrough that could maximise catches while reducing damage caused by fishing

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Scientists discover that scallops "love" disco lights

The bivalve wonderland appears to get the best of mollusks

By Matthew Neale | 23rd May 2022

NEVER MIND BUZZCOCKS

sky

TRENDING

NEWS

SCALLOPS LOVE 'DISCO' LIGHTS, SCIENTISTS DISCOVER

Scientists say the discovery could allow people to maximise catches while reducing damage caused by fishing

DU

NEWS FEATURES MUSIC TECH VIDEO TOP 100 SHOP

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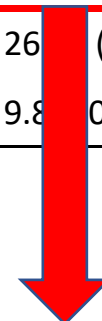
RESULTS



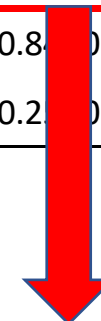
Treatment	Treatment description	European king scallops		Brown crab		Lobster & crawfish	
		n caught (n retained)	Rate (quantity string ⁻¹ 24-hr ⁻¹)	n caught (n retained)	Rate (quantity string ⁻¹ 24-hr ⁻¹)	n caught (n retained)	Rate (quantity pot ⁻¹ 24-hr ⁻¹)
A	Pot	0 (0)	-	300 (95)	9.67 ± 11.95 (1.25-46.00)	12 (6)	0.33 ± 0.49 (0.00-1.33)
B	Pot + light	100 (56)	2.36 ± 3.66 (0.00-12.75)	307 (88)	9.25 ± 10.85 (2.75-43.00)	5 (3)	0.19 ± 0.34 (0.00-1.00)
E	Parlour pot	0 (0)	-	560 (134)	20.70 ± 26.00 (3.76-97.04)	34 (17)	0.99 ± 0.84 (0.00-2.61)
F	Parlour pot + light + ramp	267 (134)	3.81 ± 4.90 (0.00-19.00)	396 (117)	8.01 ± 9.80 (0.00-40.00)	11 (7)	0.16 ± 0.21 (0.00-0.67)



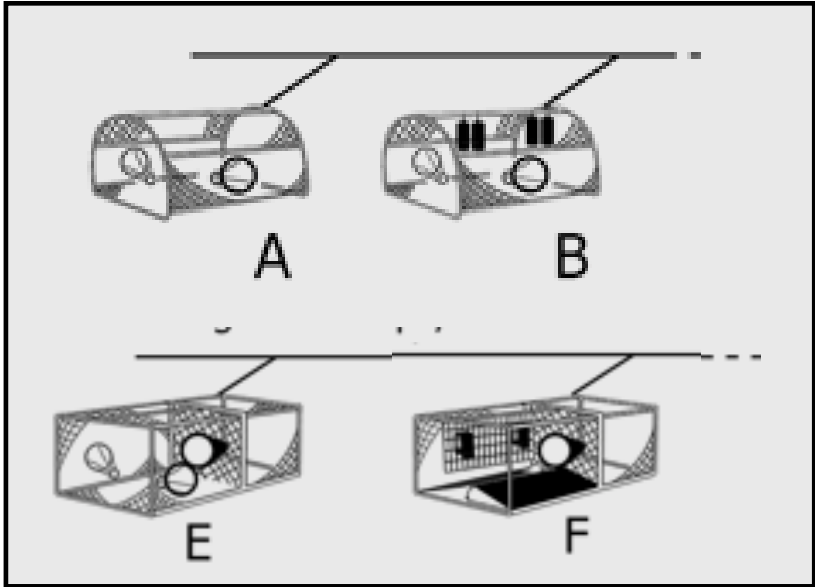
No light no scallop



No impact of light
on crab



Potential impact of
light on lobster



0.3 SCE/POT/HAUL = ~120 SCE per day of 400 pots (50% keepers)

WORK TO BE DONE

PROPOSED PATHWAY FORWARD

PHASE I



PHASE II



PHASE III

3-6 months

18 months

Dependent on outcomes of phase II

- SIF Feasibility study
- Paper

- SIF/NE/FG R&D study
- Optimise light
- Optimise trap
- Hone fishing method

- Targeted role out
- Market development (Seafish ??)
- Offshore methods?

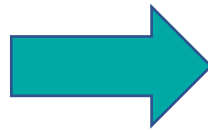
COMPLETE

EXPECTED FEB 2023

PHASE II – OPTIMISING THE METHOD

THE UNKNOWNNS

1. TRAP DESIGN
2. LIGHT COLOUR
3. LIGHT INTENSITY
4. LIGHT DUTY CYCLE
5. LOCATION



THE OUTCOMES

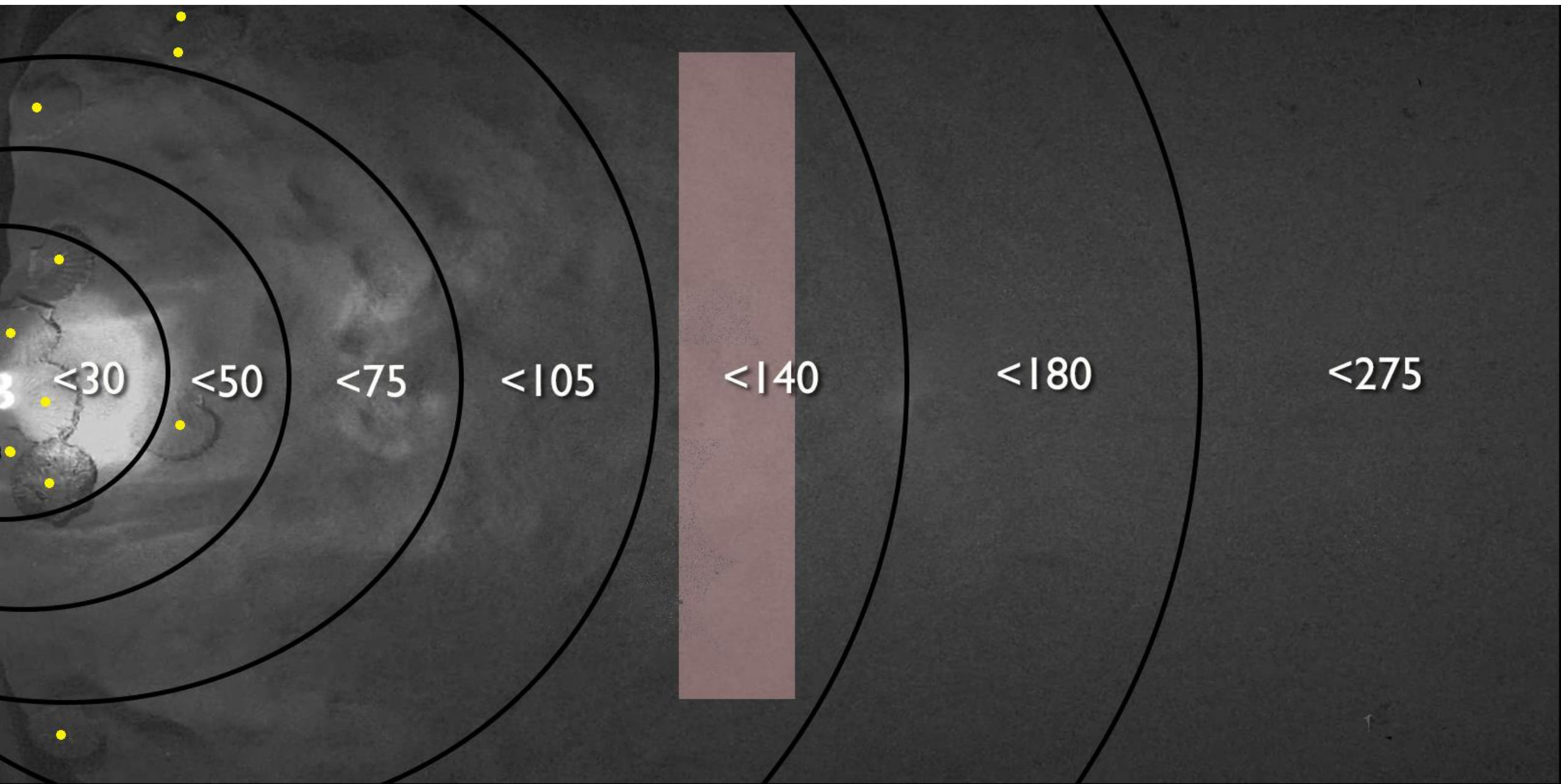
AN OPTIMISED METHOD

- 1) Viable trap?
- 2) Optimised light
- 3) Refined method



LIGHT & TRAP DESIGN





OPTIMISED LIGHT

REDACTED DUE TO COMMERCIAL SENSITIVITY

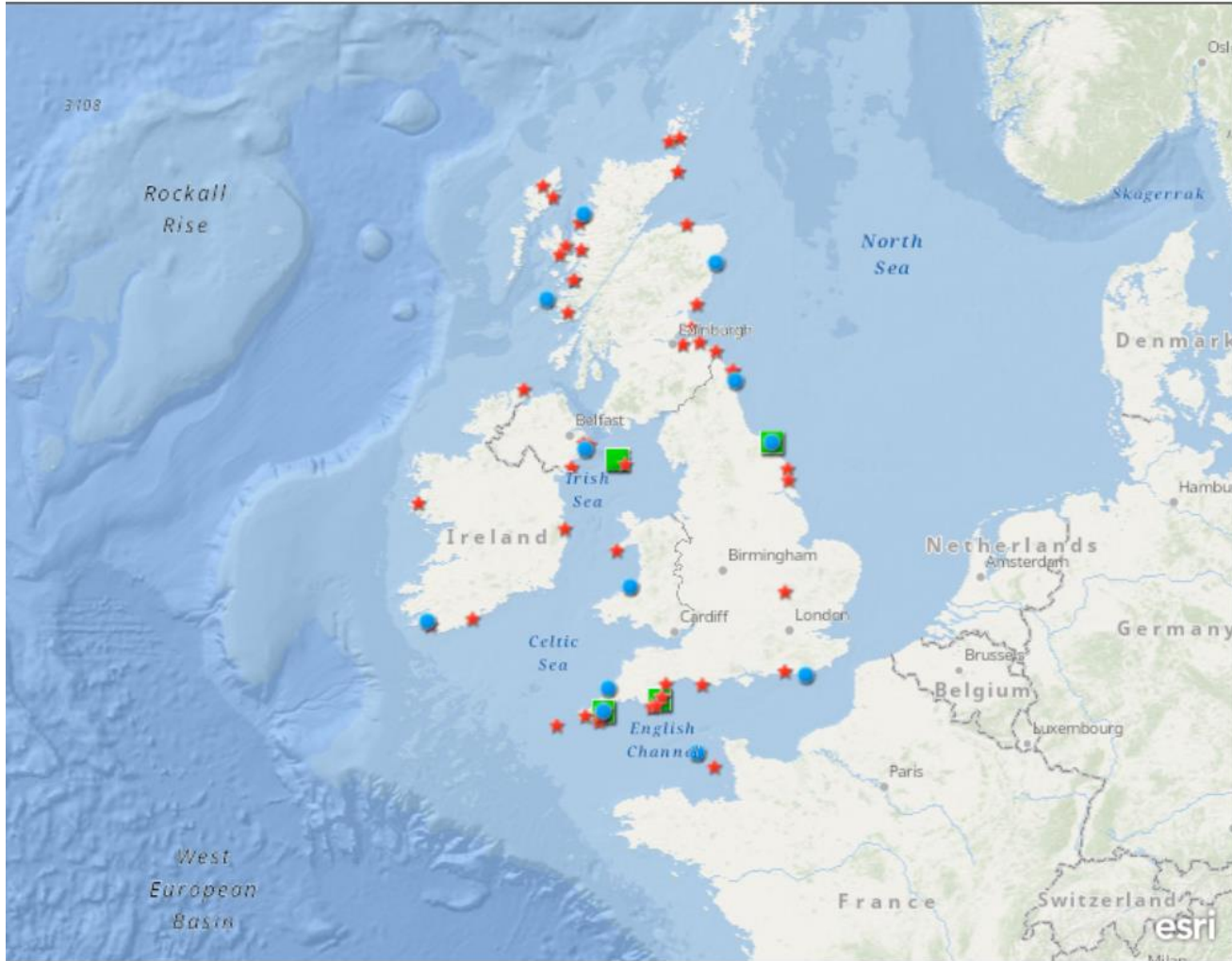
REDACTED DUE TO COMMERCIAL SENSITIVITY

OPTIMISED TRAP

REDACTED DUE TO COMMERCIAL SENSITIVITY

FISHER PARTICIPATION

- Most inquiries for lights on hold while method being developed
- 12 fishers selected to help out
- Free issued lights in return for basic catch data



SCALLOP RECORDING SHEET

Vessel & Skipper Name: TREVALLY J MAYES
 Date & Time Shot: 6.8.22
 Shot depth (m): 32
 Shot at - lat/long: 50° 8' 80" N 4° 55' 97" W

Date & Time Hauled: 21.8.22

SPECIES	No Lights (5 No. pots)	STRING Lights (5 No. pots)
SCALLOP	0	51
BROWN CRAB	5	1
LOBSTER	4	1
SPIDER CRAB	5	2
Other species: e.g. crab, lang, velvet etc.	8x ballen crabs 5x conger 1x octopus	conger x 1

Notes:
 e.g. water clarity, scallops close or
 opened in hauls, scallops have
 large roes.

longer lay.
 lights still working
 one pot 21 scallops
 one pot 17 scallops
 13 scallops of size (legal)

SCALLOP RECORDING SHEET

Vessel & Skipper Name: J. COLE
 Date & Time Shot: 9th Aug 10.00AM
 Shot depth (m): 60 meters
 Shot at - lat/long: 54° 32.95' N 000° 30.00' W

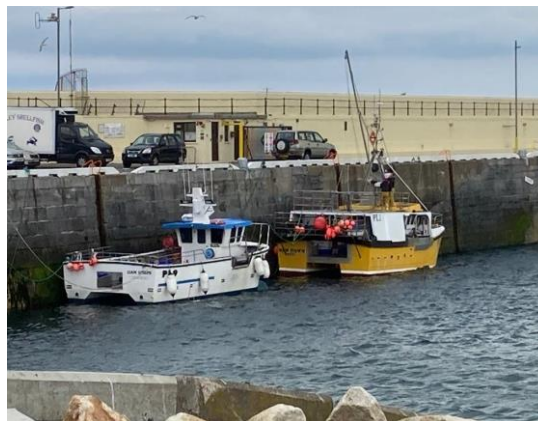
Date & Time Hauled: 14 Aug 13.00 PM

SPECIES	No Lights (20 No. pots)	STRING Lights (20 No. pots)
SCALLOP	NONE	8 SCALLOPS
BROWN CRAB	20	18
LOBSTER	12	15
SPIDER CRAB	NONE	15
Other species: e.g. crab, lang, velvet etc.	NONE	NONE

Notes:
 e.g. water clarity, scallops close or
 opened in hauls, scallops have
 large roes.

SCALLOP NO R&E IN THEM
 EAR
 EL BOTTOM.
 RUNNING
 ELL.

OBSERVED STUDIES – Tackling the unknowns – 6 questions, 4 experiments



**1. LIGHT COLOUR
DARTMOUTH**



**2. TRAP DESIGN
WHITBY**



**3. LIGHT INTENSITY
ISLE OF MAN**



**4. CONTROLS
FALMOUTH**

WHAT WE'RE LEARNING SO FAR...

- LOCATION SENSITIVE
- SOME AREAS WORKING BETTER THAN OTHERS
- LOBSTERS REDUCED IN ILLUMINATED POTS
- AUGMENTATION WILL BE LIMITED TO CRAB DOMINATED GROUNDS
- BROWN CRAB NOT AFFECTED BY LIGHT
- THERE IS HUGE APPETITE FROM COASTAL FISHERS TO HAVE THIS WORK
- PEOPLE ARE EATING "DISCOSCALLOPS" IN RESAURAUNTS
- PRICES ARE HIGH



WHAT WE'RE LEARNING SO FAR...



WHITBY – flying

DARTMOUTH – underwhelming
IOM?

Falmouth?

“Doubles the value of my strings”

“no difference in CRE/LBE”

“will need more scallop pots”

“better than lobster prices”

“selling for £2.50 a scallop”



PHASE III

Dependent on outcomes of phase II

- Targeted role out
- Market development (Seafish ??)
- Offshore methods?

QUESTIONS?



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Bycatch reduction technologies that work for fishermen and the environment