

Isles of Scilly Crawfish (*Palinurus elephas*) Monitoring Report from Isles of Scilly Dive Charters



Figure 1 - divers on ascent (I. Allsop, 2025).

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Summary

This report details monitoring of *Palinurus elephas* on board dive vessel Morvoren for the 2024 and 2025 summer season in the Isles of Scilly. The report details methods, limitations and the data set collected. Sightings data has been collected to support monitoring of Isles of Scilly Marine Conservation Zones (MCZ's) (IoS IFCA, 2024) where MCZ's have the objective "recover to favourable condition" (Natural England, 2019) for the species *Palinurus elephas*, commonly known as spiny lobster or locally known as crawfish.



Figure 2 – *Palinurus elephas* on rocky reef in Scilly (I. Allsop, 2025).

Introduction

Palinurus elephas (see Figure 2) are an epibenthic species known to live on circalittoral rock and wrecks (Gibson-Hall, *et al.* 2018). Commercially, crawfish are the “third most valuable species” (Hooper *et al.* page 10) in the IoS IFCA Natural Capital Asset Register.

The species suffered local extinctions due to over exploitation in the 1960’s and 1970’s (Gibson-Hall, *et al.* 2018). When MCZ’s were designated in Scilly in 2013, *Palinurus elephas* were designated a protected feature across 9 of the 11 MCZ’s with management approach of “return to favourable condition” (Natural England, 2019). Numbers are rising, according to fisheries data “Landings in Scilly remained steady from 1998 to 2018 and have increased by an average of 40% a year” (Morcom, *et al.*, 2023, page 3).

Monitoring marine environments is challenging “In offshore areas, there was known to be paucity of habitat data, limiting effective decision making in the Isles of Scilly IFCA district” (Hooper *et al.* page 15). As regular ‘resource users’ scuba divers can contribute to monitoring of marine species and habitats through participating in citizen science. Citizen science is when volunteers participate in data collection and surveys, such as through organised schemes like Seasearch (Seasearch/MCS UK, 2025). Where a “lack of reliable survey data for these habitats currently limits confidence in assessments, particularly asset condition” (Hooper *et al.* page 27) citizen science can contribute a qualitative data set which can be used to improve overall monitoring and ‘ground

truthing' for other survey methodologies and modelled data sets. This is important as "Increased data on fishing" is needed to "develop indicators from which the fishing can be more effectively monitored and managed." (Morcom, et al. 2023).



Figure 3 - Juvenile crayfish in crack on rocky reef (I. Allsop, 2025).

Methods

Crayfish sightings were collected by the skipper after every dive completed over both 2024 and 2025 seasons. As divers went in 'buddy pairs' each pair was asked to note the maximum number of different individual crayfish they saw after each dive completed and the highest number reported was recorded for the site. Only positive sightings were recorded. Each site within a MCZ was assigned a code (see Table 1). Then sites were assigned an additional code from the IFCA district reporting grid cells (see Figures 4, 5 and 6).

Observations from every site in a cell were then combined to show total observations per cell (see Figures 7, 8 and 9). As some dives took place outside of an MCZ but crayfish were still present, an additional site code has been added to include these records (see Tables 2 and 3). In 2025, 'additional comments' when provided by participating divers were also recorded so there is an extra column for the 2025 data set to include these records (see Table 3).

To enable comparisons to be made of crayfish abundance between the reporting cells where crayfish had been recorded, a simple process was applied to normalise the

data. The method applied was one developed by Clark, 2004, to assess the relative intensity of fishing effort in the Sussex Sea Fisheries Committee district. The abundance (total number) of crawfish recorded for each grid cell was divided by the total number of visits to the cell. The result for each cell provided a figure of relative crawfish abundance (see Figures 10, 11 and 12). The relative crawfish abundance figure then allowed comparison to be made of crawfish distribution and the importance of certain grid cells as crawfish habitat.

Limitations

Due to weather and sea state conditions, some MCZ's were dived less frequently or not at all so records are limited or not present. Where a site was dived and no crawfish recorded, it does not mean they were not present, but that they were not observed by the divers. Divers were participating voluntarily and whilst many individuals had experience of underwater surveying the main purpose of the dives were recreational, so this is a secondary objective recording sightings as opposed to actual comprehensive surveying. Records were taken between depths of 18-40m.

As this is only the second year of data collection, more years are needed for comparative analysis to be made.

District reporting grids of N, NE and SW IFCA districts (Figures 4-6):

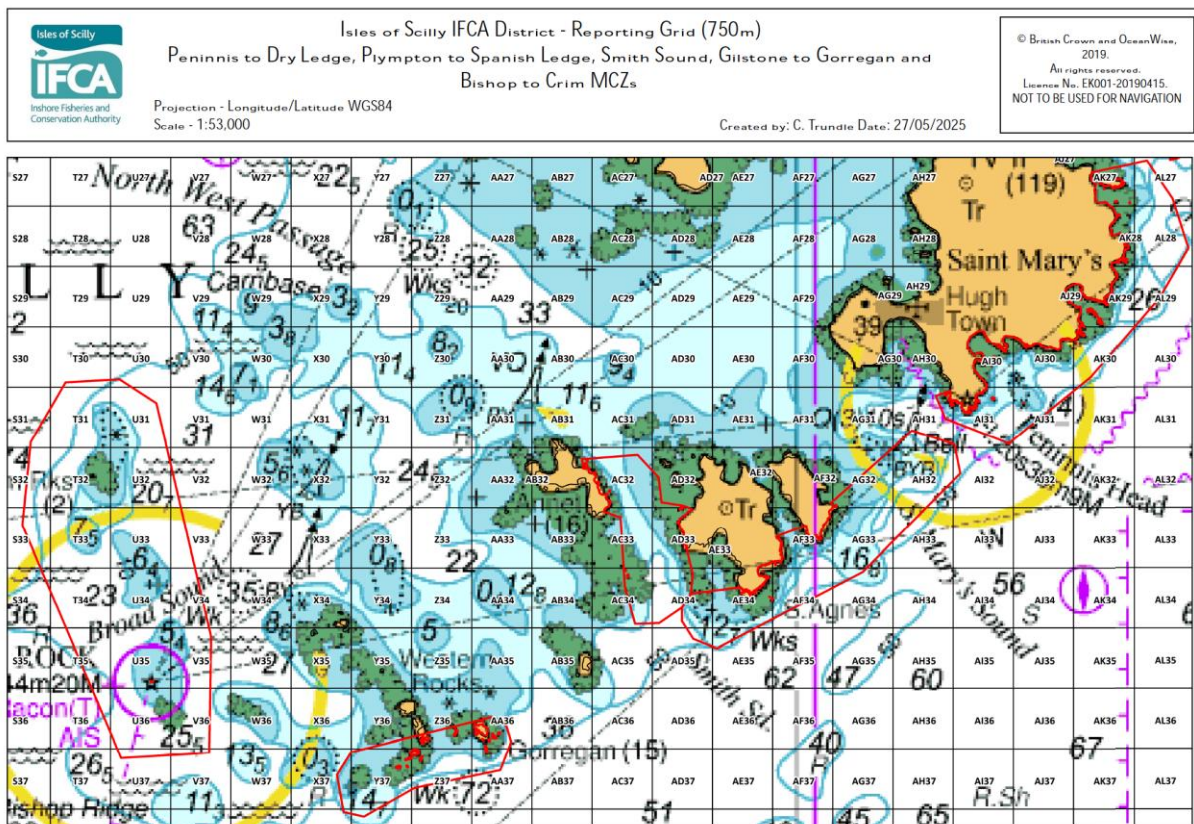


Figure 4 - IFCA District Reporting Grid South MCZ's Layout (C. Trundle, 2025).

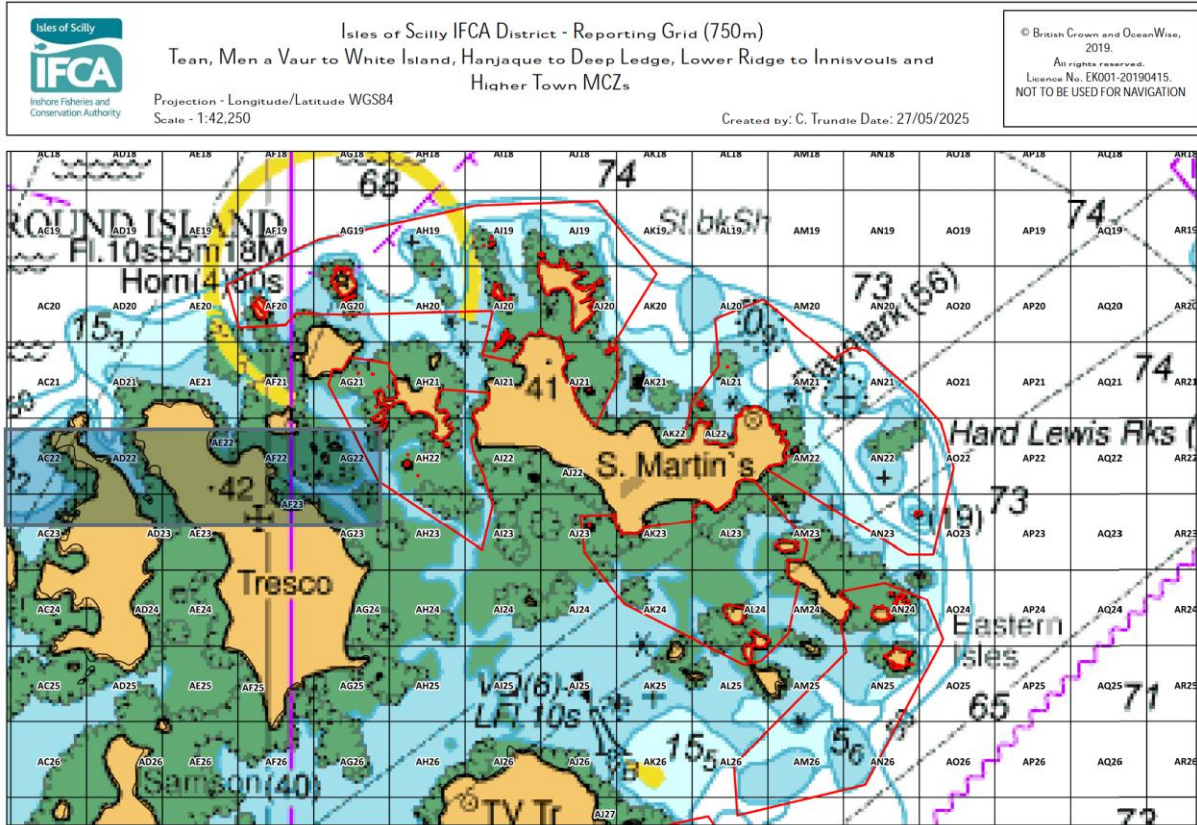


Figure 5 - IFCA District Reporting Grid North MCZ's Layout (C. Trundle, 2025).

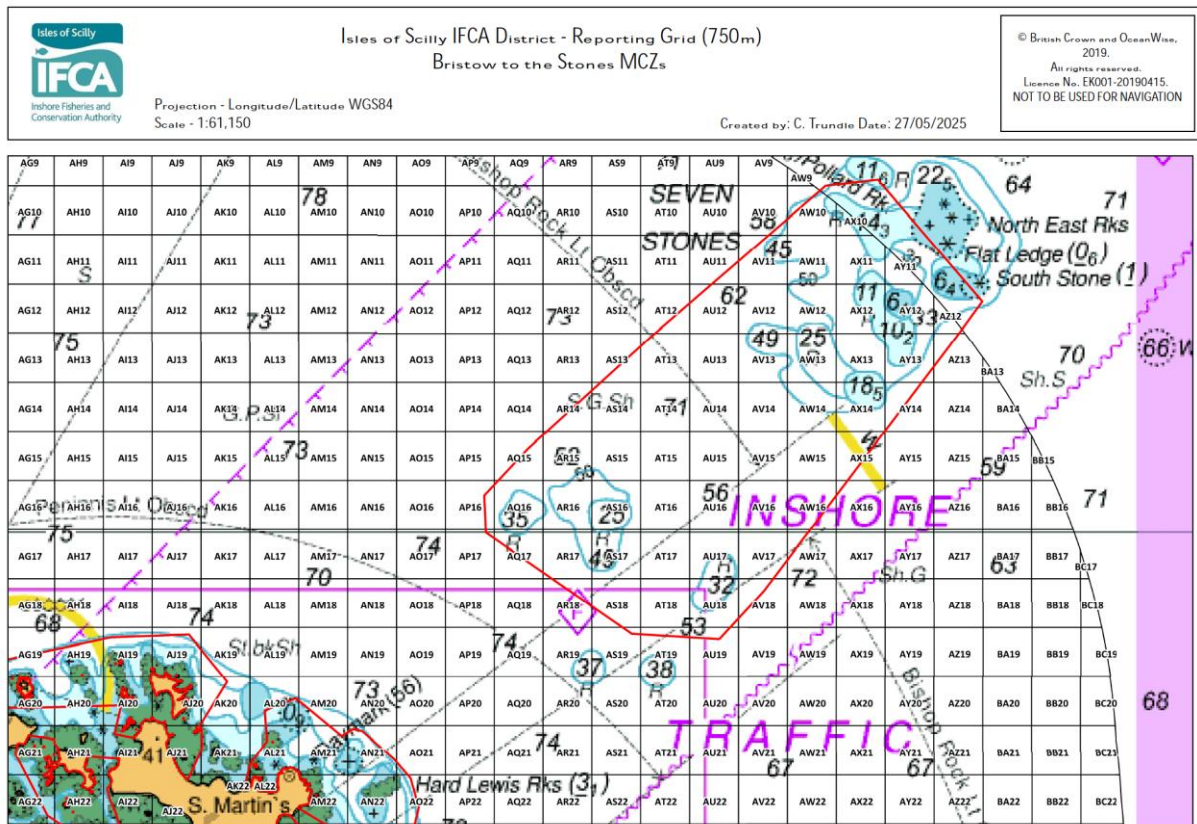


Figure 6 - IFCA District Reporting Grid Bristows to Stones MCZ layout (C. Trundle, 2025).

Raw data and assigned codes (Tables 1-3):

Table 1 - Marine Conservation Zone site code allocation.

MCZ	Code	Species general management approach 2013
Bishop to Crim	A	Recover to favourable condition
Bristows to Stones	B	Recover to favourable condition
Gilstone to Gorregan	C	Recover to favourable condition
Hanjague to Deep Ledge	D	Recover to favourable condition
Highertown	E	Not Present
Lower Ridge to Innisvouls	F	Recover to favourable condition
Peninnis to Dry Ledge	G	Recover to favourable condition
Plympton to Spanish Ledge	H	Recover to favourable condition
Smith Sound Tide Swept Channel	I	Recover to favourable condition
Tean	J	Not Present
Men a Vour to White Island	K	Recover to favourable condition
Outside of MCZ boundary	X1	

Table 2 - *Palinurus elephas* records 2024.

2024	Isles of Scilly		
Date	Code	District grid reference	No. observed
21/5/2024	H1	AD34	3
24/5/24	G1	AJ31	2
24/5/24	H2	AF34	2
27/5/24	D1	AM21	1
29/5/24	G2	AJ31	2
29/5/24	F1	AN26	2
30/5/24	G3	AK30	1
31/5/24	H3	AD35	5
31/5/24	I1	AD33	1
4/6/24	F2	AN25	1
5/6/24	H4	AE34	1
6/6/24	H1	AD34	3
6/6/24	H2	AF34	2
7/6/24	H1	AK30	3
10/6/24	H1	AD34	1
10/6/24	H2	AF34	3
17/6/24	D2	AN22	1
17/6/24	G2	AJ31	1
18/6/24	H1	AD34	2
20/6/24	H5	AH32	4
21/6/24	D3	AL20	6

23/6/24	C1	AN26	3
23/6/24	X1	AC35	1
24/6/24	B1	AX12	4
25/6/24	H1	AD34	1
25/6/24	H2	AF34	2
28/6/24	G2	AJ31	3
2/7/24	H4	AE34	1
2/7/24	H6	AG33	5
3/7/24	G4	AK28	2
4/7/24	F3	AN26	2
4/7/24	H7	AF33	2
5/7/24	D4	AN21	2
7/7/24	G4	AK27	1
7/7/24	H2	AF34	3
9/7/24	K1	AK20	2
9/7/24	D1	AM21	4
11/7/24	H4	AE34	1
12/7/24	H1	AD34	2
14/7/24	C2	Y37	3
16/7/34	G4	AK27	1
16/7/24	F1	AN26	1
17/7/24	D2	AN22	2
18/7/24	D7	AN21	4
19/7/24	X2	A023	2
22/7/24	D6	A023	10
23/7/24	H1	AD34	5
23/7/24	H8	AG34	3
24/7/24	K1	AK20	1
29/7/24	C3	AA36	1
29/7/24	C1	Z37	1
31/7/24	G4	AK27	1
31/7/24	H2	AF34	3
1/8/24	G5	AJ31	2
2/8/24	D3	AL20	4
16/8/24	H8	AG34	5
18/8/24	F3	AN26	3
26/8/24	F3	AN26	2
27/8/24	D7	AN21	4
28/8/24	D1	AM21	3
30/8/24	H9	AD34	10
9/9/24	G1	AJ31	3
12/9/24	F1	AN26	1

15/9/24	D7	AN21	3
17/9/24	F3	AN26	1
20/9/24	I1	AD33	1

Table 3 - *Palinurus elephas* records 2025.

2025	Isles of Scilly			
Date	Site code	District grid reference	No. observed	Additional comments
09/04/2025	I2	AD34	2	
25/05/2025	G6	AK27	1	Juvenile
29/05/2025	D1	AM21	2	
30/05/2025	D3	AL20	2	
01/06/2025	F1	AN26	1	
01/06/2025	G4	AK27	1	Juvenile
04/06/2025	D8	AN22	8	
04/06/2025	H7	AF33	3	
05/06/2025	D8	AN21	4	
08/06/2025	G4	AK27	1	
08/06/2025	K2	AJ20	1	
16/06/2025	H2	AF34	6	
20/06/2025	D3	AL20	3	
22/06/2025	D7	AN21	2	
23/06/2025	G5	AJ31	3	
23/06/2025	D7	A023	1	
24/06/2025	D1	AM21	3	
25/06/2025	D2	AN22	2	
26/06/2025	H1	AK30	2	
26/06/2025	H2	AF34	6	
29/06/2025	G4	AK28	2	1 large, 1 juvenile
29/06/2025	X2	A023	1	
30/06/2025	X1	AC35	4	
01/07/2025	I1	AD33	1	
03/07/2025	C3	AA36	1	
04/07/2025	D2	AN22	2	
07/07/2025	H7	AF33	4	
08/07/2025	H4	AE34	3	
09/07/2025	D8	AM21	4	
10/07/2025	B2	AZ12	3	
10/07/2025	K1	AK20	3	
11/07/2025	H1	AD34	1	Juvenile
11/07/2025	X5	W34	2	
13/07/2025	K3	AF20	1	
14/07/2025	K2	AJ20	1	Juvenile

16/07/2025	D1	AM21	1	Juvenile
16/07/2025	F4	AN25	3	2 large, 1 juvenile
17/07/2025	F1	AN26	2	
18/07/2025	K1	AK20	1	Large
20/07/2025	X3	AK21	1	Juvenile
24/07/2025	H1	AK30	1	
24/07/2025	H8	AG34	3	
25/07/2025	B3	AX12	5	
27/07/2025	G6	AK27	1	
27/07/2025	H2	AF34	2	
28/07/2025	G2	AJ31	3	
29/07/2025	F3	AN26	2	
30/07/2025	H4	AE34	1	
31/07/2025	D1	AM21	3	
10/08/2025	F3	AN26	6	
12/08/2025	H2	AF34	2	
13/08/2025	K1	AK20	2	
14/08/2025	F1	AN26	2	
19/08/2025	I1	AD33	3	
20/08/2025	C3	AA36	3	
21/08/2025	H1	AD34	1	
22/08/2025	G1	AJ31	3	
22/08/2025	I1	AD33	1	
24/08/2025	X4	Z24	1	
25/08/2025	D4	AN21	2	
25/08/2025	D7	AN22	1	
05/09/2025	D6	A023	3	

Charts of dive observations in district reporting grids and estimated relative abundance in district reporting grids (Figures 7-12):

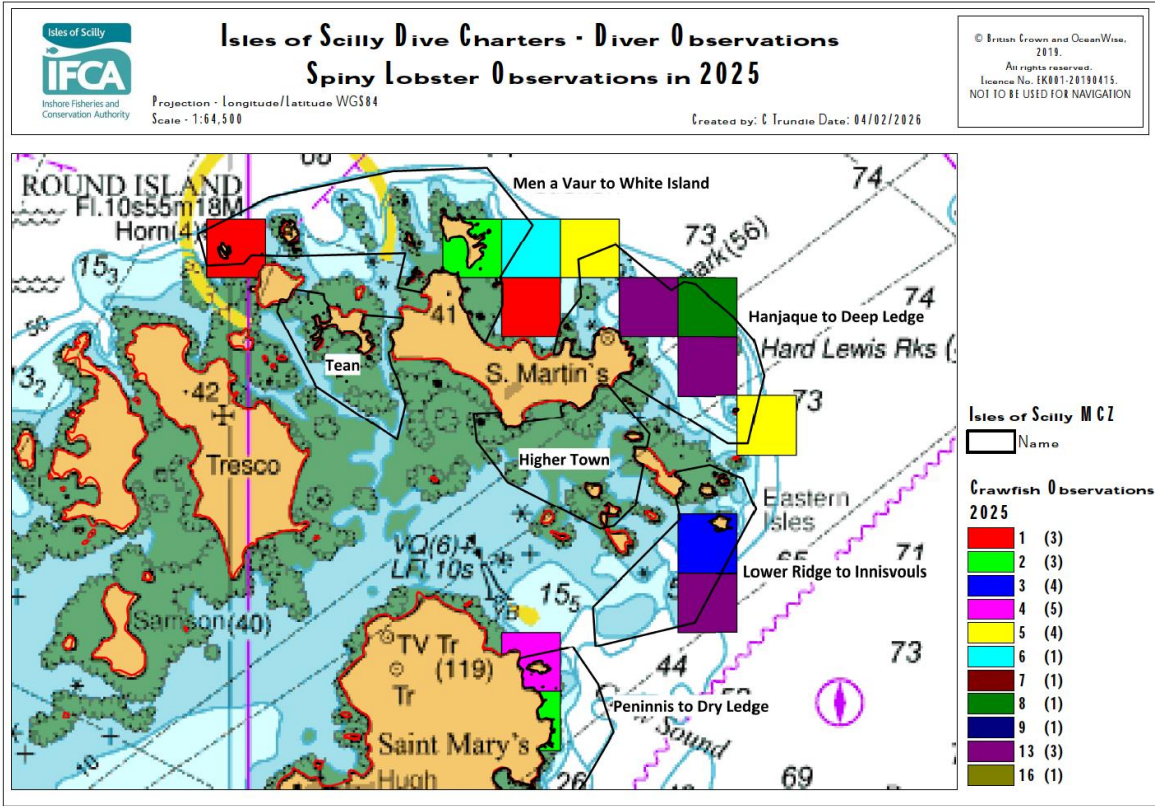


Figure 7 - Chart of diver observations N district 2025.

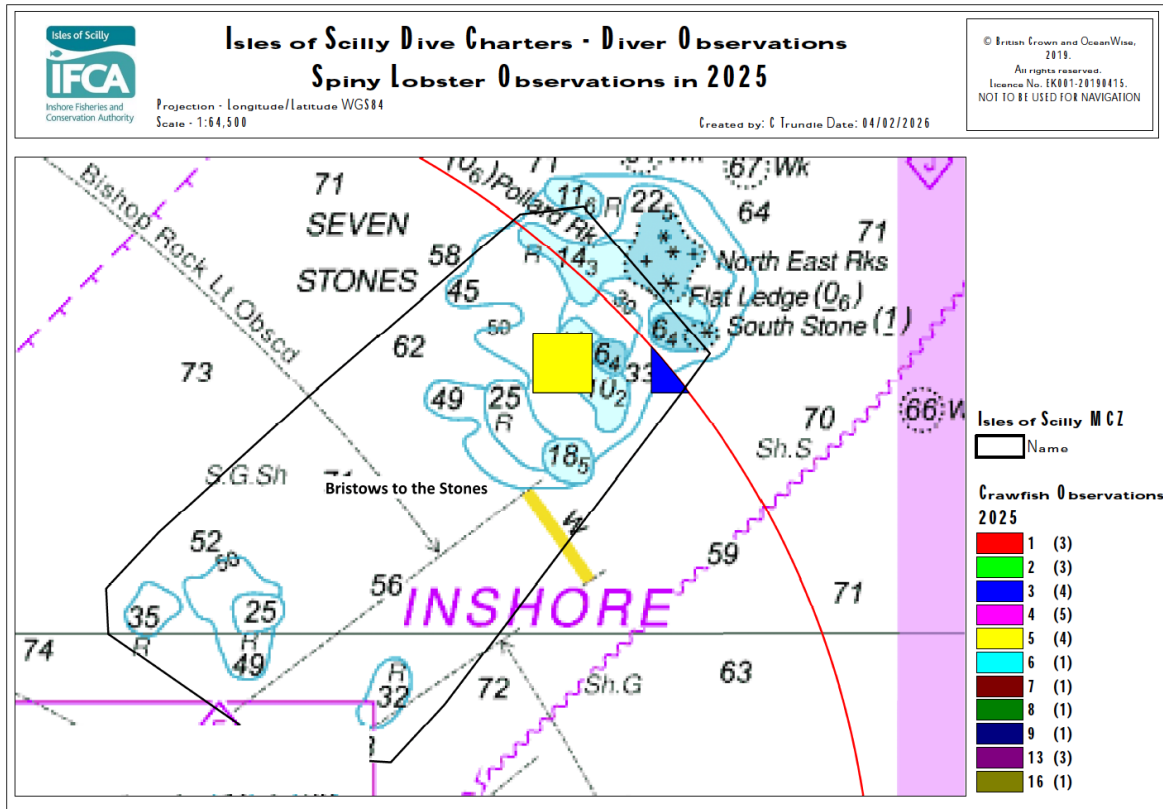


Figure 8 - Diver observations NE district 2025.

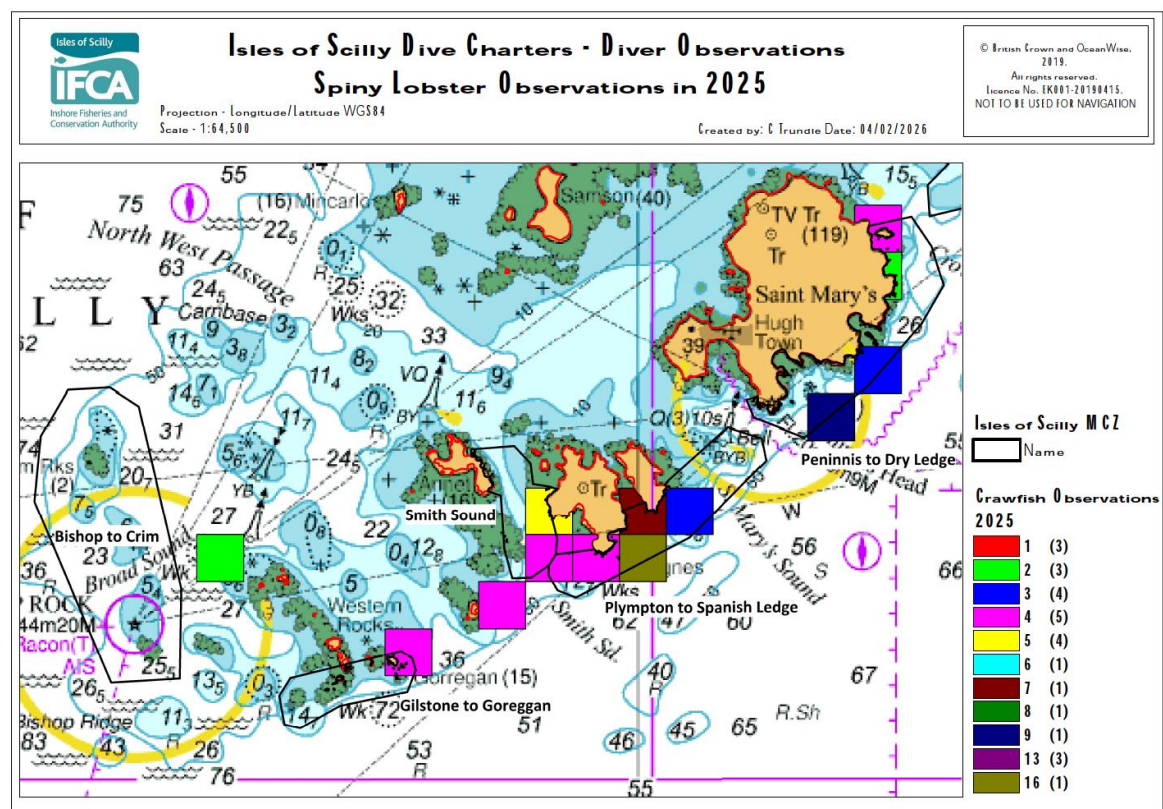


Figure 9 - Diver observations SW district 2025.

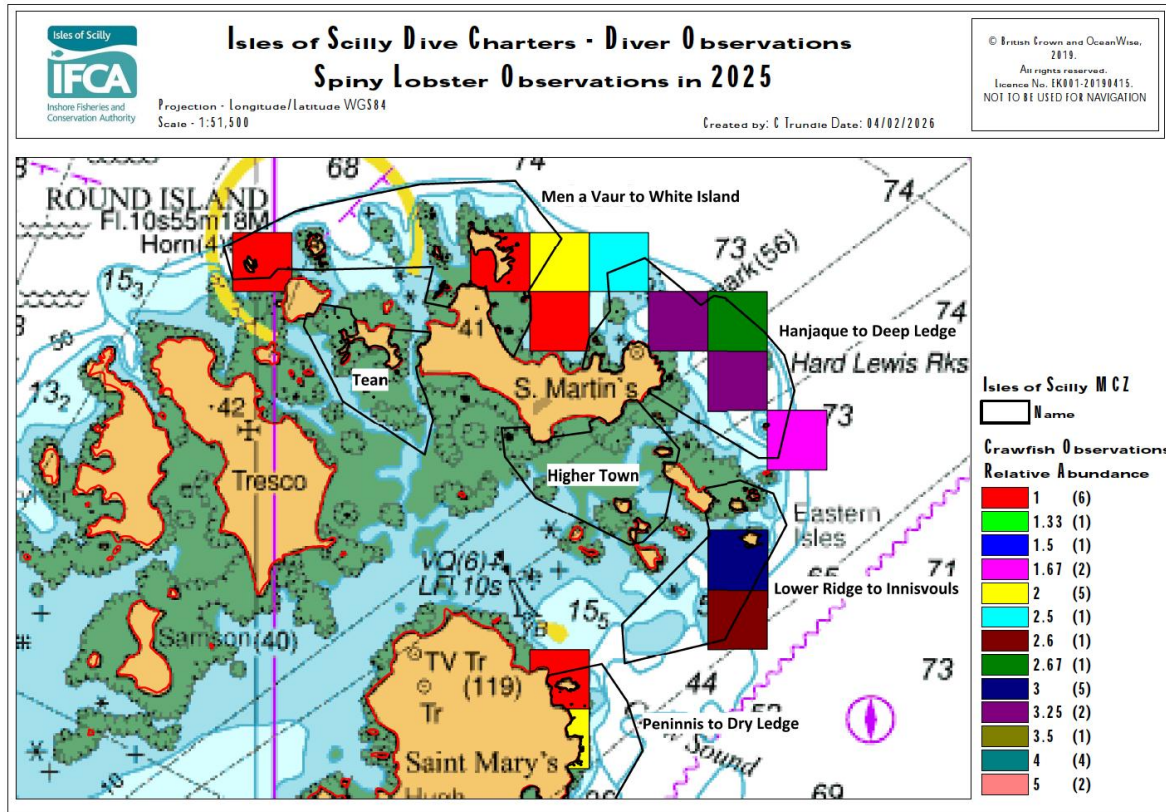


Figure 10 - Diver observations estimated relative abundance N district 2025.

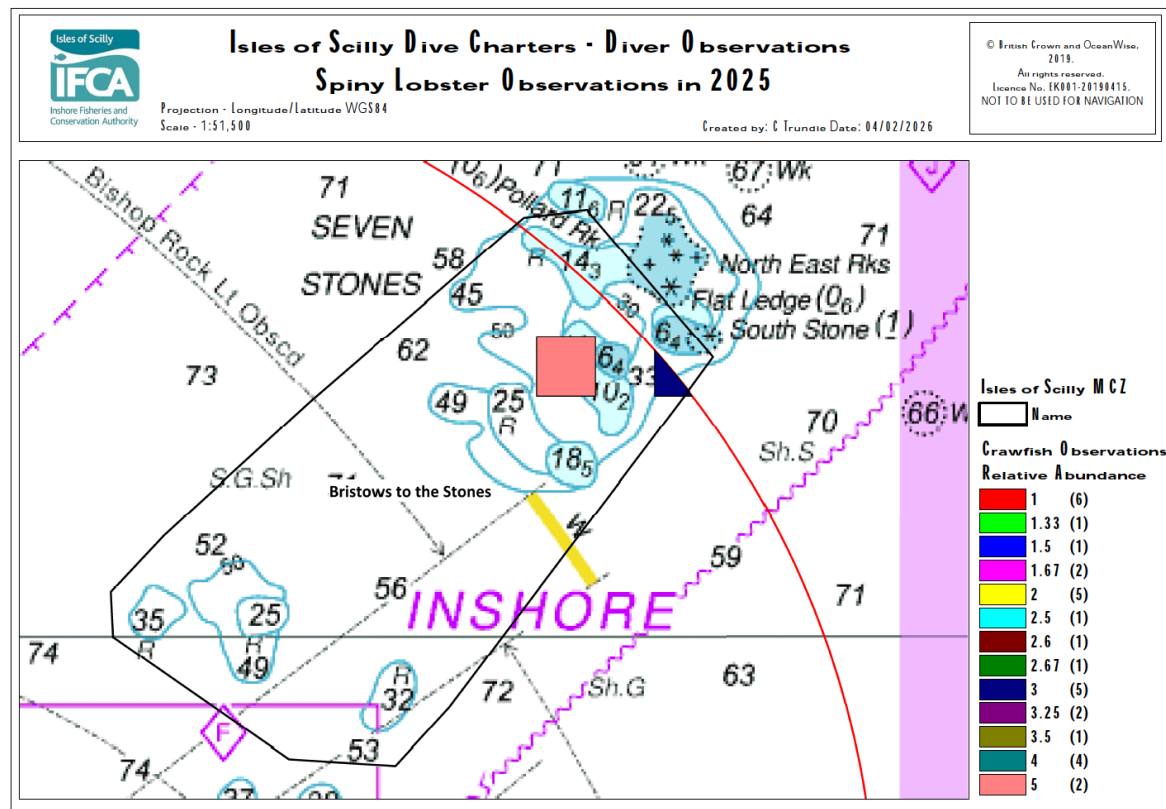


Figure 11 - Diver observations estimated relative abundance NE district 2025.

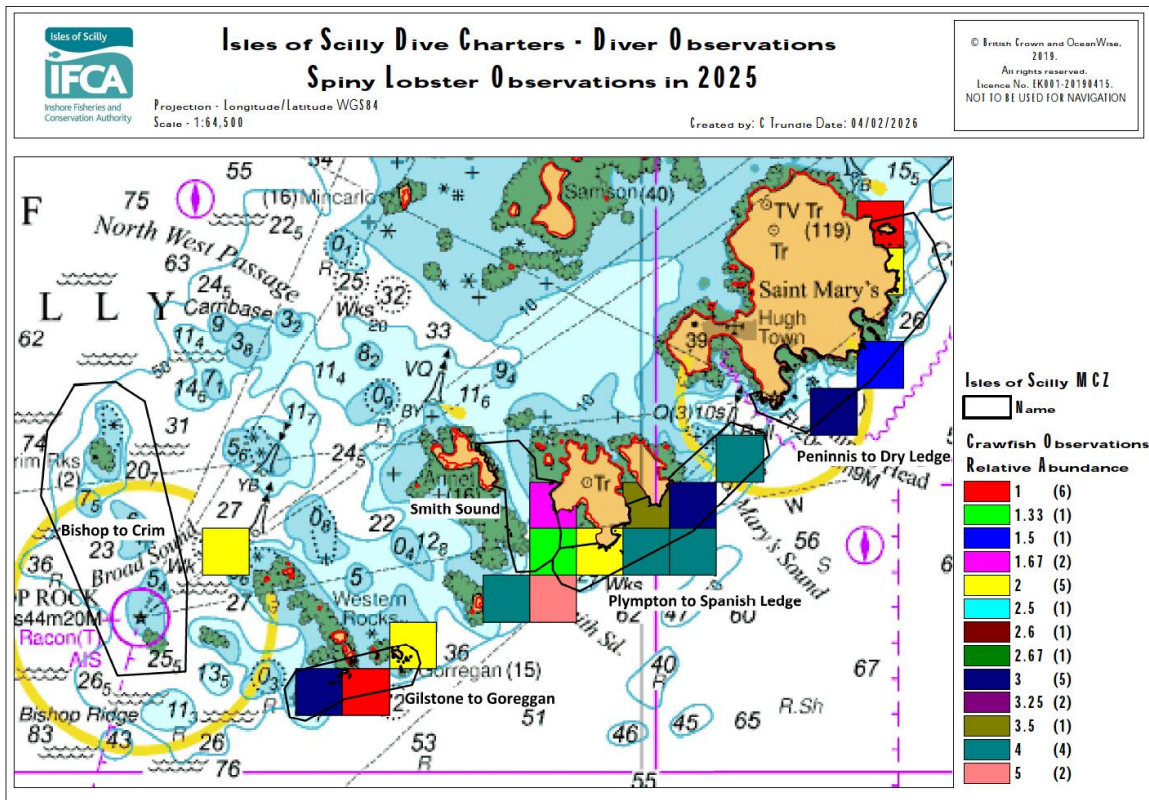


Figure 12 - Diver observations estimated relative abundance SW district 2025.

Discussion

Recording marine data is challenging. Volunteer contributions are not without their limitations but can play a valuable role in contributing records and can help with 'ground-truthing' modelled data. Due to the central coordination of data collection, this methodology allows a reproducible qualitative data set to be recorded year on year in the Isles of Scilly. Continued monitoring is important for identifying changes in the marine environment. Where other forms of underwater monitoring are limited or absent, and alongside fisheries data, citizen science helps to provide additional insight into the state of the marine environment in the Isles of Scilly. This methodology could also be applied to other species that may be observed when scuba diving for example, *Octopus vulgaris* and *Homarus gammarus*.

The district reporting grids help create a visual spatial distribution which when repeated annually over a minimum period of five years, should show any emerging patterns.

Currently there is a relatively low diving effort in the islands due to limited capacity, with only one local dive boat operator catering to visiting divers and a low number of active local divers, which helps reduce disturbance to reef and wreck sites. Scuba divers contributed to the overexploitation of *Palinurus elephas* in the 20th century (Gibson-Hall

et al. 2018: Hepper, 1971) so it is important to recognise how actions of divers can affect conservation of the species. Engaging in citizen science helps divers to respond to conservation measures for example since 2013 in the Isles of Scilly, there has been a voluntary local code of conduct whereby divers do not pick up shellfish. The Cornwall Wildlife Trust is now also supporting this as best practice for recreational divers with the #handsoffourcrawfish campaign (Cornwall Wildlife Trust, 2025).

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