MNF Voyage Summary

Voyage #:	IN2025_V04
Voyage title:	Untangling the causes of change over 25 years in the southeast marine ecosystem - Voyage 4
Mobilisation:	Hobart, Saturday 24 May 2025 – Monday 26 May 2025
Depart:	Hobart, 0800 Tuesday 27 May 2025
Return:	Hobart, 0800 Saturday 28 June 2025
Demobilisation:	Hobart, 0800 Saturday 28 June 2025
Voyage Manager:	Tegan Sime
Chief Scientist:	Dr Richard Little
Affiliation:	CSIRO
Principal Investigators:	
ORCID iD:	0000-0002-5650-7391

Voyage Summary

Executive summary

The marine waters of southeast Australia are one of a series of global ocean hotspots. In this region, the East Australian Current is extending pole-wards, resulting in warming of the ocean surface at a rate four times the global average. Many species have extended their distributions southward, with potential changes in local abundance. In addition, extreme events, such as marine heatwaves, are leading to additional impacts. Projections show that these changes, and the associated biological responses, are expected to continue in the next century.

In this hotspot lies the Australian Commonwealth Southeast Marine Park Network (SE-MPN; Figure 1), which was established in 2012 to protect the region's marine ecosystems and biodiversity, contribute to the National Representative System of Marine Protected Areas and help ensure the long-term ecological viability of Australia's marine ecosystems. It is unclear whether the changes observed in the region have also affected the marine parks, or whether the network has mitigated them. Understanding this better would help improve the ability of the marine park network to protect Australian heritage in the future.
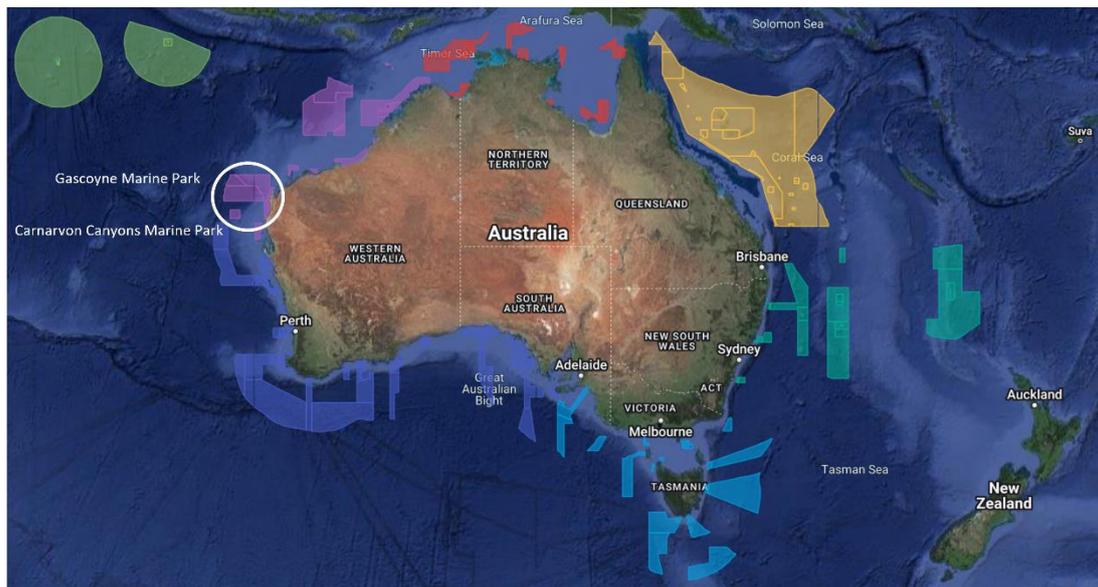

Figure 1 Australian Marine Park Network

In 2015, an expert scientific panel recommended an adaptive management approach for the Commonwealth marine reserve estate. It included the development of a research, monitoring and evaluation framework that supports robust evidence-based decision-making. It also recommended the establishment of baselines and development of early critical benchmarks in each Commonwealth marine reserve network, to enable a sound assessment for effective management. It recommended that this be done in partnership with the marine research community, under the recommendation in the National Marine Science Plan 2015– 2025 to 'establish and support a National Marine Baselines and Long-term Monitoring Program to

develop a comprehensive assessment of our estate, and to help manage Commonwealth and State Marine Reserves'.

Also, in this hotspot lie important fisheries, providing the bulk of fresh fish to Melbourne and Sydney markets. The Commonwealth-managed Southern and Eastern Scalefish and Shark Fishery (SESSF) catches about 20,000t, valued at $87 million in 2018-19, and about 20% of the value of Australian Commonwealth-managed fisheries. The trawl sector, which accounts for roughly 15,000t, spans the marine waters in the hotspot. Observations from the SESSF over the past 20 years have indicated changes in the abundance and composition of the main finfish species, manifest as declines in commercial catch rates. Concurrent with these declines, has been unprecedented high levels of catches and catch rates of other species such as ocean jackets and latchet. Additionally, stocks that were historically over-fished have not responded as expected, despite active fisheries management and a reduction in fishing effort. A recent review concluded that physical and ecosystem factors are likely to be either directly affecting the main species, or indirectly affecting other species they compete with or rely on. The general view is that the marine ecosystem has experienced and is experiencing significant change. Several hypotheses have been proposed; none have been tested but they are broadly categorised as being climate-related, or fishing-related. What is clear is that fish species from which ecosystem changes have been inferred, represent only a small part of the ecosystem under pressure, and it is not well understood. Potential changes in the abundance of tropical picoplankton extending into southern Australian waters is possible for example, which would have cascading effects since they do not support the same fish biomass as those associated with cooler waters.

Scientific objectives

The South-East Australian Marine Ecosystem Survey (SEA-MES) seeks to answer 3 questions:

1. How much have habitats, fish assemblages and species abundances changed in the southeast ecosystem in 25 years?
2. How do changes seen affect the multiple-use management of the region, particularly conservation and biodiversity management of Australian Marine Parks and the diverse activities from fisheries, oil & gas, and renewable energy sectors?
3. What are the implications for marine spatial planning and adaptive management in sectors that use the marine ecosystem and the managers that regulate it?

As a result, the core objectives are:

1. To determine changes in the assemblage structure (composition, abundances, distributions) of continental shelf and slope fishes (including focus on a suite of commercially important species) by comparing new survey data to historical baseline data.
2. To measure co-varying physical and biological properties of the regional ecosystem, especially metrics of changing ocean environment and exposure of benthic habitats to fishing.

3. To establish cause and effect by testing a series of hypotheses derived from a bio-physical model of the ecosystem, specifically created for the survey.
4. To establish a new baseline for future surveys.

It is also testing new monitoring techniques:

a.   To detect and count seabirds using deck mounted video camera.

Voyage objectives

Four voyages of the survey capture the seasonal and inter-annual variation in environmental conditions. Data analyses are structured around three hypotheses (Figure 2) based on two impacts: (i) the physical impacts of the water column driven by changing ocean conditions (Climate Hypothesis) and (ii) impacts on benthic habitat driven by exposure to bottom-contact fishing (Habitat Hypothesis). These impacts work either directly on fish species abundances, or indirectly through the food web (Trophic Hypothesis). Our prime motivation has been on commercial fish species, but we are not limited to them.
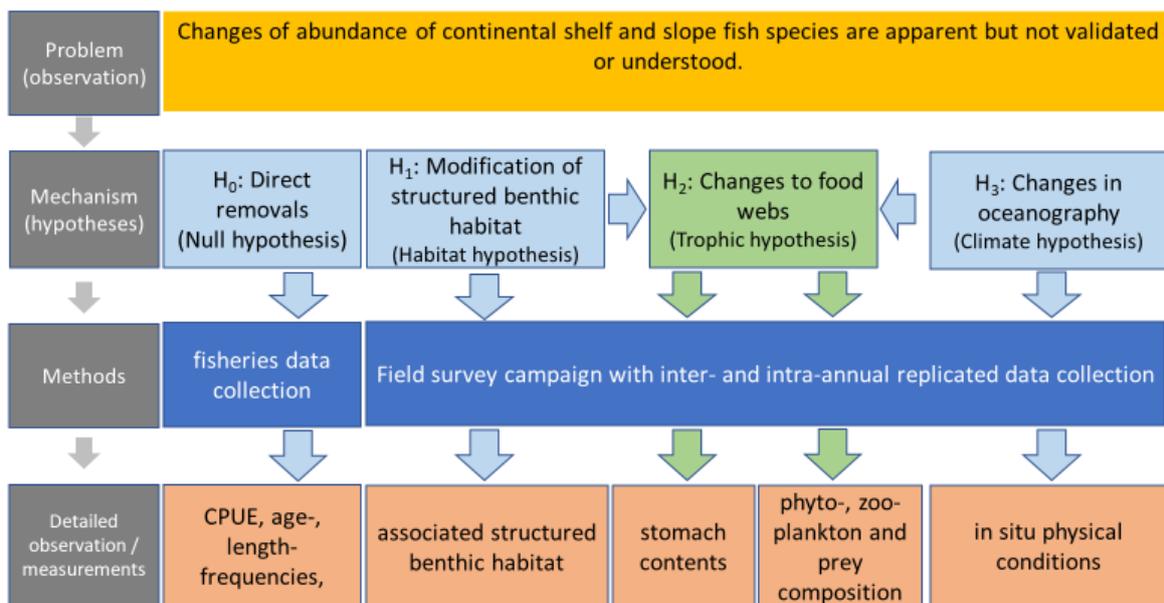

Figure 2 Direct (blue) and indirect (green) impacts on fish abundance (orange).

IN2025 V04 was the fourth voyage of the survey. The sampling schedule and locations were statistically designed for a range of sampling gear and included a weather contingency. The protocol was driven by the hypotheses and indicators derived from an ecosystem model. The voyage was the first to conduct night-time demersal trawl sampling, paired to day-time sampling, to allow a comparison of diurnal changes in species composition and establish a baseline for future surveys. A project to develop and test an on-vessel seabird counter was also included in the voyage.

Two 12-hour shift were scheduled to achieve these objectives. The morning shift (0200-1400) was responsible primarily for demersal fish trawl processing. The afternoon shift (1400-0200) conducted demersal fish trawl processing and habitat sampling using the Deep Towed Camera system. CTD were conducted throughout the day to record plankton samples, nutrients and for understanding the ocean dynamics, including climate variables. Mid-water trawl with the multi-net/RMT for estimating the plankton and micro-nekton prey fields. Night trawl sampling in the first leg (Leg 1) occurred in the early evening, and in the second leg (Leg 2) in the early morning. Each day had two trawl sample locations; one was paired with night sampling.

time	Leg 1: 28/05 - 11/06	Leg 2: 14/6 - 27/6
00:00		
23:30		multi-beam
23:00		
22:30		
22:00	multi-net	
21:30		
21:00		DTC
20:30		
20:00	trawl	
19:30		
19:00	nets in water	transit
18:30		and
18:00	CTD	mapping
17:30		
17:00		
16:30		
16:00	trawl	trawl
15:30		
15:00	nets in water	nets in water
14:30		
14:00	CTD	CTD
13:30		
13:00		
12:30		
12:00	multi-net	multi-net
11:30		
11:00		
10:30		
10:00	trawl	trawl
9:30		
9:00	nets in water	nets in water
8:30		
8:00		CTD
7:30	transit	
7:00	and	
6:30		
6:00	multi-beam	trawl
5:30		
5:00		nets in water
4:30		
4:00		
3:30		
3:00	DTC	multi-net
2:30		
2:00		
1:30		
1:00		
00:30		transit

Results

The geographical range of the study area, eastern Tasmania to southern NSW (Figure 3), encompassed the key area of operation of the SESSF where declines in fish abundances have been observed and where the ocean climate has, and is, changing rapidly. It is also the place where historical legacy data are located and where key stakeholders have interests (e.g. Flinders and Freycinet Australian Marine Parks).
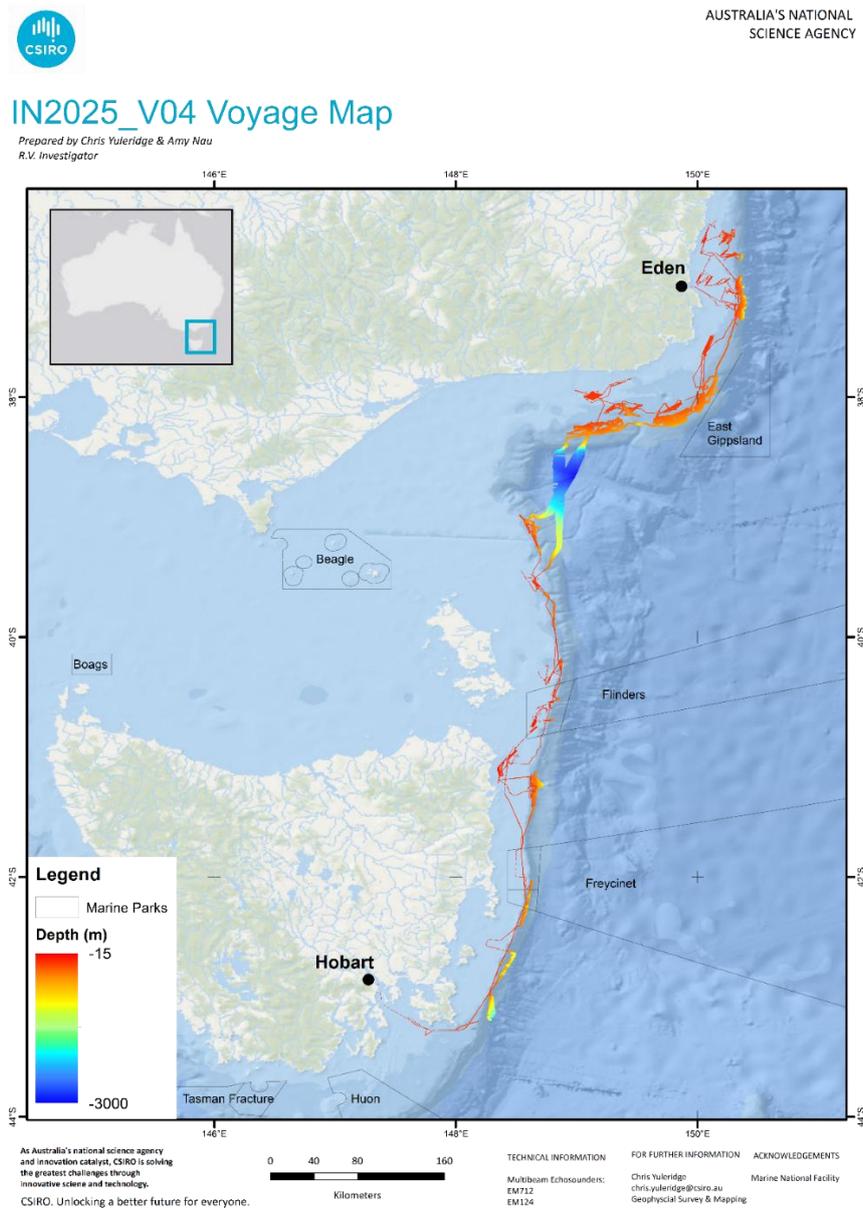
Survey sampling achieved

Figure 3 Vessel tracks for SEA-MES 4.

Voyage narrative

The depth range of sampling stations was between 70m and 500m depth (Figure 4). At each site, one or more gear types were deployed to obtain samples of animals and record imagery of animals and their natural habitats (Table 1). A typical day of operations over a 24h period consisted of a morning shift (0200-1400) responsible for mapping, demersal fish trawl processing. casting CTDs and conducting plankton tows with a Multi-net to estimate the plankton fields. The afternoon shift (1400-0200) was also involved with using the Deep Towed Camera (DTC). An important part of our sampling was CTDs to record plankton samples, nutrients, and ocean dynamics, including climate variables.
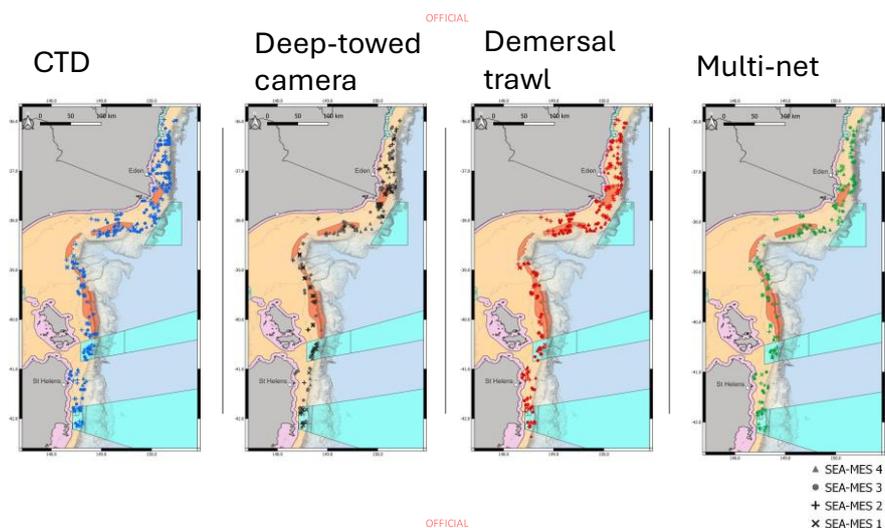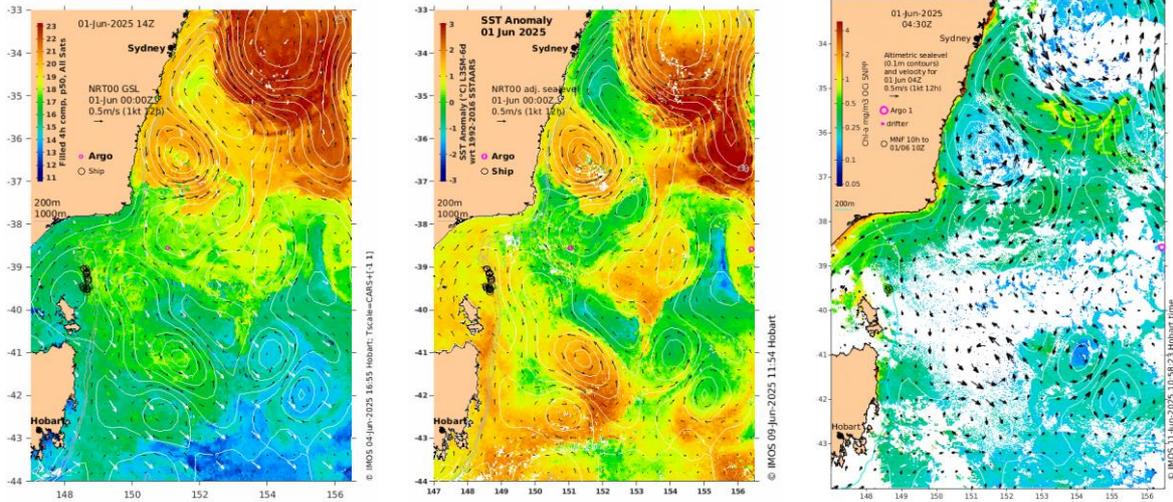

Figure 4 Spatial locations of SEA-MES sampling operations by voyage and operation. Blue polygons represent Australian Marine Parks, orange polygons fishery closures.

Table 1 Number of operations during four SEA-MES voyages.

Activity	IN2023_V05 SEA-MES 1	IN2024_V03 SEA-MES 2	IN2024_V05 SEA-MES 3	IN2025_V04 SEA-MES 4	Total
Trawl	60	80	78	66	284
DTC	87	47	41	41	216
CTD	61	82	92	61	296
Multinet	41	51	43	38	173
RMT	0	2	0	0	2
BRUV	2	0	0	0	2
Total	251	262	254	206	973

Physical Oceanography

The voyage started with 2 anti-cyclones off of NSW.

SST	SST anomaly	Chla

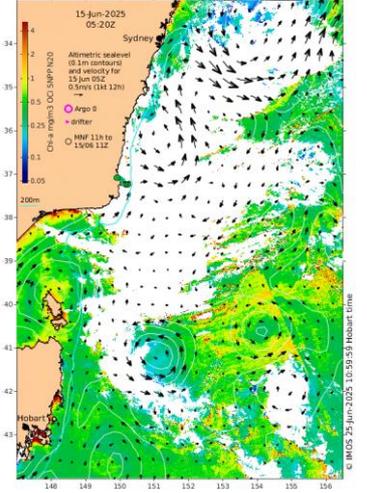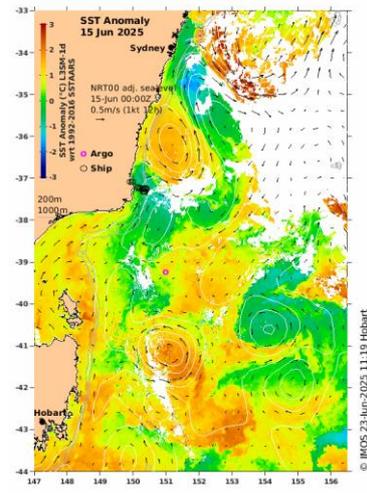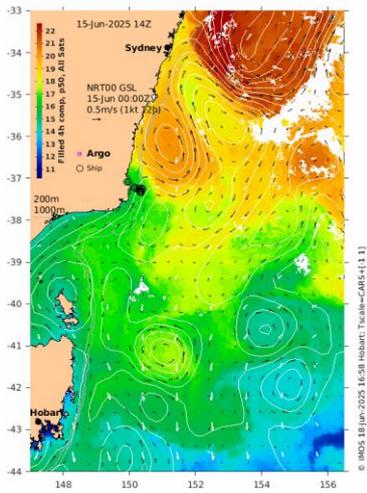Throughout the entire voyage the waters east of Tasmania and Flinders Island were up to 2C warmer than the long-term average.

Plankton blooms were apparent along the coast of Victoria and NSW, and SE Flinders Island towards the end of the voyage. Mid-way through the voyage the vessel encountered relatively cool southerly waters in a cold core eddy. Toward the end of the voyage, these eddies were still present.

Demersal trawl (66 sites)

Demersal trawl sampling using a McKenna semi V-wing fish trawl net was conducted at 66 sampling stations. 25,782kg and 269,196 individual fish were caught. 116 species of teleost, 42 species of chondrichthyans, and 1 agnathan (hagfish) were seen. 782kg of invertebrates, (11,999 individuals) were also seen. 28,347 length / weight measurements were taken 2,175 muscle tissue samples were collected; 1,404 otoliths, 3,485 stomachs, and 1,372 gonads samples were collects. The most caught species are shown in Table 2 in comparison to the catches on SEA-MES 1, 2 and 3. The distribution of catches across trawl operations is shown in Figure 5.
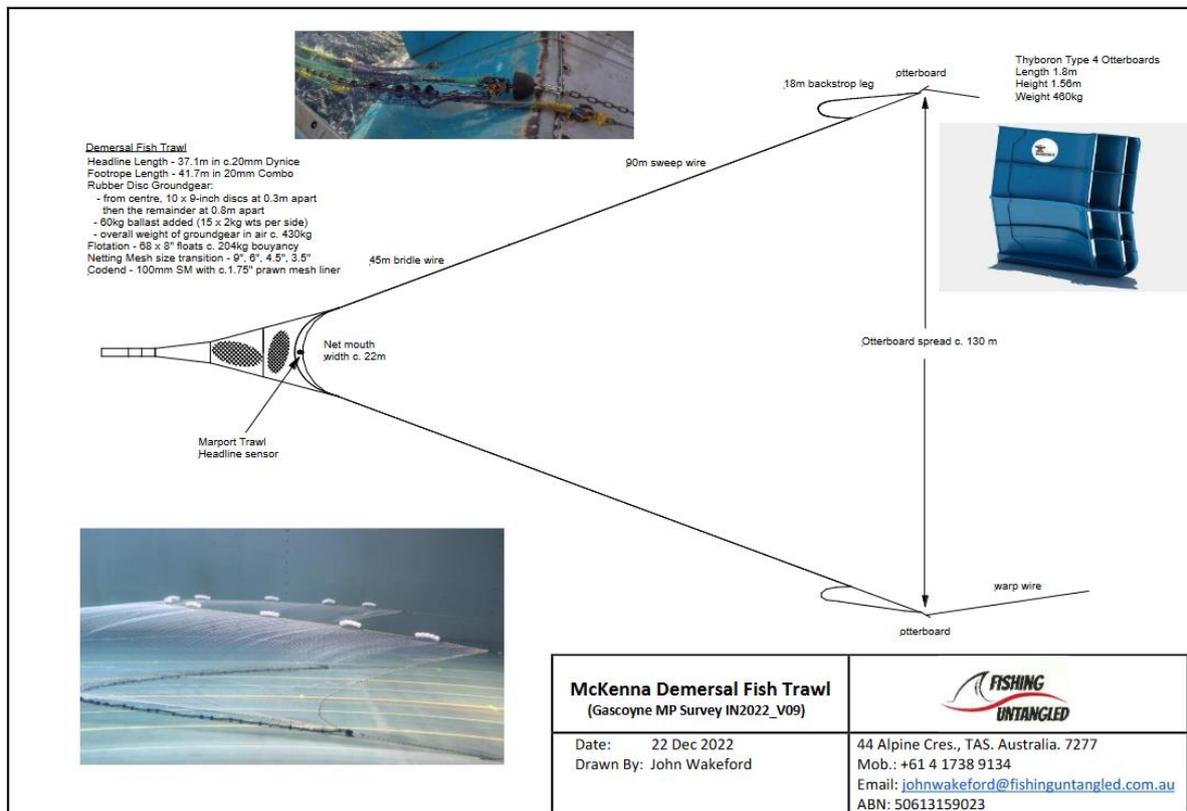
Table 2 Most commonly caught species over four SEA-MES voyages.

	common name	SEAMES 1 catch	SEAMES 2 catch	SEAMES 3 catch	SEAMES 4 catch
293	**Common Jack Mackerel**	**17,020.91**	**9,468.67**	**7,278.20**	**5,326.91**
305	Redbait	2,871.56	215.26	604.03	3,633.20
354	Gemfish	625.44	326.91	115.15	1,899.47
131	Blacktip Cucumberfish	769.93	2,214.77	2,609.45	1,576.36
88	Sparsely-spotted Stingaree	265.35	763.34	475.78	653.66
248	Roundsnout Gurnard	509.28	525.07	712.13	629.01
347	Common Stinkfish	174.02	192.90	562.35	587.62
82	Smooth Stingray	23.62	46.21	362.98	512.00
359	Blue Mackerel	795.37	750.92	790.58	437.69
324	Jackass Morwong	114.54	617.50	366.70	431.23
292	Eastern School Whiting	62.79	263.02	194.85	430.38
277	Threespine Cardinalfish	101.66	91.46	528.57	425.71
72	Melbourne Skate	117.97	319.14	402.66	395.26
71	Longnose Skate	394.62	601.36	792.06	385.28
98	Southern Eagle Ray	141.07	211.89	38.76	353.51
258	Tiger Flathead	595.31	526.94	498.36	341.22
207	Mirror Dory	176.39	564.26	495.86	293.92
85	Sandyback Stingaree	306.93	351.96	524.96	264.43
75	Bight Skate	50.80	197.20	212.98	254.88
91	Greenback Stingaree	201.81	286.19	273.86	204.55
247	Cocky Gurnard	118.73	345.96	357.44	194.38
34	Draughtboard Shark	107.02	224.76	340.76	190.92

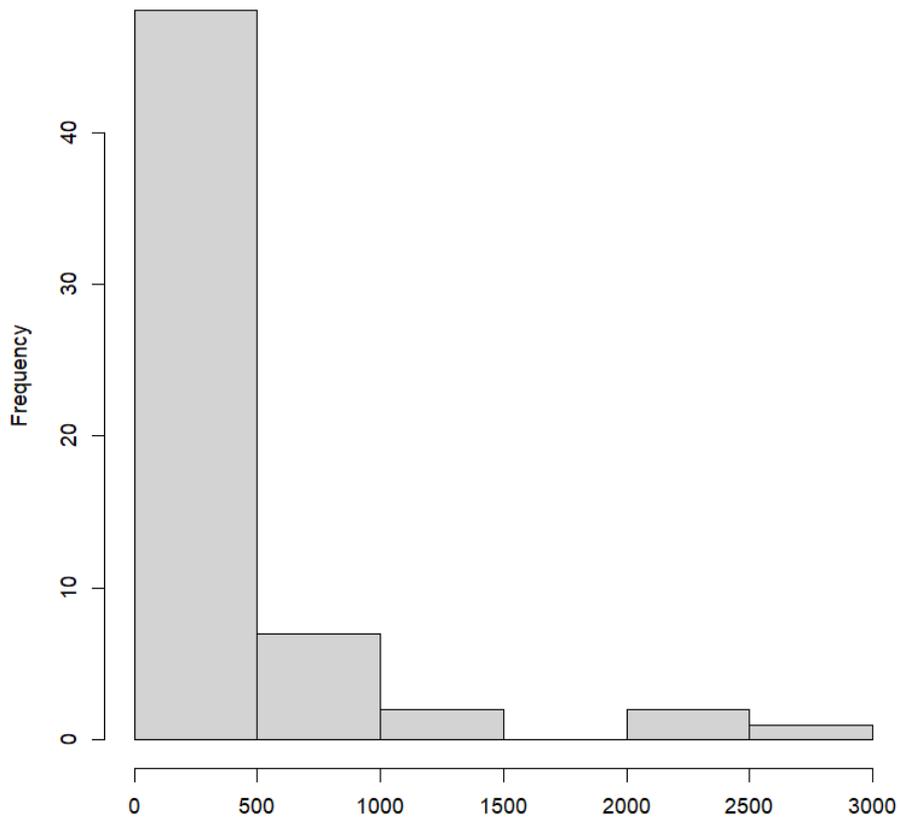| 174 | Blue Grenadier | 831.20 | 1,560.04 | 1,144.97 | 162.70 |
28	Port Jackson Shark	124.30	63.44	49.52	150.02
51	Spikey Dogfish	80.10	218.14	223.20	150.02
356	Frostfish	11.82	0.96	1.47	149.06
175	Pink Ling	163.35	82.13	164.82	138.02

Figure 5 Histogram of catch sizes (kg) of trawl operations across on SEA-MES 4.

The changes in abundance in SEA-MES 4 from the previous three voyages (CPUE: kg per standardised trawl) are shown Table 3.

Table 3 Species abundance comparisons to previous survey and SEA-MES voyages.

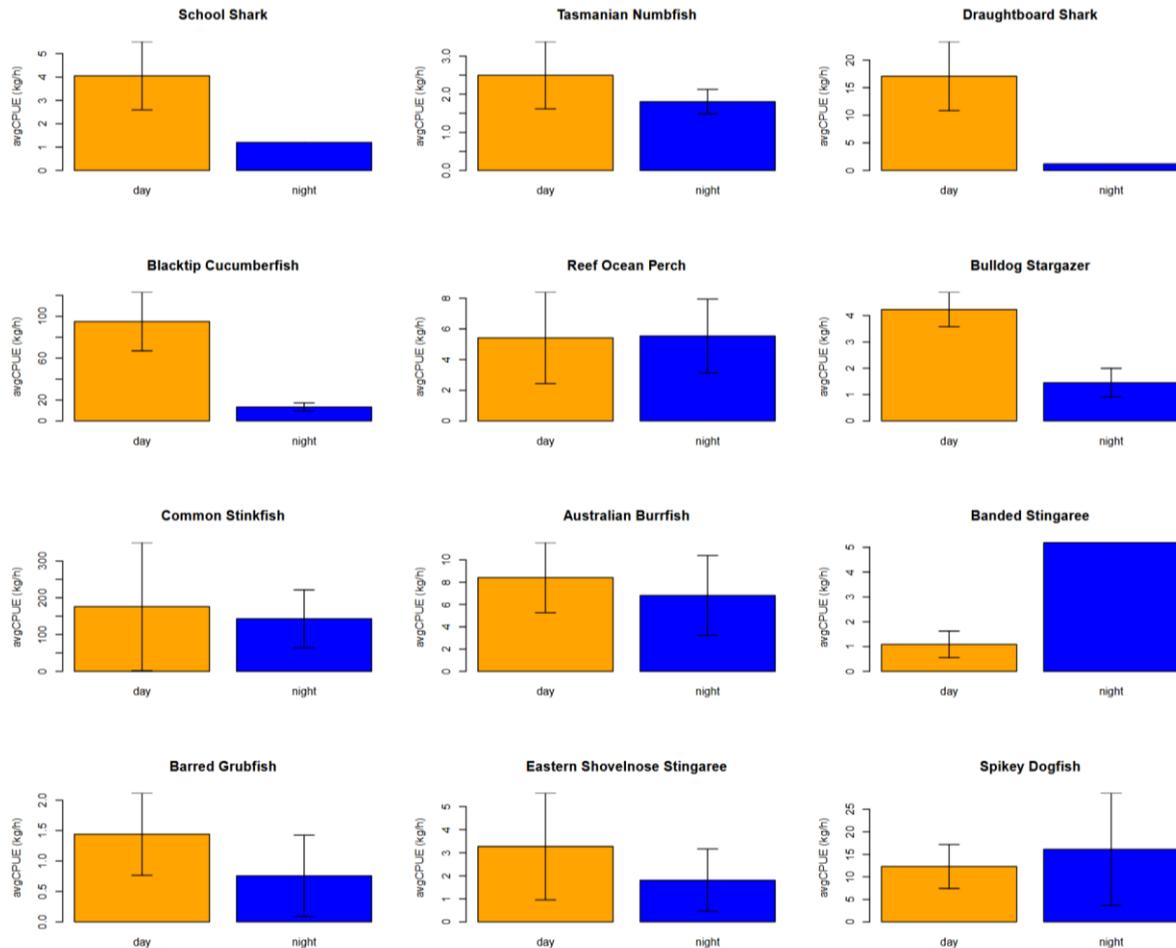a. 19 species with increased abundance in SEA-MES compared to SEFES

Common name	Avg SEFES CPUE (kg/shot)	SEFES shots	Avg SEAMES_1 CPUE (kg/shot)	SEAMES_1 shots	Avg SEAMES_2 CPUE (kg/shot)	SEAMES_2 shots	Avg SEAMES_3 CPUE (kg/shot)	SEAMES_3 shots	Avg SEAMES_4 CPUE (kg/shot)	SEAMES_4 shots	SEAMES / SEFES
Sharpnose Sevengill Shark	0.20	1	NaN	0	22.71	2	32.35	1	4.43	2	⬆ 84.55
Bight Redfish	0.09	1	7.01	1	NaN	0	NaN	0	NaN	0	⬆ 82.2
Blue Grenadier	4.54	5	138.53	12	688.25	5	163.57	14	132.61	15	⬆ 43.46
[a leatherjacket]	0.10	1	NaN	0	NaN	0	6.57	1	0.01	1	⬆ 34.41
Broadnose Shark	1.73	1	10.73	3	NaN	0	NaN	0	131.25	1	⬆ 25.97
Rough Flutemouth	0.10	1	NaN	0	0.98	1	3.05	5	1.10	6	⬆ 19.37
Snook	0.10	1	NaN	0	NaN	0	NaN	0	1.79	5	⬆ 17.95
Ocean Jacket	0.84	6	30.20	10	10.48	12	7.57	4	0.70	6	⬆ 16.62
Ornate Cowfish	0.79	2	NaN	0	9.02	1	NaN	0	NaN	0	⬆ 11.42
Balloonfish	0.83	8	24.13	13	2.49	20	0.50	1	0.59	12	⬆ 9.64
White Deepsea Cardinalfish	0.04	1	0.39	4	NaN	0	0.20	2	NaN	0	⬆ 8.11
Blue Mackerel	7.00	32	76.23	23	43.11	38	40.27	40	44.29	20	⬆ 6.91
Banded Bellowsfish	0.83	3	1.53	4	13.32	9	3.75	18	1.82	10	⬆ 5.92
Blackspot Boarfish	0.60	39	3.33	20	4.38	31	1.08	20	1.97	11	⬆ 4.91
Longfin Bigeye	0.12	1	0.49	1	0.52	6	NaN	0	0.54	2	⬆ 4.33
Grey Skate	2.00	1	5.41	7	6.27	1	11.79	12	4.37	6	⬆ 4.03
Mirror Dory	10.34	34	23.89	16	63.52	20	40.15	25	26.14	27	⬆ 3.63
Gemfish	15.53	21	39.46	33	24.28	29	10.83	22	108.80	41	⬆ 3.56
Redbait	37.38	55	185.66	33	16.39	31	28.97	43	457.01	17	⬆ 3.41

b. 22 species with reduced abundance in SEA-MES compared to SEFES

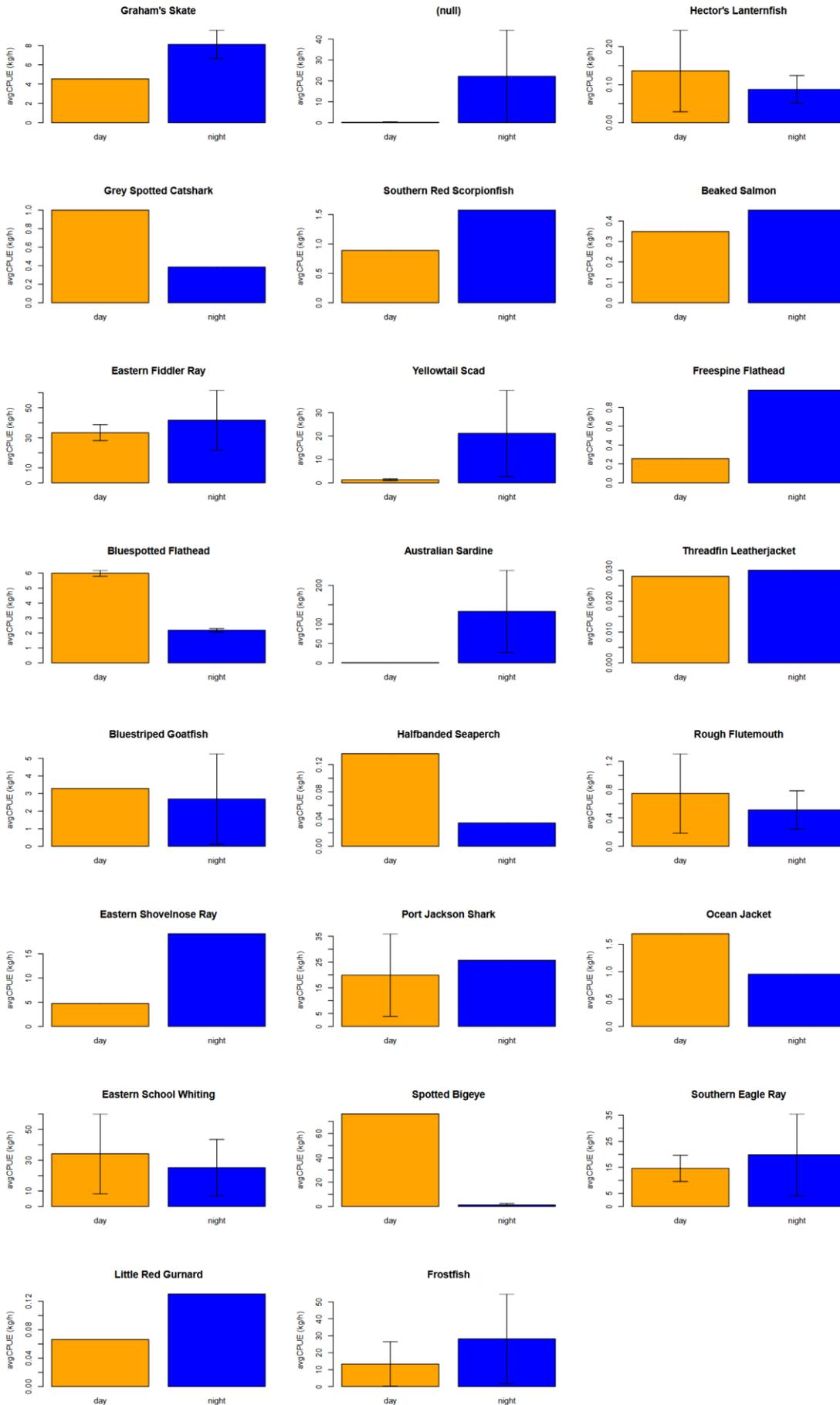| Common name	Avg SEFES CPUE (kg/shot)	SEFES shots	Avg SEAMES_1 CPUE (kg/shot)	SEAMES_1 shots	Avg SEAMES_2 CPUE (kg/shot)	SEAMES_2 shots	Avg SEAMES_3 CPUE (kg/shot)	SEAMES_3 shots	Avg SEAMES_4 CPUE (kg/shot)	SEAMES_4 shots	SEAMES / SEFES
Barracouta	78.45	88	19.47	27	35.38	17	17.15	28	5.97	8	⬇ 0.26
Harrisson's Dogfish	7.40	1	NaN	0	1.73	1	NaN	0	NaN	0	⬇ 0.23
Gummy Shark	32.04	31	4.63	19	7.64	8	7.16	18	8.90	17	⬇ 0.22
School Shark	19.38	6	3.02	8	5.18	2	3.56	1	5.16	9	⬇ 0.22
Sixspine Leatherjacket	7.95	39	NaN	0	1.72	1	NaN	0	NaN	0	⬇ 0.22
Sergeant Baker	2.07	5	NaN	0	NaN	0	0.50	1	0.33	1	⬇ 0.2
Silver Dory	7.84	134	1.55	20	1.40	26	1.72	16	0.65	7	⬇ 0.18
Silver Warehou	102.02	44	28.95	45	18.84	25	4.42	24	11.06	14	⬇ 0.18
Redbanded Grubfish	0.27	1	NaN	0	0.04	2	NaN	0	NaN	0	⬇ 0.17
Spikey Dogfish	79.45	78	5.22	31	15.58	32	11.10	41	13.51	31	⬇ 0.14
New Zealand Dory	6.68	54	0.82	16	0.33	4	1.32	14	0.11	6	⬇ 0.13
Blackspot Whiptail	0.60	1	0.09	2	0.13	2	0.15	2	0.03	6	⬇ 0.12
Blue Warehou	26.65	57	5.41	12	2.07	11	3.55	16	1.30	12	⬇ 0.12
Barred Toadfish	7.38	14	0.90	1	NaN	0	NaN	0	NaN	0	⬇ 0.12
Starry Toadfish	20.25	6	NaN	0	NaN	0	1.45	2	2.47	2	⬇ 0.1
Grey Spotted Catshark	8.42	34	NaN	0	NaN	0	0.35	1	0.70	2	⬇ 0.07
Silver Trevally	11.16	51	0.36	8	0.55	18	4.86	2	0.57	8	⬇ 0.07
Common Stingaree	22.40	1	1.29	1	NaN	0	NaN	0	NaN	0	⬇ 0.06
Umbrella Conger	1.80	1	NaN	0	NaN	0	0.04	1	NaN	0	⬇ 0.02
Redfish	127.29	103	0.39	9	1.41	9	2.61	9	3.47	18	⬇ 0.02
conger & short-tail conger eels	1.10	2	NaN	0	NaN	0	0.01	8	NaN	0	⬇ 0.01
Threadfin Leatherjacket	57.64	1	NaN	0	NaN	0	NaN	0	0.56	11	⬇ 0.01

Day-Night Comparisons

The voyage conducted 13 paired daytime/nighttime demersal trawls, which caught 97 common species. A comparison of the diurnal difference species abundance measured as CPUE (catch-per-unit-effort) shows difference but wide variation. Olgilby's Ghostshark was seen more distinctly at night, whereas Threespine Cardinalfish, Common Bellowsfish, Mirror Dory, John Dory and Blacktip Cucumberfish seemed to be more common during daylight hours.

16 species were seen during the day, but not at night

Species	CPUE (kg/h)	SE
Little Bellowsfish	0.45	
Orange Spotted Catshark	0.6	
gapers	0.01	0.003
Peacock Skate	1.27	0.43
Coastal Cubehead	0.07	
Eastern Orange Perch	0.44	
Snook	0.07	0.003
Starry Toadfish	1.68	
Butterfly Perch	0.07	
Barracouta	0.80	
Sergeant Baker	0.33	
Deepsea Bigeye	0.53	
Australian Angelshark	7.24	
Southern Sawshark	3.31	
Snapper	4.30	
skates	0.02	0.01

24 species were seen at night, but not during the day

Species	CPUE (kg/h)	SE
Sandpaper Fish	1.54	1.14
Melbourne Skate	90	
barracudinas	0.002	
Smalltooth Cookiecutter Shark	0.30	
deepsea dragonets and dragonets	0.004	
Whitley's Gurnard Perch	3.45	
Spiny Gurnard	0.08	0.02
Grey Mackerel	0.71	
Smooth Stingray	74.59	63.66
Black Stingray	6.6	
[a conger eel]	0.36	
[a leatherjacket]	0.02	
Common Stargazer	1.75	
bellowsfishes	0.002	3.45E-05
Parazen	0.06	
Multispot Lanternfish	0.02	
Barnard's Lanternfish	0.02	
Blackbelly Lanternshark	3.96	
Bright Lanternfish	0.02	
[a bighead dory]	0.03	
Common Trumpetsnout	0.0008	
bighead dories	0.19	
codlets	0.003	
Ostenfeld's Lanternfish	0.03	

Outreach, education and communications activities

On 11 June 2025 Alistair Hobday convened a panel on Sustainable Oceans, Sustainable Skills – Celebrating World Ocean Day.

Sustainable Oceans, Sustainable Skills – Celebrating World Ocean Day
The Shape Your Future series is about both the journey and the destination!

Research shows that one of the most influential factors in encouraging more students to continue with STEM is to see themselves in a career – so we want to celebrate as many career pathways as we can! That's a big part of how we address Australia's growing STEM skills shortage, and we are so grateful for your help and support.

By sharing your own professional experiences, leadership and mentoring insights, lessons you have learned along the way, and the breadth of skills you have developed, you can help inspire the next generation. We celebrate speakers from diverse backgrounds, STEM areas and professional sectors, hoping to invite more students to visualise their potential to develop diverse skills with STEM learning and lead them to a rich career pathway.

Audience
Shape Your Future webinars are targeted to secondary school students and educators from Years 7-12 (ages 12-18 years), where subject selections begin to shape how students think about school and their future career.

The webinars are also open to the public, ATSE's Fellows and our international schools, and livestreams are recorded for later watching on YouTube. We will let you know about the current registration figures in our pre-event catch-up session.

Event Details

Day and Time:	Wednesday June 11, 11:00am-12:00pm AEST (Live from 11:15am)
Location:	Online - Zoom
Organiser:	ATSE | STELR
Host	Tamara McGregor (IMNIS Coordinator, ATSE)
Panel Members	Fellow: Dr. Alistair Hobday FTSE Panellist 2: Dr. Zoe Doubleday Panellist 3: Beth O'Sullivan

On 11 June 2025 Matt Lansdell, supported by early career ocean professionals, Tess Meecham and Sarah Willington, hosted a live feed with 2 students, and their teacher from Collegiate School in Hobart, who were interested in marine science career paths.

Communications

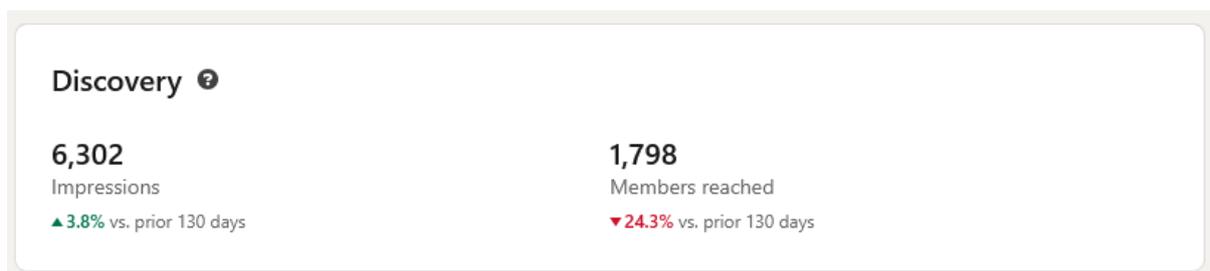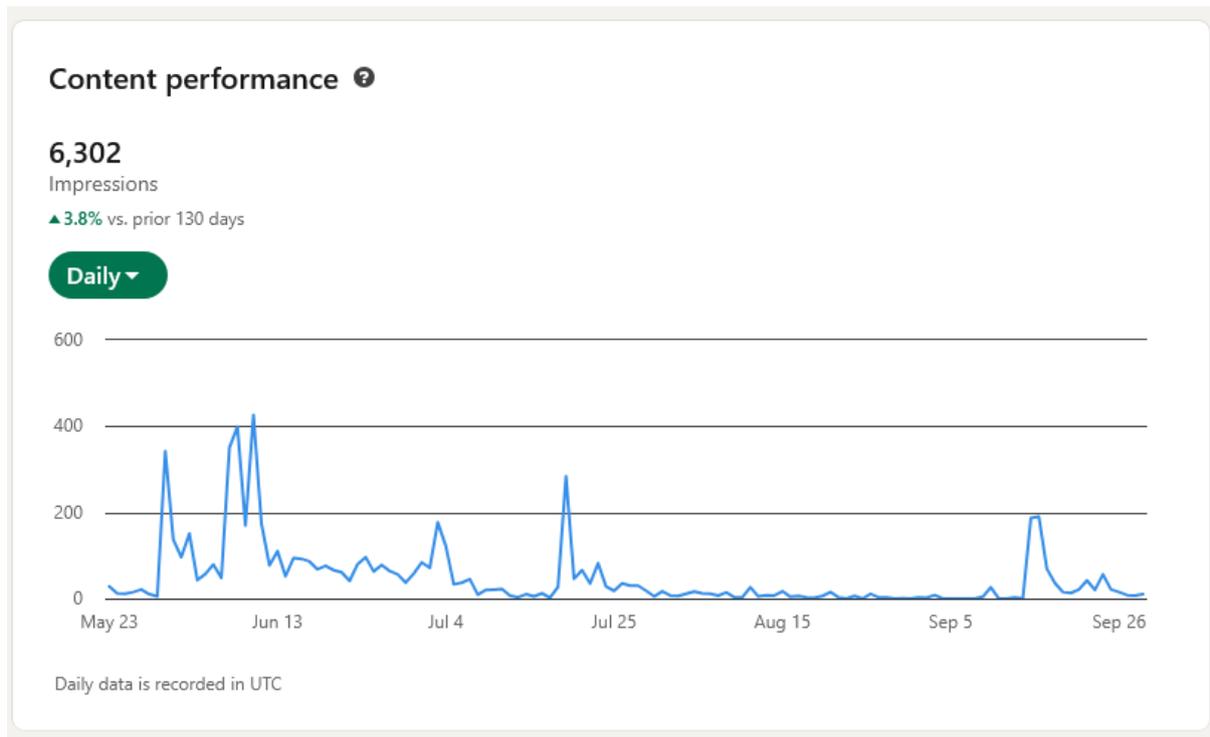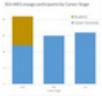Project communication to the public and stakeholders can be seen on the website:

https://research.csiro.au/sea-mes/

Some of the visual communications can be seen on the project website:

https://research.csiro.au/sea-mes/impact/ and

https://research.csiro.au/sea-mes/in-the-news/

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Richard Little posted this • 4mo

The final 4th South East Australian Marine Ecosystem Survey (#SEAMES) voyage has started on #RVInvestigator working east of the Banks Strait, off the north east tip of Tasmania. One of the questions Clot ...show more

63   4 reposts

▲ **1,437**
Impressions

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Richard Little posted this • 4mo

52 people have participated on four the #SEAMES voyages.

They have come from 7 institutions: CSIRO, Australian Muse ...show more

31   2 comments · 2 reposts

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Impressions

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It's World Ocean Day! 🌊

Oceans are complex, mysterious and affect us in such a wide ...show more

53   3 reposts

▲ **1,036**
Impressions

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Richard Little reposted this • 2w

If you haven't noticed, this post has a talking fish! 🐟
...   ...show more

The secrets of fish stomachs

22

▲ **673**
Impressions

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Richard Little reposted this • 2mo

The South East Australian Marine Ecosystem Survey (#SEAMES) has completed its voyages, but the lab and work on shore continues.

SEA-MES Data Journey

👍 Katie Cresswell and 26 others   1 comment · 1 repost

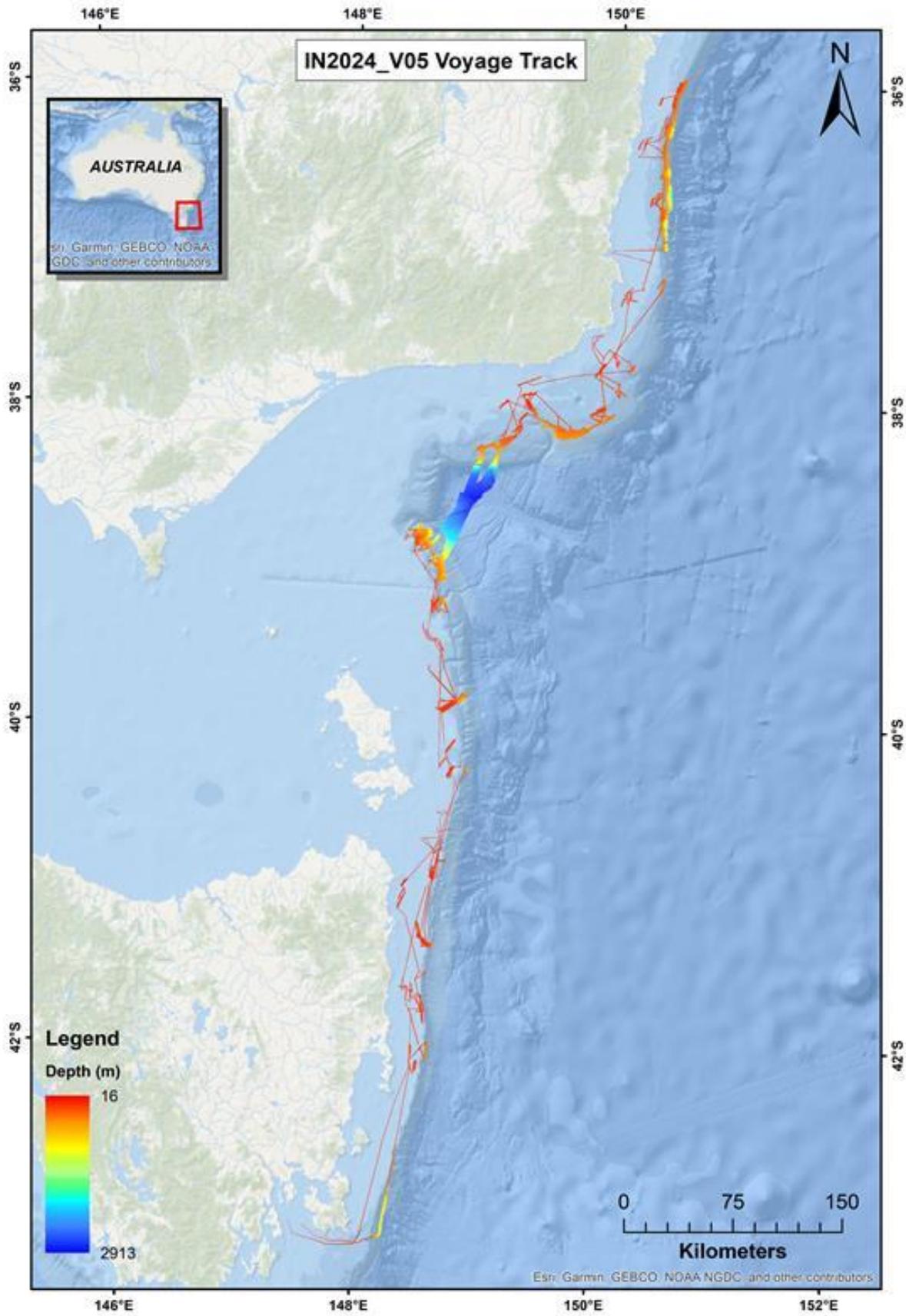▲ **589**
Impressions

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Richard Little posted this • 4mo

As the UN Ocean Conference continues this week, we are reminded of both how precious the ocean is, and of our ignorance. (UN Ocean Decade, Marine Life)...   ...show more

👍❤️ 19

▲ **502**
Impressions

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Richard Little reposted this • 3mo

It has been a pleasure having such a competent, mature and fun person on the latest #SEAMES voyage. Thank-you Jasmin Bentink.

▶️ Day In The Life: Research Vessel edition

👍❤️ 14   1 comment

▲ **360**
Impressions

View analytics

Richard Little reposted this • 2mo

Very impressive Jasmin Bentink and well said! I'm really proud that you chose to work on the #SEAMES voyage.

Jasmin Bentink
Honoured and beyond excited to be hosting the 2025 MADALAH Ball – a celebration of culture, co...

👍 2   1 comment

▲ **187**
Impressions

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Richard Little reposted this • 5mo

It's a bit of a relief, but also a bit sad that the last voyage of the #SEAMES journey will depart in less than 2 weeks. I hope the effort has b ...show more

As the marine environment changes globally, what matters most to you?
Poll • 657 votes • Poll closed

👍❤️🌱 17   1 repost

▲ **131**
Impressions

View analytics

Curation Report

Delete section if not applicable. Describe the storage location for all data/samples collected during the voyage, with each data/sample type included on a separate row. Details should include where the data/samples are being archived/curated, who is responsible for their curation, how the data/samples will be made accessible and to whom, and any further analyses that are underway/will commence.

Item #	Description	Storage	Access	Custodian
	Fish (in part)	CSIRO NCMI ANFC (Australian National Fish Collection) Hobart	By request through ANFC	ANFC (John Pogonoski)
	Catch Composition of all taxa and length weight measurements of Fish Oracle Database	CSIRO	Available to project participants for refinement of taxa identifications and use for reporting	CSIRO (Franzis Althaus)
	Collection images	CSIRO		CSIRO
	Deep Towed Camera Video	CSIRO Environment Hobart	By request through CSIRO	CSIRO (Candice Untiedt)
	Sea bird video and analysis	Bowen Cloud Drive	By request through CSIRO	CSIRO (Carlie Devine)

Track Chart

IN2024_V05 Voyage Track

Links to Further Data and Information

NCMI Information and Data Centre (csiro.au)

Data Trawler (csiro.au) – Data Extraction tools for Voyage Data

MNF Reporting (csiro.au) – Publications and reports from research on vessels run by the Marine National Facilty

Marlin3 - Marlin - CSIRO Oceans and Atmosphere Metadata Catalogue

Open Access to Ocean Data (aodn.org.au)

AusSeabed (ausseabed.gov.au)

CAAB - Codes for Australian Aquatic Biota (csiro.au)

Ocean Biodiversity Information System - Australia (obis.org.au)

Atlas of Living Australia (ala.org.au)

CSIRO Data Access Portal (data.csiro.au)

Global Biodiversity Information Facility (GBIF) (gbif.org)

Insert below any links to further information and data from your voyage.

Description	Link
Preliminary analyses of SEA-MES data	https://research.csiro.au/sea-mes/science/

Acknowledgements

Please insert acknowledgements to organisations, teams or individuals that have supported your project(s).

On-vessel team	
Candice Untiedt	Jasmin Bentink
Matt Lansdell	Camila Cataldo-Mendez
Sarah Willington	Mibu Fischer
Frank Coman	Ben Scoulding
Mark Tonks	Steve Edgar

Marg Miller	Kinam Salee
Jason Hartog	Tess Meecham
Gary Fry	TJ Lawson
Alistair Hobday	Jeff Dambacher
Jam Graham-Blair	Carlie Devine
Off-vessel team	
Andy Whiteley	Vicki Walters
Piers Dunstan	Chris Gerbing
Claire Davies	Harmeet Kaur
Sahan Jayasinghe	

Signature

Your name:	Rich Little
Title:	Chief Scientist
Signature:	
Date:	1 Oct 2025

Appendix A – Photographs

Operated by CSIRO, Australia's national science agency, on behalf of the nation   29