

# Marine Estate Management Strategy Triannual Snapshot

Reporting period July - October 2023

Marine Estate Management Authority

December 2023



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Aboriginal people are the Traditional Owners of the NSW marine estate  
and have a continuing connection to their Land and Sea Country



Figure 1. © Bindarray Maagun (River Feast) by Gumbaynggirr artist Lavinnia Inglis

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# Part A: Strategy snapshot

## Purpose of this snapshot

This Snapshot Report provides stakeholders and the community with regular updates on the implementation of the Marine Estate Management Strategy (Strategy). It includes updates on notable project highlights and informs stakeholders of key deliverables in the third trimester of Year 6 of the Strategy. Additionally, activities planned for the next reporting period (1 Nov 23-29 Feb 24) are highlighted in the 'What's next' sections.

For more updates follow us on [Instagram](#), visit the [Marine Estate website](#), or subscribe to the [Marine Estate Newsletter](#). This snapshot should be read in conjunction with the [Strategy Implementation Plan 2022-2024](#).

## Delivering long-term outcomes

The Strategy is a 10-year strategy, 2018-2028. The Strategy's 9 initiatives contribute to improving water quality, reducing marine litter, improving the health of coastal habitats, reducing threats to marine wildlife, ensuring sustainable foreshore development, ensuring sustainable land use practices, planning for climate change, protecting Aboriginal cultural values of the marine estate, delivering sustainable boating and fishing, enhancing social, cultural, and economic benefits, and delivering effective governance. Additionally, program management, monitoring, reporting, and evaluation are overarching components of the Strategy, embedded to assure the community and stakeholders that the program is implemented and monitored effectively and in an integrated and transparent way.

Continued investment for the remaining 5 years of the Strategy will help to improve water quality by reducing pollution, to ensure our coastal habitats can thrive under the effects of climate change and to increase Aboriginal people's role in protecting cultural values and managing Sea Country. Long-term funding also ensures the NSW marine estate is resilient and managed sustainably for future generations.

Detailed information on the Strategy is available [online](#) and should be referred to when reading this document.

## Program highlights this trimester

This trimester July–October is the first reporting period for the 2023-2024 financial year. There are close to 100 projects this year and good progress has occurred throughout the program. In this snapshot, we focus on some of the most notable achievements across the 9 initiatives in the Strategy. A selection of highlights illustrating the extent of work and achievements during this period are presented below. Communications and engagement activities during the period are summarised in Appendix B.

## Key highlights during July – October 2023



### Estuarine water quality monitoring

Taree to Wollongong

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Water quality sampling and data analysis: sampling and laboratory analysis and system grading completed for 2022-2023 fieldwork season. Preparation of results for next 'Health of Estuaries' update.



### Oyster reef restoration and research

Statewide

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To assist planners and identify priority locations, mapping of remnant oyster reefs completed in Evans River, Cullendulla, Jervis Bay (including Currumbene Creek) and Lake Conjola. Hawkesbury River, Pittwater and Manning River mapping now available on the Fisheries Spatial Data Portal. Further mapping planned for the next quarter. Early positive results at Wagonga Inlet with 15 fish species observed on recently seeded subtidal reefs.



### Threats to estuarine fish assemblages

Northern Beaches council

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Project findings have been released in a scientific paper on the cumulative effects of multiple stressors to Posidonia and estuarine fish published in the journal Science of the Total Environment. This paper examines relationships between human activities, Posidonia sea grass, and fish communities.



### Climate change citizen science

Statewide

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Completion of public signage: completion of final versions of four NSW bioregion-specific public signs depicting lists of marine 'species-on-the-move' that citizen scientists can spot, log and map with the Redmap project in collaboration with NSW DPI.



### Cultural Interpretation

Tweed Heads

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Supported local schools within the Tweed LGA with an Aboriginal cultural guide to input on the cross-curriculum priority - 'Aboriginal and Torres Strait Islander Histories and Culture' with a focus on Jungarra Ngarrian and Tweed coastal waters.



### Strategy for migrating species interactions

Statewide

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Scientific publication 'Characteristics of east Australian demersal trawl elasmobranch bycatch as revealed by short-term latitudinal monitoring' published in Endangered Species Research. This study forms a timely baseline which can be used to assess the impact of the prawn trawl sectors of the NSW ocean trawl fishery on elasmobranchs in the future.

## Key highlights during July – October 2023



### Fisheries enhancements

Central Coast | MidCoast

Offshore artificial reefs: construction and deployment of the Central Coast and Forster offshore artificial reefs completed (Sept and Oct 2023, respectively). Consultation and independent reports underway for Ballina and Coffs artificial reef projects.



### Vessel monitoring

Statewide

Centre for Maritime Safety (CMS) continues to identify available data and undertake gap analyses. CMS will continue to contribute to boating reports and data to MEMS program evaluation. Two reports have been publicly released: [NSW Recreational boater Survey 2023](#) and [Lifejacket Wear on Recreational Vessels Report 2023](#).



### Social and cultural benefits monitoring and research

Statewide

The [NSW Marine Estate Community Wellbeing Framework](#) was publicly released.



### Improved marine protected area planning and management

Cook Island Aquatic Reserve off Tweed Shire Council area

Code of conduct developed with Cook Island Aquatic Reserve Tour Operators: A successful workshop was held with tour operators using Cook Island Aquatic Reserve, DPI Fisheries, NPWS and Green Heroes volunteer group. Participants agreed unanimously to develop a code of conduct together that will help protect marine life and also to provide input into communication materials for the public.



### Strategy program management

Statewide

Publication of the [Strategy Snapshot Report \(March-June 2023\)](#). This provides a regular update to stakeholders and the community on the implementation of the Strategy.

# Part B: Initiative summaries

Initiative summaries include updates on notable project highlights from the reporting period as well as what is planned for the next reporting period. A full update on all projects is reported in the [Strategy Implementation Annual Report for the 2022-2023](#). For more information on the location of projects refer to the [Strategy Implementation Plan 2022-2024](#) or to 'find projects' visit [Our projects](#) page on the [Marine Estate website](#).

## Initiative 1

### Improving water quality and reducing litter

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#### Initiative summary

EHG-led projects and actions are mostly continuing from MEMS Stage 2, or moving into next phases of delivery as part of larger ongoing projects. There have been some delays to project schedule from understaffing, weather, and continuing impact/knock on effects from previous FY uncertainty around funding scale and delay of MoU. Scope of action for projects continues to align with intended long-term outcomes and efforts to gather data and information to satisfy relevant indicators. Projects continue to include ongoing engagement with key stakeholders and decision-making agencies on diffuse source water pollution impacts and management, and implementing the risk-based framework, and significant ongoing monitoring, data gathering and research efforts to inform management and fill knowledge gaps.

DPI-led project and actions staff worked tirelessly in the first trimester and delivered key outputs leading to beneficial water quality outcomes. New technologies were implemented in partnership with industry stakeholders and on-ground works completed that will reduce diffuse source water pollution. Key research findings on coastal floodplains have been released along with map-based tools that will assist councils and land managers.

#### Triannual progress and key highlights



##### **Risk-based framework for regional waterway health**

Richmond River Catchment (LGAs are Ballina, Richmond Valley, Lismore, Byron and Kyogle)

**Project summary:** Develop and trial a governance framework for the Richmond River catchment to coordinate management, reduce diffuse source runoff and improve waterway health, and contributing to the development of the Richmond River Coastal Management Program.

**Progress this trimester:** Richmond River Collaborative Partnership Meeting: meeting held in October to share information on projects and activities aimed at repairing flood impacted rivers and riparian areas. Collaborative efforts benefit various state agencies and community organisations, creating opportunities to share information, reduce individual workloads and maximise outcomes.

Emigrant Creek and Richmond River

**Progress this trimester:** Ecohealth monitoring and collaboration: Delivering Emigrant Creek Ecohealth Monitoring assessment, and collaborated with North Coast Meat Cooperative to deliver improved diffuse source water pollution management outcomes.



## Marine debris research and management program

Sydney Harbour (Middle Harbour, Port Jackson, Lane Cove, Parramatta River)

**Project summary:** Convene the Marine Debris Working Group composed of agency representatives and academic experts to oversee a marine debris risk assessment and coordinate research, monitoring and analysis activities associated with marine debris actions.

**Progress this trimester:** First year of microplastic sampling completed and analysed for Sydney Harbour and biological analysis completed. Microplastic sampling seeks to detect temporal variability in microplastic contamination and determine relationship with rainfall and microplastic density. Biological analysis concluded of >100 resident reef fish gut samples from four major Sydney coastal estuaries seeking to understand microplastic contamination in resident reef fish and any gradients of contamination from estuary mouths.

Statewide

**Progress this trimester:** Microplastics conceptual model: Developed conceptual model for marine debris in NSW, highlighting current understanding, research priorities and strategic management options.



## Estuarine water quality monitoring

Taree to Wollongong

**Project summary:** Monitoring and reporting on water quality and ecosystem health in estuaries and relevant catchments to track broadscale condition over time. Develop new indicators where relevant.

**Progress this trimester:** Water quality sampling and data analysis: Sampling and laboratory analysis and system grading completed for 2022-2023 fieldwork season. Preparation of results for next Health of Estuaries update.



## Oyster reef restoration and research

Statewide

**Project summary:** Facilitate increased protection and restoration of oyster reef habitat in NSW through provision of planning information, contributions to on-ground works, education, engagement and ongoing research and monitoring.

**Progress this trimester:** To assist planners and identify priority locations, mapping of remnant oyster reefs completed in Evans River, Cullendulla, Jervis Bay (including Currumbene Creek) and Lake Conjola. Hawkesbury River, Pittwater and Manning River mapping now available on the Fisheries Spatial Data Portal. Further mapping planned for the next quarter. Early positive results at Wagonga Inlet with 15 fish species observed on recently seeded subtidal reefs.



## Coastal floodplain study

Tweed | Richmond | Clarence | Hastings | Macleay | Manning & Shoalhaven catchments

**Project summary:** Finalise floodplain study and implement a communication plan to share results with stakeholders and increase their understanding and use of the study results.

**Progress this trimester:** Coastal floodplain prioritisation reports and data have been publicly released, which will assist decision makers in the enhancement of water quality, habitat and biodiversity. [Report 1](#), [Report 2](#).





## Clean coastal catchments research

Ballina

**Project summary:** Conduct applied research in coastal catchments to refine and promote best management practices that reduce nutrient and sediment losses in the berry, greenhouse vegetable, macadamia and livestock industries.

**Progress this trimester:** Berry-waste treatment: upgraded bioreactors have been commissioned at the Wollongbar Blueberry Nutrition Research Facility and a full spring season of sampling suite was completed. Results will help inform low cost best practice methodologies leading to improved outcomes for farmers and water quality.



## Clean coastal catchments on-ground

Clarence Valley | Coffs Harbour | Lismore

**Project summary:** Undertake on-ground works in coastal catchments to improve land use practices that reduce nutrient and sediment run-off from the blueberry, greenhouse vegetable and intensive livestock industries.

**Progress this trimester:** Installation of improved irrigation systems completed in partnership with multiple greenhouse and berry producers. Expected water savings up to 4ML/yr at individual sites leading to significant reduction in waste and nutrients into local waterways.



## Improving roads and tracks

Ballina | Eurobodalla

**Project summary:** Seal gravel roads and undertake other works to reduce sediment entering waterways.

**Progress this trimester:** The Health of Estuaries report for the North Coast for 2021-2022 has been published. Statewide field sampling to monitor broadscale condition and trends in water quality of the Marine Estate is complete for 2022-2023. The focus has been on the central region (Taree to Wollongong), and includes major waterways such as the Hunter River and Hawkesbury River. The data is currently being processed and analysed.



## Erosion and sediment control

Statewide

**Project summary:** DPE-PA are helping protect our waterways by providing accessible, best practice advice on erosion and sediment control for small scale building sites. To achieve this, DPE-PA will periodically update a set of standard conditions that improve existing controls for erosion and sediment management for (but not limited to) residential development sites during the construction phase and prepare guidance material to support the standard conditions.

**Progress this trimester:** Public exhibition of the erosion and sediment control on building sites guidelines. The consultation reached several stakeholder groups including local councils, NSW Government agencies, industry groups, certifiers and community groups and the guidelines were successfully promoted via LinkedIn, emails, Facebook posts, webinars and the DPE Planning and MEMS newsletters.

## What's next?

Work that is planned to occur in the following reporting period is highlighted below, although unexpected changes to scheduling can occur and will be communicated to affected stakeholders.



### Building capacity on the Risk-based framework

Greater Metropolitan | Sydney, Parramatta

**Project summary:** Strengthen provisions in the NSW planning system to improve the management of water quality by building stakeholder capacity to implement the Risk-based Framework.

**Anticipated progress:** Training workshops: Catchment based training workshops for 2 of 4 target locations for this FY (Parramatta Catchment River Group, Georges Riverkeeper, Cooks River Alliance and Sydney Coastal Councils Group).

Greater Metropolitan Sydney

**Anticipated progress:** Production of key strategic documents: Development and potential release of Practitioner Guide, Lake Illawarra Case Study, and Wilton 2040 report (regarding stormwater health targets in SW Sydney area).



### Estuarine water quality monitoring

Central NSW coastal region Taree to Wollongong

**Project summary:** Monitoring and reporting on water quality and ecosystem health in estuaries and relevant catchments to track broadscale condition over time. Develop new indicators where relevant.

**Anticipated progress:** Estuary Report Card webpages update: Grades for ecological health and swimming suitability to be updated on Health of Estuaries website for systems sampled in 22/23 summer.

Statewide

**Anticipated progress:** Review: Next stage of consultant review of program to commence focusing on program implementation/stakeholder value and functionality.



### Mapping outflow events

Ballina Shire | Mid-Coast | Eurobodalla

**Project summary:** Mapping subtidal habitats and monitoring coastal outflow events to quantify impacts on coastal and marine waters.

**Anticipated progress:** Field sampling: Richmond, Manning and Clyde Rivers – 5 sites up river, 5 sites offshore for each river representing good spread of salt versus freshwater.



### Oyster reef restoration and research

Port Stephens

**Project summary:** Facilitate increased protection and restoration of oyster reef habitat in NSW through provision of planning information, contributions to on-ground works, education, engagement and ongoing research and monitoring.

**Anticipated progress:** Research: Set up acoustic positioning array and commence fish acoustic tagging and tracking study of Dusky flathead and Yellowfin bream to assist understanding of connectivity of recreational targeted species and artificial oyster reefs.



### Clean coastal catchments research

Coffs Harbour

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**Project summary:** Conduct applied research in coastal catchments to refine and promote best management practices that reduce nutrient and sediment losses in the berry, greenhouse vegetable, macadamia and livestock industries.

**Anticipated progress:** Berry –demonstration farms. Industry article on fertiliser savings using a recirculated system for blackberry production.



### Clean coastal catchments monitoring

Eurobodalla

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**Project summary:** Assessing the benefits of multiple projects in Initiative 1 delivering on-ground works, using water quality monitoring and ecosystem health assessment methodologies, to measure the success of targeted works and achievement of outcomes.

**Anticipated progress:** Community engagement: Tilba Tilba community event to discuss results of local interventions to reduce sediment and nutrient loss in local waterways.



### Riverbank stabilisation

Bega Valley | Eurobodalla | Shoalhaven | Kiama LGA

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**Project summary:** Maintain existing stabilising structures constructed since 2018 and undertake new work, such as the construction of log, rock and vegetation bank protection works that stabilise erosion hotspots, helping to reduce sediment entering waterways.

**Anticipated progress:** Grants open for riverbank stabilisation works: Round 1 riverbank stabilisation grants open for applications and assessment.

## More information

More information on Initiative 1 projects is on the Marine Estate website [here](#).



## Initiative 2

### Delivering healthy coastal habitats with sustainable use and development

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#### Initiative summary

Initiative 2 seeks to improve coastal and marine habitats, and foreshore and waterway management, through various projects and overall is progressing well. Initiative staff worked tirelessly as a collaborative team of multi-agencies to progress and deliver new policy, fill knowledge gaps, and complete on-ground works. These outputs are being communicated to a broad range of stakeholders to ensure benefits are maximised. A positive start to a new financial year and ongoing efforts to reduce threats and maximise benefits of the Marine Estate.

#### Triannual progress and key highlights



##### Breakwall governance and management

Statewide

**Project summary:** Identify ownership of orphaned breakwater assets and work toward sound management strategies, or their removal where social, environmental, cultural and economic values will also be enhanced (new project).

**Progress this trimester:** Finalisation and release of Coastal Crown Lands Guidelines: The Coastal Crown Lands Guidelines are completed under MEMS management action 2.3. The Guidelines have been published on the Crown Lands website, and are being communicated via newsletters to councils and other Crown land managers, and through the MEMS newsletter. Direct communication with councils or groups of councils and other key stakeholders is now taking place. The guidelines explain how coastal Crown land management aligns with NSW legislation, clarifying planning and approval requirements, and formalising current processes and procedures.



##### Reconnecting fish habitats

Port Stephens LGA

**Project summary:** Provide fish passage at priority weir and road crossing barrier sites in coastal catchments.

**Progress this trimester:** Seaham Weir fishway is completed. This upgrade managed by Hunter Water will allow access to for migratory native fish to over 250 km upstream habitat. The Fishway also enables improved ability to deliver environmental flows to the Williams and Hunter Rivers.



##### Threats to estuarine fish assemblages

Northern Beaches council

**Project summary:** Research to quantify the influence of boating infrastructure, stormwater drains and natural habitats on fish assemblages and better understand potential human impacts.

**Progress this trimester:** Project findings have been released in a scientific paper on the cumulative effects of multiple stressors to Posidonia and estuarine fish published in the journal Science of the Total Environment. This paper examines relationships between human activities, Posidonia sea grass, and fish communities.



### Subtidal reef monitoring

All coastal LGAs in the Greater Sydney region including Wollongong, Central Coast and Newcastle

**Project summary:** Research on the diversity, abundance and size of fishes and the distribution of kelp and sessile invertebrates across the Greater Sydney region's deep rocky reefs.

**Progress this trimester:** 120 sites were surveyed in the Greater Sydney region using baited underwater video. These data will be used to assess the condition of the fish assemblages and assist managers in detection of potential ecosystem changes or risks.

## What's next?

Work that is planned to occur in the following reporting period is highlighted below, although unexpected changes to scheduling can occur and will be communicated to affected stakeholders.



### Coastal design guideline review

Statewide

**Project summary:** Finalise the review of the Coastal Design Guidelines; develop case studies and promote best practice designs in coastal urban environments.

**Anticipated progress:** Public release of the reviewed Coastal Design Guidelines and supporting materials and develop case studies.



### Domestic waterfront structure strategies

Shoalhaven | Port Stephens | Lake Macquarie | Bega | Clarence Valley | MidCoast Councils

**Project summary:** Develop estuary-wide strategies that reduce red tape and inform the assessment of domestic waterfront structures, such as pontoons and boat ramps, spanning the intertidal foreshores.

**Anticipated progress:** Review and endorsement of the Lake Macquarie, Port Stephens Great Lakes Marine Park, Clarence River, Manning River, Lake Conjola and Wonboyn Lake strategies.



### Aquatic biodiversity

Statewide

**Project summary:** Develop and implement policy to protect high-value fish habitats through the use of biodiversity offsets.

**Anticipated progress:** Webpage update and soft release of the report: Key Fish Habitat Offsets: An Ecosystem Service Approach and a video presentation of 3 key fish habitat offset case studies.



### Reconnecting fish habitats

Liverpool City Council LGA

**Project summary:** Provide fish passage at priority weir and road crossing barrier sites in coastal catchments.

**Anticipated progress:** Liverpool Weir fishway refurbishment (Georges River) construction works managed by Public Works Authority commenced.

## More information

More information on Initiative 2 projects is on the Marine Estate website [here](#).

## Initiative 3

### Planning for climate change

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#### Initiative summary

Initiative 3 aims to fill knowledge gaps in climate change impacts and incorporate these impacts into adaptation planning, strategies and decision-making. Initiative 3 is progressing well for both DPI-F and DPE-EHG with a focus around communications and engagement. This included a presentation at the National Adaptation Conference, a site tour for 2023 World Mangrove Day at Duck Creek, an Initiative 3 webinar for Local Government, a series of workshops, social media posts, and MEMS newsletter articles.

During this period the Bureau of Meteorology predicted above-average ocean temperatures are likely to occur this summer. As a result, the Initiative 3 scientists led the development of a draft Marine Heatwave Response Plan. This plan encompasses 4 key components, including an early warning system, an incident response plan, management actions and a communications strategy.

#### Triannual progress and key highlights



##### Estuarine habitat monitoring and threat assessment

Hornsby | Central Coast | Northern Beaches

**Project summary:** Monitoring threats to, and extent of seagrasses, mangroves and saltmarshes to fill knowledge gaps, assess the effectiveness of management actions, and inform blue carbon storage estimates and predictive models (new project).

**Progress this trimester:** Maps finalised for the Hawkesbury River, Berowra Creek, Cowan River, Patonga Creek. Over 1,350 ha of estuarine habitat mapped, plus areas of impact. Despite over 5.3 ha of flood-damaged mangrove in the Hawkesbury mapped, areas of mangrove have still expanded by 14.5% over the last 18 years.

Hawkesbury

**Progress this trimester:** Maps for the Hawkesbury region are available on the [Estuarine Habitat Dashboard](#) and can be downloaded from the [Fisheries Spatial Data Portal](#).

A [Scientific paper](#) was published that describes how areas of Posidonia have increased in many NSW estuaries over the last 10-18 years, but losses have occurred in 5 estuaries. Losses of Posidonia were associated with the presence of artificial structures (jetties, pontoon and oyster leases).



##### Blue carbon demonstration on national parks land

Clarence Valley

**Project summary:** Progress a demonstration site at the DPI Duck Creek Research Station, Ballina that showcases the benefits of a blue carbon project on primary production land and will facilitate the development of guidance materials to support primary producers and landholders.

**Progress this trimester:** Progress a demonstration site at Everlasting Swamp near Maclean, one of the largest coastal wetland in NSW, delivering on Action 2.5 in the [“NSW Blue Carbon Strategy 2022-2027.”](#)





## Informing the Climate Change Adaptation Strategy

Statewide

**Project summary:** Developing and consolidating marine estate information to contribute to the NSW Climate Change Adaptation Strategy, promoting alignment of actions between the NSW Climate Change Adaptation Strategy with Marine Estate Management Strategy, ensuring innovative on-ground climate adaptation actions are delivered.

**Progress this trimester:** Facilitating climate adaptation in NSW marine parks: technical working group sessions with key stakeholders including NSW government staff, local councils, Traditional Owners, researchers and representatives from the Solitary Islands Marine Park Advisory Committee were held in August 2023. This group provided input into draft risk registers for the marine park network and Solitary Islands Marine Park, and 'stress tested' the draft adaptation toolkit.

The final Statewide Steering Committee meeting was held in September, and input from members is being considered / integrated into final report due in November 2023.

The project team had an opportunity to present the climate adaptation in marine parks work at the National Adaptation Conference in Adelaide, in July 2023.



## Climate change research

Statewide

**Project summary:** Targeted experimental research to fill priority knowledge gaps about probable climate change impacts on environmental assets in the marine estate.

**Progress this trimester:** A draft marine heatwave response plan has been developed to prepare for heightened risk of marine heatwave events off the NSW coastline this summer.

Population genetic sequencing of all known populations of the endangered sea grass *Posidonia australis* has been completed. Analysis of state-wide population structure complete. Two manuscripts are in preparation. The first explores wide-ranging population connectivity, the second studies the genetic response (signatures of adaptation) of the seagrass populations to documented climate-driven abiotic changes in selected estuaries.

Southern NSW coast-Tathra to Eden

**Progress this trimester:** Extraction of DNA from the southern NSW distributed populations of the bull-kelp *Durvillaea amathaea* (120 samples) is in progress. There is a strong chance that marine heatwave conditions will affect the genetic population structure of this species in the future. The purpose is to stabilise the DNA extracted from a 'before-impact' collection. DNA will be used to assess the current genetic diversity.



## Climate change citizen science

Statewide

**Project summary:** Mapping marine species redistributions due to climate change using community data.

**Progress this trimester:** Completion of public signage: completion of final versions of four NSW bioregion-specific public signs depicting lists of marine 'species-on-the-move' that citizen scientists can spot, log and map with the Redmap project in collaboration with NSW DPI.

Coffs Harbour LGA

**Progress this trimester:** Dissemination of communication materials: dissemination of the NSW citizen science report card and poster communication resources to over 100 members of the public at the Coffs Harbour 'Gone Fishing Day' event.

## What's next?

Work that is planned to occur in the following reporting period is highlighted below, although unexpected changes to scheduling can occur and will be communicated to affected stakeholders.



### Climate change threat to mangrove and saltmarsh

Statewide

**Project summary:** Identify mangrove and saltmarsh communities most at risk from sea level rise and use vulnerability assessment principles to prioritise threat mitigation efforts and identify priority areas suited to migration using bespoke modelling.

**Anticipated progress:** 2nd Pass vulnerability assessment: final report from this activity will be completed. The report will extend the 1st pass vulnerability assessment (based only on sea level rise) to include consideration of climate change impacts on catchment sediment delivery to mangrove and saltmarsh wetlands. Importantly, the analysis now incorporates the latest NARClIM2 climate projections. This will inform a range of government initiatives relating to mangrove and saltmarsh including implementation of the Blue Carbon Policy and the Natural Capital Statement of Intent, and development of LGA Coastal Management Plans.



### Estuarine habitat monitoring and threat assessment

MidCoast | Coffs | Clarence Valley

**Project summary:** Monitoring threats to, and extent of seagrasses, mangroves and saltmarshes to fill knowledge gaps, assess the effectiveness of management actions, and inform blue carbon storage estimates and predictive models (new project).

**Anticipated progress:** Estuarine habitat and disturbance mapping: maps produced for Smiths Lake, Corindi River, Sandon River, Moonee Creek.



### Informing the Climate Change Adaptation Strategy

NSW marine park network and Solitary Islands Marine Park (Mid North Coast)

**Project summary:** Developing and consolidating Marine Estate information to contribute to the NSW Climate Change Adaptation Strategy, promoting alignment of actions between the NSW Climate Change Adaptation Strategy with Marine Estate Management Strategy, ensuring innovative on-ground climate adaptation actions are delivered.

**Anticipated progress:** Facilitating climate adaptation in NSW marine parks: The final report will be delivered, including feedback from the State-wide Steering Committee. The report and an accompanying paper including how feedback has been addressed and next steps will be sought from the (internal) Marine Estate Agency Steering Committee.



### Climate change research

Statewide

**Project summary:** Targeted experimental research to fill priority knowledge gaps about probable climate change impacts on environmental assets in the marine estate.

**Anticipated progress:** Manuscript 'Genomic analyses indicate resilience of a commercially and culturally important marine gastropod snail to climate change' will be available online.

**Scientific research:** Completion of manuscript detailing the methodology for determining species out-of-range observations using citizen science observations i.e. publishing the method used to develop the NSW citizen science report card.



## Climate change citizen science

Statewide

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**Project summary:** Mapping marine species redistributions due to climate change using community data.

**Anticipated progress:** Development of draft playing cards and playing card game that will be used to highlight species that are becoming more common in NSW coastal waters in response to climate change. These range shifting species will be worth double points. The game will be a resource that school-aged children can use to better understand climate change induces effects on their local marine environments.

Install education signage in locations including dive and fishing shops.

### More information

More information on Initiative 3 projects is on the Marine Estate website [here](#).



## Initiative 4

### Protecting the Aboriginal cultural values of the marine estate

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#### Initiative summary

Initiative 4 aims to increase community understanding of Aboriginal Sea Country values, enhance economic opportunities and employment for Aboriginal people, as well as increase active involvement in managing the marine estate. The focus of this period was to continue to the consolidate marine skills training and further develop projects that support cultural economic development opportunities. A key highlight was supporting the Joonga Aboriginal Land & Sea Corporation with training and work in asset maintenance under the Batemans Marine Park signage project. Importantly, this project provided participants with an opportunity to work On Country. Support was also provided to the Miimi Mothers Land and Sea Rangers this period for the first round of resource assessments for highly valued marine bush tucker items in the Nambucca Valley. These assessments are an extension to the previously supported plastic collective and marine litter ranger project. There is considerable interest in further developing these assessments in the future.

#### Triannual progress and key highlights



##### Cultural interpretation

Tweed Heads

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**Project summary:** Work with Aboriginal communities to increase cultural interpretation in marine protected areas, to increase public awareness of Aboriginal cultural values, which may include signage and artwork depicting the stories and cultures of Aboriginal peoples' connections to Sea Country, developed with Aboriginal communities.

**Progress this trimester:** Supported local schools within the Tweed LGA with an Aboriginal cultural guide to input on the cross-curriculum priority - 'Aboriginal and Torres Strait Islander Histories and Culture' with a focus on Jungarra Ngarrin and Tweed coastal waters.



##### Sea Country Rangers

Port Stephens

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**Project summary:** Work with Aboriginal communities to design and deliver a Caring for Sea Country ranger model and activities across the marine estate.

**Progress this trimester:** Commencement of the central region coxswain sea time strategy. An Aboriginal commercial fisher has been contracted to assist participants from the area to complete the required tasks necessary to fulfil the Coxswain Grade 1.

##### Nambucca Valley

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**Progress this trimester:** An ongoing project with Miimi Mothers land and Sea Country rangers, the Mindulum Rangers delivers environmental monitoring with Aquamarine Australia across the river continuum. For the first time this also included the Mindulum Rangers undertaking resource assessments of highly valued marine bush tucker (such as rocky shore mollusc and fish) in the Nambucca Valley.



## Reviving culture

Kempsey

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**Project summary:** Work with Aboriginal communities to maintain or revive cultural knowledge and practices of Sea Country.

**Progress this trimester:** Day on the (Macleay) River supported a school holiday event with Kinchela Boys Home through the Marrungbuya program to give kids an opportunity to learn the skills to fish in freshwater and saltwater. Elders, family members and community attended and interacted in fishing and storytelling.



## Cultural economic development

Eurobodalla | Bega Valley

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**Project summary:** Identify and expand opportunities for economic development across the Marine Estate.

**Progress this trimester:** The Batemans Marine Park asset (signage) maintenance project provided training and work experience for a local First Nations organisation, the Joonga Aboriginal Land and Water Corporation. This project provided employment, skill development and importantly allowed for participants work on Country.



## Cultural site protection

Eurobodalla

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**Project summary:** Undertake local cultural research activities with local Elders and communities targeting important cultural sites and informing management strategies to conserve cultural sites and artefacts.

**Progress this trimester:** Runnyford/ Buckenbowra Fish Trap Restoration project employed the Walbunja Rangers from the Batemans Bay Local Aboriginal Land Council, to safely restore and reconstruct the fish trap using the existing stones. This project revitalised Aboriginal cultural heritage and created a safe space to facilitate cultural fishing practices into the future.

## What's next?

Work that is planned to occur in the following reporting period is highlighted below, although unexpected changes to scheduling can occur and will be communicated to affected stakeholders.



## Aboriginal engagement

Nambucca Valley

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**Project summary:** Evaluate current arrangements of Aboriginal peoples' participation in Sea Country management and establish an effective Aboriginal Engagement Framework.

**Anticipated progress:** Support the Bowraville Cup (the Cup) through fishing clinics, promotional gear and presence. The Cup is a community memorial event which is significant to the ongoing strengthening of community relationships. The event is well represented from community services groups linked to the wellbeing, safety and health of young people in the region.



## Cultural interpretation

Shoalhaven

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**Project summary:** Work with Aboriginal communities to increase cultural interpretation in marine protected areas, to increase public awareness of Aboriginal cultural values, which may include signage and artwork depicting the stories and cultures of Aboriginal peoples' connections to Sea Country, developed with Aboriginal communities.

**Anticipated progress:** In collaboration with the Ulladulla Local Aboriginal Land Council rangers and Regional NSW the Ulladulla coastal walking track and cultural signage project will upgrade/develop the coastal walking track and upgrade existing cultural signage.



## Reviving cultures

Coffs Harbour

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**Project summary:** Work with Aboriginal communities to maintain or revive cultural knowledge and practices of Sea Country.

**Anticipated progress:** Support the Gumbaynggirr Giingana Freedom School inaugural school cultural camp to deliver fishing activities which aligns with the students strong interest this area.



## Cultural research & monitoring

Tweed Heads

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**Project summary:** Develop research, monitoring and evaluation approach that is integrated with the Aboriginal Engagement Framework and aligns with the Marine Integrated Monitoring Program.

**Anticipated progress:** The Tweed-Byron Local Aboriginal Land Council (TBLALC) Healthy Waterways-Healthy Dolphins Project is a research and monitoring program that integrates non-invasive scientific research, citizen science initiatives and education to provide for environmentally positive outcomes. This collaborative project will help fill these critical knowledge gaps and determine the status and health of dolphin populations of the Tweed region with the help of the TBLALC Sea Country rangers.

## More information

More information on Initiative 4 projects is on the Marine Estate website [here](#).



## Initiative 5

### Reducing impacts on threatened and protected species

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#### Initiative summary

Initiative 5 aims to understand and mitigate threats to threatened and protected species in NSW to improve or maintain conservation status and health of targeted threatened and protected species in the wild. This is being achieved through a shift from an operational focus to research projects designed to improve species health and habitat. The NPWS Draft Operating Model and Prioritisation Procedures and the statewide NPWS Marine Wildlife Duty Officer have received positive reviews and have been incorporated into routine policies. The 2023 season resulted in 7 successful disentanglement responses and 6 animals self-releasing from the 44 reported entanglements, and the MoU with NSW Marine Rescue was completed. The turtle nesting intervention protocols created were implemented successfully and a publication was produced from the seal sampling kits disseminated to NPWS staff. The Southern right whale citizen scientist program Right Whale ID was completed and provided information to the federal government to develop Biologically Important Areas for this species. Seal communication products are being scoped and the preliminary results of the population viability assessment for leatherback turtles have been received and will be used to guide future management practices.

Work continued with stakeholders across all fishing sectors to develop operational procedures and physical mitigation measures to reduce interactions and increase reporting of non-target species and work is underway to assess the impact of the prawn trawl sectors of the NSW Ocean Trawl Fishery on elasmobranchs and observer-based survey of the Estuary General mesh net fishery are being completed to address threats to fish assemblages (harvest and bycatch).

#### Triannual progress and key highlights



##### Partnerships to protect marine wildlife

Statewide

**Project summary:** Strengthen partnerships for marine threatened and protected species conservation response, to ensure effective wildlife management, incident response and rehabilitation.

**Progress this trimester:** Improved marine wildlife response: improved large whale disentanglement outcomes, with the reviewed and updated Memorandum of Understanding between Marine Rescue and National Parks, during large whale disentanglement events, finalised. The most successful disentanglement season on record with 7 active disentanglements.



##### Education to protect and conserve marine wildlife

Statewide

**Project summary:** Improve awareness of threats to threatened and protected species and community compliance with regulations, to reduce impacts through education campaigns, social research and effective compliance.

**Progress this trimester:** Compliance operations: conducted covert assessments of commercial whale watch operations to assess compliance with approach distances for marine mammals.



## Improve reporting of interactions with marine wildlife

Statewide

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**Project summary:** Improve reporting and data sharing on marine threatened and protected species to support evidence-based decision making, including linking and enhancing existing databases, raising awareness of reporting pathways, actively analysing and communicating data more regularly, and integrating research and data into the Monitoring Program.

**Progress this trimester:** Increased data availability: launch of public facing data platform Power BI which allows the public to follow and search for marine fauna events.



## Strategy for migrating species interactions

Statewide

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**Project summary:** Work with stakeholders across all fishing sectors to develop measures to reduce interactions and increase reporting of non-target species including fishing gear modifications or other technologies (linking with Initiatives 6 and 8).

**Progress this trimester:** Scientific publication 'Characteristics of east Australian demersal trawl elasmobranch bycatch as revealed by short-term latitudinal monitoring' published in Endangered Species Research. This study forms a timely baseline which can be used to assess the impact of the prawn trawl sectors of the NSW ocean trawl fishery on elasmobranchs in the future.



## Species monitoring

Statewide

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**Project summary:** Undertake research and monitoring to help fill key knowledge gaps identified in the statewide TARA, and to address cumulative threats to marine wildlife, monitor trends in threats and the health and condition of their habitats.

**Progress this trimester:** Scientific Publication investigation: the role of oceanic currents on whale migratory patterns and implications for entanglement.

## What's next?

Work that is planned to occur in the following reporting period is highlighted below, although unexpected changes to scheduling can occur and will be communicated to affected stakeholders.



## Planning to protect marine wildlife

Statewide

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**Project summary:** Improve strategic planning and coordination for threatened and protected species programs across NSW, including implementation of the Marine Wildlife Manual to address priority threats.

**Anticipated progress:** Marine Wildlife Carcass Burial on NPWS estate project: Coordinate the identification and assessment of potential sites for the burial of marine carcasses on NPWS estate - pilot project.



## Education to protect and conserve marine wildlife

Statewide

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**Project summary:** Improve awareness of threats to threatened and protected species and community compliance with regulations, to reduce impacts through education campaigns, social research and effective compliance.

**Anticipated progress:** Council workshops to advise on management of anthropogenic light: Workshops will be held with councils to advise on the impacts of anthropogenic light on marine fauna and recommendations for mitigation measures.



## Improve reporting of interactions with marine wildlife

Statewide

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**Project summary:** Improve reporting and data sharing on marine threatened and protected species to support evidence-based decision making, including linking and enhancing existing databases, raising awareness of reporting pathways, actively analysing and communicating data more regularly, and integrating research and data into the Monitoring Program.

**Anticipated progress:** PowerBI Platform: record use and outputs from the public facing Power BI platform.



## Estuary general fishery observer survey

Tweed | Ballina | Clarence Valley | Nambucca Valley | Kemsey | Port Macquarie  
Hastings Mid-Coast | Port Stephens | Newcastle | Central Coast | Northern Beaches  
Hornsby | Wollongong

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**Project summary:** Observer-based survey of the Estuary General mesh net fishery to address threats to fish assemblages (harvest and bycatch).

**Anticipated progress:** Observer - Estuary general fishery: trained scientific observers will continue to monitor estuary general meshnet fishing trips across main estuaries. Approximately 120 trips will be monitored from November 2023 to February 2024.



## Strategy for migrating species interactions

Ballina | Coffs Harbour | Gosford

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**Project summary:** Work with stakeholders across all fishing sectors to develop measures to reduce interactions and increase reporting of non-target species including fishing gear modifications or other technologies (linking with Initiatives 6 and 8).

**Anticipated progress:** Reducing abandoned, lost, or otherwise discarded fishing gear (ALDFG): trial the utility of RESQUNIT, the world's only gear loss prevention tool with programmable electronic release mechanism to reduce ghost fishing and recover lost traps in the NSW Ocean Trap and Line Fishery.

## More information

More information on Initiative 5 projects is on the Marine Estate website [here](#).

## Initiative 6

### Sustainable fishing and aquaculture

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#### Initiative summary

Harvest strategy development has been progressing well with the spanner crab harvest strategy being finalised and adopted. Development of additional strategies is well progressed, with the draft Mulloway Harvest Strategy nearing completion, and the Line & Trap harvest strategy working group progressing. Other projects have also progressed well, with the responsible crab fishing program resulting in more than 1,000 crab nets and traps exchanged for more environmentally responsible fishing gear. The roll out of the hook and line bin initiative has continued with over 45 bins being distributed through the State. The fisheries enhancement project has now deployed both the Forster and Terrigal artificial reefs and work has commenced on the next artificial reef locations. The Aquaculture socio-economic final report has been completed and is awaiting approval for public release.

#### Triannual progress and key highlights



##### Harvest strategy development

Statewide

**Project summary:** Expand the harvest strategy framework by continuing development and implementation of harvest strategies for key NSW species and fisheries consistent with the NSW Harvest Strategy Policy and Guidelines.

**Progress this trimester:** Total Allowable Fishing Committee used the Trawl Whiting Harvest Strategy and the Lobster Harvest Strategy to guide their determination of total allowable catch for the 2022/23 and 2023/24 fishing periods. A simple explanatory Whiting harvest fact sheet and a Lobster harvest fact sheet have been published. The Spanner Crab Harvest Strategy was endorsed by the Harvest Strategy Working Group and CommFish NSW and adopted by the Minister in August 2023. A Spanner crab harvest strategy fact sheet has also been published.



##### Recreational fishing environment assessment

Statewide

**Project summary:** Develop an environmental assessment of recreational fishing (saltwater), prepare a Recreational Fishing Management Strategy and commence implementation of key recommendations.

**Progress this trimester:** Responsible fishing advisory -major update of the DPI 'Responsible Fishing' webpages. Production of a brochure 'Responsible fishing to reduce wildlife injuries' to promote responsible fishing and to reduce interactions with wildlife. Brochure printed and being sent out to all 1 and 3 year fishing licence holders. Production and distribution of a 'Reducing the impacts of barotrauma' brochure to increase survival of fish caught from deep water. This is an educational guide with DIY instructions to use release weights to decrease bycatch mortality of species prone to barotrauma impacts. Funding provided for responsible fishing advisory in 'Kids Fishing' Australia's first angling book in 'children's speak'. Ongoing crab trap exchange program which to date has seen over 1,100 old witches hat nets and rectangular traps exchanged for environmentally responsible round crab traps and lift nets.

Responsible fishing: fishing hook and line bins continue to be distributed including new sites at Sydney and Greenwell Point. Development and distribution of over 150 litter bin stickers to be installed on bins at recreational fishing hot-spots across the following local government councils;

Georges River, Port Stephens, Liverpool, City of Parramatta, Shoalhaven, Hawkesbury, Lake Macquarie, Byron Bay and Maitland. Release mats provided to Nambucca Heads Offshore Fishing Club, Jervis Bay Game Fishing Club, Coffs Harbour Police Kids Fishing Competition and the Forge Through Completion. Release mats and release weights provided to Byron Bay Deep Sea FC. Release mats, release weights, hand reels and advisory information provided for the Evans Head Classic Fishing Tournament and Trophy Hunter Snapper Tournament in Coffs Harbour.

Responsible fishing: collaboration with the 'Fish For Life' project to deliver the 'Keep it clean' campaign. Project plan completed for a series of on-ground clean up events, videos, social media posts and advisory content developed and a program for staged release of social posts to be rolled out in association with OzFish as well as using micro influencers. This content is designed to address marine litter, specifically targeting ways to promote recreational fishers to dispose of litter appropriately and learn and use techniques to prevent gear loss. Content to be released in a staged way from August 23 to March 24, with organised cleans ups to take place at 30 locations from September 2023-September 2024. Two on ground cleans ups undertaken in this trimester - Clarence River and Clyde River in September.



### Fisheries enhancements

Central Coast | MidCoast

**Project summary:** Undertake marine fish stocking and artificial reef installation at key locations to improve fishing access.

**Progress this trimester:** Offshore artificial reefs: construction and deployment of the Central Coast and Forster offshore artificial reefs completed (Sept and Oct 2023, respectively). Consultation and independent reports underway for Ballina and Coffs artificial reef projects.

## What's next?

Work that is planned to occur in the following reporting period is highlighted below, although unexpected changes to scheduling can occur and will be communicated to affected stakeholders.



### Cultural fishing monitoring

Port Macquarie/Hastings Area

**Project summary:** Explore potential pathways to enable assessment of cultural fishing in NSW in terms of participation, catch and effort and relate these to access arrangements within current resource management decision making processes, including harvest strategies (links with management action 4.5).

**Anticipated progress:** Cultural fishing report will be finalised by late 2024.



### Recreational fishing environment assessment

Statewide

**Project summary:** Expand the harvest strategy framework by continuing development and implementation of harvest strategies for key NSW species and fisheries consistent with the NSW Harvest Strategy Policy and Guidelines.

**Anticipated progress:** Distribution of responsible fishing gear to continue, release weights and catch and release mats currently being distributed to Education officers for broader state-wide public roll out. Crab traps and nets exchanges. Tackle bins and bin stickers to continue to be distributed.

## More information

More information on Initiative 6 projects is on the Marine Estate website [here](#).



## Initiative 7

### Enabling safe and sustainable boating

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#### Initiative summary

Projects are achieving safer and sustainable boating by developing new mooring technology to minimise seagrass impacts, improving infrastructure including boat ramps and navigational aids, and delivering education campaigns to reduce environmental impacts. Initiative 7 is self-funded by Transport for NSW as a BAU program of work. MEMS contributes \$15,000 to this initiative for the Review of Offshore Anchoring Project.

#### Triannual progress and key highlights



##### Environmentally friendly moorings

Port Stephen | Sydney Harbour | Shoalhaven

**Project summary:** Establish a performance-based standard for Environmentally Friendly Moorings (EFM) and review policy and regulatory options for improving adoption and maintenance of EFM.

**Progress this trimester:** Deployment of 12 Environmentally Friendly Moorings in Port Stephens, Sydney Harbour and Jervis Bay. Sea floor monitoring including biodiversity and carbon sampling. Publication of CSIRO Literature Review of Environmentally Friendly Moorings: Environmental and Engineering Performance, encompassing environmentally friendly mooring assessment science, evaluation of the performance and market availability of different systems, and identification of environmentally friendly mooring designs for in-water trial.



##### Vessel environmental standards

Statewide

**Project summary:** Continue to enforce environmental standards and regulations among domestic commercial vessels and recreational vessels.

**Progress this trimester:** Recreational boater education: TfNSW undertakes ongoing education of recreational boaters to improve compliance with environmental regulations. Educating boaters and the community includes communications via targeted social media posts, information distributed via Maritime's bi-annual newsletter, as well as ad hoc education to local councils. Boating Education Officers also discuss environmental-related queries with recreational boaters at boat ramps. Release of three 'Check the Weather' videos - Weather Warnings and Forecasts, Wind Conditions and Wave Conditions - made in collaboration with the Australia Bureau of Meteorology.



##### Vessel monitoring

Statewide

**Progress this trimester:** Identify available data and undertake gap analysis.

**Progress this trimester:** Centre for Maritime Safety (CMS) continues to identify available data and undertake gap analyses. CMS will continue to contribute to boating reports and data to MEMS program evaluation. Two reports have been publicly released: NSW Recreational Boater Survey 2023 and Lifejacket Wear on Recreational Vessels Report 2023.



## Boating Now

Statewide

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**Project summary:** Work with partners to deliver projects funded through Round 3 of the Boating Now Program.

**Progress this trimester:** Delivery of Boating Now Round 3 projects ongoing with approximately 71% of projects completed to date. There are 21 projects remaining throughout NSW. Boating Now Round 4 is pending funding and relevant approvals.



## Maritime infrastructure

Statewide

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**Project summary:** Collaborate with key stakeholders in the implementation of the Maritime Infrastructure Plan 2019-2024 that sets out an overarching strategy to support maritime infrastructure in priority areas in NSW.

**Progress this trimester:** NSW Government continues to implement the Maritime Infrastructure Plan 2019-2024 by investing in maritime infrastructure to improve access to our waterways through programs such as the Boating Now program and the Maritime Infrastructure Stimulus Program. These programs invest in boating access infrastructure such as boat ramps, jetties and pontoons, regional harbour improvements, navigational dredging and ferry wharf upgrades.

## What's next?

Work that is planned to occur in the following reporting period is highlighted below, although unexpected changes to scheduling can occur and will be communicated to affected stakeholders.



## Environmentally friendly moorings

Port Stephens | Sydney Harbour | Shoalhaven

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**Project summary:** Establish a performance-based standard for Environmentally Friendly Moorings (EFM) and review policy and regulatory options for improving adoption and maintenance of EFM.

**Anticipated progress:** Ongoing evaluation and assessment of performance of EFMs and collection of relevant environmental data..



## Mooring strategy

Statewide

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**Project summary:** Review and modernise the strategy for mooring management and administration to improve access to moorings.

**Anticipated progress:** Public reporting on results of end-of-life vessel public consultation outcomes.



## Vessel environmental standards

Statewide

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**Project summary:** Continue to enforce environmental standards and regulations among domestic commercial vessels and recreational vessels.

**Anticipated progress:** Finalisation of Marine Pollution Regulation 2014 review and ongoing review of Marine Safety Regulation 2016.



## Review of offshore anchoring

Wollongong

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**Project summary:** Review and investigate the effects of large commercial shipping vessel anchoring within the Greater Sydney region.

**Anticipated progress:** Continued project planning to monitor possible seafloor recovery following the establishment of designated anchorages. The field component of this project will begin in May 2024.



## Boating now

Statewide

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**Project summary:** Work with partners to deliver projects funded through Round 3 of the Boating Now Program.

**Anticipated progress:** Ongoing delivery of Boating Now projects.

## More information

More information on Initiative 7 projects is on the Marine Estate website [here](#).

## Initiative 8

### Enhancing social, cultural and economic benefits

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#### Initiative summary

This initiative has a major education, research and monitoring component, working with institutions and government agencies to increase understanding of how we all use and value the marine estate, to maximise community benefits.

Initiative 8 continues its focus this period towards improving our knowledge of the social, cultural and economic benefits of the marine estate and better incorporation of these values into planning and management. This included the publication of the community wellbeing framework which guides state-wide monitoring of these benefits, and the completion of a five-year analysis of economic trends for marine estate industries.

#### Triannual progress and key highlights



##### Marine Estate Education Strategy

Statewide

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**Project summary:** Implement the NSW Marine Estate Education Strategy and curriculum-based school package.

**Progress this trimester:** The Strategy's webinar series was initiated to address actions in the Marine Estate Education Strategy related to connecting with, and informing Local Government on current Strategy work and opportunities for further integration and involvement. Two webinars have been delivered focusing on Initiative 1 (Improving water quality and reducing litter) and Initiative 3 (Planning for climate change). Webinars were delivered in collaboration with the MEMS education and stakeholder liaison team, Initiative leads and the Environment and Heritage Group.



##### Social and cultural benefits monitoring and research

Statewide

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**Project summary:** Design and implement statewide surveys to monitor community benefits, impacts, and inform the evaluation of the Strategy's effectiveness, as identified in the community wellbeing framework.

Undertake research to improve understanding of statewide survey results or additional aspects of wellbeing related to the Marine Estate.

**Progress this trimester:** NSW Marine Estate Community Wellbeing Framework was publicly released. This novel Framework provides the basis for a consistent and robust approach to monitoring the community benefits of the NSW coast, threats to these benefits and filling key knowledge gaps. The Framework is a critical component of the Marine Integrated Monitoring Program and allows us to expand beyond the traditional focus on environmental aspects of the Marine Estate.



## Economic benefits monitoring and research

Statewide

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**Project summary:** Monitor the economic benefits dimension of the community wellbeing framework of the NSW marine estate. Linked to action 8.4 marine estate economic valuation.

**Progress this trimester:** Economic contribution and Market Insights draft report complete and review by internal and external stakeholders commenced.

The report estimates the market-based value of the marine estate to the NSW economy and investigates drivers for economic changes in individual industries and regions, as well as broader trends in the marine estate over a 5 year period (2017-2022), and into the future.



## Marine Estate economic valuation

Port Stephens

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**Project summary:** Developing a consistent and comprehensive economic valuation model based on international best practice in ocean accounting that takes account of market and non-market values to monitor the economic health of the marine estate. Links to action 8.3 economic benefits monitoring.

**Progress this trimester:** Cost-benefit analysis for the Oyster Reef Restoration program in Port Stephens (delivered under initiative 1) completed and draft report prepared to help assess the economic viability and potential benefits of restoration efforts.



## Blue Economy

Statewide

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**Project summary:** Working across multiple sectors to develop a Blue Growth Strategy for NSW which explores opportunities for coordinated, innovative, long-term, sustainable development of the marine estate with a focus on those current and emerging activities which provide the greatest opportunity for sustainable growth for NSW (new project).

**Progress this trimester:** Project plan for the development and delivery of a Blue Growth Strategy for NSW completed. The Strategy will explore opportunities for innovative, long-term, sustainable development of the marine estate.

## What's next?

Work that is planned to occur in the following reporting period is highlighted below, although unexpected changes to scheduling can occur and will be communicated to affected stakeholders.



## Marine Estate Education Strategy

Statewide

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**Project summary:** Implement the NSW Marine Estate Education Strategy and curriculum-based school package.

**Anticipated progress:** The Marine Estate Agents primary school program will be publicly released.

Delivery of Strategy webinars for Initiative 2 (Delivering healthy coastal habitats).

Marine Estate Education Hub completed. The hub will be located on the Marine Estate website and is a place for schools and the community to easily find relevant education material.





## Social and cultural benefits monitoring and research

Statewide

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**Project summary:** Design and implement statewide surveys to monitor community benefits, impacts, and inform the evaluation of the Strategy's effectiveness, as identified in the community wellbeing framework.

Undertake research to improve understanding of statewide survey results or additional aspects of wellbeing related to the marine estate.

**Anticipated progress:** The NSW Marine Estate Community Wellbeing Survey Reports for coastal residents, coastal visitors and coastal youth, and associated communications materials will be publicly released.



## Economic benefits monitoring and research

Statewide

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**Project summary:** Monitor the economic benefits dimension of the community wellbeing framework of the NSW marine estate. Linked to action 8.4 marine estate economic valuation.

**Anticipated progress:** Economic contribution and Market Insights report completed.

## More information

More information on Initiative 8 is on the Marine Estate website [here](#).

## Initiative 9

### Delivering effective governance

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#### Initiative summary

Initiative 9 projects continue to deliver important work to improve marine protected area planning, management and compliance (in Greater Sydney) this period. Management planning for Lord Howe Island Marine Park is progressing well and a code of conduct for Cook Island Aquatic Reserves is to be developed with local tour operators. The Greater Sydney compliance squad spent 913 hours patrolling aquatic reserves and intertidal protected areas this period and reported an increased compliance rate of 91% of those fishers inspected.

#### Triannual progress and key highlights



##### Improved marine protected area planning and management

Cook Island Aquatic Reserve

**Project summary:** Work is underway to improve planning and management for marine parks and aquatic reserves. This work aims to balance coordination and consistency across the network of marine protected areas with tailored local solutions where required. This will result in improved governance and improved management of marine protected area values.

**Progress this trimester:** Code of conduct developed with Cook Island Aquatic Reserve Tour Operators: A successful workshop was held with tour operators using Cook Island Aquatic Reserve, DPI Fisheries, National Parks and Wildlife Service and Green Heroes volunteer group. Participants agreed unanimously to develop a Code of Conduct together that will help protect marine life and also to provide input into communication materials for the public.



##### Greater Sydney region compliance focusing on marine protected areas

Hawkesbury bioregion marine protected areas

**Project summary:** Increased fisheries compliance outcomes focusing on addressing priority threats to environmental assets. Increased community and stakeholder education and awareness of fisheries and marine protected areas rules and regulations.

**Progress this trimester:** Compliance activities and coordination: The mobile compliance squad in Greater Sydney spent 913 hours patrolling aquatic reserves and intertidal protected areas (IPAs) this period. They interacted with 749 fishers and reported an increased compliance rate of 91% of those fishers inspected. There were 61 penalty infringement notices issued with a total value of \$3,200 and 34 written cautions issued. A number of these offences were recorded in Boat Harbour, Cape Banks. and North Harbour Aquatic Reserves, Long Bay Intertidal Protected Area (IPA) and one in Sydney Harbour IPA. There were 933 fish seized, which were mainly invertebrates collected from the intertidal zone, and returned to the water. The largest number collected by one group were cockles in Botany Bay, just outside of the Towra Point Aquatic Reserve.

Education activities: The mobile compliance squad presented to the St George and Sutherland Anglers Club on 25th October 2023 on the importance of our marine protected areas and to reinforce the rules and regulations. These education activities continue to foster good working relationships with stakeholders and improve compliance outcomes, as well as regular and reliable information of illegal fishing activity.

## What's next?

Work that is planned to occur in the following reporting period is highlighted below, although unexpected changes to scheduling can occur and will be communicated to affected stakeholders.



### Improved marine protected area planning and management

Cook Island Aquatic Reserve

**Project summary:** Work is underway to improve planning and management for marine parks and aquatic reserves. This work aims to balance coordination and consistency across the network of marine protected areas with tailored local solutions where required. This will result in improved governance and improved management of marine protected area values.

**Anticipated progress:** Code of conduct developed with Cook Island Aquatic Reserve Tour Operators and associated communications materials.



### Greater Sydney region compliance focusing on marine protected areas

Hawkesbury bioregion marine protected areas

**Project summary:** Increased fisheries compliance outcomes focusing on addressing priority threats to environmental assets. Increased community and stakeholder education and awareness of fisheries and marine protected areas rules and regulations.

**Anticipated progress:** Operation Turbo Reef will run over the Australia Day long weekend and target illegal intertidal collecting to increase education, awareness and deterrent of illegal fishing activity and minimise damage to the marine ecosystem.

Increased on water and road patrols in high-risk areas and IPAs: Large numbers of people within the Greater Sydney and beyond travel to the Hawkesbury bioregion coast to fish during summer. This often results in a large spike in illegal fishing activity. The aim of increased patrols is to educate the community and fishers, have a visible presence in our marine protected areas to act as a deterrent and implement compliance actions to deter illegal activity. Compliance activities will also be coordinated with other agencies to exchange intelligence on hot spot areas and undertake patrols to increase the area patrolled and the number of patrols using a risk-based approach.

Education activities: attend events as opportunities arise and continue to promote the work of the mobile squad on social media. Continue to communicate the rules and regulations for marine protected areas and compliance outcomes to act as a deterrent to illegal fishing.

## More information

More information on Initiative 9 is on the Marine Estate website [here](#).

# Part C: Additional program requirements

## Program management, monitoring, reporting, evaluation and education

### Initiative summary

Program management focuses on supporting and improving key program processes with adaptive management to meet changing demands, budgets, and stakeholder expectations and relations. This trimester the redesign of the Annual Implementation Report was finalised and preparation for the 2024-26 Implementation Plan has begun. Provision of spatial support has improved management of NSW Aquatic Reserves through updated interactive webmaps for the Marine Estate website. The Environmental Condition framework has been completed and will be released to the public. A comprehensive range of programs and activities including website updates, newsletters and webinars have established meaningful stakeholder relationships, and promoted education about our marine estate.

The [previous triannual report](#) and [Marine Strategy Implementation Annual Report](#) are available on the Marine Estate website.

### Triannual progress and key highlights



#### Strategy program management

Statewide

**Project summary:** Implementation of a governance structure and project management framework to support delivery of the Strategy statewide to be reviewed periodically to improve efficiency and effectiveness.

**Progress this trimester:** Publication of the Snapshot report [March-June 2023](#). This provides a regular update to stakeholders and the community on the implementation of the Strategy.

The EHG MEMS program management team partnered with the EHG Estuaries and Catchments Team to promote projects funded under EHG-led marine estate.



#### Strategy education, communication, and stakeholder liaison

Statewide

**Project summary:** Implementation of communication tools, including website and e-newsletters to support and enable engagement, education and stakeholder liaison across the Strategy. Includes delivery of existing projects including the Marine Estate Education Strategy (See 8.1) and understanding non-government stakeholders (See 9.2).

**Progress this trimester:** Successful delivery of the internal the Strategy Communication and Stakeholder Engagement Framework, emphasising advancements in the Council Engagement Strategy, High-Level Message House for the Strategy, the Strategy Style Guide, and Templates. These comprehensive tools mark a significant milestone in enhancing our communication and engagement strategies for the marine estate. They establish a structured approach, ensuring consistency, effectiveness, and alignment with our overarching goals.

Two initiative webinars hosted with a total of 231 registrations. The attendees comprised 36% from State Government representatives, 60% from Local Government, and 4% from other sectors. This offered a chance to update Local Government on the Strategy progress and explore collaboration opportunities.



## Better geographic information systems (GIS) for the marine estate

Statewide

**Project summary:** Providing GIS support including developing, obtaining and publishing datasets, map production, spatial planning advice and spatial data analysis.

**Progress this trimester:** Remnant Oyster Reef mapping completed for the Hawkesbury River. Data is available via the [Fisheries Spatial Data Portal](#).



## Monitoring Program – program management

Statewide

**Project summary:** Implementation of a governance structure, framework and program management to support delivery of the Marine Integrated Monitoring Program to monitor, evaluate and report on Strategy progress, the condition of environmental assets and community benefits, and fill knowledge gaps.

**Progress this trimester:** Environmental Condition Framework Report and summary document finalised and designed. The Environmental Condition Framework provides a comprehensive summary of the selected monitoring projects and approaches to evaluate, monitor and report on the condition and trends of environmental assets of the NSW marine estate, meeting purposes 1 and 3 of the Marine Integrated Monitoring Program (MIMP). The Framework has been prepared by the Environmental-technical working group for the MIMP, with contributions from the Expert Knowledge Panel.

Mid-term evaluation of the Strategy commenced –the evaluation will measure progress towards achieving outcomes and identify insights for continuous improvement.

## What's next?

Work that is planned to occur in the following reporting period is highlighted below, although unexpected changes to scheduling can occur and will be communicated to affected stakeholders.



## Strategy program management

Statewide

**Project summary:** Implementation of a governance structure and project management framework to support delivery of the Strategy statewide to be reviewed periodically to improve efficiency and effectiveness.

**Anticipated progress:** Publication of Year 5 MEMS Strategy Implementation Annual Report–2022-23  
Publication of Year 6 Trimester 2 Snapshot Report.

Finalisation of the survey and stakeholder engagement toolkit aiming at supporting MEMS staff to measure the effectiveness of their interventions, including a standardised set of pre-and post-surveys to gauge the impact of a workshop/ event/ intervention. This is important to demonstrating how we are delivering outcomes under the Marine Integrated Monitoring Program (MIMP).





## Monitoring Program – program management

Statewide

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**Project summary:** Implementation of a governance structure, framework and program management to support delivery of the Marine Integrated Monitoring Program to monitor, evaluate and report on Strategy progress, the condition of environmental assets and community benefits, and fill knowledge gaps.

**Anticipated progress:** Publication of the Environmental Condition Framework. This Framework will be publicised along with the Community and Wellbeing Framework.

### More information

More information on Program management, monitoring, reporting, and evaluation is on the Marine Estate website [here](#).

## Appendix A – List of abbreviations

Abbreviation	Definition
Authority	Marine Estate Management Authority
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DPI-Ag	Department of Primary Industries – Agriculture
DPI-F	Department of Primary Industries – Fisheries
DPE-EHG	Department of Planning and Environment – Environment & Heritage Group
DPE-Lands	Department of Planning and Environment – Crown Lands
DPE-PA	Department of Planning and Environment – Planning and Assessment
DPE-Water	Department of Planning and Environment – Water
GIS	Geographic Information System
Knowledge Panel	Marine Estate Expert Knowledge Panel
LGA	Local Government Area
LLS	Local Land Services
MASC	Marine Estate Agency Steering Committee
MEAM	Marine Estate Activity Mapping
MIMP	Marine Integrated Monitoring Program
MoU	Memorandum of Understanding
NPWS	DPE-EHG: National Parks and Wildlife Service
NSW	New South Wales
SEED	Sharing and Enabling Environmental Data
Strategy	Marine Estate Management Strategy
TARA	Threat and risk assessment
TfNSW	Transport for NSW
UNSW	University of New South Wales

## Appendix B – Communication and engagement

### Marine Estate Instagram - #nsw\_marineestate

#### TOP POSTS VIA LIKES: July 1 – 31 October 2023

1



#### Riverbank stabilisation project

81 likes

[View post](#)

It's official! Bank protection works can result in more carbon storage as well trapping sediment to keep waterways healthier.

2



#### Boat show at Sydney

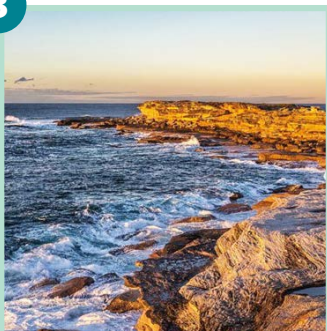
67 likes

[View post](#)

Want to learn about what to do if you see a marine mammal in the water?

Then come down to the Sydney International Boat Show to talk to our friendly staff this weekend!

3



#### Science research of Gamay

67 likes

[View post](#)

Ever wondered about the ecology of Botany Bay?

If so, a new research review into the science of Gamay (the original name for Botany Bay) might be worth a read.

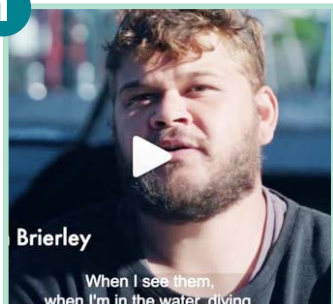
### STATISTICS

**1,961** followers increased by **3.2%** compared to previous reporting period.

**49** Instagram posts and **8** Instagram stories were posted during this period, reaching **7,026** accounts a decrease of **33.1%**

## TOP VIDEO VIEWS: July 1 – October 31 2023

1



### Sea Country video: Imagine handling sharks for a career!

**881** views

[Watch video](#)

Well that's what this deadly Aboriginal business from the NSW South Coast do as part of their role as SMART (Shark-Management-Alert-In-RealTime) Drumlins contractors.

2



### Sea Country video: Recycling on Sea Country

**740** views

[Watch video](#)

Meet four Sea Country Rangers working to protect their local waterways from plastic waste. These MiiMi Rangers from Bowraville have been collecting and recycling oyster barrels and processing them to make other valuable recycled plastic items.

2



### What about creating a human whale? On a beach?

**736** views

[Watch video](#)

Nearly 1300 people gathered on Fingal Bay Beach and did just that!

## KEY THEMES

(some themes are interrelated)

Improving water quality and litter – **8**

Improving coastal and marine habitat – **15**

Responding to climate change – **3**

Working with Aboriginal communities – **7**

Threatened and protected species – **5**

Sustainable fishing and aquaculture – **2**

Enabling safe and sustainable boating – **1**

Promoting social, cultural and economic benefits – **6**

Delivering effective governance – **1**

**Marine Estate newsletter** - [Connect with us \(nsw.gov.au\)](https://nsw.gov.au)


4 newsletters were published during the reporting period.

**STATISTICS**

**1,428** contacts increased by **16.9%** compared with the previous reporting period.

**TOP STORIES IN EACH NEWSLETTER: July – October 2023**

1




July

Marine litter campaign

93 opens

View story

2




August

Cause of death for young sea turtles investigated

119 opens

View story

3




September

NSW sea floor images now available

1264 opens

View story

4



October

Sign up for our coastal habitats and development webinar


60 opens

View story

**Marine Estate Management Strategy webinars**

Two webinars were conducted in the reporting period.

Initiative and Project leads from Initiative 3, Climate Change and Initiative 1B, Water Quality and Litter presented information during these webinars.



Total registration: 213

NSW State Government: 36% | Local Gov: 60% | Other: 4%

PUB23/1210

40



## Marine Estate Website - [marine.nsw.gov.au](https://marine.nsw.gov.au)

### Top pages visited: July – October 2023

1. [Marine Estate management strategy \(nsw.gov.au\)](#) (882 users)
2. [Knowledge centre and news section:](#)  
Story applying to install jetties and pontoons on estuaries just got easier (397 users) This story was published 8 April 2022.
3. [Threat and risk assessment](#) (268 users)

### Top 3 visited Project Pages

1. [Domestic waterfront structure strategies \(nsw.gov.au\)](#)
2. [Oyster reef restoration](#)
3. [Coastal floodplain study](#)

### Top 3 visited news articles

1. [Applying to install jetties and pontoons on estuaries just got easier](#)
2. [Sea floor images now available](#)
3. [Death of turtles investigated](#)

## STATISTICS - July – October 2023

Google has moved to a different way of producing analytics.

**5,737** USERS  
(total number of active users)

**12,435** SESSIONS (number of times sessions began on the website – new or following timed out - after 30mins)

**22,812** VIEWS  
(total number of web pages our users saw)

VIEWS PER USER **3.98**  
(average number of web pages viewed per user)

**71.98%** ENGAGEMENT RATE  
(percentage of engaged sessions)

AVERAGE ENGAGEMENT TIME **1MIN 48 SECONDS**  
(average length of time user focused on a page)



**28.02%\***  
BOUNCE RATE

\*Bounce rate is the percentage of people who land on a page, then leave without clicking on anything or visiting a second page.



**12,118.00\***  
CONVERSIONS

\*The conversion rate shows the percentage of website visitors that reached their desired action. For example, signed up to the newsletter, watched a video, downloaded a report, or clicked through to more information.