The Manx Blue Carbon Project

Half Way Update

The sea, our incredible ally

The fascinating marine life around the Isle of Man has an important role to play in our response to the climate and biodiversity crisis. As well as absorbing and locking away carbon, the seagrass meadows, saltmarshes, kelp forests, maerl beds, shellfish reefs, and marine mud around our island all do many other jobs. They protect our coastal communities from storms, flooding, and erosion; clean our air and water; and provide homes, nurseries, and feeding grounds for fish, shellfish, and many other sea creatures. Of course, they also have their own inherent value, aside from all the ways they benefit humans of the island.

Beneath the waves off coast of the Isle of Man ©R.Henthorn

February 2022 saw the start of the Manx Blue Carbon Project, a three-year venture to explore 'blue carbon' – the carbon naturally stored in our sea. By February 2025, the project aims to understand where our blue carbon is, to better understand the many other functions our blue carbon ecosystems perform, and determine how we can protect and improve our blue carbon stores.

At a glance:

- There is a better understanding of blue carbon around the Isle of Man: where it is, how much there is, and how fast it accumulates.
- The Working Group and Research Group ensure a collaborative, inclusive, interdisciplinary approach with partners and stakeholders.
- On-island engagement work has increased awareness and understanding of blue carbon.
- Off-island engagement has created vital connections within the international blue carbon research community, and led to involvement in the UK Blue Carbon Forum and UK Blue Carbon Mapping project.
- The focus will now move to looking at threats to blue carbon, assessing biodiversity and other ecosystem functions, and developing a Blue Carbon Management Plan.

The story so far

The project began by building understanding of local blue carbon habitats and developing knowledge of and relationships within the blue carbon research field.

Work began to map local blue carbon habitats, and to find out both their carbon content and how much carbon they capture each year.

Aerial drone surveys and underwater side scan sonar surveys were used to map the extent of our coastal blue carbon habitats - including our seagrass meadows, salt marshes, and kelp forests - and sediment cores were taken from the shallow coastal area, saltmarsh, and the offshore mud belt - an area within the island's 3-12 nautical mile limit.

Dr James Strong conducts a drone survey at Garwick

Who we work with

Working collaboratively with partners and stakeholders from across sectors, industries and Government departments is an absolute necessity, given the complexity and scale of the project.

The Research Group in Bangor, Wales

The Manx Blue Carbon Research Group
Ensuring collaboration and communication between all research partners, the group comprises experts from the National Oceanography Centre (NOC), Swansea University, Bangor University, the DEFA Fisheries Team, DEFA Ecosystem Policy Team, and the Blue Carbon Team.

Cutting-edge research is conducted via PhD studentships with academic research partners:

NOC and Swansea's PhD will develop a full audit of Manx blue carbon areas, identifying threats against them to inform management measures; their research will run Feb 2022 to Feb 2025.

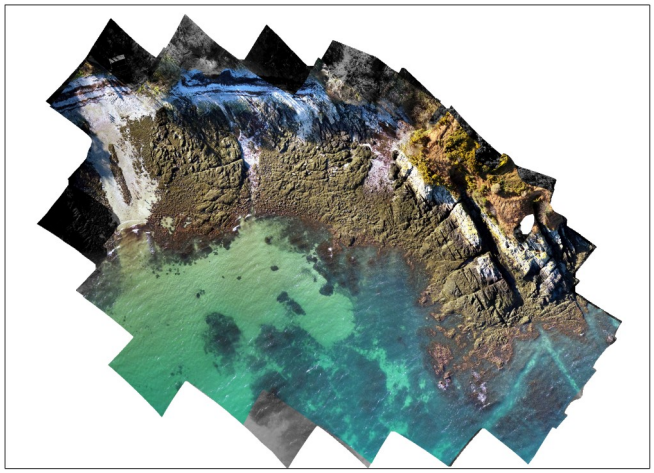
Bangor's PhD will examine the interactions between fishing activity and blue carbon, focusing in the Western Irish Sea Mud Belt; their research will run Jun 2023 to May 2026.

The Manx Blue Carbon Working Group
Bringing together organisations from across sectors to provide expert advice to the project, and ensure a connected approach to managing blue carbon in the Isle of Man. The group currently consists of all members of the Research Group, Manx Fish Producers' Organisation, Manx Wildlife Trust, KPMG, Deloitte, the IOM Climate Change Team, Department of Infrastructure, and Department for Enterprise.

What we've learnt

In shallow waters along the east coast there are seagrass meadows, with the largest known meadow in Ramsey Marine Nature Reserve. The project is working closely with Manx Wildlife Trust's Manx Eelgrass Group to understand and protect eelgrass in Manx waters.

Remote sensing and Seasearch dive surveys have more accurately determined the location and size of these seagrass meadows, with drone surveys helping to establish the full extent of seagrass meadows around the island, and sediment cores collected to investigate carbon stored within these areas.



Aerial image of Garwick from drone surveys © J.Strong

The Island's saltmarshes are situated on the east and south coasts of the island, the largest of which is at Poyll Dooey, along the Sulby River.

Research from the first year of the project found that these saltmarshes have the greatest soil carbon density of the ecosystems studied (13.45 ± 3.71 OC (%), 0–10 cm - comparable with saltmarshes around the UK).[1]

Collecting saltmarsh cores at Poyll Dooey ©H.Muir

Mud-dominated sediments in the western Territorial Sea cover an area of 450–500 km^2 and our research has found that carbon stored in this region (1.15 ± 0.27 OC (%), 0–10 cm) is comparable with estimates for similar sediments around the UK.[2]

Preparing to collect sediment cores from the boat

Despite having lower carbon density than coastal saltmarsh, the vast area covered by these offshore muds makes them one of the island's largest blue carbon stocks.

Ongoing research will determine how much carbon is accumulating in these habitats annually, whether environmental variables have significant effects on carbon stores and accumulation, and what measures could help to effectively manage the carbon stored.

Sharing knowledge

The team have been sharing their work with the local community, politicians, and with the international blue carbon research community.

On island, workshops for 150 children on the wonders of seaweed were run alongside Manx National Heritage. The team attended events such as the Festival of the Sea and Royal Agricultural show, spoke with IMarEST and the Wildlife Trust's Irish Sea Network, and in September 2022 ran an event specifically for MHKs and stakeholders.

Sleih ny Marrey: People of the Sea, a beautiful short film about the project, is helping raise understanding of the importance of blue carbon, and is now being shown at the Sea Terminal and on the Manxman, the new Steam Packet vessel.

Off island, the team attended events both online and in person to share learning across the blue carbon research field - including the MASTS Blue Carbon Workshop, the International Blue Carbon Conference, and Coastal Futures Conference - and led to joining the UK Blue Carbon Forum and UK Blue Carbon Mapping Project. Our Swansea PhD student, Hannah Muir, also presented initial research findings at the European Geoscience Union Conference 2023 in Vienna.

What's next?

Working towards February 2025, the project and its partners will:

- Create an inventory of all blue carbon in and around the Isle of Man, improving understanding of our blue carbon habitats, and identifying key 'hot spots';
- Identify threats to blue carbon, and how to manage them;
- Assess biodiversity and other ecosystem functions provided by these habitats;
- Work with stakeholders and partners to develop a Strategic Blue Carbon Management Plan;
- Promote awareness of the blue carbon ecosystems in Manx waters and their importance;
- Promote the Isle of Man as a leader in sustainable marine management.


Sunrise drone survey at Garwick Bay

Contact the team

jacqui.keenan@gov.im

rowan.henthorn@gov.im

kev.kennington@gov.im

www.netzero.im/bluecarbon

Isle of Man Government
Reiltys Ellan Vannin

Biosphere Isle of Man

Prifysgol Bangor University

National Oceanography Centre

Swansea University
Prifysgol Abertawe