UK Seagrass 2025: Evidence, Action and Priorities

Insight from the UK Seagrass Symposium

UK Seagrass Symposium

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FOREWORD

"It was a genuine privilege to welcome delegates to Cardiff Bay for the UK Seagrass Symposium 2025 and to host such an extraordinary gathering of scientists, practitioners, policymakers, community leaders and advocates. Under the year's theme, "From Roots to Recovery," we came together not only to reflect on progress, but to consider what must come next.

Over the past decade, the UK seagrass community has undergone a remarkable transformation. What was once a relatively niche area of marine research has evolved into a recognised national priority, embedded increasingly within climate strategies, biodiversity frameworks and coastal management discussions. Seagrass is now more widely understood for what it truly is: a foundational ecosystem supporting biodiversity, stabilising coastlines, capturing carbon, improving water quality, and sustaining livelihoods and cultural connections to the sea.

This shift has not happened by accident. It has been built steadily — like seagrass itself — through interconnected roots: rigorous science, community engagement, policy advocacy, and collaboration across sectors. From early restoration pilots to the development of national action plans, from innovations in mapping and genetics to citizen science initiatives such as SeagrassSpotter, the foundations for recovery are now firmly in place.

The discussions over these two days demonstrated clearly that we are entering a new phase. The question is no longer whether seagrass matters — it is how we accelerate protection and recovery at scale. How do we secure long-term funding mechanisms? How do we embed seagrass meaningfully within climate and nature policy? How do we protect existing meadows while expanding restoration efforts? And critically, how do we ensure that ocean recovery is socially just and rooted in strong relationships between people and place?

A central takeaway from this symposium is that collaboration is our greatest strength. We are seeing alignment between government departments, NGOs, academic institutions and coastal communities. We are witnessing restoration projects emerging across all four UK nations. We are also increasingly part of a growing international alliance, demonstrating that recovery does not stop at the shoreline. Knowledge, innovation and inspiration are flowing across borders, strengthening a global movement.

But recovery requires persistence. It demands sustained investment, long-term monitoring, policy support, and continued innovation. It requires us to move from short-term projects to enduring programmes. And it requires us to keep people at the heart of the work — recognising that seagrass recovery is ecological, social and cultural.

If seagrass teaches us anything, it is that meaningful recovery begins below the surface. It begins with roots — with partnerships, shared purpose, and collective resolve. What we witnessed in Cardiff was evidence that those roots are strong.

The responsibility now is to maintain momentum. To continue building the science we need for the ocean we want. To protect what remains. To restore what has been lost. And to ensure that the benefits of recovery are felt widely and fairly.

From roots, recovery grows."

Dr Leanne Cullen-Unsworth
CEO, Project Seagrass

Photo Credit: Lewis Jefferies

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Photo Credit: Lewis Jefferies

INTRODUCTION

The perception of seagrass in the UK has developed enormously over the past 10 years, particularly in scientific communities. These vital, placemaking plants are making waves with local communities and policymakers, being recognised for their role in supporting biodiversity, protecting coastlines, capturing carbon, and sustaining livelihoods through supporting fisheries, both in the UK and globally.

This report compiles the latest science, details inspiring stories of change driven by communities, and outlines innovative approaches being used to restore seagrass across the UK, providing an overview of the important work presented at the UK's second biannual Seagrass Symposium. The symposium constituted a celebration of the work that had been conducted over the last decade and looked forward, identifying what more needs to be done and what key knowledge gaps remain. It celebrated the next generation of seagrass scientists and practitioners, shining a light on the incredible science spearheaded by early career researchers and offering space for young conservationists to share their thoughts on the future of the sector. Beyond this, it also heard insights from the financial sector on how finance can be leveraged to ensure monitoring, conservation and restoration can continue to be funded long term.

Led by Project Seagrass and held in Cardiff, Wales, the symposium took place in the epicentre of seagrass science, practice and policymaking in the UK; in a nation working hard to connect science, policy, and people in action from early restoration pilot projects to the creation of Wales' National Seagrass Action Plan. In Wales, collaboration and collective learning have been key to ushering in change on seagrass, with genuine partnerships being forged across NGOs, academia, business, and government to advance seagrass restoration. As outlined by Huw Irranca-Davies MS, Deputy First Minister of Wales and Cabinet Secretary for Climate Change and Rural Affairs, who opened the symposium, this joined-up approach is essential to meet both the scale and pace of the nature and climate emergencies we collectively face. Wales, therefore, is home to ongoing work that is inspiring similar initiatives across the UK and beyond, with seagrass restoration anchored in community ownership and empowerment, invested in for the green jobs it provides, and valued for its role in supporting biodiversity, improving water quality, storing carbon and strengthening coastal resilience.

As an official UN Ocean Decade activity, the symposium demonstrated how scientific collaboration and community-driven restoration can contribute to the global mission of healthy, resilient oceans by 2030 - capturing the science, and practice, we need for the seagrass we want. Beyond this, the ideas sparked by symposium's presentations and discussions, and the new partnerships forged as a result, will help shape the next decade of ocean recovery, not just in Wales but across the UK and globally.

"Restoring seagrass is about much more than restoring a single habitat. It's about restoring balance to our seas, tackling the climate and biodiversity crises, and creating hope for the future of our seas. […] Together we are building a movement that is practical, inclusive and rooted in shared responsibility".

Huw Irranca-Davies MS

Photo Credit: Michiel Vos / Ocean Image Bank

GOVERNANCE, SCIENCE AND SCALE: INSIGHTS FROM CHESAPEAKE BAY

Chesapeake Bay is seen as a beacon of seagrass restoration and recovery, however this perceived success is the result of decades of trial, failure, and learning from mistakes. In the spirit of community and collaboration, therefore, J. Brooke Landry, Chair of the Chesapeake Bay Programme SAV Working Group, detailed 10 key lessons that can be learned from Chesapeake Bay, to help move the needle forward on seagrass restoration in the UK and beyond.

Lesson 1: Protect the seagrass you have. Pursue conservation before restoration and ensure legal protections and enforcement mechanisms are in place. If we can't defend what we have, then we'll never restore what we've lost.

Lesson 2: Act to restore water quality first. Pressures on seagrass from poor water quality run the risk of undermining confidence and cutting off funding available for seagrass restoration unless it is addressed prior to restoration efforts.

Lesson 3: Build restoration infrastructure now. Whilst water is improving, invest in the necessary infrastructure (such as educational materials, restoration guidance, workforce training, and propagation and seed processing facilities) to hit the ground running.

Lesson 4: Know your seagrass history. Map historical and recent seagrass distribution through a variety of sources, including those that are imperfect. This supports development of realistic restoration goals and focuses efforts on the sites most suitable for restoration.

Lesson 5: Establish numerical seagrass restoration goals. Develop heavily localised targets that feed into a larger system-wide goal. Precise, numerical goals are essential to creating visual narratives that encourage and maintain momentum and ensure accountability.

Lesson 6: Continue to invest in seagrass research that addresses fundamental knowledge gaps around climate thresholds, phenology shifts, genetic diversity, and propagation efficiency. As the climate continues to destabilise, certain unknowns may become existential.

Lesson 7: Monitor your seagrass. Ideally use a tiered, hierarchical approach to monitoring and ensure continued investment is available for long-term monitoring, to ensure we are not walking blindly into the future.

Lesson 8: Engage your community in seagrass stewardship, as anyone can become a seagrass monitor and advocate. Participation in citizen science spurs advocacy and public engagement which helps protect seagrass habitats long after funding runs out.

Lesson 9: Integrate social and behavioural science (in everything you do). People protect what they feel connected to and responsible for, and policy only protects what society demands. Similarly, the challenges seagrass faces are predominantly man-made, so solutions must take this into account. Without social science involvement, we stymie progress towards engagement and addressing the problems at hand.

Lesson 10: Never accept 'impossible'. Do not let the limitations of the past inhibit possibilities that could be pursued into the future. Learn from past mistakes, but don't let them limit you.

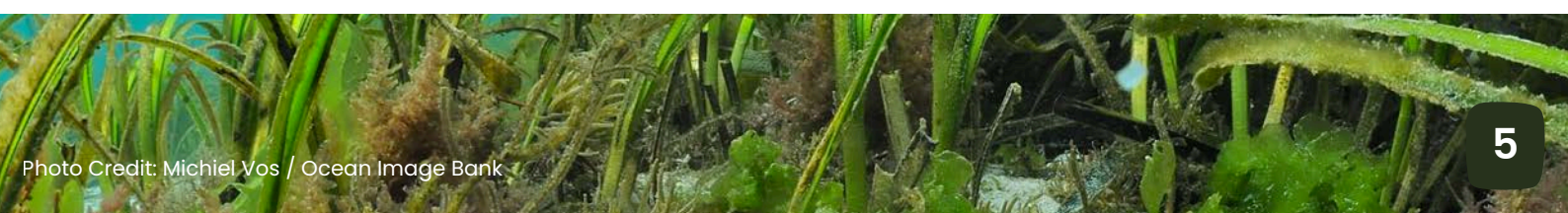


Photo Credit: Michiel Vos / Ocean Image Bank

BIODIVERSITY, FUNCTIONAL ECOLOGY AND SPECIES INTERACTIONS

Biodiversity sits at the cornerstone of our understanding of seagrass system health. It comes in many forms, including species and genetic diversity. It also includes functional diversity, which describes how species interact with the environment to provide key ecosystem services. Finally, ecosystem-level diversity explores the way in which different ecosystems or sites are connected. Developing our knowledge of all aspects of diversity is crucial to informing efforts on seagrass monitoring, conservation, and restoration. It allows us to develop indicators for loss and recovery, and determine effective, appropriate tools for intervention.

Temporal changes in community composition

Developing time series data, through long-term monitoring, is critical to assessing the success of seagrass conservation and restoration efforts. Despite this the limited availability of long-term funding means that research exploring dynamics in seagrass habitats over time remains lacking.

Exploring infaunal diversity within intertidal *Z. marina* and *Z. noltii* in the Firth of Forth, initial findings by Lyndon (2025) exemplify the importance of longer-term monitoring studies. Their findings evidence site- and species-specific variability in infaunal diversity between years, with, for example, estuarine *Z. noltii* evidencing consistent patterns interannually, whereas within marine study sites diversity appears more variable, particularly regarding the presence of annelids. Overall, their time series data highlight unpredictable changes from year-to-year, with important implications for how we interpret and use monitoring data.

Similarly, continued long-term research would help us understand how interactions between species play out over longer time spans. For example, Key (2025) notes that a long-term exploration of the interaction between seagrass and macroalgae would enable an understanding of whether the two species are in competition (resulting in seagrass decline) or are instead co-existing.

Functional diversity and species interactions

Seagrass habitats host a wide variety of species, many of which play a role as ecosystem engineers or as indicator species. Therefore understanding interactions among these species, between infauna and seagrass for example, is essential for interpreting ecosystem function, recognising pressures on seagrass systems, and informing restoration efforts.

Photo Credit: Bobbie Lee Photography

Exploring the effect of species interactions on ecosystem function, Kennedy (2025) investigated the influence of infaunal bivalves, such as cockles and clams, on *Z. noltii* performance in Y Foryd, North Wales. Their findings evidence that species diversity can strengthen ecosystem processes, such as plant productivity. These results underscore that small species can have a very large functional impact, with bivalves modifying their environment in ways that directly influence seagrass growth and resilience. Similarly, Patterson (2025) also explored the impact of infaunal communities on seagrass ecosystem function, exploring specifically the impacts infauna has on seagrass carbon storage, a key remaining knowledge gap. They found that, within *Z. noltii* meadows in North Wales, bioturbation and bioirrigation driven by infauna are related to carbon, as is species information, whereas functional traits do not tend to correlate as heavily. Ultimately, both pieces of research offer reminders that restoration must aim to build interaction as well as just seagrass extent, ensuring that ecological functions, like carbon storage, are restored alongside structural vegetation.

Innovative, integrated tools to assess and monitor the diversity within seagrass meadows are increasingly available, allowing us to better understand the health of ecosystems, i.e. how they are responding to either pressures or restoration, as well as recognise the role they provide in delivering ecosystem services. Deploying baited remote underwater video systems (BRUVs) is one such way this can be conducted, with video footage used to identify species within seagrass systems. Exemplifying this, Key (2025) assessed fish and decapod diversity within seagrass meadows across several intertidal and subtidal sites on the East and West coasts of Scotland. They identified Skye, in particular, as a highly diverse site in the UK, and evidenced the importance of seagrass meadows in providing nursery habitats for gadoid fish, many of which are commercially significant species. However, deployed alone, BRUVs are limited in the quality of the footage they provide, particularly for seagrass habitats, as vegetation can obscure the view and make species identification difficult. Thus, combining BRUVs with acoustic recordings, to identify the low-frequency sounds emitted by fish, allows for phonic richness to be assessed alongside observations of fish richness. Further research, however, is needed for continued development of acoustic libraries to enable improved identification, as for many species references are either absent or derived from aquaria settings.

Environmental DNA (eDNA) collection can also be conducted alongside BRUV systems, allowing for richness and community composition within seagrass systems to be analysed. This requires strong DNA reference libraries to enable identification of species, yet within the UK only 40% of known invertebrates have existing references. Seeking to address this, Ross (2025) employed eDNA metabarcoding to understand and monitor the effect of faunal communities on subtidal seagrass along Scotland's west coast. Through this research they developed sequences for 14 taxa that were previously unrecorded. Further, they found 62% of collected species were identifiable through eDNA, demonstrating its efficacy, with 166 macrofauna being recorded which would have otherwise been missed using more common methods. Notably, they also found differences between the communities identifiable through eDNA depending on the sampling method, with seawater samples performing better for detection of holoplankton whereas sediment was more effective for infaunal species. These findings will need consideration for any monitoring using eDNA alongside BRUVS, where seawater tends to be collected passively, particularly as to which species may be missed.

Photo Credit: Shannon Moran / Ocean Image Bank

Valuing seagrass communities

Seagrass meadows provide vital nursery habitats for juvenile fish, including commercially valuable species, yet their contribution to seafood supply and fisheries remains poorly recognised in policy, management, and stock assessment models. Further, as coastal habitats are increasingly valued through credit schemes, there is a need for robust assessment of the importance of seagrass meadows as fish habitat in the UK context.

Offering the first financial valuation of fisheries productivity supported by North Atlantic seagrass meadows, Mendzil (2025) drew upon a Seagrass Residency Index (SRI) model to assess the importance of seagrass meadows in providing habitat for economically important recreational and commercial fish species around the UK. They calculated that UK seagrass habitats provide commercial fisheries with a value of £198 million a year, based upon the 10 species that were analysed within the SRI approach (with pouting, saithe and whiting contributing the highest proportion). For recreational fisheries, seagrass provides a value of £14 million a year (seabass, cod and whiting being the most important). This means the value provided by seagrass via fisheries in the UK is just shy of £25,000 per hectare. Based on the 47,000 hectares currently identified as suitable habitat for seagrass restoration in the UK, this means that seagrass habitats could provide over £1 billion a year to the UK economy.

This research further confirms the need for seagrass restoration and conservation, and presents new evidence to communicate the immense benefits provided by seagrass to both the marine environment and society. Mendzil (2025) also emphasises the importance of integrating seagrass within future fisheries assessments, to ensure the crucial ecosystem service provided by seagrass to fisheries is recognised within analyses of fish stock health.

Conclusions

This session demonstrated the immense importance of research into connectivity and functional diversity within seagrass meadows, allowing us to better understand the health of seagrass systems in addition to the ecosystem services they provide, both to marine species and to society.

The next priority will be further investigation into whether the seagrass itself or associated fauna and infauna should be prioritised in initial restoration efforts. More broadly, this research underscores the value of adopting whole-seascape approaches to restoration that recognises the interdependencies among species and habitats as well as the potential benefits these relationships can provide.

Photo Credit: Bobbie Lee Photography

BLUE CARBON AND SEAGRASS ECOSYSTEM SERVICES

Seagrass meadows provide a wide variety of ecosystem services, both to marine species and to society. Seagrass provides nursery habitats for commercially important fish species and can act as an important carbon sink. Further research is needed to bridge the remaining knowledge gaps and allow for improved valuation of these ecosystem services. This will help to both effectively communicate the importance of seagrass systems. As well as provide the potential for seagrass to be included in emerging financial mechanisms, which could offer vitally needed funding for monitoring, conservation, and restoration into the long-term.

Quantifying seagrass-bound blue carbon

Marine ecosystems, from mangroves to seagrass, in some instances can be more effective at sequestering and storing carbon than terrestrial systems. Less is known about the specific sequestration potential of seagrass systems across the UK. More research is needed to quantify carbon stocks and understand carbon fluxes within seagrass ecosystems. This information may aid development of private financing, to enable seagrass restoration and conservation through increased access to the emerging carbon and biodiversity credit markets.

Through analysis of sediment cores, research by Evans *et al.* (2025) has contributed to building a stronger, broader picture of carbon accumulation rates in UK seagrasses. They found that carbon accumulation within seagrass systems was statistically higher than that of bare sediment. Further they found that site energetics are the main determiner of high carbon accumulation in seagrass habitats, with low energetic sites, within lagoon-like, sheltered environments, sequestering the greatest amount of carbon. For example, they highlight Fleet Lagoon in Dorset has the potential to sequester 667 megatones of carbon dioxide equivalent per year, which would equate to £46,000/year of carbon credits based on 2024 carbon market valuations. They found that these energetics also likely account for the difference between carbon accumulation in subtidal and intertidal systems, with sequestration being greater in subtidal seagrass systems due to the reduced tidal mixing. More broadly, Evans *et al.* (2025) have generated data to contribute a carbon layer to the UK-wide ecosystem enhancement decision support tool, allowing site suitability analysis for seagrass restoration work to take account of the carbon potentially sequestered by a site. These findings provide food for thought around what management interventions are required as part of restoration to address site energetics (i.e through mixtures of grey and green infrastructure). This is needed to ensure restoration work is future proof and can deliver on the site's long term carbon storage potential.

As highlighted by Evans *et al.* (2025) the carbon sequestration potential of seagrass varies on account of both site energetics in addition to characteristics such as temperature and sediment grain size. Developing localised research on carbon sequestration is therefore critical to building out the picture of carbon stocks within seagrass systems in the UK. This will allow us to understand both the geographic distribution as well as how variation, such as habitat mosaics of seagrass alongside kelp, impact the quality of carbon stocks. Examples of such research can be found in Bhuiyan's (2025) exploration of carbon accumulation within Jersey's seagrass meadows, Parry's (2025) research on carbon stock values in southwest England, and Brown's (2025) work detailing carbon accumulation and storage within the seagrass-kelp habitat mosaics that make up Orkney's seascape.

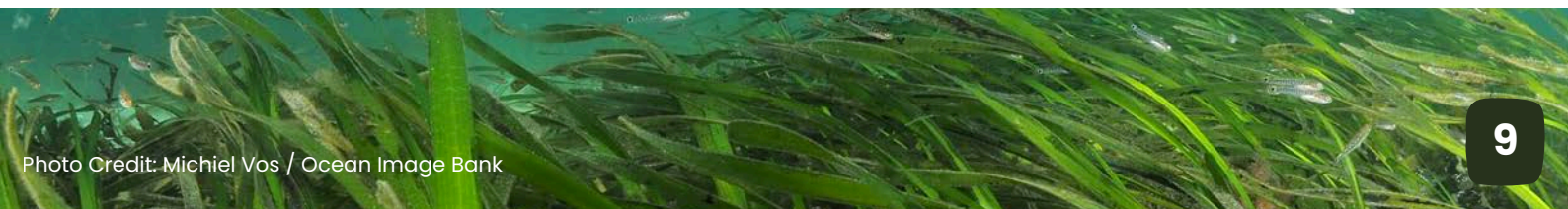


Photo Credit: Michiel Vos / Ocean Image Bank

Inclusion of seagrass within GHG inventory reporting

Following guidance by the IPCC in 2013, countries can account for emissions and removals associated with changes in the management of wetlands, including coastal wetlands. Since the introduction of this guidance, wetlands have increasingly been integrated within national greenhouse gas (GHG) inventories, and in the UK first with peatlands and soon perhaps for saltmarsh. So, is there also potential for the same to be achieved for seagrass, and capitalise on the restoration activities across the UK?

Seeking to answer this question, Kennedy and Ward (2025), indicated a potential pathway for the inclusion of seagrass within the UK's GHG inventory as part of the C-BLUES project. Drawing on a tiered approach provided by the IPCC they indicated that there was an option for initially using methods and data (i.e. on carbon accumulation rates) provided in the IPCC guidance to evaluate the greenhouse gas removals associated with seagrass restoration. This could provide a first step to move toward inclusion of seagrass within the UK's GHG inventory. As scientific knowledge increases tiers that are more detailed and complex, but reduce the uncertainty of estimation, could be employed.

To support increased standardisation and usefulness of data in the UK's GHG inventory reporting (i.e. guidance around extrapolating core depths), underlined by this research is a need for a systematic approach to data collation, drawing together existing UK data across various databases and repositories. This is essential to allow effective use of data to both answer remaining knowledge gaps and support improved decision-making around the use of seagrass systems as carbon sinks.

Fisheries and ecosystem interactions

Seagrass provides wide benefits to a range of marine species including fish by providing shelter, food, and nursery habitats. However, research is needed to provide more precise quantification of these ecosystem services to support informed decision making and monitoring of seagrass habitats.

Seeking to develop an improved baseline of recreationally and commercially important fish species using seagrass, Cramp *et al.* (2025) explored fish communities in *Z. marina* beds within Plymouth Sound. They found a marked increase in the abundance and richness of fish species within seagrass meadows when compared against bare sediment control sites. Beyond providing a baseline, this work again demonstrated the importance of a mixed methods approach to gathering data on the ecosystem services provided by seagrass. BRUVs, alongside the use of eDNA and acoustic recordings, all offering a piece of a puzzle to determining how marine species use seagrass systems, in addition to illuminating potential new hypotheses in need of further exploration, i.e. around the role of species such as crabs as pollinators within seagrass meadows.

Beyond the UK, research including East *et al.* (2025) on valuation of seagrass ecosystem services in the Maldives and Iles (2025) on risk-based modelling of Bahamian seagrass habitats also underscored the importance of seagrass systems in the context of climate change. Demonstrating both their importance in underpinning the resilience of island ecosystems and the risks they face amid a context of substantial global change.

Conclusions

Research on the diverse ecosystem services provided by seagrass, including its role in blue carbon, means we increasingly have the data required to appropriately value seagrass to facilitate its inclusion into global market-based (e.g., biodiversity credits) and climate mitigation-focused frameworks.

ANTHROPOGENIC PRESSURES AND ENVIRONMENTAL DRIVERS OF SEAGRASS DECLINE

In the Anthropocene, the scale and extent of human pressures on the environment is reshaping ecosystems in dramatic ways. While seagrass decline is by no means a new phenomenon, with past loss driven by disease for example, anthropogenic pressures have come to dominate as drivers of seagrass loss. To effectively conserve and restore seagrass, therefore, addressing both anthropogenic and environmental drivers of seagrass decline is essential.

Determining historical baselines in human-modified seas

Establishing historical seagrass extent, as well as patterns of decline and human modification, is essential to informing future work on restoration. Not only does this work enable analysis of the potential suitability of sites for restoration, but it also offers crucial knowledge on patterns of change in response to anthropogenic pressures. Drawing on historical records, to map seagrass habitat extent and change up to the present day, offers a key means through which this kind of analysis can be conducted, as exemplified by Bejkó's (2025) research mapping historical seagrass extent in Northern Ireland.

Drawing on over 200 years of archival records, Bejkó (2025) maps decline in seagrass extent in Belfast and Strangford Loughs, from the seagrass 'glory days' of 1700-1880 through to the present day. Imagery from 1700-1880 indicates high prevalence of seagrass in both Loughs, with *Z. noltii* recorded as a new species and tracked as it spread around Ireland. However, this same period also indicates early indications of decline, with seagrass undervalued and harvest for matting, increasing urbanisation, and dredging resulting in the removal of seagrass habitat. They reveal how this degradation continued through to 1940, with instances of seagrass wasting disease and continued destabilisation of mud sediment exacerbating decline and the eventual loss of *Z. marina* in 1939. Taking us up to the present day, Bejkó (2025) highlights that poor conditions remain in Belfast Lough, with poor water quality rendering the area unsuitable for seagrass restoration. Strangford Lough, however, offers a potential bright spot for future seagrass restoration efforts in Northern Ireland, with fewer anthropogenic pressures making the site more viable.

Bejkó's (2025) research, therefore, exemplifies how historical records can be utilised to pinpoint suitable sites for restoration and underscore those in need of seascape-level change. Moreover, this work also provides us with insights on both the ecological and socio-cultural history of seagrass across the British Isles, allowing us to put ongoing work on seagrass restoration and conservation in centuries-long context.

Water quality, management, and nutrient loads

Poor water quality remains one of the key threats to seagrass habitats around the UK's coastline, impacting seagrass health and extent both through algal blooms and the direct impacts of high nutrient loads.

Photo Credit: Lewis Jefferies

Literature on the impact of algal blooms on seagrass systems is growing year-on-year, suggesting either increased prevalence, improved monitoring and/or heightened interest. Reviewing this available literature, Jennings et al. (2025) explored the negative impacts of algal pressure on seagrass morphology and physiology, shoot density, above- and below-ground biomass, and on seagrass root structures and rhizomes. They highlight that this reduction in the quality of seagrass meadows from algal blooms heightens the risk of regime shifts, which would result in a loss of seagrass-associated biodiversity and carbon storage capacity. Nonetheless, Jennings et al. (2025) discovered that field-based observations tell a different story, with algal blooms demonstrating an insignificant or positive impact on seagrass, reinforcing a need for continued research into the real-world impacts of algal blooms.

Research on nutrient enrichment also demonstrates the impact of poor water quality on seagrass health. Millan et al.'s (2025) research in the Channel Islands outlines that, in addition to impeded light availability from water turbidity, excess nutrient availability can cause metabolic imbalances in seagrass, accelerating decomposition cycles and contributing to poor meadow condition. Further, in locations that are subject to large tidal ranges, such as Jersey, there is evidence that the impacts of nutrient enrichment from outfall sources may impact beds not in direct proximity to outfall (ibid.). Similar findings were also identified by Hean (2025) in Cornwall's St Austell Bay, with isotopic analysis indicating nutrient over-enrichment impacting the Bay's seagrass meadow. The generation of such evidence is essential to communicate and influence behaviour change amongst stakeholders, and to engender improved, informed local decision-making to limit the input of nutrients into seagrass systems.

Emerging research on microplastics

Microplastics are one of the most pervasive pollutants in ocean waters and coasts worldwide, yet the way they interact with important habitats, such as seagrass, remains largely unknown. As seagrass meadows reduce water flow velocity, promoting the deposition of sediment particles from the water column, they have the potential to be significant microplastic traps.

Investigating this, Kreuze *et al.* (2025) explored whether intertidal seagrass beds do indeed act as a sink for microplastics and evaluated the impact of this on seagrass bed-dwelling fauna, using mussels as a proxy. Preliminary results indicate that site characteristics, particularly site hydrodynamics, likely play a role in the extent of microplastic accumulation in seagrass beds, as the differences between seagrass habitats and bare sediment varied between study sites. Further, results indicate no significant difference between bare sediment and seagrass habitats or sites in terms of microplastic concentrations in mussels.

The study was the first to explore accumulation of tyre wear particles, likely the single largest source of microplastics in the environment according to global estimates, and underscores the need for continued research on microplastics in relation to seagrass systems, particularly in relation to how human and geographical factors may be driving variation in microplastic accumulation levels across sites.

Conclusions and next steps

Whilst the presented materials focused heavily on the impact of nutrient loads and the problems stemming from water mismanagement, bright spots such as those inherent in Strangford Lough or further afield in Chesapeake Bay give hope that not all is lost. Further, this focus also highlights a potential avenue for collaboration with water companies across the UK on seagrass monitoring near discharge points or outfall sources. Beyond water quality, participants in the session also raised the need for further research on the impacts of climate change on seagrass systems, and how it may exacerbate existing challenges, with this being essential to future proofed restoration and conservation efforts.

COMMUNITY ENGAGEMENT, KNOWLEDGE INTEGRATION, AND CULTURAL VALUES

Humans exist as core components of seagrass systems. While anthropogenic pressures remain key threats to seagrass systems, stakeholder knowledge and engagement on seagrass are increasingly recognised as essential to driving forward successful restoration efforts. Seagrass restoration, therefore, can be seen as a social-ecological endeavor, with this perspective being key to both effectively diagnosing problems and ushering in solutions. This entails fostering community connections with the ocean, recognising socio-cultural knowledge and history on seagrass, and forging partnerships that enable innovative collaboration.

Drawing on stakeholder knowledge

Communities are immense vessels of knowledge, being stewards of both written and oral records of what seagrass habitats looked like in the past and how they have changed over time. Drawing on this knowledge, often alongside traditional natural science-based methods, will be key to addressing outstanding knowledge gaps and generating an improved picture of the seagrass systems across the UK.

Exemplifying this, Gieslar (2025) drew upon local community knowledge alongside contemporary methods to map seagrass habitats around Shetland. Local records of folklore, conversing with archivists, and community engagement to pool local knowledge were key to determining site prioritisation for drone surveys on habitat extent, allowing existing extent to be compared against what could be interpreted from the past (ibid). Additionally, the local community were engaged so as to ground-truth the results of survey work. Beyond yielding evidence on the likely extent of seagrass decline, this approach also shone a light on the rich anthropological history of seagrass in Shetland, which has its own language for seagrass. Whilst continued work is needed to improve the interoperability of archival sources and modern data, this research exemplifies the immense added benefits of research anchored in community, work that is essential to ensure that restoration benefits not only ecosystems, but also the social fabric rooted in and intertwined with them.

Empowering communities through seagrass restoration

Communities are critical to restoration and conservation success, not only for seagrass. It is when people value and are engaged in endeavors to protect and restore the marine environment that we see tangible change, brought about by both sheer 'manpower' and stewardship practices that last long after project funding runs out.

In North Wales, the Pen Llŷn Ar Sarnau Special Area of Conservation (SAC) exemplifies this perfectly, pursuing social goals and success alongside those which can be ecologically determined. Pen Llŷn Ar Sarnau recognises that it is temporary, but that the community, whilst changeable, is not.

Photo Credit: Lewis Jefferies

Thus, the community is viewed as a vital partner: ensuring that necessary doors can be opened, private waters accessed, and local knowledge capitalised upon. Respect and community trust-building were key to ushering in this success, ensuring early-stage involvement, pre-consultation, and deep participation within both the design and implementation of the SAC to ensure the organisation was embedded in the community from day one. Through bilingual communication and educational materials, engaging schools and the larger community in citizen science, arts-based methods to share ecological findings, and inviting politicians to be involved, the Pen Llŷn Ar Sarnau SAC has ensured that restoration and conservation successes are shared.

The Ocean Conservation Trust (OCT) has also pursued an approach steeped in community empowerment. Recognising that engaging in a participatory way, fostering the skills, knowledge and passion of communities, is essential to restoring and protecting habitats at scale. Working UK-wide, OCT pursues this differently to Pen Llŷn Ar Sarnau but their approach seeks to mirror a similar ethos and end goal. Through developing a 'theory of change' framework, OCT prioritises understanding community specifics, ensuring restoration work recognises local challenges and concerns, and engages the community in a tailored way, both indirectly and directly - i.e. through nursery engagements, beach pop-ups, and hands-on volunteer days.

Fostering novel partnerships for restoration success

Beyond local communities, positive change for seagrass is also enabled by developing communities and networks more broadly. Linking together individuals across sectors to pool knowledge and ensure that the benefits of seagrass restoration have broad reach.

Bringing together scientists, NGOs, the private sector, and government and management organisations, Seagrass Network Cymru was founded following the identification that a network was needed to engender broader change, becoming formalised in 2021. Impatient for change, seemingly not emerging from government alone, the Network developed a National Seagrass Action Plan for Wales. The action plan set out a 25 year vision to halt the loss of Welsh Seagrass by 2030, and double its extent by 2050. However, the plan is not solely about seagrass itself, instead it puts people at the heart of change on seagrass, seeking to reconnect communities across Wales to their environment. The journey undertaken by Seagrass Network Cymru teaches us that science alone is not enough to solve the problems we face, instead connecting science to policy and bringing in a diversity of voices is key to spearheading progress. It is in this context, that the National Seagrass Action Plan comes in, providing a structure and funnel for information to reach those who can implement change - as a living document that can be utilised to continue pushing change forward.

Partnership has also been key to the successes of Studland Marine Bay Partnership in addressing the challenges posed to seagrass by boat mooring and anchoring in the Bay. Through a community of volunteers and supporting NGOs, the partnership brought in eco-buoys, engagement activities, and volunteer surveying. As well as ecologically successful, reducing pressure on the Bay's seagrass meadows leading to increased seahorse encounters within surveys, the eco-buoys have themselves engendered wider awareness on the threats posed to seagrass. Alongside recruitment of 'on-the-water ambassadors', this has created an environment within the Bay wherein even mooring a boat for just a few nights allows people to connect to the marine environment in new ways.

Conclusions

Tailored approaches, attuned to community realities, are essential to achieving conservation success beyond solely ecological metrics. To support this, and facilitate deep, transformational engagement, projects and project funding needs to contend with engagement as more than a 'tick-box' exercise, and something that is vitally important in its own right. Further, there is a need to accept the difficulties inherent with this. Social successes are often hard to measure and play out over long, sometimes generational, timescales.

CREATIVE CONNECTIONS WITH SEAGRASS

As part of a series of workshops held at the Symposium, participants stepped out of a scientist mindset to take part in a creative workshop led by UK artist Olivier Ledger and Dr. Katie DuBois, Bangor University.

Ledger is celebrated for translating marine conservation stories into striking visual art. His piece Ambassador portrays a seagrass meadow in the shape of a seahorse. In Ambassador, the seahorse carries her seagrass home, filled with hidden marine life such as spider crabs, cuttlefish, catsharks, and cod. The piece also conveys an urgent message: over 90% of the UK's seagrass has been lost, along with much of the biodiversity it supports.

During the workshop, researchers were invited to draw their own "ambassador" seahorses, reflecting on what seagrass ecosystems mean to them personally and professionally. Guided by Ledger, participants explored how shape, symbolism, and storytelling can communicate complex ecological ideas in ways that resonate emotionally as well as intellectually. The session concluded with the creation of a collaborative group artwork that combined individual perspectives into one shared visual statement. For many scientists, the workshop offered a rare opportunity to reconnect with the motivations behind their research. While scientific training often emphasizes objectivity and precision, conservation work is also driven by care, curiosity, and concern for the natural world. Engaging with art allowed participants to express those values openly and consider new approaches to science communication. By collaborating with artists, researchers gained tools to share their work in ways that are accessible, compelling, and human. The experience highlighted how creativity can strengthen both scientific understanding and public connection to threatened habitats like seagrass meadows.

The collaborative artwork produced by participants.

YOUTH VOICES

The challenges faced by seagrass, and the marine and terrestrial environment at large, are immense. Tackling such 'wicked problems' will take years of action, and as such, endeavours to bring about this change need to take a long-term, generational approach. This requires attentiveness and responsiveness to the young voices coming into the sector now, who will carry the baton of restoration and conservation efforts into the future.

The 2nd Seagrass Symposium provided space to hear from young people, engaged in internships, as trainees, on placements, and through volunteering with organisations such as Ocean Rescue Champions and Sea Rangers, to hear their reflections on the future of seagrass restoration and conservation.

Life changing experiences

Across the board, the youth panel articulated a feeling of gratitude regarding their work on seagrass thus far. Citing the positive kick-backs gained from working in a field that makes positive change, they emphasised the joy of working in the marine environment, being physically involved in planting efforts, for example, and noted the positive effect of collaborating with a diversity of people on their wellbeing and confidence.

Engaging young people

Through detailing their work, they emphasised that engagement with seagrass, and the marine environment generally, early in their lives has sparked a passion and desire to forge a career in conservation, which they otherwise may have not considered. However, they also noted that many are not aware of the non-scientific, non-STEM, roles available within the conservation sector, seeing this as a factor which was perhaps leading to young people overlooking it as a viable career path.

In terms of direct engagement, e.g. via social media, the youth panel also noted that perhaps hard-messaging and engagement methods, in-person, via youth groups or in-person university partnerships should not be overlooked in the digital age.

Barriers to entry

The lack of paid early career opportunities was key to the issues raised by the youth panel. They expressed concerns around the high-entry bar to conservation-related careers, questioning whether, given the absence of jobs, further education and its associated expense would be a wise investment.

Further, the youth panel noted the huge disparity in the ability to obtain the experience needed to access roles, stating that entering the sector was incredibly difficult for those from working class or poorer backgrounds. They agreed that there was a need for systemic change to ensure family financial backing was not the sole key to being able to enter the sector, with further investment needed into opportunities, such as those provided by Sea Rangers or Project Seagrass, to support young people.

Hope or trepidation?

Asked whether they looked forward to the future with hope or trepidation, the youth panel noted that their engagement in activities such as the symposium offered an antidote to the doom and gloom dominating news cycles. Further, they viewed their engagement in restoration and conservation work as providing hope. Given the challenges that remain regarding forging a long-term career in the sector, however, they explained that perhaps the truest answer to the question posed was 'a bit of both'.

Photo Credit: Corinne Cox

RESTORATION SCIENCE, PRACTICE AND PREDICTIVE MODELLING

As outlined in the opening section on Chesapeake Bay, learning not only from what has worked but also what has failed is essential to shifting the dial on meaningful seagrass restoration. Oftentimes there is a mismatch between what is expected by funders, which typically revolves around the acreage of seagrass restored, and the trial-and-error science needed to deliver meaningful, effective restoration.

Learnings from the lab on seed propagation

Given the scale of ambition regarding seagrass restoration across the UK, there is a need to undertake work to optimise and further understand seed germination to realistically attain these ambitious targets. This understanding is essential to enable seagrass nurseries to effectively fulfil their role in contributing to active restoration initiatives.

Drawing on past research, Newman (2025) sought to further explore the relationship between sediment and seagrass seeds, and what role microbial changes have as seeds grow and are moved between sediment (i.e. when transplanted). Preliminary findings, following isolation and sequencing of seeds, indicate that the role of microbes are critical. Whilst this research does not allow us to pinpoint specific taxa impacting germination, we can determine that functional developments are linked to microbes. Whilst this research is only in its initial stages, these findings indicate the importance of having a fuller understanding of seagrass seeds and sediment in the context of restoration.

Similarly looking to inform seagrass seed germination and growth strategies, Rodrigo (2025) explored the effects of seed colour, light conditions and freshwater shocks on *Z. marina* and *Z. noltii* seed germination and seedling establishment in aquaria settings. They found that seed colour had a significant impact on seedling success, with light coloured seeds showing better seedling establishment, whereas light conditions and freshwater shocks had no significant effect on this. This work indicates that future work should continue to test how seed collection, processing, storage and preparation can be used to optimise seeds for use in restoration.

Experimenting with different restoration methods

Over the past few years efforts to restore the UK's seagrass habitats have expanded substantially. Alongside this, work is ongoing to finetune best practice on restoration methodologies, with new approaches being trialled every day.

It is over a decade since the last meta-analysis was conducted on seagrass planting, so seeking to help fill this gap, Patterson *et al.*, as part of Project Seagrass, have begun a meta-analysis of seagrass restoration attempts in the UK since 2020 - looking to both planting methodology, planting density and planting location to determine factors that lead to restoration successes or failure. Through comparing this data on restoration efforts to Copernicus satellite data (to understand components such as temperature and wave velocity) alongside land use indices (to capture the impacts on restoration from potential human stressors), they are drawing together models to outline factors that are most significant in determining restoration outcomes. Initial findings suggest that more data is needed to inform useful outcomes, and as such suggest a concerted need for greater data sharing to enable collective learnings that can underpin shared successes. With improved data, the findings from this work can then be utilised to inform improved site selection, facilitate habitat suitability modelling, and enable further refinement of the planting processes involved in seagrass restoration.

Beyond looking at past data to determine improvements, trials are ongoing across the UK to further finetune restoration planting approaches. The Ocean Conservation Trust are trialling the use of different restoration types at their site in Jennycliffe, near Plymouth, to then inform their larger-scale restoration work. They noted the success with their HMS Octopus direct injector seeding methodology, highlighting the high-density seeding as the key feature. Further, small-scale trials are ongoing at Spurn Point led by Project Seagrass as part of the Wilder Humber project. These are comparing the different restoration success yielded by seed bags (the more traditional seeding approach), sediment-core transplanting, and direct injection seeding. With direct injection seeding showing improved results compared to other methods, this work will allow improved efficiency within restoration techniques, allowing restoration work to move away from methods that are proven to be less effective.

In addition to exploring seeding techniques, Project Seagrass have also sought to explore the effects of a more adaptive approach to restoration planting. Understanding how restoration techniques can be tailored to the specific challenges and characteristics of different sites. As part of this, Project Seagrass, among others, have explored the efficacy of planting within different seasons, which requires ongoing work to further finetune. Nonetheless this work underpins the importance of tailoring restoration approaches to specific sites, including in terms of matching seagrass genotypes to specific locales, to support improved resilience and performance.

Lessons for future restoration under climate change

Tailoring restoration approaches to support the resilience of restored sites also requires taking a long-term view. Understanding the impacts of global stressors such as climate change is also vital to inform site suitability assessments and foster restoration in places where successes are most likely into the future.

Modelling distributional changes to *Z. marina* under both moderate and severe climate change scenarios, Gouvêa (2025) projected future change, identified stable refuge areas, and revealed important drivers shaping distribution. Under moderate climate change, they found that the areas most suitable for *Z. marina* remain along the northern and western coast, especially Scotland, Northwestern Ireland and parts of Northern Wales and Northwestern England, alongside southwestern England, including East Anglia. Under more extreme warming, however, they found a 31% loss in suitable habitat areas, with losses particularly pronounced along the southern and eastern coasts of the UK. Among factors driving this loss, maximum temperature was the most important, followed by storm intensity, with minimum temperature, nitrate, light, precipitation, salinity and current showing more residual importance for *Z. marina* distribution into the future.

Models, such as those developed by Gouvêa (2025), are vital, as they provide actionable data for climate-smart conservation and restoration. This allows us to potentially prioritise restoration in areas that we know to be stable and supportive of seagrass habitat conservation under different climate change scenarios.

Photo Credit: Shannon Moran / Ocean Image Bank

Policy and partnerships for restoration practice

Alongside presentations detailing novel scientific developments and outcomes from trials in the field, the symposium also heard from practitioners from the Environment Agency, the Hampshire and Isle of Wight Wildlife Trust and the Zoological Society of London on the importance of policy tools, such as the Natural Capital Approach and Water Framework Regulations, in supporting on-the-ground restoration projects.

They highlighted that regulation is essential to address the anthropogenic drivers that are often beyond the control of on-the-ground practitioners (e.g. poor water quality). However, legislation also needs to sit alongside strong scientific evidence, improved monitoring, and local partnerships to turn policy ambition into on-the-ground action. Looking to the natural capital approach they emphasised the importance of including social science, to build wider societal buy-in and to influence behaviour change across seagrass systems - from the on-the-ground level up to that of policy. More streamlined and enabling licensing processes alongside joined-up governance were also highlighted as critical areas for improvement to improve restoration outcomes and support greater innovation for seagrass recovery.

Partnership, across sectors and different stakeholder groups, was also pin-pointed as critical to enabling the large-scale, multi-habitat approaches that are increasingly being viewed as best enabling seascape-wide restoration and recovery. Effective partnerships- support developments in policy and regulation and improve the collection and communication of evidence to support restoration.

Conclusions

The research and practice outlined here point to a clear need for tailored restoration approaches, attuned to both local site conditions as well as accounting for future change driven by climate change. To sustain progress and realistically manage ambitions for seagrass restoration, continued scientific research and improved data sharing are essential. This is needed to support practitioners in collectively learning what has worked, what has not, and where key knowledge gaps remain, enabling the development of more effective restoration approaches. Strong partnerships are fundamental to making this possible and to ensure improved, shared knowledge can be turned into lasting restoration successes.

Photo Credit: Lewis Jefferies

MAPPING, MONITORING AND INDICATORS

Conserving and restoring seagrass relies on understanding where seagrass is, why, and how it is changing. This requires mapping and monitoring the health and extent of seagrass meadows across a range of spatial and temporal scales - from snapshots of individual meadows to regional analyses spanning decades. Beyond this, it also requires developing knowledge on how we map and monitor seagrass, the indicators we use, and how best to communicate these results

Accounts of natural recovery in the field

Presenting an account of decline and recovery, Dunn *et al.* (2025) detail the outcomes of a long-term assessment of Jersey's seagrass meadows, drawing on historical records and aerial imagery spanning from the early 1800s to the present. By standardising decades of aerial photographs, they reveal patterns of historical decline (linked to both wasting disease and anthropogenic pressures) followed by encouraging natural recovery in both subtidal and intertidal seagrass beds since the late 1990s. This recovery is despite ongoing local pressures including boat mooring and nutrient inputs from wastewater outfall. Their work also outlined the value of seagrass to Jersey's fisheries and marine ecosystems, and detailed upcoming policy measures including seagrass management zones which are expected to further strengthen and support this observed natural recovery. Jersey's experience shows both the resilience of seagrass systems and underscores a need for further research to better understand the drivers of recovery in Jersey, which can inform and strengthen future management.

Similarly detailing an account of natural expansion, Odell (2025) detailed monitoring work undertaken in Loch Craignish, Scotland, enabled through a collaborative partnership with Seawilding. With the intention of establishing baseline data to track seagrass habitat change alongside restoration efforts, their work used a tiered approach to monitoring. By combining satellite imagery, high-resolution drone surveys, and community ground-truthing, Odell (2025) demonstrated that seagrass extent was far greater and more dynamic than previously recorded, with clear evidence of natural expansion and infilling since 2015. Drone imagery, in particular, proved valuable for detecting fine-scale patterns of meadow growth, monitoring of transplant success and failure, and informing restoration design, including identifying unsuitable anoxic areas of the Loch.

Monitoring methods

Continued development of monitoring methods, improving their accuracy and the level of detail they provide us on the health of seagrass systems, is key to directing effective conservation and restoration work. Elsewhere in this report, the use of mixed methods - drawing on BRUVs, eDNA, and acoustic recordings - has been shown to improve our understanding of the function and services provided by seagrass systems, providing valuable information which can be used to assess the health of seagrass habitats. Further, work by Odell (2025) among others, demonstrates how remote sensing tools, alongside drone imagery, can support effective, adaptive seagrass restoration and long-term monitoring at local scales.

New, improved methods are continuing to emerge, capitalising on technological advances that enable increasingly accessible and cost-effective methods for use in the monitoring of seagrass habitats. One such example can be found in the Ocean Conservation Trust's Remote Operated Vehicle (ROV), which holds potential to transform mapping of subtidal seagrass in the UK.

The ROV offers high-resolution imagery and improved positional accuracy, lower disturbance and stronger repeatability compared to traditional dive and drop-camera methods. The cost-effective, frequent, and precisely georeferenced surveys from ROVs like this can help address major spatial and temporal gaps in national seagrass databases and could form a key component in contemporary monitoring toolkits, alongside acoustic and satellite techniques.

Whilst work is ongoing to develop monitoring methods that are inexpensive and practical in an environment characterised by limited funding, projects exist that exemplify what is possible when large-scale, extensive funding is granted - facilitating nation-wide partnerships to map and monitor marine ecosystems at scale. Ongoing work by Fugro, as part of Italy's national Marine Ecosystem Restoration project, demonstrates just this. Using integrated multi-scale technologies (satellite imagery, airborne LiDAR, acoustic sensors, and Autonomous Underwater Vehicle-based ground-truthing) Fugro is undertaking comprehensive mapping of seagrass extent and condition around Italy's coast. Yet despite this, Fugro emphasises that no single tool is sufficient; instead, use of complementary technologies alongside robust data integration through collaborative partnerships across public, private, academic, and community sectors remains essential to delivering scalable, cost-effective, actionable insights for long-term seagrass restoration.

Communications for and use of effective monitoring

Ensuring that mapping and monitoring work is suitable for use to drive forward wider work on restoration and conservation is key. Effective communication of monitoring data is core to this, as is ensuring that monitoring efforts capture the information needed for seagrass to attract the funding necessary to support long-term restoration and conservation work.

While work is ongoing to better understand the health, state and long-term trajectory of UK seagrass systems, until now fragmented data and the lack of standardised assessment have, unfortunately, contributed to the major declines we have witnessed. Despite seagrass being recognised as an indicator of wider coastal health, monitoring under legislation, such as the Water Framework Regulations, have provided results that are poorly communicated which limits our ability to identify trends over time. Responding to this, Jones *et al.* (2025), have commenced work to integrate existing datasets and modelling approaches into a clear, accessible UK 'Seagrass Report Card' - combining ecological metrics, traffic light grading, and mapping to improve reporting of monitoring data and support management decision-making. This is hoped to strengthen collaborative progress toward a more consistent nation-wide assessment framework for seagrass.

Emerging biodiversity credits markets offer potential as a means of financing seagrass restoration work; however, questions remain as to whether current seagrass monitoring is sufficient to support this. Examining key market requirements, including quantified and verified biodiversity uplift, principles of additionality, restoration permanence, and the avoidance of leakage, Douglas (2025) found that contemporary monitoring approaches only meet some of these. Monitoring data gaps remain unmet particularly around permanence, leakage, and robust evidence of biodiversity gains. They highlight that the fragmented and inconsistent measurement of UK seagrass means that existing monitoring approaches are not yet well aligned with credit market needs. To address this, there is a need for more standardised, frequent, and biodiversity-focused monitoring, and beyond this, further research on the biodiversity gains provided by restoration to enable potential 'stacking' of both biodiversity and ecosystem service credits.

Conclusions

This work evidences that strong protection, supportive legislation, and sustained funding are vital to continue pushing forward work on seagrass restoration. While there is considerable expertise across drones, ROVs, and field-based methods, the data generated are often collected for different purposes and not integrated within a widely used, systematic framework. Further work is needed to improve the interoperability of data to support wider use, particularly to improve management decision-making and to capitalise on emerging funding mechanisms. By bringing together this experience and enhancing data sharing, we can move toward a more coordinated approach to addressing the challenges that currently stand in the way of thriving seagrass habitats around the UK.

LEVERAGING FINANCE FOR SEAGRASS SCIENCE AND RESTORATION

Long-term, sustained funding is essential for effective seagrass monitoring, conservation, and restoration. Bridging the current financing gap is critical to securing seagrass recovery into the future. This is particularly true for long-term monitoring, which is often underfunded but is vital to determining whether restoration efforts are delivering lasting success.

Efforts to address this financing gap are rapidly emerging, including developments in nature-focused credit markets and innovative, partnership-based funding models. To support shared learning on potential pathways forward, the 2nd UK Seagrass Symposium convened a panel to discuss long-term financing challenges and highlight emerging approaches to help close the funding gap for seagrass restoration. The panellists represented experienced perspectives from the private sector, academia, and government.

Unlocking long-term finance at scale

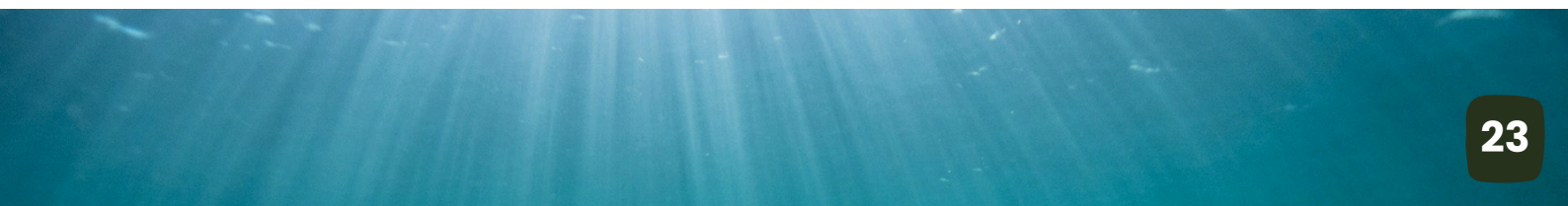
Accessing private finance to fund seagrass recovery work remains a challenge. Whilst private sector appetite for high-quality blue carbon projects has increased, many seagrass initiatives remain too small or sit at too early a stage to attract the large-scale capital that many in the private sector are looking to issue.

To address this, Susan McDonald (Director of Sustainability Strategy at Deloitte) suggested that development of portfolio-based approaches, through which projects are brought together to meet investor thresholds on scale, could offer a solution. Furthermore, Kirsty Schneeberger (founder of Athena Blue, a platform created to connect on-the-ground restoration projects with private sector funding) emphasised that projects must develop their ability to demonstrate strong integrity, credible carbon removal capacity, and robust monitoring, reporting and verification to enhance their attractiveness to private sector funding, such as mechanisms like voluntary carbon markets.

Beyond private finance, David Tudor (CEO, Pelagos Consulting) addressed the need for long-term, coordinated funding to counter the limitations of short-term grants and cyclical government funding. He spotlighted initiatives, such as Marine Fund Cymru, as examples of longer-term, place-based funding mechanisms that can help maintain momentum and retain skilled practitioners.

Novel approaches to funding and finance

Several speakers discussed emerging financial mechanisms which have been designed to complement or move beyond a narrow focus on carbon credits markets. Kirsty Schneeberger shared the growing interest of private actors in stacked or bundled credit models, which combine carbon with biodiversity, coastal protection, and ecosystem resilience. She also introduced mechanisms such as blue bonds and parametric insurance, noting their potential to support large-scale investment and increase resilience of restoration initiatives in the face of climate-related shocks. Further work, however, is needed to tailor these approaches so that they are accessible to projects in the shorter term.



Professor Sian Rees (University of Plymouth) outlined the ongoing work in developing 'Seagrass Tokens', a spatially explicit, market-based mechanism that is being piloted in Plymouth Sound. She explained that early analysis had shown that carbon credits alone were insufficient to fund seagrass restoration, prompting a shift in their focus toward a token-based model that captures verified ecological benefits (or 'uplift') and supports a broader payment-for-ecosystem-services approach. They found that the token offers a stepping stone toward scalable, high-integrity marine biodiversity markets, which embed long-term governance, monitoring and risk management within pricing mechanisms.

Exemplifying another place-based perspective, Dean Spears (Lead, Sussex Bay) argued that community-led models of financing, such as that spearheaded by Sussex Bay, were critical to long-term success and legitimacy. He outlined Sussex Bay's regional approach - which has combined development of a seascape-wide recovery blueprint, building of a blue natural capital lab, and a focus on creative public engagement - as a replicable model for aggregating projects and financing whilst maintaining strong local ownership.

Whilst the private sector has demonstrated increased interest in carbon sequestration potential of projects, Susan McDonald noted that corporate-led financing was also increasingly available for projects delivering biodiversity, benefits social value and innovation. She mentioned that some organisations - particularly regulated industries and those signed on to robust ESG frameworks - are also motivated by social return on investment and skills development, with what 'value' means in marine restoration finance having been broadened in recent years.

Enabling conditions for access to funding and finance

Across the panel, speakers stressed that finance will not flow at scale without strong enabling conditions. Data, monitoring, reporting and verification gaps remain a key barrier, but one that innovation in monitoring methods, as detailed throughout the symposium, will help to address. Kirsty Schneeberger assessed that further development on credible, scalable monitoring and reporting practices will only further support projects in accessing funding, as these are factors vital to underpinning investor confidence and market integrity. Similarly, Sian Rees points out that whilst the restoration sector generates large volumes of data, there is a need for greater focus on monitoring that is purpose-driven and aligned with the needs of end-users, particularly those of investors and policy makers, to improve access to funding and finance.

Beyond data, David Tudor underscored the importance of bridging the communication gap between finance, policy and practitioners. Improved coordination, the development of shared platforms, and clearly articulated long-term funding commitments will be essential to ensure seagrass recovery work delivers lasting ecological and social outcomes.

Photo Credit: Bobbie Lee Photography

CONCLUSION

The 2nd UK Seagrass Symposium's theme, 'Roots to Recovery' captures something symbolic. Seagrass meadows begin modestly, from a single seed, yet possess the capacity to transform entire ecosystems: from germination beneath the surface, roots entwine to stabilise the seabed, store carbon, and nurture life. In many ways, the trajectory of seagrass work across the UK mirrors this process. Over the last decade, the roots of seagrass recovery have spread and strengthened, with scientific, social, and political foundations now firmly in place upon which marine recovery at scale can be built. What we're witnessing now are the emerging shoots of a genuine, collaborative recovery movement - one focused on protecting what remains and restoring what has been lost.

The symposium captured inspiring insights from community projects, with local people working to enhance and protect the seascape on their doorstep, and demonstrated ways in which government, NGOs, and academic institutions are finding alignment to preserve and protect seagrass. Perhaps most inspiring is the collaborative work which transcends borders - with growing international collaborations between seagrass scientists and practitioners proving that recovery doesn't stop at the shoreline, it spreads, linking us all to a global movement.

In closing the symposium, Howard Wood OBE shared the story of the Community of Arran Seabed Trust (COAST) - embodying the perseverance required by the community, over 30 years of work, to assert their interests and triumph on marine recovery in the face of powerful lobbies within a disinterested policy landscape. What COAST exemplifies is that recovery doesn't happen overnight, it takes time, it takes science, it takes care and it takes communities, both local and global, pulling together for change. Yet, COAST demonstrates what can be won through doing so: seagrass restoration success that is anchored in a community, valued by a community, and rooted in a community that collectively determines how best to preserve this for future generations.

The challenge that remains beyond COAST, is how to sustain momentum on seagrass recovery. Achieving this will require long-term funding and the meaningful integration of seagrass into national climate and biodiversity policies, ensuring space for meadows to thrive once more and continued investment in the people who make this work possible. People must remain at the centre of this effort. Seagrass restoration is not only about recovering meadows; it is about restoring relationships between people and the sea and ensuring research translates into real-world impact - turning data into action, and action into hope.

This sense of hope lies at the heart of the baton now being passed to the 3rd UK Seagrass Symposium, set to take place in Scotland in 2027 and hosted by Scottish Association for Marine Science (SAMS). While Scotland is at an earlier stage of its seagrass recovery journey, it is precisely this sense of possibility - the promise of what can be achieved by embarking on such a journey - that fuels the next chapter. If we continue to work together on seagrass restoration, the opportunities are profound: thriving meadows across the UK and beyond, restored fisheries, cleaner waters, and healthier coasts. This is not only the future we want for generations to come, but one we can realise within our own lifetimes.

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O'Dell, A. 2025. *Using satellite data, UAV's and community restoration groups to show high resolution changes in aerial extent of seagrass meadows*
Webborn, M. 2025. *ROVolutionising Seagrass Mapping - revealing subtidal seagrass beds through a new lens*

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