



Tackling the climate crisis through ocean protection

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Wildlife and
Countryside



Wildlife and Countryside Link is a coalition of 65 environmental, using their strong joint voice for the protection and enhancement of nature. This Link briefing on blue carbon is supported by the Angling Trust, the Institute of Fisheries Management, the Marine Conservation Society, ORCA, RSPB, Surfers Against Sewage, Whale and Dolphin Conservation, The Wildfowl and Wetlands Trust, The Wildlife Trusts and the Zoological Society of London.

As the UN Ocean Conference takes place in Lisbon, we make the following key recommendations to the UK Government for tackling the climate crisis through ocean protections (alongside real term emissions cuts through ending the use of fossil fuels):

- Ensure that the **Marine Protected Area (MPA) network** protects blue carbon stored in the seabed through restrictions on damaging activities, including commercial fishing.
- Deliver **Highly Protected Marine Areas (HPMAs)** which protect blue carbon ecosystems.
- Include blue carbon protections in **fisheries policy**, including the Joint Fisheries Statement.
- Ensure that blue carbon is protected through **marine spatial planning**, including the marine spatial prioritisation programme.
- **Increase funding** and support for projects which build the climate resilience of marine and coastal ecosystems through their protection and restoration.
- Use the **Local Nature Recovery (LNR) scheme, Nature for Climate Fund and flooding funding** to finance blue carbon protection and restoration.
- Deliver **Marine Net Gain** to support restoration of blue carbon ecosystems at sea.
- **Properly account for blue carbon stores in carbon accounting** through the inclusion in the first instance of seagrass and saltmarshes in the greenhouse gas inventory and include ambitious blue carbon habitat protection and restoration targets in the UK Nationally Determined Contribution (NDC).
- **Support international agreements** to protect blue carbon around the world.
- Ensure that the **'blue belt' programme in the UK Overseas Territories (UKOTs)** includes protections of blue carbon.
- **Reform the UK Marine Strategy**, and integrate blue carbon considerations into other policies, including revised land use policies, to better protect blue carbon habitats.
- **Support a science-led strategy** through the UK Blue Carbon Forum and invest in better monitoring of blue carbon habitats.

These measures will protect these vital ecosystems which have been found to sequester and store around 2% of UK emissions per year, though this is likely an underestimate¹ (2% is equivalent to emissions from the industrial processes sector which includes activities such as cement production²). Effective policies can ensure that this figure rises to sequester a greater proportion of UK emissions.

¹ See <https://www.theccc.org.uk/wp-content/uploads/2022/03/CCC-Briefing-Blue-Carbon-FINAL.pdf> and <https://www.frontiersin.org/articles/10.3389/feart.2021.593324/full>: "The spatial modelling approach of this study estimates that the sediments of the UK EEZ hold 524.4 ± 68.35 Mt Organic Carbon and 2,264.8 ± 156.3 Mt Inorganic Carbon"

²

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1051408/20-final-greenhouse-gas-emissions-statistical-release.pdf

Introduction

Blue carbon refers to carbon stored in marine ecosystems. In the UK, blue carbon habitats include seagrass beds, biogenic reefs, kelp forests, seafloor muds and sands, maerl reefs and saltmarsh, as well as carbon stored in marine species like whales and dolphins, and via their functional activities in ecosystems (such as re-distributing nutrients across the seas).

Large-scale nature restoration both on land and at sea will be essential to tackle the climate and biodiversity crises. In order to reach the Government's target of Net Zero emissions by 2050, greenhouse gas removals will be required to offset hard-to-abate, residual emissions from certain sectors that are unlikely to decarbonise by this date (likely agriculture, aviation, and heavy industry). Whilst they cannot be used as a substitute for reducing emissions, high quality nature-based solutions offer a way to generate these greenhouse gas removals with additional benefits for biodiversity and climate change adaptation.³

The potential benefits of blue carbon are huge, yet so far appear underappreciated by policy makers. Studies have found:

- These ecosystems in UK seas have played a significant historic role in absorbing and storing carbon and currently sequester and store an estimated 2% of UK emissions per year⁴ (though this is likely an underestimate). This could be even higher if our seas met Good Environmental Status (GES).
- According to the Office for National Statistics, "Marine carbon sequestration is significant and requires more research to fully understand it: it is estimated at between a little over one-third and more than double the carbon removed by terrestrial habitats."⁵
- The amount of carbon removed from our atmosphere by just three blue carbon ecosystems, in one year, has an estimated value of between £742 million and £4,259 million (in 2019 prices).⁶
- The English North Sea is estimated to store 100.4 Mt carbon in just the top 10cm of the seabed, which equates to 880 tC per km². By comparison, UK forests are estimated to store 529 Mt carbon.⁷

Blue carbon habitats are highly threatened and it is estimated that the UK has lost 85% of its saltmarsh, 95% of its native oyster reefs, and up to 92% of seagrass over the last 100 years. Losses of these habitats have reduced the carbon sequestration potential of our seas, and continued disturbance of marine ecosystems, such as from bottom trawling, may result in releases of stored carbon and thereby contribute to climate change.⁸

³ See <https://www.nature.com/articles/d41586-021-01241-2>

⁴ <https://researchbriefings.files.parliament.uk/documents/POST-PN-0651/POST-PN-0651.pdf>

⁵ <https://www.ons.gov.uk/economy/environmentalaccounts/bulletins/marineaccountsnaturalcapitaluk/2021>

⁶ <https://www.ons.gov.uk/economy/environmentalaccounts/bulletins/marineaccountsnaturalcapitaluk/2021>

⁷ https://wwf.panda.org/wwf_news/?4427941/Assessment-of-Carbon-Capture-and-Storage-in-Natural-Systems-within-the-English-North-Sea-Including-within-Marine-Protected-Areas

⁸ See <https://www.nature.com/articles/s41586-021-03371-z>

These ecosystems must be treated with the same attention as forests and peatlands, with the Government mainstreaming climate considerations across marine and fisheries policy. With the complexities of measuring carbon sequestration and disturbance at sea, it will be difficult to quantify the exact carbon benefit of any actions (this is particularly true with carbon stored in marine wildlife biomass). But this cannot be used as a reason for inaction. The urgency of the climate crisis requires that precautionary measures are taken as soon as possible to protect and restore blue carbon habitats; delivering for people, the climate and for nature.

Policies to support blue carbon and ocean recovery:

Blue carbon ecosystems can be protected and restored if the right policies are implemented. The Government must use all the tools at its disposal, including the MPA network, marine planning, Net Gain, and fisheries policy to protect blue carbon. Funding should be provided for restoration from existing Environment Agency schemes, Net Gain, and the LNR scheme, with action also essential to build an international consensus for the protection and restoration of blue carbon. The following section outlines policies which will:

1. Remove threats to blue carbon
2. Restore blue carbon habitats
3. Deliver international action on blue carbon
4. Put in place the strategies and processes to effectively deliver blue carbon protections

1: REMOVE THREATS TO BLUE CARBON

- **Ensure that the MPA network protects blue carbon**

Research on the English North Sea MPA network has found that it contains 51.9% of the total organic carbon stores in the English North Sea and 42.1% of total inorganic carbon stores in the English North Sea.⁹ Yet almost all of these MPAs are still subjected to broadscale disturbance, with recent research finding that all but one of the offshore MPAs designated to protect the seabed have experienced bottom trawling.¹⁰ The Climate Change Committee has recommended that “The UK Government and devolved administrations should continue to strengthen regulation of the UK’s network of MPAs, and they should consider how policy levers – including legislation – could be more effectively and extensively employed in the marine realm to target damaging practices, such as bottom trawling.”¹¹

Our most valuable blue carbon MPA sites include: South West Deeps (East) which is approximately 190 km south-west of the Land’s End peninsula. It’s home to a range of animal species, including burrowing worms, urchins, starfish and crustaceans; and Swallow Sands, 100 km offshore from the Northumberland coast, which supports sprat and mackerel, puffins, kittiwakes, guillemots, fulmars and gannets. Between them these two sites alone store the

⁹ https://www.panda.org/discover/our_focus/oceans_practice/news2/?4427941/Assessment-of-Carbon-Capture-and-Storage-in-Natural-Systems-within-the-English-North-Sea-Including-within-Marine-Protected-Areas

¹⁰ <https://media.mcsuk.org/documents/marine-unprotected-areas-summary-report.pdf>

¹¹ <https://www.theccc.org.uk/wp-content/uploads/2022/03/CCC-Briefing-Blue-Carbon-FINAL.pdf>

carbon equivalent of more than 2 million return flights from London to Sydney (12.33 MtCO₂e).¹²

The Government is developing a programme for assessing the impact of fishing on English offshore MPA sites and implementing byelaws, where necessary, to manage damaging fishing activity in all English offshore MPAs by 2024.¹³ Byelaws for an initial four English MPAs entered into force on 13 June,¹⁴ with the Government announcing a call for evidence for a further 13 sites.¹⁵

Whilst these byelaws are welcome, they currently have a limited range, as the four MPAs they now cover represent just 10% of offshore MPAs in England. To complete the required strengthening of the network and associated protection of blue carbon, the Government needs to speedily bring forward full-site closure protections for the remaining offshore English MPAs protected for the seabed, and explore all other options to secure urgent protections.

The 2020 Fisheries Act gives the Government additional post-Brexit powers to impose limits on fishing vessel licences of all flags in UK seas. Without going through lengthy consultation processes, placing conditions on licences could be implemented by the end of 2022, revoking permissions to fish in offshore MPAs and thereby limiting blue carbon extraction by fisheries from these protected areas. In an offshore context, active restoration of blue carbon habitats is extremely complex and experimental, and the removal of pressures is the only proven path to recovery, highlighting further the critical role played by MPAs.

- **Highly Protected Marine Areas (HPMAs)**

As the Government progresses the HPMA programme, we note the importance of the Benyon review recommendation for at least one blue carbon pilot HPMA. Given that there is still a need for a better evidence base around blue carbon, this only strengthens the case for HPMAs to serve as reference points for the carbon sequestration potential of undisturbed seas. It is welcome that, of the initial 5 pilot sites, the 3 offshore sites are reported to include blue carbon areas.¹⁶ It is vital that these sites are delivered as soon as possible, and that blue carbon is properly considered as further sites are brought forward.

Blue carbon coastal habitats such as saltmarsh, maerl beds and seagrass, can provide carbon benefits as well as providing valuable nurseries for fish species. Through better protecting

¹² Analysis by the Marine Conservation Society based on Smeaton et al 2021

<https://www.frontiersin.org/articles/10.3389/feart.2021.593324/full> see

https://media.mcsuk.org/documents/MPAs_at_risk_FINAL_PR.pdf

¹³ The programme is managed by the Marine Management Organisation:

<https://www.gov.uk/government/news/marine-management-organisation-launches-consultation-on-four-of-englands-marine-protected-areas>

¹⁴ <https://www.gov.uk/government/news/government-uses-brexit-freedoms-to-protect-our-seas>

¹⁵ https://mcusercontent.com/ab1c7ee88ca09c8ad43de6922/files/f83c3f9f-3142-7293-25e0-cd3ea2e07733/Letter_Marine_Management_Organisation_call_for_evidence_on_the_draft_fisheries_assessment_for_13_MPAs.pdf

¹⁶ <https://www.theguardian.com/environment/2022/jun/20/five-highly-protected-marine-areas-set-up-in-english-waters-fishing-ban>

marine life, HPAs can therefore also help deliver the often underappreciated carbon storage and sequestration potential of marine vertebrates. Recent research indicates that there are at least nine natural biological processes or roles that the conservation or restoration of marine life may have in enhancing or restoring the ocean's biological carbon pump and other carbon fixing and sequestering processes.¹⁷ When large whales die, for example, they take huge amounts of carbon with them to the seabed, potentially locking it away from the atmosphere for millenia.¹⁸

- **Deliver protections for blue carbon in fisheries policy, including the Joint Fisheries Statement**

Overfishing can impact blue carbon by contributing to biodiversity loss and changes in ecosystem function. Fishing above sustainable levels can lead to the removal of enough fish biomass within certain trophic levels to unbalance food webs.¹⁹ A recent study assessed the climate impact of global historical fish catches and fuel consumption and found that since 1950 ocean fisheries have released a minimum of 0.73 billion metric tons of CO₂ into the atmosphere. Further, the researchers found that globally, 43.5% of the blue carbon extracted by fisheries in the high seas is from areas that would be unprofitable to fish without subsidies.²⁰

The draft Joint Fisheries Statement contains the welcome recognition that 'the protection, restoration and sustainable management of blue carbon habitats provides a nature-based solution that can support adaptation and resilience to climate change, alongside benefits for carbon sequestration and biodiversity'²¹ and we hope to see future provisions made through effective fisheries management and management of MPAs to protect and restore these habitats.

This should include Remote Electronic Monitoring (REM) with cameras that incorporate Vessel Monitoring Systems (VMS) across the fishing fleet. This can deliver increased transparency and traceability of vessels to improve stock health and increase biomass which stores carbon. Provisions to ensure inappropriate fishing activities are not allowed to take place in sensible areas must also be included.

In general, a climate smart approach to fisheries is essential to address the climate impacts of the industry, with action needed to ensure electrification of the UK fleet, rethinking fuel subsidies and eliminating inefficient fleet structures.²²

- **Marine spatial planning, including the marine spatial prioritisation programme**

¹⁷ Lutz SJ et al 2018. Oceanic Blue Carbon - How Marine Life Can Help to Combat Climate Change.

¹⁸ <https://uk.whales.org/green-whale/>

¹⁹ https://www.rspb.org.uk/globalassets/downloads/policy-briefings/climate_smart_fisheries_report_2021.pdf

²⁰ <https://www.science.org/doi/10.1126/sciadv.abb4848>

²¹ p.48 [https://consult.defra.gov.uk/sustainability-devolution-and-legislation-](https://consult.defra.gov.uk/sustainability-devolution-and-legislation-team/jfs/supporting_documents/Consultation%20draft%20of%20the%20Joint%20Fisheries%20Statement.pdf)

[team/jfs/supporting_documents/Consultation%20draft%20of%20the%20Joint%20Fisheries%20Statement.pdf](https://consult.defra.gov.uk/sustainability-devolution-and-legislation-team/jfs/supporting_documents/Consultation%20draft%20of%20the%20Joint%20Fisheries%20Statement.pdf)

²² See https://www.rspb.org.uk/globalassets/downloads/policy-briefings/climate_smart_fisheries_report_2021.pdf

Marine Planning is an important tool for Governments to allocate space for different activities and uses of our seas, including areas reserved for the conservation of blue carbon habitats. By developing effective marine plans, objectives should be set to ensure that activities and developments such as offshore windfarms deliver the much-needed increase in renewable energy capacity, without threatening the health of blue carbon ecosystems.

In the UK, the Marine Policy Statement was developed to provide a legal framework for marine planning and ensure it promotes a sustainable marine environment, safeguarding healthy ecosystems and protecting marine species. Following the shortcomings of the current marine planning system in England, the Government has launched a new marine spatial prioritisation programme.

For this to be successful, it should provide an approach to marine developments supporting healthy and productive ecosystems, with marine resources used sustainably, protecting our oceans and seas for generations to come. Plans should offer strategic guidance, underpinned by a clear hierarchy of Government policies, including protection of blue carbon. As such, this program will need to develop an overarching vision for our seas and develop a roadmap which clearly lays out the steps needed to achieve Good Environmental Status (GES) and reach net zero, which must include blue carbon provisions.

2: RESTORE BLUE CARBON HABITATS

- **Extend and fast-track the ReMeMaRe and MaRePo projects**

ReMeMaRe is an Environment Agency initiative that aims to reverse centuries of decline of our estuarine and coastal habitats by Restoring [seagrass] Meadows, [salt] Marsh and [oyster] Reef. The project has funding for restoration of 800 ha of saltmarshes, 25 ha of seagrass meadows and 50 ha oyster beds, plus a pilot study for restoring 2 ha of kelp forests. They also have £4m for the setup of aquaculture facilities that will be able to scale-up production of oyster seed and seagrass seedling required for realising the ambition of ReMeMaRe to restore 15 % of our estuarine and coastal habitats by 2043.

However, the project has not received the required funding in recent spending rounds and is therefore lacking the resources to support a long-term plan for estuarine and coastal restoration. The project is still aiming to secure an additional £24 million of resources towards estuarine and coastal restoration, which will achieve the total target of 875 ha restored.²³ Rather than the Environment Agency embarking on an extended process of fundraising, the Government should deliver this investment to ensure that this restoration work can be undertaken as soon as possible.

A new Natural England project, with partners in the EA, JNCC and Cefas, will assess wider marine restoration potential (this new initiative being branded MaRePo). This project will also have an important role to play in this space and needs to be developed swiftly.

²³ Figures from submission to Defra for the 2020 Spending Review

- **Marine net gain**

In the consultation on the principles of marine net gain published in June, the Government notes that “The 25 Year Environment Plan sets a high-level aspiration to introduce environmental net gain (ENG) within the lifetime of the Plan. ENG is an approach that seeks to capture a wider range of impacts, such as Blue Carbon sequestration or cultural ecosystem services, in assessing an intervention’s benefits.”

The scale of development at sea, particularly relating to offshore wind, has raised the potential benefits of applying the biodiversity net gain concept to the marine environment. This could provide much needed funding for blue carbon habitat restoration. Indeed, biodiversity Net Gain is defined as “an approach to development that leaves biodiversity in a better state than before”.²⁴ This must be delivered with nature being prioritised, and developments should still be subject to strict assessments of their impact on biodiversity before they are approved so net gain does not become a ‘license to trash’ the environment.

Different considerations will also be needed depending on its application in a coastal setting or an offshore one. Indeed, whereas active restoration has been proven possible for some intertidal habitats, such as saltmarshes, in a truly marine environment, the only proven method to allow for biodiversity gains is through the removal of pressures.

- **Local Nature Recovery (LNR) scheme, Nature for Climate Fund and flooding funding**

These initiatives offer a source of funding for blue carbon restoration. The Local Nature Recovery scheme will fund the creation and restoration of coastal habitats like saltmarsh and sand dunes when introduced in 2024. The current Nature for Climate Fund and Big Nature Impact fund could also be expanded to include funding for saltmarsh before this date.

In addition, the Government is spending over £5bn over the coming years on flood and coastal defences, including a commitment to fund restoration of some sub-tidal habitats, under the Flood and Coastal Resilience Innovation Programme.²⁵ With the significant benefits of blue carbon habitats for flood prevention as well as carbon sequestration, Government flood funding should devote a greater proportion of resources to restoring blue carbon habitats.

3: INTERNATIONAL ACTION TO PROTECT AND RESTORE BLUE CARBON

- **Properly account for blue carbon stores in carbon accounting**

The UK’s Nationally Determined Contribution (NDC) to the Paris Agreement sets out how we will reduce our national emissions and adapt to the impacts of climate change. Although emissions from terrestrial carbon sinks are included in this greenhouse gas inventory, coastal and marine habitats are not included. This causes policy makers to overlook the importance

²⁴ <https://cieem.net/i-am/current-projects/biodiversity-net-gain/>

²⁵ <https://www.gov.uk/government/news/innovative-projects-to-protect-against-flooding-selected>

of blue carbon for achieving net-zero goals. (Although it is vital that this is not a substitute for real term emissions cuts through ending the use of fossil fuels).

The Government should follow the recommendations from the International Panel for Climate Change (IPCC)²⁶ and the Climate Change Committee (CCC)²⁷ and support work to develop a carbon code for saltmarsh, seagrass and other habitats. The CCC recommend in a recent report that the Department for Business, Energy and Industrial Strategy “should produce a roadmap to inclusion of saltmarsh and seagrass in the GHG inventory, which specifies a suggested level of inclusion (i.e., Tier 1, 2 or 3), the additional data required to facilitate this, and an indicative timescale to inclusion.”

Funding could be provided to a body such as the British Standards Institute to support firstly the development of a code for saltmarsh carbon, and then to house and administer the code once it is up and running, with Natural England or the Environment Agency acting as the regulator. Generally, with regards to greenhouse gas removals, the Government should establish a governing body to oversee removals in the UK, covering both the compliance and voluntary markets. A regulator could also support the co-ordination of carbon markets with other developing environmental markets such as Biodiversity Net Gain and nutrient trading.

Proper accounting of blue carbon is inhibited by a lack of knowledge and ongoing debate over the fate of carbon in some marine habitats. Research should be prioritised to address these issues to advance our ability to account for all marine habitats. We also need ambitious and realistic blue carbon habitat protection and restoration targets in the next iteration of the UK NDC.

- **International agreements**

Work to define the place of the ocean in the United Nations Framework Convention on Climate Change (UNFCCC), building off the COP25 mandate, helped ensure that the Glasgow Climate Pact agreed a more prominent role for the ocean. In particular, it recognised the “critical role” of nature, including the ocean in climate change adaptation and mitigation, invited existing UNFCCC workstreams to consider how to “integrate and strengthen ocean-based action” and set up a bespoke annual ocean dialogue in UNFCCC to “strengthen ocean-based action”. Continued UK support and engagement in these workstreams will be crucial.

- **Ensure that the ‘blue belt’ programme in the UK Overseas Territories (UKOTs) includes protections of blue carbon**

It is welcome that there has been a recent acknowledgement of the importance of blue carbon habitats in the UKOTs. The Marine Management Organisation have highlighted Tristan da Cunha’s Marine Protection Zone’s fishing ban, which they note “includes ‘bottom-trawling’, (which) prevents fishing gear from disturbing habitat sediments and releasing

²⁶ https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_FinalDraft_TechnicalSummary.pdf

²⁷ <https://www.theccc.org.uk/wp-content/uploads/2022/03/CCC-Briefing-Blue-Carbon-FINAL.pdf>

carbon.”²⁸ Yet much of the blue belt, for example MPAs in South Georgia and South Sandwich Islands, have been found not to be maximising the benefits they can deliver for marine life and carbon sequestration.²⁹ The Government should support the UKOTs to better protect all MPAs to the highest level, and work with the Caribbean Territories joining the Blue Belt programme to advance protections for seagrass and mangrove habitats as a priority.

4: A STRATEGIC APPROACH TO BLUE CARBON

- **Reform the UK Marine Strategy to protect blue carbon**

The UK Marine Strategy would be strengthened by having greater regard for blue carbon. While this is currently viewed as being outside the scope of the strategy, many descriptors could incorporate blue carbon elements. Measures for blue carbon habitat creation, restoration and protection would deliver climate mitigation and adaptation benefits that could help contribute to meeting GES across multiple descriptors.

For example, measures to protect, create and restore saltmarsh and seagrass for carbon storage would also tackle water quality issues and provide valuable habitat for fish nurseries with the potential to contribute to GES for benthic habitats, eutrophication and fish/commercial fish descriptors. As such, blue carbon could be integrated as part of the existing mechanisms. The strategy could include high level targets for restoration such as the 100,000 hectares of wetlands which we need to put back into the landscape. This should also be reflected in the next round of national adaptation programmes, due from 2023.

- **Support a science led strategy, including through the UK Blue Carbon Forum**

The Climate Change Committee has recommended that “efforts to monitor, understand and analyse changes in the extent, condition and functioning of marine and coastal ecosystems should be encouraged, including an assessment of the risks these present to emissions and wider ecosystem value, and with reference to the changing climate and other pressures.”³⁰ The Government must deliver this monitoring and analysis, ensuring that the Blue Carbon Evidence Partnership is set up to work closely with the UK Blue Carbon Forum to share data and avoid duplication of effort in work towards quantifying blue carbon stocks and fluxes in UK waters.

²⁸ <https://marinedevelopments.blog.gov.uk/2021/11/18/blue-belt-programme-overseas-territories-playing-their-part-in-tackling-climate-change/>

²⁹ <http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/environmental-audit-committee/sustainable-seas/written/91542.html>

³⁰ <https://www.theccc.org.uk/wp-content/uploads/2022/03/CCC-Briefing-Blue-Carbon-FINAL.pdf>

By removing threats to blue carbon in English seas, restoring blue carbon habitats at home and abroad and sustaining further progress through focussed delivery strategies, the Government can unlock the full potential of blue carbon to mitigate climate change. Through delivering these actions we could also restore these highly threatened ecosystems in our seas; tackling the twin crises of climate change and biodiversity loss.

Wildlife and Countryside Link is the largest environment and wildlife coalition in England, bringing together 65 organisations to use their strong joint voice for the protection of nature. For more information contact Link's Marine Policy Officer Matthew Dawson: matthew@wcl.org.uk This Link briefing on blue carbon is supported by the following Link members:

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