

Part C: Suffolk's Priority Habitats, Assemblages and Species



Worlingham Marshes Nature Reserve supports a wide variety of habitats and species.

The LNRS for Suffolk is underpinned by a detailed understanding of the county's unique biodiversity and ecological needs. This section outlines how we have prioritised practical action for the habitats and species most in need of recovery. The priorities and measures identified are a guide to the recovery and enhancement of local species and habitats.

This section highlights three critical components of the LNRS:

- the identification of habitat priorities
- the identification of key species and habitat based species **assemblages**
- the identification of environmental benefits through nature-based solutions.

Combined, these provide a framework for targeted nature recovery actions in Suffolk, adopting a landscape-scale approach.

The types of actions which could be included as potential measures are:

- actions to create, improve, or restore habitats (expanding and/or enhancing habitat or changing management practices to better support biodiversity)
- actions needed to benefit specific local species
- actions to connect habitat areas to improve the resilience of nature and enable species to move through the landscape.

Examples of potential measures include actions such as 'controlled regeneration of open woodland using grazing techniques' or 'installation of nest boxes and suitable building eaves'.

The priorities and measures outlined in this section have been shaped through extensive collaboration with stakeholders, themed working groups and steering groups.

Feedback from this engagement, as well as public input, has ensured a balanced and inclusive strategy, reflecting local circumstances and stakeholder views.

Where possible, each area is linked to defined assemblages and habitats, highlighting the complex nature of ecosystems. In addition, an overall indication of where the opportunities outlined can respond to the pressures faced, as detailed in **Part A: Description of the Strategy Area**, is included.

While this section focuses on the measures and actions, the methodologies underpinning this work are detailed in **Appendix 2** to be clear how we have reached these outcomes.

Using the measures and actions determined within the LNRS

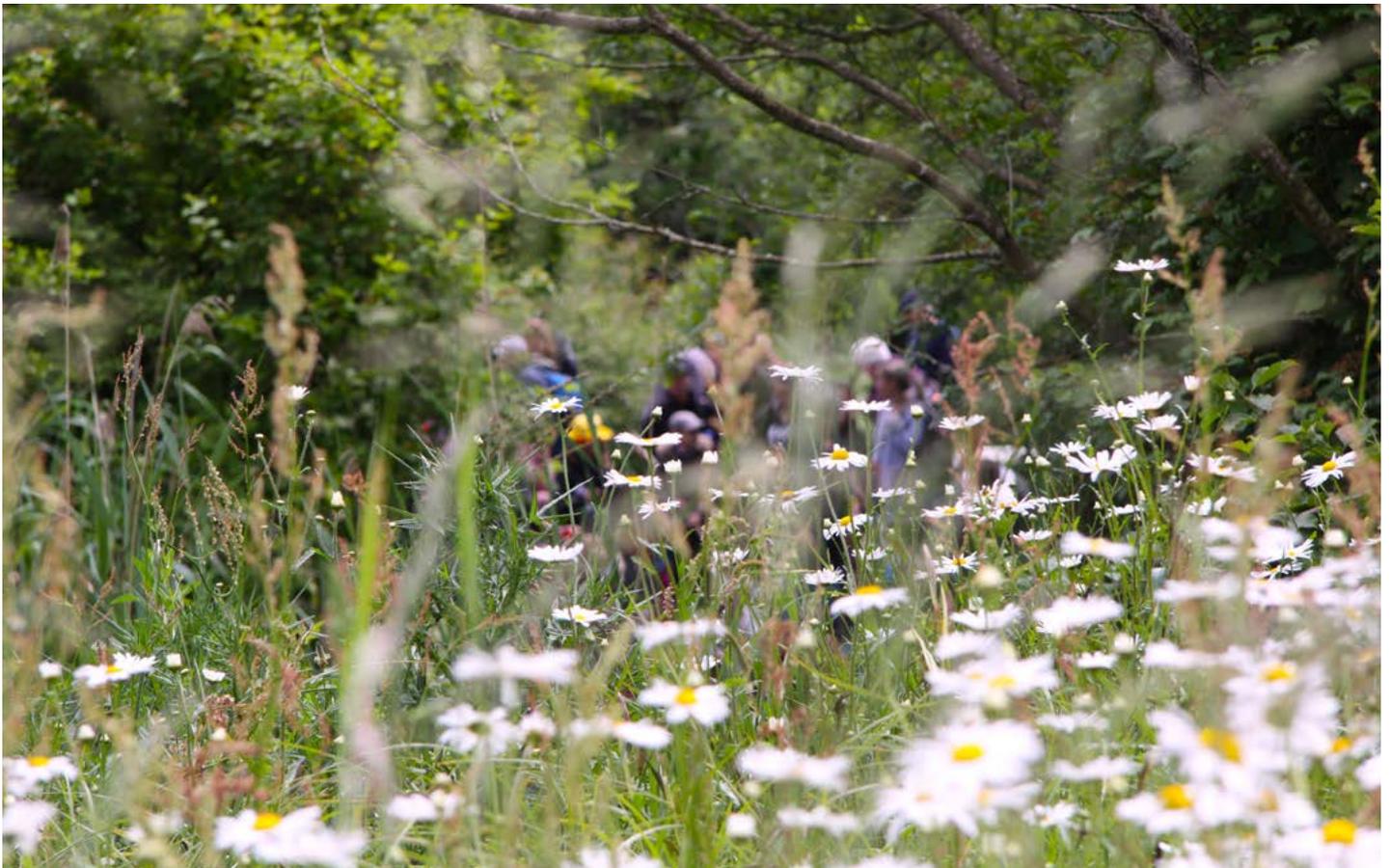
The way in which the LNRS measures will be delivered will vary based on situation, location, funding opportunities and support available.

The measures outlined have been generated using the procedures described above, and many species and habitats are expected to be supported by these actions across Suffolk to create a developing nature recovery network. A sufficient site-specific review should be carried out to determine the suitability of nature recovery actions, with appropriate expert advice and input, as appropriate. This should include a range of advice

eg **hydrological surveys** or reviews of the historic environment and Landscape Character Assessment if applicable.

This review should also consider any consents that may be required, for example from the local planning authority, relevant Historic Environment team, Environment Agency, Forestry Commission or Natural England.

Any individual or organisation looking to use the LNRS is invited to contact the Norfolk and Suffolk Nature Recovery Partnership for support as required.



People learn about nature recovery at the Suffolk Show

Habitat priorities: More, bigger, better, and more connected

Through the analysis of 301 existing stakeholder documents including strategies, policies and plans which relate to nature recovery we started to identify potential priorities. (Full details in **Appendix 1** and **Appendix 2**). Alongside input from Themed Working Groups and authoritative sources, accompanied by priorities submitted in public and landowner surveys, this generated over 1700 identified possible actions linked to habitat creation or improvement.

A robust review process, again developed in a collaborative process, identified 20 habitat specific priority areas and 13 more general priority focus areas, designed to have a wide impact across a range of habitats and processes, but without a specific location. These priorities were assessed on a qualitative basis, aligning with key national targets for environmental change, to identify where multiple benefits would arise. Full details are available in **Appendix 3**.

The measures and actions identified for the habitat priority areas are designed to contribute, where possible, to the national objectives detailed below. It is considered that the approach taken to generate strategic opportunity areas encompasses these factors of:

- restoration or creation of in excess of 500,000 hectares of wildlife-rich habitat outside of protected sites
- increasing total tree and woodland cover

- improving water quality and availability
- ensuring that everyone in England lives within 15 minutes' walk of a green or blue space
- restoration of 280,000 hectares of peatland in England
- restoration of water bodies to good ecological status
- supporting farmers to create or restore hedgerows
- managing woodlands for biodiversity, climate and sustainable forestry
- restoration of Sites of Special Scientific Interest to favourable condition
- ensuring climate change adaptability is included in actions and policies
- inclusion of proposals for nature-based solutions which improve flood risk management where appropriate
- reduction in the rates of introduction and establishment of invasive non-native species.

Each of the identified habitat priority areas are profiled in this section (**Tables 4-23**), including links where possible to the habitat-based assemblages defined as part of the species prioritisation process (**Appendix 2**). Where the measure is included on the Local Habitat Map, this is stated, along with a linked code (for supporting information refer to **Part D: Locations for Action**).

For each habitat priority, the following information is included:

- detailed measures and actions,
- existing examples of this ambition where appropriate taken from the reviewed sources, intended to provide supporting evidence for the approaches indicated, but not considered to explain the full extent of this work.

If the measure is featured on the Local Habitat Map it is identified using a PM code which correlates to the ACB layer. Unmapped measures are designated as such.

See **Table 2** for an example, and **Table 3** for the evidence codes employed.

It is not possible to define locations for all measures, and there is potential for the measures outlined in this strategy to be delivered across various locations across the county. In addition, general habitat management techniques, and the consideration of working towards a sustainable and regenerative process, can be undertaken, as appropriate, in a variety of agricultural, horticultural, rural or urban locations. Such measures can especially link to common concerns raised during engagement, for example protection of pollinator species such as bees and butterflies.

Therefore, some measures within the habitat priorities are defined as unmapped. A notable example of this is within urban areas, where a wide range of actions and potential measures, for

example wildlife friendly gardening practices, installation of green roofs, increasing green infrastructure could contribute to the recovery of a high number of species and have significant impacts on environmental benefits. However, due to the nature of the geographical features and data available, it is not suitable to apply mapped measures to these locations.

Some habitat types and locations are incorporated into the Areas of Particular Importance for Biodiversity and therefore are potentially covered by detailed management plans already in place and outside of the scope of the LNRS. Therefore, it is not possible to map measures specifically to those locations, unless they are designated as County Wildlife Sites (with the exception of SSSIs) are irreplaceable habitats or have no designation existing. Within the intertidal zone, measures can also be mapped to any designated APIB.

Table 2. Example of priorities and measures for habitat areas

Table XX. Priorities and Potential Measures considered to support species identified in the following assemblages(s): Scrub and Mosaic

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new scrub where feasible	Include open spaces and transitional habitats, such as scrub, in woodland management plans. [HPA32]	Mapped [PMXX]

Table 3. Potential Measure Evidence Codes

Code	Evidence
HPA01	Anglian River Basin District, Lowestoft Risk Area
HPA02	Anglian Water biodiversity strategy
HPA03	Appropriate biodiversity plans
HPA04	Breckland Biodiversity Audit
HPA05-08	Broads biodiversity focus, strategies and nature recovery plans especially BNRS – Broads Nature Recovery Strategy
HPA09	CABA Chalk Stream Strategy
HPA10	Catchment management plans
HPA11	Catchment partnerships
HPA12	East Marine Plan
HPA13	Estates specific work
HPA14	Farm cluster priority actions plans (location)
HPA15	Internal Drainage Boards plans and priority actions (location)
HPA16	River basin management plans
HPA17	River Catchment Partnerships priority actions
HPA18	RSPB Priority Work Area
HPA19	Suffolk Shoreline Management Plans
HPA20	Suffolk Biodiversity Audit Priority
HPA21	Suffolk local and neighbourhood plans (location)
HPA22	Suffolk local flood risk management SuDS (Sustainable Drainage Systems) plans
HPA23	Suffolk Coast RAMS [27a]
HPA24	Suffolk Green Strategy
HPA25	Suffolk Wildlife Trust flagship priority
HPA26	Suffolk Wildlife Trust Priority Habitat
HPA27	Tailored advice and funded interventions (specifics)
HPA28	Tier 1 habitat priority in National Landscape Nature Recovery Plans (location)
HPA29	Tier 2 habitat priority in National Landscape Nature Recovery Plans (location)
HPA30	Tier 3 habitat priority in National Landscape Nature Recovery Plans (location)
HPA31	Tree and Woodland strategies

Mixed Deciduous Woodland

Table 4. Mixed Deciduous Woodland (including ancient woodland) priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new deciduous woodland	<ul style="list-style-type: none"> Plan new developments to plant the veteran trees of the future, using appropriate pollarding and veteranisation techniques and species with resilience to predicted climate change and disease. To support species decisions, use Ecological Site Classification (ESC) profiles. Use mixed woodland creation to provide opportunities for recreation and increased access, whilst reducing pressures on ancient woodland areas. Create Heath, Grassland, and Woodland Enhancement Areas – zones where it is desirable to establish a mosaic of heathland, grassland, scrub and woodlands. Increase canopy cover area by the creation of new woodlands, using a broad range of native species to increase diversity and promote climate and pest/disease resilience. Create new community woodlands using appropriate species in appropriate areas. Wherever possible, creation should be achieved via natural regeneration processes, including, where appropriate, deer management techniques, incorporating protection of the designated area and appropriate timeframes. This maximises local genetic diversity and reduces risk of disease. <p>[HPA29, Suffolk and Essex Coast & Heaths]</p>	<p>Mapped [PM01]</p> <p>Veteran trees mapped [PM50]</p>
Enlarge and expand existing deciduous woodland	<ul style="list-style-type: none"> Enlarge areas of appropriate woodlands including Plantations on Ancient Woodland Sites (PAWS) and secondary woodlands. Enhance woodland areas within the IDB drainage district through tree planting ensuring potential conflicts with other habitats and species are avoided Wherever possible, creation should be achieved via natural regeneration processes, incorporating protection of the designated area and appropriate timeframes. This maximises local genetic diversity and reduces risk of disease. <p>[HPA13, Broads, Waveney]</p>	<p>Mapped [PM01]</p> <p>Veteran trees mapped [PM50]</p>
Connect deciduous woodland areas	<ul style="list-style-type: none"> Within suitable sites, plant appropriate species to link woodland blocks and enhance commuting routes for species, especially bats. Plant a variety of features such as corridors, stepping stone areas or direct links using ESC profiles. <p>[HPA29, Suffolk and Essex Coast & Heaths]</p>	<p>Mapped [PM01]</p> <p>Veteran trees mapped [PM50]</p>

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Restore and enhance existing deciduous woodland	<ul style="list-style-type: none"> • Improve biodiversity in woodland areas through targeted planting schemes, eg enrichment planting or management designed to encourage natural colonisation, or promoting retention of dead wood (fallen and standing). • Enhance woodland areas within the IDB drainage district through tree planting, ensuring potential conflicts with other habitats and species are avoided and local landscape character is conserved. • Reinstate, adapt or introduce appropriate management regimes, such as coppicing. • Ensure available management plans within woodland are being fully implemented. • Manage canopies to reduce understory shading. • Manage deer populations to sustainable levels to reduce browsing pressure. • Provide opportunities to open areas of woodland using selective felling to create appropriate structures. • Facilitate development of connected, shrub-rich, and structurally complex woodland understories. • Enhance ancient semi-natural woodland and restore PAWS to UK Forestry Standards and UK Woodland Assurance Standards (UKWAS) for biodiversity, climate and other environmental and economic benefits by the gradual and systematic removal of conifers, whilst maintaining economic outputs where possible. • Restore and enhance ancient semi-natural woodland, non-native woodlands and productive commercial forestry or biodiversity, and restore planted ancient woodland in line with revised management plans. • Diversify woodlands by varying native tree species and tree ages to facilitate natural succession, creating optimal niches for species to occupy and thrive. • Support grey squirrel population management to enhance natural regeneration. • Increase the longevity of ancient and veteran trees by protecting trunks and roots (such as from compaction) and implementing annual tree maintenance regimes, creation of root protection zones, appropriate remedial surgery, haloing, protection from livestock and nursing of seedlings or clonal cuttings. 	<p>Mapped [PM02]</p> <p>Appropriate enhancement of conifer woodlands [PM02]</p> <p>Veteran trees mapped [PM50]</p>
Restore and enhance existing deciduous woodland continued	<ul style="list-style-type: none"> • Retain dead wood, including creating ground-level piles, wherever possible to provide habitats for various bird and invertebrate species. Areas of dead trees may need appropriate safety measures in place. <p>[HPA24, HPA29, Suffolk and Essex Coast & Heaths]</p>	<p>Mapped [PM04]</p> <p>Mapped for appropriate conifer specific areas as [PM71]</p> <p>Veteran trees mapped [PM50]</p>

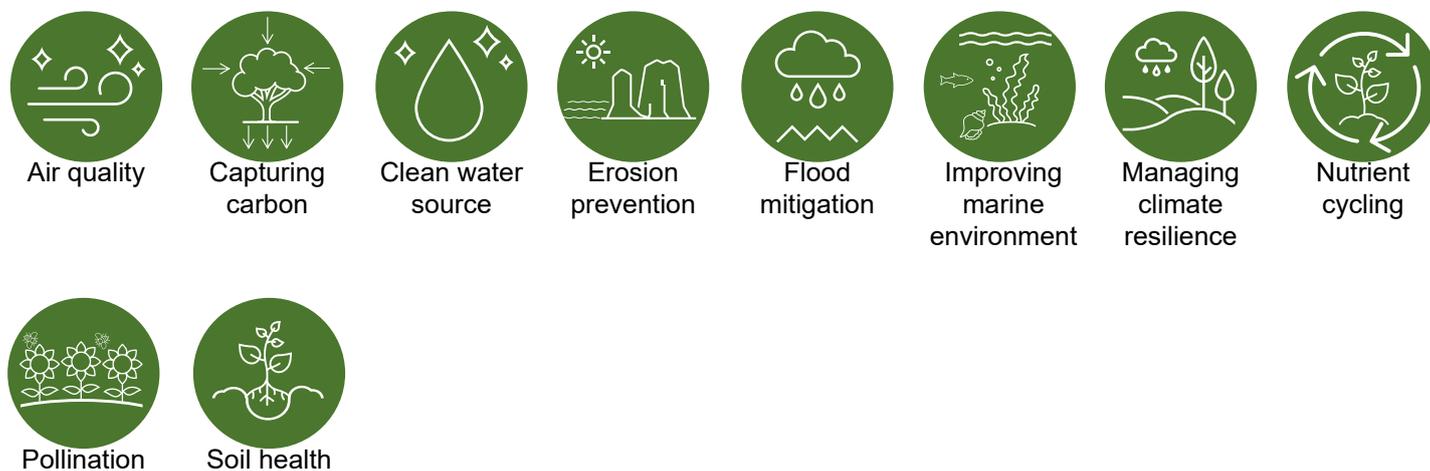
These measures are considered to support species identified in the following assemblages:

- Native Woodland

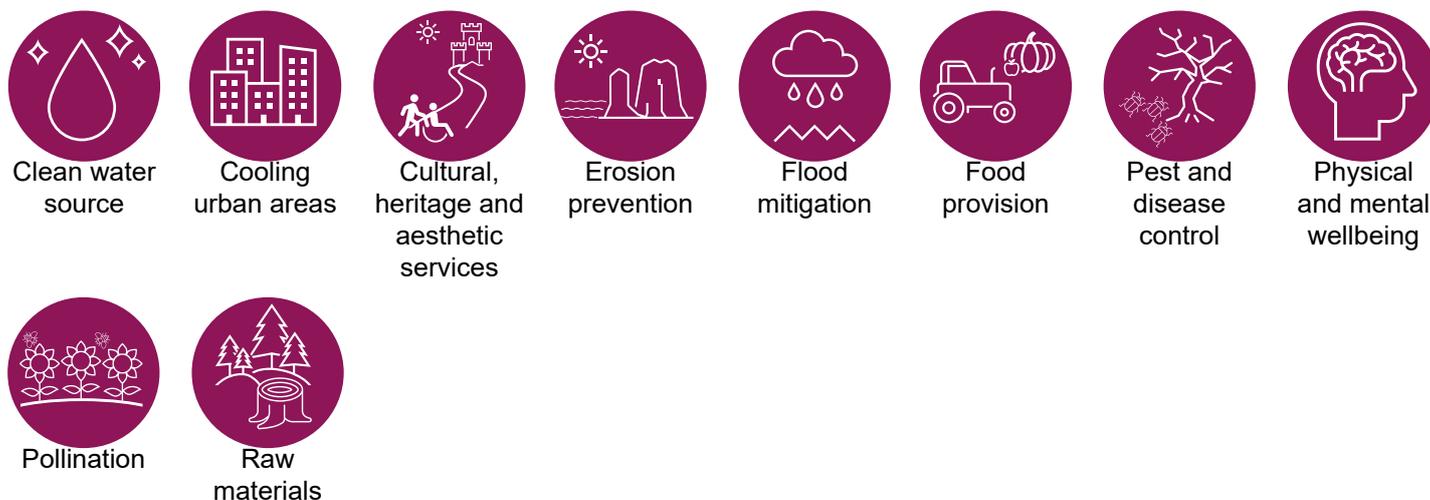
These measures could offer solutions to address pressures in:

- Woodland, Trees and Scrub
- Farmland
- Freshwater
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Wet Woodland

Table 5. Wet Woodland priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new, enlarge and expand existing and connect wet woodland where feasible	<ul style="list-style-type: none"> Plant appropriate species in appropriate places using ESC profiles (avoiding fen areas and lowland wet grassland habitats suitable for breeding waders/ wintering wildfowl) along riverbanks and floodplains to reduce flood and erosion risks and create wildlife corridors, allowing natural processes to take place. Wherever possible, creation should be achieved via natural regeneration processes, including where appropriate deer management techniques. <p>[HPA28, Suffolk and Essex Coast & Heaths]</p>	Mapped [PM03]
Restore and enhance existing wet woodland	<ul style="list-style-type: none"> Remove inappropriate invasive or non-native species from selected sites as required eg Himalayan balsam. Employ appropriate and effective grazing regimes and management programmes to ensure habitat conditions are maintained eg minimising access to watercourses to prevent excessive pollution and erosion. Promote the retention and conservation of significant trees and woodlands. Improve biodiversity in wet woodland area through targeted planting schemes or natural colonisation. Maintain wet woodland habitats by ensuring appropriate water level management based on seasonal fluctuations, soil type and location. Maintain and enhance priority areas of fen, reedbed, grazing marsh, and wet woodland through site management agreements and support for site managers. Retain dead wood, including creating ground-level piles, wherever possible to provide habitats for various bird and invertebrate species. Areas of dead trees may need appropriate safety measures in place. <p>[HPA15, (Broads, Waveney), HPA03]</p>	Mapped [PM04]

These measures are considered to support species identified in the following assemblages:

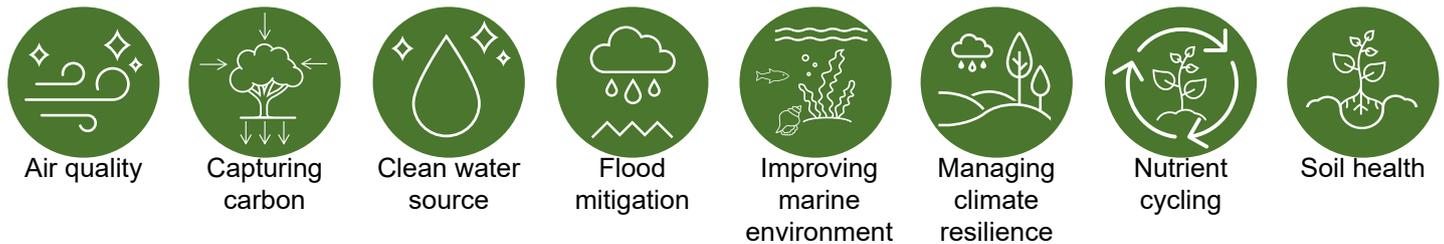
- Native Woodland
- Rivers and Riverside Habitats

Habitats and species

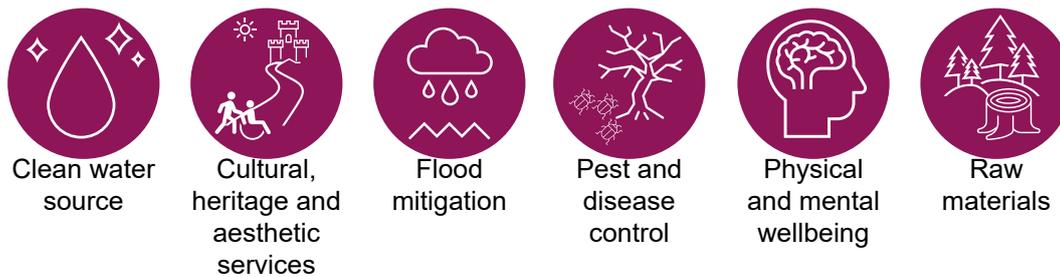
These measures could offer solutions to address pressures in:

- Woodland, Trees and Scrub
- Farmland
- Freshwater
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Wood Pasture and Parkland

Table 6. Wood Pasture and Parkland priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new, enlarge and expand existing and connect wood pasture where feasible	<ul style="list-style-type: none"> • Create wood-pasture near existing woodland to improve vegetation cover and habitat connectivity, ensuring planting follows ESC profiles. • Allow habitat connectivity where appropriate using corridors or stepping stone planting. • Increase canopy cover area by the creation of new mixed and broadleaved wood pasture using a broad range of species to increase diversity and promote climate and pest/disease resilience. • [HPA30, Dedham Vale] 	Mapped [PM05]
Restore and enhance existing wood pasture	<ul style="list-style-type: none"> • Create areas to protect significant trees and woodlands in appropriate areas such as registered parks, using Tree Preservation Orders where needed if suitable. • Restore areas within lost, historic locations. • Employ management measures for veteran and ancient trees including pollard creation, control of grazing pressures, reduction of compaction, protection against shade and root damage. • Incorporate mosaic features to maximise habitat value for invertebrates eg appropriate grazing animals, microhabitats such as dead wood, rot holes, ageing bark, fallen trees, leaf litter, nectar sources and ground vegetation. • Improve and manage the floristic diversity of the grassland beneath the trees by grazing, hay cutting and enhancing with local seed where possible. • Retain dead wood, including creating ground-level piles, wherever possible to provide habitats for various bird and invertebrate species. Areas of dead trees may need appropriate safety measures in place. <p>[HPA30, Dedham Vale]</p>	Mapped [PM06]

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Restore, enhance and re-create existing and former parkland	<ul style="list-style-type: none"> Establish suitable grazing regimes and management programmes eg pollarding. Maintain wooded parklands to preserve the landscape setting of historic estates using appropriate pruning and support as needed and considering root protection zones. Increase the longevity of ancient and veteran trees by protecting trunks and roots (such as from compaction) and implementing annual tree maintenance regimes. Recreate parkland on the sites of former historic parkland. HPA30, Dedham Vale, HPA13 (Benacre, Sotterley)]]	Mapped [PM06]

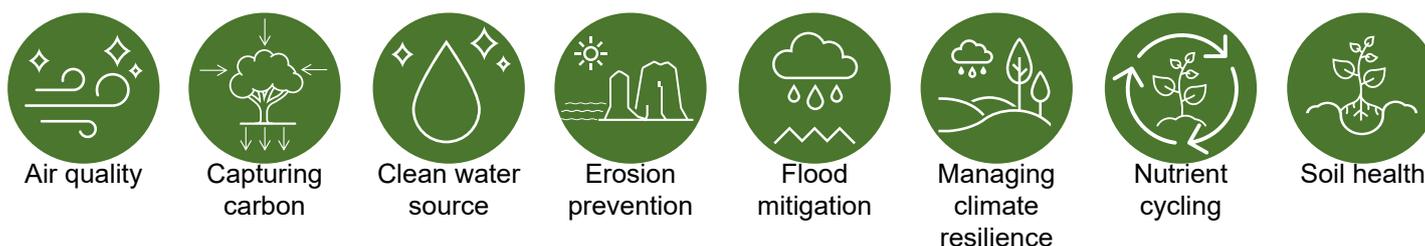
These measures are considered to support species identified in the following assemblages:

- Trees Outside of Woodlands

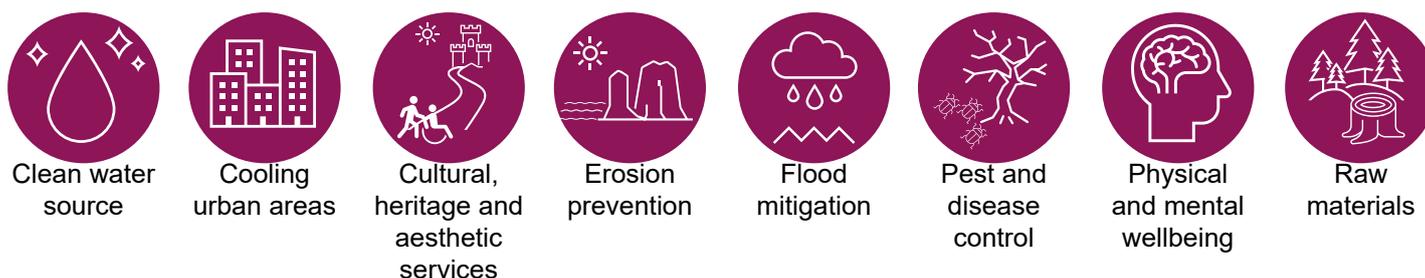
These measures could offer solutions to address pressures in:

- Woodland, Trees and Scrub
- Farmland
- Freshwater
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Scrub

Table 7. Scrub priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new scrub areas where feasible and desirable	Include open spaces and transitional habitats, such as scrub, in woodland management plans. Ensure allowance is made for a series of successional stages. [HPA28, Suffolk and Essex Coasts and Heaths, HPA18, HPA26]	Mapped [PM07]
Enlarge, expand and connect existing scrub	Use scrub areas as connectivity corridors where appropriate. [HPA28, Suffolk and Essex Coasts and Heaths]	Mapped [PM07]
Restore and enhance existing scrub	<ul style="list-style-type: none"> • Carry out annual scrub maintenance regimes where appropriate. • Adopt grazing regimes in appropriate areas to maintain scrub margins. • Coppice roadside scrub verges on long rotations (10–15 years) to improve habitat suitability for dormice. Ensure maintenance and management techniques are employed to retain scrub where appropriate and maintain safety aspects of location. • Manage scrub so there is diversity in age and structure; eg dense, tall thicket (at least 3m tall and 4m wide) • Consider hedgerows as components of linear scrub features • Employ sustainable deer management for scrub regeneration to avoid the underneath being eaten out. [HPA28, Suffolk and Essex Coasts and Heaths]	Mapped [PM08]

These measures are considered to support species identified in the following assemblages:

Scrub and Mosaic

These measures could offer solutions to address pressures in:

- Woodland, Trees and Scrub
- Farmland
- Grassland and Heathland
- Invasive Species and Diseases

These measures are considered to support the following wider environmental

benefits:



Air quality



Capturing carbon



Clean water source



Flood mitigation



Improving marine environment



Managing climate resilience



Nutrient cycling



Pollination



Soil health

These measures are considered to support the following co-benefits:



Clean water source



Cooling urban areas



Flood mitigation



Pest and disease control



Physical and mental wellbeing

Habitats in Farmed Landscapes

Table 8. Habitats in Farmed Landscapes priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
<p>Enlarge and expand existing arable field margins (typically located on outer 2-12m margin of arable fields)</p>	<ul style="list-style-type: none"> • Employ locally appropriate land disturbance or management techniques to incorporate margins. • Create margins around field boundaries where possible - margins should be created to follow best practice and scheme guidance as appropriate, and to be as wide as possible within the situation. This should allow for mitigation of spray/irrigator drift and take into account edge benefits and the juxtaposition of cultivated margins (those areas of fields that are cultivated annually but are managed to allow germination of plants to support pollinators and other invertebrates). • Support identification of desirable locations for cultivated margins including light soils (chalky and acidic), especially alongside old tracks, tussocky verges, grassland areas, old hedges, pinelines, sites of rare plants and invertebrates, and existing well-managed margins to incorporate buffering. • Employ minimal disturbance establishment practices where appropriate – direct drilling, broadcasting and rolling – noting that re-cultivating existing diverse grassland will not generally be desirable. • Allow natural regeneration of margin species or sow a variety of appropriate local native plant species • Margins should be greater than 6m, with wider margins providing more habitat for more species. • Margins should be made wider where they buffer important habitats such as rivers, streams, ditches, woodland, and hedgerows, to reduce damage to roots from cultivation, and reduce pollution of watercourses. <p>[HPA04, HPA14 (Bramfield, Blythburgh, Felixstowe, Sandlings, Stour Valley, Shotley), HPA29, Suffolk and Essex Coasts and Heaths, Dedham Vale]</p>	<p>Mapped where possible when linked to other measures [PM09]</p>
<p>Connect arable field margin areas</p>	<ul style="list-style-type: none"> • Follow principles identified above to connect existing field margins. • Use arable field margins to connect non-farmed habitats, and to enhance areas such as hedgerows where planting is not appropriate. <p>[HPA11 (Bramfield, Blythburgh, Felixstowe, Sandlings, Stour Valley, Shotley)]</p>	<p>Mapped where possible when linked to other measures [PM09]</p>

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Restore and enhance existing arable field margins	<ul style="list-style-type: none"> • Implementation of appropriate cultivation methods to maximise organic content within margins. • Implementation of appropriate cultivation methods to maximise biodiversity within margins; employ seasonal cutting and removal of material to promote more diverse swards, or no cutting to allow scrub regeneration and expansion of hedgerows. • Spread green hay from locally floristically diverse sites to increase local native wildflower species. <p>[HPA14 (Bramfield, Blythburgh, Felixstowe, Sandlings, Shotley, Stour Valley), HPA15 (Broads), HPA29, Suffolk and Essex Coasts and Heaths, Dedham Vale]</p>	Mapped where possible when linked to other measures [PM10]
Create new hedgerows using appropriate native species	<ul style="list-style-type: none"> • Plant new hedgerows in appropriate areas using native species: <ul style="list-style-type: none"> ○ on field boundaries, old hedge lines, or on areas which connect existing or planned habitats. ○ next to ditches and margins • Provide a root protection zone, preferably with 15m buffers, to limit pressures and allow trees to develop and deteriorate naturally <p>[HPA14 (Bramfield, Blythburgh, Stour Valley)] Hedgerows may also be created as an unmapped measure outside of ACB areas to provide additional connectivity</p>	Unmapped
Restore and enhance existing hedgerows	<ul style="list-style-type: none"> • Improve hedgerows and incorporate field-edge trees, encouraging gapping up and planting to enhance connectivity. • Gap up hedgerows with a variety of locally appropriate native hedgerow species. • Lay or coppice hedgerows past peak maturity to encourage dense base regrowth and extend lifecycles, in appropriate areas following expert advice. • Maintain hedgerows associated with Roadside Nature Reserves following appropriate plans and techniques. • Create areas which allow for retention and conservation of significant hedgerow trees. • Bring hedgerows into lifecycle management, including periodic rejuvenation. • Promote hedgerow management practices that benefit wildlife, including dormice, such as incremental trimming and longer trimming rotations. • Establish species-rich hedgerows. 	Unmapped

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Establish more hedgerow trees	<ul style="list-style-type: none"> • Plant new hedgerow trees of appropriate varieties. • Recreate hedgerow pollards. • Increase overall canopy cover area by the creation of agroforestry crops and shelterbelts (primarily within in-field areas), using a broad range of species to increase diversity and promote climate and pest/disease resilience. 	Mapped where possible when linked to other measures [PM12]
Create new hedgerows using appropriate native species	<ul style="list-style-type: none"> • Plant new hedgerows in appropriate areas using native species: <ul style="list-style-type: none"> ○ on field boundaries, old hedge lines, or on areas which connect existing or planned habitats. ○ next to ditches and margins • Provide a root protection zone, preferably with 15m buffers, to limit pressures and allow trees to develop and deteriorate naturally <p>[HPA14 (Bramfield, Blythburgh, Stour Valley)] Hedgerows may also be created as an unmapped measure outside of ACB areas to provide additional connectivity</p>	Mapped where possible when linked to other measures [PM11]
Restore and enhance existing hedgerows	<ul style="list-style-type: none"> • Improve hedgerows and incorporate field-edge trees, encouraging gapping up and planting to enhance connectivity. • Gap up hedgerows with a variety of locally appropriate native hedgerow species. • Lay or coppice hedgerows past peak maturity to encourage dense base regrowth and extend lifecycles, in appropriate areas following expert advice. • Maintain hedgerows associated with Roadside Nature Reserves following appropriate plans and techniques. • Create areas which allow for retention and conservation of significant hedgerow trees. • Bring hedgerows into lifecycle management, including periodic rejuvenation. • Promote hedgerow management practices that benefit wildlife, including dormice, such as incremental trimming and longer trimming rotations. • Establish species-rich hedgerows. 	Mapped where possible when linked to other measures [PM12]
Establish more hedgerow trees	<ul style="list-style-type: none"> • Plant new hedgerow trees of appropriate varieties. • Recreate hedgerow pollards. • Increase overall canopy cover area by the creation of agroforestry crops and shelterbelts (primarily within in-field areas), using a broad range of species to increase diversity and promote climate and pest/disease resilience. 	Mapped where possible when linked to other measures [PM12]

Habitats and species

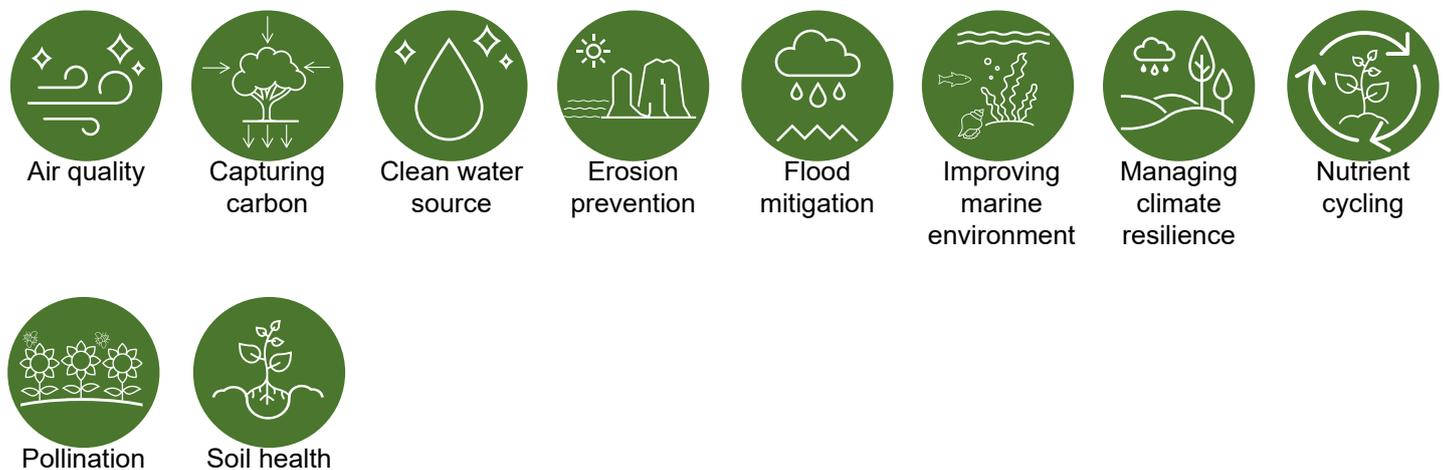
These measures support species identified in the following assemblages:

- Farmed Landscapes
- Trees Outside of Woodlands

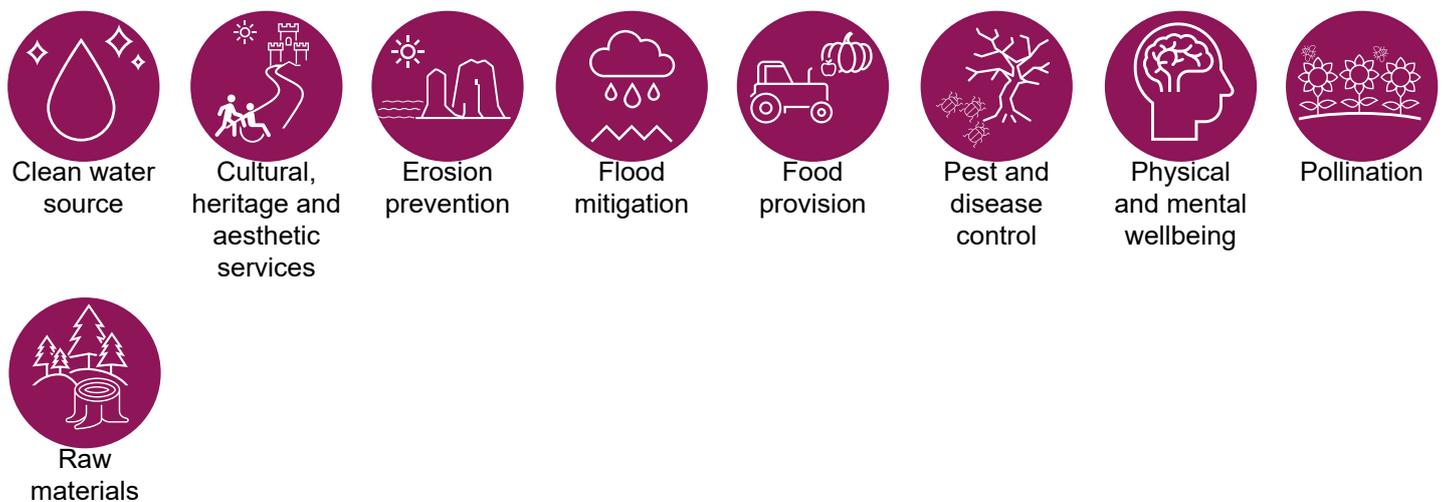
These measures could offer solutions to address pressures in:

- Woodland, Trees and Scrub
- Farmland
- Freshwater
- Grassland and Heathland
- Invasive Species and Diseases
- Coastal

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Traditional Orchards

Table 9. Traditional Orchards priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new orchards where feasible	<ul style="list-style-type: none"> Plant orchards in rural and urban areas, including community projects. Increase canopy cover area by the creation of new orchards using a broad range of species to increase diversity and promote climate and pest/disease resilience. [HPA14 (Felixstowe, Sandlings, Shotley, Stour Valley)]	Mapped [PM13]
Enlarge and expand existing traditional orchards	Plant orchard trees annually to meet appropriate defined targets.	Mapped [PM13]
Restore or enhance existing traditional orchards	<ul style="list-style-type: none"> As part of creation or regeneration processes, engage orchard owners in management, upkeep, and use, and provide education on accessing stewardship funding, training in pruning and out of management restoration. Create areas which allow for retention and conservation of significant orchards both for cultural and landscape continuity and for the genetic diversity of fruit trees and important assemblages of epiphytes, fungi and invertebrates associated with old trees and orchards. Improve and manage the grassland beneath the trees for the floristic diversity by grazing, hay cutting and enhancing with local seed where possible [HPA14 (Felixstowe, Sandlings, Shotley, Stour Valley), HPA15 (Broads)]	Mapped [PM14]

These measures are considered to support species identified in the following assemblages:

- Trees Outside of Woodlands

These measures could offer solutions to address pressures in:

- Woodland, Trees and Scrub
- Farmland
- Freshwater
- Invasive Species and Diseases
- Coastal
- Urban and Built

These measures are considered to support the following wider environmental benefits:



Air quality



Capturing carbon



Flood mitigation



Managing climate resilience



Nutrient cycling



Pollination



Soil health

These measures are considered to support the following co-benefits:



Cooling urban areas



Cultural, heritage and aesthetic services



Flood mitigation



Food provision



Pest and disease control



Physical and mental wellbeing



Pollination



Raw materials

Habitats in Urban, Built and Garden Environments

Table 10. Habitats in Urban, Built and Garden Environments priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Improve the condition of the existing urban tree estate	<ul style="list-style-type: none"> • Ensure tree management regimes are in place to improve and enhance existing trees. • Replace all trees lost due to pests, disease, damage, or health and safety concerns. • Plant using species with resilience to predicted climate change and disease, including where appropriate non-native species, using ESC profiles and Trees and Design Action Group (TDAG) guidance. Ensure all planting schemes align with existing policies and TAWS (Trees and Woodland Strategies). • Provide a root protection zone, preferably with 15m buffers, to limit pressures and allow trees to develop and deteriorate naturally. 	Unmapped Veteran trees mapped [PM50]
Increase urban tree cover	<ul style="list-style-type: none"> • New road, housing, energy and other developments should aim to establish diverse roadside wooded habitats, with consideration for road safety and impact of increased mammal populations. • Aim for an increase in towns and cities to 20% tree canopy cover. • Plant using species with resilience to predicted climate change and disease, including where appropriate non-native species, using ESC profiles. Ensure all planting schemes align with existing policies and TAWS (Trees and Woodland Strategies). <p>[HPA21]</p>	Unmapped Veteran trees mapped [PM50]

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Identify focus areas for improved garden connectivity and wildlife friendly management practices	<ul style="list-style-type: none"> • Improve the wildlife value of private gardens and promote networks of living gardens. • Ensure all new fencing installed in new development is wildlife friendly eg gravel boards have pre-cut holes for hedgehogs and small mammals to pass through. • Promote the installation of bird and bat boxes and bee bricks. • Retain hedgerows around new developments. Where access is created or widened through an existing hedgerow, replant a new native hedgerow. • Protect and enhance hedgerows in peri-urban areas. • Use mixed native hedging wherever possible, where the right species is planted in the right location. • Incorporate features in new buildings to protect and enhance wildlife, such as 'swift bricks' and 'hedgehog doors'. • Design gardens to enhance wildlife, including trees and hedgerows in boundary treatments where appropriate. • Retain ponds in the built environment. • Develop meadow areas within urban environments where possible to support pollinator species. • Include amphibian friendly features like dropped kerbs, SuDS ponds and tunnels. <p>[HPA21]</p>	<p>Unmapped</p> <p>Veteran trees mapped [PM50]</p>
Identify areas suitable for creation of community gardens	<ul style="list-style-type: none"> • Develop specific community projects, such as gardens, orchards and allotments. • Retain or create native hedgerows around allotments, alongside habitats for pollinators with long flowering periods, and berry bearing shrubs for bird species. 	<p>Unmapped</p> <p>Veteran trees mapped [PM50]</p>
Create green crossings over roads or railway lines that fragment blocks of habitat	<ul style="list-style-type: none"> • Increase permeability in urban and wider environments with features such as hedgehog highways, green bridges, and suitable underpasses. • Integrate green infrastructure corridors into development proposals to establish connections and ecological networks. 	<p>Unmapped</p> <p>Veteran trees mapped [PM50]</p>
Improve habitats associated with major transport infrastructure	<ul style="list-style-type: none"> • Improve the management of road and rail corridors. • Follow appropriate biodiversity plans designed specifically for railway network habitats and areas 	<p>Unmapped</p> <p>Veteran trees mapped [PM50]</p>

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
<p>Create new habitats through drainage and infrastructure features on development sites</p>	<ul style="list-style-type: none"> • Incorporate SuDS, including reedbeds, green roofs, swales, rain gardens, permeable paving, water butts etc. • Plant hedgerows and trees in appropriate locations, where the right species is planted in the right location. • Add ponds to newly built environments where suitable • Incorporate habitat for pollinators, with appropriate planting and cutting regimes, rotational areas with over wintering or hibernation possibilities. • Incorporate features like green roofs, green walls and high quality varied habitats within public open spaces • Retrofit existing areas with appropriate features, or make space for SuDS and other measures to reduce run-off. 	<p>Unmapped</p> <p>Veteran trees mapped [PM50]</p>
<p>Make space for more, bigger, better and joined up nature in and around built development (including within new allocations and development plans)</p>	<ul style="list-style-type: none"> • Develop high-quality habitats in school grounds to improve biodiversity (linking to Climate Action Plans). • Create habitats through parish-based recovery projects. • Enhance road verge management. • Better manage churchyards for biodiversity. • Enhance public green spaces. • Improve parks and open spaces to incorporate nature recovery techniques. • Include green corridors and stepping stones within development plans. • Promote the creation of 'edible parks' through community projects. • Create new nature reserves accessible to urban populations • Establish Community Woodlands near settlements in appropriate conditions using appropriate species. • Plant veteran trees of the future in new developments, using appropriate native species of local provenance. • Promote the creation of urban and peri-urban agricultural opportunities. • Ensure plans for lighting infrastructure takes into account appropriate intensities, wavelengths and time patterns to minimise impact on biodiversity whilst complying with required regulations. • Retain dead wood, including creating ground-level piles, wherever possible to provide habitats for various bird and invertebrate species. Areas of dead trees may need appropriate safety measures in place. 	<p>Mapped where possible</p> <p>Veteran trees mapped [PM50]</p>

Habitats and species

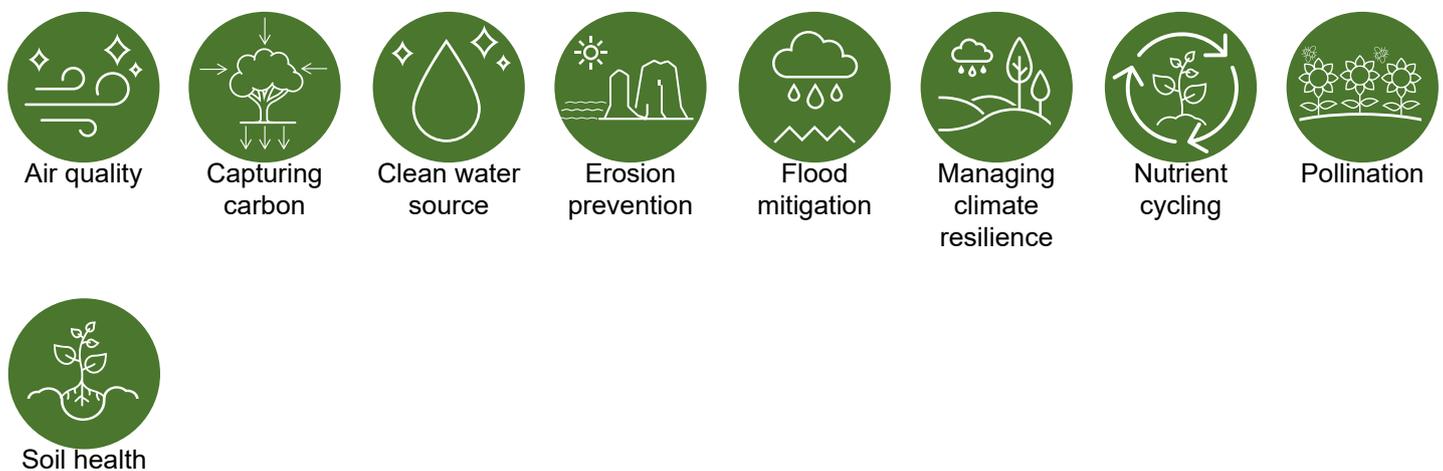
These measures are considered to support species identified in the following assemblages:

- Urban, Built and Garden Environments

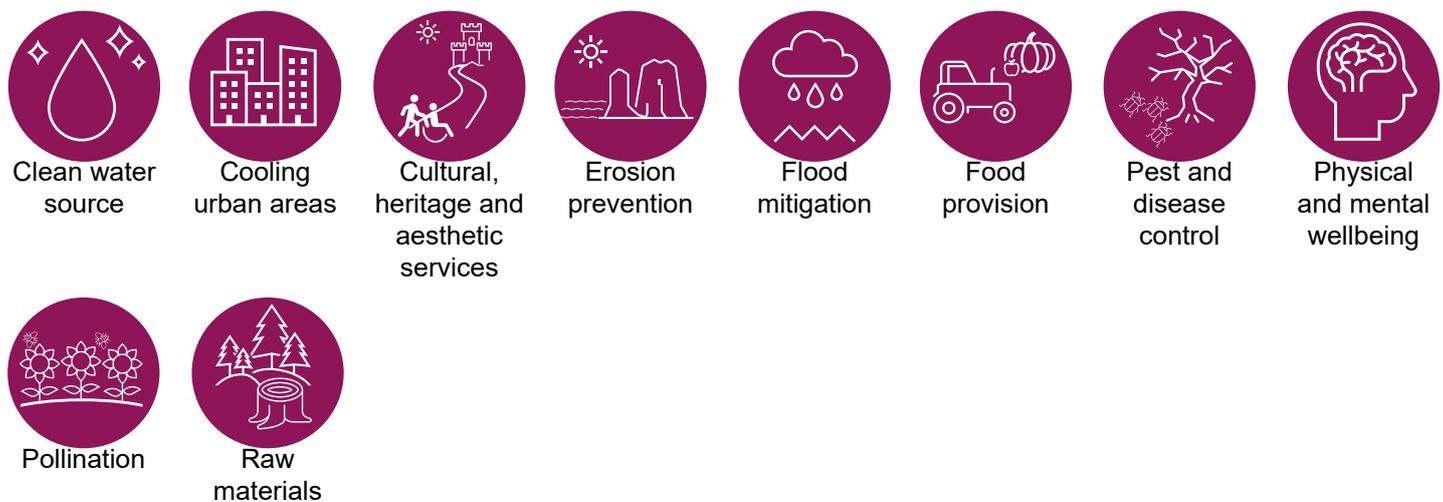
These measures could offer solutions to address pressures in:

- Woodland, Trees and Scrub
- Freshwater
- Invasive Species and Diseases
- Urban and Built

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Heathland and Acid Grassland

Table 11. Heathland and Acid Grassland priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new heathland areas where feasible and desirable	<ul style="list-style-type: none"> • Create Heath, Acid Grassland, and Woodland Enhancement Areas to establish mosaics of heathland, scrub, bare ground, acid grassland, and woodland habitats. The process of heath creation is considered a complex process due to the time required, and therefore the successional creation habitats are important for nature recovery principles. • Convert landward arable fields adjacent to coastal floodplains into heath where possible in suitable areas. • Use heather and other heathland floral seed from existing Suffolk heaths wherever possible [HPA15 (Broads), HPA07]	Mapped [PM15]
Enlarge and expand existing heathland	<ul style="list-style-type: none"> • Buffer all heathland sites to promote resilience to climate change, using appropriate expertise and new research where possible. • Increase connectivity between existing heathlands using developed creation techniques. • Include wet heath and transition areas between heath and other habitats [HPA04]	Mapped [PM15]
Restore and enhance existing heathland	<ul style="list-style-type: none"> • Promote management and controlled grazing regimes. • Incorporate mosaic features into habitats. • Remove encroaching vegetation where appropriate, incorporating adding measures to encourage rabbit populations. • Protect heathland habitats and species from human disturbance. • Where possible, promote restoration of heathland from land previously used for forestry purposes. [HPA23]	Mapped [PM16]
Create new acid grassland where feasible and desirable	Create new acid grassland at priority sites.	Mapped [PM17]
Enlarge and expand existing acid grassland	Enlarge, buffer, and reconnect sites.	Mapped [PM17]
Restore and enhance existing acid grassland	<ul style="list-style-type: none"> • Promote management and controlled grazing regimes. • Incorporate mosaic features into habitats. • Remove encroaching vegetation where appropriate. • Maintain sites in favourable condition through appropriate management. 	Mapped [PM18]

Habitats and species

These measures are considered to support species identified in the following assemblages:

- Acid Grassland and Heathland
- Brecks Grass Heath

These measures could offer solutions to address pressures in:

- Grassland and Heathlands
- Woodland, Trees and Scrub
- Farmland
- Freshwater
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



Air quality



Capturing carbon



Erosion prevention



Flood mitigation



Improving marine environment



Managing climate resilience



Nutrient cycling



Pollination



Soil health

These measures are considered to support the following co-benefits:



Cultural, heritage and aesthetic services



Erosion prevention



Flood mitigation



Food provision



Pest and disease control



Physical and mental wellbeing



Pollination

Neutral and Calcareous Grassland

Table 12. Neutral and calcareous grassland (including meadows, road verges, parks, churchyards and cemeteries) priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new grassland areas where feasible and desirable	<ul style="list-style-type: none"> • Ensure new road developments include wide verges and control new road verge provision. • Create Heath, Grassland, and Woodland Enhancement Areas to establish mosaics. • Revert arable land to grassland where possible. • Use green hay and hand-collected seed wherever possible. [HPA05]	Mapped [PM19]
Enlarge and expand existing grassland	<ul style="list-style-type: none"> • Develop land management programmes for grassland areas across the country, including churchyards and cemeteries in all dioceses, lowland meadows and grassy commons where applicable, and the majority of amenity spaces. • Use green hay and hand-collected seed wherever possible. 	Mapped [PM19]
Connect grassland areas	<ul style="list-style-type: none"> • Connect all grassland habitats, including road verge areas where feasible, potentially via agri-environment schemes. • Use green hay and hand-collected seed wherever possible. 	Mapped [PM19]
Restore and enhance existing grassland	<ul style="list-style-type: none"> • Promote appropriate grazing and management regimes. • Incorporate mosaic features within habitats. • Maximise biodiversity-enhancing practices in all grasslands including churchyards and cemeteries and known lowland meadow sites. • Enlarge and restore road verges and boost biodiversity. • Buffer existing trackways and track verges, for example those associated with rights of way and National Trails, including the King Charles III England Coast Path. • Use green hay and hand-collected seed wherever possible. • Use sustainable and financially viable methods for hay cutting and grazing. • Buffer all sites to protect from spray drift. 	Mapped [PM20]

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new, enlarge and expand and connect existing calcareous grassland areas where feasible and desirable	<ul style="list-style-type: none"> Incorporate management techniques in appropriate areas to allow natural processes to occur. Use green hay and hand-collected seed wherever possible [HPA14, HPA20]	Mapped [PM21]
Restore and enhance existing calcareous grassland	<ul style="list-style-type: none"> Re-establish lowland calcareous grassland from arable or other land. Implement appropriate grazing regimes. Use green hay and hand-collected seed wherever possible. Link to Big Chalk programme targets and projects where possible. See www.big-chalk.org [HPA14 HPA15 (East Suffolk), HPA20]	Mapped [PM22]
Create new lowland meadows and pastures where feasible and desirable	<ul style="list-style-type: none"> Incorporate management techniques in appropriate areas to allow natural processes to occur. Encourage the use of green hay processes and collection of local seeds. Revert arable land to grassland where possible. [HPA14, HPA20]	Mapped [PM23]
Enlarge and expand existing lowland meadows and pastures	Encourage the use of green hay processes and collection of local seeds. [HPA14, HPA20]	Mapped [PM23]
Connect lowland meadow and pasture areas	<ul style="list-style-type: none"> Incorporate management techniques in appropriate areas to allow natural processes to occur. Implement appropriate grazing and mowing regimes. [HPA14, HPA20]	Mapped [PM23]
Restore and enhance existing lowland meadows and pastures	<ul style="list-style-type: none"> Incorporate management techniques in appropriate areas to allow natural processes to occur. Implement appropriate grazing and mowing regimes. [HPA14, HPA20]	Mapped [PM24]

These measures are considered to support species identified in the following assemblages:

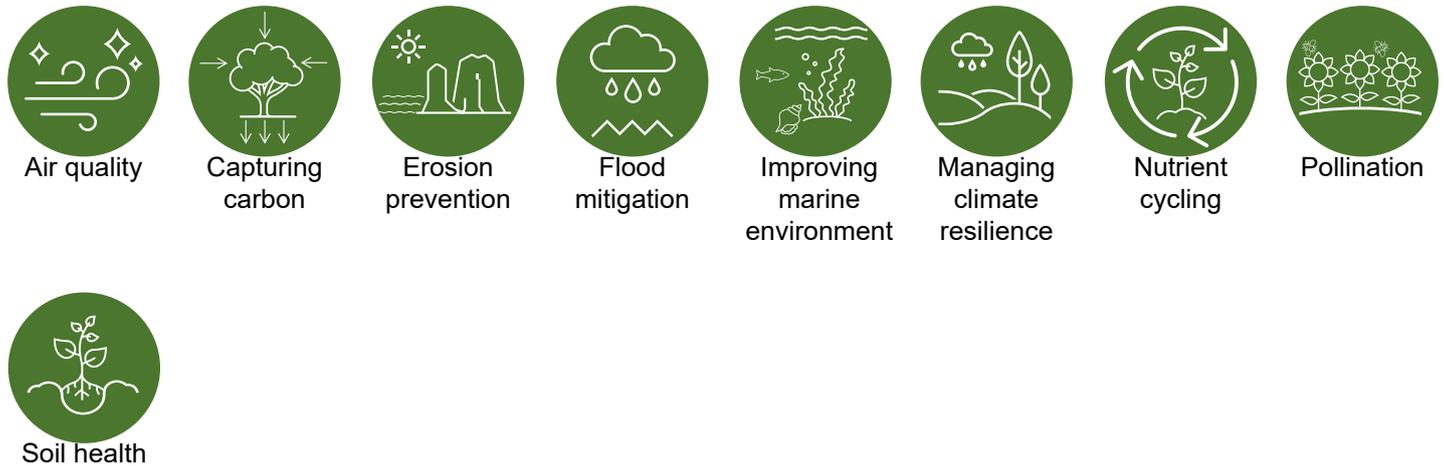
- Lowland Meadows and Pastures
- Chalk Grassland
- Brecks Grass Heath
- Farmed Landscapes
- Reedbeds and Freshwater Wetlands
- Saltmarshes and Lagoons

Habitats and species

These measures could offer solutions to address pressures in:

- Grassland and Heathlands
- Farmland
- Woodland, Trees and Scrub
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Wet Grassland

Table 13. Wet Grassland (including grazing marshes and rush pasture) priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new, enlarge and expand existing and connect wet grassland and grazing marshes where feasible and desirable	<ul style="list-style-type: none"> • Connect wet grassland blocks to create larger areas of habitat. • Ensure habitat creation efforts are complementary and strategically implemented so as not to inadvertently increase predation pressure on key priority species. Include appropriate in-field foot drains, ditches and appropriate water control structures. • Include as part of an open wetland habitat mosaic to maximise invertebrate species, using local green hay and seeds wherever possible. • Instigate appropriate grazing and water level management regimes to benefit breeding waders and wintering wildfowl. • Include predator-proof fencing. <p>[HPA02, HPA05-08, HPA14 (Felixstowe, Sandlings, Shotley, Stour Valley), HPA19, HPA21, HPA23, HPA26, HPA28, Suffolk and Essex Coasts and Heaths, Dedham Vale)]</p>	Mapped [PM25]
Restore and enhance existing wet grassland and grazing marshes	<ul style="list-style-type: none"> • Maintain and enhance priority areas of grazing marsh through site management agreements. • Use appropriate water level management practices, including maintaining and extending existing ditch systems. • Remove scrub and woodland where appropriate to create a variety of grazed and tall vegetation structures. • Promote appropriate grazing management regimes for breeding waders and wintering wildfowl. • Minimise refuges/perches for predators next to areas utilised by breeding waders. <p>[HPA02, HPA14 (Felixstowe, Sandlings, Shotley, Stour Valley), HPA15, HPA19, HPA21, HPA26, HPA28, Suffolk and Essex Coasts and Heaths, Dedham Vale)]</p>	Mapped [PM26]

Habitats and species

These measures are considered to support species identified in the following assemblages:

- Lowland Meadows and Pastures
- Reedbeds and Freshwater Wetlands
- Saltmarshes and Lagoons
- Farmed Landscapes

These measures could offer solutions to address pressures in:

- Grassland and Heathlands
- Farmland
- Woodland, Trees and Scrub
- Freshwater
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



Air quality



Capturing carbon



Clean water source



Erosion prevention



Flood mitigation



Improving marine environment



Managing climate resilience



Nutrient cycling



Pollination



Soil health

These measures are considered to support the following co-benefits:



Clean water source



Cultural, heritage and aesthetic services



Erosion prevention



Flood mitigation



Food provision



Pest and disease control



Physical and mental wellbeing



Pollination

Open Mosaic Habitat on Previously Developed Land

Table 14. Open Mosaic Habitat on Previously Developed Land (including brownfield and landfill) priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new open mosaic habitat where feasible and desirable	<ul style="list-style-type: none"> • Secure the inclusion of valuable sites as recognised natural open spaces in Green Infrastructure strategies. • Develop protocols to allow land in new developments to be left for natural colonisation, ensuring ongoing opportunities for habitat creation. • Within urban areas, include creation of OMH at ground level, especially as a interim measure during planning and development phases, alongside integrating within permanent landscape schemes. • Consider the potential of green and brown roofs to enhance the availability of this habitat. [HPA20, HPA21]	Mapped [PM27]
Enlarge and expand existing open mosaic habitat where feasible	<ul style="list-style-type: none"> • Secure the inclusion of valuable sites as recognised natural open spaces in Green Infrastructure strategies. • Develop protocols to allow land in new developments to be left for natural colonisation, ensuring ongoing opportunities for habitat creation. • Ensure scrub removal, ploughing, turf removal, and the creation of steep open exposures at key former gravel workings. [HPA04, HPA20, HPA21]	Mapped [PM27]
Improve and enhance existing open mosaic habitat	See 'Enlarge and expand existing open mosaic habitat where feasible'	Mapped [PM28]

Habitats and species

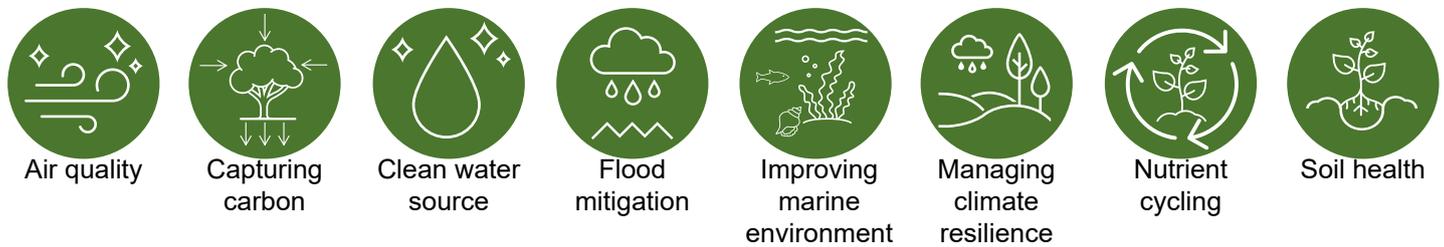
These measures are considered to support species identified in the following assemblages:

- Scrub and Mosaic
- Urban, Built and Garden Environments

These measures could offer solutions to address pressures in:

- Grassland and Heathlands
- Farmland
- Woodland, Trees and Scrub
- Urban and Built
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Rivers and Streams

Table 15. Rivers and Streams priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Restore and enhance existing rivers, streams and ditches	<ul style="list-style-type: none"> • Reconnect rivers with floodplains, removing barriers along the river course where feasible. • As appropriate, remove invasive non-native species. • Improve water quality using nature-based solutions, sustainable practices and improved waste water treatment practices eg within household septic tanks. • Allow natural river morphological processes to take place. • Reduce erosion of river banks using appropriate planting techniques and regimes or structures. • Restore ditch and dyke habitats using appropriate species translocation, water quality testing and planned clearance to maintain water flow. • Reduce drainage and holding water on the floodplains which may involve blocking ditches. • Use nature-based solutions, such as retaining fallen trees in watercourses, creating leaky dams, and upstream natural flood management, to restore and enhance rivers. • Employ appropriate river restoration techniques as determined by expert advice – this may include restoring meanders, enhancing channels, modifying river beds, diversion, enhancing outfalls and using in-channel features such as shallow water and gravel beds • Always aim to address the range of challenges facing rivers and stream by utilising the Catchment Based Approach (CABA). • Work with Catchment Partnership organisations to ensure measures align with locally written and agreed Catchment Action Plans. • Establish habitat buffers between arable land and watercourses to reduce agricultural runoff and mitigate diffuse pollution. • Develop opportunities for establishing ‘treatment wetlands’ to clean post treatment wastewater before it enters rivers and streams. • ‘Slow the flow’ and improve infiltration of water into soils through creation of suitable habitats in appropriate locations, such as grassland, woodland, scrub mosaics. <p>[HPA05-08, HPA10, HPA14 (Waveney, Water and Woodlands, Bramfield, Blythburgh), HPA15, HPA17, HPA20 (Breckland, East Suffolk, West Suffolk), HPA29 (Suffolk and Essex Coasts and Heaths, Dedham Vale)]</p>	Mapped [PM29]

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
<p>Improve management of water resources through nature-based solutions, (also referred to as Natural Flood Management)</p>	<ul style="list-style-type: none"> • Mitigate against pollution, abstractions, droughts, and floods, as well as physical modifications such as land use changes, drainage, soil erosion, channelisation and barriers. • Reforestation, increasing the number of trees and vegetation biomass within the catchment where appropriate, but to avoid significantly increasing tree cover which shades out chalk stream or other specialist aquatic plants. Caution must be applied for use of large tree species, due to a high water demand, reducing flows in the chalk stream. • Maintenance of soil structure and vegetation cover. • Restoration of a more natural bed level and run-off attenuation features. • Floodplain reconnection to alleviate short-term flooding. In addition, to enhance resources and increase subsequent summer flow rates, target flood water storage away from discharge zones ie headwater opportunities with the correct geology, where there is connectivity with the underlying aquifer. <p>[HPA01, HPA15, HPA16, HPA17, HPA29 (Suffolk and Essex Coasts and Heaths, Dedham Vale)]</p>	<p>Mapped [PM30]</p>
<p>Strengthen mosaic of wetland habitats along river channels</p>	<ul style="list-style-type: none"> • Restore rivers by recreating what would occur naturally and is appropriate to the type of river, its energy and landscape, its natural character, and is based on the restoration of natural processes. • Restore a more natural mosaic of habitats, by reducing drainage and adopting appropriate management, which could benefit chalk streams and improve valley fen or grazing marsh habitat. <p>[HPA15, HPA16, HPA17, HPA20, HPA27 (River Waveney Trust) HPA29 (Suffolk and Essex Coasts and Heaths, Dedham Vale)]</p>	<p>Mapped [PM30]</p>
<p>Improve river, riparian and floodplain habitat</p>	<ul style="list-style-type: none"> • Reinststate the natural processes of water bodies to re-create more natural morphology, water velocities and increase biodiversity. • Retain riparian trees in appropriate areas. • Revert arable land on naturally wet soil to appropriate floodplain habitat to increase biodiversity. <p>[HPA14, HPA15, HPA16, HPA17, HPA20, HPA27 (River Waveney Trust) HPA29 (Suffolk and Essex Coasts and Heaths, Dedham Vale)]</p>	<p>Mapped [PM30]</p>

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Restore and enhance chalk stream habitats	<ul style="list-style-type: none"> • Restoration of river meanders as appropriate to the natural character of the chalk stream. • Use of riparian trees to cool chalk streams. • Reconnection of the stream and the flood plain. • Implement changes to channel morphology to restore energy to the system to enable natural processes to remove silt from the gravel bed • Use the CaBA Chalk Stream Strategy detailing the ecological basis for improving the health of chalk streams - a culmination of restoring flows, improving water quality and restoration of habitat. • Link to Big Chalk programme targets and projects where possible. See www.big-chalk.org <p>[HPA 09, HPA15, HPA17, HPA21 (Breckland)]</p>	Mapped [PM29]

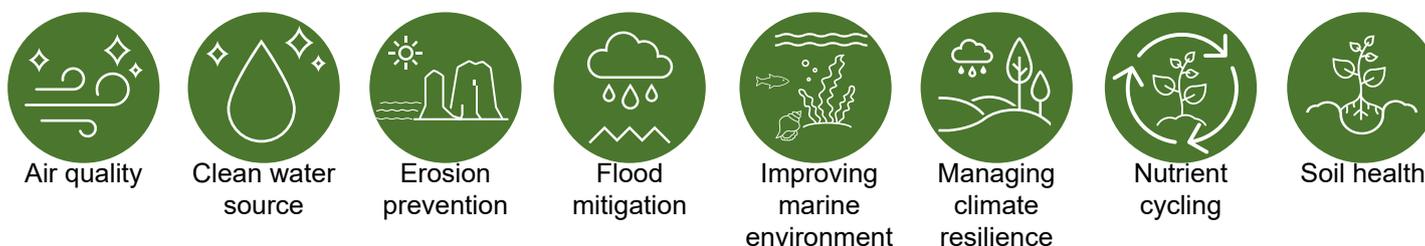
These measures are considered to support species identified in the following assemblages:

- Rivers and Riverside Habitats

These measures could offer solutions to address pressures in:

- Freshwater
- Farmland
- Woodland, Trees and Scrub
- Urban and Built
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Clean water source



Cooling urban areas



Cultural, heritage and aesthetic services



Erosion prevention



Flood mitigation



Food provision



Pest and disease control



Physical and mental wellbeing



Raw materials

Still Water Habitats

Table 16. Still Water Habitats priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create or re-create new still water habitats where feasible and desirable	<ul style="list-style-type: none"> • Include ponds as integral parts of green infrastructure. • Re-establish or create ponds of high wildlife value, avoiding damage to Priority Habitats. New high-quality pond sites should form part of a network of clean water ponds with high biodiversity potential. • Refer to appropriate district level licensing schemes for links to great crested newts. <p>[HPA14 (Bramfield, Blythburgh, Stour Valley, HPA15, HPA21, HPA26 HPA28 and HPA29, (Suffolk and Essex Coasts and Heaths, Dedham Vale)</p> <p>Ponds may also be created or re-created as an unmapped measure outside of ACB areas to provide additional connectivity</p>	Mapped where possible [PM30 or PM31]
Restore appropriate pond habitats	<ul style="list-style-type: none"> • Restore ghost or lost ponds and improve ponds in poor condition. • Support pond restoration and creation through projects like the Norfolk Ponds Project. • Buffer ponds from any impacts of arable farming with permanent grass margins. • Manage margins to ensure scrub does not surround pond habitats <p>[HPA14 (Bramfield, Blythburgh, Stour Valley, HPA15, HPA23, HPA26, HPA28 and HPA29, (Suffolk and Essex Coasts and Heaths, Dedham Vale)</p> <p>Ponds may also be restored as an unmapped measure outside of ACB areas to provide additional connectivity.</p>	Mapped [PM31]
Restore, maintain and enhance lake and Broads habitats	<ul style="list-style-type: none"> • Control and manage invasive non-native species. • Restore diverse macrophyte communities in shallow lakes. • Trial innovative restoration techniques and identify maintenance and enhancement needs for aquatic communities. • Restore shallow lakes to a clear water state using appropriate techniques such as sediment, vegetation and fish removal. <p>[HPA08, HPA11, HPA14, (Waveney, Water & Woodlands), HPA15]</p>	Mapped [PM56]

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Enhance existing pond habitats	<ul style="list-style-type: none"> • Control and manage invasive non-native species. • Improve water quality by reducing water and atmospheric pollution, over-abstraction, light pollution, and recreational pressures. Control invasive species, and implement biosecurity measures. • Clear woody vegetation from most significant and mere sites, retaining some wet woodland. Maintain diverse vegetation structures around margins and within water bodies using grazing and mechanical methods. • Support community projects for pond development and maintenance. • Retain and improve the biodiversity of ponds in the built environment. • Selectively fell around ponds, connecting them via networks of rides. • Assess and reduce cover on existing overshadowed ponds. • Periodically dig out ponds that have become over silted. <p>[HPA04, HPA14 (Bramfield, Blythburgh, Stour Valley, HPA15, HPA21, HPA23, HPA26, HPA28 and HPA29, (Suffolk and Essex Coasts and Heaths, Dedham Vale), HPA31]</p>	Mapped [PM32]
Restore, maintain and enhance lake and Broads habitats	<ul style="list-style-type: none"> • Control and manage invasive non-native species. • Restore diverse macrophyte communities in shallow lakes. • Trial innovative restoration techniques and identify maintenance and enhancement needs for aquatic communities. • Restore shallow lakes to a clear water state using appropriate techniques such as sediment, vegetation and fish removal. <p>[HPA08, HPA11, HPA14, (Waveney, Water & Woodlands), HPA15]</p>	Mapped [PM32]
Restore wetlands, including open water, fen and reedbed	Use former gravel pits and mineral workings, especially in river valleys, as potential sites for restoration of wetlands, including open water, fen and reedbed.	Mapped where possible [PM32, PM33, PM35]

These measures are considered to support species identified in the following assemblages:

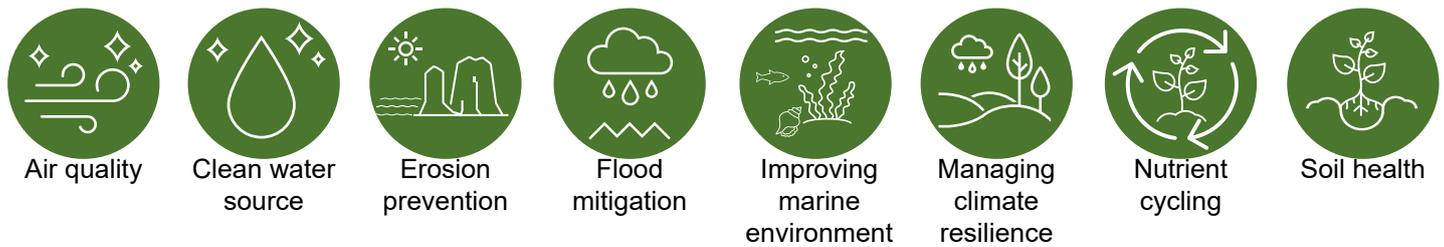
- Still Waters
- Farmed Landscapes
- Scrub and Mosaic

Habitats and species

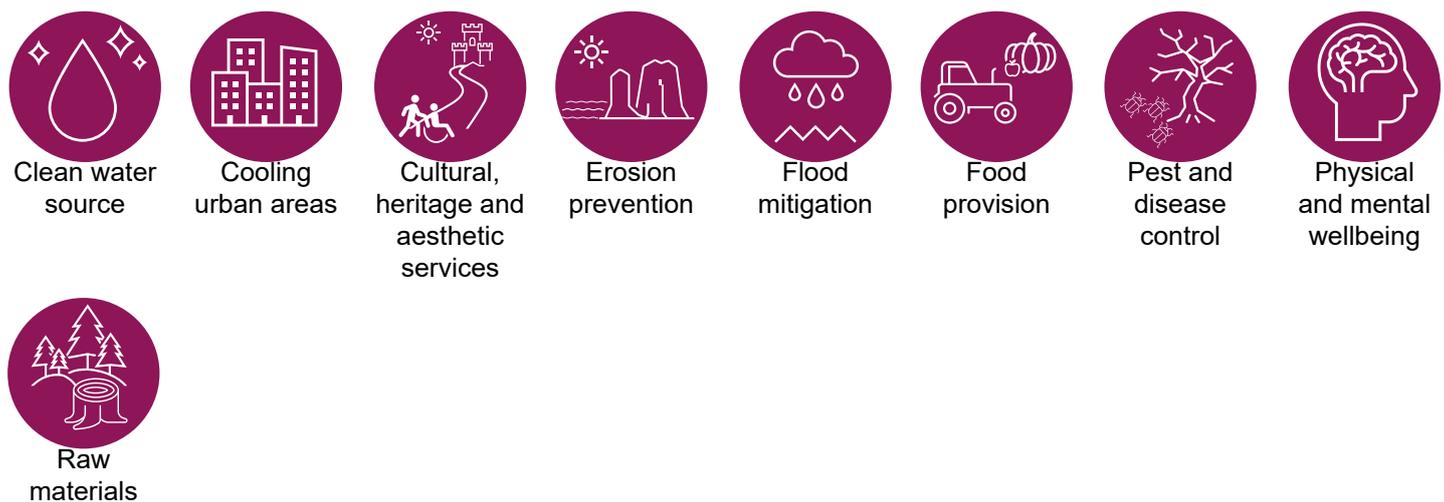
These measures could offer solutions to address pressures in:

- Freshwater
- Farmland
- Woodland, Trees and Scrub
- Urban and Built
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Fen Habitats

Table 17. Fen Habitats priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new fen habitats and wetlands	<ul style="list-style-type: none"> • Create new fen to replace those at risk from climate change impacts by identifying fen refugia areas, managing their hydrology, translocating vegetation where appropriate and re-seeding using local seed sources wherever possible • Manage the water table effectively to ensure levels are sufficient for habitat creation. [HPA15, HPA17]	Mapped [PM33]
Enlarge, expand and connect existing fen habitats	<ul style="list-style-type: none"> • Remove most scrub and woodland from fen and wetland sites, creating a mix of grazed and tall vegetation structures through flexible extensive grazing or mechanical management. Retain some wet woodland as part of the habitat. • Link fen restoration and expansion to ELMS and other projects in order to establish wildlife corridors. • Ensure appropriate water quantity and quality for existing sites, in light of climate change and pressures on supply. [HPA04, HPA14 (Felixstowe, Sandlings), HPA30 (Suffolk and Essex Coasts and Heaths, Dedham Vale)]	Mapped [PM33]
Restore and enhance existing fen habitats	<ul style="list-style-type: none"> • Enhance priority fen areas through site management agreements, prescriptions, and support services for site managers, in conjunction with reedbed, grazing marsh, and wet woodland control measures. • Control invasive species within wetlands. • Link fen restoration and expansion to ELMS projects. • Ensure appropriate water quantity and quality for existing sites, in light of climate change and pressures on supply [HPA0 2, HPA15, HPA23, HPA26, HPA30 (Suffolk and Essex Coasts and Heaths, Dedham Vale)]	Mapped [PM34]

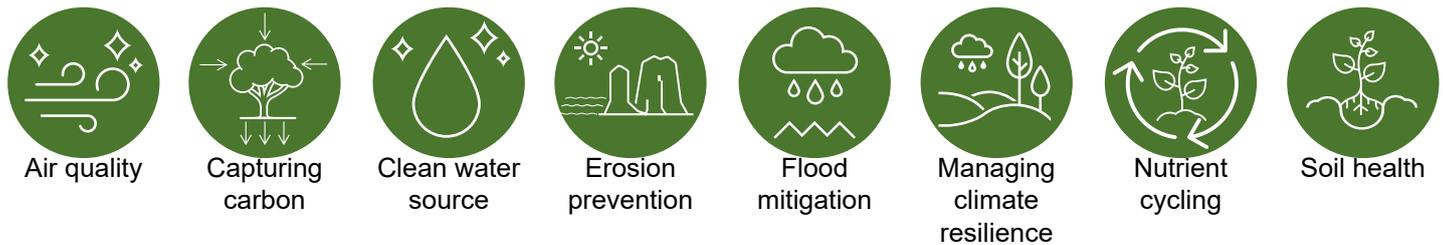
These measures are considered to support species identified in the following assemblages:

- Lowland Fen

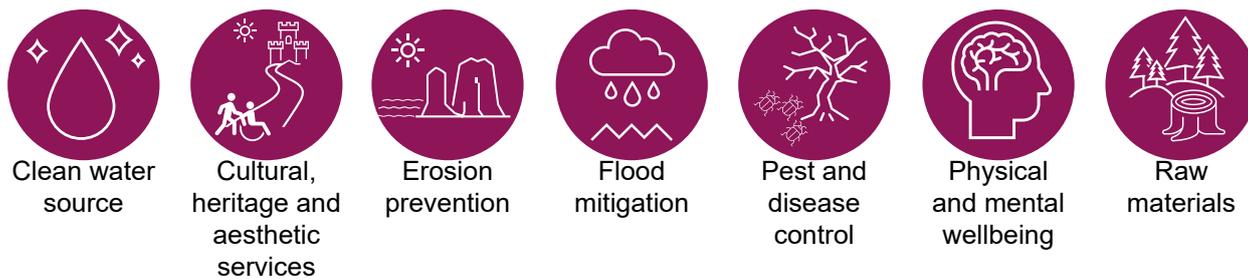
These measures could offer solutions to address pressures in:

- Freshwater
- Farmland
- Woodland, Trees and Scrub
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Reedbeds

Table 18. Reedbeds priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new reedbed habitat	<ul style="list-style-type: none"> • Create new reedbeds to replace those at risk from coastal management changes. • Where appropriate, reconnect fragmented wetlands and reedbeds with existing habitats. • Explore opportunities to create new reedbeds and link them with other projects to establish wildlife corridors. [HPA02, HPA06, HPA15, HPA18, HPA28 (Suffolk and Essex Coasts and Heaths)]	Mapped [PM35]
Enlarge, expand and connect existing reedbed habitat	<ul style="list-style-type: none"> • Incorporate SuDS, including reedbeds and natural filtration systems, to manage floods while creating habitats and green corridors. • Explore opportunities to create new reedbeds and link them with other projects to establish wildlife corridors. • Develop a reed management policy, maintaining and extending reedbed fringe habitats along Board drains where feasible. [HPA 02, HPA06, HPA14 (Felixstowe, Sandlings), HPA15, HPA18]	Mapped [PM35]
Restore and enhance existing reedbed habitat	<ul style="list-style-type: none"> • Restore rivers, fens, and reedbeds (peatland). • Enhance priority fen, reedbed, grazing marsh, and wet woodland areas via site management agreements, prescriptions, and support services for site managers. • Improve reedbeds through appropriate water level management that facilitates healthy fish populations and prevents drying, to prevent succession of this transitional habitat to woodland. Also, implement a scrub management regime for this purpose. Develop a reed management policy, maintaining and expanding reedbed fringe habitats along Board drains where feasible. [HPA05, HPA02, HPA13, HPA23, HPA27]	Mapped [PM36]

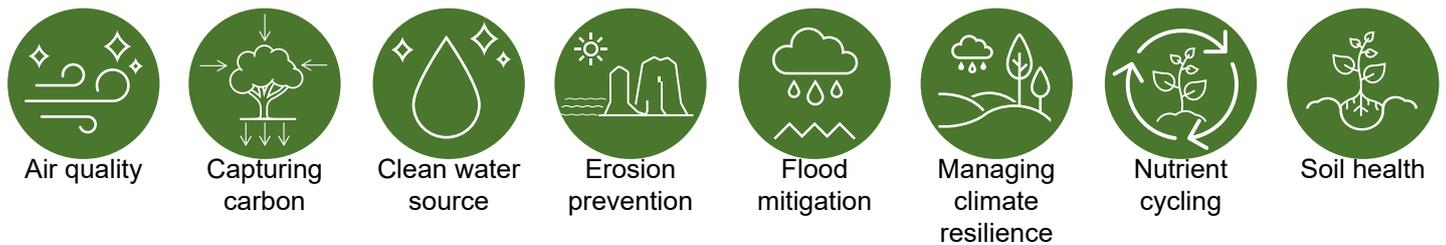
These measures are considered to support species identified in the following assemblages:

- Reedbeds
- Freshwater Wetlands

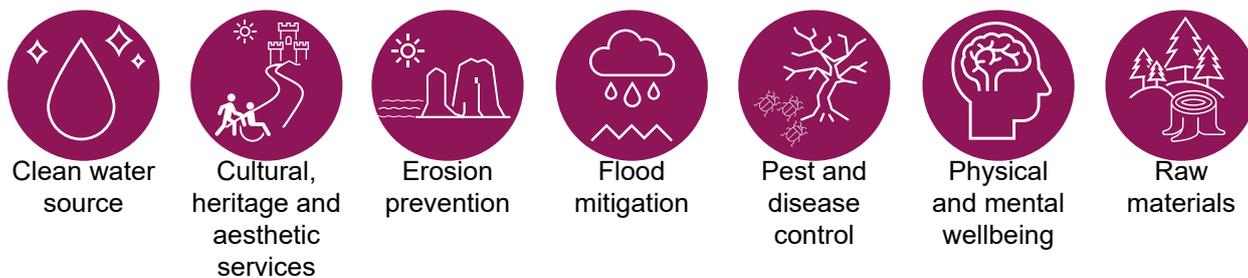
These measures could offer solutions to address pressures in:

- Freshwater
- Coastal
- Farmland
- Woodland, Trees and Scrub
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Coastal Saltmarsh and Intertidal Mudflats

Table 19. Coastal Saltmarsh and Intertidal Mudflats priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new, enlarge and expand existing saltmarsh where feasible and desirable	<ul style="list-style-type: none"> • Allow saltmarsh to develop naturally and migrate inland where feasible, restoring the coastal floodplain through managed realignment and Regulated Tidal Exchange (eg removing or breaching artificial structures). • Actively convert grazing marsh areas at high risk of sea defence failure to saltmarsh or brackish marsh. • Identify areas around the coast and estuaries where saltmarsh could be created in preparation for future adaptation and to support management of protected sites. <p>[HPA12, HPA14 (Felixstowe, Sandlings, Shotley), HPA15, HPA18, HPA28 (Suffolk and Essex Coasts and Heaths)]</p>	Mapped [PM37]
Restore and enhance existing saltmarsh	<ul style="list-style-type: none"> • Allow saltmarsh to develop naturally and migrate inland where feasible, restoring the coastal floodplain through managed realignment and Regulated Tidal Exchange (eg removing or breaching artificial structures). • Improve saltmarsh management in areas outside SAC, SSSI, and Ramsar designations using appropriate methods such as grazing management, vegetation planting, management of pollution events, management of access, freshwater input and drainage. Refer to appropriate documentation where possible Saltmarsh management manual - GOV.UK [28]. • Implement appropriate management measures to minimise recreational disturbance, linking to strategic solutions where appropriate. • Implement Beneficial Use of Dredged Sediment (BUDS) as a saltmarsh restoration tool and potential to build resilience of existing saltmarsh. <p>[HPA12, HPA14 (Felixstowe, Sandlings, Shotley), HPA15 (East Suffolk), HPA18, HPA23, HPA28 (Suffolk and Essex Coasts and Heaths)]</p>	Mapped [PM38]

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Create new, enlarge and expand existing intertidal mudflats where feasible and desirable	<ul style="list-style-type: none"> Implement shoreline management strategies, including managed realignment and Regulated Tidal Exchange. Identify areas around the coast and estuaries where mudflats could be created in preparation for future adaptation and to support management of protected sites. [HPA12, HPA14 (Shotley), HPA15 (East Suffolk), HPA18, HPA23, HPA28 (Suffolk and Essex Coasts and Heaths)]	Mapped [PM39]
Restore and enhance existing intertidal mudflats	See 'Create new intertidal mudflats where feasible and desirable'	Mapped [PM40]

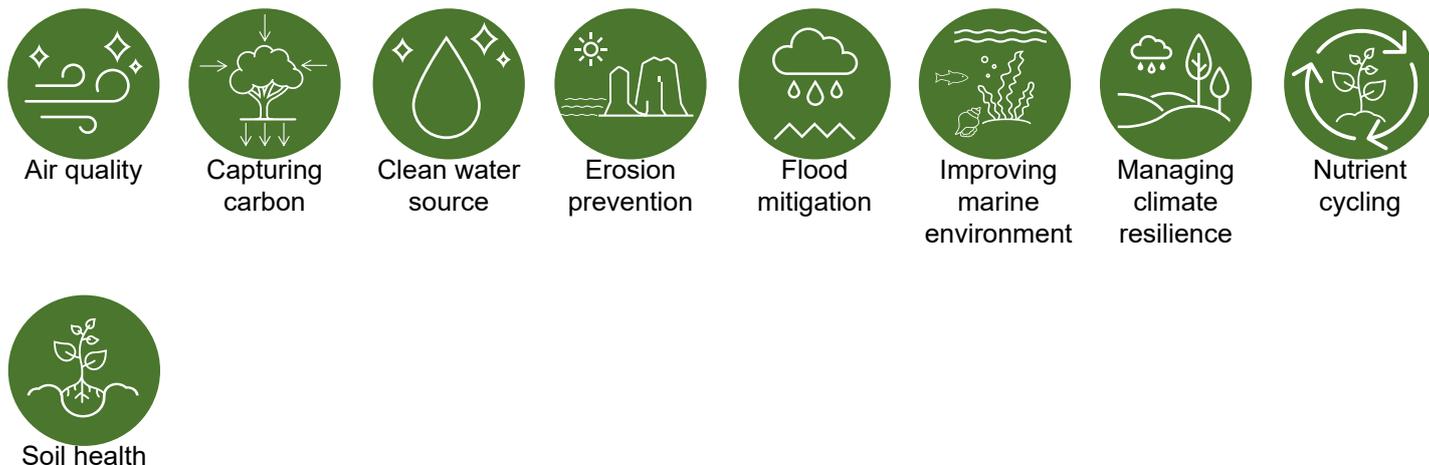
These measures are considered to support species identified in the following assemblages:

- Saltmarshes and Lagoons

These measures could offer solutions to address pressures in:

- Freshwater
- Coastal
- Farmland
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Clean water source



Cultural, heritage and aesthetic services



Erosion prevention



Flood mitigation



Food provision



Pest and disease control



Physical and mental wellbeing



Raw materials

Coastal Sand Dunes

Table 20. Coastal Sand Dunes priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Facilitate the formation of new coastal sand dunes	<ul style="list-style-type: none"> • Allow natural coastal processes to enable dunes to develop, move, and function naturally. • Facilitate a wide zone of transition between Mean High Water and the backshore to accommodate a range of coastal plants. • Facilitate dune formation using appropriate planting eg use of marram grass. • Implement shoreline management, including incorporating new areas of shingle into land adaptation projects on the coast where possible and allowing vegetation to regenerate naturally. <p>[HPA15, (Broads, East Suffolk)] HPA19]</p>	Mapped [PM41]
Enlarge and expand existing coastal sand dunes	<ul style="list-style-type: none"> • Allow natural coastal processes to enable dunes to develop, move, and function naturally. • Restore dune slacks to create a succession of habitats for dune slack species, restore natural functioning to dune systems constrained by sea defences and facilitate dune roll-back. • Enhance connectivity between dune systems by improving remnant dunes and creating ecotones with inland habitats. 	Mapped [PM41]
Restore and enhance existing coastal sand dunes	<ul style="list-style-type: none"> • Allow natural coastal processes to enable existing dunes to move and function naturally, increasing their resilience. • Improve sand dune management outside designated areas (eg SAC, SSSI, Ramsar). • Use techniques detailed in published advice such as The Sand Dune Managers Handbook: second edition – Natural England [29]. • Mitigate impacts from recreational disturbance through strategic solutions eg innovative signage and management techniques. • Control invasive species. • Restore dune slacks to create a succession of habitats for dune slack species, restore natural functioning to dune systems constrained by sea defences and facilitate dune roll-back. • Enhance connectivity between dune systems by improving remnant dunes and creating ecotones with inland habitats. <p>[HPA19]</p>	Mapped [PM42]

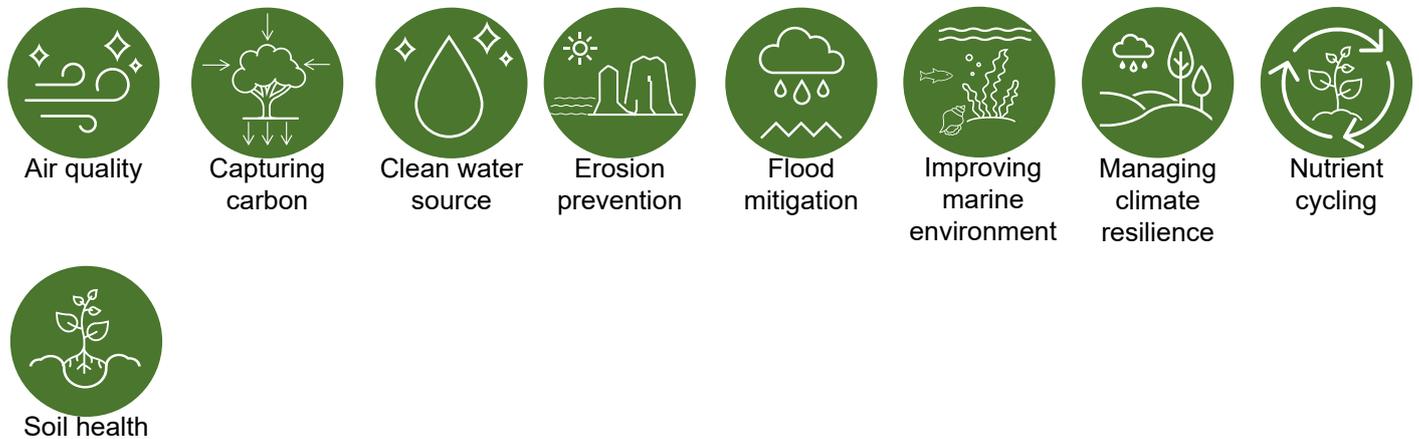
These measures are considered to support species identified in the following assemblages:

- Coastal Shingle and Dunes

These measures could offer solutions to address pressures in:

- Coastal
- Freshwater
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Coastal Vegetated Shingle

Table 21. Coastal Vegetated Shingle priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Facilitate the formation of new coastal vegetated shingle	<ul style="list-style-type: none"> Allow natural coastal processes to enable vegetated shingle to develop, move, and function naturally. Implement shoreline management, including managed realignment. [HPA15] (East Suffolk), HPA19, HPA28 (Suffolk and Essex Coasts and Heaths)]	Mapped [PM43]
Enlarge and expand existing coastal vegetated shingle	Implement shoreline management, including managed realignment. [HPA15] (East Suffolk), HPA19, HPA28 (Suffolk and Essex Coasts and Heaths)]	Mapped [PM43]
Restore and enhance existing coastal vegetated shingle	<ul style="list-style-type: none"> Allow natural coastal processes to enable vegetated shingle to function naturally. Improve vegetated shingle management outside designated areas (such as SAC, SSSI, Ramsar). Techniques include: minimising disturbance, using traditional land management techniques on adjacent grassland, preventing scrub encroachment, and leaving tidal debris, driftwood and seaweed on the beach. Mitigate recreational disturbance impacts through strategic solutions eg. innovative signage and management techniques. Implement shoreline management, including managed realignment. [HPA15 (East Suffolk), HPA19, HPA23, HPA28 (Suffolk and Essex Coasts and Heaths)]	Mapped [PM44]

These measures are considered to support species identified in the following assemblages:

- Coastal Shingle and Dunes

These measures could offer solutions to address pressures in:

- Coastal
- Freshwater
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



Air quality



Erosion prevention



Improving marine environment



Managing climate resilience



Nutrient cycling

These measures are considered to support the following co-benefits:



Cultural, heritage and aesthetic services



Erosion prevention



Pest and disease control



Physical and mental wellbeing

Maritime Cliffs and Slopes

Table 22. Maritime Cliffs and Slopes priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Facilitate the formation of appropriate maritime slopes	<ul style="list-style-type: none"> Allow natural coastal processes to enable maritime cliffs and slopes to develop, move, and function naturally. Implement shoreline management, including managed realignment. [HPA15 (East Suffolk, HPA19)]	Mapped [PM48]
Enlarge and expand existing maritime cliffs and slopes	See 'Facilitate the formation of appropriate maritime slopes'	Mapped [PM48]
Restore and enhance existing maritime cliffs and slopes	See 'Facilitate the formation of appropriate maritime slopes'	Mapped [PM47]

These measures are considered to support species identified in the following assemblages:

- Chalk Grassland
- Acid Grassland and Heathland
- Lowland Meadows and Pastures

These measures could offer solutions to address pressures in:

- Coastal
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Cultural,
heritage and
aesthetic
services



Erosion
prevention



Pest and
disease
control



Physical
and mental
wellbeing



Pollination

Saline Lagoons

Table 23. Saline Lagoons priorities and potential measures

Priority	Potential Measure(s) and [Evidence Code(s)]	Map Status
Facilitate the formation of new and connect saline lagoons	<ul style="list-style-type: none"> • Allow natural coastal processes to enable new saline lagoons to develop and function naturally. • Create new saline lagoons in strategic locations to provide stepping stones and increase resilience to climate change impacts. • To create new saline lagoons, it may be necessary for regulated tidal exchange to be used. • Implement shoreline management, including managed realignment. <p>[HPA 12, HPA15 (East Suffolk, HPA19, HPA28, (Suffolk and Essex Coasts and Heaths)]</p>	Mapped [PM45]
Restore and enhance existing saline lagoons	<ul style="list-style-type: none"> • Allow natural coastal processes to enable existing saline lagoons to function naturally. • Improve saline lagoon management in areas outside SAC, SSSI, and Ramsar designations. Techniques include: maintaining water quality levels, minimising disturbance, maintaining structural diversity, controlling encroachment and maintaining the margins • Implement shoreline management, including managed realignment. <p>[HPA 12, HPA15 (East Suffolk, HPA19, HPA23, HPA28, (Suffolk and Essex Coasts and Heaths)]</p>	Mapped where possible [PM46]

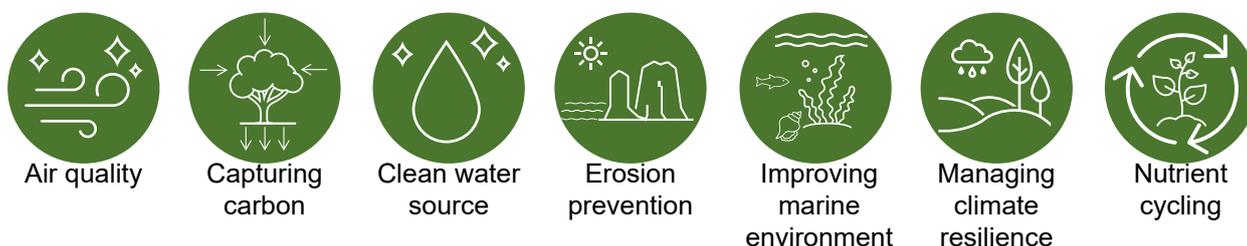
These measures are considered to support species identified in the following assemblages:

- Saltmarshes and Lagoons

These measures could offer solutions to address pressures in:

- Coastal
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Clean water
source



Cultural,
heritage and
aesthetic
services



Erosion
prevention



Food
provision



Pest and
disease
control



Physical
and mental
wellbeing

Mapping potential measures to create mosaic habitats

Allowing dynamic habitat mosaics consisting of different habitat types to develop in some places is important in supporting the full diversity of habitats and species that would naturally occur in a place. This is especially important at a large scale where such mosaics can be allowed to develop under minimal human led management, which might not be feasible to resource at such a scale or desirable in terms of habitat outcomes.

The dynamic habitat mosaic approach can instead embrace natural processes such as grazing and disturbance to shape the habitats, with the ambition to produce diverse areas with varied vegetation structure and crucial transitional zones (eg from dry to wet habitats, open to closed vegetation, bare to covered ground).

Dependent on the underlying conditions, the habitats that would naturally

occur would be established to largely undetermined outcomes, allowing them to adapt and develop resilience to pressures such as climate change.

These habitats can be created on a variety of scales and would be considered to facilitate ambitious recovery projects. Where possible, they can be included within the spatially mapped opportunities within this strategy, but could also be considered part of the wider priorities and measures that could take place across the county, facilitated by all stakeholders.

Mosaics have been mapped to those parcels where multiple habitats comprising a natural succession of habitats were suggested through the rules based mapping, where the distinctiveness of those habitats (as defined for BNG purposes) is the same or similar, and where there is widespread distribution of these habitats throughout the county.



Prioritising species

The foundation of this work began with a thorough review of 1284 species of concern across Suffolk, derived from authoritative sources such as Natural England and the National Biodiversity Network. Employing a robust scoring system, developed in collaboration with stakeholders and experts, species were assessed for their conservation status,

ecological significance, and vulnerability. This systematic process reduced the longlist to 261 species, which were further defined as 21 key species for focused action, detailed in **Tables 39-59**, while the remaining were grouped into habitat-based assemblages (**Tables 24-38**). All relevant species are in **Tables 67-69** and full details are available in **Appendix 2**. The key species are shown below in **Figure 10**.

Figure 10. Key species



**Bark-sulphur
firedot**
*Caloplaca
flavorubescens*



**Basil-thyme case-
bearer**
Coleophora tricolor



Crested cow-wheat
*Melampyrum
cristatum*



Dwarf eelgrass
Zostera noltei



Eurasian curlew
Numenius arquata



European eel
Anguilla anguilla



Fen raft spider
*Dolomedes
plantarius*



Hazel dormouse
*Muscardinus
avellanarius*



Kittiwake
Rissa tridactyla



Lapwing
Vanellus vanellus



**Little whirlpool
ramshorn snail**
Anisus vorticulus



**Narrow-mouthed
whorl snail**
Vertigo angustior



Orange-fruited elm lichen
Caloplaca luteoalba/
Gyalolechia
flavorubescens



Rosser's sac-spider *Clubiona*
rosserae



Scarce vapourer
Orgyia recens



Serotine bat
Eptesicus serotinus



Starlet sea anemone
Nematostella
vectensis



Suffolk lungwort
Pulmonaria obscura



Tassel Stonewort
Tolypella intricata



Water vole
Arvicola amphibius



White-clawed crayfish
Austropotamobius
pallipes

Habitat-based assemblages

Beyond individual species, the Suffolk LNRS identifies 15 habitat-based assemblages. These assemblages reflect groups of species that co-exist within specific habitat types, such as grasslands, wetlands and urban environments. A flagship species has been selected for each assemblage to symbolise conservation efforts and engage the public. For instance, the turtle dove exemplifies farmland habitats, while the nightingale underscores the ecological importance of scrubland.

Profiles of these assemblages provide an overview of their flagship species, appropriate conservation measures, relevant habitats, and the additional biodiversity benefits they offer (**Tables 24-38**). By linking species and habitats, this approach ensures that measures support broader ecological networks, adhering to Lawton's principles of "bigger, better, more, and more joined up." It is recognised that not all measures are appropriate for the location of each individual species within the assemblages identified, due to varying ecological needs. It is also recognised that species included within a particular assemblage will make use of other habitat areas and ecosystem features, and are therefore not isolated to the habitat assigned but can benefit from a range of potential measures. Therefore species specific requirements must be considered carefully as part of any planned action and expert advice obtained.

Within the tables below, measures are identified for the species listed. In some cases, measures may be applicable to more than one species. Where appropriate, this is explained using text in the relevant section of the table.

Where the habitat measures identified as most relevant for a particular species occur in locations with known species records, these have also been identified within the Local Habitat Map by use of a species code (for example SPM01). Whilst this information strengthens the link between habitat measures that may provide benefits to species, it must not be used in place of more detailed assessment of species requirements and suitability.

The measures and actions identified for the assemblages and species are designed to contribute where possible to the national objectives detailed below. It is considered that the approach taken to generate strategic opportunity areas encompasses these factors:

- halt the decline of species abundance
- reduce the risk of species' extinction
- reducing the rates of introduction and establishment of invasive non-native species.



Coastal Shingle and Dunes



Saltmarshes and Lagoons



Reedbeds and Freshwater Wetlands



Farmed Landscapes



Lowland Meadows and Pastures



Native Woodland



Trees Outside of Woodland



Scrub and Mosaic



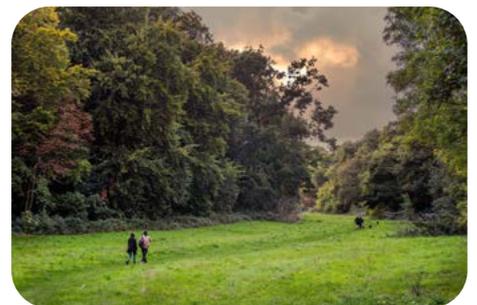
Still Waters



Rivers and Riverside Habitats



Lowland Fen



Chalk Grassland



Brecks Grass Heath



Acid Grassland and Heathland



Urban, Built and Garden Environments

Coastal Shingle and Dunes

Coastal habitats, such as shingle beaches and dune structures, support specialised species adapted to harsh conditions. These natural systems protect against erosion and flooding and provide essential nesting grounds for seabirds.



Little tern
Sternula albifrons

Table 24a. Coastal Shingle and Dunes assemblage iconic flagship species indicating habitat health

Species	Potential Measures
Little tern <i>Sternula albifrons</i>	Implement intensive protective management for colonies and provide suitable habitat areas. If prospecting occurs at new sites, facilitate breeding success with a suite of protective measures.

Table 24b. Coastal Shingle and Dunes assemblage shortlisted species showing recovery potential

Species	Potential Measures
<i>Gnaphosa lugubris</i> spider	<ul style="list-style-type: none"> Habitat improvement and protection, alongside appropriate ecological research and monitoring to better understand detailed species requirements. Maintain adequate grazing/mowing with scrub clearance if necessary, to ensure retention of open ground
Natterjack toad	Connect appropriate habitats of warm, open dunes and ephemeral water bodies
Grey Hair-grass	Conduct rotavation and grazing of dunes to mobilise sand and shift accessible areas on dunes receiving a lot of recreational pressure.
<i>Rhysodromus fallax</i> spider	<ul style="list-style-type: none"> Where possible, reduce recreational pressures by incorporating accessible areas within appropriate habitats. Control recreational erosion of foredunes.
Prickly saltwort	See <i>Rhysodromus fallax</i> spider
<i>Baryphyma maritimum</i> spider	<ul style="list-style-type: none"> See <i>Rhysodromus fallax</i> spider Protect vulnerable yellow dunes from visitor pressure.
<i>Clubiona frisia</i> spider	<ul style="list-style-type: none"> See <i>Rhysodromus fallax</i> spider Manage encroaching scrub on grey dunes to maintain open habitat. Protect fragile yellow dunes from recreational pressures by controlling access.
Ringed plover	Where possible, reduce recreational pressures by incorporating accessible areas within appropriate habitats, including keeping key areas disturbance-free and use of 'dogs on leads' policies, where appropriate. This can be accompanied by use of on-site communications and educational measures. reduce predation via protective measures, and create new habitat nesting areas on bare shingle and sand.

Species	Potential Measures
String of sausages lichen	Where possible, manage recreational pressures by incorporating accessible areas within appropriate habitats. on dunes to protect sensitive areas.
Yellow vetch ' <i>Vicia lutea</i> '	Manage scrub edges within habitats to maintain ecological balance.

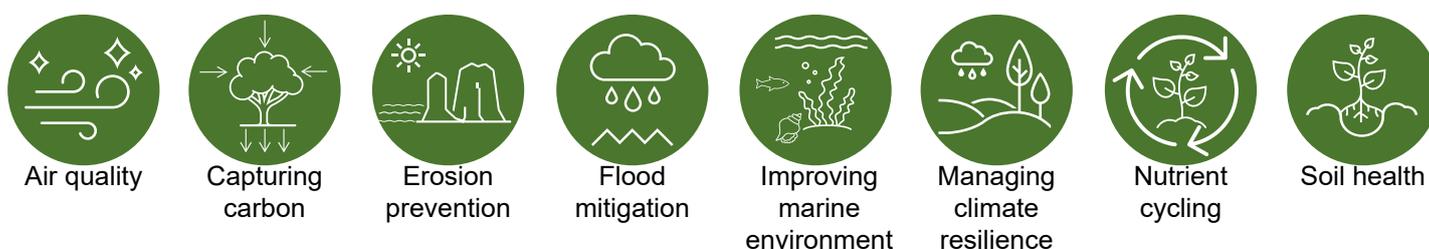
Additional species or groups benefiting from conservation actions:

- Other lichens and fungi
- Sea Pea

The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes (PM43-44) as well as in the existing areas of particular importance for biodiversity (APIB) where the relevant habitat types occur and as unmapped measures across various locations. Specific areas for the flagship species Little Tern are identified using the code SPM29. These measures could offer solutions to address pressures in:

- Coastal
- Freshwater
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Saltmarshes and Lagoons

Saltmarshes, lagoons and brackish coastal areas provide essential feeding grounds for wading birds and breeding sites for fish. These intertidal habitats protect against erosion, sequester carbon, and support salt-tolerant plant life, adding significant ecological value.



Redshank
Tringa totanus

Table 25a. Saltmarshes and Lagoons assemblage iconic flagship species indicating habitat health

Species	Potential Measures
Redshank <i>Tringa totanus</i>	<ul style="list-style-type: none"> • Restore habitats by manipulating water levels, reducing grazing, and delaying mowing. • Create and maintain high-quality areas of extensive, shallow, vegetated water during breeding months. • Consider seasonal grazing to create an optimal sward where appropriate • Avoid agricultural or high-disturbance activities including recreational disturbance at breeding sites during the breeding season.

Table 25b. Saltmarshes and Lagoons assemblage shortlisted species showing recovery potential

Species	Potential Measures
Oystercatcher	Maintain and restore saltmarsh habitats, managing appropriate water levels and grazing intensity.
Common tern	Create habitats using gravel pits, tern rafts in reservoirs, islets in industrial lagoons, port structures, and by improving reserves through vegetation control, managing gull competition, and predator control.
Sea barley	<ul style="list-style-type: none"> • Enhance management and design of coastal defence areas and retreat plans. • Cultivate the species off-site and re-introduce the plants to areas with a suitable habitat'
Small cord-grass	See 'Sea barley'
Sea heath	See 'Sea barley'
Divided sedge	See 'Sea barley'
Borrers saltmarsh-grass	See 'Sea barley'
Pedunculate sea-purslane	Establish new populations as backups to the existing site in Essex; restore upper saltmarsh habitats in suitable East Anglian sites, restore the saltmarsh/dune interface where appropriate, and translocate seed specimens as needed.
Common eelgrass	Implement terrestrial habitat measures to improve the quality of water entering the coast, and enhance planning to reduce impacts from freshwater inputs and terrestrial run-off.

Species	Potential Measures
Native oyster	<ul style="list-style-type: none"> • See 'Common eelgrass'. • Restoration of and creation of new breeding beds of culch.
Scarce pug	<ul style="list-style-type: none"> • Improve and enhance saltmarsh habitats to include Sea Wormwood plants. • Prevent grazing of upper saltmarsh edges in late summer and early autumn. • Undertake management of upper saltmarsh edges to reduce dominance of species such as Sea Couch and Shrubby Sea-blite
<i>Praestigia duffeyi</i> spider	<ul style="list-style-type: none"> • Maintaining and restoring saltmarsh, including management of appropriate water levels and levels of grazing. • Ensure site managers are aware of species past/recent presence and vulnerability. Update them with survey and research results to provide guidance on locations/management and inform commissioning of invertebrate survey work. • Once there is sufficient understanding of this species' ecology, assess viability of translocation to new saltmarsh areas created in mitigation for losses to coastal realignments.

Additional species or groups benefiting from conservation actions:

- Pink-footed and Dark-bellied brent goose

The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes (PM37-38, 45-46), as well as in the existing areas of particular importance for biodiversity (APIB) where the relevant habitat types occur and as unmapped measures across various locations. Specific areas for the flagship species Redshank are identified using the code SPM30. These measures could offer solutions to address pressures in:

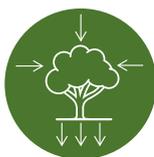
- Coastal
- Freshwater
- Invasive Species and Diseases

Habitats and species

These measures are considered to support the following wider environmental benefits:



Air quality



Capturing carbon



Clean water source



Erosion prevention



Flood mitigation



Improving marine environment



Managing climate resilience



Nutrient cycling



Soil health

These measures are considered to support the following co-benefits:



Clean water source



Cultural, heritage and aesthetic services



Erosion prevention



Flood mitigation



Food provision



Pest and disease control



Physical and mental wellbeing



Raw materials

Reedbeds and Freshwater Wetlands



Bittern
Botaurus stellaris

Reedbeds, marshes, pastures, and wetlands support species like bitterns and marsh harriers, improve water quality, and aid flood management.

Table 26a. Reedbeds and Freshwater Wetlands assemblage iconic flagship species indicating habitat health

Species	Potential Measures
Bittern <i>Botaurus stellaris</i>	<ul style="list-style-type: none"> • Create large contiguous reedbed expanses (over 1 hectare) with restoration and protection of flooded channels. • Raise water tables in areas where reedbeds are at risk of drying out and manage reed structure to enhance diversity. • Maintain reedbed age structure, with no more than 30% older than 7 years and less than 5% scrub cover. • Implement cyclical cutting of different reed sections and regularly remove scrub. • Reduce numbers and the pressure of deer in fen and reedbeds. • Include bittern feeding requirements in ecosystem design management. • Incorporate recreational disturbance management where appropriate.

Table 26b. Reedbeds and Freshwater Wetlands assemblage shortlisted species showing recovery potential

Species	Potential Measures
Tansy beetle	Remove Himalayan balsam to promote growth; plant in gaps to aid beetle movement and create flood-safe areas. Use temporary fencing and manage grazing to protect tansy. Manage sites in line with current research.
Scarce emerald damselfly	<ul style="list-style-type: none"> • Create habitats with dense submerged and emergent vegetation within shallow pools and drainage channels. • Restoration and re-naturalisation of wetland systems, particularly grazing marshes, to create diverse habitats, including shallow ephemeral areas. • Diversification of wetland systems through pool and ditch creation to increase availability of breeding habitat encouraging range expansion. • Encourage species to continue its range expansion to offset expected habitat loss as a result of sea level rise.

Species	Potential Measures
Large mouthed valve snail	<ul style="list-style-type: none"> • Use ditch management and vegetation control, supported by research and monitoring to understand species needs. • Stagger clearance of ditches: clearing alternate 10-15m stretches, or clearing only one side of ditches, or creating spur ditches one year before ditch clearance. • Molluscs require ditches to be managed so that there is a range of successional stages from open water through to overgrown and clogged.
Geyer's whorl snail	<ul style="list-style-type: none"> • Use ditch management and vegetation control to create specific habitat of low growing grasses and sedges. • Management of grazing levels at existing sites to avoid trampling. • Molluscs require ditches to be managed so that there is a range of successional stages from open water through to overgrown and clogged.
Desmoulin's whorl snail	<ul style="list-style-type: none"> • Use ditch management and vegetation control, alongside maintenance of hydrological conditions. • Support restoration of hydrology on protected sites. • Molluscs require ditches to be managed so that there is a range of successional stages from open water through to overgrown and clogged.
Marsh harrier	<ul style="list-style-type: none"> • Creation and enhancement of reedbed habitats, alongside wetland regeneration projects. • Promote sustainable farming practices and reduction in use of organochlorine pesticides alongside other accumulating chemicals.
<i>Erioptera bivittata</i> fly	Improve and protect habitats with ecological research and monitoring to enhance understanding of specific species requirements
<i>Erioptera meijerei</i> fly	See ' <i>Erioptera bivittata</i> fly'
Fenn's wainscot	<ul style="list-style-type: none"> • Regularly cut reedbeds as part of habitat management. • Recreate reedbed habitat on drained land.
Grass-poly	Employ ditch management and vegetation control to create exposed areas and open vegetation.
Grass snake	Develop and connect habitat areas to increase ecological connectivity.
Creeping marshwort	Create suitable habitats, such as creating scrapes in floodplains and enhancing connectivity with rivers, in appropriate areas to support species needs.
Water dock case bearer	Employ ditch management techniques and vegetation control to create specific habitat of food plant.

Additional species or groups benefiting from conservation actions:

- Aquatic macrophytes
- Aquatic beetles

The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes:

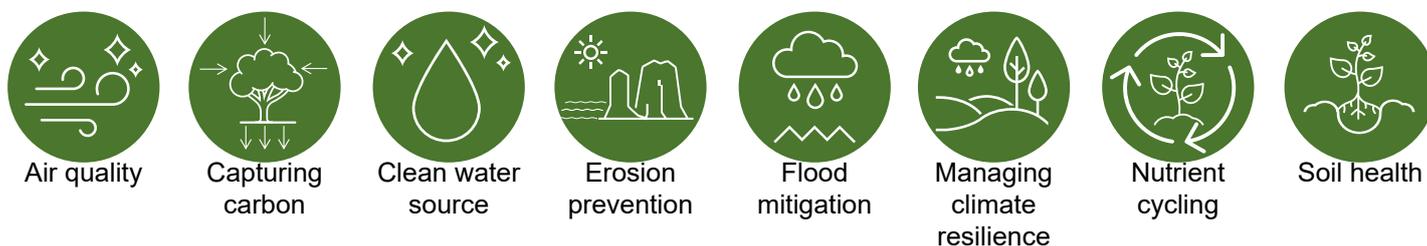
- PM30
- PM33-36

As well as in the existing areas of particular importance for biodiversity (APIB) where the relevant habitat types occur and as unmapped measures across various locations. Specific areas for the flagship species bittern are identified using the code SPM31.

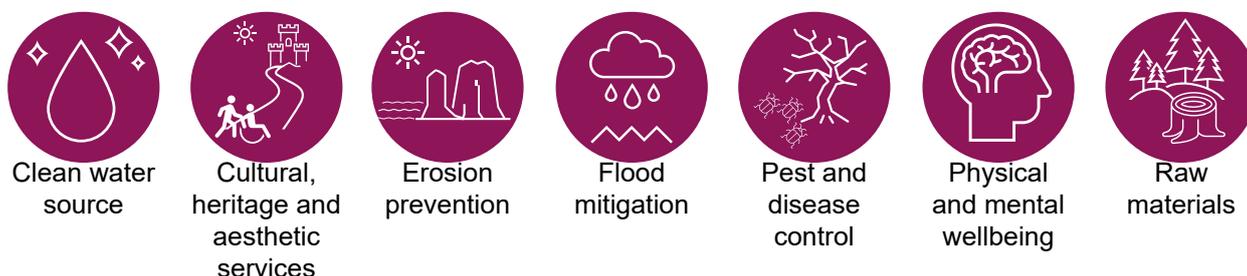
These measures could offer solutions to address pressures in:

- Coastal
- Farmland
- Freshwater
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Farmed Landscapes

Suffolk's farmland, including arable fields, grasslands, hedgerows, and margins, can support biodiversity with wildlife-friendly management, providing habitats for pollinators, birds, and small mammals alongside agriculture.



Turtle dove
Streptopelia turtur

Table 27a. Farmed Landscapes assemblage iconic flagship species indicating habitat health

Species	Potential Measures
Turtle dove <i>Streptopelia turtur</i>	Provide a variety of required habitats: <ul style="list-style-type: none"> • nesting habitat (hedgerows, regenerating scrub and some woodland edges) • foraging habitat (with bare ground/short vegetation and sources of small seeds in the breeding season) • water sources with shallow edges • manage hedges to offer nesting sites while allowing scrub areas to regenerate • provide supplementary feed where appropriate.

Table 27b. Farmed Landscapes assemblage shortlisted species showing recovery potential

Species	Potential Measures
Kestrel	<ul style="list-style-type: none"> • Increase invertebrate presence on farmland by maintaining diverse habitats and leaving wild, unfarmed areas. • Practice organic grazing and regenerative farming with reduced chemicals, especially insecticides, to support insect-eating birds. • Reduce or delay post-harvest ploughing to increase winter stubble and green cover crops, and avoid annual hedge cutting. • On intensive arable land, maintain cropped areas for nesting and foraging, adding wildflower, grass, and nectar-rich margins to boost insects and provide summer food for breeding birds. • Provide seed sources to support farmland birds, especially in late winter, either by direct provision or allowing plants to go to seed in suitable areas. • Maintain and enhance hedgerows for nest sites and corridors • Create and maintain grassland habitats for foraging • Improve farmland for small mammals, including creating refugia in winter to protect from flooding • Provide appropriate nest boxes • Control rodent management to minimise chemical impacts • Create appropriate in-field measures for specific species eg skylark.
Grey partridge	See 'Kestrel'

Species	Potential Measures
Yellow wagtail	See 'Kestrel', as appropriate for species
Cuckoo	See 'Kestrel', as appropriate for species
Skylark	See 'Kestrel', as appropriate for species
Tree sparrow	See 'Kestrel', as appropriate for species
Linnet	See 'Kestrel', as appropriate for species
Greenfinch	See 'Kestrel', as appropriate for species
Bullfinch	See 'Kestrel', as appropriate for species
Corn bunting	See 'Kestrel', as appropriate for species
Yellowhammer	See 'Kestrel', as appropriate for species
Barberry carpet	<ul style="list-style-type: none"> Plant barberry within hedgerows to enhance habitat diversity. Enhance and connect the existing core areas away from arable areas. Create additional breeding habitat through Barberry planting at new sites within 5km of known populations. Include planting in field margins, new hedgerows and woodland rides. Reduce hedgerow cutting frequency and ensure hedges are cut after September.
Brown hairstreak	<ul style="list-style-type: none"> Increase the prominence of blackthorn and implement infrequent cutting regimes. Ensure appropriate management of hedgerows (appropriate methods and rotations).
Ground pine	Reintroduction and appropriate management
Slender tare	Ensure appropriate management of arable field margins, habitat improvement, and protection
Wild pansy	See 'Ground pine'
Small flowered catchfly	See 'Ground pine'
Red tipped cudweed	See 'Ground pine'

Additional species or groups benefiting from conservation actions:

- Other arable weeds and plants eg shepherd’s needle
- Hedgerow butterflies
- Hedgerow trees such as Hazel, Hawthorn
- Pink-footed goose and other water fowl and waders

The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes:

- PM01-02
- PM05-06
- PM09-14

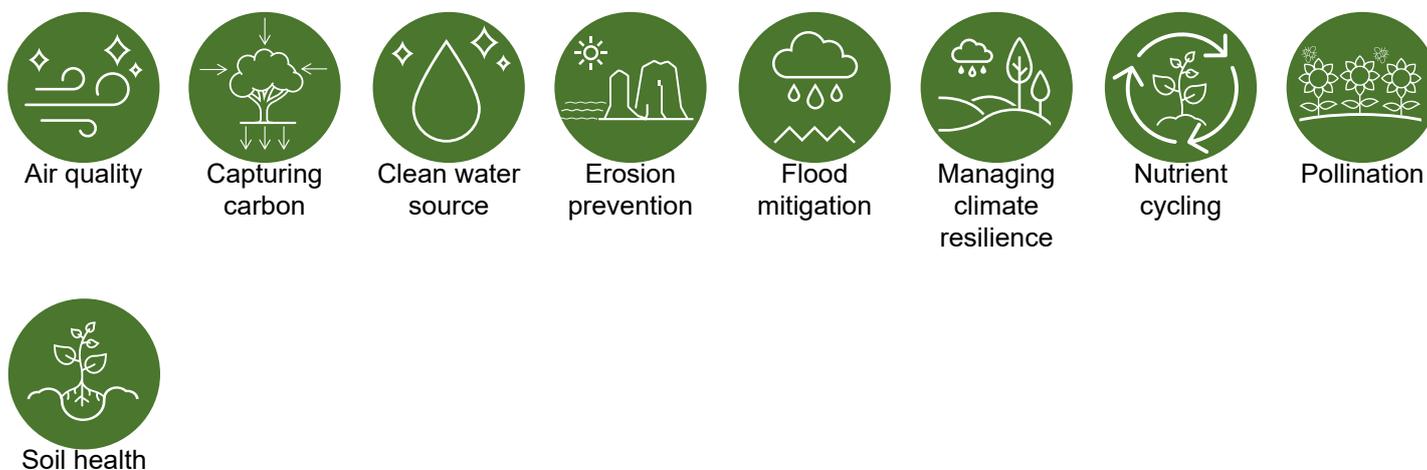
Habitats and species

- PM19-24
- PM31-32

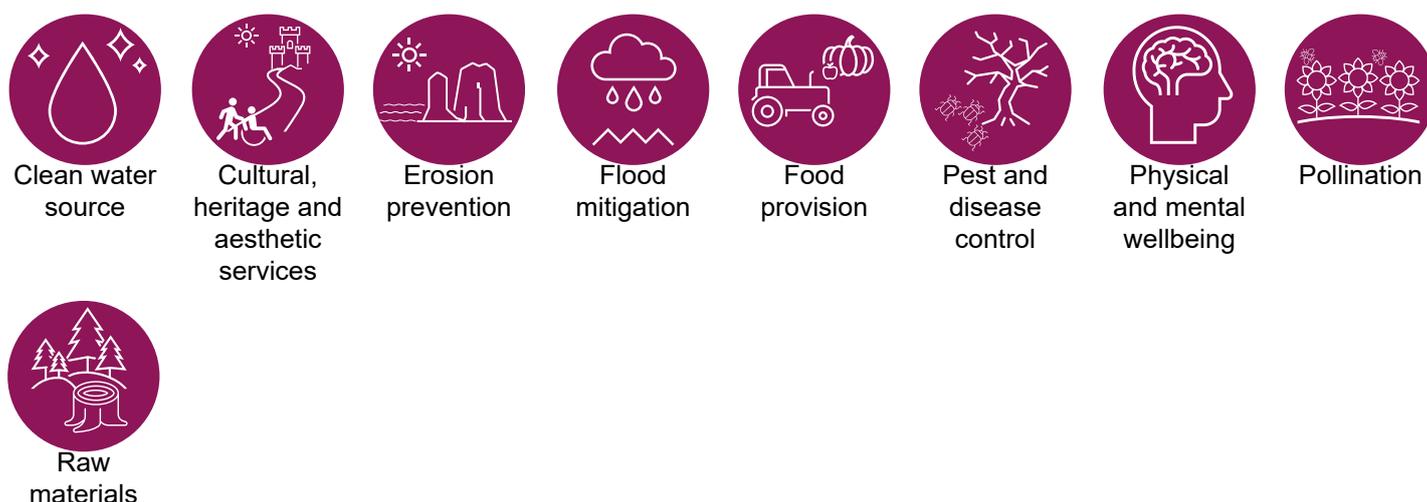
As well as in the existing areas of particular importance for biodiversity (APIB) where the relevant habitat types occur and as unmapped measures across various locations. Specific areas for the flagship species turtle dove are identified using the code SPM32. These measures could offer solutions to address pressures in:

- Coastal
- Farmland
- Woodland, Trees and Scrub
- Freshwater
- Grassland and Heathlands
- Urban and Built
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Lowland Meadows and Pastures

Species-rich grasslands, lowland meadows and pastures, support pollinators, ground-nesting birds, and small mammals. Traditional management aids carbon storage, soil health, and water management, sustaining ecological balance.



Green-winged orchid
Anacamptis morio

Table 28a. Lowland Meadows and Pastures assemblage iconic flagship species indicating habitat health

Species	Potential Measures
Green-winged orchid <i>Anacamptis morio</i>	<ul style="list-style-type: none"> • Improve management of habitat areas by cutting and raking to reduce nutrient loading followed by adopting a suitable mowing regime’. • Control invasive species to protect native biodiversity. • Manage grazing pressures to prevent overgrazing in meadow habitats, whilst employing aftermath grazing to reduce nutrient levels and competition from aggressive plants. • Support pollinator populations by providing nesting sites, reducing pesticide use, and planting native flowering plants. • Avoid mowing during peak fruiting or flowering periods and control vegetation that competes with target species. Incorporate appropriate hay cutting regimes. • Increase populations of target species by creating new habitat areas adjacent to existing populations. • Control deer to sustainable levels, remove grazing animals, limit scrub and bramble encroachment, and consider fencing to protect vulnerable populations. • Re-establish specimen plants on appropriate lost sites. • Maintain continuity of management over a long period allowing the appropriate soil fungi to accumulate.
Dingy skipper	<ul style="list-style-type: none"> • As 'Green-winged orchid', incorporating appropriate management and trials for species re-establishment as needed. • Appropriate hay management and/or grazing. • Create, restore, enhance and connect habitats to increase availability of habitats and increase the resilience of dingy skipper metapopulations.
Spiny retharrow	See 'Dingy skipper'
Twayblade	See 'Dingy skipper'
Deptford pink	See 'Dingy skipper'
Sulphur clover	See 'Dingy skipper'
Frog orchid	See 'Dingy skipper'
Chamomile	See 'Dingy skipper'

Table 28b. Lowland Meadows and Pastures assemblage additional species or groups benefiting from conservation actions

Species	Potential Measures
Fungi eg waxcaps	Employ appropriate management techniques in terms of grazing and cutting and eliminating chemical use, and keep well-drained

Additional species or groups benefiting from conservation actions:

- Barn owl
- Bryophytes

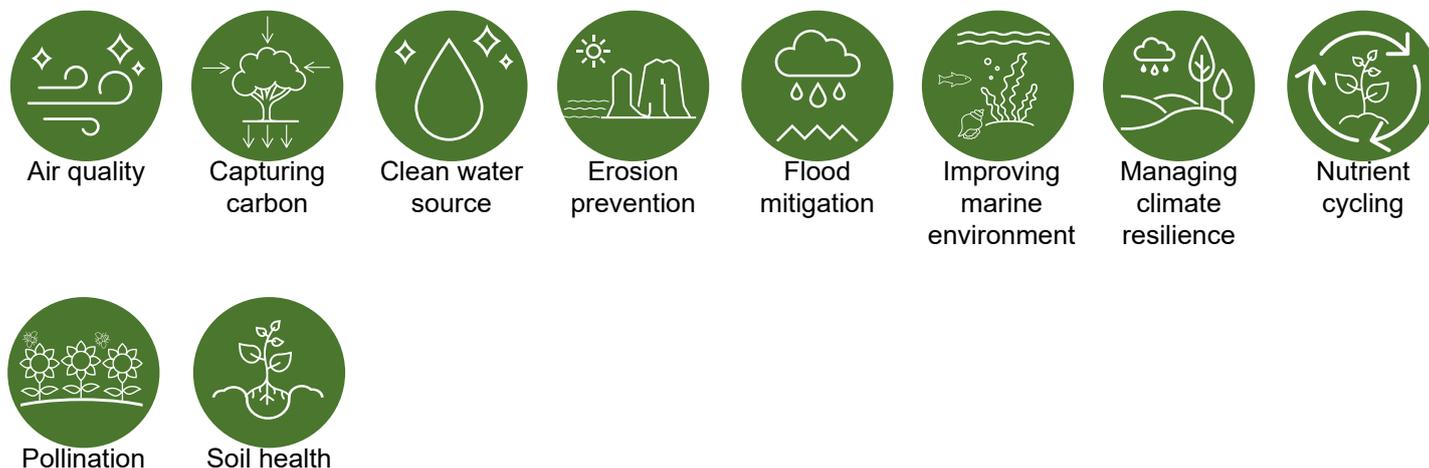
The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes:

- PM19-24

As well as in the existing areas of particular importance for biodiversity (APIB) where the relevant habitat types occur and as unmapped measures across various locations. Specific areas for the flagship species green-winged orchid are identified using the code SPM33. These measures could offer solutions to address pressures in:

- Farmland
- Woodland, Trees and Scrub
- Freshwater
- Grassland and Heathlands
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Clean water source



Cultural, heritage and aesthetic services



Erosion prevention



Flood mitigation



Food provision



Pest and disease control



Physical and mental wellbeing



Pollination



Raw materials

Native Woodland

Suffolk’s native woodlands, with ancient and veteran trees, are rich ecosystems that support diverse wildlife, store carbon, purify air, and mitigate floods, bolstering climate resilience and enhancing the landscape.



Barbastelle bat
Barbastella
barbastellus

Table 29a. Native Woodland assemblage iconic flagship species indicating habitat health

Species	Potential Measures
Barbastelle bat <i>Barbastella barbastellus</i>	<ul style="list-style-type: none"> • Use woodland management practices to enhance appropriate woodland areas, such as streams and ponds within wet woodland. • Employ minimal woodland management – leave standing deadwood wood and damaged trees – this allows for successional availability of roosts. • Protect existing/potential roosting sites by retaining trees with cracks, loose bark, ivy and/or woodpecker holes, storm-damaged trees – loose bark is especially important for maternity colonies. • Leave areas of non-intervention in all woodlands - encourage natural cycle of growth, damage, decay as well as regeneration. • Establish foraging corridors by planting trees and hedgerows within 6 km of suitable roosting habitats. • Near bat roosts, plant trees or woodland that can develop veteran features like hollowing. • Protect maternity roosts and hibernacula from development. • Create connections between populations to reduce isolation. • Reduce the impact of artificial night lighting as much as possible.

Table 29b. Native Woodland assemblage shortlisted species showing recovery potential

Species	Potential Measures
Eagle's claw lichen	<ul style="list-style-type: none"> • Maintain host tree species (eg Acer, Fraxinus, Ulmus, Quercus) in wood pasture, parkland, and along roadsides. • Thin trees selectively to reduce overstocking in order to maintain appropriate light to the lichens and add structural variety in woodlands, ensuring successional natural processes can occur. • Control regeneration to keep woodlands open, potentially by reintroducing grazing, mindful of wild herbivore pressure. • Clear dense growth around veteran trees, aiming for glades across one-third of the area with varied age and size.

Species	Potential Measures
Drab wood soldierfly	<ul style="list-style-type: none"> • Restore and maintain mature woodlands with an extensive understorey layer, including veteran oaks, deadwood (fallen or standing), and appropriate clearings and rides with shrubby edges. • Manage deer populations to sustainable levels to preserve structural diversity and understorey vegetation. • Restore woodland connectivity to support ecosystem health and species movement. • Use rotational cutting of the understorey to encourage regrowth and structural diversity.
Lesser spotted woodpecker	See 'Drab wood soldierfly'
Willow tit	See 'Drab wood soldierfly'
Oak polypore	See 'Drab wood soldierfly'
Marsh tit	See 'Drab wood soldierfly'
Redpoll	See 'Drab wood soldierfly'
Hawfinch	See 'Drab wood soldierfly'
Dark crimson underwing	<ul style="list-style-type: none"> • See 'Drab wood soldierfly' • Support natural oak woodland development, allowing for mature oak trees to become established.
Greater butterfly-orchid	See 'Drab wood soldierfly'
Spotted flycatcher	See 'Drab wood soldierfly'
Purple emperor	<ul style="list-style-type: none"> • Establish large blocks of broadleaved woodlands or clusters of smaller woods with abundant willow. • Manage woodlands for shaded conditions, promoting honeysuckle in sheltered areas. • Enhance rides and glades with bare ground and large bramble patches for nectar. • Use coppicing on 12–30-year rotations, retaining honeysuckle-supporting trees. • Control grazing to support coppice regrowth and connect open woodland areas. • Create and connect woodlands to reduce isolation of existing colonies.
White admiral	<ul style="list-style-type: none"> • See 'Purple emperor' • Support woodland regeneration to increase number of potential sites for this species.
Wild service tree	<ul style="list-style-type: none"> • Identify and include key species within planting strategies to support biodiversity and habitat goals. • Use local wild sourced seed to preserve and foster local genetic diversity'
Small leaved lime	See 'Wild service tree'

Table 29c. Native Woodland assemblage additional species or groups benefiting from conservation actions

Species	Potential measures
Other lichens and fungi	<ul style="list-style-type: none"> • Thin trees selectively for structural variety within woodlands. • Maintain open woodland structure by controlling regeneration, reintroducing grazing where appropriate, considering grazing pressure from wild herbivores. • Clear regrowth around veteran trees, creating varied glades across a third of the area. • Retain trees beneficial to valuable plant and fungi species. • Expand suitable tree areas near existing populations to boost species presence. • Manage deer populations to sustainable levels, remove grazing animals, limit scrub/bramble spread, and fence if needed. • Avoid mowing during peak fruiting/flowering and manage competing vegetation. • In hotspots, protect soils by avoiding felling, coppicing, fire, fertilisers, and heavy machinery. • Ensure continuity of tree species from saplings to veterans through planting or natural regeneration.

Additional species or groups benefiting from conservation actions:

- Other bat species
- Bryophytes
- Other native tree species eg Alder, Oak
- Saproxylic beetles

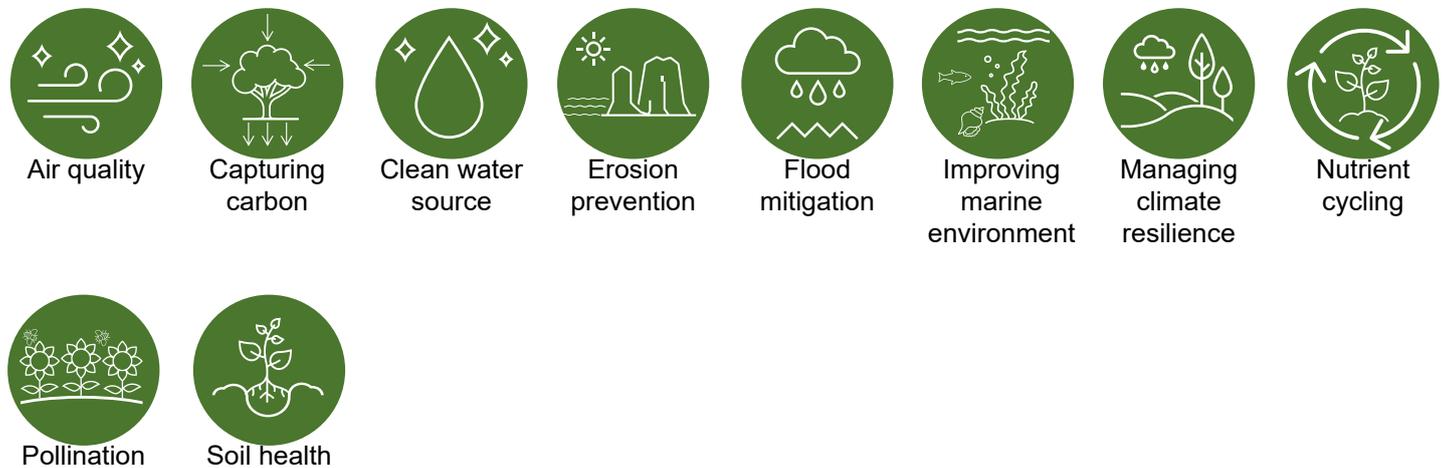
The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes:

- PM1
- PM5-6
- PM50

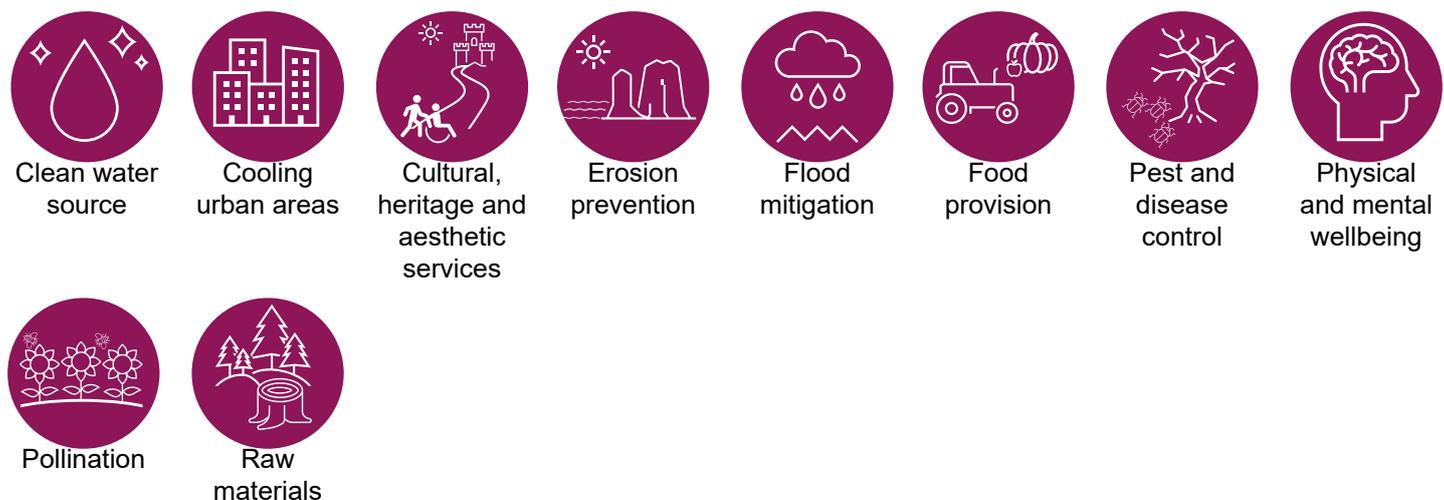
As well as in the existing areas of particular importance for biodiversity (APIB) where the relevant habitat types occur and as unmapped measures across various locations. Specific areas for the flagship species barbastelle bat are identified using the code SPM34. These measures could offer solutions to address pressures in:

- Farmland
- Woodland, Trees and Scrub
- Freshwater
- Urban and Built
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Trees Outside of Woodland

Trees in hedgerows, roadsides, and fields provide habitats, support landscape connectivity, stabilise soil, capture carbon, and enhance rural and urban character.



Pedunculate oak
Quercus robur

Table 30a. Trees Outside of Woodland assemblage iconic flagship species indicating habitat health

Species	Potential Measures
Pedunculate oak <i>Quercus robur</i>	<ul style="list-style-type: none"> • Use for planting programmes in appropriate soils and within appropriate locations (use Ecological Site Classification (ESC) profiles). • Collect and cultivate seed from noteworthy specimens of Pedunculate oak in Suffolk.

Table 30b. Trees Outside of Woodland assemblage shortlisted species showing recovery potential

Species	Potential Measures
Field maple	<ul style="list-style-type: none"> • Use for planting programmes using species appropriate to soil type, climate and location (use Ecological Site Classification (ESC) profiles). • Collect and cultivate local origin seed in order to preserve and foster local genetic diversity.
Sweet chestnut	See 'Field maple'
Rowan	See 'Field maple'
Yew	See 'Field maple'
Hornbeam	See 'Field maple'
Black poplar	Select damp condition species for creating habitats near ditches and floodplains, linked to wetland creation. Plant specimens following genetic DNA profiling programme established via propagation and clone bank of locally sourced saplings.
Elms	<ul style="list-style-type: none"> • Plant native clones of <i>Ulmus</i> species that are disease-resistant.
White letter hairstreak	<ul style="list-style-type: none"> • Control of Dutch Elm Disease.
Golden hoverfly	<ul style="list-style-type: none"> • Maintain veteran specimens to support associated species. • Protect existing habitat by ensuring that rot holes are available and not filled.
Beech	See 'Golden hoverfly'.

Table 30c. Trees Outside of Woodland assemblage additional species or groups benefiting from conservation actions

Species	Potential Measures
Other lichens and fungi	<ul style="list-style-type: none"> • Thin trees selectively to reduce overstocking. • Control regeneration to keep woodlands open, potentially by reintroducing grazing, considering wild herbivore pressure. • Clear dense growth around veteran trees, creating glades across one-third of the area with varied age and size. • Retain trees important for valuable plant and fungi species. • Expand suitable areas for species or plant trees near existing locations for species to boost populations. • Control deer populations, remove grazing animals, limit scrub/bramble spread, and consider fencing if needed. • Avoid mowing during peak fruiting/flowering and control competing vegetation. • Protect soils in hotspots by avoiding use of fire, fertilisers, and heavy machinery. • Ensure continuity of suitable trees from saplings to veterans through planting or natural regeneration and appropriate management techniques.

Additional species or groups benefiting from conservation actions:

- Other veteran trees
- Bryophytes
- Bats

The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes:

- PM5-6
- PM12-13
- PM50

As well as in the existing APIB where the relevant habitat types occur and as unmapped measures across various locations. These measures could offer solutions to address pressures in:

- Farmland
- Woodland, Trees and Scrub
- Freshwater
- Grassland and Heathlands
- Urban and Built
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



Air quality



Capturing carbon



Clean water source



Erosion prevention



Flood mitigation



Improving marine environment



Managing climate resilience



Nutrient cycling



Pollination



Soil health

These measures are considered to support the following co-benefits:



Clean water source



Cooling urban areas



Cultural, heritage and aesthetic services



Erosion prevention



Flood mitigation



Food provision



Pest and disease control



Physical and mental wellbeing



Pollination



Raw materials

Scrub and Mosaic

Scrub includes all growth stages of native shrubs, from scattered bushes to closed canopy vegetation. Good scrub has a diverse structure with different heights, though it's usually less than 5 metres tall. Scrub and scrub mosaics are valuable in areas dominated by arable land and agriculturally improved grassland, where food and shelter for wildlife are in short supply.



Nightingale
Luscinia megarhynchos

Table 31a. Scrub and Mosaic assemblage iconic flagship species indicating habitat health

Species	Potential Measures
Nightingale <i>Luscinia megarhynchos</i>	<ul style="list-style-type: none"> • Manage scrub habitats to maximise growth at the thicket stage, and include a range of ages and stages of scrub succession. • Cut scrub in reasonable blocks rather than in many small, widely dispersed patches, encouraging dense layers of scrub to develop, including bramble. • Implement appropriate coppicing practices, within appropriate regulations and restrictions, to maintain all stages of the coppice lifecycle within the woodland, with sequentially coppiced coupes adjacent to each other on rotation. • Manage deer populations to sustainable levels to promote a diverse vegetation structure. • Connect existing suitable habitats with tall, thick hedges. • Promote wet woodland restoration via riparian management techniques to enhance invertebrate presence.

Table 31b. Scrub and Mosaic assemblage shortlisted species showing recovery potential

Species	Potential Measures
Red-backed shrike	<ul style="list-style-type: none"> • Actively create, restore, and manage habitats. • Decrease habitat fragmentation by creating corridors, such as hedgerows, buffer strips, raised banks, and set-aside land, to facilitate species movement. • Enhance recolonisation potential for both species by providing suitable habitats, such as low-input, structurally diverse grasslands, to support healthy populations of prey.
Adder	Maximise connectivity of habitats, maintain and expand range to allow natural colonisation, including scrub cover and dedication hibernation areas. Manage predator threats, reduce recreational disturbance, minimise fire risks, and increase public awareness and appreciation.

Additional species or groups benefiting from conservation actions:

- Other lichens and fungi
- Bryophytes
- Invertebrates
- Bats
- Small birds, including farmland birds
- Other reptile species, eg grass snake, slow worm and common lizard

The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes:

- PM07-08
- PM27-28

As well as in the existing areas of particular importance for biodiversity (APIB) where the relevant habitat types occur and as unmapped measures across various locations. Specific areas for the flagship species nightingale are identified using the code SPM35. These measures could offer solutions to address pressures in:

- Farmland
- Woodland, Trees and Scrub
- Freshwater
- Urban and Built
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



Air quality



Capturing carbon



Clean water source



Erosion prevention



Flood mitigation



Improving marine environment



Managing climate resilience



Nutrient cycling



Pollination



Soil health

These measures are considered to support the following co-benefits:



Clean water source



Cultural, heritage and aesthetic services



Erosion prevention



Flood mitigation



Food provision



Pest and disease control



Physical and mental wellbeing



Pollination



Raw materials

Still Waters

Lakes, ponds, gravel pits, and reservoirs provide vital habitats for aquatic plants, invertebrates, and animals, supporting biodiversity, enhancing Suffolk's scenic beauty, and offering recreational opportunities.



Great Crested Newt
Triturus cristatus

Table 32a. Still Waters assemblage iconic flagship species indicating habitat health

Species	Potential Measures
Great Crested Newt <i>Triturus cristatus</i>	<ul style="list-style-type: none"> • Create high-quality terrestrial habitats nearby to support foraging and hibernation, including undisturbed areas with deadwood or stones to serve as hibernacula. • Increase connectivity between known metapopulation by providing a range of habitats eg seasonal and permanent ponds, those which are shaded and those which are open • Establish or maintain large, predominantly fish-free ponds, ideally located within 1 km of other ponds suitable for Great Crested Newts. • Ensure ponds have gently sloping entrances to allow easy access for newts and other wildlife. • Refer to appropriate district level licensing schemes

Table 32b. Still Waters assemblage shortlisted species showing recovery potential

Species	Potential Measures
Common toad	Create nearby high-quality terrestrial habitat eg loose soil, leaf litter and rocks or logs.
Ribbon leaved water plantain	<ul style="list-style-type: none"> • Conduct habitat disturbance (deweeding and desilting) and restore site hydrology. • Re-introduce the species in locations where there is a suitable habitat.
Opposite-leaved pondweed	See 'Ribbon leaved water plantain'.
Zircon reed beetle	<ul style="list-style-type: none"> • Ensure marginal sedges are present as needed. • Protect sedge-dominated emergent vegetation from excessive disturbance.
Stoneworts	Keep water clean and maintain mineral substrates.
Bewick's swan	Implement land management practices to ensure nearby safe feeding areas on farmland are available.
Whooper swan	See 'Bewick's swan'.
Frogbit	Maintain or improve marsh ditches and pools to create slow-moving, calcareous conditions.
Water-violet	See 'Frogbit'.

Additional species or groups benefiting from conservation actions:

- Water beetles
- Aquatic macrophytes
- Odonata (dragonflies and damselflies)
- Other amphibians eg smooth newt and frog

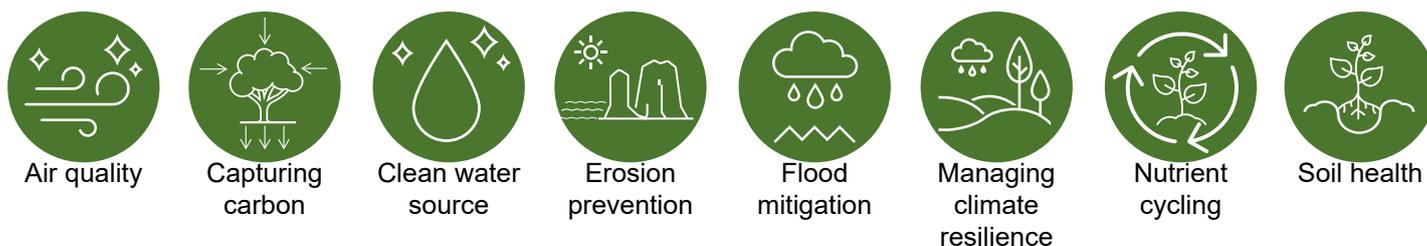
The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes:

- PM31-32

As well as in the existing areas of particular importance for biodiversity (APIB) where the relevant habitat types occur and as unmapped measures across various locations. Specific areas for the flagship species great crested newt are identified using the code SPM36. These measures could offer solutions to address pressures in:

- Farmland
- Freshwater
- Urban and Built
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Rivers and Riverside Habitats

Rivers, chalk streams, riparian areas, and floodplains form dynamic ecosystems that support diverse wildlife, act as corridors and aid in water purification, flood management and water quality, benefiting biodiversity and human communities.



Kingfisher
Alcedo atthis

Table 33a. Rivers and Riverside Habitats iconic flagship species indicating habitat health

Species	Potential Measures
Kingfisher <i>Alcedo atthis</i>	Improve water quality and create wetland habitat and riparian tree planting.

Table 33b. Rivers and Riverside Habitats assemblage shortlisted species showing recovery potential

Species	Potential Measures
Spined loach	<ul style="list-style-type: none"> Employ suitable substrate and vegetation management regimes. Conduct riparian tree planting to enhance shading of river channels and mitigate the effects of increased temperatures.
Brook lamprey	As above
Depressed river mussel	<ul style="list-style-type: none"> Removal of invasive species where possible and implement additional biosecurity measures. Improve overall water quality. Support the creation of well vegetated water.
Desmoulin's whorl snail	<ul style="list-style-type: none"> Enhance calcareous water sources, ensuring the presence of marginal reed grasses and sedges. Support restoration of hydrology on protected sites.
Beaver	<ul style="list-style-type: none"> Follow IUCN guidelines for reintroductions into fenced enclosures, accompanied by long-term monitoring and a management plan. Additionally, follow Natural England guidance for licensing wild release, managing the existing wild beaver populations, and developing long-term management plans for beavers in England. Natural England can issue licences to projects wanting to reintroduce beavers into the wild, where these projects demonstrate clear benefits and where risks can be avoided, mitigated or managed [30]. Ensure access to freshwater habitats, ideally wooded, slow-flowing, and in broad river valley bottoms. Freshwater areas of sufficient size, with adjacent foraging resources, will support natural restoration of river and wetland ecosystems, aiming to increase habitat diversity.

Additional species or groups benefiting from conservation actions:

- Molluscs
- Aquatic macrophytes
- Otters
- Water shrews

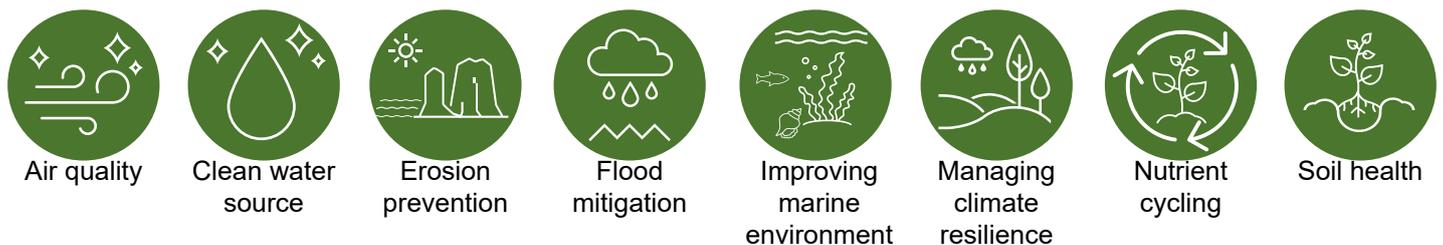
The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes:

- PM29-30

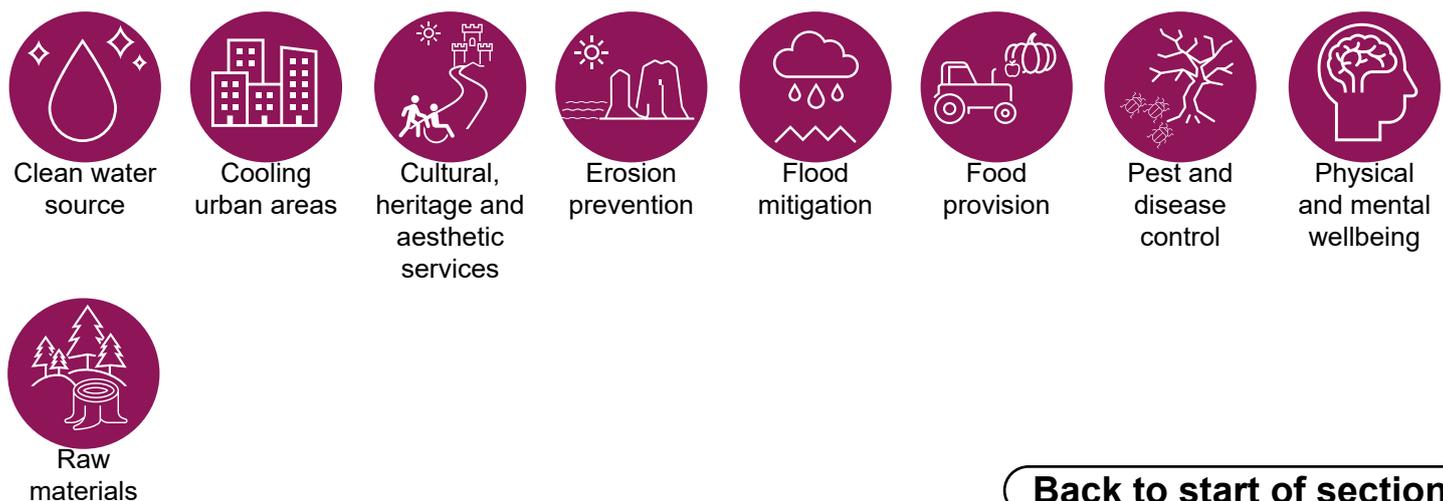
As well as in the existing areas of particular importance for biodiversity (APIB) where the relevant habitat types occur and as unmapped measures across various locations. Specific areas for the flagship species kingfisher are identified using the code SPM37. These measures could offer solutions to address pressures in:

- Farmland
- Freshwater
- Urban and Built
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Raw materials

Lowland Fen

Lowland fens, peatlands, river valleys, and fen edges with waterlogged, peat-forming ecosystems support rare plants, birds, and insects. Vital for carbon storage, water purification, and flood control, they are key for biodiversity and ecosystem services.



Fen orchid
Liparis loeselii

Table 34a. Lowland Fen assemblage iconic flagship species indicating habitat health

Species	Potential Measures
Fen orchid <i>Liparis loeselii</i>	Restore and create calcareous fens and wet meadows to promote connectivity, incorporating management techniques like disturbance and appropriate cutting and grazing regimes. Reduce numbers and the pressure of deer in fens using sustainable techniques.

Table 34b. Lowland Fen assemblage shortlisted species showing recovery potential

Species	Potential Measures
Marsh fragrant-orchid	See 'Fen orchid', Table 34a .
Early marsh orchid (cream flowered form)	See 'Fen orchid', Table 34a .
Greater water parsnip	Translocation of appropriate specimens to prepared and appropriately managed areas of habitat incorporating implications of threats of disease
Milk parsley	<ul style="list-style-type: none"> See 'Greater water parsnip'. Protect and maintain current populations from pressures such as poor water quality, trampling, grazing, theft, etc
Fen ragwort	<ul style="list-style-type: none"> Manage wetlands and river margins to ensure seasonal flooding and support habitat health. Reduce numbers and the pressure of Chinese water deer in fens. Reduce the pressure of increasing winter water levels by implementing flood alleviation measures.
Swallowtail	<ul style="list-style-type: none"> See 'Fen ragwort' Research the potential impacts of sea level rise and increased salinisation on sites where swallowtail are currently found. Research other potentially suitable habitats and introduction techniques for the larval foodplants. Research the hybridisation risk of influx and future spread of the gorganus subspecies. Maximise measures to protect and establish milk parsley due to it being an essential food plant.
Pashford pot beetle	<ul style="list-style-type: none"> Lowland Fen and wet heathland habitat creation and restoration. Translocations of individuals to new sites with suitable habitat if a large population can be found.

Species	Potential Measures
Devil's bit scabious	Maintenance of fen habitats to prevent shading and promote growth
<i>Hygrolycosa rubrofasciata</i>	For fen and fen carr, maintain water table levels and apply "re-wetting" techniques to enhance spider habitats.
<i>Gongylidiellum murcidum</i>	See ' <i>Hygrolycosa rubrofasciata</i> '.
<i>Neon valentulus</i>	<ul style="list-style-type: none"> • Maintain sedge beds by leaving litter in place and managing water levels to support spider habitats. • Maintain open habitat by scrub control through appropriate grazing, mowing, and or removal regimes. • Take all appropriate measure to safeguard and restore natural hydrology (such as internal sluices/dams, infilling channel, and review of abstraction and drainage consents).
<i>Hygrolycosa rubrofasciata</i>	For fen and fen carr, maintain water table levels and apply "re-wetting" techniques to enhance spider habitats.
<i>Gongylidiellum murcidum</i>	<ul style="list-style-type: none"> • See '<i>Hygrolycosa rubrofasciata</i>'. • Restore areas of lowland fen to encourage populations to return to the habitat.
Swollen spire snail	<ul style="list-style-type: none"> • In appropriate areas, implement appropriate cutting regimes to encourage reed sweetgrass (<i>Glyceria maxima</i>) dominance over phragmites. Alternatively, create areas within water treatment system reedbeds where the snail can be translocated to. • Restore areas of lowland fen to encourage populations to return to these habitats.
Fen mason-wasp	<ul style="list-style-type: none"> • Create and enhance specific habitats, including creating soil banks and south facing slopes, and ensuring areas of bare ground are included. • Sympathetic management of existing water courses and key aquatic plants. • Creation of new water courses to aid connectivity and create larger, more stable populations.
<i>Baryphyma gowerense</i> spider	<ul style="list-style-type: none"> • Conduct scrub clearance and maintain sedge beds through cutting. • Maintain tussocky vegetation structure of fen vegetation, balancing this need against any requirement for scrub control to maintain open habitat.

Additional species or groups benefiting from conservation actions:

- Fungi
- Orchids

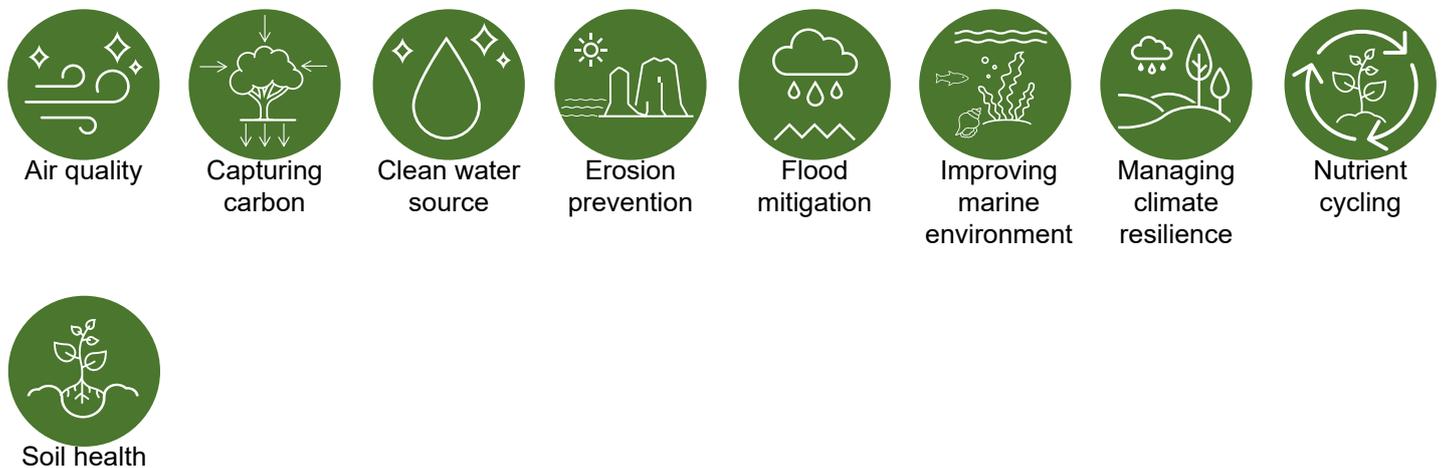
The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes:

- PM23-26
- PM29-30
- PM33-34

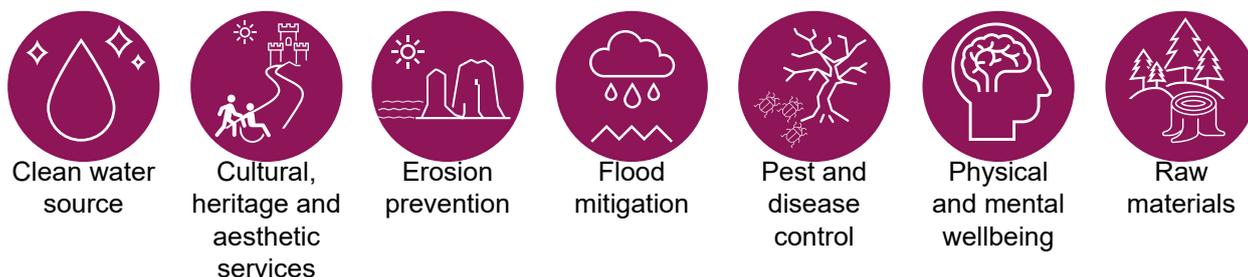
As well as in the existing areas of particular importance for biodiversity (APIB) where the relevant habitat types occur and as unmapped measures across various locations. Specific areas for the flagship species fen orchid are identified using the code SPM38. These measures could offer solutions to address pressures in:

- Farmland
- Woodland, Trees and Scrub
- Freshwater
- Grassland and Heathlands
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Chalk Grassland

Suffolk's chalk grasslands, on shallow, chalky soils, support a unique diversity of wildflowers and rare invertebrates. These nutrient-poor habitats foster specialised plant communities, making them a priority for restoration and protection.



Rockrose
Helianthemum
nummularium

Table 35a. Chalk Grassland assemblage iconic flagship species indicating habitat health

Species	Potential Measures
Rockrose <i>Helianthemum</i> <i>nummularium</i>	Appropriate grazing regimes, sustainable agricultural practices, control of scrub and improve and create chalk grassland areas to provide new habitat.

Table 35b. Chalk Grassland assemblage shortlisted species showing recovery potential

Species	Potential Measures
Field gentian	Maintain grassland at a mean height of 3-5 cm, with approximately 5% bare soil at the end of the grazing period; cattle grazing is preferred.
Firedot lichen	<ul style="list-style-type: none"> Enhance habitats with ecological research and monitoring to better understand species requirements. Use improved grazing techniques with traditional breeds, controlled hay-cutting, and scrub clearance.
Spotted cat's-ear	As above
Military orchid	Improve management of road verges, escarpment, old chalk pits, scrub edge and dune slacks on suitable soils.
Man orchid	Manage road verges, escarpments, old chalk pits, limestone quarries, scrub edges, and dune slacks on suitable soils.
Fly orchid	Apply grazing management, excluding livestock during the spring and early summer flowering periods, and consider the existing pressure from wild herbivores.
Juniper	Manage areas to regenerate juniper and associated species by creating scrapes down to bare soil for seed establishment, and exclude rabbits, deer, and sheep from these areas.
Yellow vetchling	Improve management of road verges, waysides, waste ground, railway embankments, docks, sheltered undercliffs on suitable soils.

Additional species or groups benefiting from conservation actions:

- Horseshoe vetch
- Grassland bee species
- Grassland butterfly species eg Chalkhill blue
- Crickets/grasshoppers
- Other bat species

The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes:

- PM21-22

As well as in the existing areas of particular importance for biodiversity (APIB) where the relevant habitat types occur and as unmapped measures across various locations. Specific areas for the flagship species rock-rose are identified using the code SPM39.

These measures could offer solutions to address pressures in:

- Farmland
- Woodland, Trees and Scrub
- Grassland and Heathlands
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



Air quality



Capturing carbon



Erosion prevention



Flood mitigation



Improving marine environment



Managing climate resilience



Nutrient cycling



Pollination



Soil health

These measures are considered to support the following co-benefits:



Cultural,
heritage and
aesthetic
services



Erosion
prevention



Flood
mitigation



Food
provision



Pest and
disease
control



Physical
and mental
wellbeing



Pollination

Brecks Grass Heath

The Brecks open heathlands and sandy soils are home to rare, specialised species like the stone-curlew. This unique, dry, nutrient-poor landscape is culturally and ecologically significant, making it a conservation priority and is the driving force behind the presence of a number of species.



Stone-curlew
Burhinus oedicnemus

Table 36a. Brecks Grass Heath assemblage iconic flagship species indicating habitat health

Species	Potential Measures
Stone-curlew <i>Burhinus oedicnemus</i>	<ul style="list-style-type: none"> • Key measures within arable habitats are: <ul style="list-style-type: none"> ○ safeguarding nest sites from agricultural operations ○ creating plots within cereal crops to provide late and early season breeding habitats ○ creating and maintaining cultivated margins to support cover for chicks. • Key measures on existing Brecks grass heath are: <ul style="list-style-type: none"> ○ predator control ○ reducing recreational disturbance ○ re-establishing semi-natural processes to create ground disturbance through encouraging rabbit populations ○ a range of periodic ground disturbance techniques to create a range of successional stages from bare ground through to closed over turf.

Table 36b. Brecks Grass Heath assemblage shortlisted species showing recovery potential

Species	Potential Measures
Woodlark	In Brecks and forest clearings, restore and maintain a network of open spaces within forestry plantations and connect lowland heaths.
Fingered speedwell	Maintain appropriate arable margins using low-input methods and introduce species where necessary.
Grey carpet	Maintain or improve agri-environment options promoting herb-rich arable margins.
Interrupted brome	Reintroduce in appropriate areas.
Spring speedwell	Use livestock and rabbit grazing to create habitats and disturb soil with low-input arable methods to establish appropriate arable margins.
Prostrate perennial knawel	See 'Spring speedwell'
Bur medick	See 'Spring speedwell'
Seaside pansy	See 'Spring speedwell'
Sand catchfly	Employ favourable grazing regimes and use low-input methods to disturb soil, creating suitable arable margins.

Species	Potential Measures
<i>Lycoperdina succincta</i> beetle	Recreate connected habitats by applying grazing techniques and removing invasive species.
<i>Verrucaria xyloxena</i> lichen	See ' <i>Lycoperdina succincta</i> beetle'
Sheet-weaver spider (<i>Agyneta fuscipalpa</i>)	<ul style="list-style-type: none"> • See '<i>Lycoperdina succincta</i> beetle'. • Maintain and/or instate rotational areas of broken ground/turf stripping to create patches of persistent bare ground.
Field wormwood/ Breckland mugwort	<ul style="list-style-type: none"> • In Brecks and open mosaics, maintain open grassland on sandy soil, control grazing regimes, remove invasive species, and increase the population of field wormwood. • Introduce Field wormwood plants cultivated off-site in locations that will link current beetle populations'
Proliferous pink	See 'Field wormwood/Breckland mugwort'
Wormwood moonshiner	See 'Field wormwood/Breckland mugwort'

Additional species or groups benefiting from conservation actions:

- Rock rose
- Horseshoe vetch
- Grassland bee species
- Grassland butterfly species
- Crickets/grasshoppers
- Other bat species
- Eurasian Curlew
- Inland invertebrates who are localised to this area and habitat type

The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes:

- PM2
- PM7-10
- PM27-28

As well as in the existing areas of particular importance for biodiversity (APIB) where the relevant habitat types occur and as unmapped measures across various locations. Specific areas for the flagship species stone curlew are identified using the code SPM40. These measures could offer solutions to address pressures in:

- Farmland
- Woodland, Trees and Scrub
- Freshwater
- Grassland and Heathlands
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



Air quality



Capturing carbon



Erosion prevention



Flood mitigation



Managing climate resilience



Nutrient cycling



Pollination



Soil health

These measures are considered to support the following co-benefits:



Cultural, heritage and aesthetic services



Erosion prevention



Flood mitigation



Food provision



Pest and disease control



Physical and mental wellbeing



Pollination



Raw materials

Acid Grassland and Heathland

Nutrient-poor acid grasslands and heathlands, with fewer flower species than calcareous grasslands, provide habitats for specialised species like heathland birds and invertebrates. They are crucial for carbon storage, water regulation, and biodiversity across Suffolk's landscapes.



Nightjar
Caprimulgus europaeus

Table 37a. Acid Grassland and Heathland assemblage iconic flagship species indicating habitat health

Species	Potential Measures
Nightjar <i>Caprimulgus europaeus</i>	<ul style="list-style-type: none"> • Recreate, manage and restore key heathland habitats, alongside implementation of effective rotational forestry management. • Incorporate recreational disturbance management where appropriate.

Table 37b. Acid Grassland and Heathland assemblage shortlisted species showing recovery potential

Species	Potential Measures
Heath-dog violet	Employ effective habitat control and restoration to create hydrological profile required.
<i>Dolichopus migrans</i> fly	<ul style="list-style-type: none"> • Open up habitats through management practices like grazing. • Where applicable prevent encroachment of scrub and bracken from areas outside of protected sites (that may not be grazed for instance).
Grayling butterfly	<ul style="list-style-type: none"> • Improve habitat management by ensuring the inclusion of essential foodplant species. • Restore and enhance habitat patches to help buffer any potential climate change effects and potentially help increase resilience of both coastal and inland populations.
Silver studded blue	<ul style="list-style-type: none"> • Maintain a mosaic of heathland in different stages, with bare soil and early successional vegetation, including heather, to support populations of symbiotic ants. • Undertake targeted management (scrapes, cutting, small scale burns) across most landscapes where it occurs to restore early successional habitat within existing sites and on new suitable sites.
Cylindrical whorl snail	<ul style="list-style-type: none"> • Restore appropriate habitats by improving agricultural practices to minimise agrochemical pollutants. • Maintenance of grazing regimes on known sites.
Great sundew	Create new areas of suitable habitat and relocate plants where necessary.
Roundleaf sundew	See 'Great sundew'
Bell heather	Apply appropriate management techniques, such as grazing, cutting, and habitat restoration, to increase the overall area of habitat.

Additional species or groups benefiting from conservation actions:

- Heathland bee species
- Heathland butterfly species
- Adder
- Common lizard
- Woodlark
- Heathland invertebrates, such as green tiger beetles

The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes:

- PM15-18 (where appropriate)

As well as in the existing areas of particular importance for biodiversity (APIB) where the relevant habitat types occur and as unmapped measures across various locations. Specific areas for the flagship species nightjar are identified using the code SPM41.

These measures could offer solutions to address pressures in:

- Farmland
- Freshwater
- Grassland and Heathlands
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



Air quality



Capturing carbon



Erosion prevention



Flood mitigation



Improving marine environment



Managing climate resilience



Nutrient cycling



Pollination



Soil health

These measures are considered to support the following co-benefits:



Cultural,
heritage and
aesthetic
services



Erosion
prevention



Flood
mitigation



Food
provision



Pest and
disease
control



Physical
and mental
wellbeing



Pollination

Urban, Built and Garden Environments



Hedgehog
Erinaceus europaeus

Urban green spaces - parks, gardens, and street trees - are vital wildlife refuges that aid nature recovery, improve air quality, and enhance residents' wellbeing.

Table 38a. Urban, Built and Garden Environments assemblage iconic flagship species indicating habitat health

Species	Potential Measures
<p>Hedgehog <i>Erinaceus europaeus</i></p>	<ul style="list-style-type: none"> • Create quality semi-natural habitats and integrate artificial features in urban, built, and garden areas. • Create edge habitats and habitat buffers. • Add 13x13 cm "hedgehog highways" at fence bases and provide hedgehog houses. • Include undergrowth, shrubs, hedges, deadwood, woodland, and grassland in gardens. • Practice wildlife-friendly gardening with wildflowers and scrub habitats for insects. • Reduce or eliminate artificial fertilisers and pesticides; promote regenerative farming. • Manage garden and park grass to create long grass, short turf, open soil, and tussocks. • Let dense vegetation grow via compost, log, and leaf piles in gardens. • Boost insect numbers and therefore foraging areas with wildflowers, ponds, and less mowing. • Avoid pesticides to support insects; encourage organic, low-herbicide gardening and farming. • Raise awareness of hazards like landscaping injuries, pond drownings, and net entanglements. • Train greenspace managers and landscapers on hazard mitigation, habitat clearance timing, and wildlife-friendly features. • Install small mammal road signs at key roadkill hotspots, especially near town and village speed limits.

Table 38b. Urban, Built and Garden Environments assemblage iconic flagship species indicating habitat health

Species	Potential Measures
Starling	<ul style="list-style-type: none"> • See 'Hedgehog'. • Install nest boxes, use building eaves, and preserve nesting sites, including on new build homes and via retro-fitting initiatives within ecologically relevant distances. • Developments should include integrated nest boxes (commonly known as swift bricks) and artificial nest cups for house martins where possible, with the general aim across a development of a minimum of one nest box per unit. • Encourage wildlife gardening for food, roosting, and nesting spaces.
House martin	See 'Starling'.
House sparrow	See 'Starling'.
Swift	See 'Starling'.
Swallow	See 'Starling'.
Greenfinch	See 'Starling'.

Additional species or groups benefiting from conservation actions:

- Heathland bee species
- Heathland butterfly species

The appropriate potential measures for these species could be implemented at locations specified within the Local Habitat Map within the following habitat priority codes:

- PM01-02
- PM11-14
- PM19-20
- PM27-28
- PM31-32

As well as in the existing APIB where the relevant habitat types occur and as unmapped measures across various locations. These measures could offer solutions to address pressures in:

- Farmland
- Woodland, Trees and Scrub
- Freshwater
- Grassland and Heathlands
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



Air quality



Capturing carbon



Clean water source



Erosion prevention



Flood mitigation



Managing climate resilience



Nutrient cycling



Pollination



Soil health

These measures are considered to support the following co-benefits:



Clean water source



Cooling urban areas



Cultural, heritage and aesthetic services



Erosion prevention



Flood mitigation



Food provision



Pest and disease control



Physical and mental wellbeing



Pollination



Raw materials

Bolstering rare species: Suffolk Native Black Poplar Project

Because of land and timber use changes over the past two centuries, Black Poplars now very rarely naturally regenerate and the species is dependent on human intervention for its survival. There are presently only approximately 150 known clones in the UK, placing it at serious risk from pests and diseases.

The Suffolk Native Black Poplar ('NBP') Project aims to:

- assist in the development and diversification of the existing Dedham Vale NL and Nowton Park NBP clone banks and support the new clone bank at Jimmy's Farm.
- propagate new male and female saplings from cuttings from clone trees
- distribute those saplings county-wide for wetland/riparian planting projects
- update the existing Suffolk Biodiversity Information Service (SBIS) database by (re-)surveying known mature trees and recording newly-discovered and newly-planted trees.

Who's involved?

The lead organisation for the project is the Suffolk Tree Warden Network ('STWN'), which coordinates the clone bank development work, the nursery work for the production of saplings, the distribution of saplings to planting projects, the recording of all new saplings on the SBIS database, and the (re-) surveying of known mature trees.

Key project partners are Dedham Vale NL, West Suffolk Council at Nowton Park, and SBIS, for implementation of project elements. Apart from past partial SCC funding, the project has yet to secure any key funders.

What have they achieved?

The project has, in the 3 years since initiation, grown and distributed over 800 saplings to planting projects across Suffolk.

Project volunteers have also (re-) surveyed more than 40 trees and implemented selected DNA testing via Forest Research to improve the SBIS database.

A black poplar nursery facility has been established at Nowton Park nursery, where volunteers assist in propagation and maintenance. Upgrading and diversification of the clone banks is in hand, which involves significant volunteer engagement.

The Suffolk project has been instrumental in setting up the East Anglian Black Poplar Project; in leading in the establishment of a national Black Poplar project; and in developing a whole genome sequencing project (involving Forest Research, Wellcome Sanger Institute and the University of Udine, Italy) of approx. 200 UK black poplars which will improve understanding of the genetic history and variability of current national black poplar population, in a European-wide context.



The Black poplar at Butley, Suffolk

How do they do it?

Central to the widespread species reintroduction in wetland/riparian habitats has been engagement.

The project has reached out to private landowners (many through STWN's own marketing presence at public events and through volunteer Tree Warden community engagement), farm clusters, SWT reserves, the National Trust, the EA, the Little Ouse Headwater Project, the River Waveney Trust and other environmental groups.

What's next?

The long-term project aims are to:

- diversify the existing Suffolk clone banks with new clones introduced from across the UK
- establish a permanent dedicated nursery
- identify new clones from continued surveying and DNA testing
- support breeding of new clones by partner organisations (such as Kew).

These aims will require funding to cover costs, and the ongoing support of STWN, Dedham Vale NL, West Suffolk Council at Nowton Park, and SBIS.

Find out more by visiting www.suffolktreewardens.org.uk/community-tree-nursery

Protecting breeding waders: Trimley Marshes Breeding Wader Project

Wading birds including avocets, redshanks and lapwings nest on the ground and are very vulnerable to predators such as foxes and badgers.

This project involved the installation of 1.2km of permanent in-dyke fencing at Trimley Marshes to protect the eggs, chicks and breeding waders. The new fencing provided a solution to a problem posed by a temporary 9-line electric fence which only provided very limited protection to the wildlife rich lagoons.

Who's involved?

The two main organisations involved are the Suffolk Wildlife Trust (SWT) and the Suffolk & Essex Coast & Heaths National Landscape. SWT own and manage the Trimley Marshes Nature Reserve and the SECHNL secured £29,256 from the Farming In Protected Landscapes fund to pay for the work.

What have they achieved?

1.2km of permanent in-dyke fencing was successfully installed. A suite of habitat creation and restoration work was also successfully carried out:

- 1km of new foot drain habitat was created and restored.
- 2km of dyke habitat was restored.
- 2 outlets were restored.
- 2 breeding wader islands were created.
- 1 breeding wader island was reprofiled.

This will significantly help to provide breeding and feeding opportunities for key target wader species such as redshank, lapwing and avocet. It will also help wintering waterfowl such as wigeon and teal.

The restored habitat will also help tackle climate change through carbon sequestration and storage.



Wetland creation, Trimley Marshes



Wetland creation, Trimley Marshes

How did they do it?

The new 1.2km fence is made of high-tensile netting installed on a Versalok post system with metal strainers, turners, and intermediate posts. The straining posts are box-type, with intermediate posts measuring 2.7m and strainers and turners at 3.3m.

The fence was built at the base of the slope, partially in the water, with slight angle turns to keep it in shallow areas of the dyke for easier installation.

A vibrating head on a 5-tonne tracked excavator drove the posts, and the netting was positioned at a height to ensure a stock-proof barrier.

What's next?

Regular bird surveys will be conducted by reserve staff and volunteers to monitor any changes in breeding and wintering bird numbers.

The site is also being used as a demonstration site to show other landowners and nature reserve managers the benefits of anti-predator fencing and habitat creation work.

Find out more by visiting the [Trimley Marshes case study on the Suffolk & Essex Coast & Heaths website](#).

Key species

The LNRS prioritisation process identified 21 key species representing Suffolk's most pressing conservation needs. These include mammals, reptiles and amphibians, fish, lichens and fungi, vascular and non-vascular plants, invertebrates and birds. Species represented inhabit all areas of the county, both rural and urban. Collaboration with biodiversity experts and stakeholders ensured a balanced selection across taxonomic groups while reflecting public priorities.

Other organisations and partnership members may produce their own priority species lists, for example Buglife's Important Invertebrate Areas or Plantlife's Important Plant Areas, which may also be a source of reference for stakeholders.

Below, each species is showcased with profiles outlining conservation measures, habitats and broader ecological benefits. This highlights the interdependence of species and habitats, offering a roadmap for action to safeguard Suffolk's natural heritage.

Each of these species is profiled in this section (**Table 39-59**), detailing their primary conservation measures, suitable habitats and the broader biodiversity benefits of their protection. Within the profile, the most relevant habitat measures that have been mapped within the Local Habitat Map are indicated. Relevant habitat measures that overlap with areas where there are species records have been indicated in the mapping with a relevant species code (for example SPM01). This is intended

to highlight areas where nature-recovery actions could support these species, however the final decision making processes on any intended work must involve specific assessment of the detailed ecological requirements and bespoke conservation needs. The identified areas for species are intended to link the habitat-based measures to areas with known species distributions (see **Figure 11 and 12**). This process is designed to represent an opportunity for nature recovery in the right places, whilst taking into account the sensitivity of vulnerable areas and species. However, it does not represent and must not replace suitability modelling of individual species requirements.

The 21 key species for Suffolk are:

- Bark sulphur fire-dot
- Basil-thyme case-bearer
- Crested cow-wheat
- Dwarf eelgrass
- Eurasian curlew
- European eel
- Fen raft spider
- Hazel dormouse
- Kittiwake
- Lapwing
- Little whirlpool ramshorn snail
- Narrow-mouthed whorl snail
- Orange-fruited elm lichen
- Rossers sac spider
- Scarce vapourer
- Serotine bat
- Starlet sea anemone
- Suffolk lungwort
- Tassel stonewort
- Water vole
- White-clawed crayfish

Bark-sulphur firedot

Caloplaca flavorubescens



Bark-sulphur firedot can be found on *Fraxinus wayside* and parkland trees, particularly in limestone areas, and *Populus tremula*.

Table 39a. Bark-sulphur firedot primary measure

Primary measure	Primary measure detail
Habitat enhancement	Manage existing mature trees to provide the next generation of veterans - such as Sycamore, Norway Maple, Sallows, Hazel, Aspen and Field Maple (as appropriate to the location). Alternatively, plant suitable host tree species and encourage the planting / replacement of pasture and wayside trees to ensure continuity of suitable habitat. Planting regimes should follow ESC profiles.

Table 39b. Bark-sulphur firedot other relevant measures

Other relevant measures	Other relevant measures detail
Species-specific action	Mitigate ash-dieback impact. Ensure veteran ash trees are not felled even if infected (evidence suggests that old ash trees die more slowly) and provide ongoing sympathetic management for any infected hosts.
Land management advice and techniques	Ensure existing/potential host trees are kept free of scrub and ivy.
Pollution reduction & mitigation	Ensure wayside trees are kept free of fertilisers, manure and slurry through the implementation of agri-environment schemes.

These measures could also offer solutions to address pressures in these habitats:

- Farmland
- Woodland
- Trees and Scrub
- Invasive Species and Diseases

Other linked assemblages that would benefit from these measures are:

- Trees outside of woodland
- Native Woodland
- Farmed Landscapes

The mapped measures for wood pasture and parkland [PM05-06], with appropriate tree species, are potentially relevant for bark-sulphur firedot.

These measures are considered to support the following wider environmental benefits:



Air quality



Capturing carbon



Flood mitigation



Managing climate resilience



Nutrient cycling



Pollination



Soil health

These measures are considered to support the following co-benefits:



Cooling urban areas



Cultural, heritage and aesthetic services



Erosion prevention



Flood mitigation



Food provision



Pest and disease control



Physical and mental wellbeing



Pollination



Raw materials

Basil-thyme case-bearer

Coleophora tricolor



This species of moth is a Brecks specialist, unknown anywhere outside of the Brecks. Basil-thyme, the sole food source of the basil-thyme case-bearer, thrives in ruderal areas and sparsely vegetated ground. It is commonly found on unimproved Breck grassland where open conditions support its growth. Additional habitats include disused airfields with cracking hard surfaces and the edges of tracks and rides within conifer plantations established on former heathland.

Table 40a. Basil-thyme case-bearer primary measure

Primary measure	Primary measure detail
Habitat Management	<ul style="list-style-type: none"> • Large areas of land and connected populations are likely required for the species and its foodplant. • Promote early successional stages to encourage the foodplant, with limited ground disturbance (eg rotovation).

Table 40b. Basil-thyme case-bearer other relevant measures

Other relevant measures	Other relevant measures detail
Grazing Control	Manage sheep and rabbit grazing, as well as deer access, in areas where the foodplant is present to prevent overgrazing.
Ground Disturbance	Expand the creation of disturbed bare ground strips using a harrow to break up soil and reduce dense grass along forest corridors and rides.

These measures could also offer solutions to address pressures in these habitats:

- Farmland
- Grassland and Heathlands

Other linked assemblages that would benefit from these measures are:

- Brecks Grass Heath
- Acid grassland and heathland

The mapped measures for Calcareous grassland [PM21-22], especially linked to foodplant records, are potentially relevant for Basil-thyme case-bearer. Specific habitat measures relevant to this species are identified on the LHM as SPM02.

These measures are considered to support the following wider environmental benefits:



Air quality



Managing
climate
resilience



Nutrient
cycling



Pollination



Soil health

These measures are considered to support the following co-benefits:



Food
provision



Pest and
disease
control



Physical
and mental
wellbeing



Pollination

Crested cow-wheat

Melampyrum cristatum



The suitable habitats for Crested cow-wheat are margins, rides, and glades within ancient oak woodland, as well as associated field hedgebanks and scrubby roadside verges.

Table 41a. Crested cow-wheat primary measure

Primary measure	Measure detail
Species-Specific Action	<ul style="list-style-type: none"> • Maintain appropriate woodland habitats through keeping rides and glades open. • Implement road verge management, ensuring arisings are removed, re-introducing specimens where appropriate on suitable soils. • Prevent spray drift onto potentially suitable habitat near populations.

Table 41b. Crested cow-wheat other relevant measures

Other relevant measures	Measure detail
Habitat Creation, Expansion, and Connectivity	Expand woodlands to reconnect fragmented sites and increase suitable habitat by translocation through seed or the use of green hay.

These measures could offer solutions to address pressures in:

- Farmland
- Woodland
- Trees and Scrub

Other linked assemblages that would benefit from these measures are:

- Native Woodland
- Trees out of woodland
- Farmed landscapes

The mapped measures for Arable Field Margins [PM09-10] and roadside verges [PM 19 - 20] are potentially relevant for Crested cow-wheat. Specific habitat measures relevant to this species are identified on the LHM as SPM04.

These measures are considered to support the following wider environmental benefits:



Air quality



Capturing carbon



Managing climate resilience



Nutrient cycling



Pollination



Soil health

These measures are considered to support the following co-benefits:



Physical and mental wellbeing



Pollination

Dwarf eelgrass

Zostera noltei



Dwarf eelgrass is typically found in shallow marine environments on intertidal mudflats. These habitats are characterised by brackish or fully saline waters, often in sheltered coastal locations.

Table 42a. Dwarf eelgrass primary measure

Primary measure	Primary measure detail
Relocation and Replanting Projects	<ul style="list-style-type: none"> • Collect eelgrass seeds from healthy populations, ensuring permits and permissions are in place. • Prepare and propagate seeds before planting directly into restoration sites using appropriate methods. • Monitor and maintain planted populations to ensure successful establishment.

Table 42b. Dwarf eelgrass other relevant measures

Other relevant measures	Other relevant measures detail
Sustainable Farming Practices	Manage grazing, mowing, fertiliser, pesticide, and slurry use. Implement buffer zones and improve planting to minimise impacts from freshwater inputs and terrestrial run-off, reducing sedimentation.
Water Pollution Reduction and Mitigation	<ul style="list-style-type: none"> • Implement measures to reduce urban and industrial pollutants entering coastal waters, eg use of buffer strips to reduce agricultural run off, improve stormwater management, increase water quality testing to monitor levels. • Focus on reducing sedimentation from coastal erosion to protect sensitive habitats – this can be achieved via soft engineering using sand nourishment and sandscaping.
Recreational Disturbance Reduction and Mitigation	<ul style="list-style-type: none"> • Strategically deploy eco-moorings to minimise human disturbance in sensitive areas. • Access management. • Engagement with both bait diggers and watercraft users such as boat users, kayakers and paddleboarders.
Fisheries Management	<ul style="list-style-type: none"> • Reduce pump-scoop fishing in vulnerable locations. • Promote plans to reduce sedimentation caused by coastal engineering and dredging activities eg via alternative sustainable methods and infrastructure.

These measures could offer solutions to address pressures in:

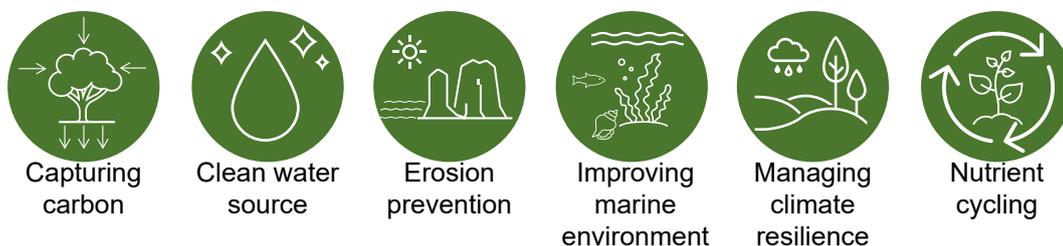
- Freshwater
- Coastal

Other linked assemblages that would benefit from these measures are:

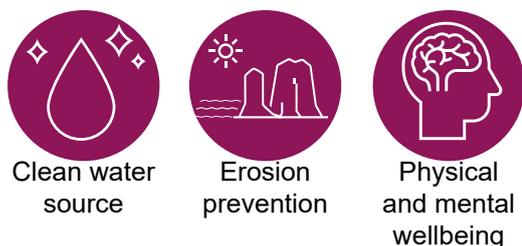
- Saltmarshes and Lagoons

The mapped measures for Saltmarsh and Mudflat [PM37-40] are potentially relevant for Dwarf eelgrass where they align with appropriate intertidal zone areas. Specific habitat measures relevant to this species are identified on the LHM as SPM05.

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Eurasian curlew

Numenius arquata



Eurasian curlew are found in open lowland environments. Breeding populations are confined to the Brecks dry acid grassland and heathland. Freshwater wetland areas and lowland meadows and pastures are used for feeding habitats, throughout the year, alongside coastal habitats and farmland for wintering areas.

Table 43a: Eurasian curlew measures

Primary measure	Measure detail
Habitat Creation and Restoration	<ul style="list-style-type: none"> Address habitat loss from land use changes, drainage, and degradation by creating and expanding Brecks grass heath habitats suitable for year-round foraging activity and wet habitats, suitable for nesting adults, eggs, and chicks. Winter foraging areas may also be utilised by curlew as suitable breeding areas. Recreational disturbance management

Table 43b. Eurasian curlew other relevant measures

Other relevant measures	Measure detail
Nest Protection	Employ measures like electric fencing and emerging technologies to protect nests and improve the success rate of hatching chicks.
Predator Management	Manage problematic species (including invasive non-native species, pests, and diseases). Predation impacts vary depending on habitat quality, configuration, and other factors; trial methods should focus on reducing predation impacts and actively protecting nests.
Sustainable Farming Practices	Reduce pressures by managing grazing, mowing, fertiliser, pesticide, and slurry application. Employ appropriate agri-environment scheme designs and promote the adoption of relevant prescriptions in suitable areas.

These measures could offer solutions to address pressures in:

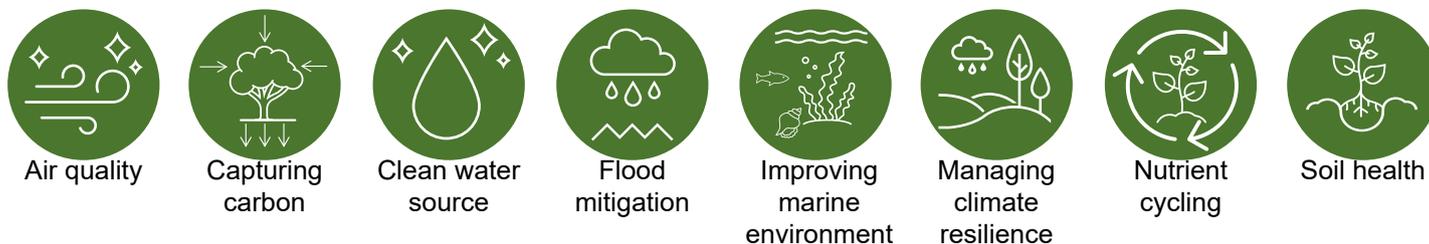
- Coastal
- Farmland
- Freshwater
- Grassland and Heathlands
- Invasive Species and Diseases

Other linked assemblages that would benefit from these measures are:

- Reedbeds and Freshwater Wetlands
- Lowland Meadows and Pasture
- Farmed Landscapes

The mapped measures for breeding in dry habitats of heathland [PM15-18] and wet grassland habitats for foraging [PM25-26] are potentially relevant for Eurasian curlew. Specific habitat measures relevant to this species are identified on the LHM as SPM06.

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



European eel

Anguilla anguilla



European eel inhabits rivers, chalk rivers, active shingle rivers, saline lagoons, saltmarshes, intertidal mudflats, coastal floodplains, and marine environments. Born in the marine environment, they migrate into rivers and wetland habitats to mature into adulthood. The species requires good water quality and clear migratory routes along rivers. Primarily nocturnal, they spend the day hidden, buried in mud, or sheltering under logs and rocks within the water.

Table 44a. European eel primary measure

Primary measure	Primary measure detail
Habitat Creation, Expansion, and Improved Connectivity	Remove barriers where possible. Where barriers cannot be removed, eel pass installations or nature-like fish passes should be considered to provide access to upstream habitats.

Table 44b. European eel other relevant measures

Other relevant measure	Other relevant measures detail
Habitat Restoration and Enhancement	Improve the quality and quantity of refuge and foraging habitats to increase survival rates. In rivers, promote protective elver cover, such as bankside tree cover, tree roots, and woody debris, through rewilding techniques. Restoration measures that reinstate the natural river channel form (such as re-meandering) are beneficial. In lakes, focus on reinstating marginal woody debris and bankside vegetation.

These measures could offer solutions to address pressures in:

- Freshwater
- Invasive Species and Diseases

Other linked assemblages that would benefit from these measures are:

- Rivers and Riverside Habitats
- Saltmarshes and Lagoons

The mapped measures for Riparian habitat connecting to saltmarshes and marine environments [PM29-30, 37-40] are potentially relevant for European eel, where appropriate. Specific habitat measures relevant to this species are identified on the LHM as SPM07.

These measures are considered to support the following wider environmental benefits:



Capturing carbon



Clean water source



Erosion prevention



Flood mitigation



Improving marine environment



Managing climate resilience



Nutrient cycling

These measures are considered to support the following co-benefits:



Clean water source



Cultural, heritage and aesthetic services



Erosion prevention



Flood mitigation



Physical and mental wellbeing

Fen raft spider

Dolomedes plantarius



Fen raft spiders rely on saw-sedge (*Cladium mariscus*), particularly around small pools formed in old peat cuttings. (Pools dominated by fine-leaved grasses such as *Molinia* are not favoured. Young spiders hatching in early summer likely mature the following year, while those hatching in late summer typically spend two winters as juveniles).

Table 45a. Fen raft spider primary measure

Primary measure	Primary measure detail
Population Establishment	Continue establishing new populations and implement translocation to suitable sites.

Table 45b. Fen raft spider other relevant measures

Other relevant measures	Other relevant measures detail
Habitat Restoration	Restore arable farmland to fen and grazing marshes around ancient fen remnants, creating new habitat to support species recovery.
Incorporate Key Vegetation	Include water soldiers (<i>Stratoides aloides</i>) in management plans to enhance feeding and nesting opportunities. Need to balance the water soldiers presence with native flora and take caution over its introduction into new sites

These measures could offer solutions to address pressures in:

- Farmland
- Freshwater

Other linked assemblages that would benefit from these measures are:

- Still Waters
- Reedbeds and Freshwater Wetlands
- Lowland Fen

The mapped measures for appropriate fresh and still water habitats [PM45-48; 49-52; 54-55; 57-59] are potentially relevant for Fen raft spider. Specific habitat measures relevant to this species are identified on the LHM as SPM08.

These measures are considered to support the following wider environmental benefits:



Capturing carbon



Clean water source



Flood mitigation



Managing climate resilience



Nutrient cycling



Soil health

These measures are considered to support the following co-benefits:



Clean water source



Flood mitigation



Physical and mental wellbeing

Hazel dormouse

Muscardinus avellanarius



New growth woodland is the preferred habitat for hazel dormouse. They have a preference for coppice woodland, or woodland managed through ride widening or thinning. The species can also be found in scrub and hedgerows. Deciduous woodland with well-developed shrub layer, overgrown hedgerows, scrub and plantations where the shrub layer is suitable.

Table 46a. Hazel dormouse primary measure

Primary measure	Primary measure detail
Habitat Restoration and Enhancement: Connect Habitats	<p>Over the past two decades, numerous projects have sought to restore dormouse habitat and to connect fragments of habitats that are isolated. Targeted habitat management includes:</p> <ul style="list-style-type: none"> • bring woodlands into appropriate management, such as coppicing • manage the canopy to reduce understory shading • control deer populations to sustainable levels to reduce browsing pressure • facilitate the development of a connected, shrub species rich and structurally complex, woodland understory • increase permeability in the urban and wider environment, for example green bridges, suitable underpasses • bring hedgerows into lifecycle management including periodic rejuvenation • establish more hedgerow trees • establish species rich hedgerows • promote hedgerow management that routinely benefits wildlife such as incremental trimming and longer trimming rotations • lay or coppice hedgerows which have passed their peak maturity to encourage dense base regrowth and ensures another lifecycle • promote the importance of field margins to maximise their benefits for terrestrial mammals • promote reduced, targeted and responsible use of pesticides and herbicides • coppicing roadside diverse scrub verges on long rotations (10-15 years) increases suitability of habitat for dormice • new road developments should aim to establish a diverse roadside wooded habitat, particularly if the road is adjacent to suitable dormouse habitat or dormouse records exist within the area • allow hedgerows to spread into field margins, establishing wider corridors of scrubby habitat connecting woodlands.

Table 46b. Hazel dormouse other relevant measures

Other relevant measures	Other relevant measures detail
Species-specific action: Support for reintroduction	Follow a planned programme for reintroduction to improve genetic diversity; dormice are released at two or more sites in close proximity, so that populations can bolster each other.
Species-specific action: Managing woodlands for dormice.	<ul style="list-style-type: none"> • Selective felling, coppicing and ride management to increase the extent, diversity and connectivity of understory in woodlands. Maintain and improve woodland rides and woodland edges by opening the canopy, to limit over-shading • Sustainable management of deer populations, which can inhibit understory development due to browsing. • Hazel layering, which can create excellent woodland understorey habit.

These measures could offer solutions to address pressures in:

- Farmland
- Woodland
- Trees and Scrub

Other linked assemblages that would benefit from these measures are:

- Native Woodland
- Trees Outside of Woodlands
- Farmed Landscapes

The mapped measures for appropriate woodland and hedgerow habitats [PM01-02; 11-12], maximising connectivity, are potentially relevant for hazel dormouse. Specific habitat measures relevant to this species are identified on the LHM as SPM09.

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Kittiwake

Rissa tridactyla



Kittiwake nests on maritime cliffs and buildings close to the coast.

Table 47a. Kittiwake primary measure

Primary measure	Primary measure detail
Species Specific Action	<ul style="list-style-type: none"> • Build purpose-built structures in coastal locations (in close proximity to existing colonies) on which birds can nest (aka 'kittiwake hotels'). Continue to investigate the efficacy and potential of these structures. • In urban locations, work with local communities to preserve historic nest sites and sub-colonies; recognise the high value of these as favoured breeding locations and existing epicentres of colony growth.

Table 47b. Kittiwake other relevant measures

Other relevant measures	Other relevant measures detail
Air pollution reduction & mitigation and offshore wind turbines or tidal energy projects - energy infrastructure	Enhance habitats important for kittiwakes (using the SeaMaST tool for example) and build on the compensation measures being implemented for offshore wind farm developments.
Removing conflict within habitats	Minimise disturbance of birds breeding in urban environments and discourage the use of inappropriate and harmful deterrents by building owners. Where there are conflicts of interest, encourage building owners to consult with the local authority.
Fisheries Management	<ul style="list-style-type: none"> • Where possible within the scope of the LNRS, protect important populations of sand eels, clupeids (sprat and herring) from over exploitation.* • Encourage and contribute to research on food availability pressures acting on local populations, especially in relation to climate change.

These measures could offer solutions to address pressures in:

- Coastal

Other linked assemblages that would benefit from these measures are:

- Coastal Shingle and Dunes
- Urban and Built Environment

*This can be supported by similar measures offshore, which would be considered outside of the scope of the current LNRS.

These measures are considered to support the following wider environmental benefits:



Erosion prevention



Improving marine environment



Managing climate resilience



Nutrient cycling

These measures are considered to support the following co-benefits:



Erosion prevention



Food provision



Physical and mental wellbeing

Lapwing

Vanellus vanellus



Breeding lapwing in England prefer wet grasslands, marshes, and farmland with short vegetation for nesting and foraging, including areas with spring crops, cultivated exposed soil, or sparse heathland grassland. In marginal upland areas, they use short, wet, unimproved grassland or pasture.

Table 48a. Lapwing primary measure

Primary measure	Primary measure detail
Sustainable Farming Practices to Reduce Pressures	<ul style="list-style-type: none"> • Manage grazing, mowing, fertiliser use, pesticides, slurry, and buffers in a way that provides suitable nesting/feeding habitat and reduces disturbance or the destruction of nests. • Implement agri-environment schemes tailored to meet breeding Lapwing requirements at an appropriate scale. Actions include: <ul style="list-style-type: none"> ○ creation of Lapwing plots in arable fields ○ growing spring cereals instead of autumn cereals ○ delaying or adjusting mowing, grazing, or crop cultivation timings ○ restoring wet grassland features and habitats (such as scrapes and footdrains) and instigating suitable water level management regimes ○ maintaining short swards on wet pastures through grazing and cutting regimes outside of the breeding season ○ investigate a range of measures to reduce predation of breeding birds. • Additional considerations: <ul style="list-style-type: none"> ○ ensure field operations do not destroy or remove nests ○ create bare ground patches across landscapes during autumn and winter for nesting and feeding ○ minimise or avoid cattle grazing between mid-March and May to prevent nest trampling. ○ Recreational disturbance management ○ Monitoring of invertebrate food may be required in areas where there is poor productivity to inform management adjustments that may be required to support Lapwing and other breeding waders. ○ Ensure that active planting of trees close to areas supporting or with potential to support Lapwing is avoided.

Table 48b. Lapwing other relevant measures

Other relevant measures	Other relevant measures detail
Maintenance of Existing Habitat	Protect habitats within areas around protected sites, ensuring the conservation of vital wintering sites.
Arable, Grassland, and Wetland Expansion	Maintain and expand wetland and grassland habitats through targeted recreation schemes for wetland birds, ensuring their functionality as core conservation areas.
Predator Management	Manage problematic species (including invasive non-native species, pests, and diseases). Predation impacts vary depending on habitat quality, configuration, and other factors; trial methods should focus on reducing predation impacts and actively protecting nests.

These measures could offer solutions to address pressures in:

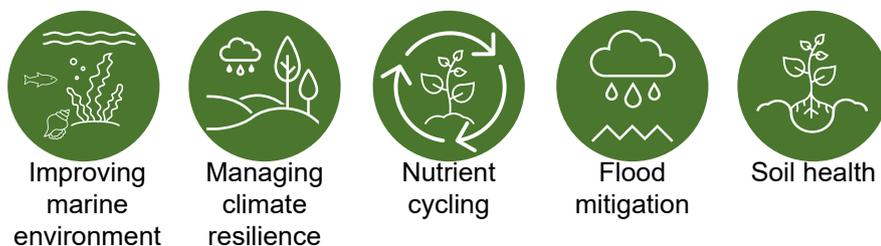
- Coastal
- Farmland
- Woodland, Trees and Scrub
- Freshwater
- Grassland and Heathlands

Other linked assemblages that would benefit from these measures are:

- Farmed Landscapes
- Reedbeds and Freshwater Wetlands
- Lowland Meadows and Pasture

The mapped measures for Wet grassland measures and appropriate farmed landscape actions, including unmapped measures [PM25-26] are potentially relevant for lapwing. Specific habitat measures relevant to this species are identified on the LHM as SPM12.

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Cultural,
heritage and
aesthetic
services



Flood
mitigation



Food
provision



Physical
and mental
wellbeing



Raw
materials

Little whirlpool ramshorn snail

Anisus vorticulus



Little whirlpool ramshorn snail is found in coastal floodplains, lowland fens, and ponds with high water quality, fen vegetation, and stable water levels. Prefers drainage channels in traditionally managed grazing marshes with a high diversity of aquatic plants at late successional stages. Thrives in unpolluted, calcareous waters within marsh drains that support dense aquatic flora and favours ditches with diverse flora but minimal emergent vegetation.

Table 49a. Little whirlpool ramshorn snail measures

Primary measure	Primary measure detail
Habitat Creation and Existing Population Management	<ul style="list-style-type: none"> • Create new habitats, including ditch systems, and remove fish species such as carp that increase turbidity. These areas must be calcareous and unpolluted water sources. • Specific protocols must be followed to manage occupied ditches eg remedial management and trimming waterside vegetation, and a licence obtained due to European Protected Species status

Table 49b. Little whirlpool ramshorn snail other relevant measures

Other relevant measures	Other relevant measures detail
Population Establishment	Establish additional populations within large wetland ecosystems, including through translocation.
Agricultural Management	<ul style="list-style-type: none"> • Manage drainage and irrigation operations and associated infrastructure to minimise impacts. • Reduce diffuse pollution entering surface or groundwater from agricultural activities.
Transport Impact Reduction	Mitigate the impacts of transport operations and infrastructure on surrounding ecosystems, aiming to manage and divert run off to minimise impacts on ditches alongside routes. Examples include installation of buffer strips, barriers, silt traps, increased planting of appropriate species and bund creation.

These measures could offer solutions to address pressures in:

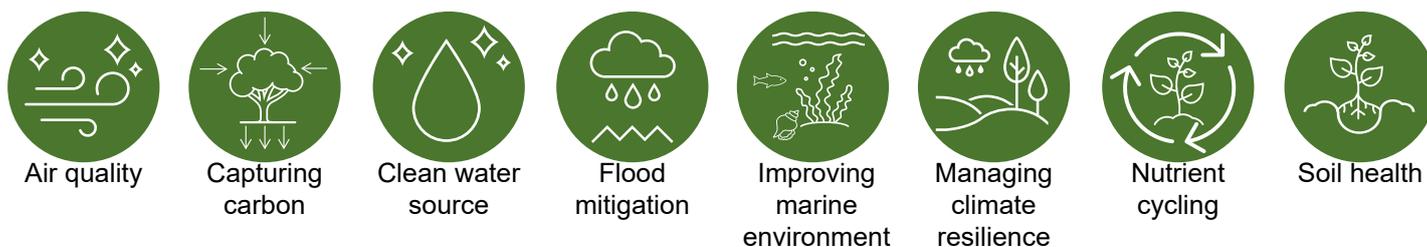
- Coastal
- Farmland
- Freshwater

Other linked assemblages that would benefit from these measures are:

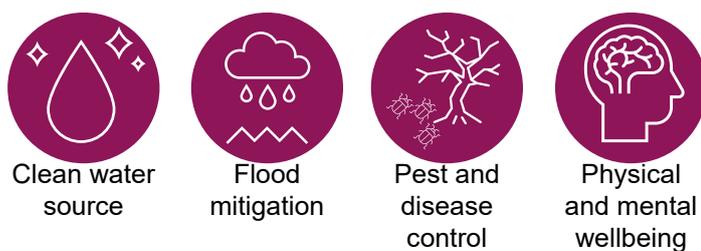
- Still waters
- Reedbeds and Freshwater Wetlands
- Lowland Fen

The mapped measures for wet grassland [PM25-26] and appropriate river and ditch habitat measures [PM29] are potentially relevant for Little whirlpool ramshorn snail. Specific habitat measures relevant to this species are identified on the LHM as SPM14.

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Narrow-mouthed whorl snail

Vertigo angustior



Narrow-mouthed whorl snails are typically found in calcareous wetlands bordering lakes, rivers, or fens, with calcareous fen being the species' most common habitat. Due to its specific microhabitat requirements, the species is often confined to a narrow zone around wetlands, spanning only a few metres in width.

Table 50a. Narrow-mouthed whorl snail primary measure

Primary Measure	Primary measure detail
Habitat Improvement	Prevent afforestation to maintain open habitat conditions suitable for the species.

Table 50b. Narrow-mouthed whorl snail other relevant measures

Other Relevant Measures	Other relevant measures detail
Habitat Maintenance	<ul style="list-style-type: none"> • Avoid drainage and implement re-wetting strategies to preserve wetland areas. • Use controlled grazing techniques to manage vegetation and sustain habitat quality.
Water Pollution Mitigation	<ul style="list-style-type: none"> • Address eutrophication, a primary threat to the species, which degrades water quality in coastal seepages. Reduce nutrient runoff to prevent further deterioration.

These measures could offer solutions to address pressures in:

- Farmland
- Freshwater

Other linked assemblages that would benefit from these measures are:

- Still waters
- Reedbeds and Freshwater Wetlands
- Rivers and riverside habitats
- Lowland Fen

The mapped measures for unmanaged habitat including wet grassland [PM25-26], fen and wetland [PM33-34] alongside coastal ditches [PM37-38] are potentially relevant for narrow-mouthed whorl snail. Specific habitat measures relevant to this species are identified on the LHM as SPM15.

These measures are considered to support the following wider environmental benefits:



Capturing carbon



Clean water source



Flood mitigation



Improving marine environment



Managing climate resilience



Nutrient cycling



Soil health

These measures are considered to support the following co-benefits:



Clean water source



Flood mitigation



Food provision



Physical and mental wellbeing

Orange-fruited elm lichen

Cerothallia luteoalba/Gyalolechia flavorubescens



Orange-fruited elm lichen is a species associated with well-lit, dry trees with rough, basic bark. It typically occurs on bark or exposed lignum, particularly in the wound tracks of old, injured trunks in parklands. It is usually found near the base of the trunk, where the bark or wood is enriched with nutrients. Occasionally, it can also be found on soft, calcareous stone (eg chalk pebbles) or mortar. Before Dutch Elm Disease, elm was its primary host tree. In recent years, it has occasionally been recorded on sycamore, field maple, and ash.

Table 51a. Orange-fruited elm lichen primary measures

Primary Measure	Primary measure details
Land Management Techniques	<ul style="list-style-type: none"> • Manage veteran and ancient trees to benefit this species. • Identify younger suitable trees (such as field maple, sycamore, disease resistant elms) to serve as future veteran replacements, ensuring light conditions meet the species' requirements. • Where suitable trees are absent, plant future veteran trees near existing populations but not so close as to cause shading or competition issues. • Allow successive generations of trees to age naturally, enabling natural damage to create niches. • Plant disease-resistant elm to support population recovery.

Table 51b. Orange-fruited elm lichen other relevant measures

Other Relevant	Other relevant measures details
Habitat Restoration and Enhancement	<ul style="list-style-type: none"> • Implement positive woodland management to maintain open conditions around host trees and create glades. • Reintroduce sensitive grazing to control shrub encroachment and maintain suitable light levels.
Air Pollution Reduction and Mitigation	<ul style="list-style-type: none"> • Reduce locally generated atmospheric pollutants by: <ul style="list-style-type: none"> ○ lowering excessive stocking levels ○ limiting fertilisation of nearby grasslands. • Ensure wayside trees are free from fertilisers, manure, and slurry through agri-environment schemes.

These measures could offer solutions to address pressures in:

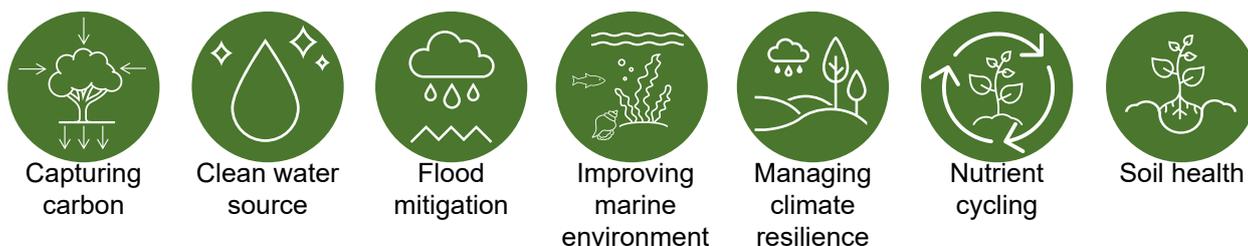
- Farmland
- Woodland
- Trees and Scrub
- Urban and Built
- Invasive Species and Diseases

Other linked assemblages that would benefit from these measures are:

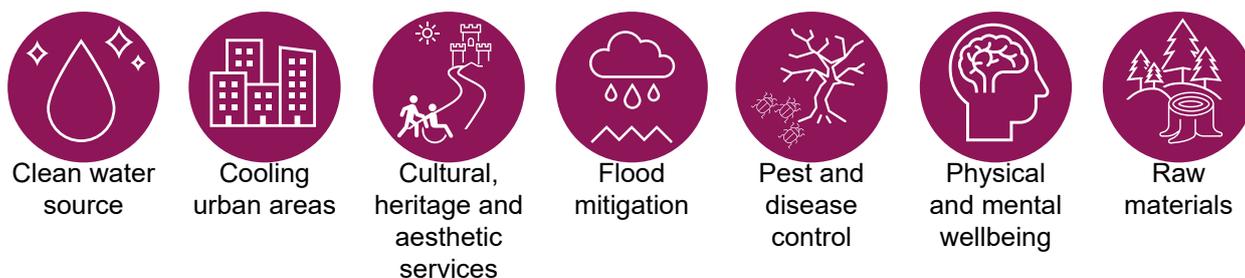
- Native trees
- Trees outside of woodlands

Mapped specific woodland planting schemes [PM01-02, 05-06] and measures for veteran trees [PM50] are potentially relevant for orange-fruited elm lichen. Specific habitat measures relevant to this species are identified on the LHM as SPM19.

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Rosser's Sac-spider

Clubiona rosserae



Rosser's Sac-spiders are confined to fens. In fens it is found among cut sedge and reeds and in sedge tussocks.

Table 52a. Rosser's Sac-spider primary measures

Primary Measure	Primary measure details
Land Management practices	Maintain a high ground water table using soil and water management, minimising inappropriate drainage.

Table 52b. Rosser's Sac-spider other relevant measures

Other Relevant	Other relevant measures details
Land Management Practices	Prevent carr woodland encroaching on open sedge beds by a regime of annual mowing and grazing.
Improve habitat connectivity	Wetland links needed between remnant fen blocks to reduce hydrological vulnerability and increase the chances of long-term recolonisation.

These measures could offer solutions to address pressures in:

- Farmland
- Freshwater

Other linked assemblages that would benefit from these measures are:

- Lowland Fens

Mapped specific fen and wetland measures [PM33-34] are potentially relevant for Rosser's sac-spider. Specific habitat measures relevant to this species are identified on the LHM as SPM20.

These measures are considered to support the following wider environmental benefits:



Clean water source



Flood mitigation



Improving marine environment



Managing climate resilience



Nutrient cycling



Soil health

These measures are considered to support the following co-benefits:



Clean water
source



Flood
mitigation



Improving
marine
environment



Managing
climate
resilience



Nutrient
cycling



Soil health

Scarce vapourer

Orgyia recens



Scarce vapourer typically occurs in lowland sandy heaths, wet woodlands, fens, bogs, and hedgerows.

Table 53a. Scarce vapourer primary measure

Primary Measure	Primary measure detail
Hedgerow Management	<ul style="list-style-type: none"> • Manage hedgerows on a rotation of at least three years to maintain biodiversity and habitat health. • Avoid managing all hedgerows on a site within the same year. • Undertake management in sections, ensuring cuts or trims are distributed across the hedgerow.

Table 53b. Scarce vapourer other relevant measures

Other Relevant Measures	Other relevant measures detail
Translocation/ Reintroduction	<ul style="list-style-type: none"> • Introduction of populations to appropriate habitat areas, including where possible additional research into distribution limitations.
Planting of Habitat Trees	<ul style="list-style-type: none"> • Ensure planting of deciduous trees such as hawthorn, pedunculate oak, and sessile oak, which serve as essential feeding sites for larvae during the winter months.

These measures could offer solutions to address pressures in:

- Farmland
- Woodland
- Trees and Scrub
- Grassland and Heathlands

Other linked assemblages that would benefit from these measures are:

- Farmed Landscapes
- Acid Grassland and Heathland Native Woodland
- Lowland Fen

Varied mapped habitat measures across arable, grassland, hedgerow, woodland and fen landscapes [PM01-03, 11-12, 15-26, 33-34] are potentially relevant for Scarce vapourer. Specific habitat measures relevant to this species are identified on the LHM as SPM21.

These measures are considered to support the following wider environmental benefits:



Capturing carbon



Clean water source



Flood mitigation



Improving marine environment



Managing climate resilience



Nutrient cycling



Pollination



Soil health

These measures are considered to support the following co-benefits:



Clean water source



Cooling urban areas



Cultural, heritage and aesthetic services



Flood mitigation



Physical and mental wellbeing



Raw materials

Serotine bat

Eptesicus serotinus



The serotine bat prefers building roosts and forages in open areas across diverse habitats, such as woodland edges, small-scale farmland, over lakes and rivers, and around streetlights. Benefits from organic, cattle-grazed pasture.

Table 54a: Serotine bat primary measure

Primary Measure	Primary Measure detail
Habitat Restoration and Enhancement: Creation of Corridors	Artificial lighting at night can form a barrier to movement across the landscape. Therefore, it is important to reestablish, enhance and/or create new 'dark commuting corridors' of appropriate habitat between roosting and foraging areas. In contrast, artificial illumination should be provided if necessary in foraging areas, to maximise feeding opportunities.

Table 54b: Serotine bat other relevant measures

Other Relevant Measures	Other Relevant Measures detail
Habitat Restoration and Enhancement: Role of Grazing Land and Feeding Habitat	<ul style="list-style-type: none"> • This species benefits from organic livestock management practices, including winter grazing, particularly in the absence of treatments that effect parasitic worm populations (eg ivermectin). • Provision of a variety of improved feeding habitats where large invertebrates can be found eg creation of woodlands and hedgerows, riparian planting and enhancement of aquatic areas to ensure year round provision. • Protection of existing roost sites.

These measures could offer solutions to address pressures in:

- Farmland
- Woodland
- Trees and Scrub
- Grassland and Heathlands
- Urban and Built

Other linked assemblages that would benefit from these measures are:

- Native Woodland
- Trees Outside of Woodlands
- Urban, Built and Garden Environments
- Farmed Landscapes
- Lowland Measures and Pastures

The mapped potential measures which focus on the creation of varied habitat types and increased connectivity, in addition to associated unmapped measures in urban and built landscapes, are potentially relevant for the serotine bat. Specific habitat measures relevant to this species are identified on the LHM as SPM22.

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Starlet sea anemone

Nematostella vectensis



Starlet sea anemone are found in isolated or semi-isolated brackish pools within saltmarshes and lagoons, as well as in ditches and on mudflats in saltmarshes and shallow estuaries at or above the high-water mark. Typically associated with mud, muddy sand, and muddy shingle, but can also occur on vegetation.

Table 55a: Starlet sea anemone primary measure

Primary Measure	Primary measure detail
Habitat Creation and Connectivity	<ul style="list-style-type: none"> Reduce the isolation of brackish pools to minimise habitat fragmentation and enhance ecological connections. Promote natural processes to ensure lagoon formation is facilitated and shingle barriers remain as a protective barrier. Create new lagoons near to existing populations to allow colonisation and spread from existing sites.

Table 55b: Starlet sea anemone other relevant measures

Other Relevant Measures	Other relevant measures detail
Habitat Restoration and Protection	<ul style="list-style-type: none"> Maintain and enhance lagoons and other sheltered brackish water habitats. Mitigate damaging factors, including pollution and drainage, to ensure long-term habitat viability. Promote alternative run off pathways and sustainable agricultural practices to minimise salinity changes.
Translocation	Relocate individuals to expansive, unmanaged open marshes free from human influence, allowing for natural population spread and sustainability.

These measures could offer solutions to address pressures in:

- Freshwater
- Coastal

Other linked assemblages that would benefit from these measures are:

- Saltmarshes and Lagoons
- Coastal shingle and dunes

The habitat measures that have been mapped within coastal habitats [PM37-40] are additionally potentially relevant for starlet sea anemone. Specific habitat measures relevant to this species are identified on the LHM as SPM23.

These measures are considered to support the following wider environmental benefits:



Capturing carbon



Erosion prevention



Flood mitigation



Improving marine environment



Managing climate resilience



Nutrient cycling

These measures are considered to support the following co-benefits:



Erosion prevention



Flood mitigation



Physical and mental wellbeing

Suffolk lungwort

Pulmonaria obscura



Suffolk lungwort is an understorey plant typically found in woodlands, growing beneath the main canopy of trees. The understory consists of smaller trees, shrubs, and herbaceous plants that thrive in the dappled light and sheltered conditions provided by the overhead canopy. It is also found in rides and areas of coppiced woodland.

Table 56a. Suffolk lungwort primary measure

Primary measure	Primary measure details
Species-Specific Action	<ul style="list-style-type: none"> • Continue coppice management to maintain suitable habitat conditions. • Employ developed plant propagation techniques and establish re-introduced populations at appropriate locations.

Table 56b. Suffolk lungwort other relevant measures

Other relevant measures	Other relevant measures details
Landscape Habitat Creation, Expansion, and Connectivity	<ul style="list-style-type: none"> • Improve woodland connectivity to link fragmented habitats. • Buffer existing sites to enhance their ecological resilience. • Ensure existing sites are managed appropriately

These measures could offer solutions to address pressures in:

- Farmland
- Woodland
- Trees and Scrub

Other linked assemblages that would benefit from these measures are:

- Native woodland
- Trees outside of woodland

The habitat measures that have been mapped within woodlands to create appropriate habitat and buffer zones [PM01-04] are potentially relevant for Suffolk lungwort. Specific habitat measures relevant to this species are identified on the LHM as SPM24.

These measures are considered to support the following wider environmental benefits:



Capturing carbon



Improving marine environment



Managing climate resilience



Nutrient cycling



Soil health

These measures are considered to support the following co-benefits:



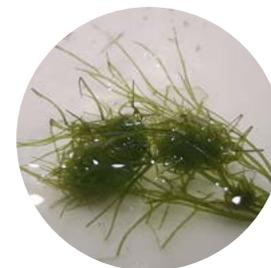
Physical and mental wellbeing



Raw materials

Tassel stonewort

Tolypella intricata



Tassel stonewort are found in shallow water such as pools, ditches and semi-permanent puddles which dry up in summer. Tassel stonewort thrives in clear, unpolluted water and likes to root into bare mineral sediments like clay, sand or fine gravel.

Table 57a. Tassel stonewort primary measure

Primary measure	Primary measure details
Water Quality and Pollution Control	<ul style="list-style-type: none"> • Implement offsite remedial actions to tackle diffuse pollution. • Reduce water quality pressures using sustainable agricultural practices, reduction in run off, use of nature-based solutions and improved water treatment practices, as poor water quality has driven most declines in stonewort populations.

Table 57b. Tassel stonewort other relevant measures

Other relevant measures	Other relevant measures details
Habitat Management	Improve habitat topography, maintain open conditions by removing vegetation regularly and using cattle grazing at core sites to enhance suitability for stoneworts.
Monitoring	Monitor known sites regularly, including regular monitoring of nutrient levels. Nutrient levels to be reduced if necessary.

These measures could offer solutions to address pressures in:

- Freshwater

Other linked assemblages that would benefit from these measures are:

- Still Waters

The mapped measures for appropriate brackish shallow lake habitats [PM31-32] are potentially relevant for tassel stonewort. Specific habitat measures relevant to this species are identified on the LHM as SPM25.

These measures are considered to support the following wider environmental benefits:



Capturing carbon



Clean water source



Flood mitigation



Improving marine environment



Managing climate resilience



Nutrient cycling

These measures are considered to support the following co-benefits:



Clean water
source



Cultural,
heritage and
aesthetic
services



Flood
mitigation



Physical
and mental
wellbeing

Water vole

Arvicola amphibius



Water voles can be found in coastal floodplains, lowland fens, reedbeds, raised bogs, lakes, ponds, rivers, and chalk rivers. The species favours riparian habitats, including streams, ditches, rivers, canals, reedbeds, and upland systems. Optimal habitats have slow-flowing water and densely vegetated banks 2–5 metres from the water’s edge.

Table 58a. Water vole primary measure

Primary measure	Primary measure details
Management of Problematic Invasive Species: Mink Control	<ul style="list-style-type: none"> • Monitor mink occurrence and maintain monitoring of traps to ensure they do not recolonise from other counties, to mitigate their impact on native wildlife. • Monitoring to understand how water vole populations respond to a reduction in mink is also important, along with helping understanding of other pressures on the species that may limit their recovery. • Coordinate sustained efforts with landowners to eradicate mink across large landscapes and river catchments. • Use appropriately designed mink rafts for effective monitoring and humane trapping. Remote devices can manage multiple rafts efficiently across wide areas.

Table 58b. Water vole other relevant measures

Other relevant measures	Other relevant measures details
Habitat Restoration and Enhancement: Restore watercourses and marginal vegetation to their natural state.	<p>Sympathetic management of river banks:</p> <ul style="list-style-type: none"> • fence buffer zones (2m+) from water’s edge to reduce trampling. Provide off-stream watering points • manage trees and scrub to avoid excessive shading and support diverse vegetation • rotate bankside cutting every two years (or longer), leaving one bank uncut. Cut from late September • de-silt ditches every five years, avoiding damage to fragile banks • ensure that fish and crayfish traps are legally compliant by having adequate guards to prevent water vole from drowning in traps
Habitat Creation, Expansion, and Connectivity: Create waterbodies with marginal vegetation to enhance habitat.	<p>Increase Water vole habitat:</p> <ul style="list-style-type: none"> • establish grassy buffer strips (4-6m) along watercourses, ditches, and ponds, particularly near intensive farmland • remove artificial bank revetments to support burrowing and vegetation growth • restore or create wetlands (ponds, scrapes, ditches) linked to existing habitats to promote movement.

Other relevant measures	Other relevant measures details
Hydrology Restoration on Protected Sites	Remove land drainage to raise water table levels and restore natural hydrology.
Water Pollution Reduction and Mitigation	Reduce water pollution and eutrophication, which harm water voles through contamination and habitat degradation.

These measures could offer solutions to address pressures in:

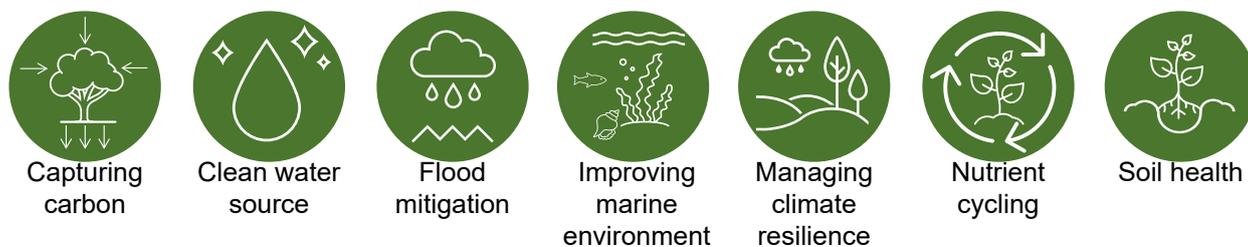
- Farmland
- Woodland
- Trees and Scrub
- Freshwater

Other linked assemblages that would benefit from these measures are:

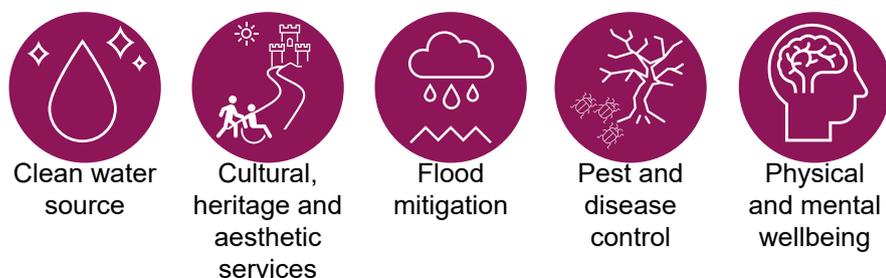
- Still Waters
- Rivers and Riverside Habitats
- Lowland Fen
- Reedbeds and Freshwater Wetlands

The habitat measures that have been mapped within freshwater wetland, fen, reedbed and riparian areas [PM29-36] are potentially relevant for water voles. Specific areas identified for measures for this species are identified on the LHM as SPM26

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



White-clawed crayfish

Austropotamobius pallipes



White-clawed crayfish are found in lakes, ponds, rivers, chalk rivers, and potentially brownfield sites. Prefers clean water with abundant refuges such as tree roots, rocks, and stable riverbanks. Thrives in clean aquatic habitats, particularly hard-water streams and rivers, but may also inhabit canals, reservoirs, lakes, and water-filled quarries. Within Suffolk, this species has been significantly affected by disease introduced with the non-native crayfish and population monitoring is essential.

Table 59a. White-clawed crayfish primary measure

Primary Measure	Primary Measure detail
Habitat Creation and Creating In-Water Refuges	Establish trees such as alder and willow along riverbanks to create shaded areas and exposed root systems suitable for crayfish colonisation. Place cobbles, boulders or wood along riverbanks and margins to provide shelter.

Table 59b. White-clawed crayfish other relevant measures

Other Relevant Measures	Other Relevant Measures details
Catchment Management	Maintain high levels of water quality and improve water quality by implementing buffer strips, restricting cattle access, and other sustainable practices.
Captive Breeding Programme	Support population recovery through captive breeding initiatives, establishing ark sites to maintain the number of populations and incorporate eDNA sampling as appropriate.
Population maintenance	Explore techniques for the active management and removal of invasive species to help safeguard populations within historical range and promote or apply appropriate biosecurity measures. Refer to the Crayfish Conservation Manual as required [31].

These measures could offer solutions to address pressures in:

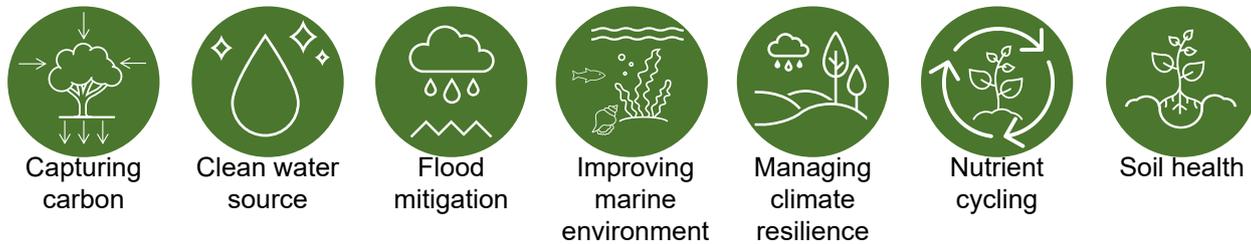
- Freshwater
- Woodland
- Trees and Scrub
- Invasive Species and Diseases

Other linked assemblages that would benefit from these measures are:

- Still Waters
- Rivers and Riverside Habitats

The habitat measures that have been mapped within freshwater habitats, but specifically chalk streams and rivers, including ark habitat sites [PM29-32] are potentially relevant for white-clawed crayfish. Specific habitat measures relevant to this species are identified on the LHM as SPM27.

These measures are considered to support the following wider environmental benefits:



These measures are considered to support the following co-benefits:



Locations of key species across Suffolk

To support identification of potential measures within the spatial strategy, data on the recorded locations of the key species, provided by SBIS (Suffolk Biodiversity Information Service) has been reviewed through the creation of the Local Habitat Map (see **Part D: Locations for Action**). The maps below demonstrate the species density (**Figure 11**) and species richness (**Figure 12**) across the county for the combined records and counts for those individuals. This data is intended to highlight the most important areas for population numbers and variety of species found, to support the identification of the areas identified for nature recovery actions.

Figure 11. A map demonstrating where the key species indicated in the LNRS can be found across Suffolk in terms of numbers of records

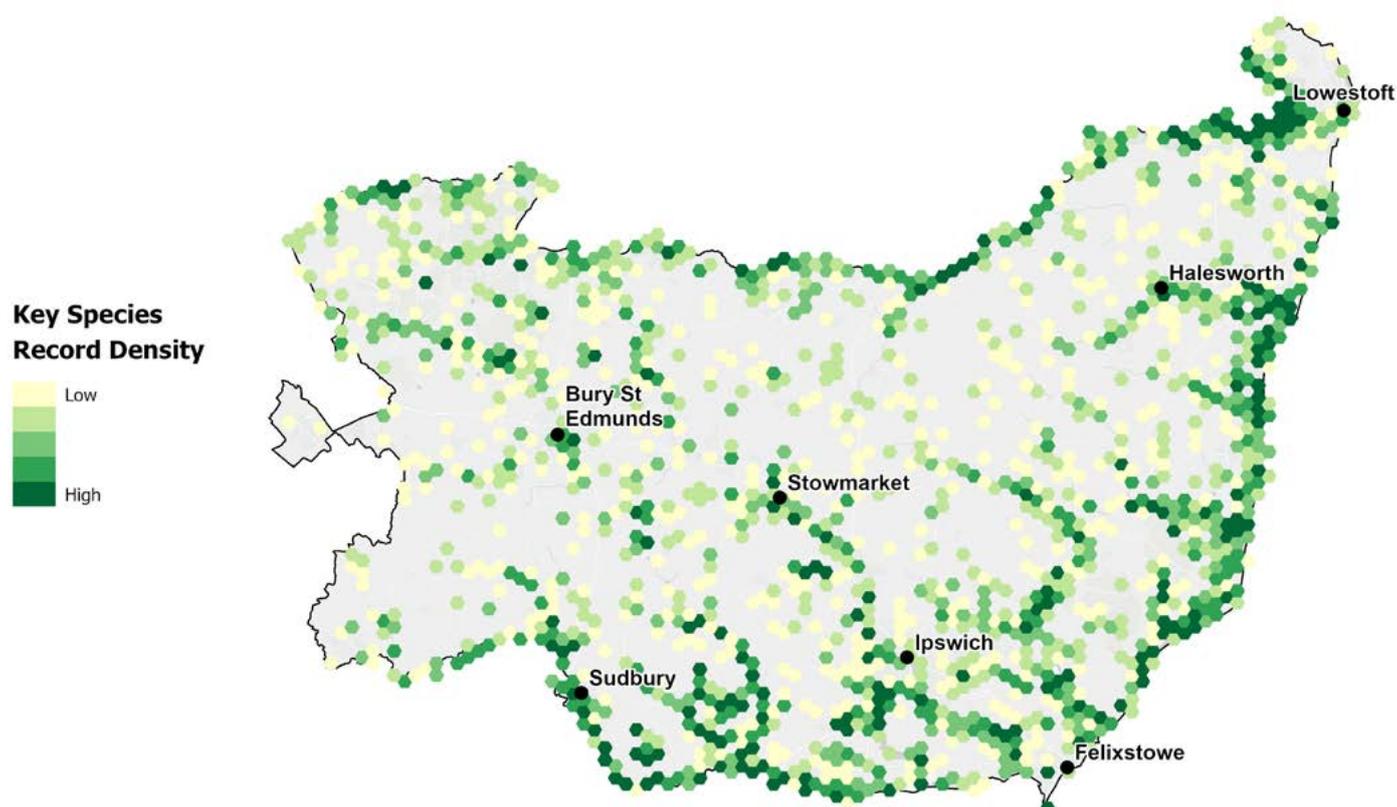
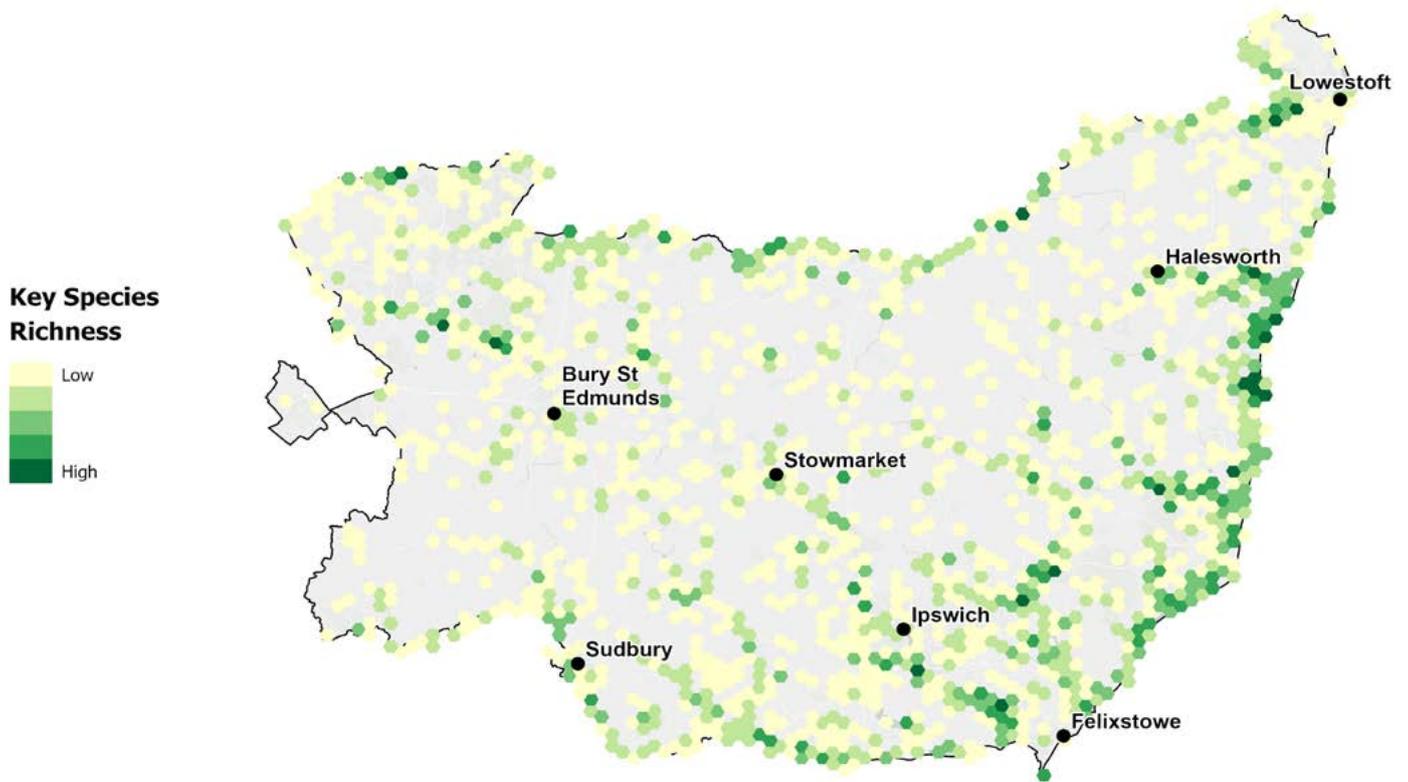


Figure 12. A map demonstrating how many of the key species indicated in the LNRS can be found in locations across Suffolk – the species richness.



Wider priorities

Some measures are not specifically designed to create or enhance habitats, and therefore **Table 60** identifies Wider Priorities designed to apply widely across locations, stakeholders and land parcels. These link to key spatial, environmental or nature-based processes which do not have a defined location focus. These can be adopted across the county (eg within the unmapped areas or ‘white space’) to bolster the specific actions determined within the species and habitat prioritisation process, creating benefits across ecosystems.

Table 60. Wider Priorities

Outcomes	Relevant potential and existing measures/actions/projects for on the ground delivery
Reduce impacts on nature from pesticide use (including insecticides, herbicides and fungicides)	<ul style="list-style-type: none"> • Promote the reduced, targeted, and responsible use of pesticides (insecticides, herbicides, and fungicides) in farms, parks, streets, and gardens. • Implement regenerative farming practices to impact soil biodiversity and carbon capture.
Reduce flood risk through nature-based solutions	<ul style="list-style-type: none"> • Use of SuDS including reedbeds, green roofs, swales, rain gardens, permeable paving, water butts etc. • Re-connect river channels with their floodplains. • Slow down overland flows through woodland and meadow creation. • Leave wood debris in the upper reaches of river channels to slow flood flows.
Reduce air pollution pressures on nature from all sources	<ul style="list-style-type: none"> • Promote reduced emissions of damaging air pollutants from all sources. • Use of shelterbelts of trees to reduce nitrogen and filter out particles from the air.
Reduce water pollution pressures on nature from all sources	<ul style="list-style-type: none"> • Reduce emissions of damaging water pollutants from all sources. • Implement in-field measures to reduce run-off • Raise community awareness about catchment management, including septic tanks and domestic treatment plants. • Benefit the marine environment by improving the quality of the freshwater entering it.
Reduce water use pressures on nature from all sources	<ul style="list-style-type: none"> • Promote reduced water use from all sources. • Ensure that water abstraction across catchments is sustainable. • Improve storage of water during winter months so it can be used in the summer to reduce the need for abstraction from watercourses and from groundwater.

Outcomes	Relevant potential and existing measures/actions/projects for on the ground delivery
Reduce recreational pressures on nature from all sources	<ul style="list-style-type: none"> • Promote responsible recreational practices (with links to strategic solutions mitigating impacts on sensitive sites eg Suffolk Coast RAMS). • Manage areas around campsites and recreational sites using low-impact tree and forestry management systems. • Encourage schemes to promote protection of nesting birds, especially in coastal areas. • Reduce light pollution from recreational sources and promote dark skies. • Provision of 'Suitable Alternative Natural Greenspaces' (SANG) close to where people live in order to decrease recreational pressures on more sensitive sites for nature.
Improving soil quality in all areas	<ul style="list-style-type: none"> • Implement sustainable agroforestry, horticultural and agricultural practices. • Keep soil covered throughout the year using cover crops. • Preserve and improve soil structure via minimum tillage. • Avoid soil compaction. • Increase or maintain soil organic matter.
Creating large scale mosaic habitats	<p>Implement habitat creation in terms of continuous and dynamic mosaics of at least 100 hectares (ideally approximately 5000 to 12000 hectares) in any location, not specifically those identified in the ACB. Follow recommendations in the Nature Networks Evidence Handbook [32]. This could also incorporate free-roaming herbivores introduced to encourage natural ecological processes.</p>
Enabling future action	<ul style="list-style-type: none"> • Measures to support the creation of new local wildlife groups, community action and the natural history recorders of the future. • The creation of new jobs, apprenticeships and skills connected to nature, especially in traditional methods.

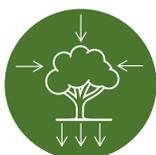
These measures could offer solutions to address pressures in:

- Coastal
- Farmland
- Woodland, Trees and Scrub
- Freshwater
- Grassland and Heathlands
- Urban and Built
- Invasive Species and Diseases

These measures are considered to support the following wider environmental benefits:



Air quality



Capturing carbon



Clean water source



Erosion prevention



Flood mitigation



Improving marine environment



Managing climate resilience



Nutrient cycling



Pollination



Soil health

These measures are considered to support the following co-benefits:



Clean water source



Cooling urban areas



Cultural, heritage and aesthetic services



Erosion prevention



Flood mitigation



Food provision



Pest and disease control



Physical and mental wellbeing



Pollination



Raw materials

Securing a species future: Fen Raft Spider translocation programme

The Fen Raft Spider, *Dolomedes plantarius*, is listed as Vulnerable to extinction on the global and British Red Lists. Translocation is one element in its national recovery programme, aiming to reduce the extinction risk of this large, elegant and superbly adapted wetland spider by increasing the number of populations from three natural remnants to at least twelve.

Who's involved?

- Natural England (instigator, and host to one new population)
- Suffolk Wildlife Trust (donor population, and host to two new populations)
- Sussex Wildlife Trust (donor population)
- RSPB (host to one new population)
- BIAZA (13 British Zoos and Collections contributed to captive rearing work in 2011-13)

Funding contributions came from:

- Natural England
- the Broads Authority
- the BBC Wildlife Fund
- Love the Broads
- Suffolk Wildlife Trust
- RSPB.

Research was undertaken by PhD and Masters students at The Universities of East Anglia and Nottingham.

Hundreds of volunteers have monitored the populations on behalf of the project and host sites managers.

What have they achieved?

The number of Fen Raft Spiders populations in Britain has increased from three to seven since 2010, substantially reducing the threat of extinction.

Translocations have focussed on the Broads where new populations now thrive on river-side grazing marshes on a 5km stretch of the lower Waveney, a 6 km stretch of the mid-Yare, and 2km of the Thurne.



Adult female Fen Raft Spider



Volunteers training to monitor new Fen Raft Spider Populations

How did they do it?

The programme followed international (IUCN) guidelines for conservation translocations. Each potential site we evaluated for over 3 years and assessed the genetics of the source population.

The first three translocation sites were populated with spiders from remnant populations at Redgrave and Lopham Fen, Norfolk, and the Pevensey Levels, East Sussex.

The Redgrave and Lopham Fen population was very small, so spiderlings were individually captive-reared for the first three months of life, greatly increasing their survival compared with that in the wild. Because spiderling survival is naturally low, the numbers introduced were large – over 30,000 across the four sites.

The first new population established so rapidly that it was able to supply the spiderlings needed for the fourth translocation; there was no longer any need to remove spiders from the natural populations or to undertake very labour-intensive captive rearing.

What's next?

The programme now includes a new phase, evaluating potential translocation sites beyond the Broads, initially in the East Anglian Fen Basin. Research on the impacts of climate change on this relatively immobile species suggests that its climatic range is shifting and that translocations are likely to remain an important element in its conservation.

Regular monitoring remains essential to understanding how the populations vary in extent and abundance between years and over longer periods. This information underpins routine site management and informs the potential need for additional interventions.

Genetic monitoring is also being introduced to help inform the most appropriate choice of parental stock for future translocations.

New research is now investigating the possibility of developing eDNA methods for monitoring this species, potentially making it much easier to detect future range changes.

Find out more by visiting
www.dolomedes.org.uk

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