

LOGO |

# SWANSEA LOCAL NATURE RECOVERY ACTION PLAN (LNRAP)

2023 - 2030

DRAFT

WE ARE IN A

# NATURE EMERGENCY

In recognition of this ecological crisis the Senedd became one of the first parliaments in the world to declare a Nature Emergency in June 2021. Swansea Council also declared a Nature Emergency in November 2021.

The Nature Recovery Action Plan (NRAP) for Wales is the national biodiversity strategy for Wales. It sets out six key objectives and five overarching themes of action to direct nature recovery action at a national level.

To address the nature emergency in Swansea, this Swansea Local Nature Recovery Action Plan (LNRAP) was created by the **Swansea Local Nature Partnership (LNP)**. This LNRAP replaces the Local Biodiversity Action Plan (published 2005).

It sets out local priorities in the form of 'action themes' (aligned with the six objectives of the NRAP for Wales) to address the decline of nature and achieve nature recovery in Swansea. LNP partners will use the action themes to guide their work, and progress will be recorded annually.

However **this plan is for everyone** - at home, in school, in work or in your community - whether you work in nature conservation or not!





## WHAT IS

# THE SWANSEA LNRAP?

### **An introduction to nature and nature recovery**

In the following pages the importance of nature and nature recovery are identified and information on the state of nature at a global, national and Swansea level are provided.

### **A guide to coordinate nature recovery action**

Next the Swansea LNRAP action themes identify local priorities for nature recovery in the context of the national objectives of the NRAP for Wales. These are intended to guide a coherent and coordinated approach to the nature emergency across the county.

### **A reference for information on local nature**

Then information and links to further resources on habitats and species in Swansea are provided so you can learn about some of Swansea's biodiversity.

### **A source of inspiration**

Finally, the Swansea LNRAP also provides some ideas for what you can do at home, school, work, your community, or as a nature enthusiast to aid nature recovery in Swansea.



THE SWANSEA LNRAP WAS

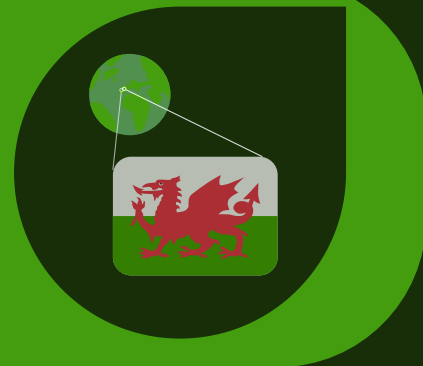
## CREATED WITH:

- Engagement and feedback from the Swansea LNP members through workshops, presentations, LNP quarterly meetings, plus written feedback and suggestions.
- Key global, national, and regional legislation, policies and plans in mind, plus relevant public consultations.
- Regard to relevant evidence reports (e.g. State of Natural Resources Report (SoNaRR) and others).
- Consideration of local data including habitats, species and ecosystem resilience.

FOR REFERENCE:

# WIDER CONTEXT

**BROAD NATIONAL OBJECTIVES:** informed and directed by national legislation and global policies/targets



The Well-Being of Future Generations (Wales) Act 2015

The Environment (Wales) Act 2016

NRAP for Wales & 2020/21 Update\*

Wildlife and Countryside Act 1981 (as amended)

Marine and Coastal Access Act 2009

Welsh National Marine Plan 2019

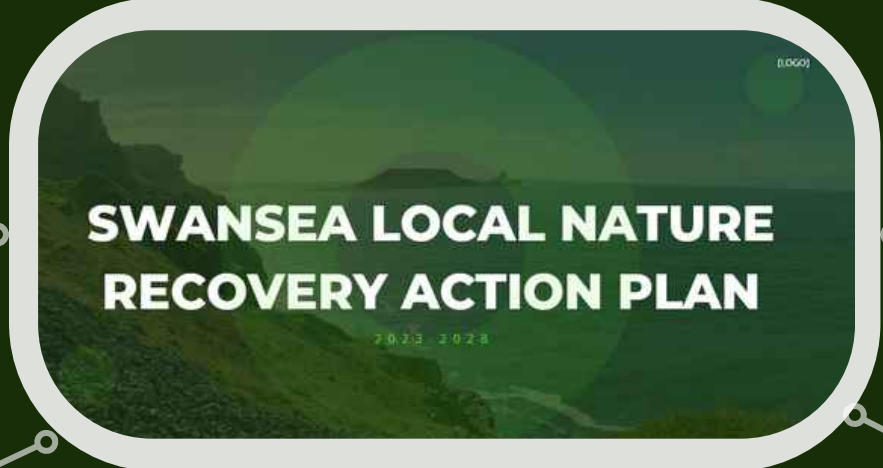
Kunming-Montreal Global Biodiversity Framework\*

Convention on Biological Diversity Strategic Plan for Biodiversity

**REGIONAL CHALLENGES & OPPORTUNITIES:** identify key areas for actions



NRW South West Area Statement



NRW Marine Area Statement

**LOCAL KNOWLEDGE:** directs local priorities for action towards national objectives



LNP Cymru Network (advice & guidance)

Swansea LNP Partners

Relevant Local Community Consultations\*\*

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\*The NRAP for Wales will be updated to reflect changes in global biodiversity policy including the ratification of the Kunming-Montreal Global Biodiversity Framework in 2022. However, at the time of publication the NRAP for Wales was yet to be updated to reflect the new global biodiversity policy.

\*\*Natur am Byth! Swansea Bay, Coasts, Commons and Communities -2022 & NRW Natur am Ni - 2022

SOME OF OUR PARTNERS...



Cadwraeth, Cymuned, Hanes  
Conservation, Community, History



Ymddiriedolaeth Genedlaethol National Trust



Cyngor **Abertawe** Swansea Council



SWANSEA

# LOCAL NATURE PARTNERSHIP

Established in 1999 the Swansea Local Nature Partnership is an active group with representatives from many organisations including relevant public sector bodies, third sector conservation organisations, voluntary conservation groups, landowners, and professional and amateur naturalists. Partners and individuals are united by an interest in conserving, enhancing, and raising awareness of nature in Swansea. The Swansea LNP has over 50 member organisations and is open to anyone to join.

SWANSEA LNRAP

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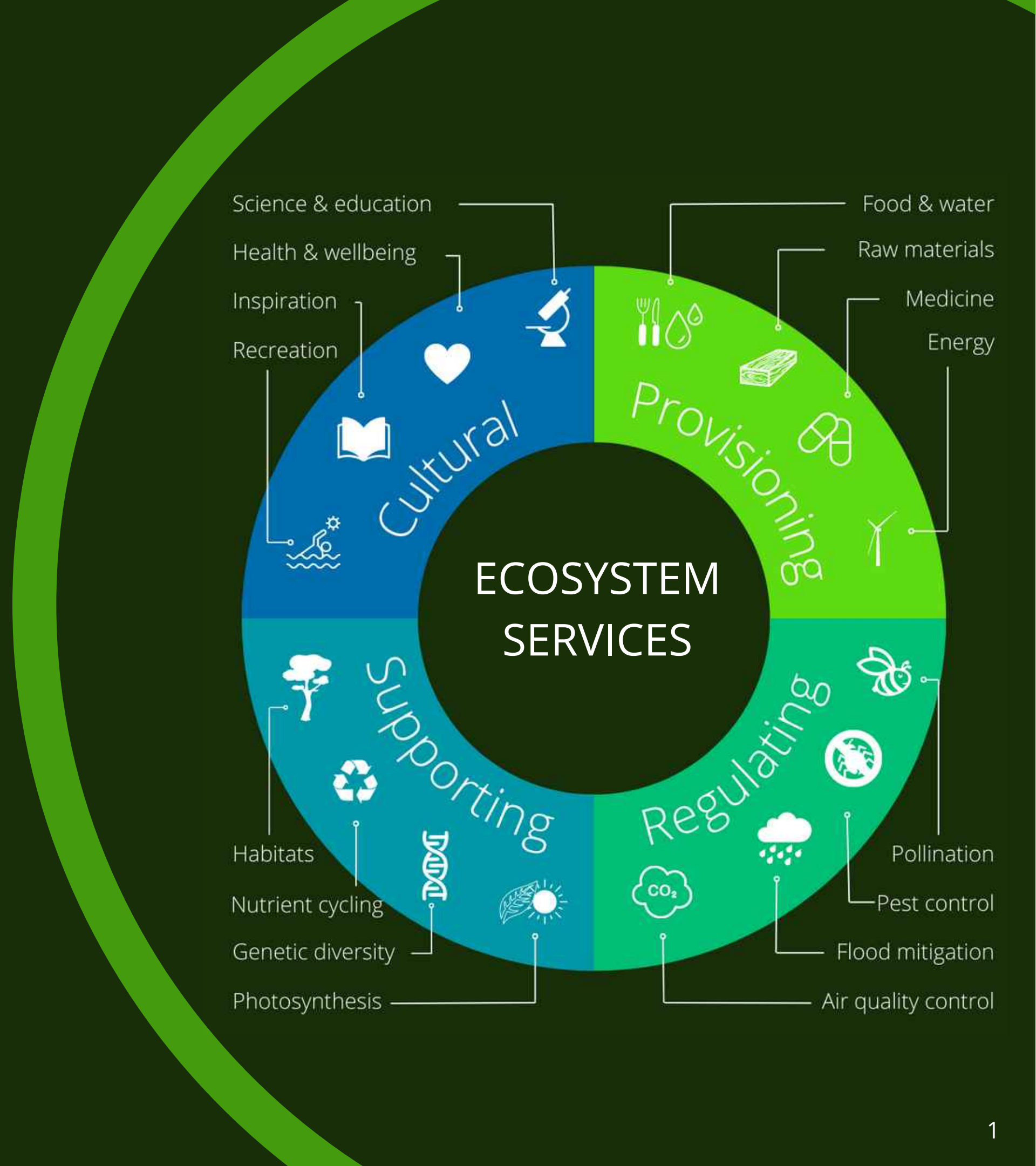
NATURE IS

# IMPORTANT

A huge number of different habitats, species and ecosystems make up the natural world around us. The collective term for this is biodiversity. At an ecosystem level the more species, and the more individuals of these species the more biodiverse the ecosystem or region is. Common and widespread species are also important as well as rare species.

These building blocks of nature are valuable in their own right, but together they also provide many vital benefits and services to us as individuals and communities. These are called 'ecosystem services' and they include processes such as pollination and food production, clean air and water provision, flood prevention, carbon sequestration, as well as health and well-being enrichment, plus recreational experiences.

Ecosystem services are linked to the health of an ecosystem, which depends on the diversity and abundance of species. The healthier, or more 'resilient', the ecosystem, the better able it is to provide ecosystem services.







# ECOSYSTEM RESILIENCE

is the capacity of an ecosystem to **deal with pressures and demands ...**

...whilst retaining their ability to **deliver ecosystem services** and benefits...

**...now and into the future.**



like climate change and more frequent extreme weather events



like pollination of crops, flood mitigation and food and clean water provision



we are a part of nature, not apart from it

Some ecosystem services are dependent on multiple species. Therefore fewer species or smaller, more isolated populations lead to a weaker ecosystem. Conversely, the greater the diversity and connectivity of an ecosystem, the more able it is to provide ecosystem services and continue to provide them in face of pressures, such as climate change. This is ecosystem resilience.

You can understand the concept of ecosystem resilience by thinking of the communities we live in. A healthy and resilient community is built on a diversity and abundance of people and societal roles. As communities and society depend on ecosystem services (nature) to function, resilient ecosystems thereby underpin a resilient society.

NATURE IS

# DECLINING

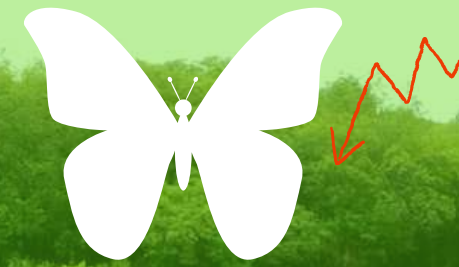
The UK, including Wales, has a long and history of industrialisation, and therefore has lost more nature, and ecological processes (such as grazing) sooner than many countries. Due to these earlier losses, some valued and protected habitats (and associated species) became associated with traditional land management practices, for example traditional hay meadow management and wildflower rich grasslands. The subsequent loss of these traditional practices plus increasing urbanisation and habitat fragmentation resulted in accelerating rates of decline in the 20th century, such that 97% of wildflower meadows were lost in the UK by the 1980s.

Globally the greatest drivers of the decline in nature on land are land-use change and habitat loss due to resource harvesting, development and agriculture, as well as pollution and invasive non-native species (INNS). At sea unsustainable practices such as over-fishing and pollution have huge impacts. The same is true in Wales, where key pressures include INNS, pests and disease, land use change, over-exploitation of resources, and pollution. At a local and global level, climate change is also having widespread and increasingly disruptive effects on terrestrial and marine species and ecosystems.

For more information on the state of nature in Wales see the [State of Natural Resources Report \(SoNaRR\) for Wales 2020.](#)

\*Habitats/species that protected sites are designated for.

\*\*That had sufficient evidence to be assessed.



52%

decline in average species' abundance of butterflies in Wales since 1970.



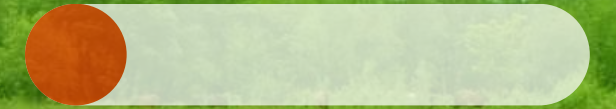
80%

of protected natural features\* in Wales are in an unfavourable or undesirable state\*\*.

In short

# less wildlife is now found in fewer places

Only



13%

of Welsh Habitats have high diversity levels.



Wales scores

**16th** worst

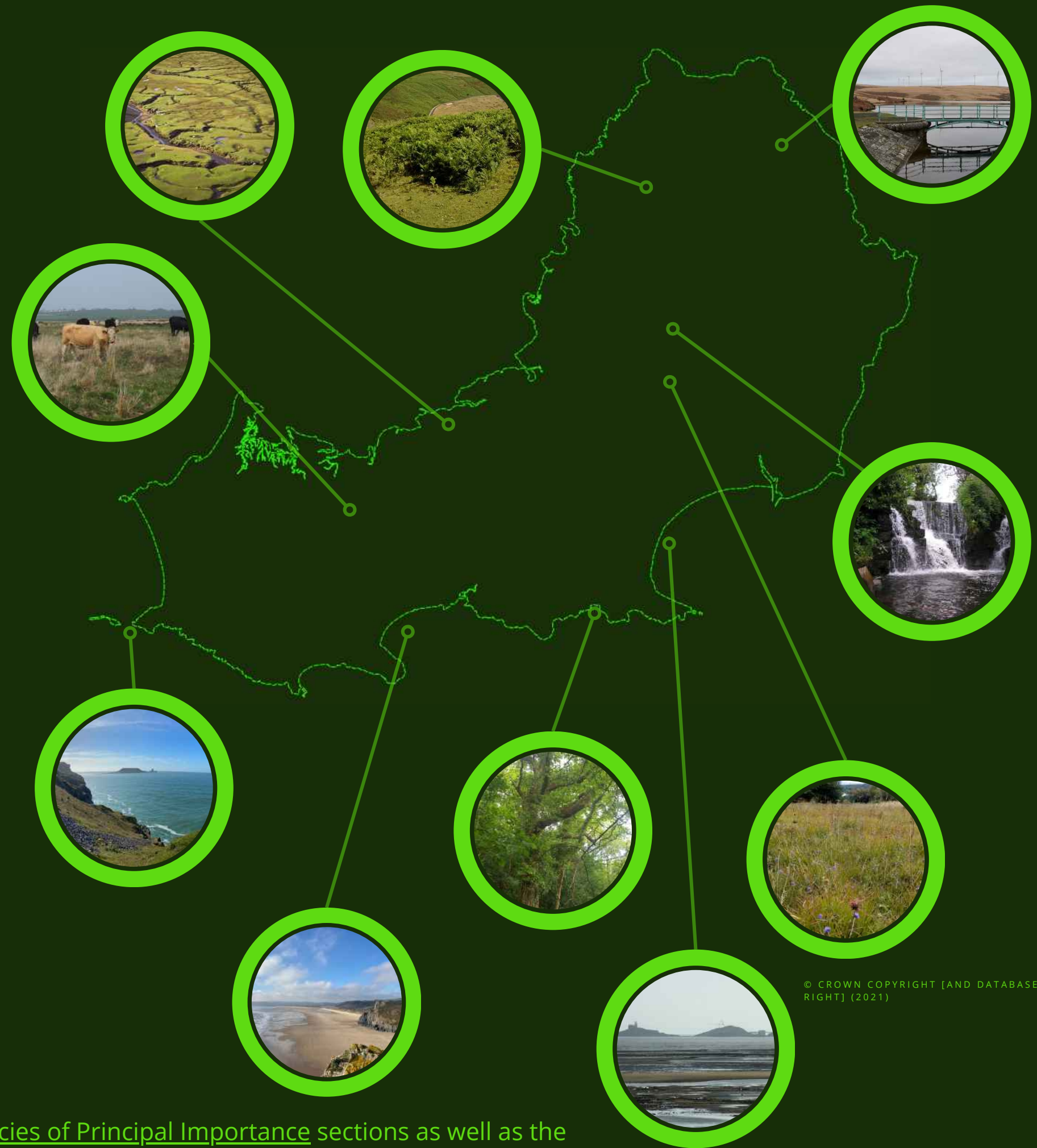
ranking of the Biodiversity Intactness Index out of 240 countries.

## AN OVERVIEW OF NATURE IN **SWANSEA**

There is a huge diversity of habitats within Swansea that support a wide variety of species. These include upland moorland, grasslands, woodlands, wetlands, estuaries, coastal cliffs as well as sand dunes and heathlands, and many of these are often only minutes from the city or other urban centres. The marine environment around Swansea supports intertidal boulder communities, honeycomb worm reefs, peat and clay exposures, subtidal sands and gravels, as well as blue mussel beds.

Nestled amongst the urban sprawl of Swansea there are habitats intimately linked with the city's industrial past, such as the rare metal tolerant calaminarian grassland found in Six Pit, Swansea Vale and White Rock Site of Special Scientific Interest, just west of Bon-y-maen. This and other metal loving species have reclaimed soil that was once the site of copper works. Similarly, old tunnels and shafts in the Clyne Valley and Dunvant brickworks, once used for mining are now home to bats including rare horseshoe bats.

The coastline of Swansea is iconic and diverse. Ranging from the 5 mile expanse of Swansea Bay, through to the south Gower limestone coastal cliffs intercut by sand dunes and beaches, culminating in the famous Worm's Head Causeway. In contrast the north Gower coastline is dominated by salt marsh, fragile dune and estuarine environs. Inland on the Gower Area of Outstanding Natural Beauty (AONB) the hills of Cefn Bryn and Rhossili Down dominate the landscape of traditional small fields, wooded valleys, and open commons.

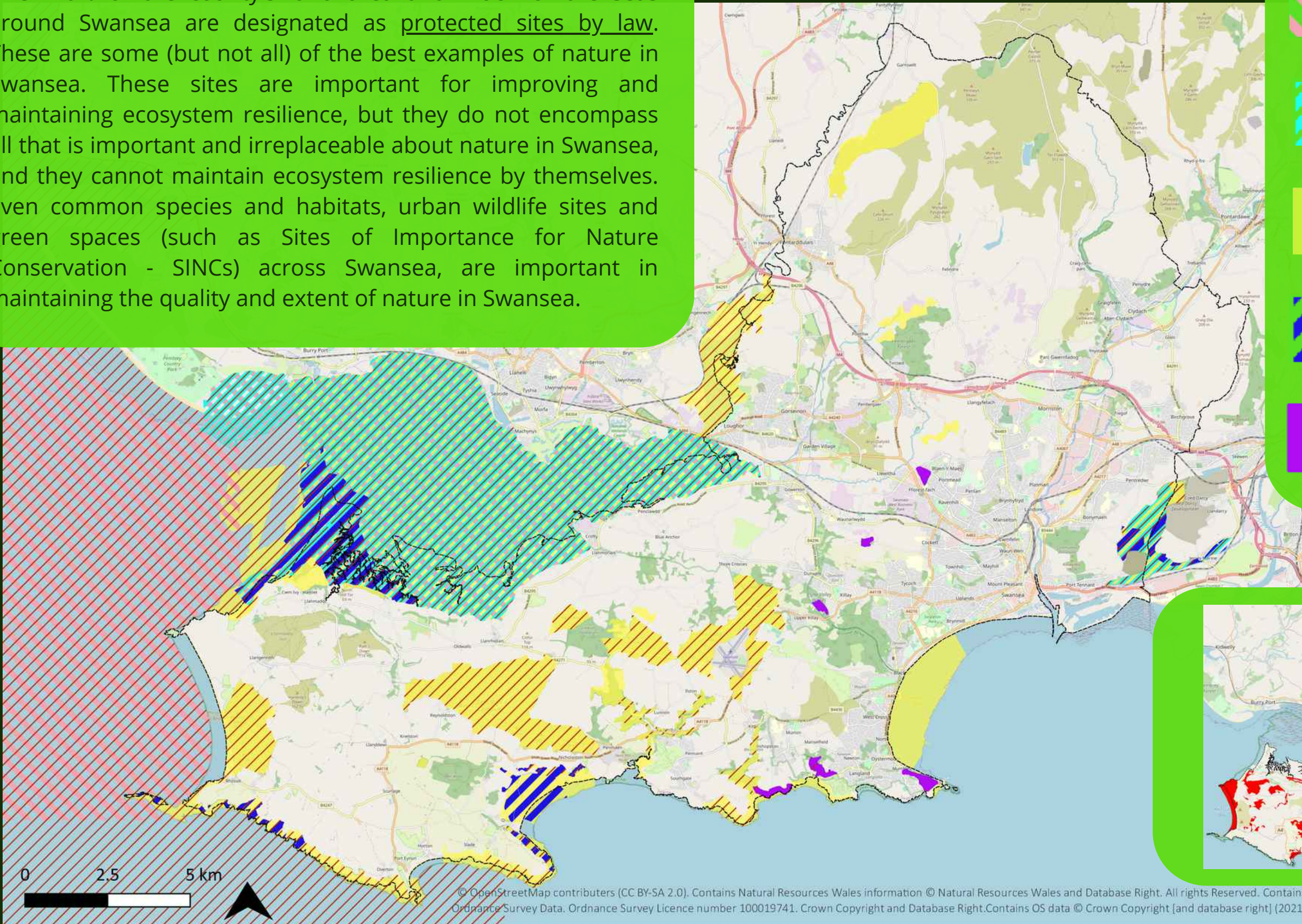


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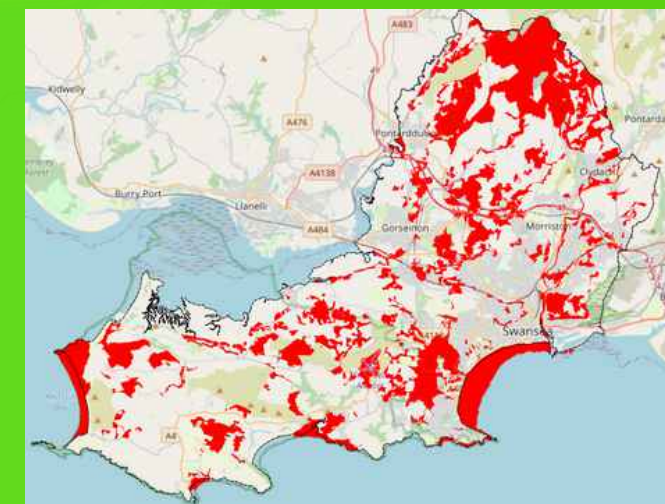
For more information on habitats and species in Swansea see the [Habitat](#) and [Species of Principal Importance](#) sections as well as the [spotlight on Swansea's species](#).

DRAFT

Over 20% of the county's land area and much of the seas around Swansea are designated as protected sites by law. These are some (but not all) of the best examples of nature in Swansea. These sites are important for improving and maintaining ecosystem resilience, but they do not encompass all that is important and irreplaceable about nature in Swansea, and they cannot maintain ecosystem resilience by themselves. Even common species and habitats, urban wildlife sites and green spaces (such as Sites of Importance for Nature Conservation - SINCs) across Swansea, are important in maintaining the quality and extent of nature in Swansea.



-  **7** SPECIAL AREAS OF CONSERVATION (SAC)
-  **2** SPECIAL PROTECTION AREAS (SPA)
-  **2** RAMSAR SITES
-  **28** BIOLOGICAL (OR MIXED) SITES OF SPECIAL SCIENTIFIC INTEREST (SSSI)
-  **4** NATIONAL NATURE RESERVES (NNR)
-  **6** LOCAL NATURE RESERVES (LNR)



**154**  
SITES OF IMPORTANCE FOR NATURE CONSERVATION (SINC)

DRAFT

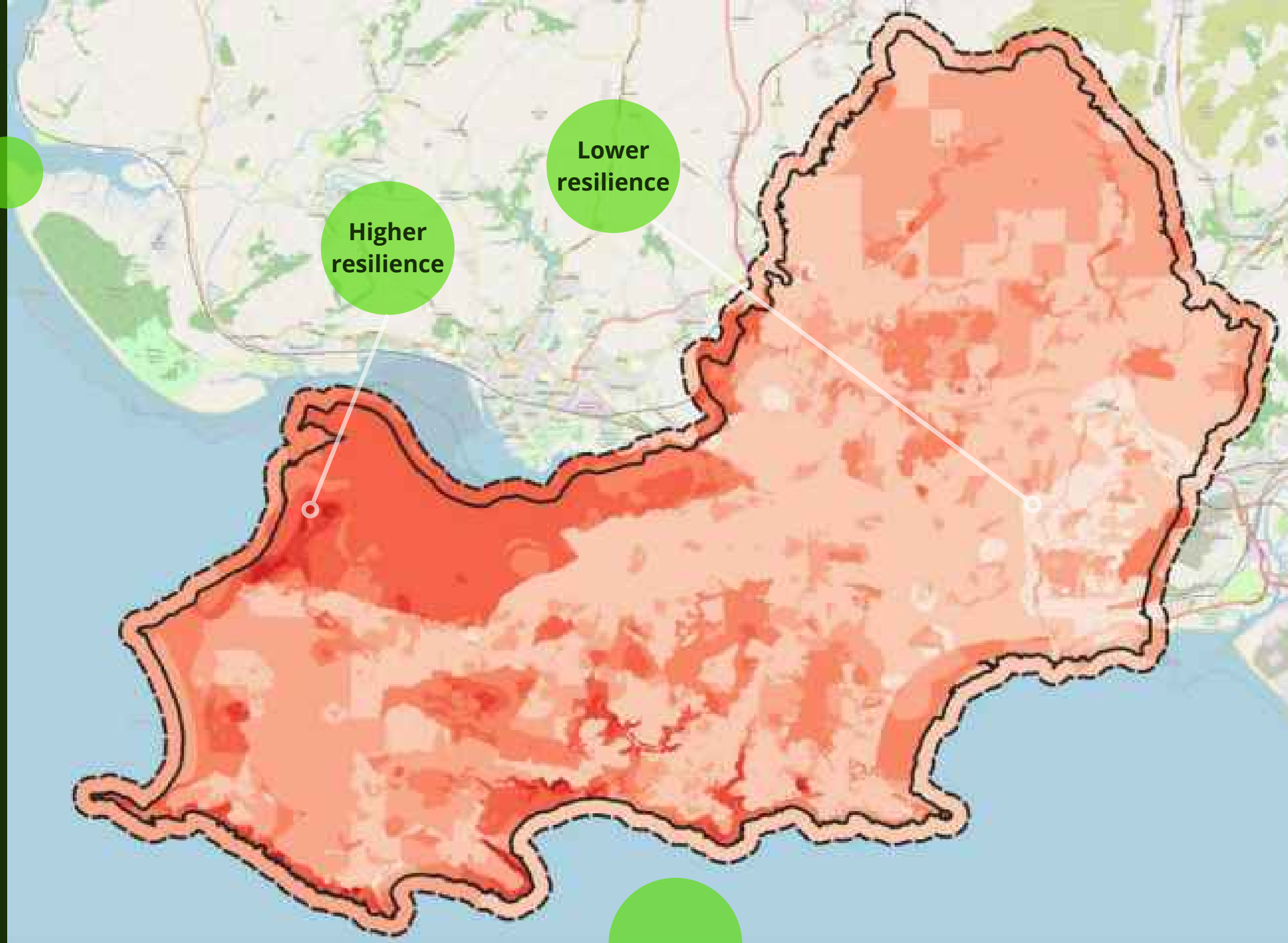
# ECOSYSTEM RESILIENCE

## IN SWANSEA

The Swansea Ecosystem Resilience report produced by the South East Wales Biodiversity Records Centre (SEWBRc) in 2022, maps ecosystem resilience across the entire county of Swansea, taking into account 11 different factors. While ecosystem resilience mapping is still in its infancy the output is useful nevertheless and indicates areas of **higher (darker shades)** and **lower (lighter shades)** resilience throughout Swansea.

It indicates that the majority of Swansea is of lower resilience. Predictably the lowest ecosystem resilience is indicated around the city centre while the areas of highest ecosystem resilience tend to correspond with existing protected sites.

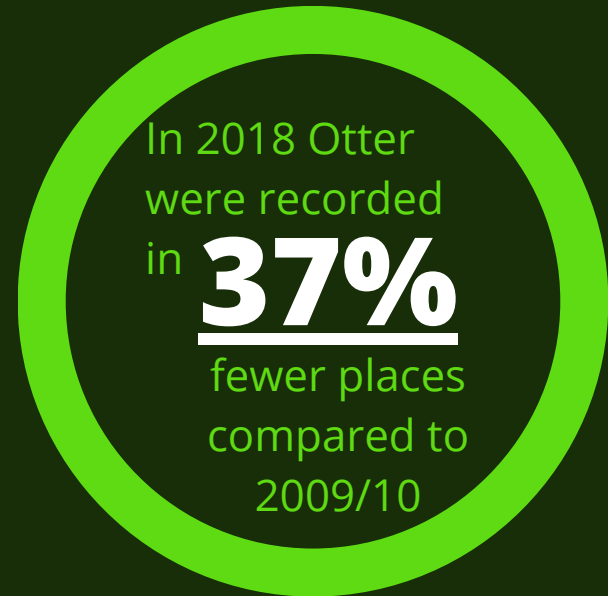
It is important that ecosystem resilience is improved across the county and that areas of high resilience are connected to provide essential services to the people of Swansea.



Data @ SEWBRc Ecosystem Resilience Report 2022

NATURE IN SWANSEA IS

# STRUGGLING



The exact state of nature in Swansea is unknown due to a lack of data. What we do know paints a worrying picture. Diversity and abundance of species are declining, the majority of protected features\* are in unfavourable or unknown condition, and most of Swansea is of lower ecosystem resilience.

Some of the biggest barriers to nature recovery in Swansea\*\*\* are INNS (e.g., Japanese knotweed and Himalayan balsam), a lack of connectivity, and habitat loss due to competition for development, poor awareness and understanding of nature issues, as well as an absence of long-term investment (funding or otherwise) in nature recovery.



\*\*Habitats/species that protected sites are designated for. Swansea site data available from NRW's [Protected Sites Assessment 2020](#). \*\*\*Identified at Swansea LNP LNRAP Workshops, September & October 2022

\*Data @ SEWBReC 2023

SWANSEA LNRAP

# ACTION THEMES

The Swansea LNRAP Action Themes are informed by a variety of global and national policy drivers and legislation, including the Nature Recovery Action Plan for Wales (NRAP), which is the national biodiversity strategy for Wales. The plan, published in 2015 and updated in 2020/21, sets six key objectives and five overarching themes of action in order to reverse the decline in biodiversity.

It is these national objectives that set the overarching framework for the Swansea LNRAP action themes, but they are underpinned by local knowledge and priorities, as well as the themes highlighted in the South West Wales and Marine Area Statements.

The Swansea LNRAP has 25 Action Themes. For each Action Theme one case study is provided to show how Swansea LNP partner's work has, is or will contribute to that nature recovery priority. Please note these case studies only provide a small snapshot, and they do not encompass the entirety of the varied work undertaken by the Swansea LNP.



@ Evelyn Gruchala

For a visual representation of the linkages between the Swansea LNRAP Action Themes (and the plan itself) and other global, regional, and local policies, legislation and knowledge see [here](#).

FOR REFERENCE:

# NRAP FOR WALES THEMES OF ACTION & AREA STATEMENT THEMES

## NRAP for Wales: Themes of Action

1. Maintaining and enhancing resilient ecological networks
2. Increasing knowledge and knowledge transfer
3. Realising new investment and funding
4. Upskilling and capacity for delivery
5. Governance, mainstreaming and reporting our progress

## South West Area Statement: Themes

1. Reducing health inequalities
2. Ensuring sustainable land management
3. Reversing the decline of, and enhancing, biodiversity.
4. Mitigating and adapting to a changing climate (cross-cutting theme).

## Marine Area Statement: Themes

1. Building resilience of marine ecosystems
2. Nature-based solutions and adaptation at the coast
3. Making the most of marine planning





NRAP FOR WALES

## OBJECTIVE 1:

Engage and support participation and understanding to embed biodiversity throughout decision making at all levels

<p><b>Swansea LNRAP Action Themes</b>                      For Objective 1: Engage and support participation and understanding to embed biodiversity throughout decision making at all levels</p>	<p><b>NRAP for Wales Theme of Action Addressed</b></p>	<p><b>South West Area Statement Theme Addressed</b></p>	<p><b>Marine Area Statement Theme Addressed</b></p>
<p>1.1. Provide accessible educational and awareness raising events in-person and/or online, especially focussing on expanding the reach of initiatives outside of people/groups already engaged in nature recovery and conservation.</p>	<p>2 &amp; 4</p>	<p>-</p>	<p>1 &amp; 2</p>
<p>1.2. Work with the public, private, and third sector to increase awareness of biodiversity issues, challenges, and opportunities for making nature-positive* decisions.</p>	<p>2 &amp; 4</p>	<p>-</p>	<p>1 &amp; 2</p>
<p>1.3. Engage with communities, schools, and landowners to promote understanding of biodiversity in their area and work together to encourage appropriate management and actions to achieve nature recovery.</p>	<p>2 &amp; 4</p>	<p>2</p>	<p>1</p>
<p>1.4. Embed evidence-led nature positive*decision making at all levels and advocate for changes that support nature recovery.</p>	<p>2, 4 &amp; 5</p>	<p>-</p>	<p>3</p>

\*Nature Positive as defined in the [Nature Positive 2030](#) report means reversing the current declines in biodiversity, so that species and ecosystems begin to recover. This is an essential step to achieve nature recovery. Thus making nature positive decisions means you actively consider your impact on biodiversity and take steps to support recovery.

CASE STUDY

# ACTION THEME 1.1



Swansea Community Farm has been providing free activities and volunteer opportunities for over 20 years. They run Farm Clwb on a Saturday where volunteers assist with food growing, conservation work, and feeding and mucking out the animals! They also run #wellbeingwednesday once a month for young people not engaging in education due to poor mental health. As well as adult volunteer days on Tuesdays and Thursdays, to provide support for those with poor mental health or wellbeing.

CASE STUDY

# ACTION THEME 1.2



For the past 13 years, Oakley Intertidal Marine Education has delivered free annual events across Swansea and Gower beaches, to raise awareness of marine and coastal species and habitats and the threats they face. Records are particularly gathered of climate change indicator species and marine INNS. The events also contribute to the Gower AONB management Plan, various beaches management plans and Blue Flag status of Swansea's beaches.

CASE STUDY

## ACTION THEME 1.3



Swansea Council Nature Conservation team engaged with the Parks department to develop cut and collect management trials across several parks and verges in 2021. Plug planting was also carried out with local communities in the parks, providing the opportunity for volunteers to learn about the importance and benefits of cut and collect management and wildflowers in general.

CASE STUDY

## ACTION THEME 1.4



@ Ben Sampson

Swansea University became one of the founding members of the Nature Positive Universities Partnership in November 2022, pledging not only to ensure that the land it manages makes a positive contribution to biodiversity, but to assess the impact of its entire operations on nature. It will then minimise these impacts as far as possible and compensate for those that remain.



NRAP FOR WALES

## **OBJECTIVE 2:**

Safeguard species and habitats of principal importance and improve their management

<p><b>Swansea LNRAP Action Themes</b> For Objective 2: Safeguard species and habitats of principal importance and improve their management</p>	<p><b>NRAP for Wales Theme of Action Addressed</b></p>	<p><b>South West Area Statement Theme Addressed</b></p>	<p><b>Marine Area Statement Theme Addressed</b></p>
<p>2.1. Monitor and survey species and habitats of principal importance in Swansea to expand current knowledge on presence and extent and thereby inform management decisions and conservation interventions.</p>	<p>2</p>	<p>-</p>	<p>1 &amp; 2</p>
<p>2.2. Develop, review, and deliver targeted actions that address threats to or improve management of species and habitats of principal importance, thereby building into a wider network of nature recovery and ecosystem resilience.</p>	<p>1</p>	<p>3 &amp; 4</p>	<p>1</p>
<p>2.3. Deliver proactive actions that increase the abundance and expansion of the extent of species and habitats of principal importance.</p>	<p>1</p>	<p>3 &amp; 4</p>	<p>1</p>

CASE STUDY

## ACTION THEME 2.1



@ Aaron Davies

The Glamorgan Bat Group has been monitoring horseshoe bat populations around Swansea since the 1980s. They conduct maternity roost counts and hibernation surveys every year. They also launched their AudioMoth Bat Project in 2023. In this scheme you can loan an AudioMoth bat detector to collect more bat records across Swansea and Neath Port Talbot.

CASE STUDY

## ACTION THEME 2.2



Swansea Council AONB team established the Gower Places of Worship Programme in 2022. This three-year Welsh Government funded project aims to provide bespoke solutions to improve the interactions of wildlife with churches in the Gower and improve their long term biodiversity value. Species targeted include bats, swifts, barn owls, pollinators and reptiles.

CASE STUDY

## **ACTION THEME 2.3**



In 2022 NRW released 200 water vole in Oxwich NNR in the Gower to re-establish populations of the species that have disappeared from South Wales over the years. The release was the culmination of a three year effort to captive breed water vole and reduce American mink (an invasive non-native predator) populations in the reserve.





NRAP FOR WALES

## OBJECTIVE 3:

Increase the resilience of our natural environment by restoring degraded habitats and habitat creation

<p><b>Swansea LNRAP Action Themes</b> for Objective 3: Increase the resilience of our natural environment by restoring degraded habitats and habitat creation</p>	<p><b>NRAP for Wales Theme of Action Addressed</b></p>	<p><b>South West Area Statement Theme Addressed</b></p>	<p><b>Marine Area Statement Theme Addressed</b></p>
<p>3.1. Identify location of, and priorities for, habitat restoration and creation based on current evidence including ecosystem resilience and habitat connectivity.</p>	<p>1</p>	<p>3 &amp; 4</p>	<p>1 &amp; 2</p>
<p>3.2. Develop and deliver actions to improve the diversity, extent, condition, and connectivity of habitats within Swansea.</p>	<p>1</p>	<p>3 &amp; 4</p>	<p>1 &amp; 2</p>
<p>3.3. Ensure that at least 30% of Swansea county is protected and effectively managed for nature by 2030, including marine*, terrestrial and freshwater** areas.</p>	<p>1</p>	<p>2, 3 &amp; 4</p>	<p>1 &amp; 2</p>
<p>3.4. Restore and create habitat within and outside the Welsh Marine Protected Area network to help restore ecological processes and connect marine wildlife populations.</p>	<p>1</p>	<p>2, 3 &amp; 4</p>	<p>1</p>
<p>3.5. Restore and create habitat and green infrastructure in urban and peri-urban areas, to increase access to good quality multifunctional semi-natural green and blue spaces and the associated well-being benefits for communities.</p>	<p>1</p>	<p>1</p>	<p>-</p>
<p>3.6. Restore and create habitat within our river and floodplain environments to help restore ecological processes and connect aquatic wildlife, such as migratory fish.</p>	<p>1</p>	<p>2, 3 &amp; 4</p>	<p>-</p>

\* Marine habitats between high and low mean water springs \*\*terrestrial and freshwater land/habitats down to high mean water springs within the county boundary. .

CASE STUDY

## ACTION THEME 3.1



Swansea Council and Pennard Golf Club are working to restore Pennard Castle and two rare plants that grow there, hawkweed and yellow whitlowgrass. With Celtic Wildflowers they have developed a mitigation strategy for both plants that includes seed collection, growing in a dedicated facility and replanting in specially designed pockets in the lime mortar after restoration work finishes.

CASE STUDY

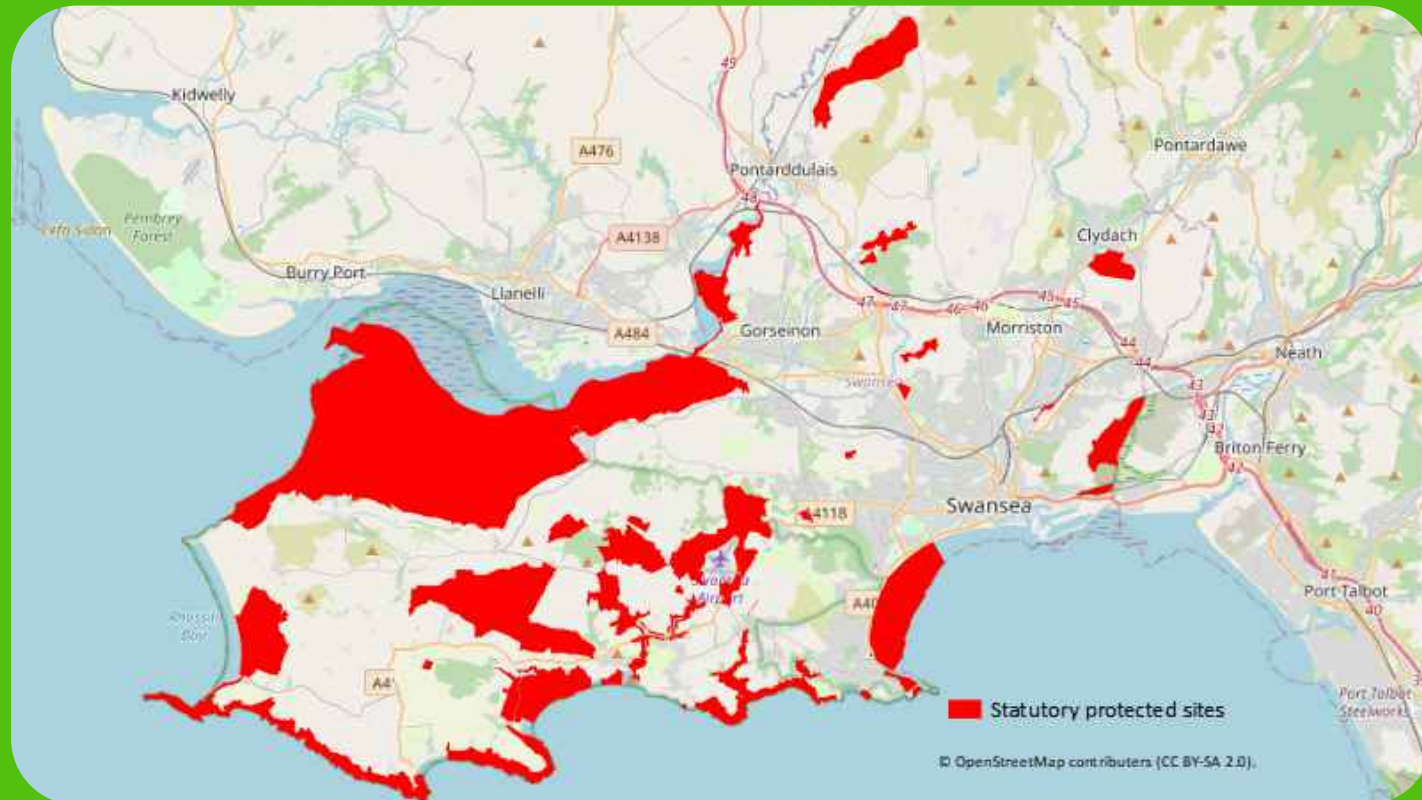
## ACTION THEME 3.2



Penllergare Valley Woods are using conservation grazing to increase grassland habitat diversity in Middle Park. The botanical diversity of the grassland site at Penllergare has diminished over the years due to little or no active management. So it is hoped that by using a local herd of Highland cattle to periodically graze the site, structural and species diversity will increase in the grassland overtime. Benefiting insects, birds, and mammals as well.

CASE STUDY

# ACTION THEME 3.3



Statutory protected sites\* for nature conservation, cover around 21% of the land area of Swansea county\*\*. However not all of these sites are in good condition and/or positive management despite efforts undertaken by landowners and other organisations with the limited resources available. A baseline audit will be carried out to assess the percentage area of Swansea that is protected and managed for nature so we can work towards achieving 30 by 30 in Swansea.

CASE STUDY

# ACTION THEME 3.4

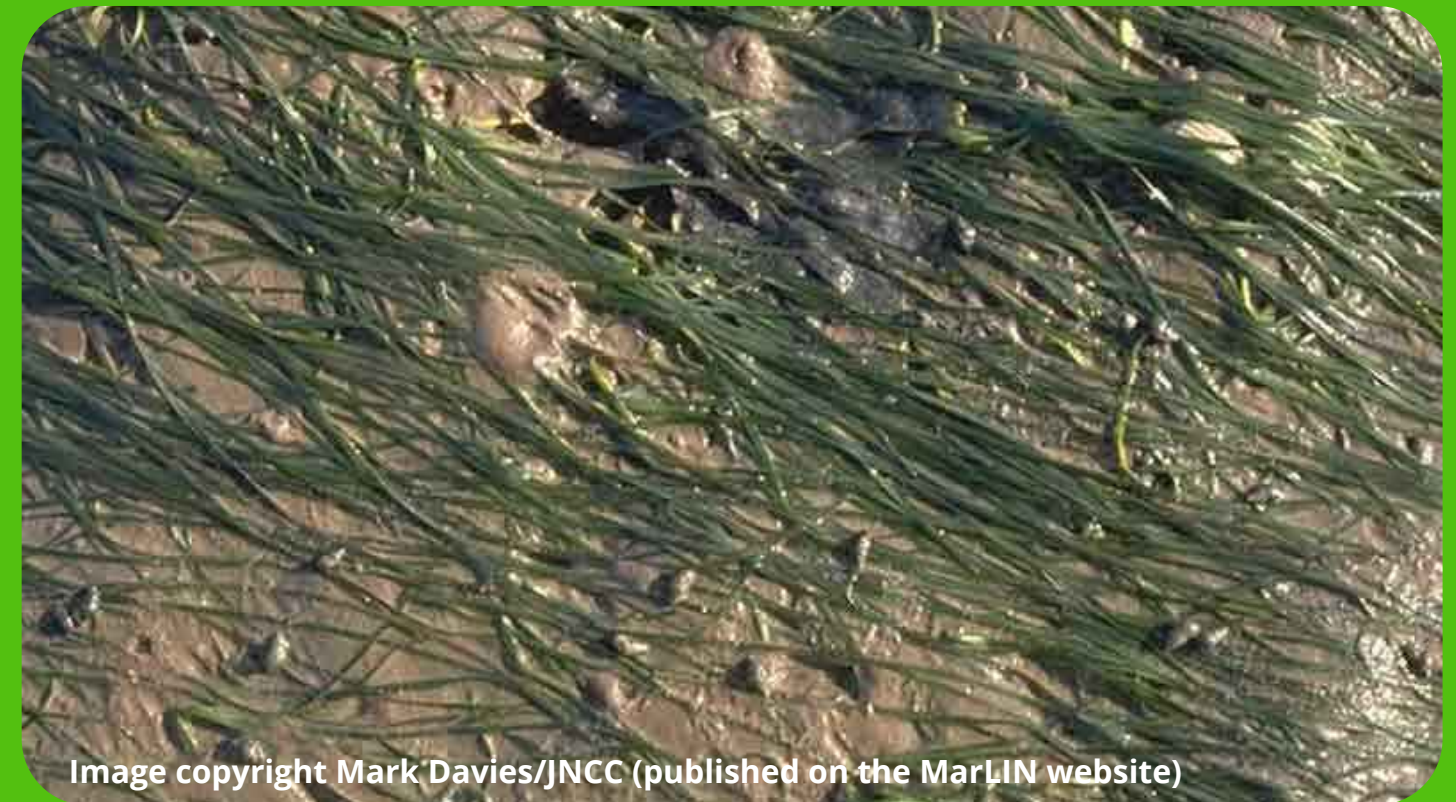


Image copyright Mark Davies/JNCC (published on the MarLIN website)

A project is proposed within Carmarthen Bay & Estuaries European Marine Site to address the potential for dwarf eelgrass restoration on north Gower through a feasibility assessment. This will determine whether restoration targets and goals can be achieved, with reference to relevant past and 'cutting edge' current seagrass restoration projects.

DRAFT

\* Including biological or mixed SSSI, SAC, SPA, Ramsar sites, and LNRs. \*\*To low mean spring water.

CASE STUDY

## ACTION THEME 3.5



#CityNature Pier Street green corridor project aims to develop a green corridor along Pier Street. Recycled plastic planters were installed in 2021/22 offering year round native species or species which support pollinators. In 2022/23 a rain pond and rain planters were also added to create a small wildlife pond and overflow rain planters slowing the flow of rain water outside the Environment Centre. The Environment Centre also boasts a living wall and green roof.

CASE STUDY

## ACTION THEME 3.6



@ Harriet Alvis

West Wales Rivers Trust is working to remove or modify in-stream barriers such as weirs across South West Wales, including Swansea. These works allow for the free movement of aquatic species along rivers, as well as re-naturalising flows and the subsequent dispersal of sediment and nutrients.



NRAP FOR WALES

## **OBJECTIVE 4:**

Tackle key pressures on species and habitats

<p><b>Swansea LNRAP Action Themes</b> For Objective 4: Tackle key pressures on species and habitats</p>	<p><b>NRAP for Wales Theme of Action Addressed</b></p>	<p><b>South West Area Statement Theme Addressed</b></p>	<p><b>Marine Area Statement Theme Addressed</b></p>
<p>4.1. Reduce and, where possible, eliminate environmental pollution into terrestrial, freshwater, and marine environs in Swansea. Employing sustainable management and nature-based solutions where relevant.</p>	<p>1</p>	<p>1, 2, 3 &amp; 4</p>	<p>1 &amp; 2</p>
<p>4.2. Work collaboratively to tackle terrestrial, freshwater, and marine INNS across the county of Swansea.</p>	<p>1</p>	<p>2, 3 &amp; 4</p>	<p>1 &amp; 2</p>
<p>4.3. Contribute to Swansea’s Net Zero 2050 target and make globally responsible decisions to tackle climate change and its impact on species and habitats.</p>	<p>1</p>	<p>3 &amp; 4</p>	<p>1</p>
<p>4.4. Use visitor guidelines and promote relevant codes of conduct for reducing human impact on local marine, intertidal and terrestrial wildlife.</p>	<p>1 &amp; 2</p>	<p>2 &amp; 3</p>	<p>1</p>
<p>4.5. Minimise further loss and increase connectivity in key wildlife corridors throughout Swansea to reduce the effects of habitat fragmentation resulting from urban growth and historic land use impacts.</p>	<p>1</p>	<p>3 &amp; 4</p>	<p>-</p>
<p>4.6. Respond proactively to emerging research on local and national species declines, particularly those at risk of extinction.</p>	<p>2</p>	<p>3</p>	<p>-</p>

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CASE STUDY

# ACTION THEME 4.1



West Wales Rivers Trust is working in both urban and rural areas to reduce pollution into our freshwater environments. This includes working with farmers to reduce run-off from farmyards and farmland, work with Dwr Cymru to push forward the use of wetlands for filtering excess nutrients and also urban pollution reduction advice and the delivery of Sustainable Urban Drainage.

CASE STUDY

# ACTION THEME 4.2



The Wales Resilient Ecological Network (WaREN) project is working to facilitate Local Action Groups (LAGs) or volunteer groups across Wales (including Swansea). WaREN is providing training and equipment to LAGs and aims to establish a collaborative and sustainable approach to tackling invasive species at a national and local level.



CASE STUDY

## ACTION THEME 4.3

### Net Zero 2030

How we're taking action on climate change across the council.

Swansea Council has an organisational target of net zero by 2030. To achieve this they are taking action across the whole council, including expanding their electric vehicle fleet, a pension fund reduction in fossil fuel investments, growing the cycle network and much more.

CASE STUDY

## ACTION THEME 4.4



The Gower Seal Group trained 'Seal Ambassadors' provide information to raise awareness of the challenges faced by seals. They frequently deliver presentations to schools, community groups and attend local events. They also promote the Operation Seabird Guidelines, a national campaign to reduce disturbance to all marine wildlife and actively support 'Gower Safe' a local multi agency initiative to protect the community and environment.

CASE STUDY

## ACTION THEME 4.5



Amphibian and Reptile Conservation (ARC) Trust have been undertaking pond creation and restoration across Gower since 2012. This has been focused around an important isolated population of great crested newt that requires a network of connected ponds across the landscape. These works have provided more, and connected existing, habitats, benefiting a whole host of species as well as great crested newt.

CASE STUDY

## ACTION THEME 4.6



@ Phillip Croft

Gower Ornithological Societies [Saving Swansea's Swifts](#) project is addressing severe declines (58% between 1995 and 2018) in swift numbers nationally. With the help of local volunteers they are conducting surveys to add to limited data on where swifts breed in Swansea, and identifying opportunities to increase breeding opportunities through the installation of nest boxes on a variety of privately and publicly owned buildings.



NRAP FOR WALES

## OBJECTIVE 5:

Improve our evidence, understanding and monitoring

<p><b>Swansea LNRAP Action Themes</b> For Objective 5: Improve our evidence, understanding and monitoring</p>	<p><b>NRAP for Wales Theme of Action Addressed</b></p>	<p><b>South West Area Statement Theme Addressed</b></p>	<p><b>Marine Area Statement Theme Addressed</b></p>
<p>5.1. Use baseline surveys, monitoring, and other initiatives to develop a high-quality local evidence base for Swansea and ensure data is accessible through SEWBreC, and other relevant organisations (e.g. NRW).</p>	<p>2 &amp; 4</p>	<p>-</p>	<p>-</p>
<p>5.2. Support the development of new tools that use local environmental data to identify and target nature recovery opportunities.</p>	<p>2, 3 &amp; 4</p>	<p>-</p>	<p>-</p>
<p>5.3. Ensure that the Swansea LNP has broad and wide-ranging skills and expertise needed to deliver nature recovery projects.</p>	<p>2, 3 &amp; 4</p>	<p>-</p>	<p>-</p>

CASE STUDY

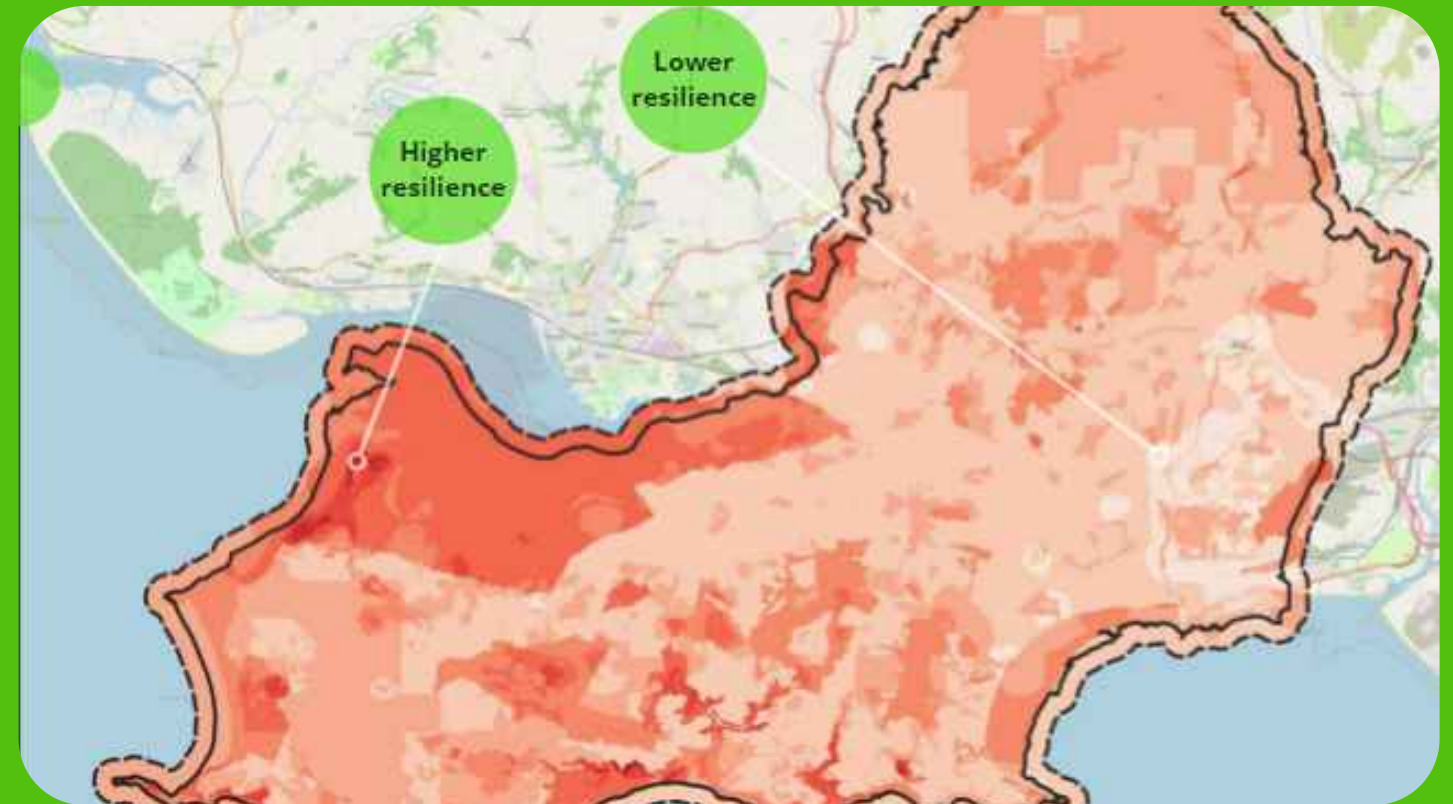
# ACTION THEME 5.1



Natur Am Byth development phase funded by National Lottery Heritage Fund commissioned a range of surveys to inform species recovery actions for Swansea's most important species. This includes the strandline beetle, which is currently present in Whiteford NNR. This is one of only three extant UK sites, all of which are in Carmarthen Bay.

CASE STUDY

# ACTION THEME 5.2



The outputs of the Swansea Ecosystem Resilience report produced by SEWBReC in 2022 can be used in many ways. This includes identifying locations for restoration work to be undertaken, as well as identifying higher resilience sites that could be considered for site designations, and to inform strategic land allocations.

CASE STUDY

# ACTION THEME 5.3



Swansea LNP currently (2023) consists of over 50 member organisations working in nature conservation, community food growing and/or community engagement, as well as individual members. An audit is being undertaken by LNP coordinators to identify any missing key partners and knowledge gaps. This is aided by Welsh Government Local Places for Nature funding which currently funds the LNP co-ordinator role in Swansea LNP (until at least 2025).

SOME OF OUR PARTNERS...



NRAP FOR WALES

# OBJECTIVE 6:

Put in place a framework of governance and support delivery

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<p><b>Swansea LNRAP Action Themes</b> For Objective 6: Put in place a framework of governance and support delivery</p>	<p><b>NRAP for Wales Theme of Action Addressed</b></p>	<p><b>South West Area Statement Theme Addressed</b></p>	<p><b>Marine Area Statement Theme Addressed</b></p>
<p>6.1. Continue to provide a strong and active local partnership (Swansea LNP) to act as an interface between local delivery partners and the Welsh Government/NRW.</p>	<p>5</p>	<p>-</p>	<p>-</p>
<p>6.2. Embed the Swansea LNRAP within partner organisations to guide actions.</p>	<p>5</p>	<p>-</p>	<p>-</p>
<p>6.3. Encourage collaborative action in the delivery of the Swansea LNRAP, including project development, funding, and participation in landscape scale or national projects.</p>	<p>3</p>	<p>-</p>	<p>-</p>



CASE STUDY

# ACTION THEME 6.1



Swansea LNP meets quarterly to share knowledge, network, and discuss ongoing projects. Additionally Swansea LNP Coordinator(s) attend biweekly liaison meetings with LNPs from other counties, Welsh Government and NRW. The forum facilitated by the Wales Biodiversity Partnership allows a two way flow of information and ideas from the field to the heart of Government and back again.

CASE STUDY

# ACTION THEME 6.2



Swansea Council is developing a Section 6 Plan that will set out actions and projects the council will undertake over a three-year period to meet their Section 6 (biodiversity) duty under the Environment (Wales) Act 2016. This plan is aligned with the Swansea LNRAP and actions directly address local priorities for nature recovery identified in the LNRAP action themes.

CASE STUDY

# ACTION THEME 6.3



The Swansea LNP facilitates collaborative action through knowledge exchange, joint partner projects, and shared funding. For example Welsh Government Local Places for Nature funding managed by the LNP Coordinator(s) and other Swansea Council Nature Conservation team staff has been used to support many LNP partner projects over the years. Including the Orchard Project which has established or restored 16 community orchards in Swansea between 2021 and 2023.

A NOTE ON

# REVIEWING & RECORDING

- The Swansea Local Nature Recovery Action Plan will be reviewed again by 2030.
- Actions that partners undertake towards the Swansea LNRAP will be shared and reviewed each year, ideally in the first meeting of the New Year of the Swansea LNP. These actions will be recorded by the Swansea LNP Coordinator(s).
- If you would like to take part in the review process please contact the LNP Coordinator(s) using the email below.

**Please note** that the Swansea LNRAP does not commit any one LNP partner to any specific actions. The Swansea LNRAP is intended to identify priorities (action themes) that guide partner actions. It is therefore the responsibility of individual LNP partners to identify where and how they are able to contribute to actions towards the Swansea LNRAP action themes. The Swansea LNP Coordinator(s) is there to help if required.

 [nature.conservation@swansea.gov.uk](mailto:nature.conservation@swansea.gov.uk)



FURTHER INFORMATION ON

# SWANSEA'S NATURE

The following pages provide further detail on nature in Swansea in addition to the overview provided earlier on in the LNRAP. Keep reading or click on the links below to find out more about:

- [Habitat overviews](#)
- [Priority species audit](#)
- [Spotlight on some of Swansea's species](#)
- [Special sites](#)

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SWANSEA

# HABITAT OVERVIEWS

The following descriptions are adapted from previous work on the [Local Biodiversity Action Plan](#) (published 2005) to give an overview of some of the different habitats found in Swansea. Swansea lacks a recent and comprehensive habitat audit, so the overviews presented here focus on [Habitat of Principal Importance](#) (as listed in Section 7 of the [Environment \(Wales\) Act 2016](#)) as there is more information available for these.

However, it should be noted that other habitats are still of great importance for nature recovery and ecosystem resilience. Given the urban nature of large parts of Swansea an overview of urban habitats is also provided.

Data used for most maps are sourced from NRW Environment (Wales) Act Section 7 [marine](#) and [terrestrial](#) habitat layers. These are not comprehensive and some habitat types in Swansea are missing. Additionally the terrestrial habitat data sets were created from layers derived from [Terrestrial Phase 1 Habitat surveys](#) conducted across Wales in the 1980s and 1990s. Given the age of this data habitat presence and extent may have changed since then in some instances.

SWANSEA'S

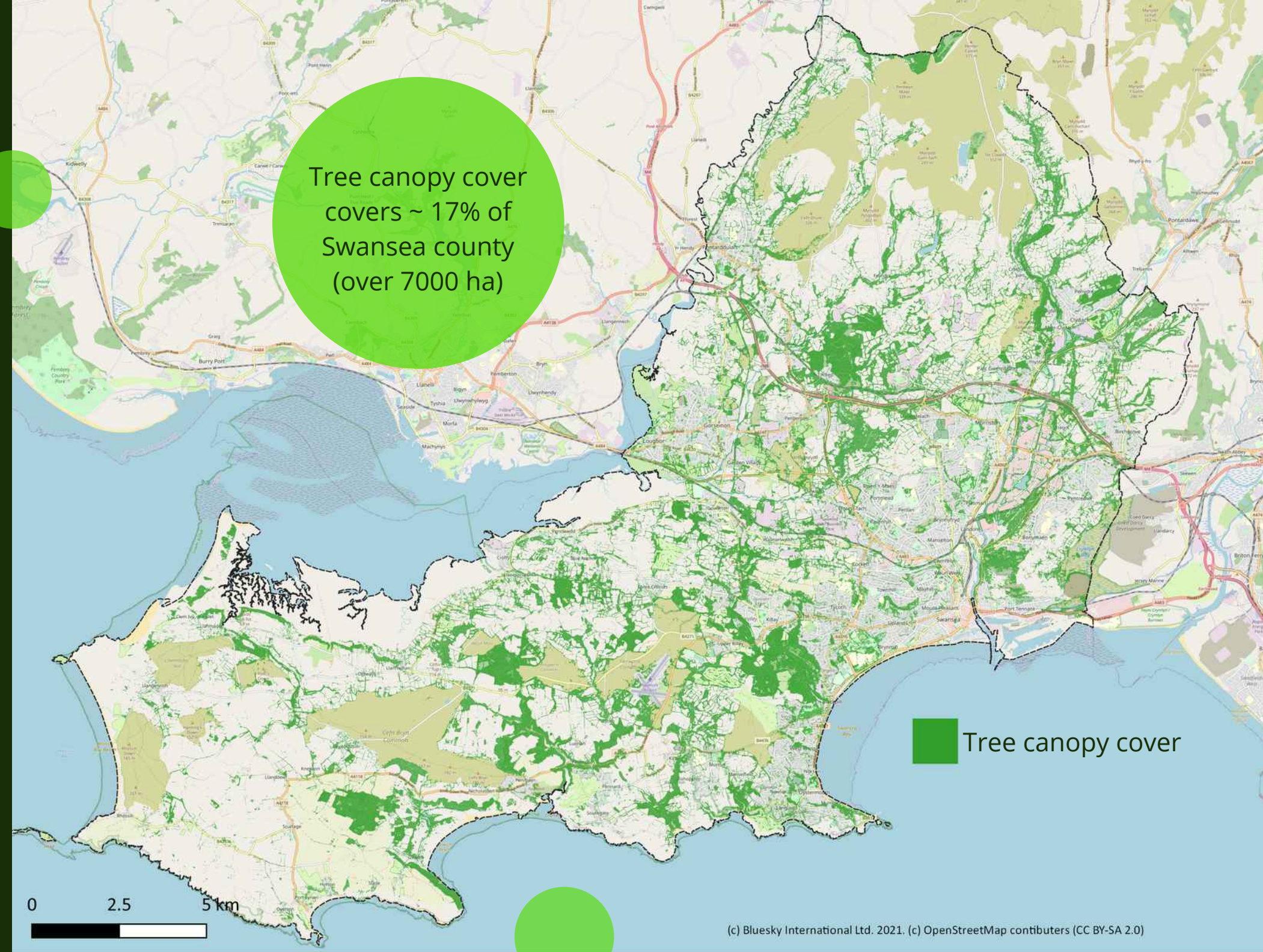
# WOODLAND

Swansea has a variety of semi-natural woodland habitat, some of which is ancient. As well as plantation woodland habitats. Of these there are eight habitats of principal importance that occur in Swansea including:

- Lowland mixed deciduous woodland
- Lowland beech and yew woodland
- Wood pasture and parkland
- Upland mixed ash woods
- Wet woodland
- Upland oak wood
- Orchards
- Hedgerows

Lowland mixed deciduous, upland mixed ash, and wet woodland make up most of the priority woodland in Swansea. With upland oak wood being relatively uncommon except in the north east of the county around Clydach. Lowland beech and yew woodland is rare in Swansea, with its extent limited to a few sites in the Gower. Overall though, woodland (including hedgerows and orchards) is the most connected of all of the habitat types within Swansea with networks running across the entire county and core networks covering relatively large areas. However, there are a few areas such as the north Swansea commons where the networks break or are absent.

Woodland habitats in Swansea support a variety of Species of principal importance including (but not limited to) bullfinch, barn owl, several species of bats, marsh fern and dormice.



There are many threats to woodland habitats in Swansea including fragmentation and lack of appropriate management, but one of the most pervasive is the spread of INNS such as rhododendron and Japanese knotweed plus tree diseases such as ash dieback.

SWANSEA'S

# OPEN WATER

Rivers and streams, ponds and mesotrophic lakes are all open water habitats of principal importance found within Swansea.

There are a range of river types including alkaline streams rising on Cefn Bryn Common and Rhossili Down. Plus the Bury Pill a free flowing stream which crosses Gower to the tidal influenced River Loughor and River Tawe. As well as numerous smaller streams which rise within the uplands of the north Swansea catchment.

Throughout the whole of the county there are likely over 1000 ponds but the condition of most are unknown. However, there are several known key sites for ponds within Swansea, including Barlands Common, Upper Killay Pond, Mynydd Garn Goch and Penllergaer Woods. Pond habitats offer a unique opportunity as they are one of the few Habitats of Principal Importance that can be quite easily created.

Mesotrophic lakes on the other hand are relatively infrequent in the UK and Swansea and largely confined to the margins of upland areas, but there are some examples in Swansea, most notably Broadpool on Cefn Bryn.

These habitats support a variety of species of principal importance including (but not limited to) great crested newt on the Gower plus otter, three lobed water-crowfoot, grass snake, and common toad. There are many threats to open water habitats in Swansea including pollution, recreational disturbance, and INNS such as New Zealand



Pigmyweed, floating pennywort, parrot's feather, water fern and several pondweeds. However, one of the more significant threats to ponds and lakes especially is a lack of management leading to succession and the eventual loss of open water habitat. For our rivers, in addition to pollution, barriers to fish passage (such as weirs) and a lack of flow (e.g. due to historical straightening) are also major threats.

# SWANSEA'S WETLANDS

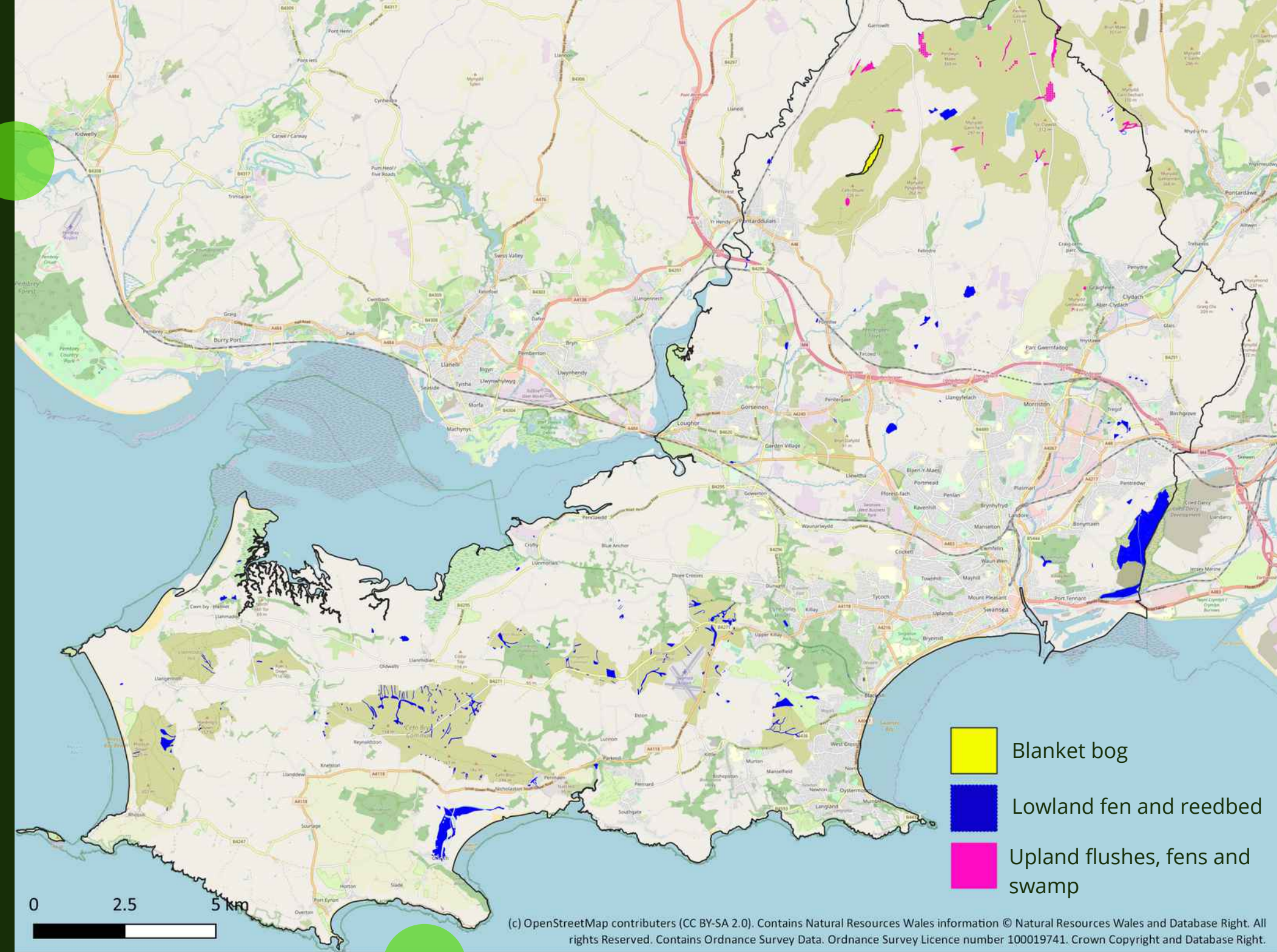
Blanket bogs, upland flushes, fen and swamps and lowland fen reedbeds are all wetland habitats of principal importance found within Swansea.

Blanket bog occurrence is very limited within the county, as well as patches of upland flushes, fen and swamp habitat, which are by their nature restricted to the upland environments of Swansea, north of Felindre.

Lowland fen and reedbed is the most extensive of the three wetland priority habitat types within Swansea, but is still limited in its occurrence and connectivity, mostly occurring in small isolated patches with the exception of larger sites at Oxwich and Crymlyn Bog NNRs.

Reedbed connectivity is also limited as the larger sites tend to be stand alone e.g. Oxwich Marsh, with little connectivity between the isolated smaller sites e.g. Pwll Du.

While relatively uncommon in Swansea compared to other habitats, the wetland habitats present do support a variety of species of principal importance, several of which are strongly dependant on these types of habitat. This includes (but not limited to) reed bunting, lapwing, southern damselfly and royal fern.



There are many threats to wetlands habitats in Swansea including lack of management leading to scrub invasion and INNS such as Japanese knotweed, but the most significant impacts are through drainage/abstraction and pollution affecting water levels and quality.



SWANSEA'S

# HEATH & GRASSLANDS

Swansea has a variety of heath and grasslands including eight habitats of principal importance:

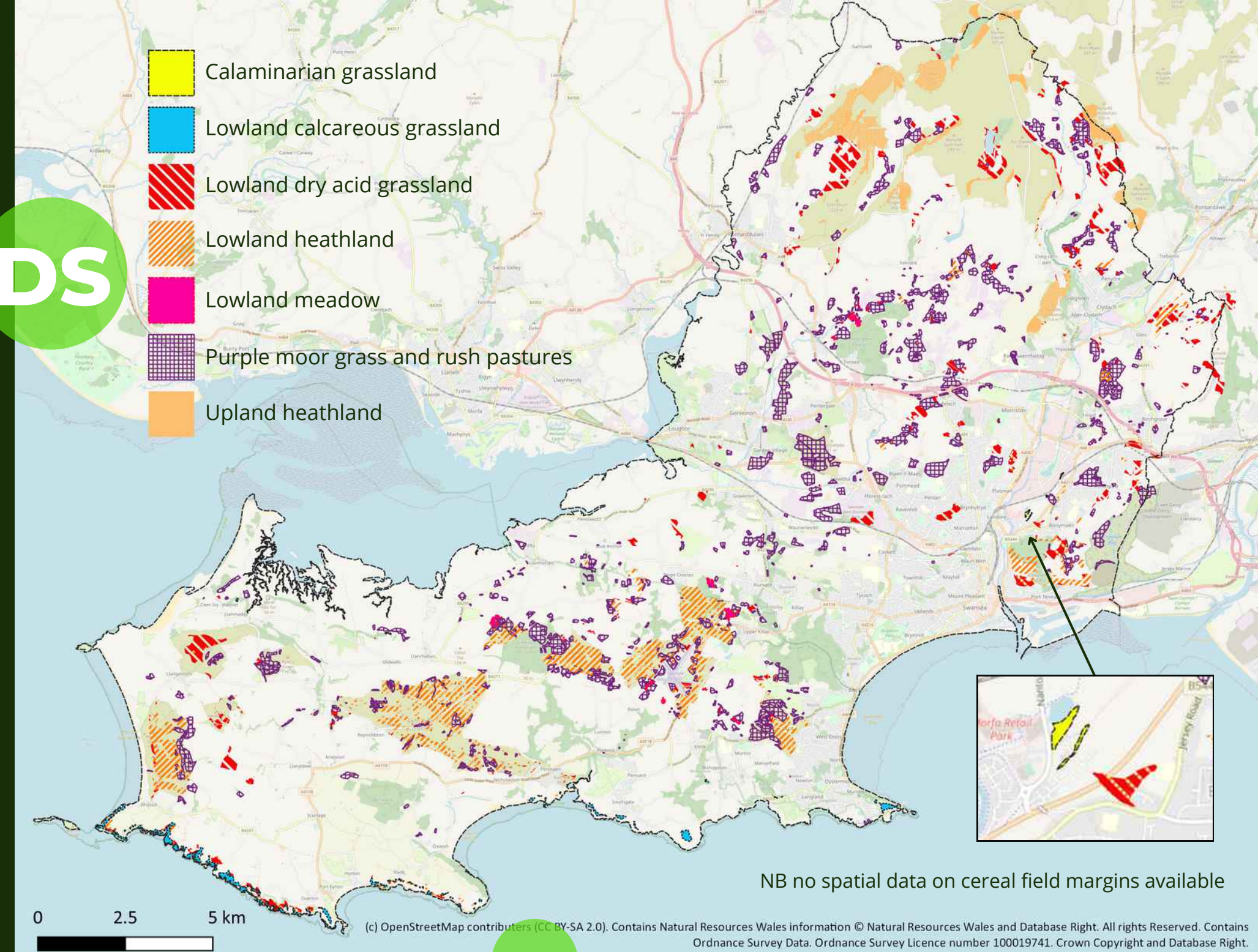
- Purple moor grass and rush pasture
- Cereal field margins
- Lowland calcareous grassland
- Calaminarian grassland
- Lowland dry acid grassland
- Lowland heath
- Lowland meadow
- Upland heath

In general there are isolated areas of heathland mainly with large concentrated areas on the Gower commons and the Swansea uplands with only a few patches around Swansea's urban fringe in between.

The main areas of grassland connectivity are through the large areas of upland acid grasslands in the Swansea uplands. The other significant area of connectivity is the cluster of patches of Lowland dry acid grassland in west Gower; Llanmadoc Hill, Ryers Down and Hardings Down and the calcareous grassland at Rhossili.

Heath and grassland habitats in Swansea support a variety of species of principal importance including (but not limited to) marsh fritillary, skylark, yellow hammer, small heath butterfly, brown hare, and adder.

There are many threats to these habitats in Swansea including fragmentation and INNS, but a major issue is the variability of appropriate management. With many heath and grasslands being



unmanaged, and even those that are managed by grazing are often under or overgrazed due to the complexities and many challenges of grazing as a management regime. However, there are some good examples in Swansea, such as Overton Mere where Dexter cattle and Torcoed ponies are being used to manage scrub encroachment on calcareous grassland.

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SWANSEA'S

# COASTAL HABITATS

The coastal habitats within Swansea are diverse, including six habitats of principal importance:

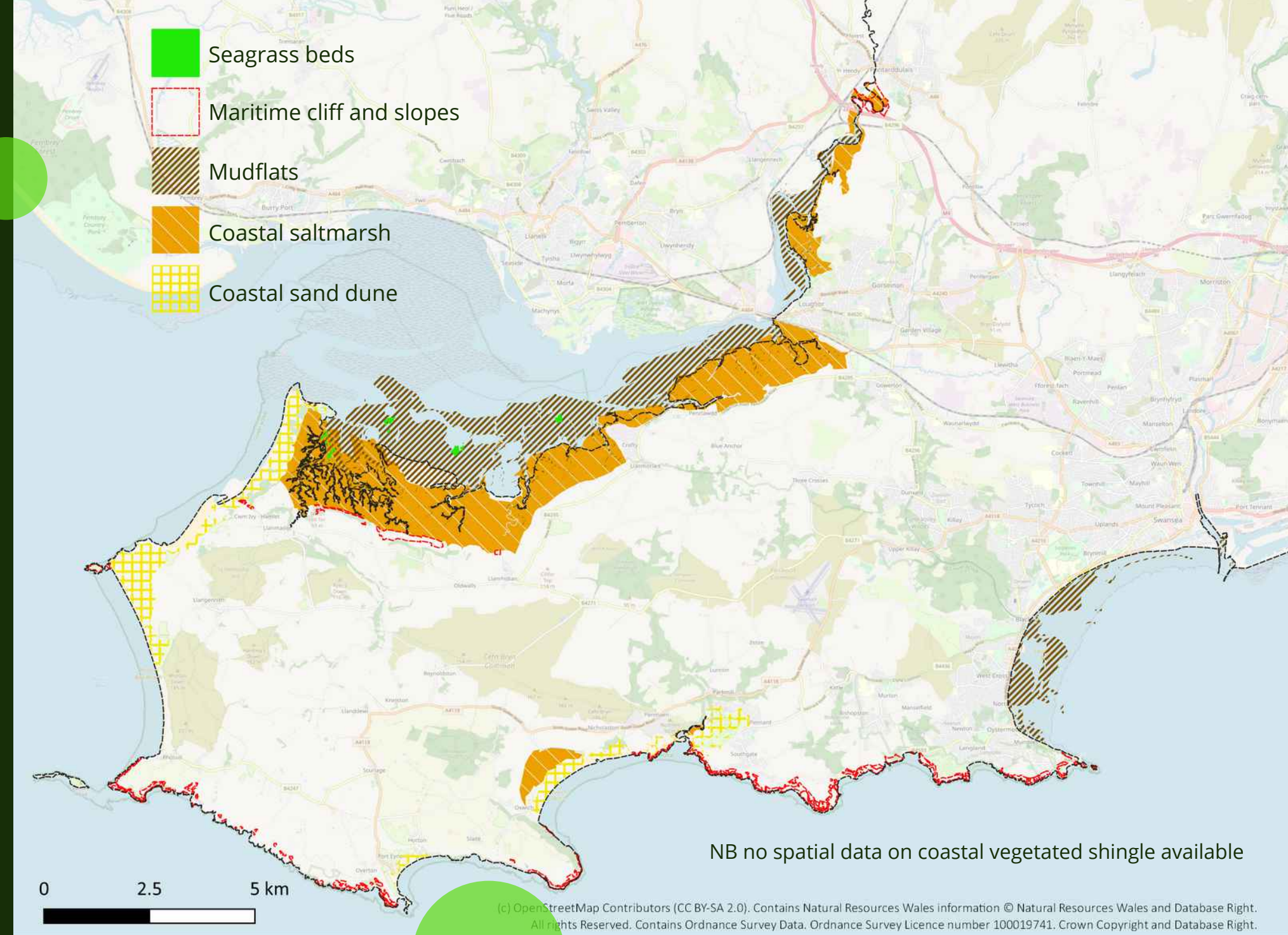
- Seagrass beds
- Intertidal mudflats
- Coastal salt marsh
- Coastal vegetated shingle
- Maritime cliffs and slopes
- Coastal sand dunes

These habitats are dynamic and rely on coastal processes for their existence and as a result, are subject to natural changes in quality and extent. Good examples of coastal sand dunes can be seen at Nicholaston Burrows, Oxwich Burrows, Port Eynon, Whiteford NNR and Penmaen Burrows. In addition, dune restoration and creation works have been ongoing in Swansea Bay over the past 10 years.

On north Gower, from Whiteford to the Burry Inlet, large expanses of mudflats and coastal saltmarsh can be found. There also smaller areas of saltmarsh at Oxwich and Pennard Valley, as well as an area of mudflats in Blackpill SSSI.

Maritime cliffs and slopes are largely confined to south and west Gower where they grade into various vegetation types such as calcareous grassland and lowland heath. Seagrass beds are the scarcest of Swansea's coastal habitats and are restricted to only a few small sites in the Burry Inlet.

Coastal habitats in Swansea support a variety of species of principal importance including (but not limited to) yellow whitlow grass, sea



stock, otter, prickly saltwort, narrow-mouthed whorl snail, Eurasian curlew, chough, shrill carder bee, and small blue butterfly.

There are many threats to coastal habitats in Swansea. Some of these include recreational disturbance, INNS, marine pollution, marine litter, over or under-grazing, nutrient enrichment, coastal squeeze, coastal developments, climate change, and erosion.

SWANSEA'S

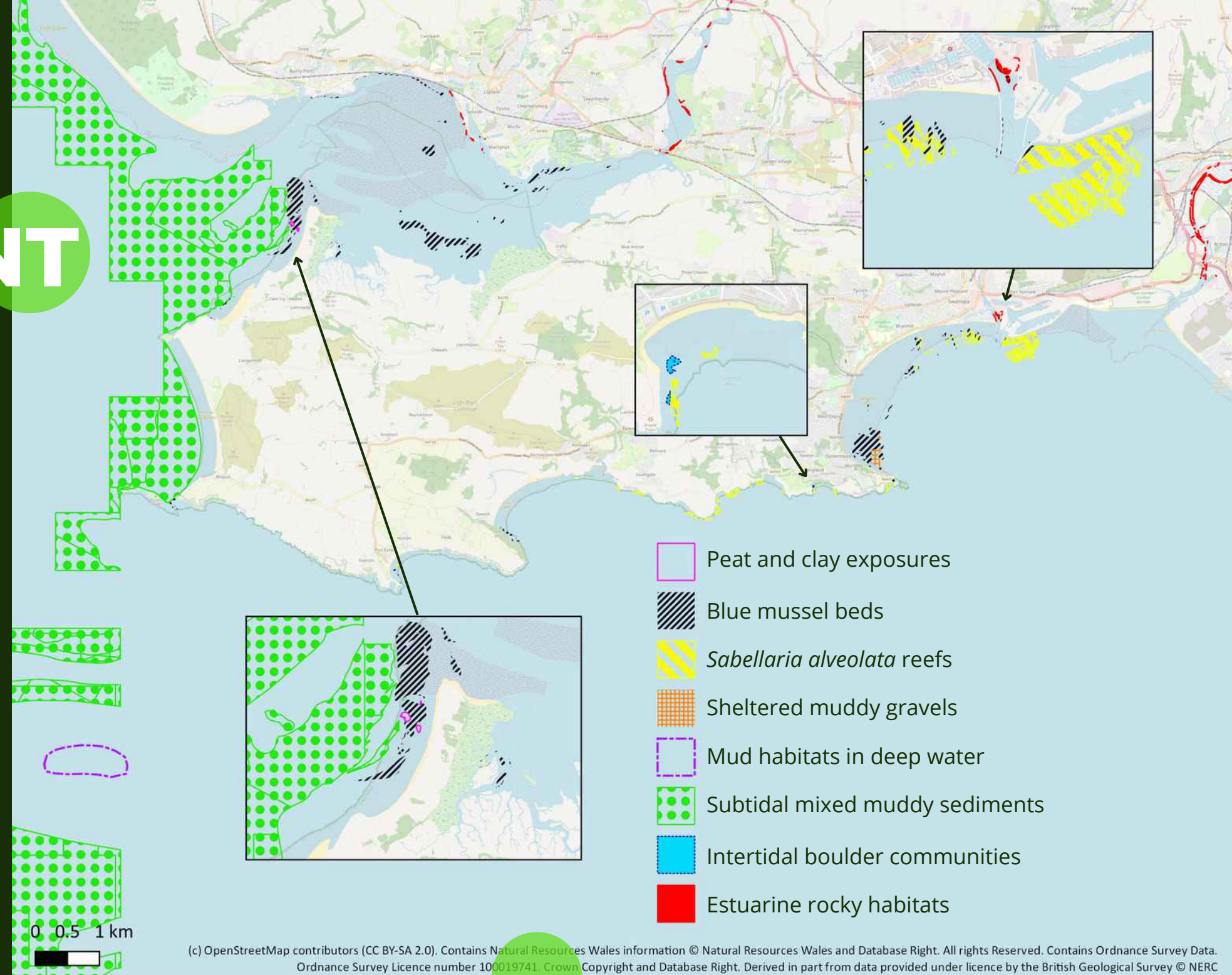
# MARINE ENVIRONMENT

The marine habitats around Swansea are diverse, including eight habitats of principal importance:

- Peat and clay exposures
- Blue mussel beds
- *Sabellaria alveolata* reefs
- Sheltered muddy gravels
- Mud habitats in deep water
- Subtidal mixed muddy sediments
- Intertidal boulder communities
- Estuarine rocky habitats

Blue mussel beds are the most common marine habitat of principal importance, found in the near shore seas around much of Swansea's coastline. These include relatively large patches near Mumbles, and in the Loughor Estuary. *Sabellaria alveolata* (honeycomb worm) reefs are also present as hummocks or thin veneers, mainly restricted to the intertidal environment off Swansea's south coast, including Swansea Bay, Llangland Bay, Bracelet Bay, Oxwich, and Port Eynon. Intertidal boulder communities are widespread across Swansea's rocky shores. They can be found at Bracelet Bay, Llangland Bay, Oxwich, Port Eynon, and Worms Head Causway.

While subtidal mixed muddy sediments are found in large expanses off the west and north Gower coast, the remaining marine habitats of principal importance are only found in smaller more isolated patches. Estuarine rocky habitats occur in the River Tawe, and the Loughor estuary; sheltered muddy gravels near Mumbles, peat and clay exposures at Swansea beach, Port Eynon and near Whiteford, and mud habitats in deep waters south of Worms Head Causeway.



Marine habitats in Swansea support a variety of species of principal importance including (but not limited to) harbour porpoise, Risso's dolphin, thornback ray, lesser sandeel, leatherback turtle, stalked jellyfish, plus a rich variety of bird species. There are many threats to marine habitats in Swansea. Some of these include sea temperature rise, pollution, marine litter, INNS, disturbance, offshore marine renewable energy developments, dredging and over-exploitation of natural resources.

SWANSEA'S

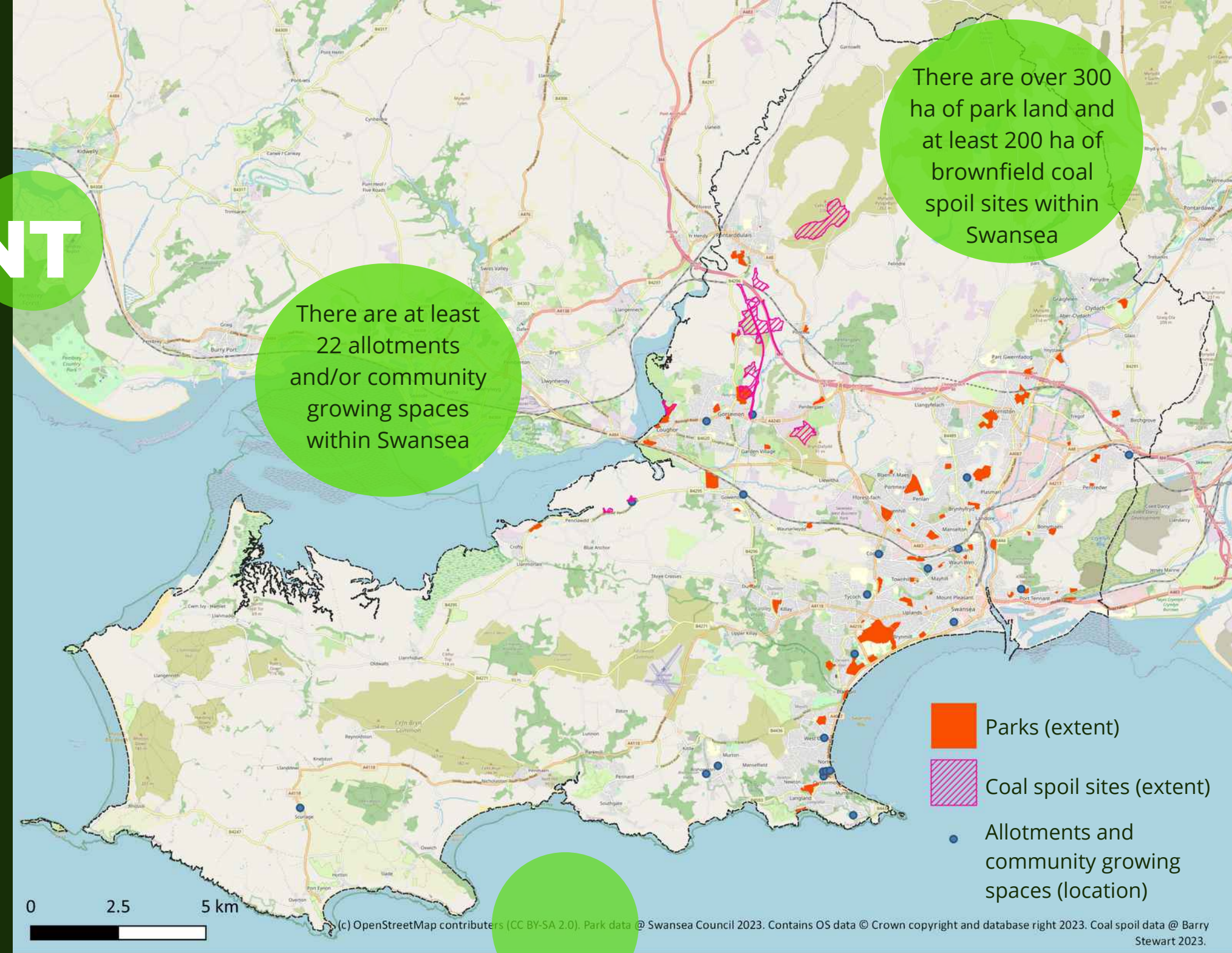
# URBAN ENVIRONMENT

Urban habitats in Swansea, such as buildings, parks, gardens, and other green and food growing spaces cover large areas. Some are designated as SINCs, but even those areas that are not are still important in supporting species, and contributing to ecosystem resilience.

They are particularly important habitats for birds, such as swifts, that utilise the eaves of houses for nesting places, and bat species that make their homes in roof spaces and dilapidated buildings. Other important species such as hedgehog and slow worm are commonly associated with urban gardens and allotments.

Urban habitats can also play a significant connectivity role, e.g. parks can provide 'stepping stones' of habitat in amongst urban features, while grassy commons, verges and hedges may be important for connecting these habitats throughout urban areas. Green infrastructure installations like green roofs, living walls and rain planters provide resources and connectivity for pollinators and other species whilst addressing the impacts of climate change, by slowing the flow of surface water run off and providing summer cooling. They create multifunctional green oases in an otherwise largely 'grey' environment.

However, there is still significant scope to enhance biodiversity through the creation and management of nature-friendly networks of gardens, parkland and buildings in Swansea. There are several threats to wildlife in urban spaces including light and chemical pollution, as well as the way we manage some of our green spaces, because nature isn't neat.



Short, overly mowed vegetation (or artificial grass) leaves little or no opportunity for wildflowers to grow and provides no shelter which negatively impacts pollinators and other invertebrates, plus small mammals and birds. Even bramble, which might seem unsightly is an important winter food resource for many species and provides nesting opportunities for birds. So by letting *some* areas of grassland grow, wildflowers will flower for longer providing food and habitat for wildlife. By allowing plants to grow bigger roots they will also store more carbon in the soil and help mitigate climate change.

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SPECIES OF PRINCIPAL IMPORTANCE IN  
**SWANSEA**

Of the 662 individual Species of Principal Importance listed on the Section 7 of the Environment (Wales) Act 2016, xxx species have been recorded from the Swansea unitary authority area. Of these, xx species have not been recorded in the last 20 years. Many of these have suffered national declines and are therefore probably no longer resident in Swansea.

Table x shows the distribution of Species of Principal Importance according to taxonomic groups (excluding those not recorded in the last two decades). A full list of priority species recorded in Swansea available at xxx

PLEASE NOTE THIS PAGE IS INTENTIONALLY INCOMPLETE.



Systematic Group	Number of species	% of Total No. S7 species in Swansea
Lichen	x	x
Liverwort & moss	x	x
Flowering Plants	x	x
Fungi	x	x
<b>All plants &amp; fungi</b>	<b>x</b>	<b>x</b>
Butterflies & moths	x	x
Damselflies	x	x
Spiders	x	x
Bees, wasps & ants	x	x
Molluscs	x	x
True flies	x	x
Beetle	x	x
<b>All invertebrates</b>	<b>x</b>	<b>x</b>
Birds	x	x
Terrestrial mammals	x	x
Amphibians	x	x
Marine reptiles	x	x
Terrestrial reptiles	x	x
Fish	x	x
Marine mammals	x	x
<b>All vertebrates</b>	<b>x</b>	<b>x</b>
<b>Total Species</b>	<b>x</b>	<b>x</b>



**YELLOW WHITLOW GRASS** is a very rare plant species and in the UK found only on the limestone cliffs and old walls in the Gower. It blooms in the spring with beautifully dainty yellow flowers.



**MARSH FRITILLARY** is one of the UKs most threatened butterfly species, but we have a resident population on the Gower Commons SAC. In fact, this is the second most important area for the species in Wales.



**HARBOUR PORPOISE** is a frequent visitor to the seas around Swansea, commonly seen in Swansea Bay or off the Gower coast, so much so that part of Swansea's sea is designated as a SAC specifically for this species.



**SOUTHERN DAMSELFLY** has very specialised habitat requirements. There are two populations of southern damselfly in Gower Commons SAC which are the only known populations of this species in South Wales.



**ADDER** are a well-known feature of the Gower landscape, but their numbers across Wales are declining rapidly. They are peaceful and shy but venomous, and bites can happen by accidentally stepping on or picking them up.

SPOT LIGHT ON SOME OF SWANSEA'S **SPECIES**



**STRANDLINE BEETLE**

has declined severely over the last 20 years from Welsh beaches, Devon and Cornwall as well as the French Atlantic coast. This rare coastal species is now classified as endangered, but is present in Swansea, with Whiteford being its principal site in South Wales at present.



**WOOD BITTER VETCH** is rare throughout West Glamorgan but there is a population present on Cadle Heath LNR, near Fforest-fach. This is one of only two populations of the species in West Glamorgan.



**OTTER** are present throughout Swansea and have been spotted in most major rivers including the Clyne, Loughor, and Tawe, as well as the Gower coast. However, there are worrying signs that otter have been declining in Swansea in recent years.



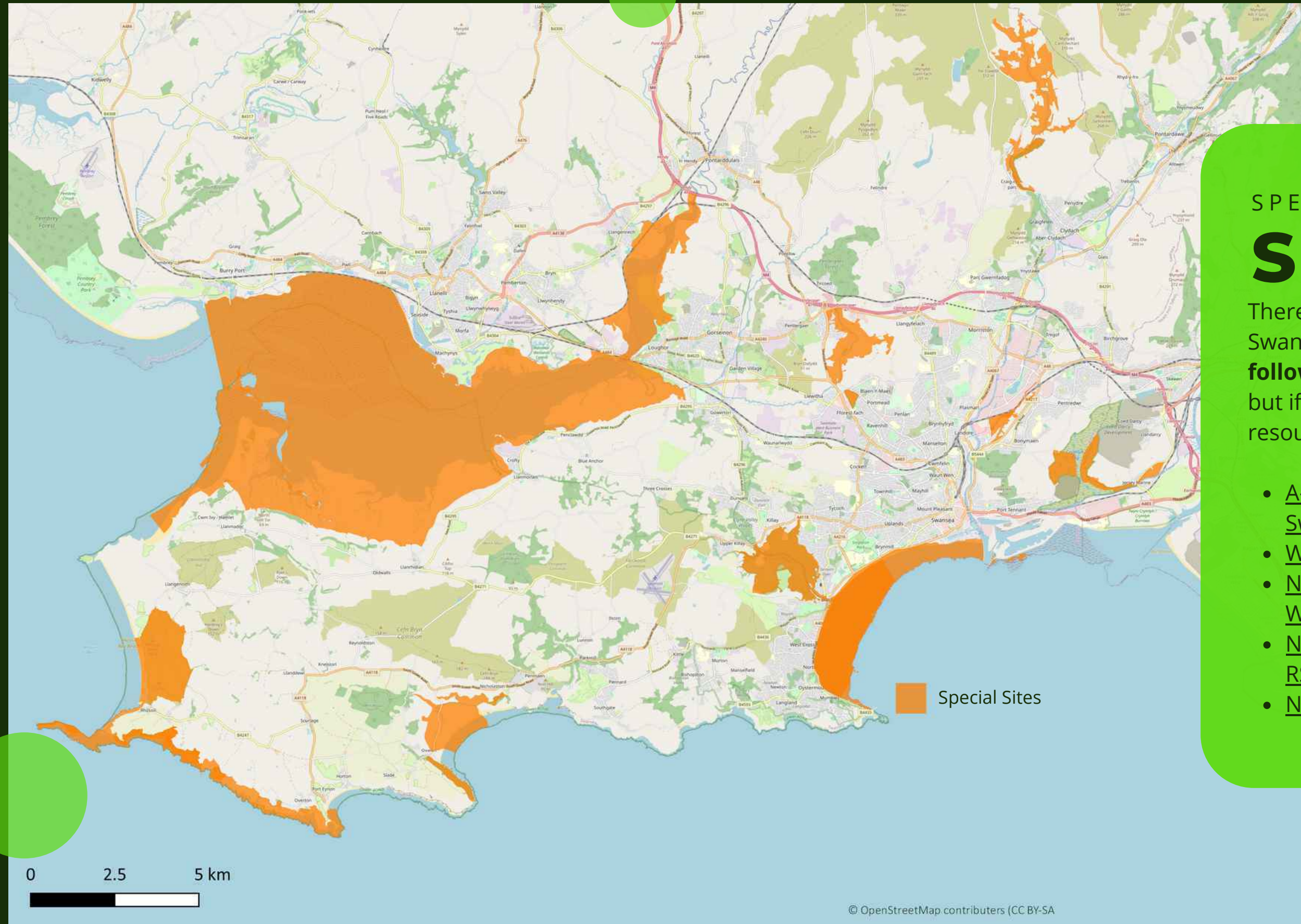
**HORESHOE BATS** faced catastrophic declines in the 20th century, but south Wales remains one of their strongholds and we are lucky to have both species (the lesser and the greater) resident in Swansea. The Vincent Wildlife Trust own a horseshoe roost on Gower that was a derelict building but is now a one-stop bat house! Glamorgan Bat Group monitor the horseshoe populations every year.



**NORTH ATLANTIC GREY SEAL** is the predominant seal species sighted on our Gower coast. The UK has around 38 percent of the global population and Gower has a very small percentage of that number. However, they do suffer from disturbance by a range of human activities. Gower Seal Group is committed to reducing such incidents by raising awareness of this globally rare visitor to our coastline.



**CHOUGH** populations declined sharply in the 19th century leaving them restricted to western parts of the UK. There are resident populations on the south Gower cliffs where birds are regularly spotted, however across Wales the species has declined over the past two decades.



## SPECIAL SITES

There are many special sites for nature around Swansea, some protected by law and others not. **The following pages are just a few examples of these**, but if you want to find more then try some of the resources below.

- [A-Z parks, nature reserves and outdoor spaces - Swansea](#)
- [Wales | National Trust](#)
- [Nature Reserves | The Wildlife Trust of South and West Wales \(welshwildlife.org\)](#)
- [Nature Reserves UK | Nature Walks Near You - The RSPB](#)
- [Natural Resources Wales / South West Wales](#)



**LOUGHOR ESTUARY** is a large estuarine complex comprising areas of grazed salt marsh, sand and mud flats. The site and the surrounding areas are subject to numerous designations (SSSI, SAC, SPA and Ramsar) owing to several internationally important habitat features and species. For example the area is home to significant populations of overwintering wader and wildfowl populations averaging in excess of 46,000 birds. The marine parts of this site also form part of the Carmarthen Bay and Estuaries European Marine site.



**WHITEFORD** NNR is an expanse of sand dunes, beach, tidal salt marsh and forest owned by the National Trust. The marshes are important for overwintering oystercatcher, knot, pintail and golden plover. Early marsh orchid, fen orchid, early sand grass, and dune gentian can also be found among the dune systems.

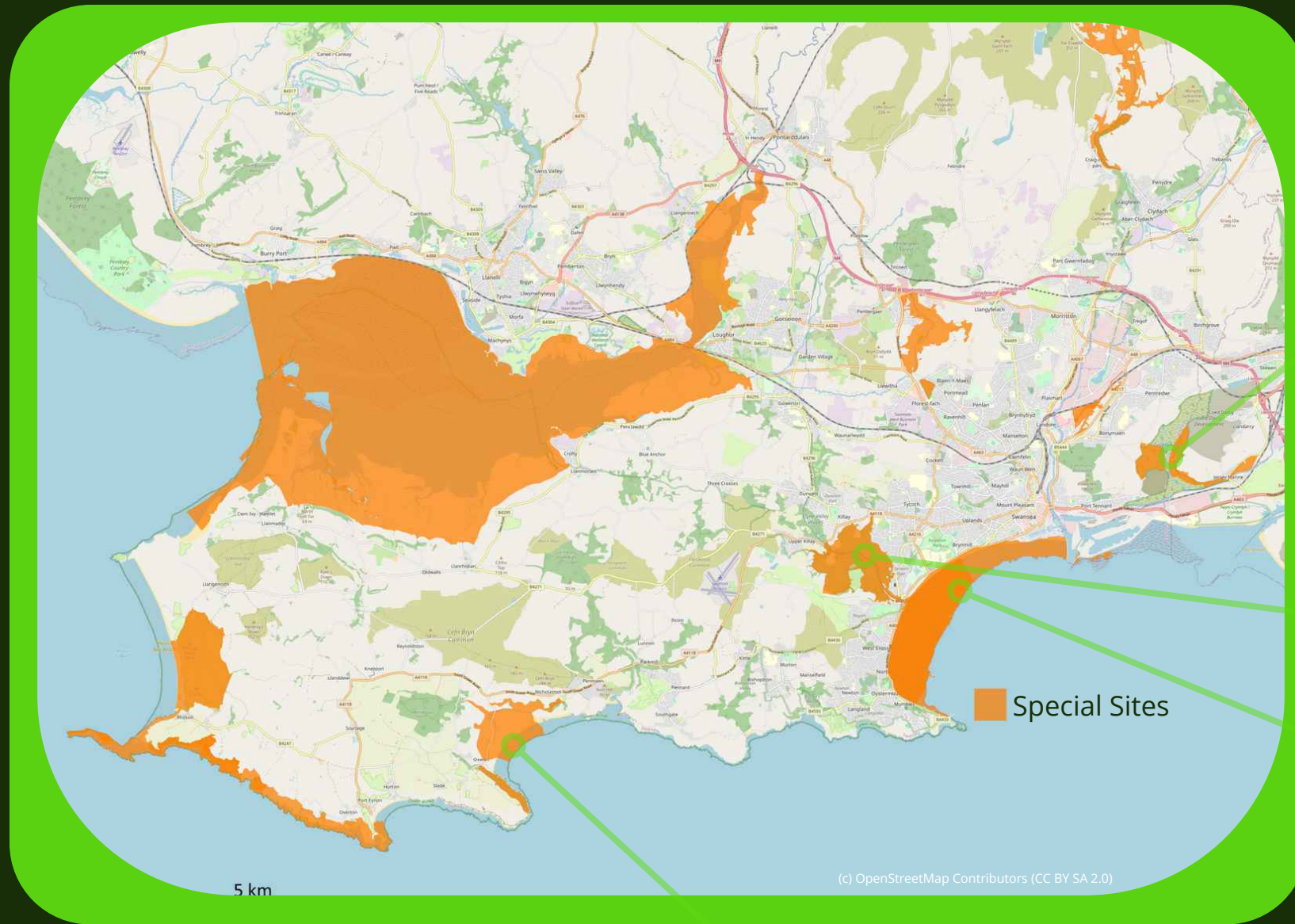


**RHOSSILI DOWN** SSSI and cliffs are among the largest commons on Gower covering 354 hectares. The Down consists of dry acid dwarf shrub heath with bracken dominated areas, and the site supports species such as brown hare, Dartford warbler, chough, southern damselfly, and black bog ant. The National Trust own much of this land and have been introducing wildlife friendly farming practices in some areas in recent years. They have been creating more wildflower meadows, managing hedgerows and reintroducing traditional strip field farming.



**OVERTON MERE** is part of the Gower Coast SSSI and has a diversity of habitats including hawthorn and blackthorn scrub, mixed gorse and heath, open limestone scree, and improved and unimproved limestone grassland. While the sea shore itself is a fossil raised beach dating back to the last Ice Age. Common rock-rose, milkwort, eyebright, linnet, meadow pipit, and stonechat are commonly observed, as well as green tiger beetle and the rare silky wave moth. The reserve is also notable for the Dexter Cattle and Welsh Mountain Ponies present that are used for conservation grazing.





**CRYMLYN BOG** NNR lies in the east of Swansea and is owned and managed by NRW. It is the largest expanse of lowland fen in Wales and home to a wide variety of wetland specialists including reed, sedge and Cetti's warbler, marsh cinquefoil, and royal fern. The bog is also one of seven sites involved in the LIFE Quake Project to restore quaking bogs.



**CLYNE VALLEY COUNTRY PARK** is the only country park in Swansea, covering 700 acres of land from Blackpill at the coast to Dunvant in the north. It has a long industrial past beginning with coal mining from the 14th century, and ironworks and a thriving brickmaking industry throughout the 19th and 20th century. The valley has since been reclaimed by wildlife, with varied oak, birch, and beech woods, providing habitat for many species of birds. Disused quarries and tunnels, provide shelter for bats, and the rare bee orchid is even found here. Access has improved over the years with the help of Clyne Valley Community Project so it's now even easier to experience nature in the park.



**OXWICH** NNR is managed by NRW. It is a diverse mix of beach, sand dunes, lakes, woodlands, cliffs and salt and freshwater marshes. The dunes are home to wild orchids that flower in spring and there is a nationally recognised population of the small blue butterfly. The NNR was also the site of a water vole reintroduction in 2022.

**SWANSEA BAY** is the longest beach in the county, stretching from the dunes near Swansea Marina to Mumbles Pier, which is home to a significant colony of breeding kittiwakes (on the old lifeboat station). The easterly part of the SINC has been the target of dune restoration works over recent years, while the westerly parts encompass **Blackpill SSSI** which is designated for internationally important numbers of overwintering sanderling and ringed plovers. These birds are sensitive to disturbance from people and pets.



### PENLLERGARE VALLEY WOODS

consists of over 100 acres of woodland on an old Victorian estate. Previously the home of the Llewelyn family, today the estate is entrusted to the Penllergare Trust who have worked to protect the woods from further development encroachment and conserve and enhance biodiversity. Including most recently by using a local herd of Highland cow to increase grassland wildflower diversity. The woods on site are also carpeted with bluebell and wood anemone in the spring and the lakes are an excellent place to observe kingfishers, dippers, and otters.



**CWM CLYDACH** nature reserve is owned and managed by the RSPB. The broadleaved woodland and Lower Clydach river that runs through the reserve support breeding wood warblers, grey wagtails, dippers, and spotted flycatchers. Buzzards, red kites, and ravens are also frequently spotted in the reserve.



**CADLE HEATH** LNR is an urban heathland. In addition to wet heath, the 11.5 hectare reserve has areas of grassland, ponds, scrub and woodland. It provides a home for a wide range of plants and animals including butterflies and dragonflies, frogs, skylarks, heather, devil's-bit scabious, southern marsh orchids and whorled caraway. There's also a significant colony of wood bitter vetch which only occurs on two sites in West Glamorgan.



**PLUCK LAKE** SINC encompasses Six Pit, Swansea Vale and White Rock SSSI. The industrial heritage of this site and surrounding areas are intimately linked to its protection, with the site being designated for three metal-loving species assemblages, that is calaminarian grassland, metal-tolerating lichen assemblages and spring sandwort. A successful translocation of *Scopelophila* moss was carried out on the site in the last few years, with the help of NRW and local botanists.





WHAT CAN I DO TO

# HELP NATURE IN SWANSEA?

The following pages give *some* ideas for what you could do to help nature and contribute to the priorities for nature recovery (action themes) in Swansea. This is not an exhaustive list but a starting point.

To make it easier, ideas have been tagged with icons for home, school, work, your community or as a nature enthusiast to give you an idea of where you could implement them but you don't have to stick to these categories!



Home



School



Work



Community



Nature enthusiast

WHAT CAN I DO?

# MAKE SPACE FOR NATURE!



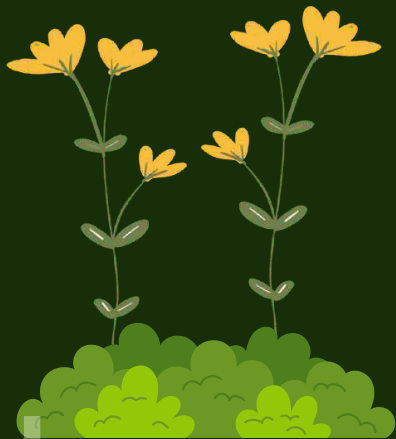
You can quickly and cheaply **make a meadow** for wildlife, by reducing the amount of times you mow your grass! Let grass grow between April and July to see what native flowers bloom. You always need to **cut and remove** the clippings in late summer or autumn, as is being done in some of our Swansea Parks. If you don't have many flowers, then you can buy native local seed or plugs to boost your lawn. Yellow rattle is especially good to plant as this controls grass growth which helps wildflowers!



You could **plant trees** as they provide food, shelter, and nesting sites for many species including insects, birds and bats. You could plant and manage a small group of trees, or stick with a single tree in a border, hedge or lawn. Evergreen (those that keep their leaves) and deciduous (those that lose their leaves over winter) trees bring different features to your garden and if it's possible then have both!. Evergreen trees will give foliage and greenery all year round, whilst deciduous ones will give a huge variety of leaf shape and colours plus a seasonal bounty of fruits and seeds. Always make sure you plant trees around 2-3 m apart, and avoid planting within 4m of buildings.

Planting more trees can be beneficial for the climate and wildlife, but the wrong tree planted in the wrong place can do more damage than good. For example, planting trees in wildflower rich meadows or peatlands can cause more carbon to be released than can be captured by the tree and it could reduce biodiversity. For more information on choosing the **right tree for the right place** see here.

**Plant native wildflowers and shrubs** to provide food and shelter for pollinators and other species. The flowers and berries of native plants will attract butterflies, moths, bees, and birds. Evergreen shrubs also provide food and shelter during colder months. You can even encourage bats into your garden by planting flowers that attract insects, for example, night-scented stock, evening primrose and lavender. Keep Wales Tidy offer packages for groups to improve outdoor spaces for people and and wildlife!



Consider **green infrastructure** in renovation projects including green walls, green roofs and rain planters - these help support biodiversity, reduce energy costs, and boost our health and wellbeing. They can also reduce flooding by diverting surface water run off away from our conventional drainage systems.

## Additional Links for further resources

- [How to mow your lawn for wild flowers - No Mow May \(plantlife.org.uk\)](http://plantlife.org.uk)
- [How to grow a wild patch or mini meadow | The Wildlife Trusts](#)

- [Conservation - Keep Wales Tidy](#)
- [How to plant a Barcham Tree - Barcham](#)
- [How much to water newly planted trees? - Barcham](#)
- [Arboricultural Association - Guide to Young Tree Establishment \(trees.org.uk\)](http://trees.org.uk)

- [Tree Species Selection for Green Infrastructure - Trees and Design Action Group \(tdag.org.uk\)](http://tdag.org.uk)
- [Climate action - Green infrastructure strategy - Swansea](#)
- [Livingroofs.org, the leading UK green roof website](http://livingroofs.org)

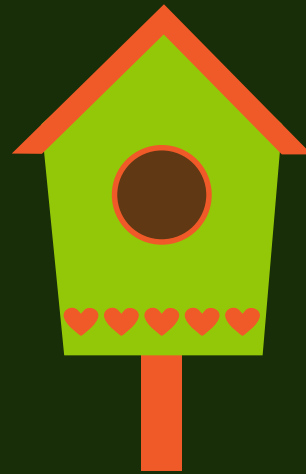
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## WHAT CAN I DO?

# GIVE NATURE A HOME!



Any **bird box** is beneficial to install on a suitable structure or tree, but swifts especially are struggling. They need a special type of box that is placed at least 5 meters up, ideally on a north facing wall no obstacles for them to swoop into. By installing swift boxes in your home in suitable locations you would be contributing to the [Saving Swansea's Swifts Initiative](#)! Bird boxes can be placed on large trees or the side of a building, so you don't even need a garden to help birds!



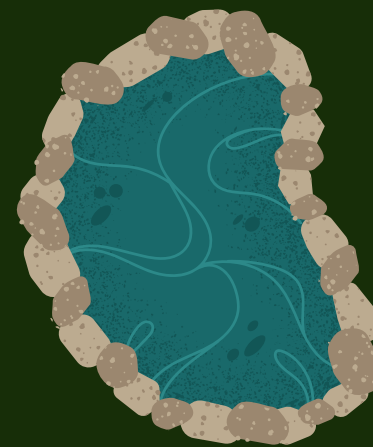
You could **install a bat box** to provide seasonal homes for bats where access to tree roosts and suitable buildings is limited. Bats need time to find and explore new roosts, and it may be several months or even years before boxes have residents – be patient! Once bats find a place they want to live they can return over and over again. Please note, as bats are vulnerable to disturbance and fully protected under UK law, **boxes must only be opened by a licensed bat worker**. Bat boxes can be placed on large trees or the side of a building.



Insects and other minibeasts need safe spaces to shelter, hide from predators, and raise their young. You can help them by leaving or **creating natural features** like standing or fallen dead wood, log stacks, or by leaving some dead vegetation over winter. All the rotting wood, flaking bark and maze of little gaps between the logs is also heaven for other wildlife including toads and newts!



You could also invest in an **owl box**. Although owls prefer quieter spaces, so you'll need the right conditions and this may be suited to homes or business with relatively large areas of land, such as farms. Barn owls love buildings, so a disused building or quiet loft (where the bird can enter at 3m+) could be a good place for a barn owl box. Tawny owls however prefer woodland habit.



You can **make a shallow pond** to create habitat for many species including insects, amphibians, and plants; as well as providing an important water resource for birds and mammals. Even a washing up bowl can be turned into wildlife wetland feature. [Do you have space for a wildlife pond or mini wetland?](#) However, make sure you are careful moving pond plants from other gardens, as there are [some nasty species which can ruin your pond](#).

## Additional Links for further resources

- [Nestboxes For The Garden - The RSPB](#)
- [Tawny Owl nestboxes - The Barn Owl Trust](#)
- [Ways to help nature - Swansea](#)
- [Where's the best place for your Barn Owl nestbox? \(barnowltrust.org.uk\)](#)
- [Putting up your box - Bat Boxes - Bat Conservation Trust \(bats.org.uk\)](#)
- [Create a log pile for wildlife | The RSPB](#)
- [How to build a pond | The Wildlife Trusts](#)
- [All-new resource for creating garden wildlife ponds out now | Amphibian and Reptile Conservation \(arc-trust.org\)](#)
- [Local Places for Nature - Keep Wales Tidy](#)

# CHECK YOUR POLLUTION!



**Think about your use of chemicals** at home, the garden, the classroom and at work. Using phosphate free dishwashing detergent is one way to minimise water pollution. You could also avoid using artificial pesticides, herbicides, and fertilisers. Plus using peat free compost or trying to make your own. Another idea is to use alternatives to slug pellets like coffee grounds and eggshells.



Artificial grass is a source of microplastic pollution. Some products claim to be recyclable, but this can only be done through a specialist process, so after the artificial grass has exceeded its lifetime (10-20 years) it likely ends up in landfill.

Artificial grass cannot store carbon or help with flooding like living plants can, so it also provides no climate benefit. In fact, the process of making it emits carbon meaning it is a net polluter. Artificial grass also provides no food or shelter for wildlife, and forms a near complete barrier to the soil beneath it, preventing vital food resources, such as dead leaves, from reaching the soil. This starves ground dwelling invertebrates such as earthworms. Burrowing insects, like solitary bees, are also prevented from finding homes.

If you don't have grass at your home, school or workplace, or you have a shady balcony and want to introduce some greenery, **instead of artificial grass** try potted evergreen shrubs, or shade tolerant plants such as bluebell, wild garlic, or snowdrops. These will brighten up your space without introducing harmful plastics and provide food and shelter for wildlife!



Plastic pollution is everywhere, and it's especially damaging to marine and freshwater ecosystems. It's a huge threat to wildlife because it doesn't break down easily. Larger pieces can trap and/or injure wildlife, while smaller pieces of plastic can be ingested and build up in the bodies of animals at the top of the food chain (including us). There are many small changes you can make to **reduce your plastic footprint** like trying to buy loose fruit and vegetables that aren't covered in plastic. Or if you have the time and space you could try growing your own vegetables at home. If you do need to buy plastic, be sure to recycle it afterwards.



**Check for drain misconnections** . A drain misconnection is when an appliance (e.g. washing machine) or plumbing (e.g. toilet) is connected to the wrong drain or pipe so foul water is released into the surface water sewer, instead of the waste water sewer. The surface water sewer is released directly into rivers or streams, so if there is a misconnection, pollutants will be released into the surrounding water ways and beaches every time you flush or wash your clothes! It's the property owners responsibility to fix a misconnection, but you can contact Dŵr Cymru, your local authority, or a WaterSafe plumber for advise if you suspect you have a misconnection.

## Additional Links for further resources

- [Chemical-free organic gardening | The Wildlife Trust of South and West Wales \(welshwildlife.org\)](#)
- [How to use less plastic | The Wildlife Trust of South and West Wales \(welshwildlife.org\)](#)
- [Natural Resources Wales / Have you ever considered how you might be causing pollution?](#)
- [ConnectRight](#)
- [Drain Misconnections Threaten Our Rivers | The Rivers Trust](#)
- [Misconnected sewers | Dŵr Cymru Welsh Water \(dwrcymru.com\)](#)

WHAT CAN I DO?

# FIGHT THE CLIMATE EMERGENCY

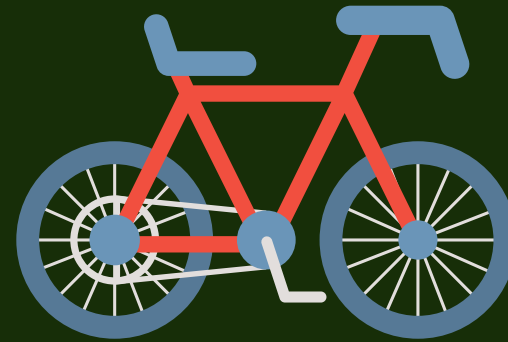


Around one-third of food is lost or wasted during the journey from field to table, which has a huge environmental footprint. If food waste were a country it would be the third largest emitter of greenhouse gases!

Reducing the distance between where your food is produced and where you buy it can help **reduce food waste** and emissions, benefiting the climate, nature, and you! Eating seasonally will also help reduce the environmental footprint from your diet as it avoids foods grown in energy intensive greenhouses.

Everything you do to fight climate change will also help with nature recovery, so thank you! Some **simple changes** you could make around the house, classroom or business could include switching to a green energy provider, minimising wasted electricity and water use, and walking and cycling where possible.

If you're a business owner you could encourage your employees to cycle or walk to the office by participating in the cycle-to-work scheme and/or provide support for staff to commute via public transport.



Peat is commonly used in compost for gardening but it is dug out of moors, bogs and fens causing damage to extremely vulnerable and hard to replace habitat, and all the species that depend on it. In the UK more than 94% of lowland peat bogs are damaged or destroyed. Peat is slow growing (only a millimetre or two a year) so peat that is lost won't be replaced in our lifetime, our children's, or even our grandchildren's. In fact some commercial extraction can remove more than 500 years of peat growth in a single year!

Peatlands are not only important for the wildlife that depend on them but they are also huge carbon sinks, meaning they store lots of carbon underground. When the peat is damaged or destroyed this carbon is released, contributing to climate change. So by **going peat free** you can help reduce your environmental impact and prevent further damage to these delicate and unique ecosystems.

If you do eat meat, try choosing meat with lower carbon footprints, such as pasture/grass fed meat rather than grain fed meat. Especially those from local and/or **regenerative farms** which employ more nature friendly methods to grow crops and farm livestock.



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## Additional Links for further resources

- [Change how you travel | The Wildlife Trust of South and West Wales \(welshwildlife.org\)](#)
- [The Anatomy Of Action](#)
- [Regenerative Agriculture - Innovation for Agriculture](#)
- [What is Conservation Grazing | PONT \(pontcymru.org\)](#)
- [Reduce food waste | The Wildlife Trust of South and West Wales \(welshwildlife.org\)](#)
- [How to go peat free at home | The Wildlife Trust of South and West Wales \(welshwildlife.org\)](#)



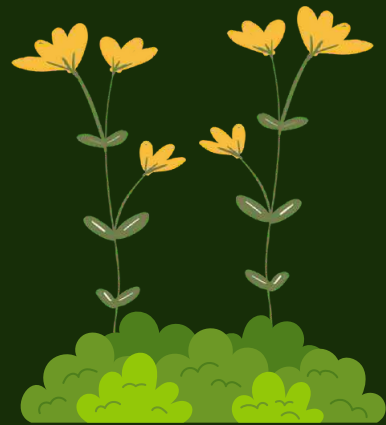
WHAT CAN I DO?

# IF I'M SHORT ON SPACE?

YOU CAN STILL...

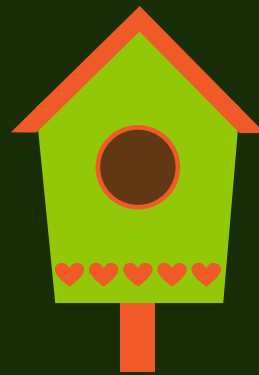


Install a **green roof** on a bin shelter, shed or balcony. You could also install a green wall or window box. Go have a look at the [Environment Centre](#) on Pier Street for inspiration.



**Plant native wildflowers and shrubs**. For smaller spaces, planting climbers such as honeysuckle, clematis, sweet peas, and roses provide resources for pollinators without the need for large spaces. Remember the same principles apply if you don't have any outdoor spaces, you can plant the wildflowers in window boxes or planters!

You don't have to have a garden or outdoor grounds to put up a **bird box** as you can install these on your home, school or workplace buildings (though you may need permission if you are not the owner!). Some bird boxes can even be put on trees, if you have any. The same goes for **bat boxes** too!



FOR SCHOOLS ESPECIALLY



# DISCOVER NATURE

Understanding and appreciation for nature can be fostered in children from a very early age. Biodiversity is an essential component of **environmental education** and can be linked to the national curriculum in many different ways. For example you could complete a biodiversity audit of your school grounds (even if you don't have much greenspace you could be surprised at what you might find!) and record what species you find. Make sure to submit your records to [SEWBRc](#), this can be done [online](#) or via the [LERC Wales app](#). This exercise could be especially interesting if you have created/are managing wildlife areas within your grounds.



Take the children to visit one of the many [nature reserves in Swansea](#). Time spent in nature is proven to improve learning and it will give students the chance to **discover the natural world** around them. If you don't have the skills or experience to teach the students yourself you could look into courses or trips run by experienced outdoor education tutors. .

## Additional Links for further resources

- [Livingroofs.org](#), the leading UK green roof website
- [Forest School training \(forestschoolsnpt.org.uk\)](#)
- [BioBlitz | School Wild Challenge - The RSPB](#)
- [A-Z parks, nature reserves and outdoor spaces - Swansea](#)
- [Eco-Schools - Keep Wales Tidy - Eco-Schools](#)

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WHAT CAN I DO?

# SET AN EXAMPLE: IN SCHOOL



Become an **Eco-school** to encourage young people to make positive environmental changes to their school and wider community



Join the **Bee Friendly Scheme** to contribute to landscape scale action for pollinators.

**Demonstrate good practices** for the environment in the classroom by using water and energy efficiently, minimising waste, and reusing and re-cycling where possible. If you have space on your school grounds you could create a school wildlife garden, orchard or vegetable patch and use it to teach wildlife friendly gardening practices.



## Bee Friendly Scheme

# AS A BUSINESS



If you don't have grounds or can't manage them for nature you can **donate** to an environmental Non-Governmental Organisation (NGO) that looks after nature elsewhere instead. Bonus points for supporting a local scheme in Swansea!

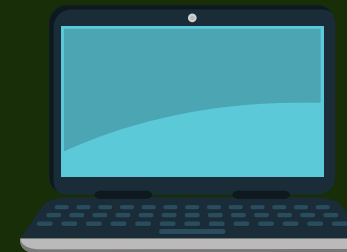


Asses the impact on nature when making decisions in your business and do everything you can to **minimise your impact** and support nature recovery!

**Set up a volunteering scheme** in your company. You could allow employees special leave days to volunteer with a local nature conservation organisation. This can benefit your employees, as well as the local wildlife, by allowing them to gain new skills and experiences. If you want suggestions for where to volunteer contact the Local Nature Partnership Coordinator(s) for further detail.



**Share** your companies nature positive actions online to encourage and inspire other business to take action for nature recovery in Swansea.



### Additional Links for further resources

- [How to certify as a B Corp - B Lab UK \(bcorporation.uk\)](https://www.bcorporation.net/en-gb/how-to-certify)
- [Wales Biodiversity Partnership - How can I get involved \(biodiversitywales.org.uk\)](https://www.biodiversitywales.org.uk/)
- [Business Support - Keep Wales Tidy - Caru Cymru](#)
- [Green Key - Keep Wales Tidy](#)
- [How to help wildlife at work | The Wildlife Trust of South and West Wales \(welshwildlife.org\)](https://www.welshwildlife.org/)
- [How to help wildlife at school | The Wildlife Trust of South and West Wales \(welshwildlife.org\)](https://www.welshwildlife.org/)

Get certified as a **B-Corp** . B-Corp businesses meet high standards of social and environmental performance, transparency and accountability.



WHAT CAN I DO?

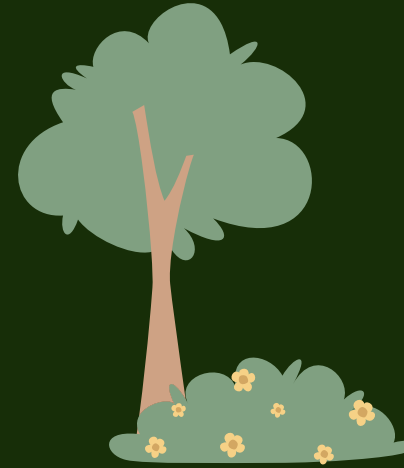
# IN MY COMMUNITY



Volunteer for one of the many small grassroots **community groups** in Swansea, like the [Clyne Valley Community Project](#), [Kilvey Community Woodland Volunteers](#), [Rosehill Quarry](#), or the numerous Swansea Parks 'Friends of' groups (as just some examples), or [create your own!](#) [Contact](#) Swansea Council's Nature Conservation Team's Volunteer Co-ordinator, or your local [Keep Wales Tidy Project Officer](#) for more details.



The more people know about the nature around them, the more they might care and take actions to ensure its recovery, so shout about the nature in your community! You can **spread awareness** at community events or on social media.



**Get to know nature** in your community and if you think you've got somewhere on your local patch that should be protected, or if you want management advice then [contact](#) the Swansea Local Nature Partnership Coordinator (s).



Nature recovery needs **coordinated action** so you could work with neighbours to establish wildlife corridors such as [hedgehog highways](#).



**Contact your councillor.** Get in touch with your local politician and ask what is being done to maintain and enhance biodiversity or let them know any concerns you have. In some cases you could also see what your workplace could do to help nature in your community.

You could **organise** events such as [litter picks](#) or river cleans, or consider working together to create spaces for nature such as wildlife gardens or community orchards



If you're concerned about damage or danger to the natural environment then you can **report an incident** to the [relevant authorities](#).

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## Additional Links for further resources

- [Community Group Insurance Form - Keep Wales Tidy - Caru Cymru](#)
- [Wales Biodiversity Partnership - Swansea \(biodiversitywales.org.uk\)](#)
- [Create nature highways and byways | The RSPB](#)
- [Coastal And Inland Cleanup Guide - World Ocean Day - World Ocean Day](#)
- [How to organize a cleanup? | River Cleanup \(river-cleanup.org\)](#)
- [Litter Champions - Keep Wales Tidy - Caru Cymru](#)
- [How to organise a community litter pick - The Waste Management & Recycling Blog \(forgerecycling.co.uk\)](#)
- [Litter Picking Hubs - Keep Wales Tidy - Caru Cymru](#)
- [Awards - Keep Wales Tidy](#)

## WHAT CAN I DO?

# AS A NATURE ENTHUSIAST



Are you a skilled birder? Or are beetles more your thing? Whether you're a specialist, a jack of all trades, a keen beginner or a life long learner you could **use your skills** by volunteering your time. You could take part in a citizen science project, a national monitoring scheme or a local BioBlitz!

You could even start your own survey. This could range from discovering the nature in your garden, or monitoring your local patch for your favourite species. **Always remember to submit your records to SEWBRcC!**



One of the best things you can do with your knowledge and experience is to **share your skills** with others! You could do this through a local nature group, by attending a recording event and lending your experience, or you could even run your own nature events to pass on your skills to members of your community. If you want any help or advice contact the Local Nature Partnership Coordinator(s).



Record what you see when you are out and about (even just on your evening dog walk!) and **submit your records** to the South East Wales Biodiversity Records Centre (SEWBRcC). It is free and easy to do, you can submit your records online using SEWBRcCORD or via the LERC Wales app. If you aren't able to submit records online or using an app you can also share your sightings with SEWBRcC via email or on a recording form. **You don't have to be an expert to submit records**, and if you're not confident in your identification then try taking a picture to submit alongside your sighting. Biological records can help monitor species and habitats so by submitting your records you could be helping their conservation! You can also explore records near you online using Aderyn.



Whether you're a botanist looking to hone your existing skills, a birder looking to break into butterflies or a complete beginner hoping to learn your first tree its never too late to keep learning and **expand your skills**. There are plenty of free online resources, apps and webinars to get you started. You could also join a local nature group, or attend an event to learn from experienced naturalists.

You could also **join the Swansea Local Nature Partnership** to share your particular expertise and/or local knowledge. Contact the Local Nature Partnership Coordinator(s) for more information.

## Additional Links for further resources

- National Bat Monitoring Programme - Our Work - Bat Conservation Trust (bats.org.uk)
- Big Butterfly Count (butterfly-conservation.org)
- Local Groups - The Mammal Society
- Glamorgan, v.c. 41 - Botanical Society of Britain & Ireland (bsbi.org)
- Gower Ornithological Society - Home to The Gower Ringing Group (gowerbirds.org.uk)
- Glamorgan :: British Mycological Society (britmycolsoc.org.uk)
- Glamorgan Bat Group - glambatclub@gmail.com
- Natural History Courses - Field Studies Council (field-studies-council.org)
- Training | The Species Recovery Trust | Salisbury
- Learn | The Wildlife Trust of South and West Wales (welshwildlife.org)
- Wales Biodiversity Partnership - Swansea (biodiversitywales.org.uk)
- Saving Swansea's Swifts - Gower Ornithological Society (gowerbirds.org.uk)
- SEWBRcC :: recording
- What is a biological record? | Biodiversity Projects (fscbiodiversity.uk)
- Add a record - Ancient Tree Inventory (woodlandtrust.org.uk)



TECHNICAL TERM

# EXPLAINERS

Please keep reading for definitions and explanations of some technical terms used in the Swansea LNRAP.

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## EXPLAINER: WHAT ARE SPECIES, HABITATS AND ECOSYSTEMS?

There are many technical definitions of a **species** but one of the simplest is, a group of organisms (e.g. animals, plants, fungi) that can reproduce naturally with one another and create fertile offspring. This is the biological definition of a species.

A **habitat** is where species make their home. Habitats provide all the conditions (environmental and otherwise) a species needs to survive.

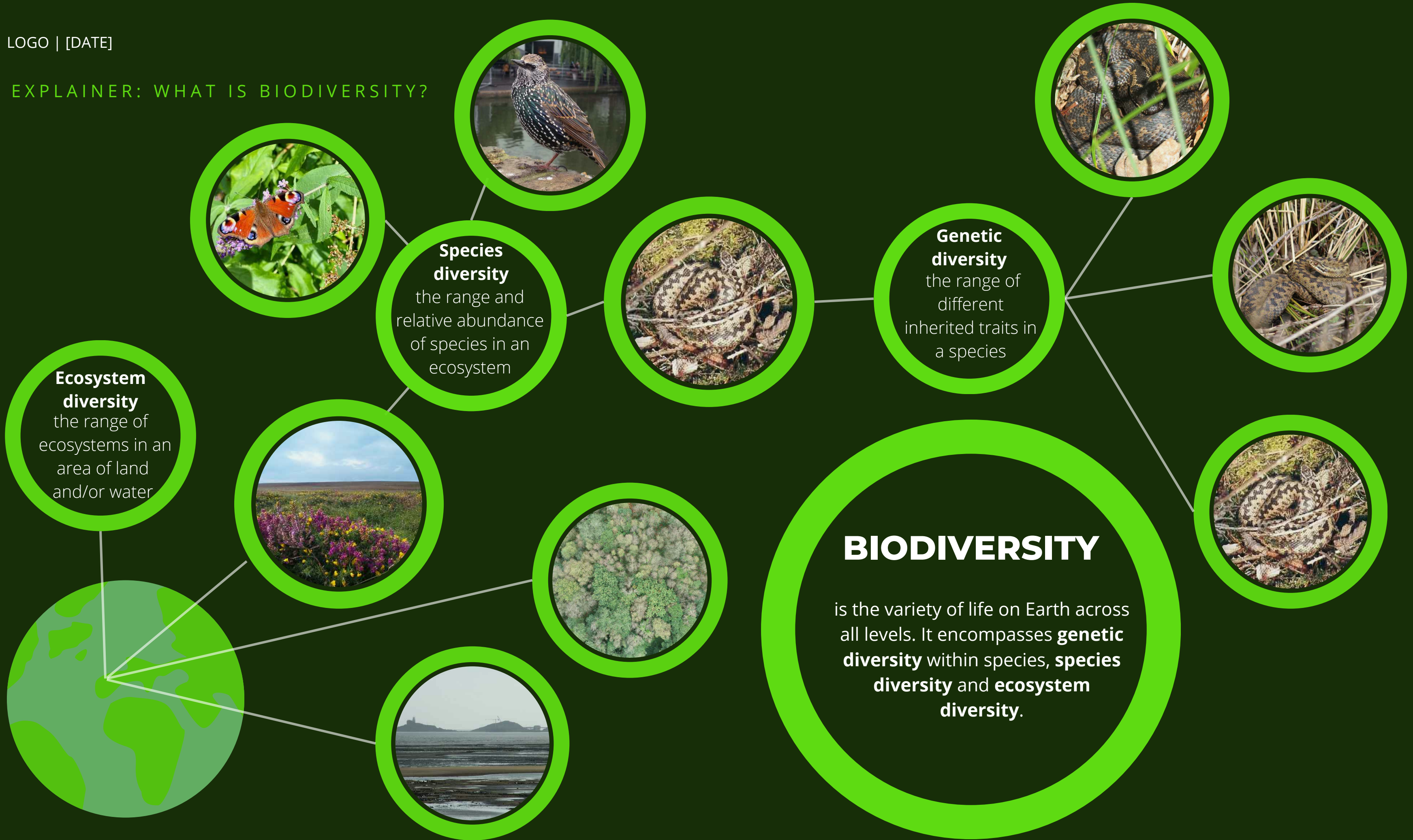
Species and their interactions with each other, as well as their habitats plus the physical environment (e.g. air, water, soil, weather) are what make up **ecosystems**.

In technical terms an ecosystem is a biological community of interacting species as well as the physical environment in a given area. The biological and physical parts of the ecosystem are linked through nutrient cycles and the flow of energy (e.g. grazing or predation).

If a habitat is a home, then an ecosystem is the street/neighbourhood where that home is situated.



EXPLAINER: WHAT IS BIODIVERSITY?



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## EXPLAINER: WHAT IS GREEN INFRASTRUCTURE?

If you want to learn more about GI in Swansea then you can read the [Swansea Central Area: Regenerating our City for Wellbeing and Wildlife \(GI\) strategy](#).

### Smart & sustainable

GI solutions can help save energy, and natural resources, e.g. a bio solar roof (green roof with solar panels) can boost the solar gain.



### Multi-functional

GI must provide multiple ecosystem functions e.g. flood relief, increasing biodiversity, improving well-being, increasing building insulation etc..



### Biodiverse

GI provides food and shelter for native species, they should also provide connectivity (e.g. green corridors and buzz highways).



## GREEN INFRASTRUCTURE (GI)

is a network of **multi-functional** green space (urban or rural) that provides a range of **benefits** for **wildlife** and **communities**. GI can include natural habitat, as well as features like green roofs and green walls. GI installations are also called **nature-based solutions**.

### Health

GI features create a sense of place and wellbeing, supporting our mental and physical health and creating spaces to play and socialise.



### Adapted for climate change

GI can help towns and cities adapt to climate change by capturing water to reduce flooding, provide summer shade and improve air and water quality.