Ecological Corridors: from the city to the sea

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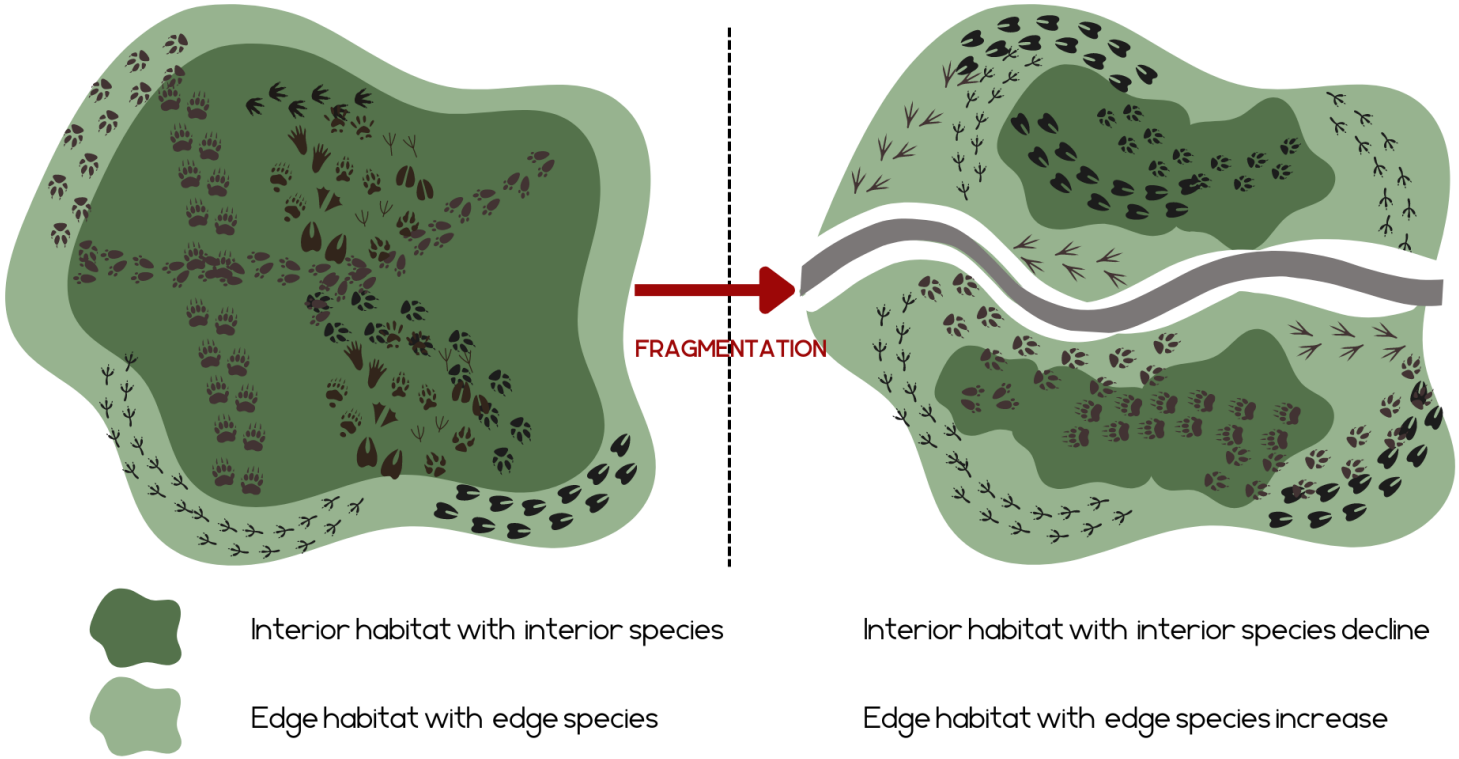
Council

Why do we need corridors?

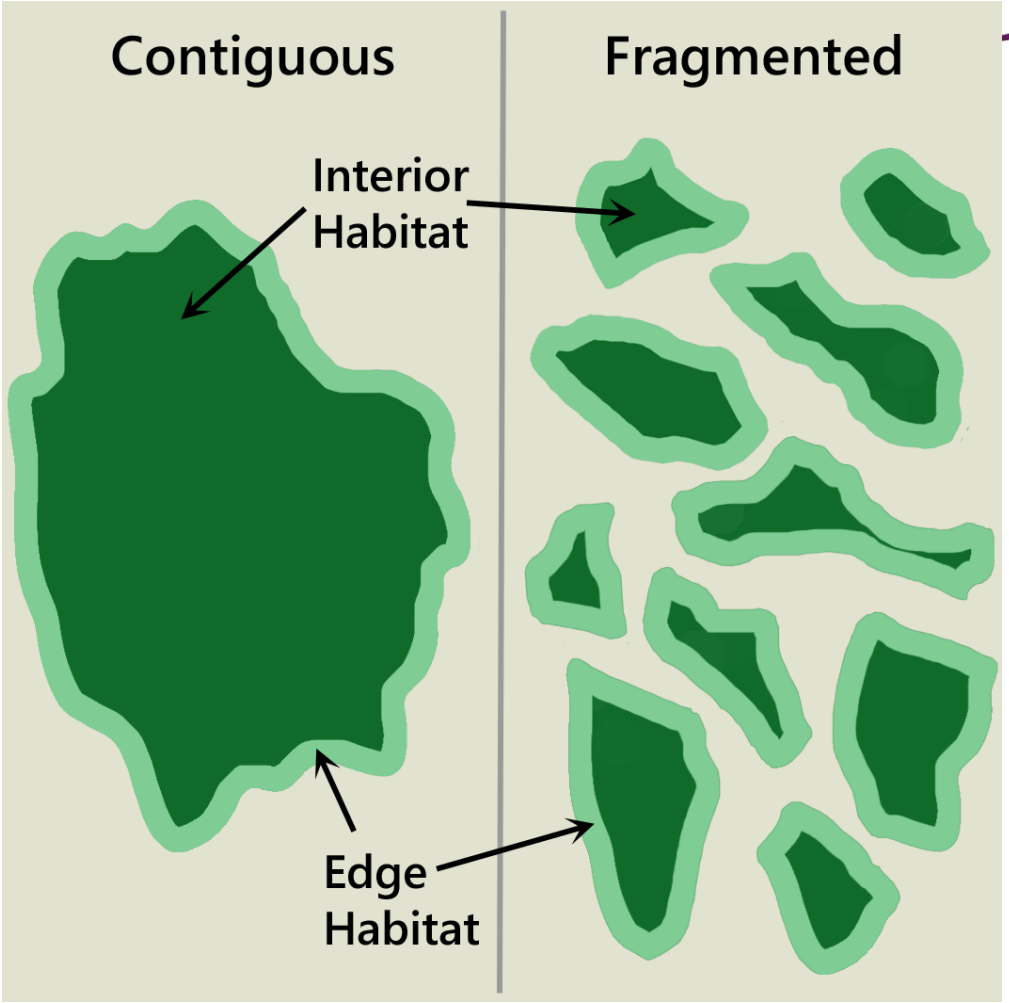
- We have degraded habitat and caused habitat to fragment into smaller ‘patches’ e.g. building a road through a woodland



©Debs Rylands

Why does this matter?

- Further fragmentation can change original habitat.
- Increased distance makes it more difficult for species to move from one area to another.
- Species living in these areas become isolated over time – affects gene flow
- Habitat fragmentation due to human development is an ever-increasing threat to biodiversity



Canadian Centre for Translational Ecology. 2019

What is an Ecological Corridor?

Definition:

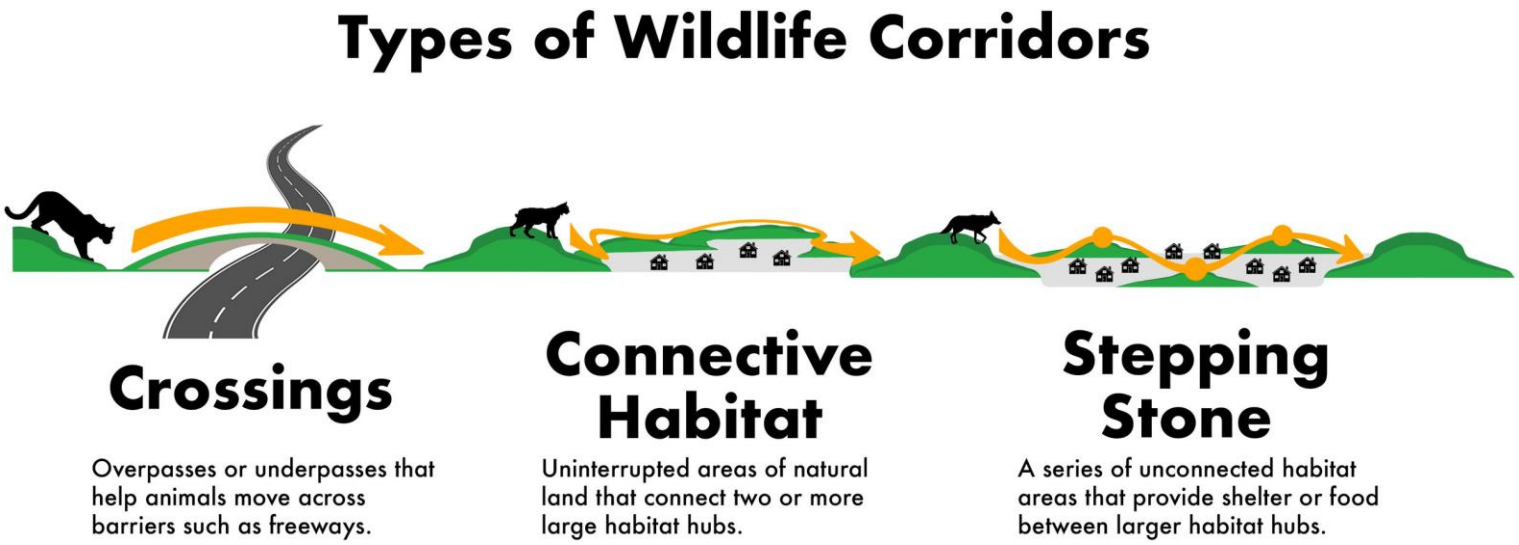
"...Avenues along which wide-ranging animals can travel, plants can propagate, genetic interchange can occur, populations can move in response to environmental changes and natural disasters, and threatened species can be replenished from other areas."

(Ninth U.S. Circuit Court of Appeals (1990), cited in Walker and Craighead (1997))

- Also called: green / blue corridor / wildlife corridor / habitat corridor

Ecological Corridors

- Facilitates connectivity between areas to access resources.
- Individuals have access to other populations of its own species (intraspecific) which helps gene flow.
- Can help reduce impact caused by human activities such as roads and housing.



Ecological Corridors and Ecological Networks

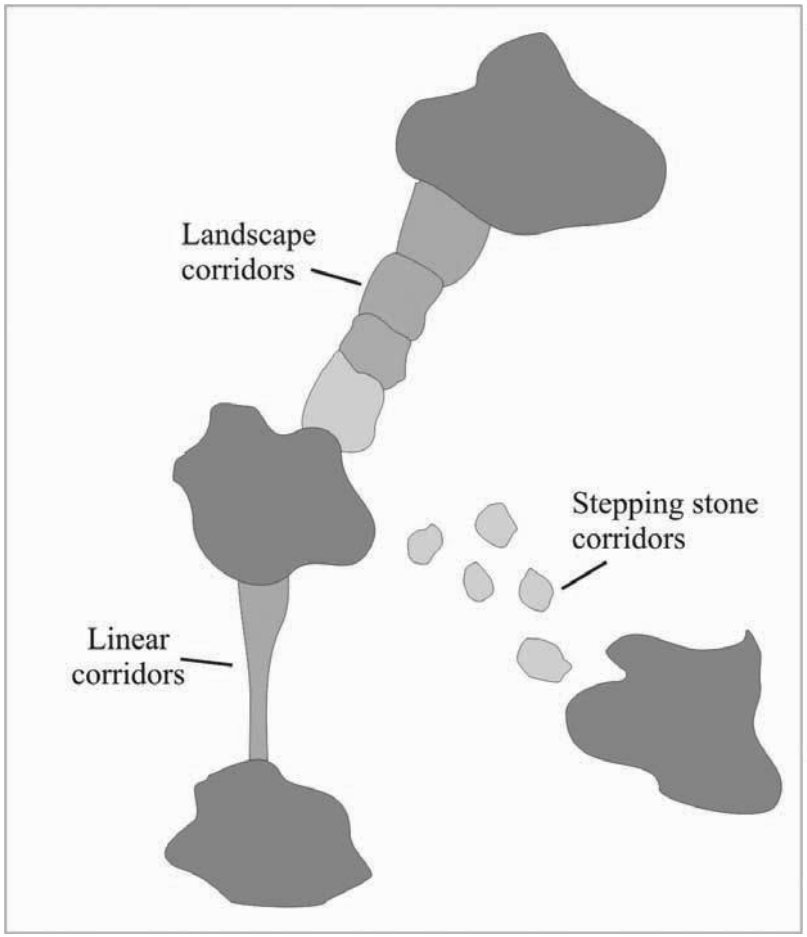


Figure 3. Morphological types of ecological corridors

©The USDA Conservation Corridor Planning at the Landscape Level Handbook (1999)

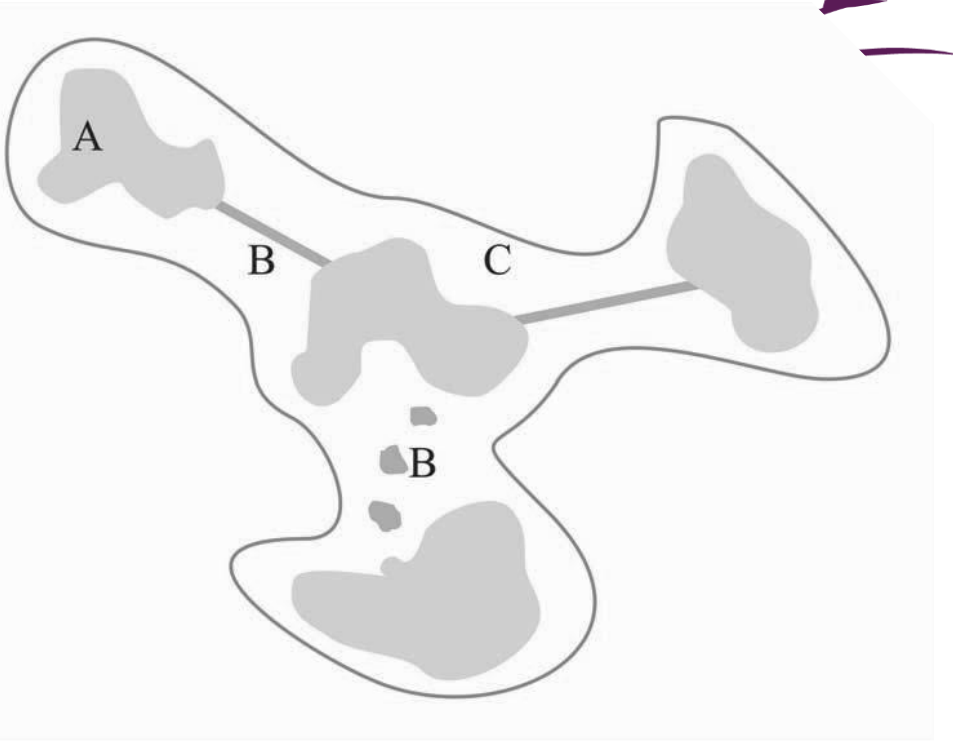


Figure 2. Ecological network – scheme
A – ecologically important area,
B – ecological corridors
C – buffer zone

© Szabadoš et al., 2011).
©Anonim. (2009). Law on Nature Conservation (Official Gazette of the Republic of Serbia, nr. 36/2009 & 88/2010).

Limitations of Corridors for Biodiversity

Habitats and species

- Species specific – they suit mobile species such as bats, birds, and flying insects but may not be suitable for plants and other invertebrates.
- Corridor must have suitable habitat for target species.
- Can act as a barrier to some species.
- Animals have ecological niches and some have territories
- IAS can spread into corridors if not managed appropriately

Size and complexity

- Value of the corridor will depend on its size and complexity
- The larger the corridor, the greater potential for a range of species.
- Corridors that are too narrow or small corridors may not be effective or if maintained poorly, e.g. species poor hedgerows or poor maintenance.
- Scale is a factor.

Planning your corridor

- Parks and open spaces can provide habitats and resources for wildlife.
- But an action for one species could impact another, e.g. Light-bellied Brent Geese.
- Pre-plan: consider existing habitats and species. Try to retain existing natural features, particularly hedgerows and mature trees, as it takes years for these to develop into functioning ecosystems.
- Avoid overplanting areas of sensitive habitat, such as species-rich grassland, and removing rare and native plants, such as bee or pyramidal orchids.
- Check records on the NBDC website, BSBI records, BirdWatch Ireland records, Naturalist Field Clubs and biodiversity reports from Local Authorities

Green ecological corridors in cities

- Considering nature-based solutions in the design of projects.
- Incorporate trees, hedgerows, native plants, green biodiverse roofs.

Councils

- Greening Strategies – to increase green space across a city and construct new parks. Biodiverse planting, de-paving hard landscaping, planting trees and native hedgerows, and creating buffer zones and allowing areas to grow native plants will all help biodiversity, but also consideration needs to be given to connecting sites more.

Businesses/Construction

- Development Guidelines for supporting biodiversity in housing and other building projects to encourage best practice are being developed by Fingal and other councils and can be issued to ILI members when ready.

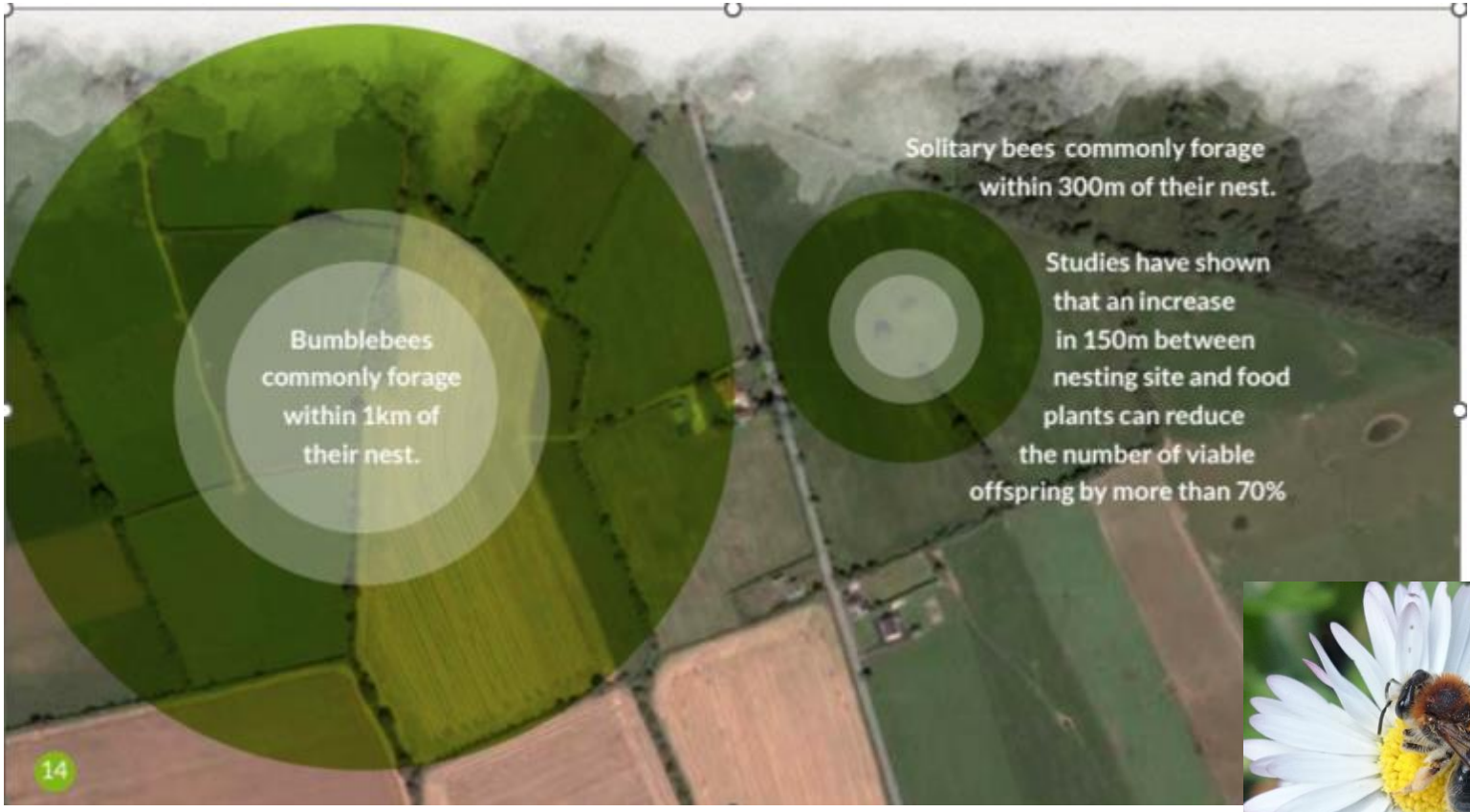
Home-owners

- Providing habitat for wildlife in private gardens.
- Work on community projects to enhance local areas.

- **Look at the local scale <u>and</u> broader connectivity across the city.**

Scale: solitary bees

Source: https://pollinators.ie/how-far-do-pollinators-travel/



- Bumblebees forage ~ 1km of nest
- But solitary bees usually forage within 300m. An increase in 150m between nesting site and forage can reduce no. of viable offspring by more than 70%!

Creating a Corridor for bees

- Ground nesting bees (below ground):
- Bees nest under hedgerows
- Solitary/mining bees like banks of loose earth
  - A well-drained sunny south or west facing bank (or an aspect in between).
  - Alternatively, you can use well drained flat ground.

Q: Where are there potential nesting sites or where can you create them?

Creating a Corridor for bees

Q: Where are there potential forage sites or where can you create them?

Corridor from nest to food sources

Think of the solitary bee and consider linkages within 150 m.

Think before you plant!

Q: Can you leave areas of native plants to grow?

Native insects have evolved with native plants. Research shows that pollinators favour native plants. The top 10 favourite food sources for bees in 2024 were:

1. Dandelions
2. Thistles
3. Vetches
4. Clovers (Red & White)
5. Bramble
6. Lavender
7. Knapweed
8. Ragwort
9. Heather (garden and native)
10. Bird's-foot Trefoil

You can still use non-natives but ensure there's year-round forage from early spring to winter. Also, urban native plants have evolved to tolerate pollution, so they can survive urban environments.

Right Tree

Trees are crucial to a healthy ecosystem and can support a huge variety of species. Local provenance native trees are best for our native wildlife as they have evolved alongside each other. If grown locally there will be a lower risk of importing pests and diseases.

On the back of this flyer is a selection of native trees that are particularly good for pollinators.

Right Place

A variety of habitats is needed for a healthy ecosystem. Some habitats are already valuable to biodiversity, so it is best to avoid planting trees in these areas.

They include species-rich grassland, wetlands or areas adjacent to streams, coastal habitats, bogs, heathland, or sites with rare or protected species.

Right Space

When selecting a tree, think about what will happen to it in the future: How tall will it grow? What will the canopy cover be like? Will it produce fruit that will fall in the autumn?

Hopefully your tree will last a long time in its environment, and all of these factors might impact its future, particularly in places where it may be in conflict with human interests.

National Biodiversity Data Centre
A Heritage Council Programme

An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture Food and the Marine

Tree Council of Ireland

native woodland trust

Trees on the Land

Source: www.pollinators.ie

Blue / River corridors

Rivers and Canals provide vital river corridors for a range of terrestrial and aquatic species, e.g. flora, birds, insects, fish, aquatic invertebrates, otters, and bats.

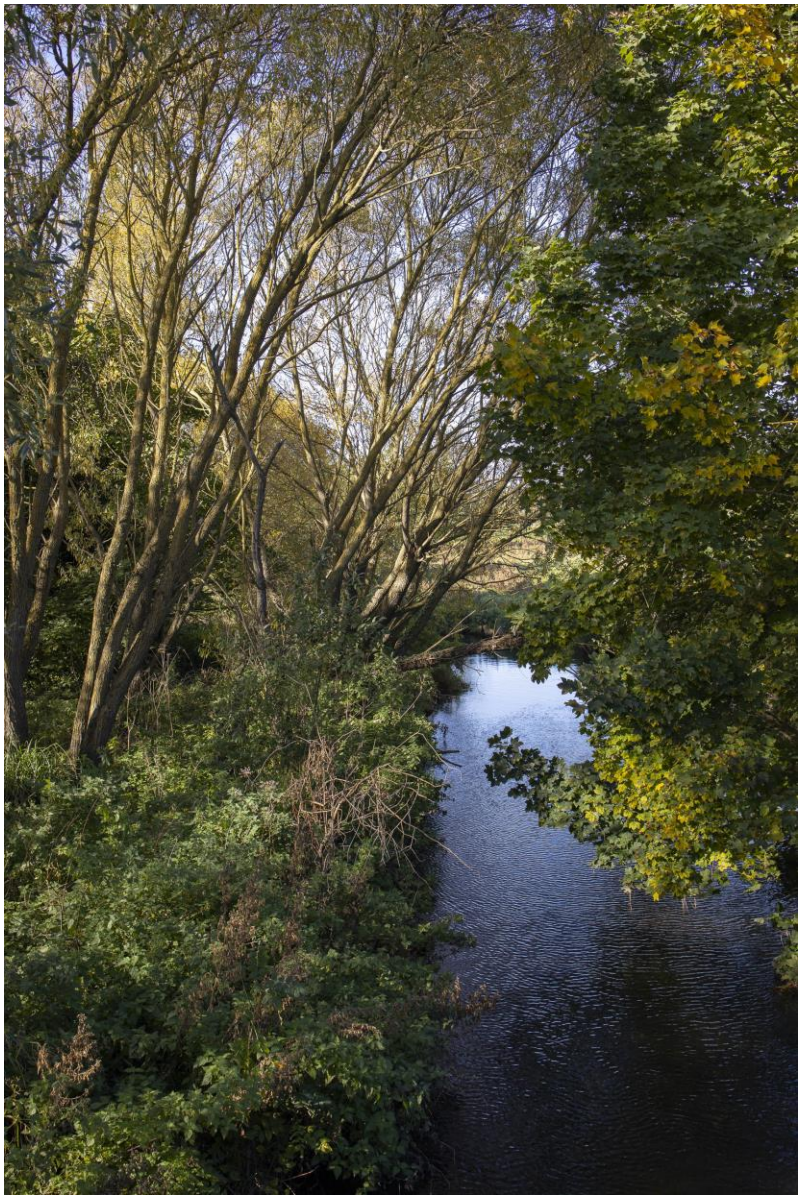
Why river/blue corridors are vital

Comhairle Contae Fhine Gall
Fingal County Council

- Riparian corridors along rivers are critical to the natural functioning of the river
- Trees, roots and fallen wood provide habitat and shade for species, including Atlantic salmon and Brown trout.
- Fish are temperature sensitive

Ecosystem Services

- Stabilise banks and reduce channel erosion
- Slows down the flow of water, helping to mitigate impacts of Climate Change
- Helps control sediment and nutrient inputs, reduces chemicals from run off



Fish migration barriers

How Fingal is improving river corridors

Comhairle Contae
Fhine Gall
Fingal County
Council

Ward River, Swords

River Ward

Comhairle Contae Fhine Gall
Fingal County Council

But some are protected national monuments, so a fish pass is being installed.

Improving river corridor

Comhairle Contae Fhine Gall
Fingal County Council

- Allow trees, shrubs, hedges to grow in riparian zones
- Remove weirs and barriers to fish migration
- Restoring meanders to straightened rivers
- Daylighting enclosed rivers
- Installing riffle, pool, glides

Castlecurragh, Mulhuddart

PLANNING FOR WATERCOURSES IN THE URBAN ENVIRONMENT

A Guide to the Protection of Watercourses through the use of Buffer Zones, Sustainable Drainage Systems, Instream Rehabilitation, Climate / Flood Risk and Recreational Planning

*Including one-off developments

Iascach Intíre Éireann
Inland Fisheries Ireland

A Guideline Developed by Inland Fisheries Ireland

Four Steps to Good Riparian & River Planning for Urban Areas

STEP 1 – PROTECT STREAMSIDE ZONE >10M

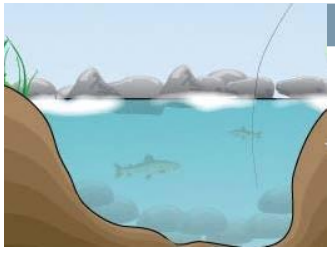
- ENSURE SUFFICIENT SPACE IS SET-ASIDE , I.E. >10M.
- LEAVE INTACT IF IN AN UNDISTURBED NATURAL SITE.
- IF DISTURBED, LANDSCAPE APPROPRIATELY.
- PLANT WITH NATIVE MARGINAL AND EMERGENT VEGETATION.

STEP 2 – CONSTRUCT MIDDLE ZONE 15M-30M

- ENSURE SUFFICIENT SPACE SET-ASIDE , I.E. >15M.
- LEAVE INTACT IF IN AN UNDISTURBED NATURAL SITE.
- IF DISTURBED, LANDSCAPE APPROPRIATELY.
- CREATE AMENITY WALKS ETC.
- PLANT WITH NATIVE TREES AND VEGETATION.

STEP 3 – CONSTRUCT OUTER ZONE >8M

- ENSURE SUFFICIENT SPACE SET-ASIDE , I.E. >8M.
- LEAVE INTACT IF IN AN UNDISTURBED NATURAL SITE.
- IF DISTURBED, LANDSCAPE APPROPRIATELY.
- INCORPORATE SUDS (E.G. SWALES, RETENTION PONDS ETC.).
- ENSURE SUDS LINK APPROPRIATELY TO DEVELOPMENT IN A TREATMENT TRAIN.
- CONSIDER WIDER AMENITY USES IF APPROPRIATE.



STEP 4 – REHABILITATE INSTREAM CHANNEL

- IF WATERCOURSE WAS PREVIOUSLY DEGRADED BY DRAINAGE, REHABILITATE WITH APPROPRIATE HABITAT RESTORATION TECHNIQUES.
- CONTACT INLAND FISHERIES IRELAND FOR ADVICE.
- RECREATE HABITAT VARIABILITY.
- CONSIDER CREATION OF ANGLING POOLS IF APPROPRIATE.
- CONSIDER SAFETY REQUIREMENTS (E.G. AVOID STEEP BANKS.)
- ENSURE WORK IS CARRIED OUT TO A HIGH ECOLOGICAL STANDARD. ***CONSULT WITH IFI FOR FURTHER ADVICE***


WATERCOURSE
STREAMSIDE ZONE
MIDDLE ZONE
OUTER ZONE (SuDS)

Other resources

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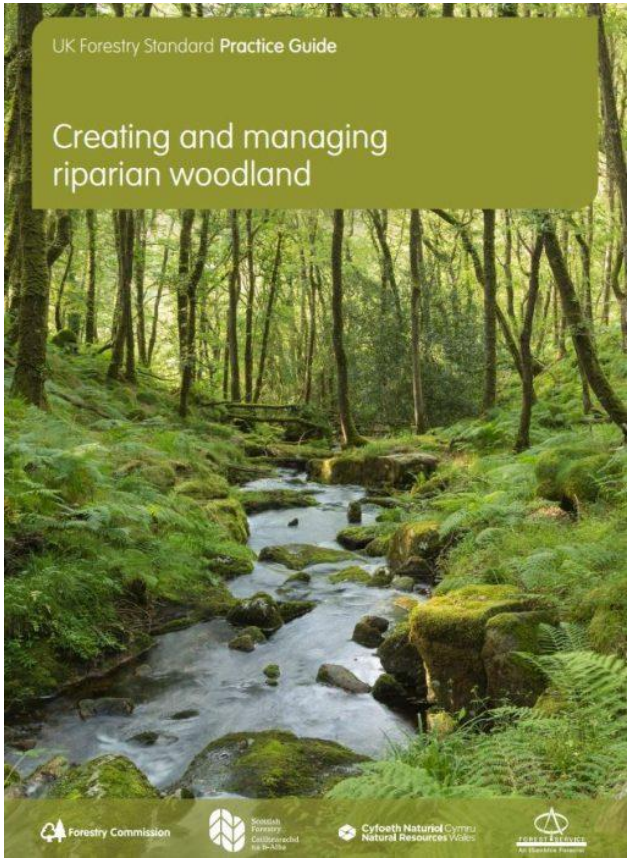
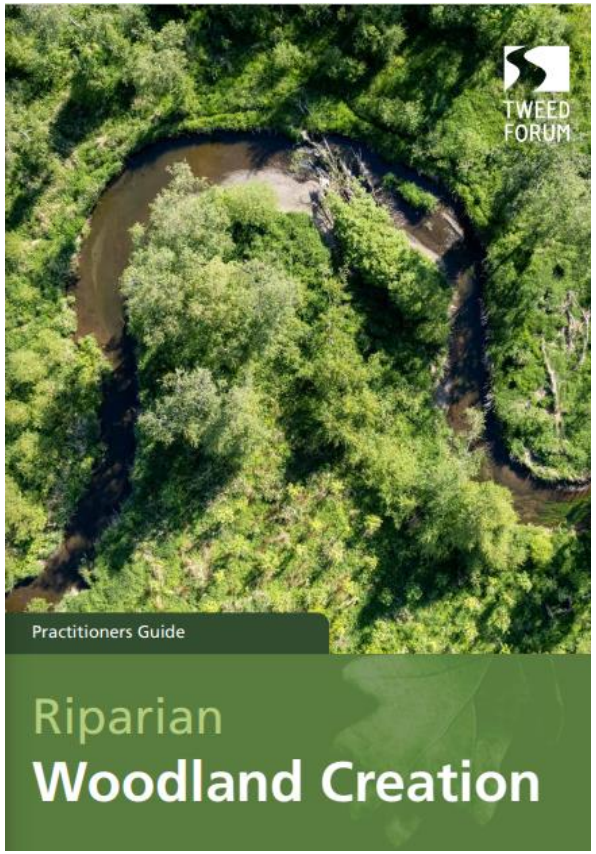
Fingal County Council

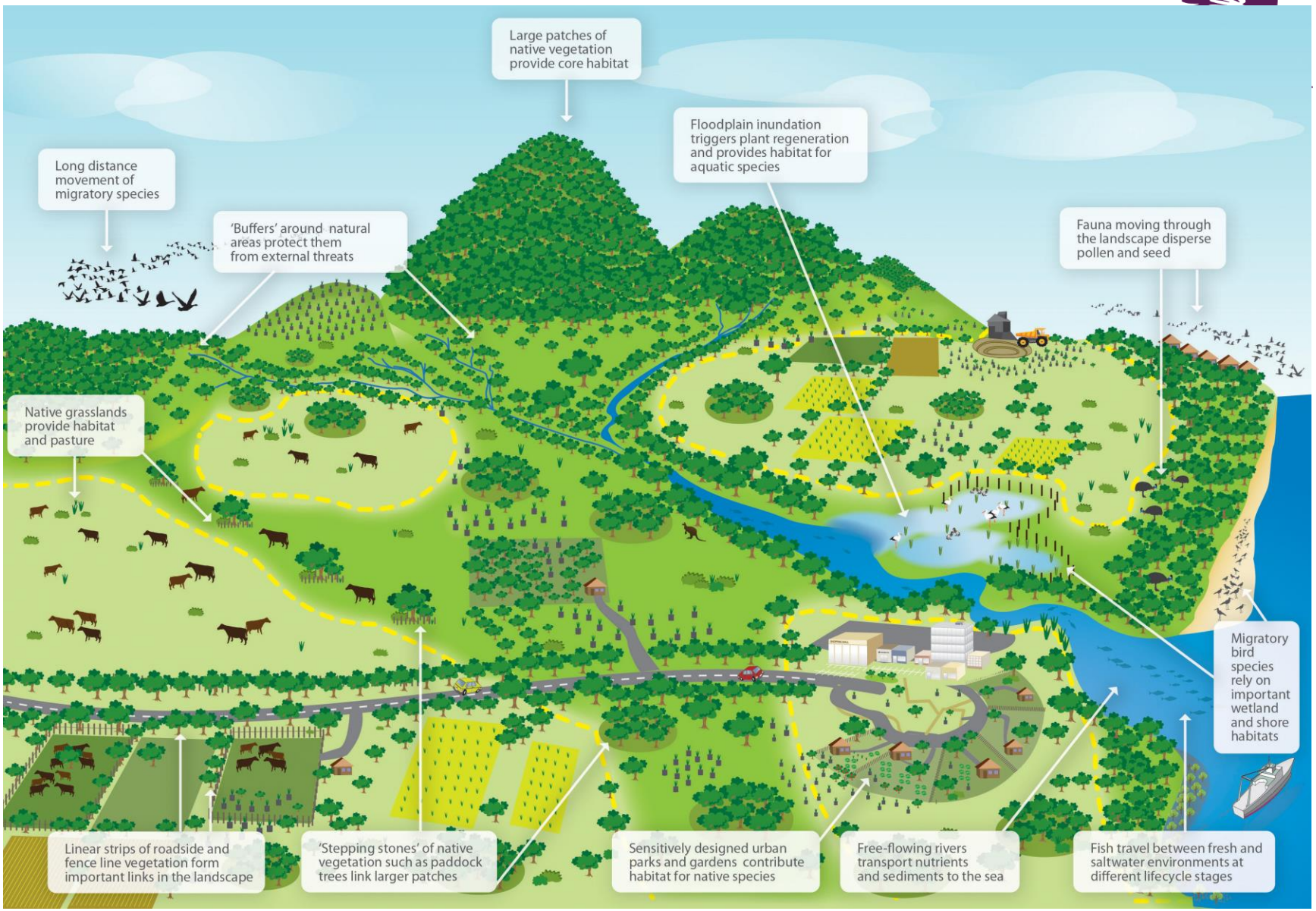


https://cdn.forestresearch.gov.uk/2024/07/UKFSPG028_Riparian_woodland_web_0108-compressed.pdf



https://tweedforum.org/wp-content/uploads/2023/12/Practitioners-Guide-to-Woodland-Creation-web-final-compressed.pdf

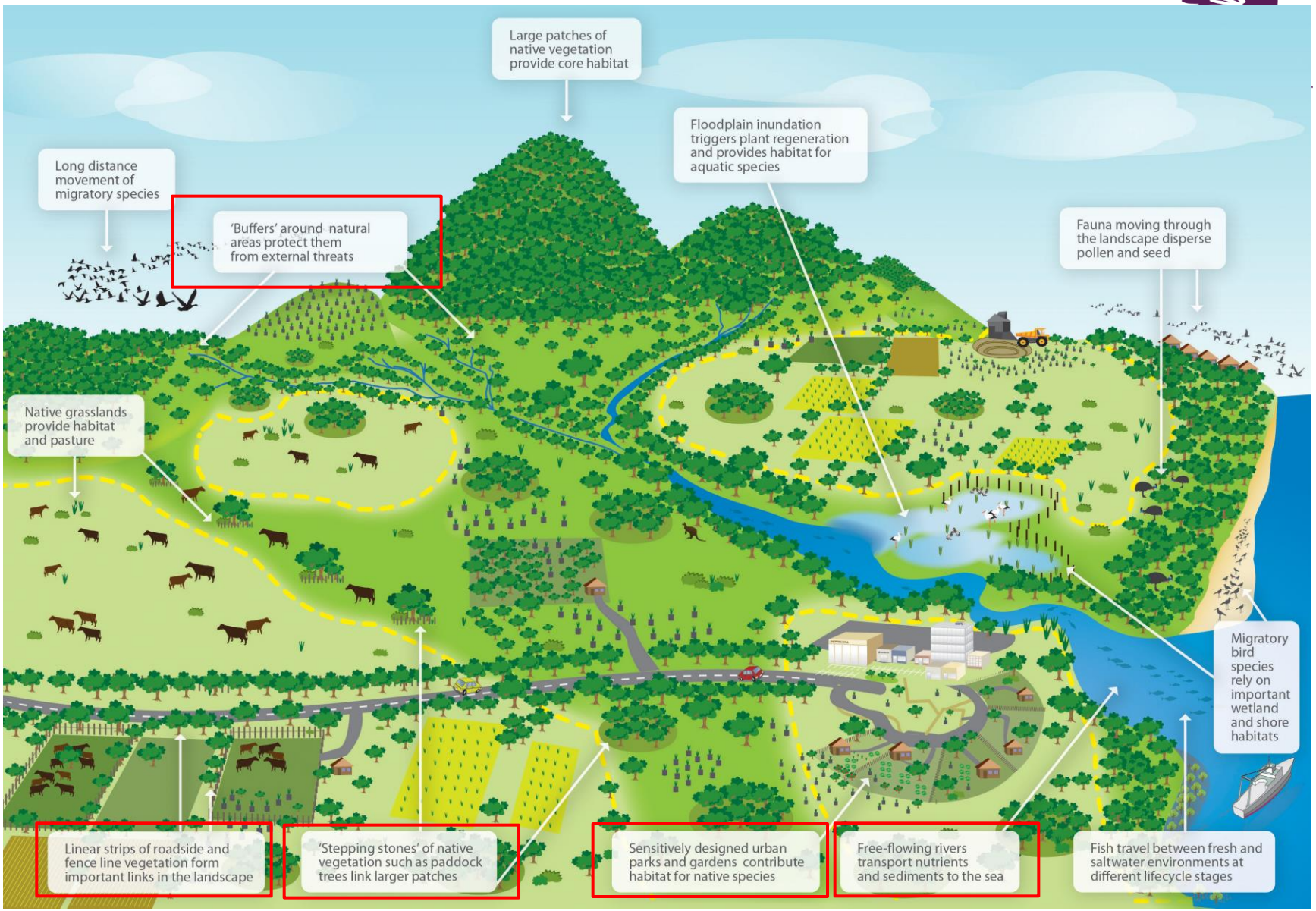
Landscape elements that contribute to wildlife corridors



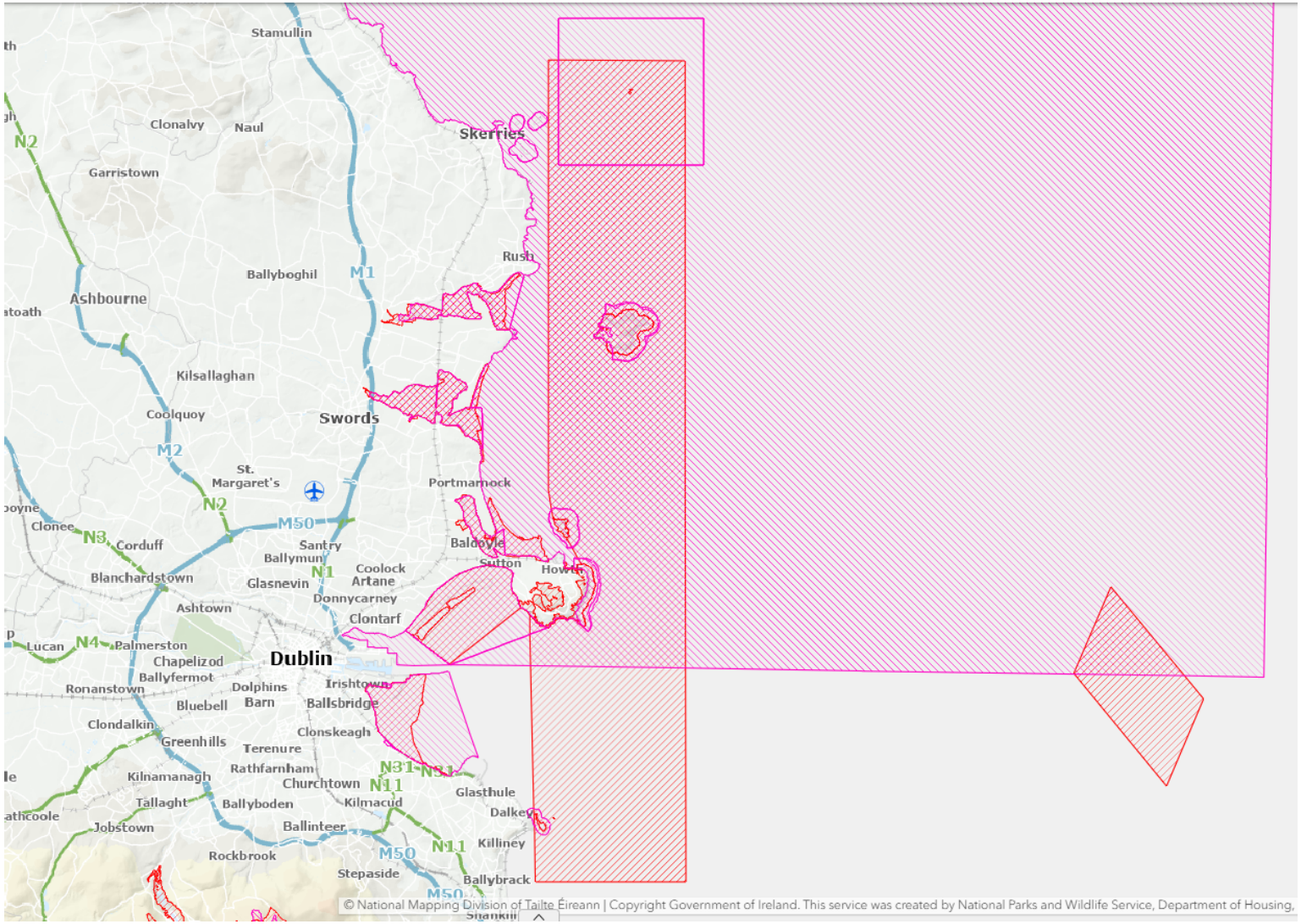
Fingal County Council

https://www.dcceew.gov.au/environment/biodiversity/conservation/wildlife-corridors

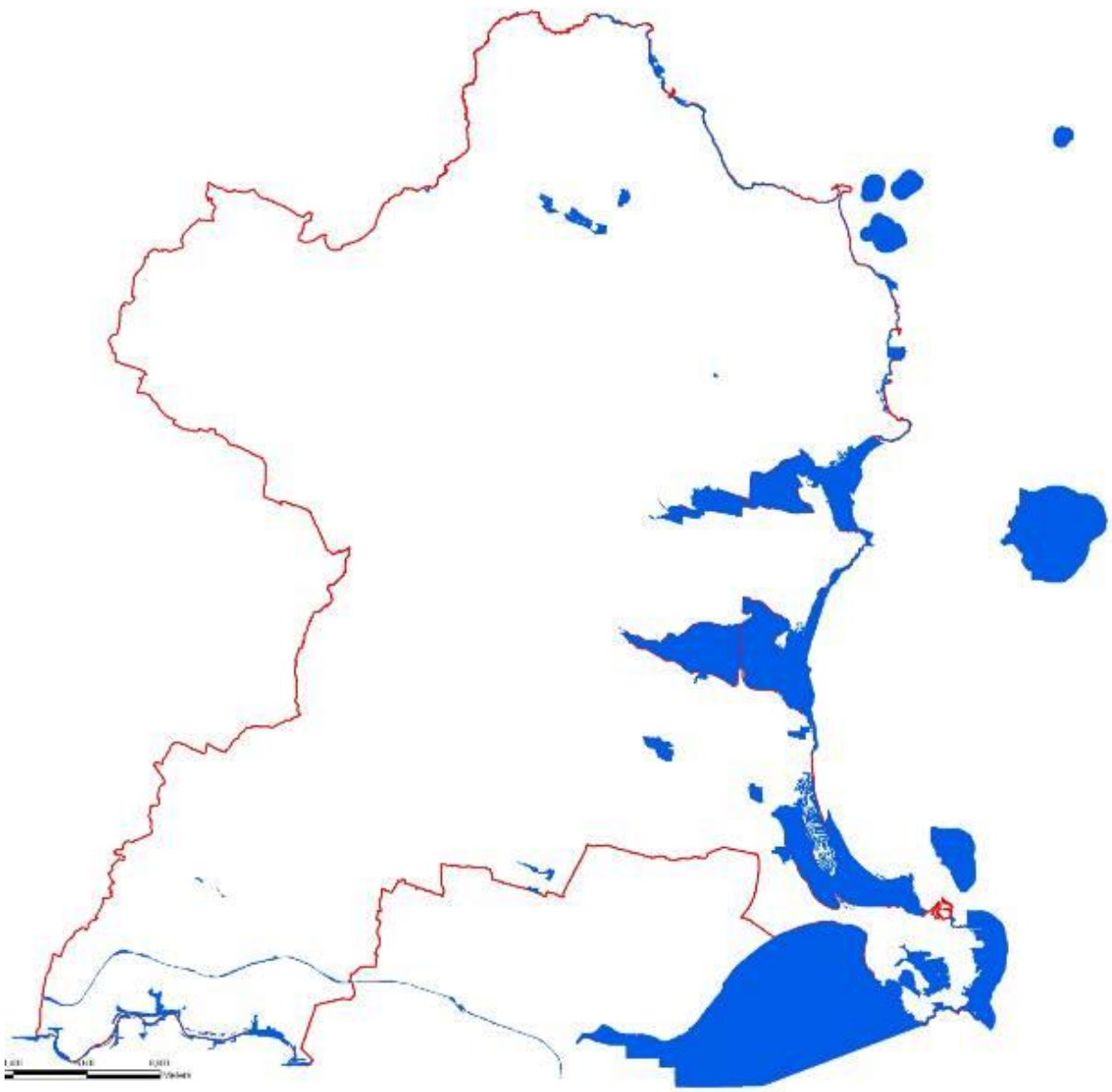
Landscape elements that contribute to wildlife corridors

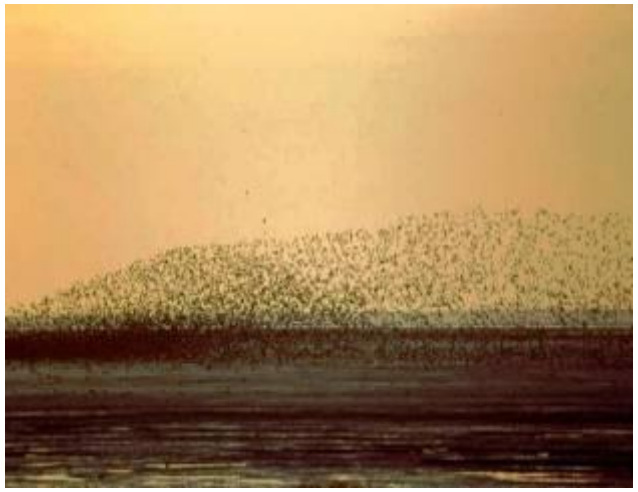


Dublin County: Natura 2000 Sites

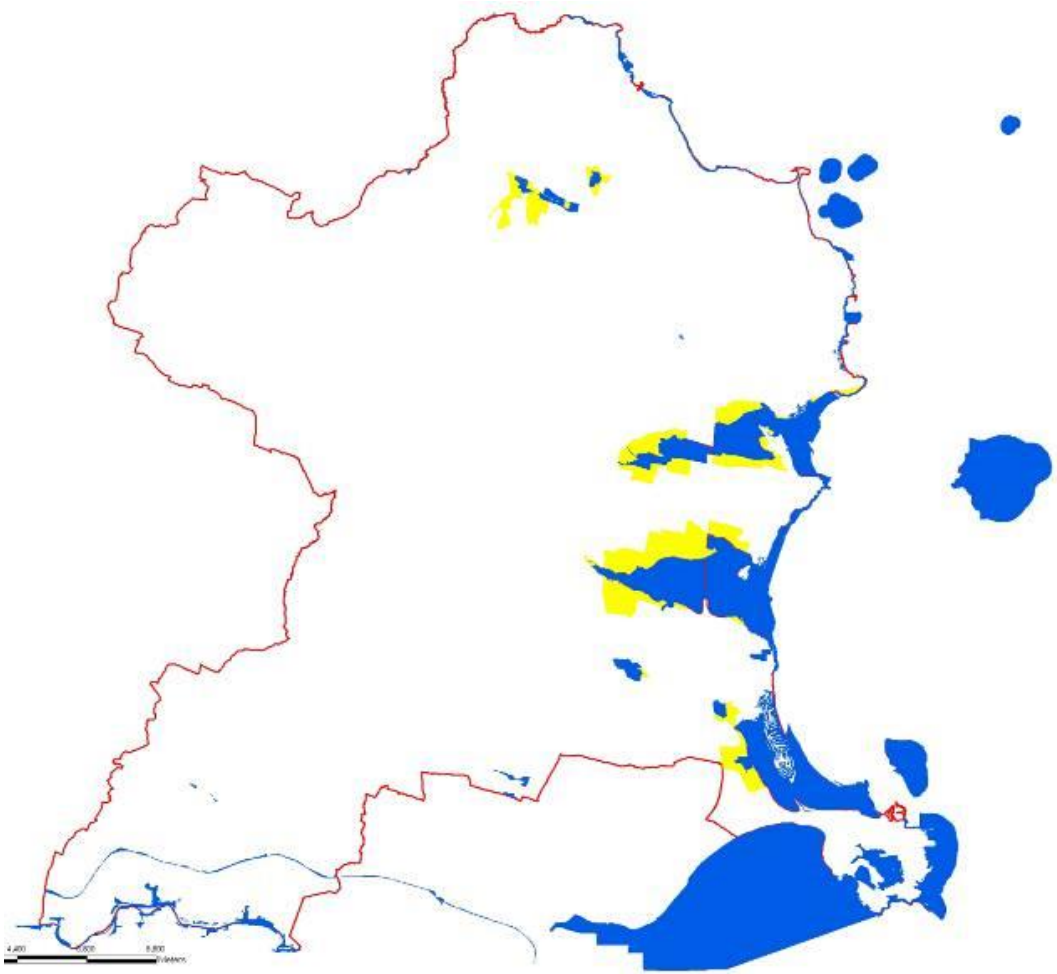


Core sites

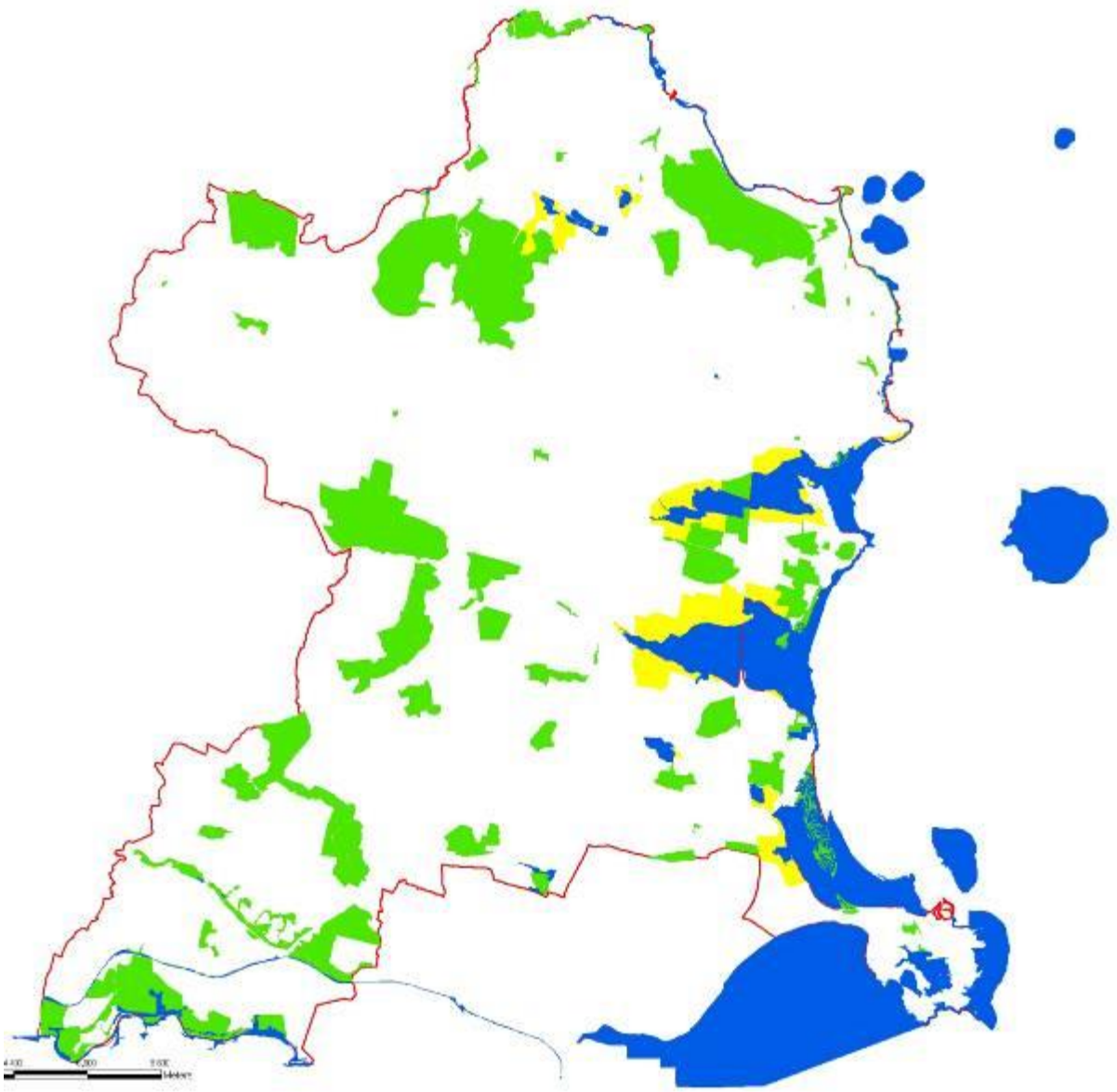




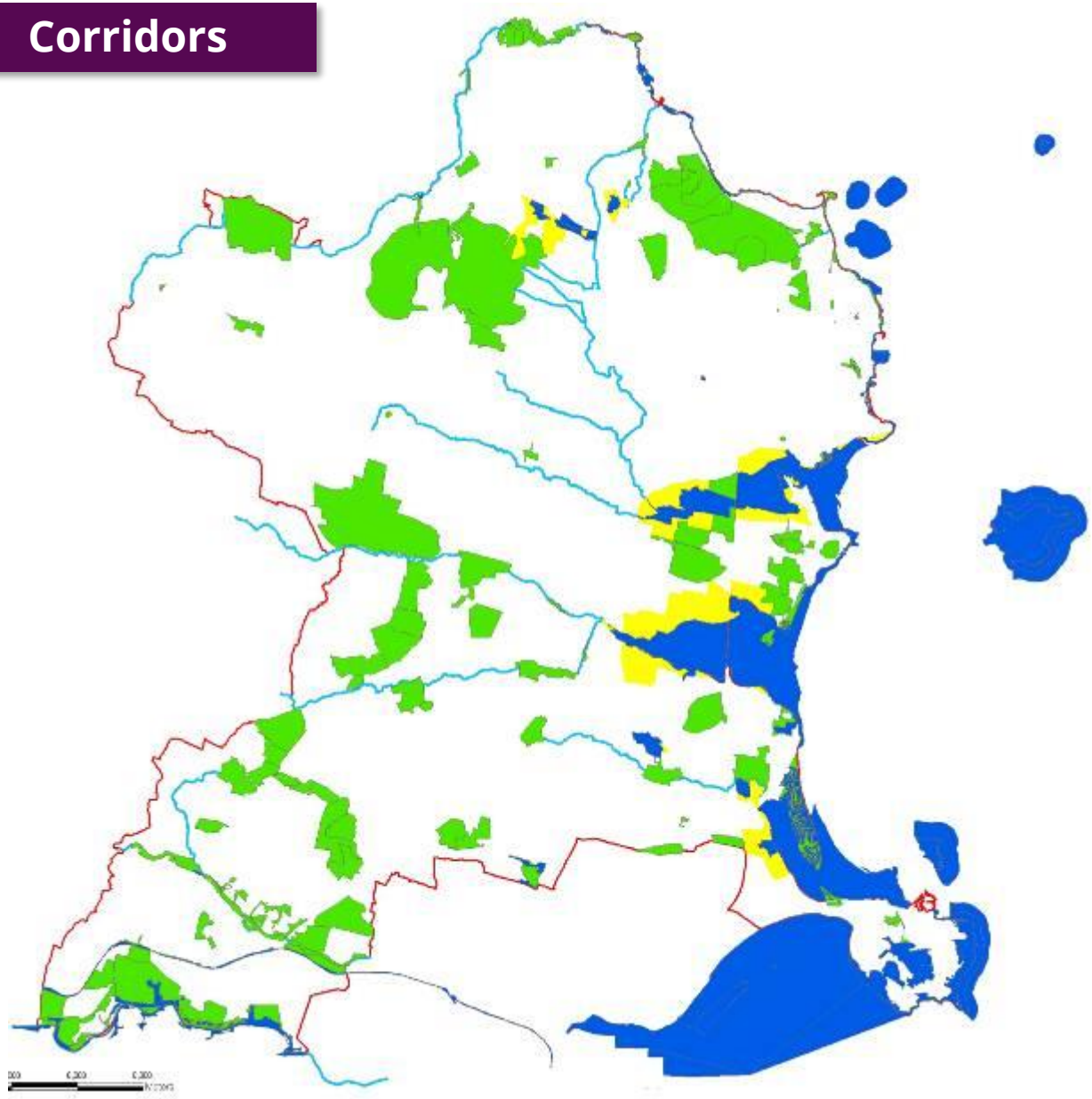
Buffer zones to core sites



Nature Development Areas



Corridors

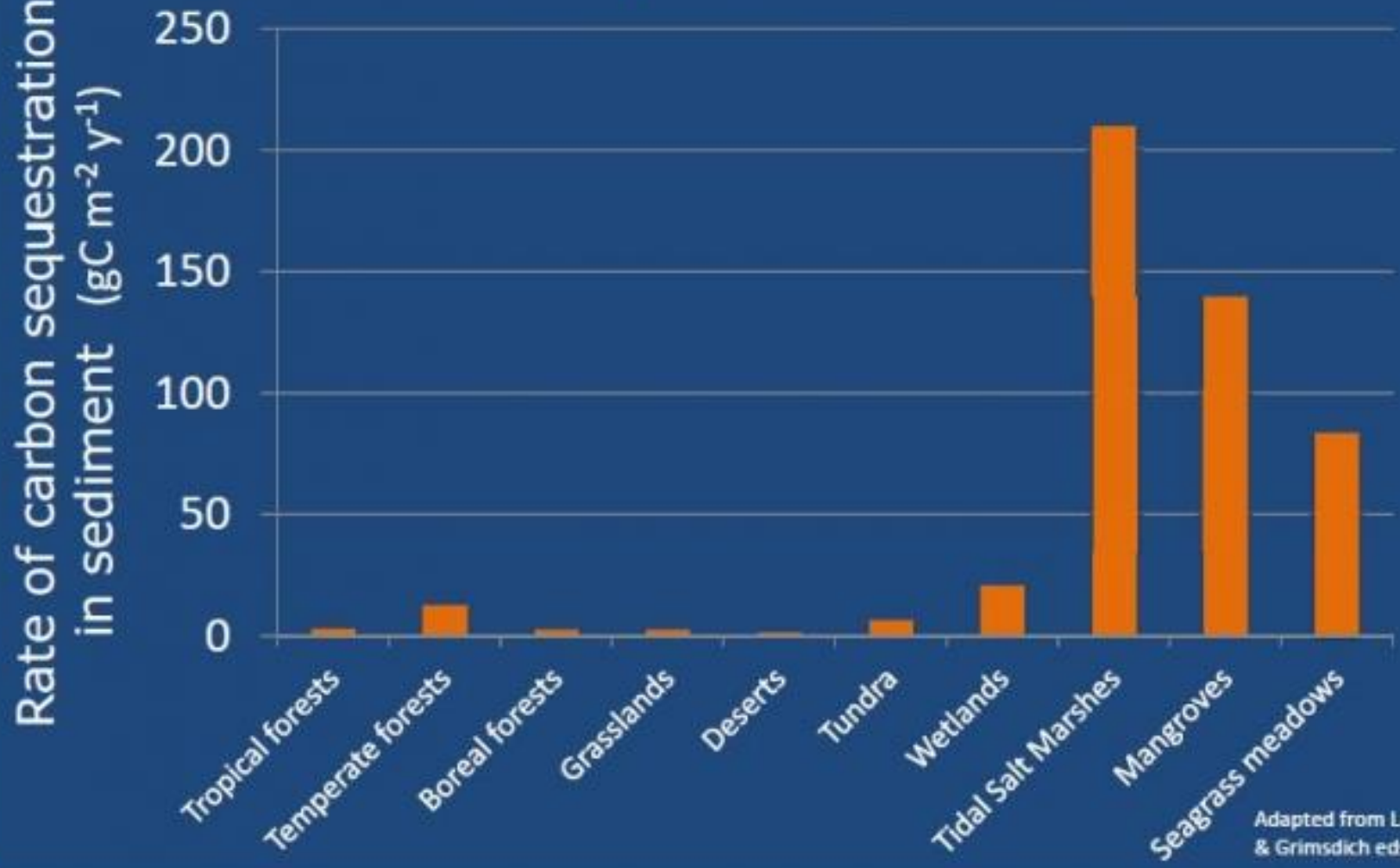


Restoring Natural Processes

Restoring Natural Processes


KING LANDSCAPING
Tel:
041 6851192
087 6200014
EX60
www.kinglandscaping.ie

Coastal ecosystems have high carbon sequestration rates



Take home points

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- Consider the ecology of the species you're trying to help and habitat it needs.
- Consider any existing habitats and species - don't replace important habitats such as calcareous grassland, wetlands etc.
- Consider scale – wider and longer corridors are more valuable for biodiversity.
- Create a corridor from an existing core natural area or park to another natural area/park and plan out the connectivity.
- Incorporate trees, hedgerows, native plants, green biodiverse roofs and ponds.
- For housing estate developments, retain existing hedgerows, tree lines or other biodiversity features. It takes years to establish these for value for biodiversity. Use a variety of measures to help biodiversity – hedgerows, green spaces with native plants, swift bricks, biodiverse green roofs etc.
- Do not introduce IAS, particularly Third Schedule spp.
- Having an ecologist draw up a corridor plan would be beneficial.

and remember…

Thanks for listening!

“Our planet will only survive if its ecosystems are connected.”

World Wildlife Fund

Note….
Healthy Biodiversity and Ecosystems are essential for Climate resilience

Some useful resources

- Fingal Biodiversity Action Plan: https://www.fingal.ie/sites/default/files/2023-12/Fingal%20Biodiversity%20Action%20Plan%202023-2030.pdf
- All-Ireland Pollinator Plan website has lots of resources on: www.pollinators.ie
- The RHS lists can be found at: https://www.rhs.org.uk/science/conservation-biodiversity/wildlife/plants-for-pollinators
- The Tweed Forum Riparian planting: https://tweedforum.org/news/riparian-woodland-practitioners-guide/
- https://tweedforum.org/wp-content/uploads/2023/12/Practitioners-Guide-to-Woodland-Creation-web-final-compressed.pdf
- UK Forestry Standard: Creating and managing riparian woodland: https://cdn.forestresearch.gov.uk/2024/07/UKFSPG028_Riparian_woodland_web_0108-compressed.pdf