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Natural Capital and Ecosystem Assessment

FRESHWATER BIOLOGICAL ASSOCIATION

Discovering Priority Habitats *in England*

Freshwater Naturalness assessments

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Priority Habitats Officer

Full resources available at:
https://priorityhabitats.org/contribute/contribute-naturalness-data/

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Overview

Morning:

- Project background
- Assessing River & Stream Naturalness
- Assessing Lake Naturalness

Afternoon:

- Cartographer app sign-ups
- Survey practice (in-field)
- Uploading our surveys to the Citizen Science Data Portal

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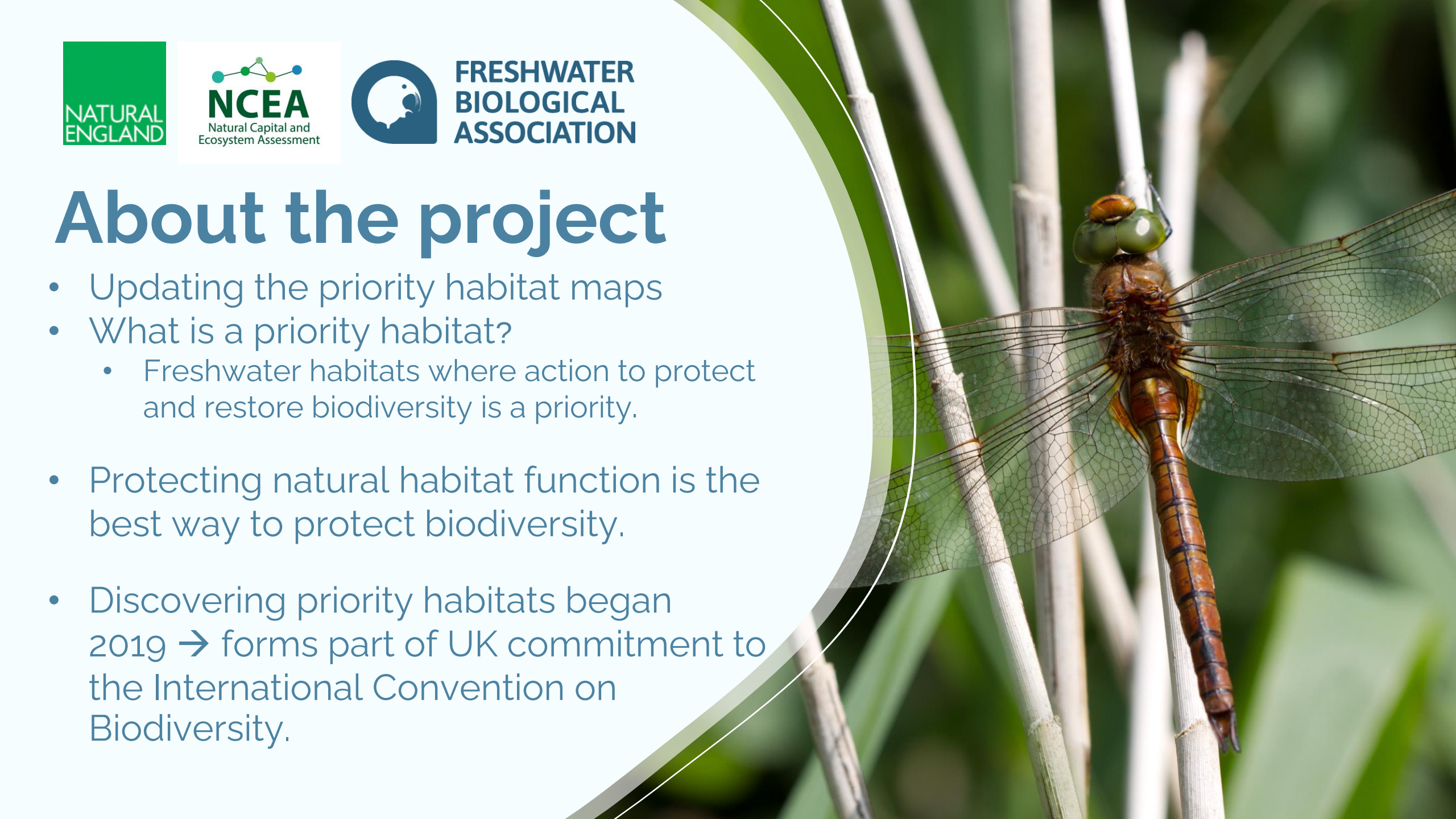
About the project

- Updating the priority habitat maps
- What is a priority habitat?
  - Freshwater habitats where action to protect and restore biodiversity is a priority.

- Protecting natural habitat function is the best way to protect biodiversity.

- Discovering priority habitats began 2019 → forms part of UK commitment to the International Convention on Biodiversity.



About the project

- Train citizen scientists to carry out naturalness assessments on streams, rivers and lakes in England.

- Citizen science data informs Natural England's 'Priority River and Lake Habitats' maps.
  - Guides which areas are prioritised for protection and restoration

- We want to identify sites that are in:

Good condition - so we can protect natural function

Poor condition - so we can restore natural function

Surveying your sites

Site selection:

- We would like to know about all levels of naturalness.
- Smaller waterbodies (and **all** lakes)
- Designed to suit you
- Excludes ponds

Lakes - are defined as over 2 hectares

Rivers - 500m per survey section

Headwaters

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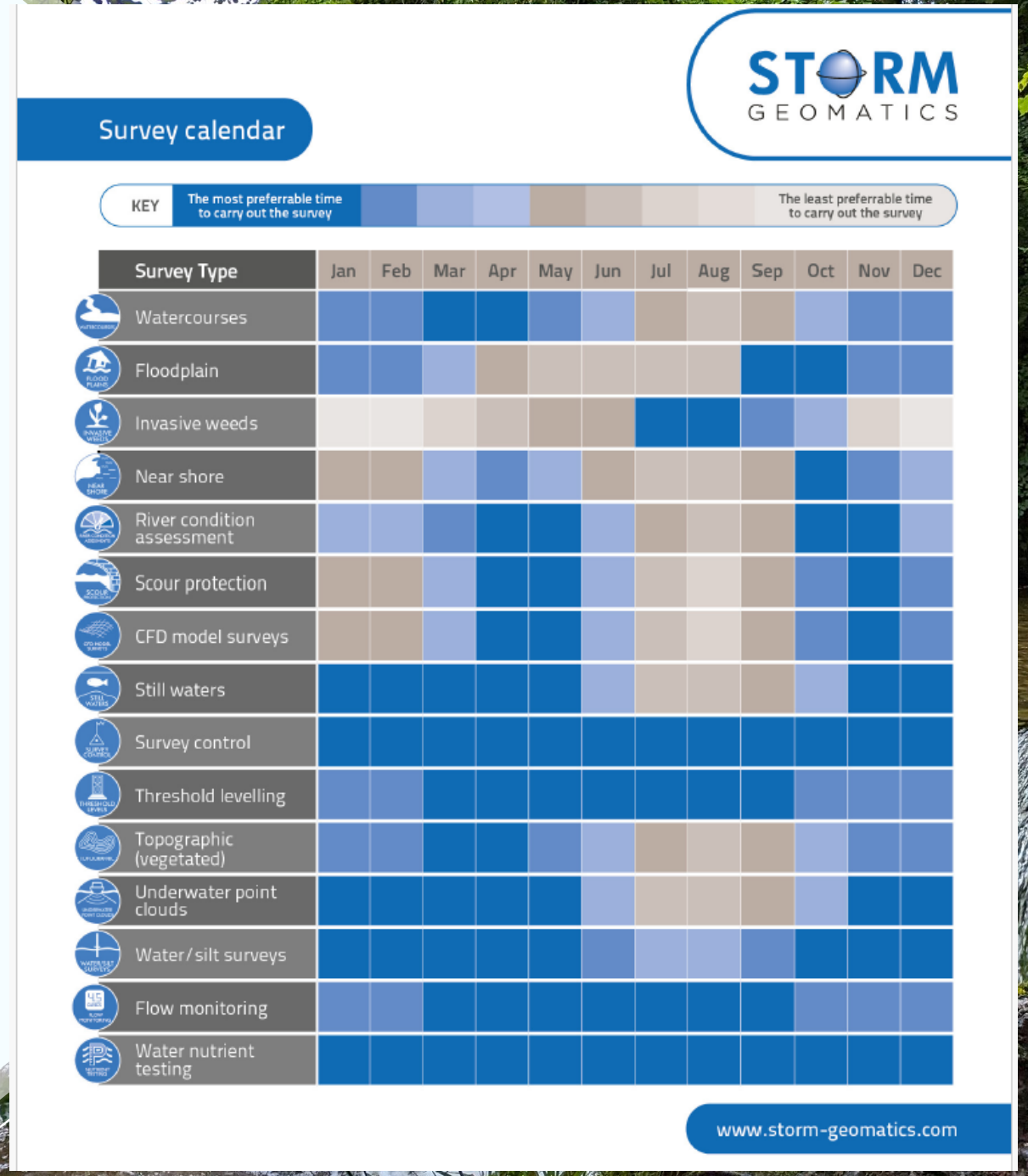
Seasonal variance causes certain naturalness features to become more or less obvious.

Surveying all year-round helps to capture features that might be missed in certain months
e.g., very few invasive species in winter but impacts of flooding become more obvious.



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Naturalness Assessment

- Naturalness → natural function
- Simple visual survey split into four sections:

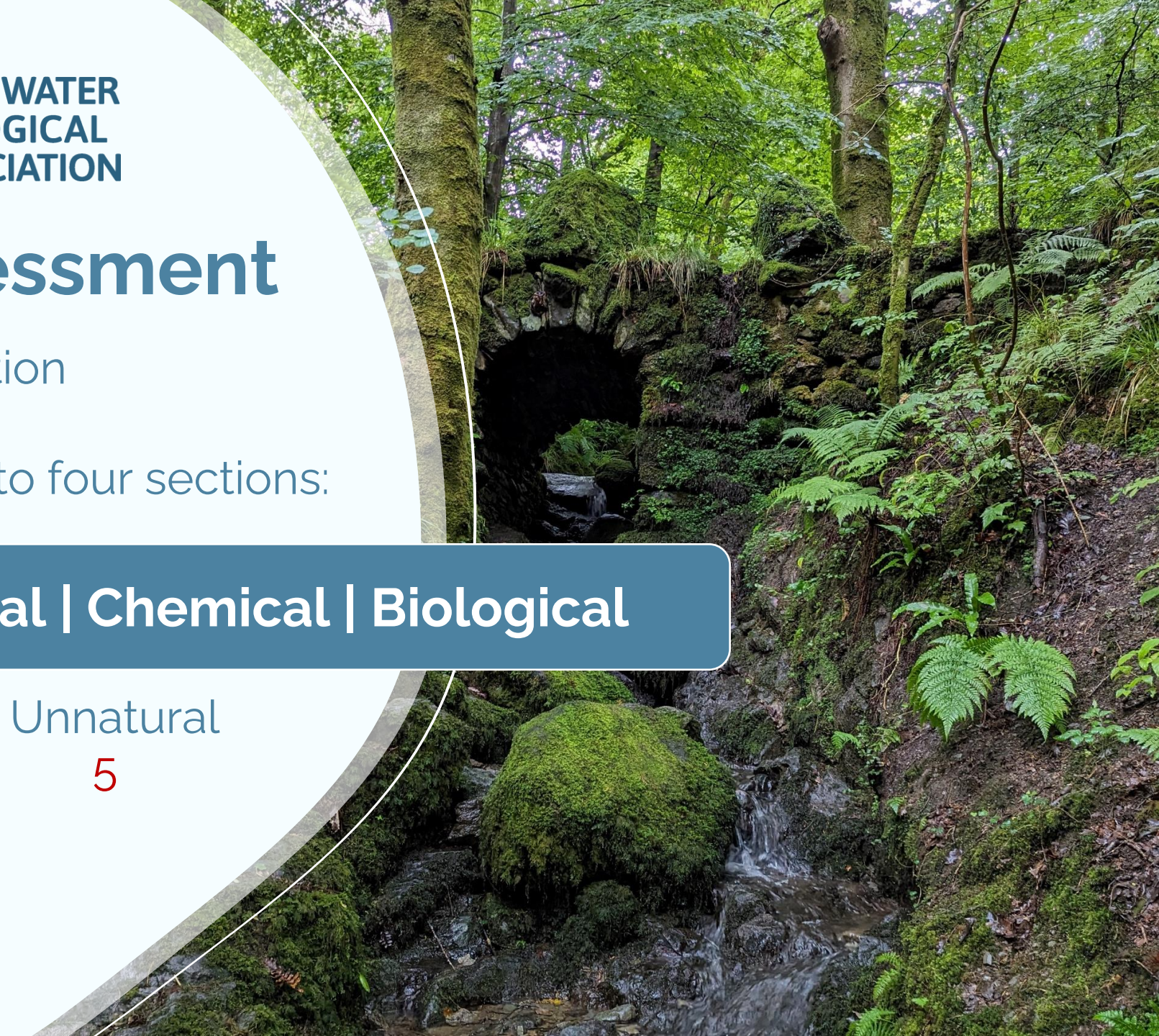
Physical | Hydrological | Chemical | Biological

Highly Natural — Highly Unnatural

1 2 3 4 5

- Confidence score:

High - Medium - Low



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Assessing River & Stream Naturalness

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Rivers & Streams: Physical

Modification of bank

Stream running through farmed land

Woody material in river

Physical naturalness: changes to the natural shape and form

- Artificial modifications (%)
- Tree cover → roots interacting with channel (%)
  - Shade /Leaf litter/ woody material
- Naturalness of riparian vegetation

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Rivers & Streams: Restoration

Measures restoring natural processes	Measures not restoring natural processes
Removal of in-channel structures (weirs, dams)	Construction of fish passes
Removal of bank revetments to restore lateral channel movement	Flow augmentation
Measures to restore natural river channel dimensions and flooding of the floodplain, associated with restoration/re-creation of floodplain habitats	Reducing the width/depth of the river channel to fit impacted flows
Restoration of the natural flow regime by land use/land management change (e.g. restoration of drained upland peat areas) and reducing abstraction/flow modifications	Increasing tree shading to mask eutrophication effects
Restoration of more natural nutrient and sediment regimes by controlling problems at or near source (e.g. restoration of drained upland peat areas, reduced fertiliser use, nutrient reductions in effluents)	Establishment of new in-channel control structures to manage flooding or generate power
Restoration of a diverse semi-natural riparian zone, including patchy cover of trees, shrubs and herb-rich swards of varying heights	Close bankside fencing
Restoration of ephemeral in-channel habitats, including naturally intermittent headwater streams and natural areas of intermittently exposed riverine sediments (shoals, shallow margins)	Dredging
Restoration of wetlands, backwaters and oxbow lakes in the floodplain, in hydrological connectivity with the river.	
Retention of large woody debris in the channel	Removal of fallen trees.
Control of non-native species associated with rivers	

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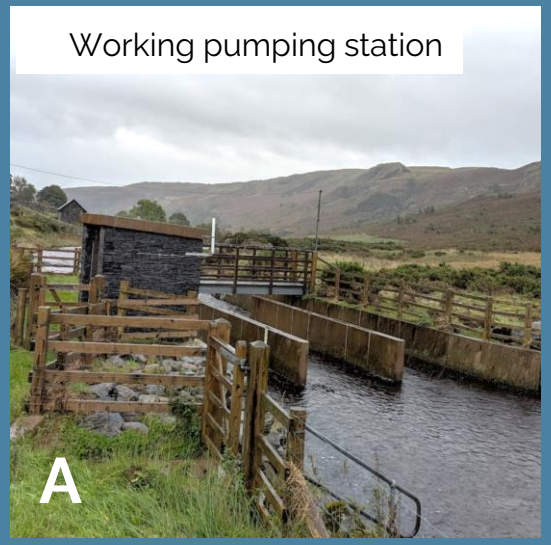
Rivers & Streams:

Hydrological



Hydrological naturalness: changes to natural flow & obvious modifications

- Abstraction (pipes, pumps)
- Impounding structures (dam/weir). Dry up of streams. Natural or not?
- Water Diversions & heavily modified channels

Additional data sources can help assess hydrological features e.g.,
Abstraction licensing strategies (CAMS process) - GOV.UK (www.gov.uk)
River obstacles: Catchment Based Approach

UK Centre for Ecology & Hydrology

UK Water Resources Portal

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Rivers & Streams: Chemical

Filamentous algae

Sewage Fungus

Chemical naturalness: Signs of pollution

- Sewage fungus / filamentous algae → nutrient enrichment
- Water clarity→ artificially enhanced input of sediment.
- Dead aquatic animals or lack of invertebrates

Raw sewage in our rivers | The Rivers Trust

Rivers & Streams: Biological

Biological naturalness: non-native species only (%)

- Non-native plants e.g., Himalayan balsam, Japanese knotweed, Giant hogweed.
- Non-native animal life e.g., signal crayfish, killer shrimp, zebra mussels.

Japanese knotweed

Himalayan balsam

Giant hogweed

[NNSS eLearning (nonnativespecies.org)]

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Rivers & Streams: Practice

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Rivers & Streams: Practice

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Rivers & Streams: Practice

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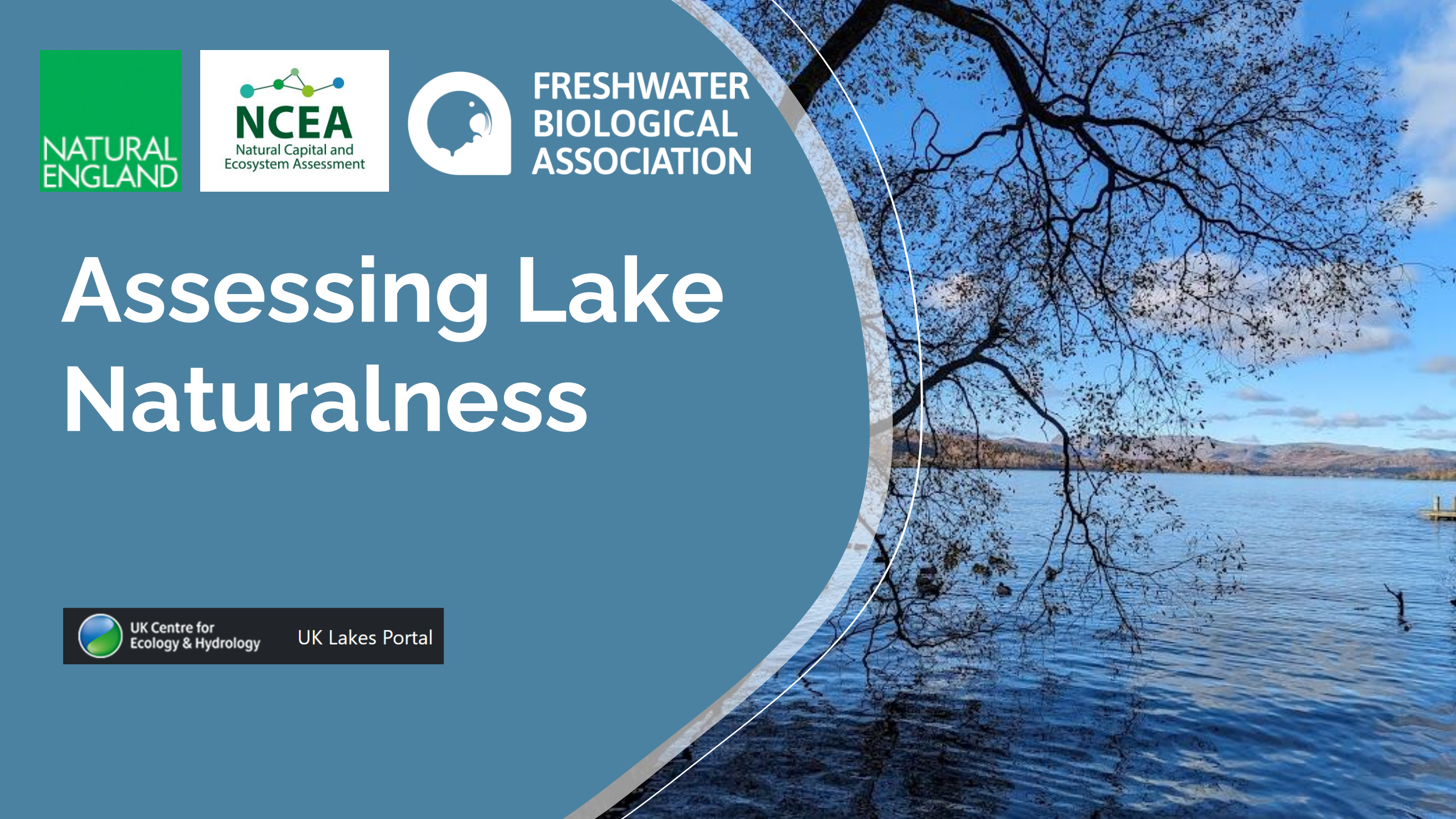
Assessing Lake Naturalness



UK Centre for Ecology & Hydrology

UK Lakes Portal

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Lakes: Physical

Shoreline modification

High water mark obstruction

Non-natural land use
Farmland/improved grassland
Roads/tracks/paths
Buildings/gardens
Orchards/plantations
Recreational parks

Physical naturalness: changes to the natural shape and form

Shoreline condition

- Physical modifications %
- Presence of fringing wetland

Land use: up to 10m high water

- semi-natural land %

Lake shape (Artificial only)

- Gradient allow for plant growth
- Check CEH Lakes map for further info

- Most unnatural scoring category→ Overall score

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Weir with fish pass

Sluice affecting natural water level

River Obstacles App

Lakes: Hydrological

Hydrological naturalness: natural fluctuation & obvious modifications

Structures

- Presence of barriers and impassable structures

Water level

- Expected seasonal fluctuations
- Evidence of abstraction

In/outflows

- Presence of modified outflows
- Artificial inflows such as ditches

Lakes: Chemical

Chemical Naturalness: signs of pollution

Water clarity

- Lake bottom or Secchi disk visibility

Algae

- Presence of algae blooms

Submerged plants

- Presence and depth of plants (Fennel pondweed and Horned pondweed)

Sampling

- Level of pollution

Peat lake → tea like colour

Polluted lake → opaque/cloudy

EA WFD catchment data explorer

Lakes: Biological

Water Fern

New Zealand pygmy weed

Biological naturalness: non-native species only (%)

- **Presence and percentage of survey area?**
- Non-native species: Parrot's feather, Water Fern, Curly Waterweed, New Zealand Pygmy weed
- Signal Crayfish
  - Noticeboards/signs at the site?

ID sheets » NNSS (nonnativespecies.org)

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Lakes: Practice

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Lakes: Practice

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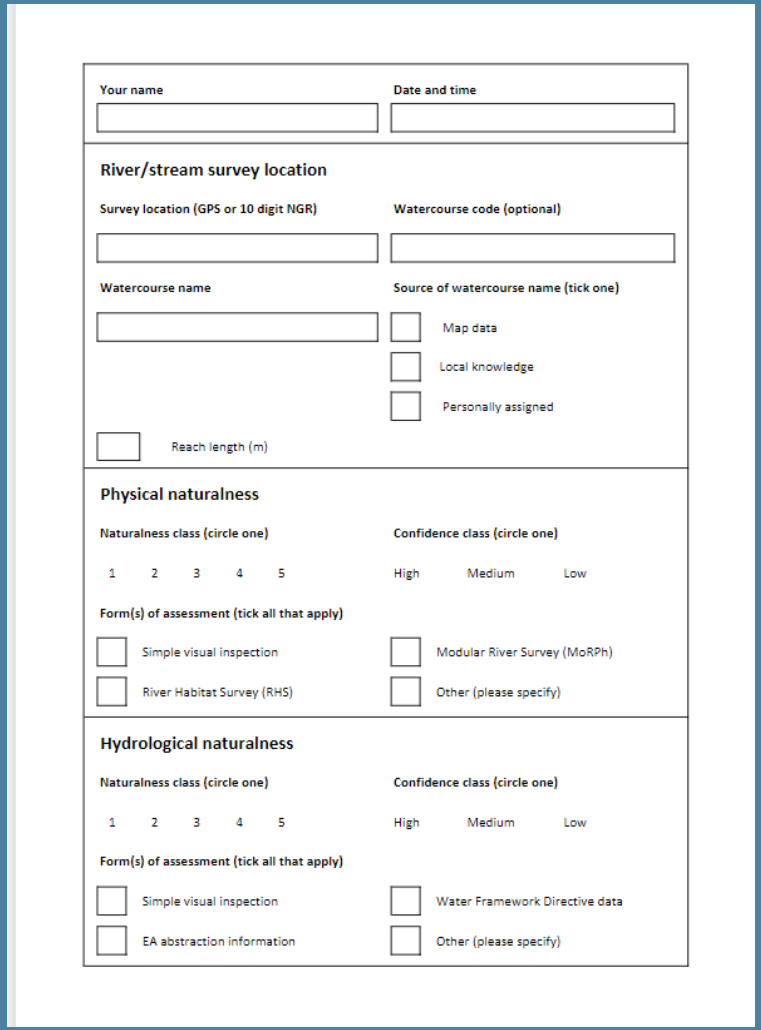
Completing Surveys

Collecting data

Supplementary information

- Location and time
- Notes
- Intermittent flow (streams and rivers)
- Photographs
- Plant functional groups (lakes)
- Species of interest
- Key habitat features



Your name | Date and time

River/stream survey location

Survey location (GPS or 10 digit NGR) | Watercourse code (optional)

Watercourse name | Source of watercourse name (tick one)

☐ Map data
☐ Local knowledge
☐ Personally assigned

☐ Reach length (m)

Physical naturalness

Naturalness class (circle one): 1 2 3 4 5

Confidence class (circle one): High Medium Low

Form(s) of assessment (tick all that apply)

☐ Simple visual inspection
☐ Modular River Survey (MoRPh)
☐ River Habitat Survey (RHS)
☐ Other (please specify)

Hydrological naturalness

Naturalness class (circle one): 1 2 3 4 5

Confidence class (circle one): High Medium Low

Form(s) of assessment (tick all that apply)

☐ Simple visual inspection
☐ Water Framework Directive data
☐ EA abstraction information
☐ Other (please specify)

UK Centre for Ecology & Hydrology

UK Lakes Portal

Additional Info

Contributing data→ Citizen Data Portal

- Guidance documents & resources
- Printable survey forms
- Examples of completing a naturalness survey
- Photos of key habitat features
- High priority species recording

Contribute naturalness data – Discovering Priority Habitats in England

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cartographe

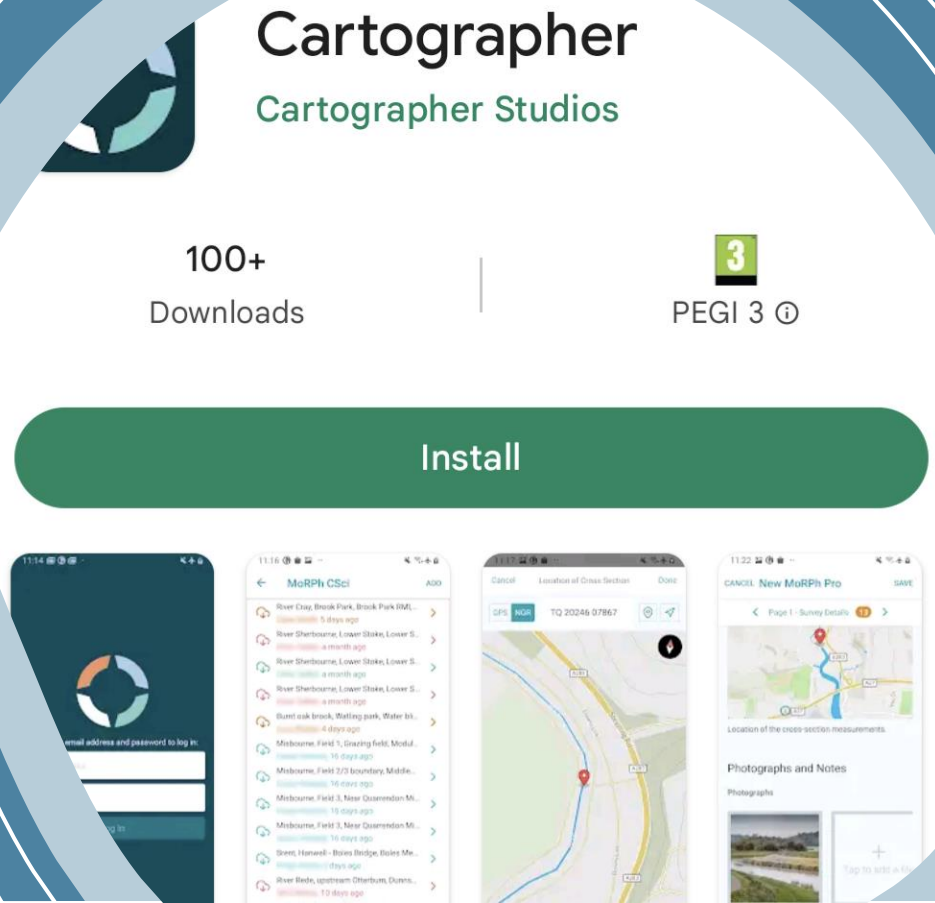
Using Cartographer

Register for an account
Priorityhabitats.org

Cartographer login

Using the app

Download the App



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Afternoon Practical session

Health and Safety (key points)

- Be aware of slips, trips and falls
- Stay out of the water and away from steep and unstable banks
- Wear appropriate clothing and footwear
- Biosecurity awareness
- Please fully read the **sheets in your packs** before we leave for the practical site

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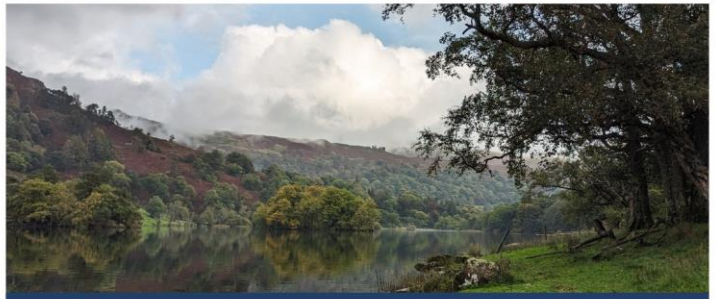
Uploading Surveys

PRIORITY HABITATS

FRESHWATER NATURALNESS
UPLOADING LAKE SURVEYS

A step-by-step guide of how to upload lake surveys to the cartographer mobile app.



Further guidance can be found online:
priorityhabitats.org

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PRIORITY HABITATS

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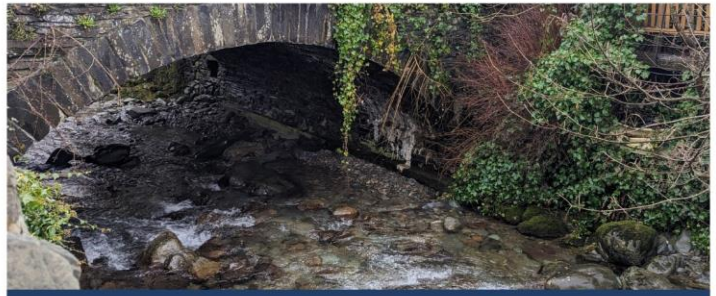
A step-by-step guide of how to upload river/stream surveys to the cartographer mobile app.



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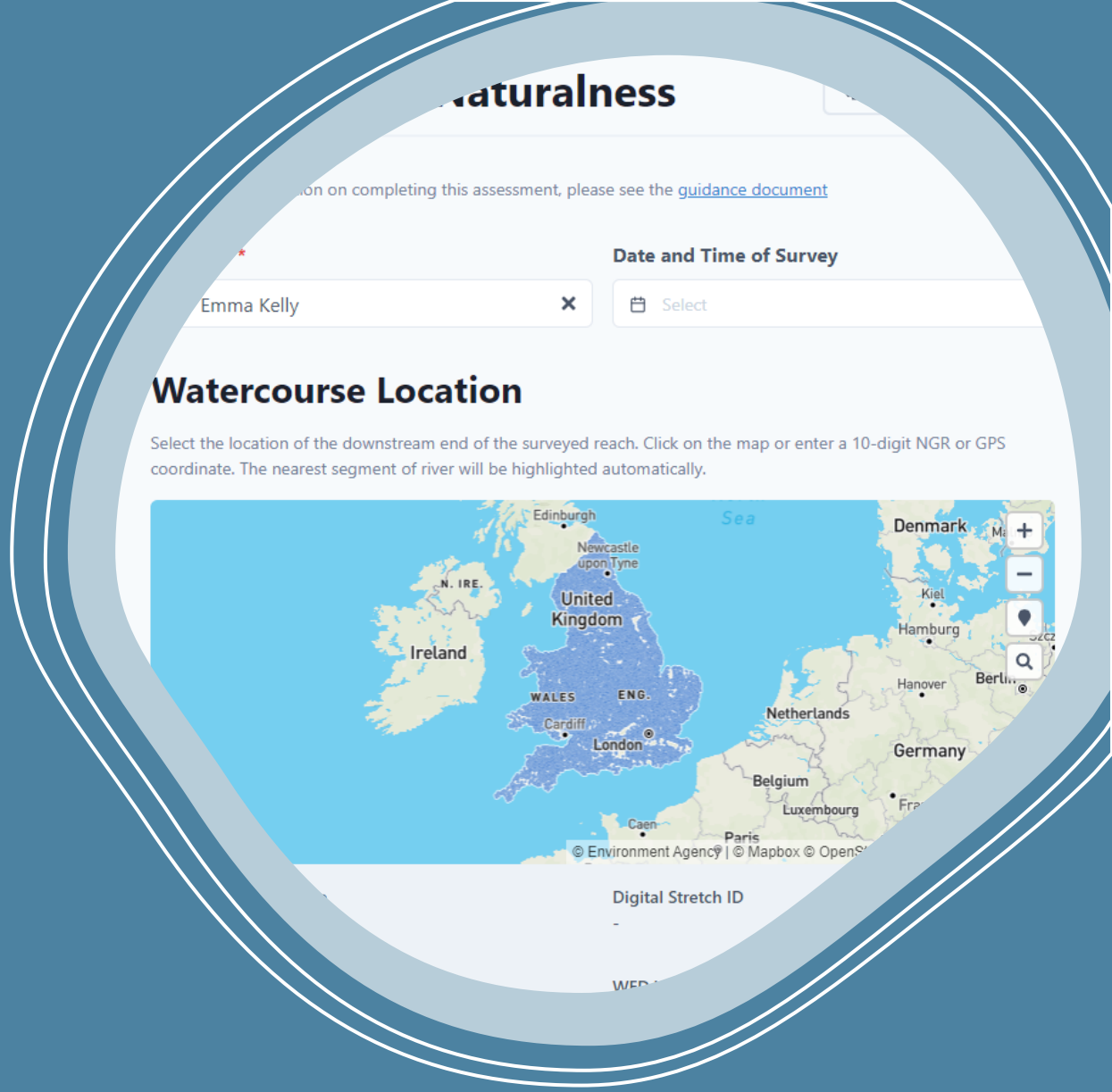
Uploading a survey

River/Stream Naturalness
[River/Stream Naturalness - Priority Habitats (cartographer.io)]

Lake Naturalness
[Lake Naturalness - Priority Habitats (cartographer.io)]



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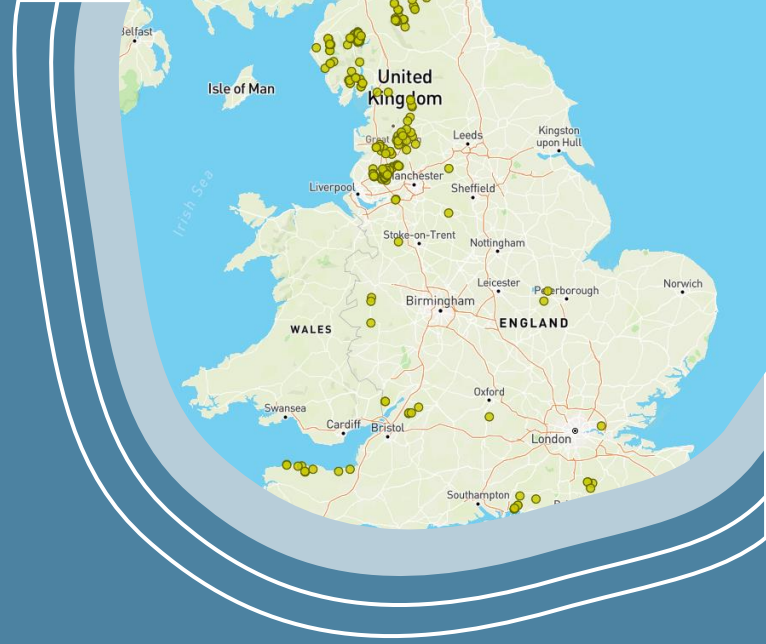
Surveys to date

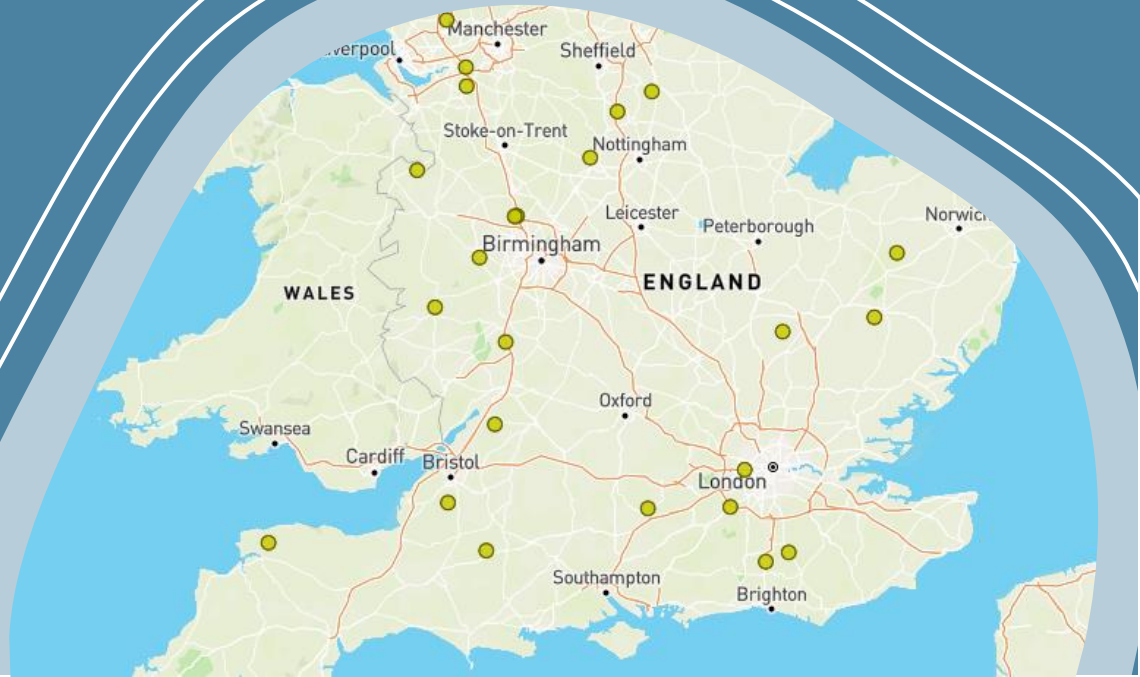


River/Stream

[Display river and stream naturalness data – Discovering Priority Habitats in England]

Lakes

[Display lake naturalness data – Discovering Priority Habitats in England]



Afternoon Practical session

Beyond today

- Be aware of **land access** and make sure to stay in open access areas (or confirm permission to survey)
- Always check H&S before attending a site
- Follow our newsletter for updates on big survey days, quizzes, Q&As etc.
- Talk to your host about organising survey days or check out the ‘Seasonal Survey Weekends’

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Help and Queries

- Please visit **priorityhabitats.org** for FAQs and detailed guidance
- Contact me at **priorityhabitats@fba.org.uk**
- Please complete Feedback forms

Any questions?

Priority Habitats Feedback