

Priority Habitats Field Guide

This field guide will help you to remember the methods and specific features you learned about in your training, during your field assessment. You can print this out and take it with you, or download the PDF on your phone/tablet device. Remember to consider your **confidence level** (High, Moderate, Low) too!

Assessing River and Stream Naturalness

Physical - here, we want to assess the physical naturalness of the river or stream. This part of the assessment asks you to look for **artificial modifications, tree cover and variety of vegetation** on the banks, as well as note any changes that have been made to the river .

Scoring

1

Highly natural

- No evidence of physical modifications,
- At least 1/3 of surveyed area has tree cover, tree roots strongly interact with the channel, affecting flow,
- Leaf litter/woody material left in channel.
- Riparian vegetation semi-

2

Natural

- Some limited evidence of physical modifications,
- At least 1/3 of surveyed area has tree cover, tree roots interact with the channel to some extent,
- Leaf litter/woody material left in channel.
- Riparian vegetation semi-

3

Semi-natural

- Some evidence of physical modifications (up to 30% of survey area),
- Artificial impoundment structures, e.g. dams or weirs, present but rare.

4

Unnatural

- Extensive physical modifications, with some natural sections along the channel/banks,
- Artificial impoundment structures, e.g. dams or weirs, are present and impacting habitat

5

Highly unnatural

- Entire river is physically modified,
- River is straightened along length, with artificial or reinforced banks and no natural habitat features



iNaturalist



PlantNet



BloominAlgae



iRecord

Don't forget your apps!

Hydrological - here, we want to assess the hydrological naturalness of the river. This part of the assessment asks you to look at the way in which the **river flows** and whether **water is impounded or abstracted** at any point along its stretch.

Scoring

1

Highly natural

- No evidence of impacts on natural flow, like pipes or pumps,
- Headwaters may be dry in the summer (intermittent streams).

2

Natural

- Some minor impacts on natural flow from abstraction or upstream impoundment,

3

Semi-natural

- Moderate impact of abstraction, diversion, or upstream impoundment on natural flow.

4

Unnatural

- Natural flow is heavily impacted by hydrological changes. Unnatural drying.

5

Highly unnatural

- The river is dry for the majority of the year due to abstraction or diversion of water.

Chemical - here, we want to assess the chemical naturalness of the river. This part of the assessment asks you to look out for the presence of **algal blooms**, **sewage fungus** and other evidence of **effluent discharge**.

Scoring

1

Highly natural

- No evidence of pollution, with no sewage fungus or filamentous algae,
- No direct effluent discharge.

2

Natural

- Evidence of low-level pollution, with small amounts of fungus and patches of filamentous algae,
- Potential effluent discharge upstream

3

Semi-natural

- Moderate levels of fungus and filamentous algae growth along the entire reach.

4

Unnatural

- High levels of fungus and filamentous algae growing along the entire reach.

5

Highly unnatural

- Major pollution issues, with thick mats of filamentous algae and extensive sewage fungus growth,
- May be poor water clarity.

Biological - here, we want to assess the biological naturalness of the river. This part of the assessment asks you to make note of the presence of **non-native species** in and around the watercourse.

Scoring

<p>1 Highly natural</p> <ul style="list-style-type: none"> • No evidence of non-native species present (assess for Himalayan balsam, Giant hogweed and Japanese knotweed as a minimum). 	<p>2 Natural</p> <ul style="list-style-type: none"> • One or more non-native species present but not extensive, • Non-native plants take up 5% or less of channel length, • Non-native animals should be only rarely encountered.
<p>3 Semi-natural</p> <ul style="list-style-type: none"> • One or more non-native species present, with a significant presence along the reach (up to 25%) 	<p>4 Unnatural</p> <ul style="list-style-type: none"> • One or more non-native species are a major component of plant and/or animal life in and around the river (up to 60%)
<p>5 Highly unnatural</p> <ul style="list-style-type: none"> • One or more non-native species dominate the plant and/or animal life in and around the river. 	

Key Habitat Features

Remember to take note (if you can) of any of these key habitat features on your river or stream stretch.

- **Bankside flushes and springs** - areas where ground water is seeping into the system.
- **Trees interacting with channel** - trees along the river bank extending their roots or branches into the channel.
- **Waterfalls and cascades** - often form in the upper reaches of streams, where the gradient of the land is changing more steeply.
- **Woody material** - Discarded woody material such as fallen branches or trunks often make their way into undisturbed channels.
- **Natural mire-stream transitions** - these occur where the wetland and stream are connected to each other.
- **Sinuuous and multiple channels** - meandering stretches of river, as well as rivers that have split into several distinct channels.
- **Riparian wetlands** - wetlands (bogs/mires/marshes) which form on the land immediately adjacent to the river or stream channel.
- **Exposed cobble/gravel/sand** - naturally deposited sediments from high or low flow events.
- **Moss-covered boulders** - these provide extra complexity to the river habitat.
- **Fern-filled ravines/gyhlls** - well developed fern vegetation along steeper sided river banks.

Assessing Lake Naturalness

Physical - here, we want to assess the physical naturalness of the lake. This part of the assessment asks you to consider the condition of the shoreline, the land use around the lake, and the shape of the lake (if artificial).

Use these categories (shoreline, land use, lake shape) to help you decide on the naturalness class of your lake. Whichever is the lowest score you give for a category, use that as the overall class e.g. if you gave shoreline a 2 but land use a 1, the overall class should be 2! Please note: lake shape is only used for artificial lakes.

Scoring

	Shoreline	Land use	Lake shape
1	<ul style="list-style-type: none"> No evidence of physical modification, Fringing wetland. 	<ul style="list-style-type: none"> Land use around lake all semi-natural. 	<ul style="list-style-type: none"> Lake edges slopes gently, allowing for plants to grow in the water.
2	<ul style="list-style-type: none"> No more than 5% of shoreline physically modified. Fringing wetland. 	<ul style="list-style-type: none"> Majority of land use around lake is semi natural. 	<ul style="list-style-type: none"> Plant growth possible up to 10m from lake edge.
3	<ul style="list-style-type: none"> No more than 1/3 of shoreline physically modified. Little wetland. 	<ul style="list-style-type: none"> Around 2/3 of land use around lake is semi-natural. 	<ul style="list-style-type: none"> Plant growth possible up to 3m from, lake edge.
4	<ul style="list-style-type: none"> Physical modifications across at least 2/3rds of shore. 	<ul style="list-style-type: none"> At least 1/3rd of the land use around the lake is semi-natural. 	<ul style="list-style-type: none"> Edges may be steep, leaving little habitat for plants.
5	<ul style="list-style-type: none"> Physical modifications across more than 2/3rds of shore. Wetland absent 	<ul style="list-style-type: none"> Less than 1/3 of land use is semi-natural. 	<ul style="list-style-type: none"> Artificial edges leave little habitat for plants. May be some marginal or floating.

Hydrological - here, we want to assess the hydrological naturalness of the lake. This part of the assessment asks you to note features such as water level, the presence of structures, as well as inflows and outflows.

	Structures	Water level	In/outflows
1	<ul style="list-style-type: none"> No structures affecting water level/creating barriers. 	<ul style="list-style-type: none"> Natural, seasonal water level fluctuations. 	<ul style="list-style-type: none"> In/outflows natural, surrounding land not drained or with ditches.

2	Structures	Water level	In/outflows
	<ul style="list-style-type: none"> Structures may be present, but are not unpassable to fish. 	<ul style="list-style-type: none"> Natural water level fluctuations, or, artificial mimicking natural pattern. 	<ul style="list-style-type: none"> No additional ditches, but may be some modifications to in/outflows.
3	<ul style="list-style-type: none"> Structure is present that is impassable to most fish species, most of the time. 	<ul style="list-style-type: none"> Water levels are fixed, unable to fluctuate naturally. 	<ul style="list-style-type: none"> Outflows modified, or, artificial inflows from land draining (ditches).
4	<ul style="list-style-type: none"> Large structure present, impassable at all times to all fish species. 	<ul style="list-style-type: none"> Water levels heavily depleted by abstraction. 	<ul style="list-style-type: none"> Outflows modified, artificial inflows (if any).
5	<ul style="list-style-type: none"> Very large, impassable structures present. 	<ul style="list-style-type: none"> Drawdown of more than 2m of water annually. 	<ul style="list-style-type: none"> Lake likely to be a reservoir or part of hydroelectric scheme.

Chemical - here, we want to assess the chemical naturalness of the river. This part of the assessment asks you to look at **algal growth**, **water quality**, and **plants**. You may also wish to apply sampling methods such as **water sampling** and **biological monitoring**.

Scoring

1	Water clarity	Algae	Plants	Sampling
	<ul style="list-style-type: none"> Lake bottom or Secchi disc visible through more than 3m of water. 	<ul style="list-style-type: none"> Very little algae, hardly noticeable. 	<ul style="list-style-type: none"> Plants growing at 3m depth or as deep as the lake (if less than 3m) 	<ul style="list-style-type: none"> Water tests show no positive result, biological sampling show no pollution.
2	<ul style="list-style-type: none"> Lake bottom or Secchi disc visible through between 1m and 3m of water. 	<ul style="list-style-type: none"> Occasional noticeable algae growth, not persistent or widespread. 	<ul style="list-style-type: none"> Plants growing at less than 3m depth, but more than 1m depth. 	<ul style="list-style-type: none"> Water tests register low pollution. Bio-sampling shows low level pollution.
3	<ul style="list-style-type: none"> Lake bottom or Secchi disc visible through 50cm to 1m of water. 	<ul style="list-style-type: none"> Moderate filamentous algae, with algal blooms in spring and autumn. 	<ul style="list-style-type: none"> Some plants present but not abundant unless adapted to nutrients. 	<ul style="list-style-type: none"> Water tests show moderate pollution. Bio-samples represent moderate water quality.
4	<ul style="list-style-type: none"> Lake bottom or Secchi disc visible through 25cm to 50cm of water. 	<ul style="list-style-type: none"> May be frequent blooms and extensive filamentous algae. 	<ul style="list-style-type: none"> Plants absent or sparse, 	<ul style="list-style-type: none"> Water tests register high pollution. Bio-samples represent highly impacted water quality.

5

Water clarity

- Water brown or green, unable to see bottom of lake under 25cm of water.

Algae

- Frequent algal blooms and extensive filamentous algae.

Plants

- No submerged plants are present.

Sampling

- Water tests and biological sampling represent very high levels of pollution.

Biological - here, we want to assess the biological naturalness of the lake. This part of the assessment asks you to make note of the presence of **non-native species** in and around the water.

Scoring

1

Non-native plants

- No evidence of non-native species in or around the lake.

Non-native animals

- No evidence of non-native species in or around the lake.

2

- Non-native plants occupy no more than 5% of shoreline/lake area

- Non-native animals are rarely encountered, and have little impact.

3

- Non-native plants occupy up to 25% of the shoreline.

- At least one non-native species found when searched for.

4

- Non-native plants occupy up to 60% of the shoreline.

- Multiple non-native species found when searched for.

5

- Non-native plants occupy more than 60% of the shoreline.

- Non-native species are numerous and found with little effort.

Key Habitat Features

Remember to take note (if you can) of any of these key habitat features on your lake:

- **Shoreline modification** - this includes any changes to the shoreline such as reinforcing the banks or adding artificial structures.
- **Riparian zone up to 10m from bank** - the area around the lake and semi-natural habitat.
- **Perimeter trees** - note of the percentage of lake perimeter that has trees.
- **Fringing marginal emergent vegetation** - note the percentage of the lake perimeter that has emergent vegetation.
- **Number of ditches** - ditches may drain into the lake from the land surrounding, you may see these as you walk around, or on aerial maps.
- **Presence of outflow structures** - can include sluices, weirs or dams.
- **Plant functional groups** - keep an eye out for: rosette forming, floating leaved and rooted, free floating, submerged linear leaves, submerged broad leaves, submerged fine leaves, emergent broad leaves, emergent narrow leaves and filamentous algae.

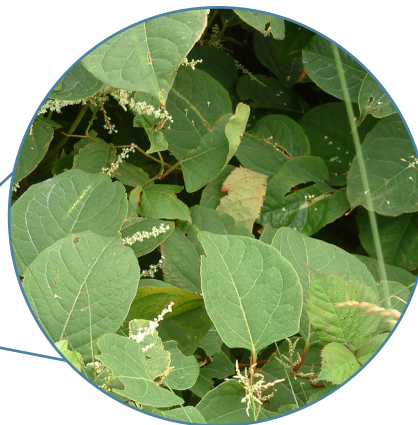
Non-native species



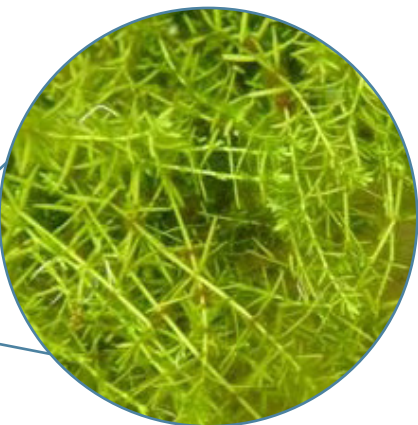
Himalayan balsam



**Giant hogweed
(do not touch me!)**



Japanese knotweed



New Zealand pygmyweed

Non-native species



Parrot's feather



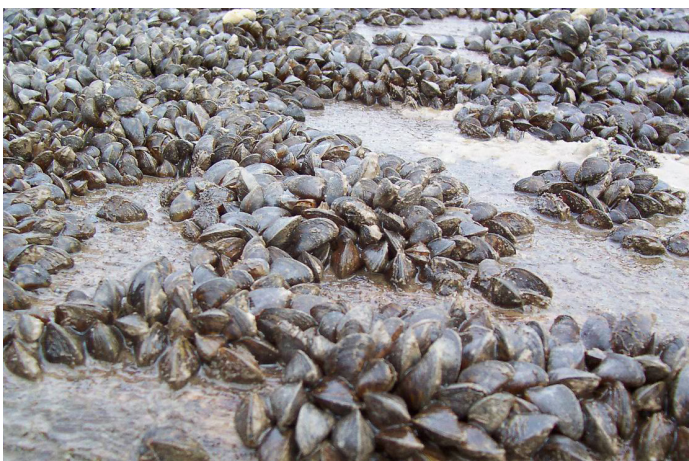
Signal crayfish
(look for my red claws)

Images © GB Non-Native Species Secretariat



Killer shrimp

Images © Environment Agency



Zebra mussel

Image © Anastasija Zaiko

Image © Paul Beckwith BWV

Plant functional groups

Rosette forming



Plants have **short, stiff leaves with pointed ends**. The leaves **join at the base** in a rosette e.g. shoreweed and water lobelia.

Floating leaved and rooted



Leaves **lie flat on the water** surface but are rooted to lake bed e.g. water lily and floating bur reed.

Free floating



Plants are not rooted, but lay on the surface of the water e.g. duck weed.

Submerged linear leaves



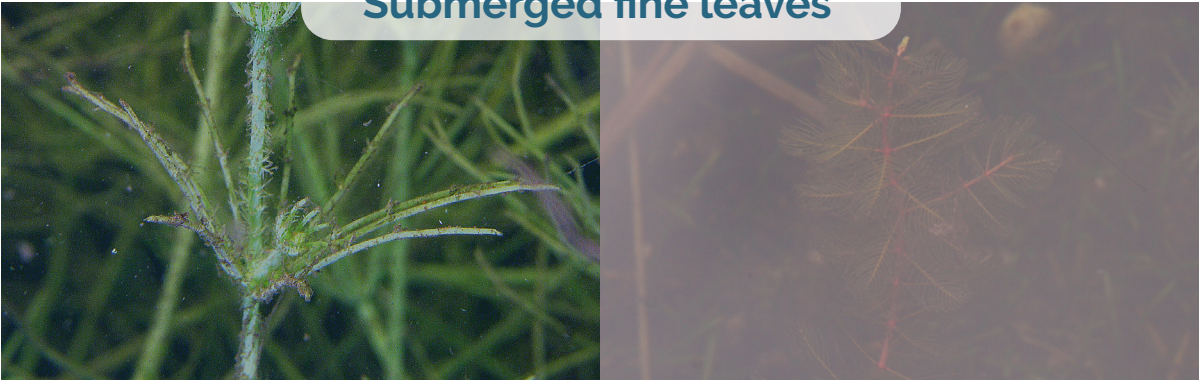
Grass-like leaves, mostly submerged underwater, and rooted to the lake bed e.g. horned pondweed.

Submerged broad leaves



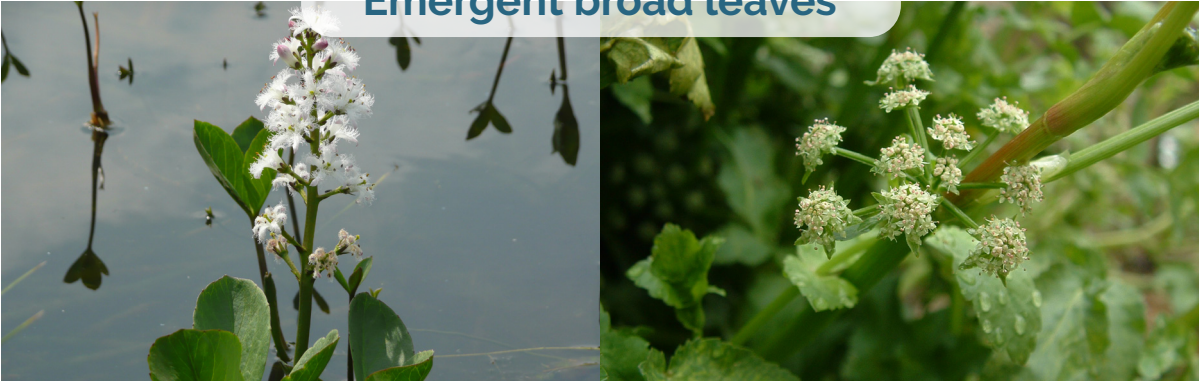
Broad leaves, mostly submerged underwater, and rooted to the lake bed e.g. waterweed and clasp-leaved pondweed.

Submerged fine leaves



Very **fine, branched 'leaves'**, mostly submerged underwater, and rooted to the lake bed e.g. stoneworts and water milfoils.

Emergent broad leaves



Broad leaf plants rooted to the lake bed, with **flowers and leaves above water** e.g. bog bean and fool's watercress.

Emergent narrow leaves



Narrow leaf plants rooted to the lake bed, with **flowers and leaves above water** e.g. reeds and horsetails.

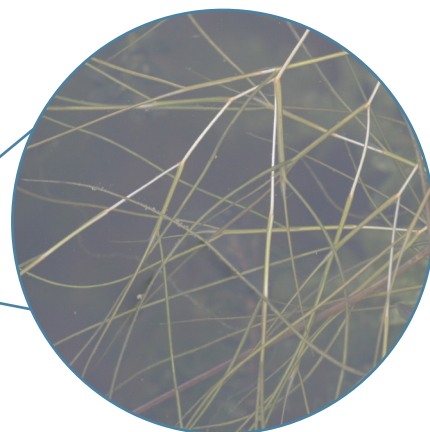
Filamentous algae



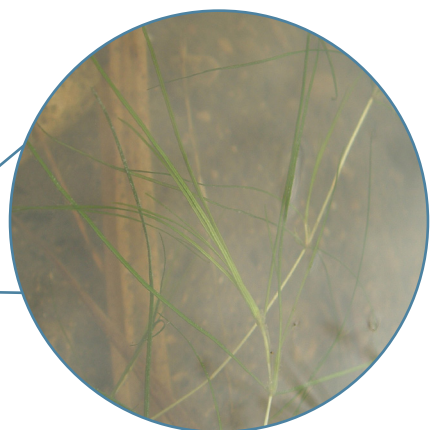
Algae that **grow in threads** that interweave. This forms a mat that **looks like wet wool**. May be attached to substrate or free-floating.

Nutrient enrichment

These plants can be indicators of nutrient enrichment in still water bodies.



Fennel pondweed



Horned pondweed

Helpful resources



<http://www.nonnativespecies.org/home/index.cfm>



<http://publications.naturalengland.org.uk/publication/5630174502584320>

<http://publications.naturalengland.org.uk/publication/6266338867675136>

Glossary

Abstraction: the removal of water from a river or other water body.

Artificial: a copy of a naturally occurring feature or process, made by humans.

Biodiversity: the variety of different plants and animals associated with a habitat.

Biological: relating to living organisms.

Bloom: the rapid growth of algae or cyanobacteria in a water body.

Chemical: relating to chemistry e.g. interaction of compounds in the environment.

Clarity: the degree of transparency or purity of water.

Effluent: sewage or other human waste that is discharged into a water body.

Emergent: an aquatic plant with leaves and flowers above water.

Enriched: the addition of nutrients.

Filamentous: resembling a thread, with a thin diameter.

Grapnel: a small hook with several prongs attached to rope, used to grab plants.

Habitat: the environment within which an organism lives naturally.

Hydrological: relating to the properties of water above and below ground.

Impounded/impoundment: water that is held back by a structure e.g. a dam.

Inflow/outflow: the location where water moves into and out of a water body.

Invertebrate: an animal with no backbone e.g. molluscs, insects and crustaceans.

Modification: a change that has been deliberately made.

Native: an animal or plant that is indigenous to a place.

Physical: relating to structure and interaction of tangible materials.

Pollution: the introduction of substances to the environment, with negative effects.

Reach: the extent or range of a waterbody that is being assessed.

Riparian: relating to the banks or adjacent land of rivers and streams.

Secchi Disc: a white and black disc used to measure transparency of water at depth.

Submerged: something that is completely underwater.

Vegetation: plants found in a particular habitat.

Water Framework Directive: EU and UK legislation aiming to prevent deterioration of the water environment and improve water quality by managing water in natural river basin districts, rather than by administrative boundaries.

For further resources, please visit:
<https://priorityhabitats.org/>



**FRESHWATER
BIOLOGICAL
ASSOCIATION**

