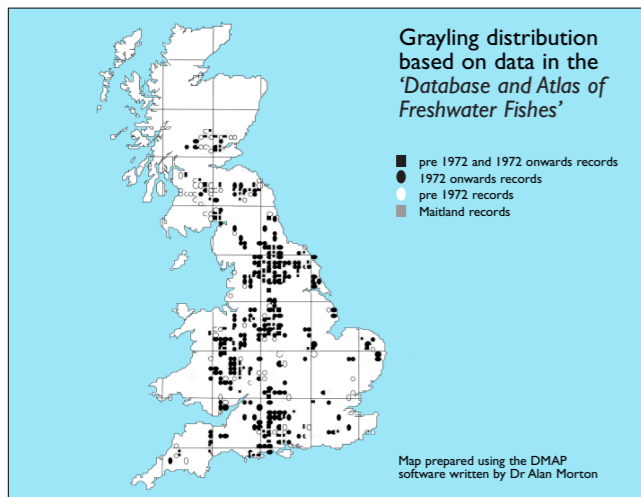


The European grayling belongs to the same family, Salmonidae as trout and salmon - all have a small adipose fin. The fish is stream-lined and has a silver-grey back & flanks with black flecks and a whitish under-body. The dorsal fin is large with rows of red, blue and black spots and is bigger in the male. The mouth is quite small and undershot, the eye teardrop shaped and the skin and flesh give off a faint smell of the herb thyme, hence its Latin name *Thymallus thymallus* (L).

Distribution

European grayling are native to parts of England & possibly Wales having reached Britain before it was isolated from continental Europe after the last ice age. They are now widely distributed throughout Britain. All Scottish populations result from introductions within the last 150 years. Grayling also reside in a few stillwaters, including Gouthwaite reservoir in Yorkshire & Llyn Tegid (Bala Lake) in North Wales. Worldwide, many grayling populations are under threat through overfishing, pollution and barriers preventing access to spawning sites.



Management of Grayling

The grayling is now recognised as an economically valuable and sought after freshwater fish. Responsibility for its management in England and Wales lies with the Environment Agency (EA). The EA recently focused on its future management in developing the "National Trout and Grayling Fisheries Strategy". This aims to "enhance the social and economic benefits derived from trout and grayling fisheries whilst ensuring the conservation of wild stocks and the aquatic environment in England & Wales" (see the EA website). The EA has also published a "Review of Grayling Ecology, Status and Management" (W245), which recommends ways to raise the standard of management for this species and identifies important gaps in current knowledge.

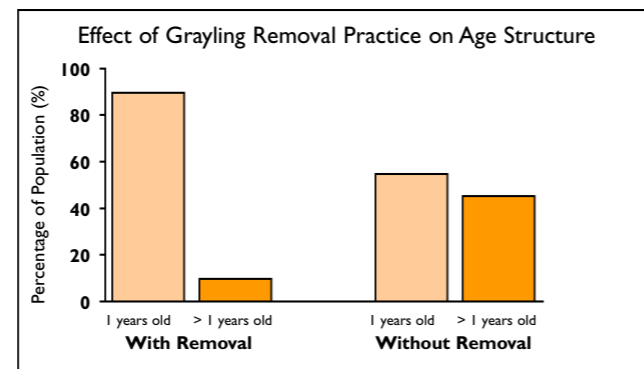
Interactions with other species

Grayling are considered by some fishery managers to be competitors to brown trout. In rivers where both species live, they often eat similar food items. This does not mean that competition occurs between the two species. It has long been known that where two species co-exist, they use food and space more efficiently than when in isolation. The resulting combined production of fish is greater. In many UK rivers food supply is plentiful and the presence of one species probably has little effect on the other. Rather than attempting to remove one species, it is better to make use of both as valuable fishery resources. Grayling remain more active than trout during the winter months and their willingness to take a fly or bait on the coldest of days can extend the fishing season and add to the overall value of a fishery.

Grayling Removal Practices

The grayling was previously regarded as vermin, particularly in southern chalk streams where brown trout were the anglers quarry. Consequently they were systematically removed in large numbers. Since the formation of an independent voluntary group, the Grayling Society in 1977, attitudes toward this species have changed. They are now valued as a fishery resource and fishermen appreciate the fine sporting qualities that the 'Lady of the Stream' offers particularly outside the trout season.

Removals have been made by netting, electric fishing and angling in the misguided belief that it would improve the trout population. The different methods used to remove grayling tended to eradicate particular size groups. Whichever size group is removed, competition is reduced amongst the remaining grayling. In fisheries where grayling have been culled for many years there is no indication that it has improved trout fishing. On the contrary, evidence suggests that grayling removal may have a negative impact on the fishery.



Comparisons of grayling populations at chalk stream sites where removal has and has not taken place over a number of years – excludes 0+ grayling (Ibbotson)

With less competition, fish grow faster and become sexually mature at an earlier age and smaller size. Fish maturing at two years will be smaller than those waiting until their third year.

Grayling that mature at a younger age are shorter lived due to increased spawning mortality and the average size of the fish in the fishery decreases. The resulting small average size further reinforces a belief that grayling have a low fishery value, and adds weight to the argument for still further removals.

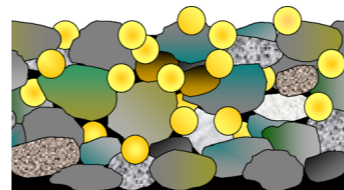
Where culling has ceased, the grayling fishing has greatly improved with no impact on the quality of the trout stocks. The larger older grayling that have re-established now enhance the economic value of the fishery, especially where angling is permitted during the winter months.

The EA recognises the economic importance of grayling stocks through its National Trout and Grayling Fisheries Strategy and states "we will not undertake any large scale removal of grayling, except to re-establish a grayling fishery elsewhere". This practise is given weight indirectly on SAC rivers by the protection afforded to SAC species – large-scale removals by electric fishing would only be allowed where it can be demonstrated not to harm SAC species.

Grayling Lifecycle and Habitat Requirements

Fertilised eggs

- Eggs are yellowish and about 2 to 3mm in diameter.
- They are deposited in pockets near the gravel surface to a depth of 5cm.
- Preferred gravel diameter ranges from 2 to 8cm.
- After two to four weeks, they hatch and young alevins emerge near the gravel surface and swim downstream.



Juveniles

- In the first months the slow marginal zones provide vital nursery areas for larvae and fry, where they feed on small animals in the water column.
- On reaching 5cm, fry can withstand greater velocities and move into faster flowing habitats.
- Larger fry occupy the area between the margins and mid channel with a sand/pebble bed where they catch drifting prey.
- As they continue to grow, the juveniles move progressively into deeper water.

Adults

- As winter approaches, adults form shoals in preparation for spawning.
- Commencement of spawning is controlled by temperature – usually between March and April.
- Sexual maturity is reached between two and four years (20-40cm in length). In many British waters, grayling rarely reach ages greater than five or six years.
- In cooler more northerly rivers in Scandinavia and Russia, grayling grow and mature more slowly with increased longevity.
- Growth slows markedly with the onset of sexual maturation and consequently a 1kg (~2.2lbs) fish is regarded as a specimen grayling.
- Males defend territories in clean, moderately flowing water and court females approaching from downstream.
- His vibrating display and erect fins initiate spawning.



- Adults favour clean well oxygenated fast flowing water with a pebble bed in summer and deeper, slower flowing water in winter.
- They feed throughout the day and rest on the bottom at night.
- They are opportunistic feeders exploiting seasonally available drifting prey, shrimps and caddis – they also consume terrestrial invertebrates.
- Prey varies with age – older fish tending to feed nearer to the river bed.
- They are unable to tolerate high water temperatures (18 to 25° C) and are very susceptible to organic pollution.
- Where their habitat requirements are fulfilled for all life stages, their home range may be only a few hundred metres. In larger rivers, migrations over many kilometres may be necessary to reach feeding and spawning grounds.

Conservation

Many rivers in England and Wales contain grayling as a result of introduction by man. There are a few rivers that are thought to contain original, indigenous stocks of grayling. These include the Rivers Ouse, Trent, and possibly the Severn, Wye, Thames, Ribble, Hampshire Avon and Welsh Dee. Any actions likely to affect these grayling populations should take their high conservation value into account.

Further conservation is offered by the Grayling Society who aim to protect & preserve the grayling and its habitat as well as promoting angling for the species. The Society actively encourages its angling membership to practice catch and release but they are not averse to anglers taking the odd fish for the table - the flesh of grayling is palatable with some preferring the taste to that of the trout.

Fishing Regulations

Angling regulations currently vary throughout England and Wales, but the EA will review the minimum size limits and close seasons to ensure that all grayling have an opportunity to mature and spawn at least once. Anglers should check local byelaws and regulations before fishing anywhere.

Monitoring Stock and Fishery Performance

A pilot national logbook scheme for grayling fisheries began in 2001. Anglers are being asked to record simple details of their grayling fishing activities and catches. The data from these logbooks will be recorded over a minimum five-year period, to monitor the status of national and local grayling populations, fishery performance and exploitation (details are available from the EA and The Grayling Society). Using the data collected, the EA seeks to assess the status of wild grayling stocks and develop conservation targets for them.



Introductions

The EA's National Trout and Grayling Fisheries Strategy states "there shall be no stocking into rivers, streams or enclosed waters outside catchments where they are not already present, except possibly to maintain an introduced population or for 'recovering' rivers" (those improving from long-term pollution). However, proposals to introduce any new fish species, including grayling, must always be preceded by wide consultation and any introduction requires written consent from the EA.

Ten interesting facts about the grayling

- Six species of grayling are found worldwide, all in the Northern Hemisphere. The European grayling is thought to have reached Britain via the "North Sea River" before Britain became isolated from continental Europe.
- Published records from Scandinavia suggest that European grayling can grow up to 9kg (~20lbs) in weight. However, it is now thought that these fish were probably white fish, since grayling are rarely seen above 1.5kg (~3lbs) in those countries.
- Grayling have been found in archaeological deposits in York dating from the 12th Century.
- In Norway, radio-tagged grayling have been recorded migrating 120km (~75miles) between their spawning and feeding grounds.
- The liver of the grayling is smaller as a percentage of body weight than in trout and many coarse fish. This means they are less able to detoxify many pollutants and are therefore good indicators of high water quality.
- At night grayling have been recorded moving from deep water into shallower, slow flowing almost still waters (dead zones).
- A 1kg (~2lbs) female grayling will lay between 4-5,000 eggs and being promiscuous, she will lay them in batches with several different males. A single female has been observed spawning nine times with seven different males over six days and on one occasion three times in five minutes.
- At the end of their first year of growth, grayling can be more than double the weight of their cousins, the trout and salmon, despite hatching later in the year.
- In the past, thousands of grayling were annually removed from rivers (particularly chalk streams) and simply buried in the fields next to the river.
- Grayling are protected in Annex V of the EC Habitats Directive. This means that their exploitation must be compatible with maintaining the grayling populations at a favourable conservation status. Large-scale removal of naturally occurring grayling populations would rarely be consistent with this aim.



For more information about grayling, grayling fisheries and their management, contact your local Environment Agency office or local area secretary from The Grayling Society.

Environment Agency

Rio House
Waterside Drive
Aztec West
Almondsbury
Bristol BS32 4UD

Telephone: 01454 624400
Fax: 01454 624409
www.environment-agency.gov.uk

CEH Dorset

Winfrith Technology Centre
Winfrith Newburgh
Dorchester
Dorset DT2 8ZD

Telephone: 01305 213500
Fax: 01305 213600
www.ceh.ac.uk

The Grayling Society

c/o 7 Oaktree Way
Little Sandhurst
Berkshire
GU47 8QS

Telephone: 01344 775051
Fax: 01344 466604
www.graylingsociety.org

Grayling, the past, present and future...

An Environment Agency,
Centre for Ecology and Hydrology
& Grayling Society Publication

