American Brook Trout, *Salvelinus fontinalis*

**Overview**

Short description of *Salvelinus fontinalis*, American Brook Trout

Also known as Brook Charr, Eastern Brook Trout, Speckled Trout or Squaretail. Combination of dark green marbling on the back and dorsal fin and red spots with blue halos on the sides. Anal, pelvic and pectoral fins with white leading edge followed by dark stripe; fins otherwise reddish. 25-40cm in Europe, rarely 45cm+.

Description of *Salvelinus fontinalis*, American Brook Trout status in GB

American brook trout is established throughout England, Scotland and Wales, especially in northern England and Scotland.

**Habitat summary: *Salvelinus fontinalis*, American Brook Trout**

Occurs in clear, cool, well-oxygenated rivers (small to medium) and lakes. Some individuals ('salters') spend the spring at sea near the river mouth, though most spend their whole lives in freshwater.

**Overview table**

<table>
<thead>
<tr>
<th>Environment:</th>
<th>Freshwater</th>
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<tbody>
<tr>
<td>Species status:</td>
<td>Non-Native</td>
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<tr>
<td>Native range:</td>
<td>Northern America, Northeastern U.S.A., Alberta, British Columbia, Labrador, Manitoba, New Brunswick, Nova Scotia, Ontario, Saskatchewan, Yukon</td>
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<td>Functional type:</td>
<td>Predator</td>
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<tr>
<td>Status in England:</td>
<td>Non-Native</td>
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<tr>
<td>Location of first record:</td>
<td>Chertsey Bridge (Surrey)/London</td>
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<td>Date of first record:</td>
<td>1876</td>
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**Invasion history: *Salvelinus fontinalis*, American Brook Trout**

Origin

Eastern North America: most of eastern Canada from Newfoundland to the western side of Hudson Bay; southwards to the Great Lakes, and Mississippi River basins to Minnesota and northern Georgia.

First Record

Chertsey Bridge (Surrey) and the SW outskirts of London in/around 1876 (following the first introduction in 1869).

Pathway and Method

Introduced primarily for sport/angling. Possibly some escapes from aquaculture. Scattered throughout GB, especially the north and west; best-established populations are probably in Scotland.

Species Status

Invasive and established throughout GB. Introduced from the 19th century onwards (with varying degrees of establishment) to numerous countries in South America, Europe, Asia, Africa and Australasia, including some small and remote island nations such as the Falklands and Kerguelen. For details, see the [Fishbase](https://www.fishbase.org).

Ecology & Habitat: *Salvelinus fontinalis*, American Brook Trout

Dispersal Mechanisms

In its native range, general upstream movements occur in early spring, summer and late autumn, and downstream movements in late spring and autumn. In Sweden, brook trout have dispersed upstream from the point of introduction, and can disperse against the flow and across barriers such as waterfalls, colonising the narrow headwaters of a watercourse. They can also move through mires at high water flow, potentially gaining access to the headwaters of adjacent drainage areas.

Reproduction

Like many salmonids, brook trout exhibit variability in life history traits such as size, age at maturity, and fecundity. Some variation, such as time for spawning, may be dependent on latitude and temperature, but there can also be substantial variation between populations on a small geographical scale, including differences in age at maturity, and reproductive effort.
Brook trout reach sexual maturity after two to four years. Spawning takes place in running water in late summer or autumn, depending on latitude and temperature, and eggs hatch in the spring, after about 100 days. Eggs are deposited in a nest or ‘redd’, a small pit constructed by the female on a gravelly substrate. The fry remain hidden in the gravel, feeding on the yolk sac, until water temperatures begin to rise in early spring, when they emerge to search for insect prey. Reproduction will usually not take place in waters with a pH below approximately 5 (Grande 1984). The growth rate is high compared to other salmonids, but since the lifespan is rather short, approximately 5 years, they rarely reach a large size.

**Known Predators/Herbivores**
General piscivory; taken by seabirds and affected by lampreys.

**Resistant Stages**
Eggs and fry remain hidden in gravel.

**Habitat Occupied in GB**
Clear, cool, well-oxygenated rivers (small to medium) and lakes. Some individuals (known as ‘salters’) spend the spring at sea within a few kilometres of the river mouth for up to three months, though most spend their whole lives in freshwater. Diet includes a wide range of organisms: worms, leeches, crustaceans, insects (chironomids, caddisflies, blackflies, mayflies, stoneflies and dragonflies), molluscs, fishes, amphibians and small mammals. Stomachs of some individuals have been found to contain traces of plant material (Scott & Crossman 1973) but the species can be considered predatory.

**Distribution:** *Salvelinus fontinalis*, American Brook Trout
Scattered throughout GB, especially the the north and west; best-established populations probably in Scotland.

**Impacts:** *Salvelinus fontinalis*, American Brook Trout

**Environmental Impact**
Competes with native fish such as other salmonids for food and shelter/cover. It also predate on native fish, amphibians, zooplankton and invertebrates. When stocked in previously fishless oligotrophic mountain lakes, this species alters nutrient cycles and stimulate primary production by accessing benthic sources of phosphorus. The replacement of native salmonids (brown trout, salmon) with brook trout has a negative effect on the freshwater pearl mussel *Margaritifera margaritifera*, as the brook trout cannot serve as host to the glochidial larvae. *M. margaritifera* is listed as ‘vulnerable’ on the IUCN Red List of Threatened Species.

The brook trout has genetic effects as it hybridises with the native brown trout, of which some hybrids are fertile. One well-known hybrid is the Tiger Trout or Tigerfish (*Salmo trutta* X *Salvelinus fontinalis*) which is generally sterile and often stocked for angling. Others include:

- *S. fontinalis* x *S. namaycush* or ‘Splake’
- *S. fontinalis* x *S. alpinus* or ‘Sparctic char’, ‘Sparctic trout’

**Health and Social Impact**
An important fish for leisure angling, though this impact may become negative if linked to the loss of native salmonids.

**Economic Impact**
Cultured and marketed for food and stocking/angling. A popular game fish with anglers, particularly fly-fishermen. Many anglers now practice catch-and-release tactics to preserve remaining populations. Revenues derived from the sale of fishing licenses may contribute to the restoration of river habitats. The species is commercially raised for food production, being sold for human consumption in both fresh and smoked forms. However, this impact may become negative if linked to the loss of native salmonids. Used as an experimental animal; because of its dependence on high water quality and diversity of aquatic and insect life forms as prey, it can be used to assess the effects of pollution. Significant costs may be incurred in the control of established populations, and management of impacts on habitats and native species.

**References & Links: Salvelinus fontinalis, American Brook Trout**

**Identification**

**Biology, ecology, spread, vectors**


**Management and Impact**

(Salmo trutta) in northern boreal lakes: stealth, long-term patterns? Canadian Journal of Fisheries and Aquatic Science 64, 654-664.

General

FAO Fishbase


https://www.cabi.org/isc/datasheet/65325