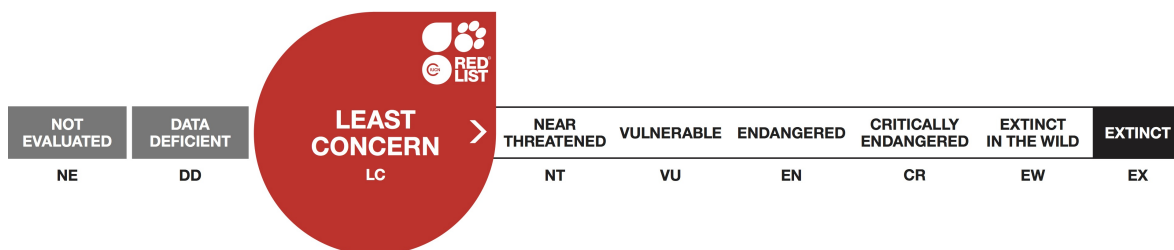


Salmo trutta, Brown Trout

Assessment by: Freyhof, J.



View on www.iucnredlist.org

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Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Actinopterygii	Salmoniformes	Salmonidae

Taxon Name: *Salmo trutta* Linnaeus, 1758

Common Name(s):

- English: Brown Trout, Sea Trout

Taxonomic Notes:

Genetic data indicate that *S. trutta* and some populations of hybrid origin are native in some rivers draining to the Mediterranean, the Black Sea (at least in upper Danube drainage) and the Caspian Sea (at least in upper Volga drainage). The present published data do not always enable to identify the head water populations of the different species on the basis of morphological characters (they may be distinguishable, but this simply has not been investigated).

Assessment Information

Red List Category & Criteria: Least Concern [ver 3.1](#)

Year Published: 2013

Date Assessed: March 5, 2010

Justification:

A widespread species and overall Least Concern. However, anadromous part of populations (sea trout) and many lacustrine stocks have in many cases markedly declined because of pollution (and possibly from impacts from salmon farming). The phylogeographic structure is almost destroyed by stocking.

European Union 27 = LC. Same rationale as above.

Previously Published Red List Assessments

2008 – Least Concern (LC)

1996 – Lower Risk/least concern (LR/lc)

Geographic Range

Range Description:

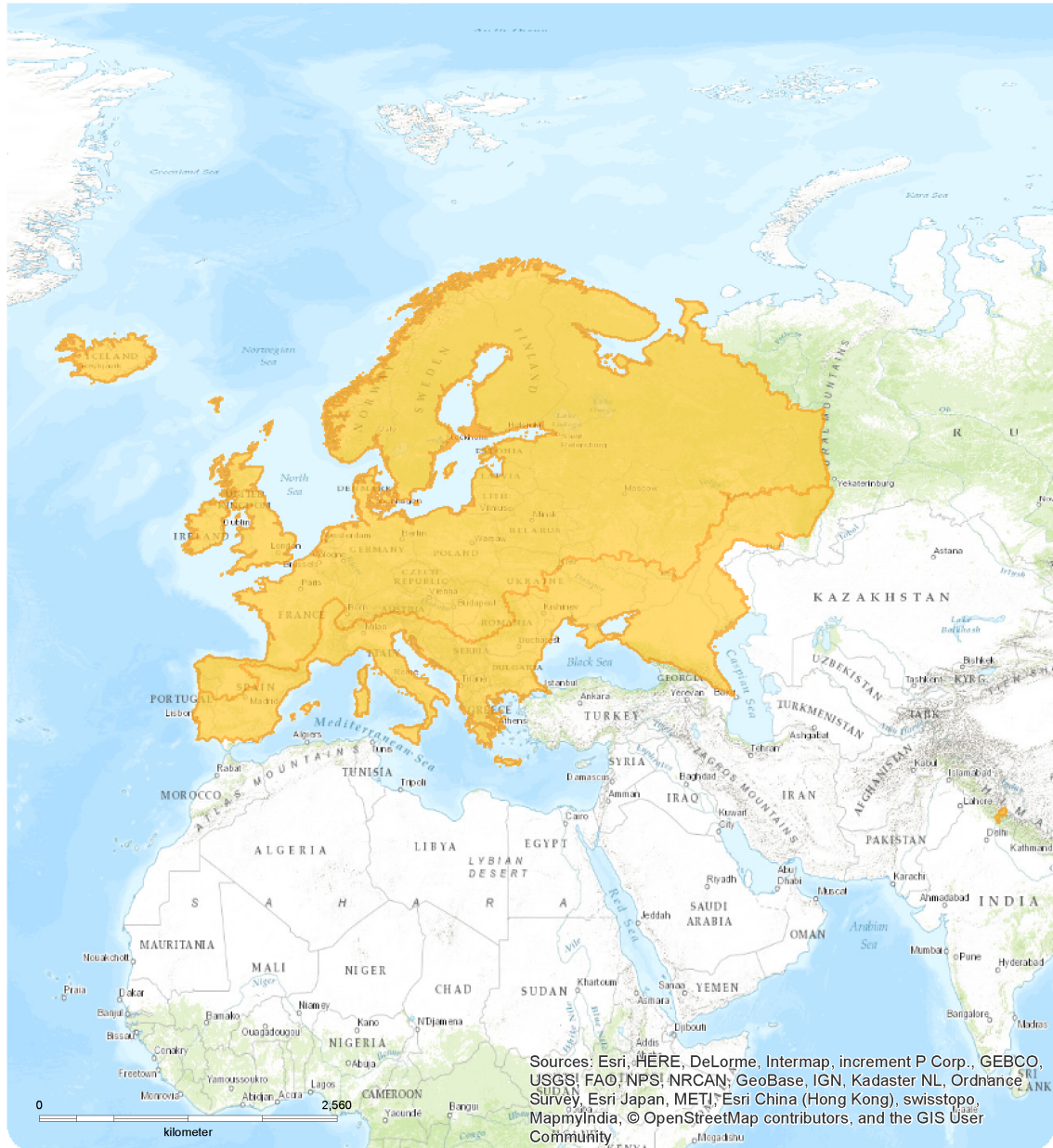
Atlantic, North, White and Baltic Sea basins, from Spain to Chosha Bay (Russia). Present in Iceland and in northernmost rivers of Great Britain and Scandinavia. In Rhône drainage, native only to Lake Geneva basin, which it entered after last glaciation. Native to upper Danube and Volga drainages. Introduced throughout Europe, North and South America, southern and montane eastern Africa, Pakistan, India, Nepal, Japan, New Zealand and Australia.

Country Occurrence:

Native: Andorra; Austria; Belarus; Belgium; Croatia; Czech Republic; Denmark; Estonia; Faroe Islands; Finland; France; Germany; Guernsey; Hungary; Iceland; Ireland; Isle of Man; Jersey; Latvia; Liechtenstein; Lithuania; Luxembourg; Netherlands; Norway; Poland; Portugal; Romania; Russian Federation; Serbia (Serbia); Slovakia; Slovenia; Spain; Sweden; Switzerland; Ukraine; United Kingdom

Introduced: Italy

Distribution Map

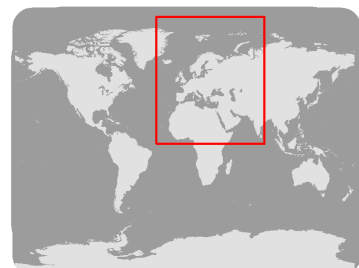


Salmo trutta

Range

■ Extant

Compiled by:
Kottelat, M. & Freyhof, J. (2008)



The boundaries and names shown and the designations used on this map do not imply any official endorsement, acceptance or opinion by IUCN.



Population

Abundant.

Current Population Trend: Unknown

Habitat and Ecology (see Appendix for additional information)

Habitat:

Cold streams, rivers and lakes. Spawns in rivers and streams with swift water. Lacustrine populations migrate to tributaries and lake outlets, rarely spawning on stone, wave-washed lake shores. Spawning sites usually characterised by downward movement of water into gravel. Sea and lake trouts forage in pelagic and littoral habitats, sea trouts mostly close to coast, not very far from estuary of natal river.

Biology:

Anadromous, lacustrine and resident ecotypes. Spawns in couples between late October and March, usually in November-December. Females select spawning sites and deposit the redd. Males guard and defend females against other males. Eggs are covered with gravel by female. Both sexes usually survive spawning and anadromous trout migrate back to sea or lake in autumn or overwinter in rivers and migrate in spring (5-70 % repetitive spawners in Norway). Sea trouts generally feed in freshwater. Eggs are covered with 3-30 cm of gravel. Redd depth is positively related to female's size. Eggs in deep redds are less vulnerable to spates and wash-outs and more vulnerable to low oxygen concentrations and pollution. Fry usually emerge from gravel between March (Spain) and July (Finland). Parrs and resident trouts are territorial, feeding on drifting and benthic invertebrates. Success in finding and defending a feeding territory is positively correlated to size of fry and to mother's size. Being large is clearly advantageous at this stage of life cycle. Resident trouts usually spawn for the first time at 2-3 years and spawn 2-3 seasons. Smoltification usually complete at 2-3 years and 120-220 mm SL, but up to seven year old smolts are reported. Mean smolt age increases with latitude. All juveniles seem to have the genetic ability to smoltify and migrate; in some small, summer-dry streams all migrate. In other streams, almost none seem to migrate. Factors triggering the 'decision' of an individual to smoltify or not are not well understood. If migration is impossible, smolts may interrupt migration and become resident again. In most rivers, a greater proportion of females than males seems to migrate, apparently a response to a greater need for reproductive energy. Therefore, sex ratio is usually skewed towards females in smolts. Large anadromous females may spawn with small resident males (the reverse is not reported but is expected to be possible, too). Smolts start to migrate downstream in April-May when temperature increases from low winter level, reaching beyond 5-11°C; migration peaks at rising water levels with increased turbidity.

There is a great variability in life history details of lacustrine populations. In some lakes, fry may migrate to the lake and at least males may spawn for the first time at two years. In other lakes, parrs smoltify after spending 1-3 years in spawning streams and males feed 4-6, females 5-8 years before first reproduction. At sea and in lakes, trouts feed on small fish and large crustaceans. In lakes, aquatic and terrestrial insects may form an important part of the diet. After at least 18 month at sea, sea trouts start to return to rivers to spawn. The pattern and timing of upstream migrations depends on particular river, sex and age. Homing accuracy is not as high as in *S. salar*. After spending one summer at sea, whitling start to migrate in July-September to lower reaches of rivers to overwinter or mature and migrate to spawning sites. Anadromous adults migrate in May and enter rivers until late October. Most maturing

whitlings are males and the proportion of whitlings might be up to 30 % among spawners. Whitlings usually sneak in to spawn in redds of large couples, as resident males do, too. Large males attack, injure and often kill sneakers. After one spawning season as whitling or resident male, individual trouts may spawn again as large sea trout. The factors triggering the 'choice' to reproduce as whitling or as large male seems to be related to body size of young parrs since larger parrs more frequently develop the whitling tactic and smaller parrs the large male tactic. During upriver migrations, the silvery colour evolves into a dark breeding colour, the skull of males enlarges and the lower jaw develops a kype. Sometimes hybridises with *S. salar*.

Systems: Freshwater

Use and Trade (see Appendix for additional information)

It is harvested for human consumption, and for sport fishing.

Threats (see Appendix for additional information)

Locally threatened by water pollution and impacts from salmon farming (sea lice etc.)

Conservation Actions

No information available.

Credits

Assessor(s): Freyhof, J.

Reviewer(s): Kottelat, M. & Smith, K.

Contributor(s): Kottelat, M.

Bibliography

Bernatchez, L. 2001. *The evolutionary history of brown trout (Salmo trutta L.) inferred from phylogeographic, nested clade, and mismatch analyses of mitochondrial DNA variation..*

Elliot, J.M. 1994. *Quantitative ecology and the brown trout*. Oxford University Press, Oxford.

IUCN. 2008. 2008 IUCN Red List of Threatened Species. Available at: <http://www.iucnredlist.org>. (Accessed: 5 October 2008).

IUCN. 2011. IUCN Red List of Threatened Species (ver. 2011.1). Available at: <http://www.iucnredlist.org>. (Accessed: 16 June 2011).

Klemetsen, A., Amundsen, P.-A., Dempson, J.B., Jonsson, B., Jonsson, N., O'Connell, M.F. and Mortensen, E. 2003. *Atlantic salmon Salmo salar L., brown trout Salmo trutta L. and Arctic charr Salvelinus alpinus (L.): a review of aspects of their life histories.*

Kottelat, M. and Freyhof, J. 2007. *Handbook of European Freshwater Fishes*. Publications Kottelat, Cornol, Switzerland.

Citation

Freyhof, J. 2013. *Salmo trutta*. *The IUCN Red List of Threatened Species 2013*: e.T19861A9050312. <http://dx.doi.org/10.2305/IUCN.UK.2008.RLTS.T19861A9050312.en>

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External Resources

For [Images and External Links to Additional Information](#), please see the Red List website.

Appendix

Habitats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Habitat	Season	Suitability	Major Importance?
5. Wetlands (inland) -> 5.1. Wetlands (inland) - Permanent Rivers/Streams/Creeks (includes waterfalls)	-	Suitable	Yes
5. Wetlands (inland) -> 5.5. Wetlands (inland) - Permanent Freshwater Lakes (over 8ha)	-	Suitable	-
9. Marine Neritic -> 9.1. Marine Neritic - Pelagic	-	Suitable	-
9. Marine Neritic -> 9.10. Marine Neritic - Estuaries	-	Suitable	-

Use and Trade

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

End Use	Local	National	International
Food - human	Yes	Yes	No
Sport hunting/specimen collecting	No	Yes	Yes

Threats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Threat	Timing	Scope	Severity	Impact Score
8. Invasive & other problematic species & genes -> 8.1. Invasive non-native/alien species -> 8.1.1. Unspecified species	Ongoing	-	-	-
	Stresses:	2. Species Stresses -> 2.1. Species mortality		

Additional Data Fields

Population
Population severely fragmented: No
Habitats and Ecology
Movement patterns: Full Migrant

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