

Salmon and sea trout



Key message

Numbers of Atlantic salmon returning to Scotland's coast have declined since at least 1971 and fail to meet conservation targets. Approximately half of assessed stocks (95/193) are in poor conservation status. Rod catches of sea trout have declined over the past 20 years in just over 38% of stocks.

Background

Atlantic salmon live in fresh water as juveniles before migrating to sea to undertake long migrations to their oceanic feeding grounds in the North Atlantic. As adults they return to the rivers in which they grew up where they then spawn and begin the next generation. Scotland's native trout populations are more varied and after initial growth in rivers can either remain there or migrate to sea before returning to spawn. Those trout that go to sea are known as sea trout.

Although the coastal areas are used by both Atlantic salmon and sea trout assessment on stocks focusses on the spawning stocks in rivers which will produce the next generation. For Atlantic salmon stock status is assessed by comparing the overall number of spawners to an internationally



Figure 1:
Atlantic salmon (*Salmo salar*) on their return migration (top) and a Sea trout (*Salmo trutta*) caught in the rod fishery (bottom).



First adult salmon returning to River Baddoch, Aberdeenshire, October 2019. Photo by Stephen McLaren, Marine Scotland Science

agreed conservation limit. Assessments are also made at smaller scales, primarily rivers to provide the evidence supporting the management of coastal and inland salmon fishing.

The trends in the estimated number of spawners and the number, age and size of Atlantic salmon returning to the Scottish coasts are also examined.

Assessment of sea trout stocks is more difficult with no equivalent international consensus on methods. The only data available to examine sea trout stocks are the national catch data. Therefore trends in catches over the past 20 years are examined.

Due to their large geographic ranges Atlantic salmon and sea trout are subject to a number of pressures and disentangling the causes of changes in stocks is extremely challenging.

Results

Salmon

Although there has been a decline in the estimated number of Atlantic salmon returning to coastal waters from their high seas feeding grounds since at least the early 1970s the estimated number of spawning salmon has remained steady over this period, before declining from 2010 onwards (Figure 2). The difference in trends between the two measures is a result of the decline in the removal of salmon by fisheries (Figure 3). Fewer salmon have been returning to the Scottish coast but as fewer have been removed by fisheries the numbers spawning in rivers has remained relatively constant until roughly 2010. The estimated number of salmon returning in 2018 was 44% of the 2011 estimate.

When viewed on a river by river basis it can be seen that there is a geographic spread in the occurrence of stocks in poor conservation status (Figure 4). There is further information in the extended section.

Sea trout

Overall rod catches of sea trout in Scotland have shown a long term decline over the period of data collection (1952 - 2018) and are currently at the lowest level recorded (Figure 5). There is further information in the extended section.

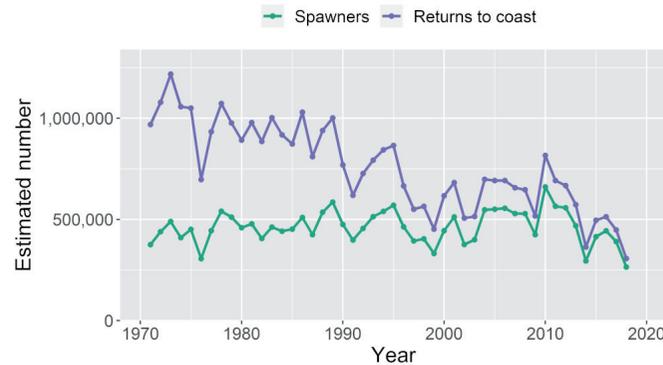


Figure 2:
Trends in the estimated number of salmon returning to Scottish coastal waters and the numbers spawning in Scotland's rivers 1971 - 2018 using data from report to ICES Working Group.

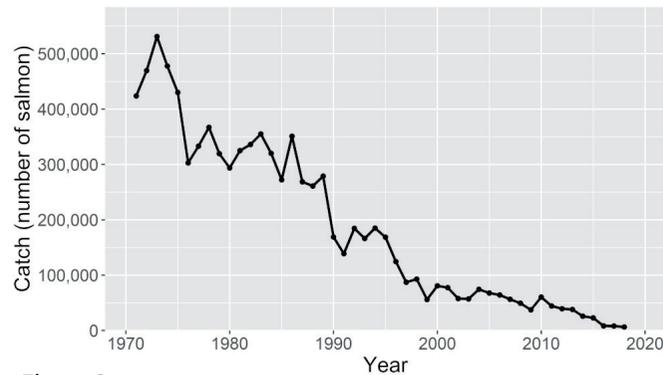


Figure 3:
Number of salmon retained in Scottish net and rod fisheries 1971 - 2018.

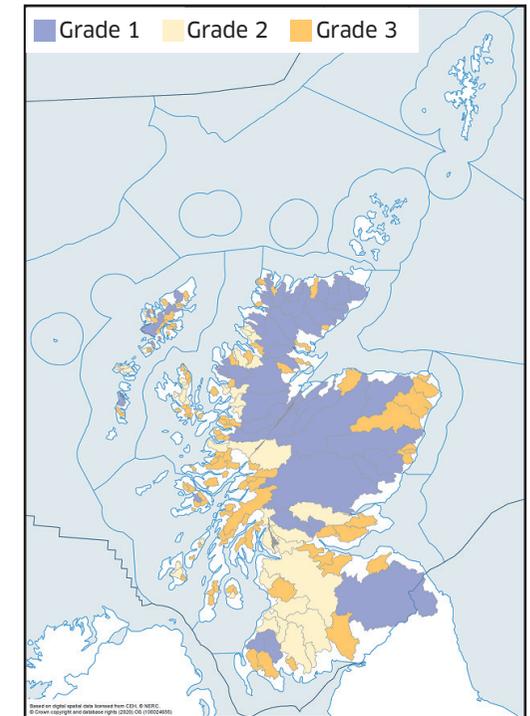


Figure 4:
Map showing the Conservation status of the 173 assessment areas in Scotland for the 2019 fishing season. (blue = good conservation status; cream = moderate conservation status; orange = poor conservation status).

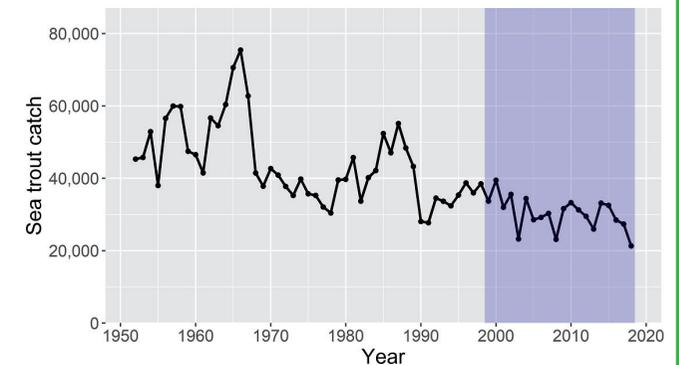


Figure 5:
Rod catches of sea trout in Scotland from 1952 - 2018. The shaded area highlights the last 20 years which were used to examine trends.

Conclusion

The results show that the number of Atlantic salmon returning to Scottish coastal waters has declined over the last 50 years. This is not associated with a reduction in salmon leaving rivers and would appear to be driven by increased at-sea mortality.

Previously declines in coastal returns were compensated for by reductions in commercial net fisheries and by rod fisheries adopting catch and release. However, this buffering capacity has now been fully utilised and post 2011 this decline has had an impact on the estimated number of salmon spawning in Scottish rivers. A reduction in the size of returning salmon, and therefore egg production, has further exacerbated these declines.

The overall stock is below its conservation limit and rivers on the east coast of Scotland tend to do better than rivers elsewhere.

The main driver of changes in Atlantic salmon stocks is occurring in the marine environment, although the observed geographic differences may be the result of local factors.

The best available evidence suggests the overall sea trout stock is at its lowest level since 1952. There is evidence of an overall decline over the past 20 years. Examination on a finer scale shows declines are spread throughout the country.

Knowledge gaps

There are a number of gaps that could be filled to increase the salmon assessment's accuracy. However the trends described are supported by independent methods (e.g. counters) and are seen throughout the salmon's range.

The main gaps exist around the exact drivers of changes, which is the subject of a series of Working Groups/Discussions led by ICES. Scottish Government is focussing on [high level pressures](#) impacting on salmon.

The assumption that rod catches reflect sea trout stock status is untested, but reflects best available evidence. International efforts are underway to develop methods to assess the status of sea trout stocks.

Status and trend assessment

	Region	Status	Trend
Salmon	All Scotland		
Sea trout	All Scotland		

Status and trend assessment legend

Status assessment (for Clean and safe, Healthy and biologically diverse assessments)		Trend assessment (for Clean and safe, Healthy and biologically diverse and Productive assessments)	
	Many concerns		No / little change
	Some concerns		Increasing
	Few or no concerns		Decreasing
	Few or no concerns, but some local concerns		No trend discernible
	Few or no concerns, but many local concerns		All trends
	Some concerns, but many local concerns	Confidence assessment	
	Lack of evidence / robust assessment criteria		
	Lack of regional evidence / robust assessment criteria, but no or few concerns for some local areas		Low
	Lack of regional evidence / robust assessment criteria, but some concerns for some local areas		Medium
	Lack of regional evidence / robust assessment criteria, but many concerns for some local areas		High