

Rod catches of Usk salmon and stock status in 2022

Guy Mawle (guy.mawle@gmail.com), 7 November 2022

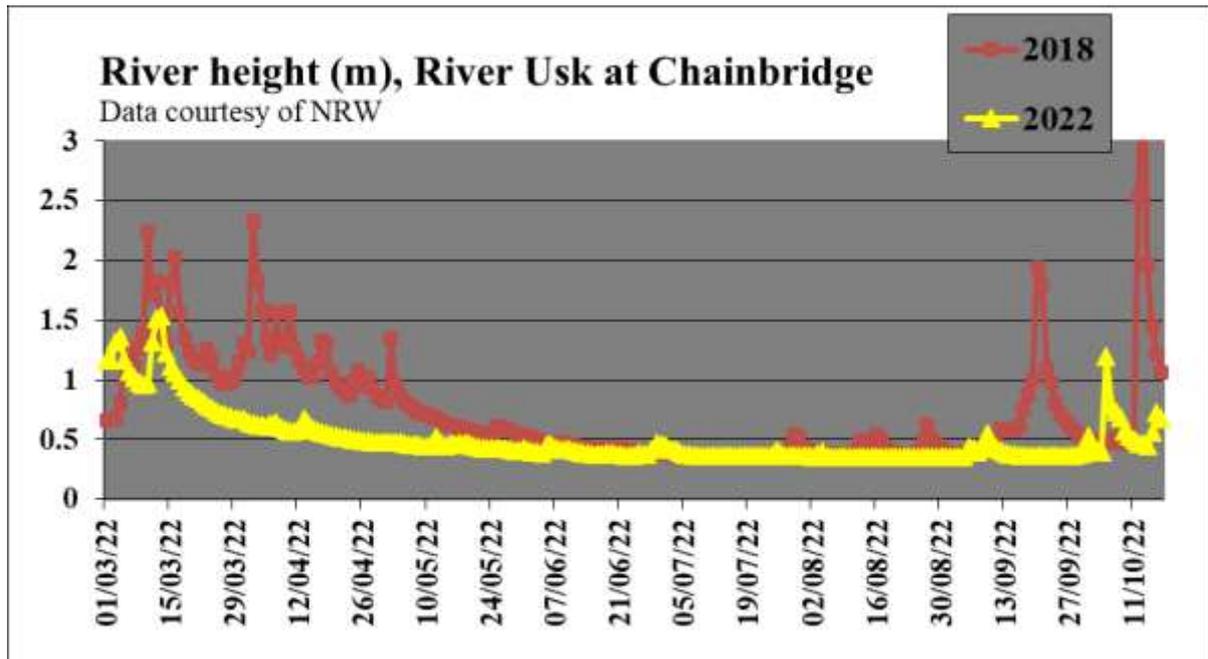
Summary:

- Conditions for fishing and salmon migration were exceptionally poor due to low flows and high temperatures. For most of the season, salmon angling was largely confined to the tidal reaches.
- Some fisheries closed during the hot weather to avoid mortalities after catch-and-release.
- Rod catches were the worst on record. The declared rod catch for the whole river, when available from catch returns next April, is predicted to be between 80 and 110 salmon, best estimate 92.
- Catches peaked in May and October.
- The average weight of salmon in 2021 was high at 11.1lbs reflecting another poor run of grilse.
- Adult stock status for Usk salmon will remain 'At Risk'.
- Concern continues about the sustained low abundance of juvenile salmon. Climate and now low adult abundance offer partial explanations but there appear to be other unexplained problems within the river.
- It is not only salmon that is in trouble. Much of the ecology is degraded.



Not long from the sea, a May salmon from Isca AC's tidal beat. Few salmon were caught above the tidal fisheries in 2022. (Photo: Andrew Beattie)

1. **River conditions:** It was an exceptionally hot, dry season, even compared to 2018 which provided what had been the Usk's lowest ever rod catch.



In summary:

March: Overall flows were average, less extreme than in recent years.

April: Flows dropped steadily so that, overall, they were below average.

May to August: In every month, flows at the Chainbridge gauge were the lowest in recent years, even lower than in 2003, a notorious drought year. However, for most of the summer, the flow at Chainbridge was supported by a release from Usk reservoir. From mid-July to early October, Welsh Water released water for abstraction at Usk town. While this release was too small to encourage migration it should have improved water quality through most of the river down to Usk. Regrettably, the Canal and Rivers Trust continued its abstraction to the canal at Brecon significantly reducing the river flow, despite concern expressed by NRW.

It was also a hot summer. On 12 June, daily average water temperatures at NRW's Trostrey gauge first exceeded 18°C, the level at which NRW advises that salmon may not survive catch and release. They topped 20°C on 23 June before falling back. They again exceeded 20°C on 8 July and remained high until the end of August, peaking at over 23°C. In the tidal reaches, which held most of the salmon, water temperatures would have been higher. Isca AC closed its tidal beat at Newbridge to fishing from 18 July to 6th September. Other fisheries on the lower river also closed at times during this period.

September: The river rose about 20 cms/8 inches in the first week before falling back. Unlike 2021, the daily average water temperature remained below 18°C at NRW's Trostrey gauge. Flows remained low until the end of the month.

October: There was a substantial spate on the 5th and a second spate just before the end of the season. Conditions for migration and angling were therefore good for the last couple of weeks.

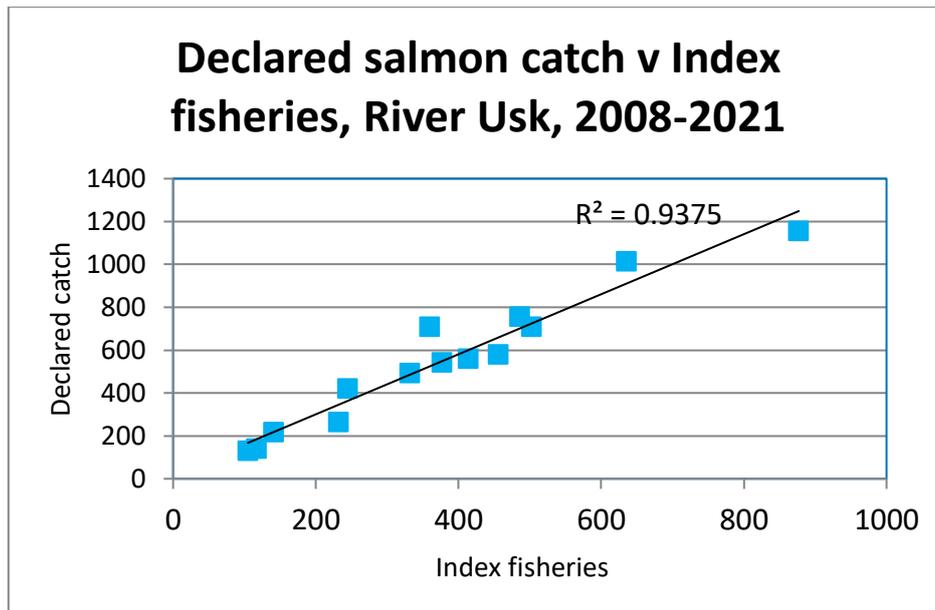


Above: After a long period of high water temperatures and low flows, dead and distressed salmon were seen in the tidal reaches from the bridge at Newbridge-on-Usk on 22 August. (Photo: Mike Cowburn)

2. Rod catch of Usk salmon

2.1 **Seasonal totals:** Catches were provided for 'Index fisheries' in the middle and lower reaches, i.e. Upper Llangybi; Lower Llangybi (from David Addams-Williams); three Merthyr Tydfil AA fisheries (from Tony Rees); Monkswood (from Helen Harrison); Llanover (from Ross Murray); the Usk Town Water (Chris Brain) and Isca AC's three fisheries (from Andrew Beattie). Together these totalled 71, lower than the 105 for 2018, when the Usk recorded its lowest ever rod catch.

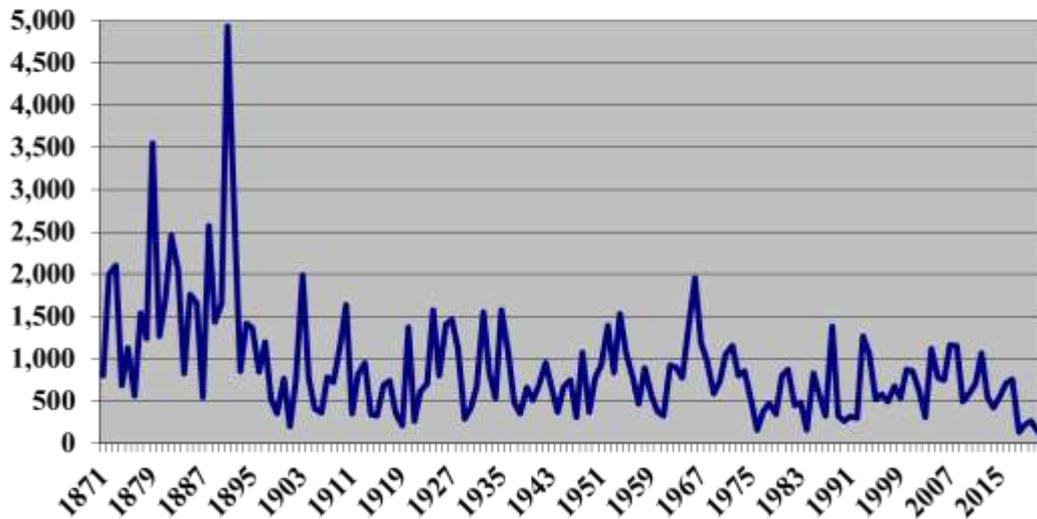
2.2 Salmon licence holders are required to make individual catch returns to NRW by the end of December. Not all do, but these 'declared' catches are used by NRW, with some adjustment, to assess stock status. There is a strong correlation between the catches at Index fisheries and the declared catch.



	Salmon catch Index fisheries	Declared Usk catch	Proportion of Usk catch
2008	877	1156	76%
2009	332	491	68%
2010	456	580	79%
2011	360	707	51%
2012	636	1014	63%
2013	377	543	69%
2014	245	421	58%
2015	414	559	74%
2016	503	709	71%
2017	486	756	64%
2018	105	129	81%
2019	141	216	69%
2020	232	263	88%
2021	117	140	84%
2022	71	Predicted: 92 Range: 80-110	5-year average to 2021: 77% Range: 64% to 88%

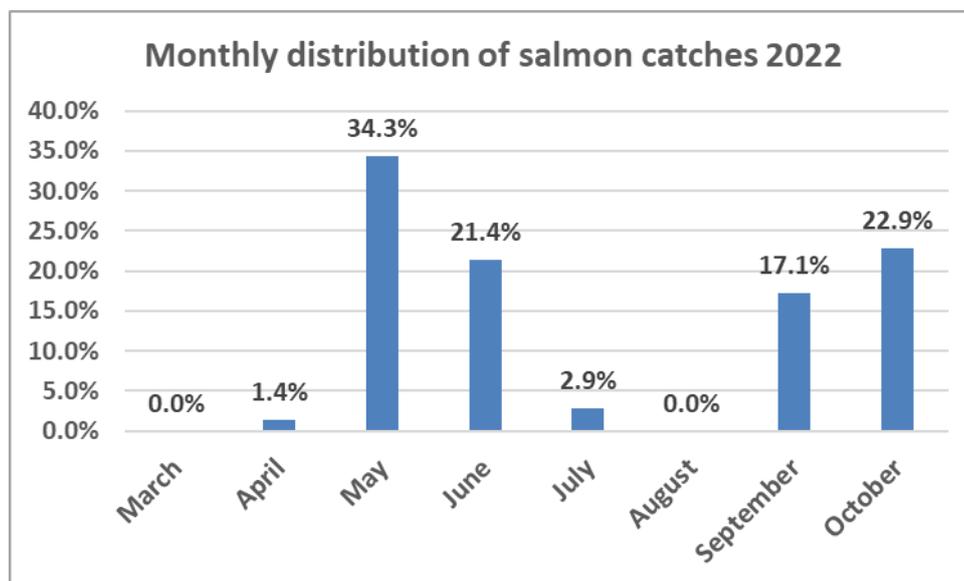
2.3 Over the last five years, the catch recorded at the Index fisheries has, on average, been 77 percent of the catch declared by anglers to NRW, ranging from 64 to 88 percent. The catch at the Index fisheries in 2022 can therefore be used to estimate the catch that will be declared to NRW this winter and reported next year. For the 2022 season, it is predicted to be about 92, between 80 and 110. This will be the lowest on record since 1871, see below. The last five years' catches have all been low, though 2020 was reduced by low fishing effort due to Covid restrictions. Fishing effort was also low in 2022 reflecting poor fishing conditions and generally low catches.

River Usk : Salmon rod catch, 1871-2022



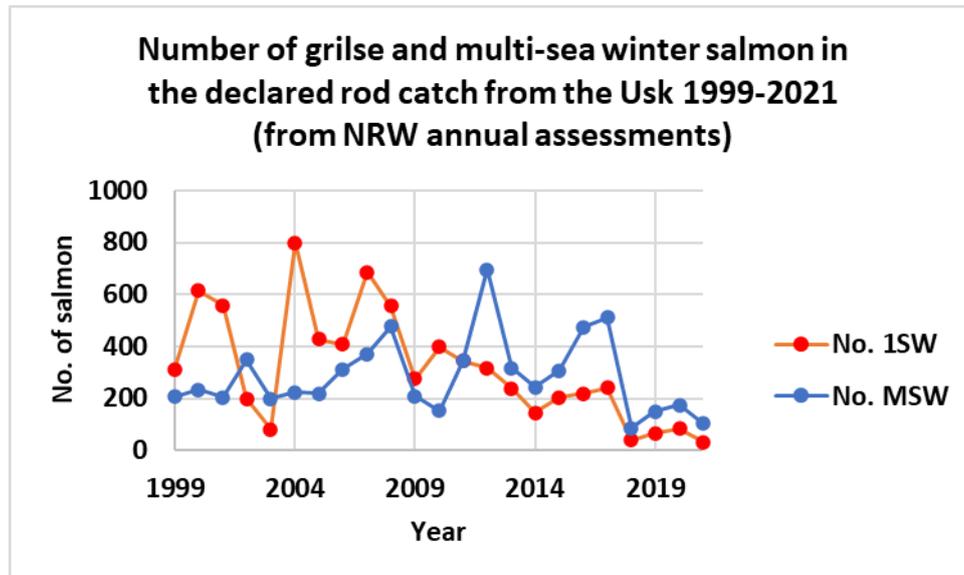
Above: The declared rod catch for the Usk was measured in the thousands in the 19th century and exceeded a thousand several times early this century before the recent decline. It is now measured in scores.

2.4 **Distribution of catch through the season:** The best fishing was in the spring. Over half the catch was taken in May and early June before the hot weather set in. Most of the rest came at the back end after flow and water temperature improved.

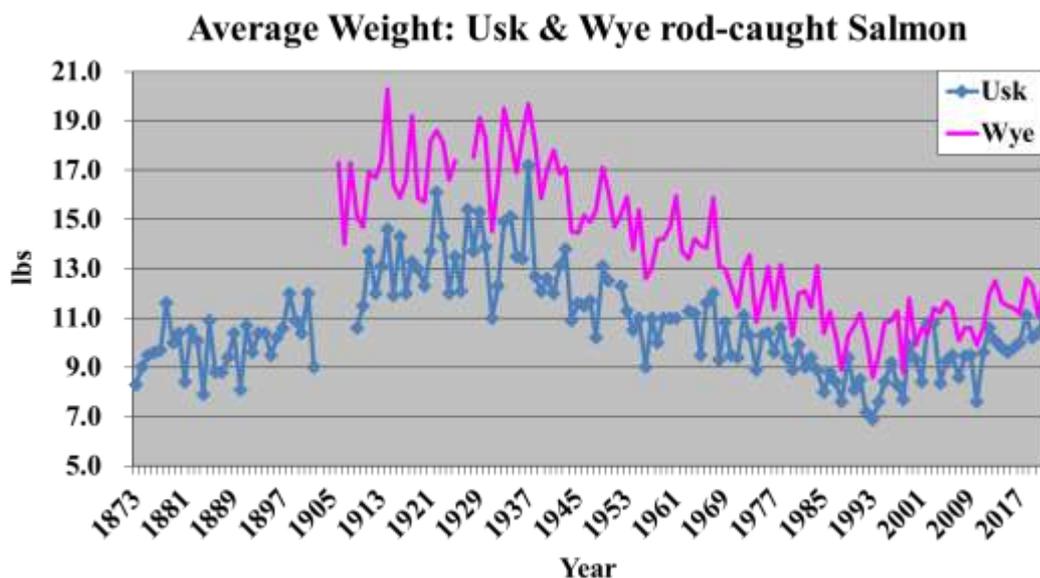


2.5 **The size of salmon caught:** The 70 salmon caught at Upper Llangybi, Lower Llangybi, and the Isca AC and Merthyr Tydfil AA fisheries had an average weight of 11.1 lbs. This continued the trend of increasing weight in recent years. The increase reflects the reduced proportion of smaller salmon, mainly grilse, in the catch. Grilse, which spend only one winter at sea, dominated the declared rod

catch in the early part of this century but, as shown below, the number reported has been falling. In contrast, the catch of larger, multi-sea-winter salmon had been increasing before the drop in catches in 2018.



2.6 The decline in grilse abundance is not confined to the Usk and reflects changes in the marine environment linked to climate. Such declines have occurred before and have been followed by a period of increased abundance and size of multi-sea-winter salmon, associated with fluctuations in the ocean climate. These changes are reflected in the average weight of rod-caught salmon, see below. The last period of low salmon abundance, both grilse and multi-sea-winter, was at the start of the last century. Runs were subsequently dominated by large, early-run salmon in the 1920s and 1930s. In 1937, the average weight of rod-caught salmon from the Usk was over 17lbs. Whether historical cycles will be repeated seems uncertain given the impact of man-made climate change on the North Atlantic.



2.7 The recent upturn in average weight, and prior to 2018, the abundance of multi-sea-winter salmon follow measures introduced in the 1990s to reduce the number of multi-sea-winter salmon killed in rod and net fisheries.

2.8 **Run-timing:** As in recent years, there seemed to be few fresh salmon, even grilse, caught after July. Presumably most salmon destined for the Usk now arrive in the Severn Estuary in late spring and summer, even if they may not enter the river immediately.

3.0 Adult stock status

3.1 The level and trend in estimated egg deposition over the last ten years is used by NRW to assess the current and future status of the salmon stock. For 2021, for the first time, NRW assessed the Usk as 'At Risk' of failing its management objective with a similar assessment predicted for 2026. For more detail see page 69 in:

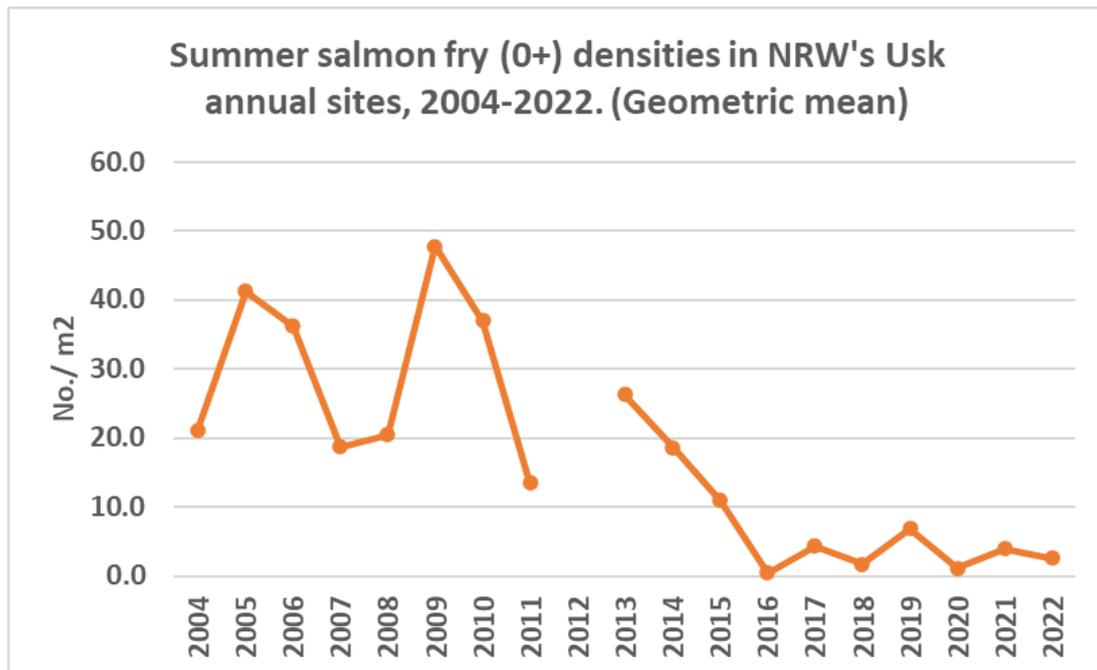
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1093963/SalmonReport-2021-assessment.pdf

NRW has used the predicted rod catch in 2022 (from 2.2 above) and the weights of salmon caught at index fisheries to make an initial assessment of the adult stock for 2022. Given the poor catch and downward trend in recent years, the Usk salmon stock will again be classed as at 'At Risk'.

5.0 Juvenile stock status

5.1 NRW has 13 electrofishing sites on the catchment upstream of Crickhowell that it has surveyed annually in the summer since the 1980s. These sites were selected to be important nursery areas for salmon. All are on the lower part of tributaries except one that is on the very top of the main river. This is not to suggest that the tributaries produce all the juvenile salmon in the Usk. The tributary sites were selected because of the sampling method used. The main river is, or should be, an important nursery area as well.

5.2 These annual surveys show that for the last five years, densities have been persistently low in these sites, having collapsed to a tenth of those before 2011.



Data from NRW, except 2020 when, due to Covid, the sites were fished by the Wye & Usk Foundation. No survey in 2012. Data for 2022 are draft.

5.3 The decline may reflect, to some degree, the decline in the grilse run, as indicated by the rod catch. However, judging by the rod catch of multi-sea-winter fish there was no overall shortage of adult salmon in 2016 or 2017 that would explain the lack of salmon fry in 2017 and 2018. That paucity of fry will be due to conditions in the river, rather than at sea, and requires explanation. The desperately poor runs of salmon since 2018 could account, in part at least, for low juvenile numbers from 2019 onwards but that does not mean that there weren't other factors affecting abundance.

5.4 NRW commissioned analysis¹ of juvenile salmon abundance in major Welsh rivers from 2001 to 2017. This identified that both extreme temperature or flows could deplete fry abundance. 2016 was a clear case. There were exceptionally high temperatures at spawning time and low temperatures when fry emerged, also high floods before and during the time when fry emerged from the gravel. All were followed by low numbers of fry in the summer. However, neither extreme temperatures nor flows seem to account for low salmon fry abundance in 2017 or 2018. Further analysis using data local to the Usk is still needed.

5.5 Sustained low abundance of salmon fry for the last six years at these survey sites does not bode well for future runs of adult salmon. However, other factors affect adult abundance including survival to smolt; conditions for smolt migration (good in 2021, poor in 2022); and survival at sea.

¹ Stephen D. Gregory, Victoria E. Bewes, Andrew J.H. Davey, Dylan E. Roberts, Peter Gough, Ian C. Davidson. 2020. Environmental conditions modify density-dependent salmonid recruitment: Insights into the 2016 recruitment crash in Wales. *Freshwater biology* 2020 v.65 no.12 pp. 2135-2153: <https://onlinelibrary.wiley.com/doi/10.1111/fwb.13609>

6.0 The state of the riverine environment

6.1 It is not just the salmon stock that is in trouble. Much of the river's ecology is degraded, as described in a report published last year:

<https://afonyddcymru.org/a-dying-river-the-state-of-the-river-usk/>

Since then, NRW's monitoring shows a further degradation in the ecological status of the river. The 2021 assessment found that 65 percent of the water bodies in the Usk catchment failed to reach even 'Good Ecological Status', compared to 50 percent in the previous assessment.

6.2 The main reason for water bodies failing to reach Good Ecological Status is poor fish populations, principally salmon and trout.

Acknowledgements

Thanks to all who contributed information, especially those who provided catch data for their fisheries so promptly; to the Wye & Usk Foundation for their 2020 survey data; and to NRW for various data and stock assessment. Particular thanks to Andrew Gott (NRW) for providing the 2022 juvenile data and to Paul Greest and Ian Davidson (NRW) for turning round the stock assessment so quickly.