



The
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Jamie Carruth
Monitoring team

2024 Electro fishing season

Investigate

Determine

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Electrofishing Summary



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- 150 sites across the Wye and Usk.
- Area covered around 100km in 3 directions from Talgarth.
- 5-minute riffle surveys.
- Improves understanding of salmonid spawning success trends.
- Informs future work.

Investigate

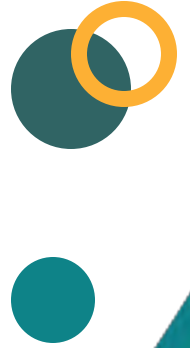
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Contents



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- High level breakdown of Wye & Usk survey salmon fry results.
- More detailed discussion on what we think caused the good and the bad.
- Will lead us into what we need to target and how.

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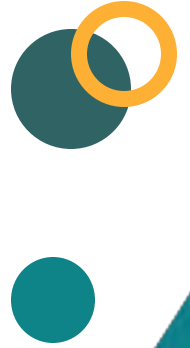
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Wye 2024



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Fantastic Irfon tributary – Garth Dulas

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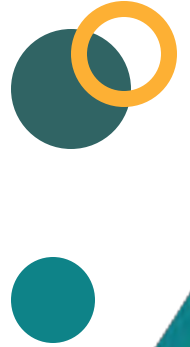
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Mainstem Wye



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- Exceptional results.
- Near-record numbers seen across almost entire surveyable main-stem Wye.
- Blows any results seen in the last two decades out the water.

Investigate

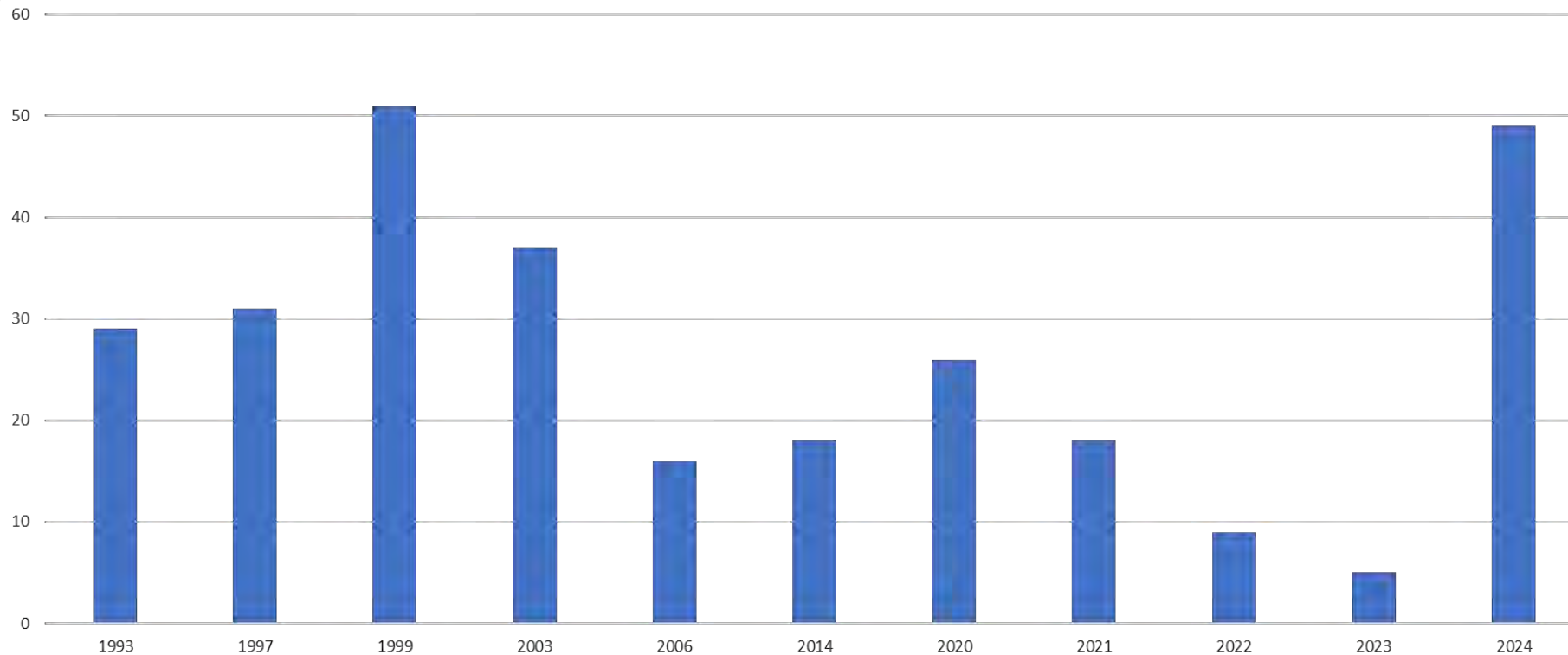
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Mainstem Wye Average Salmon Fry – Historic results vs recent years



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Major Wye Tributaries



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- Largely followed the same pattern as the mainstem Wye.
- Irfon, Ithon, Elan, Edw fantastic.

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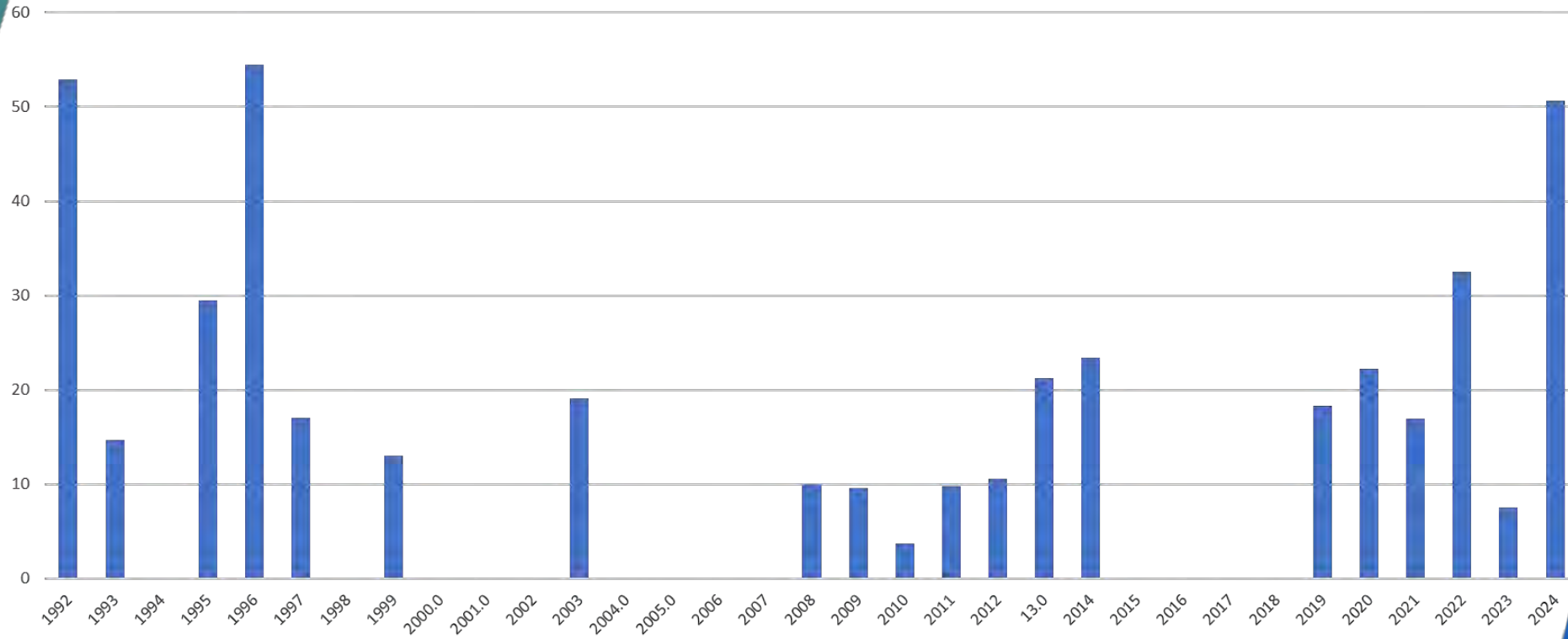
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Irfon average Salmon fry over 30 years



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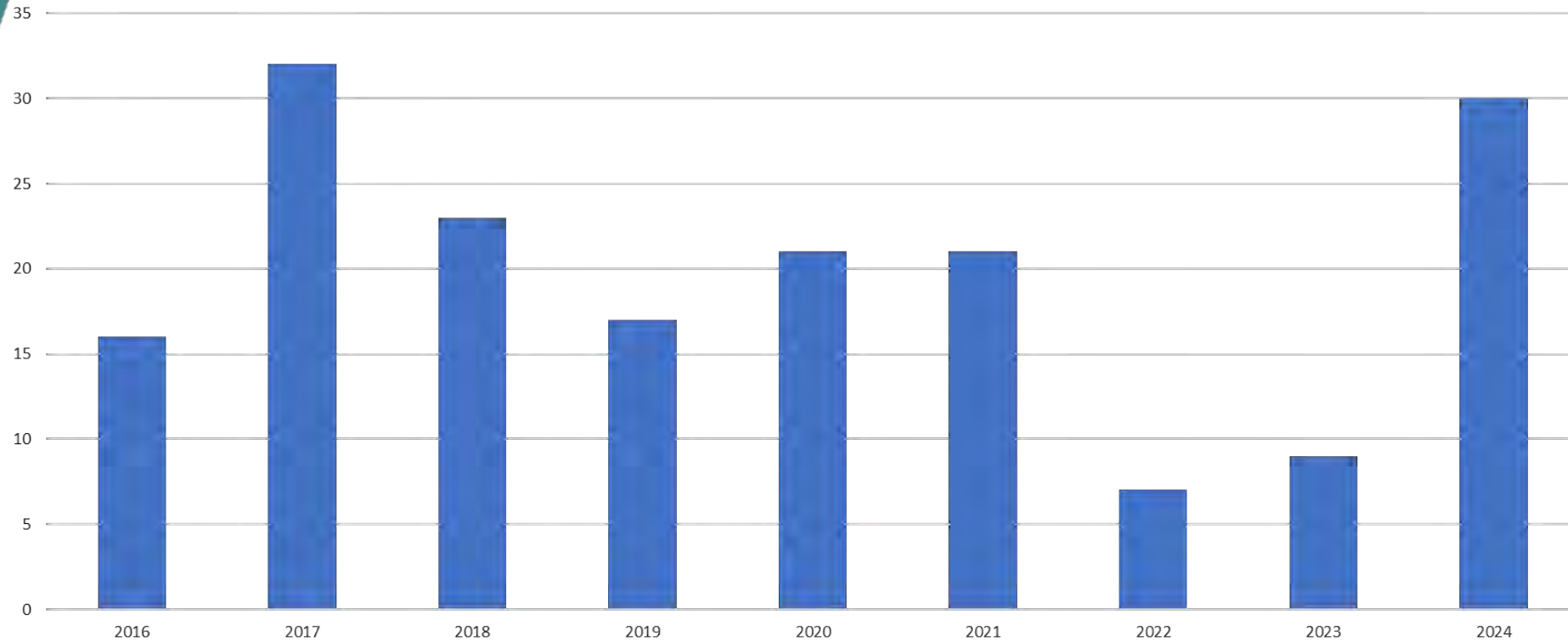
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Ithon – 2016 to 2024



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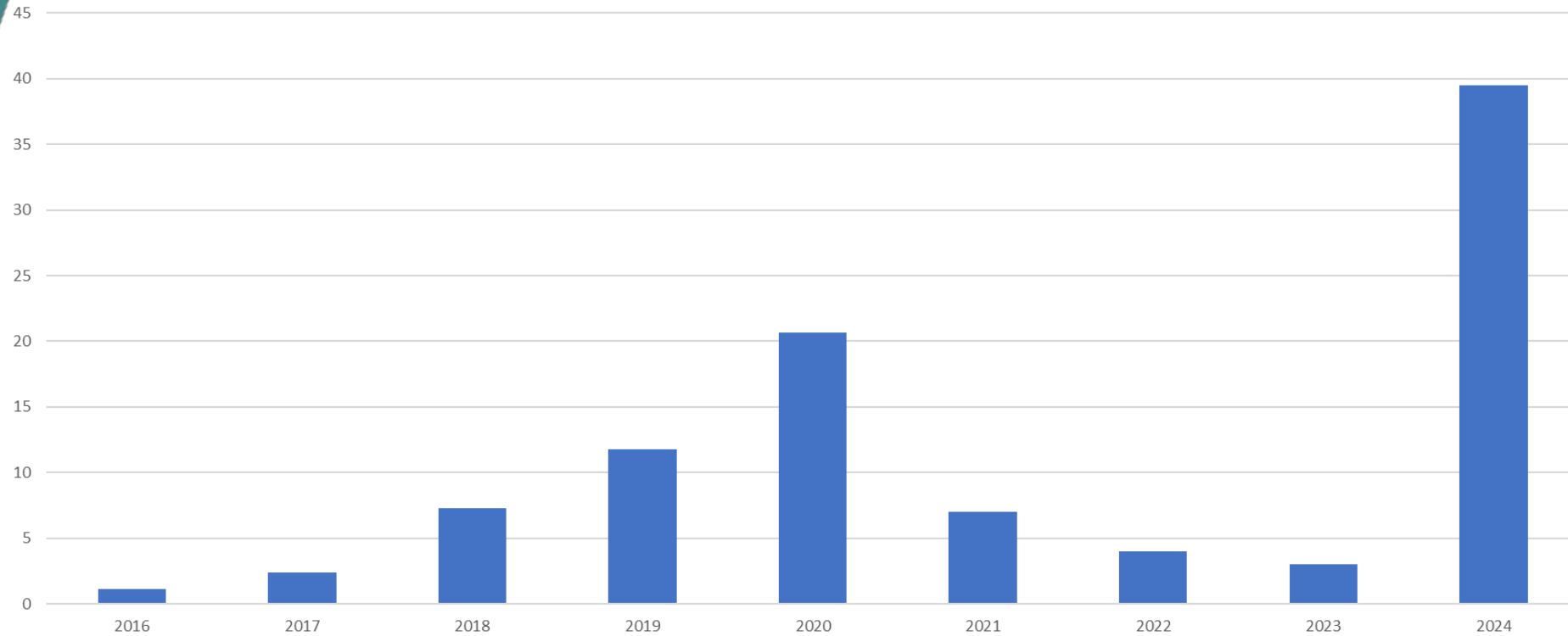
Determine

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Elan – 2016 to 2024



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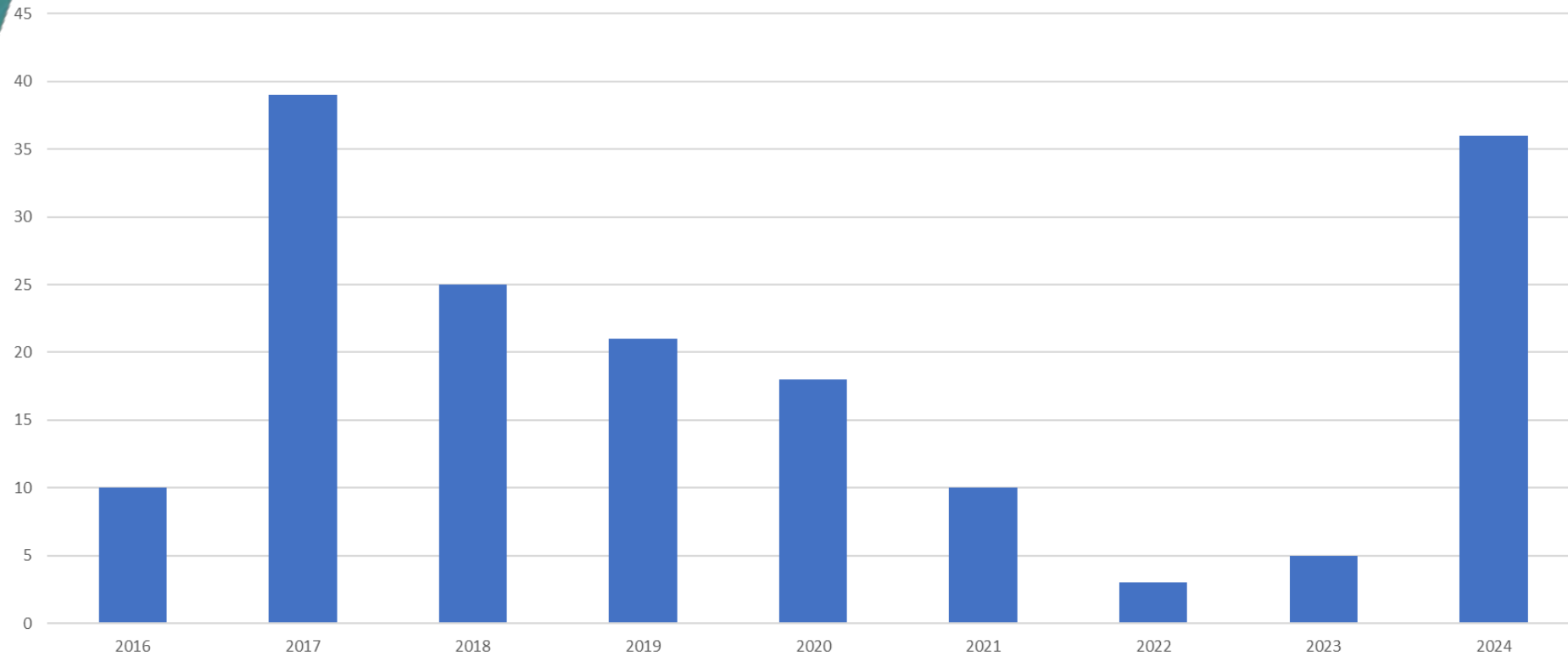
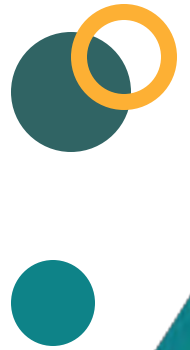
Determine

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Edw – 2016 to 2024



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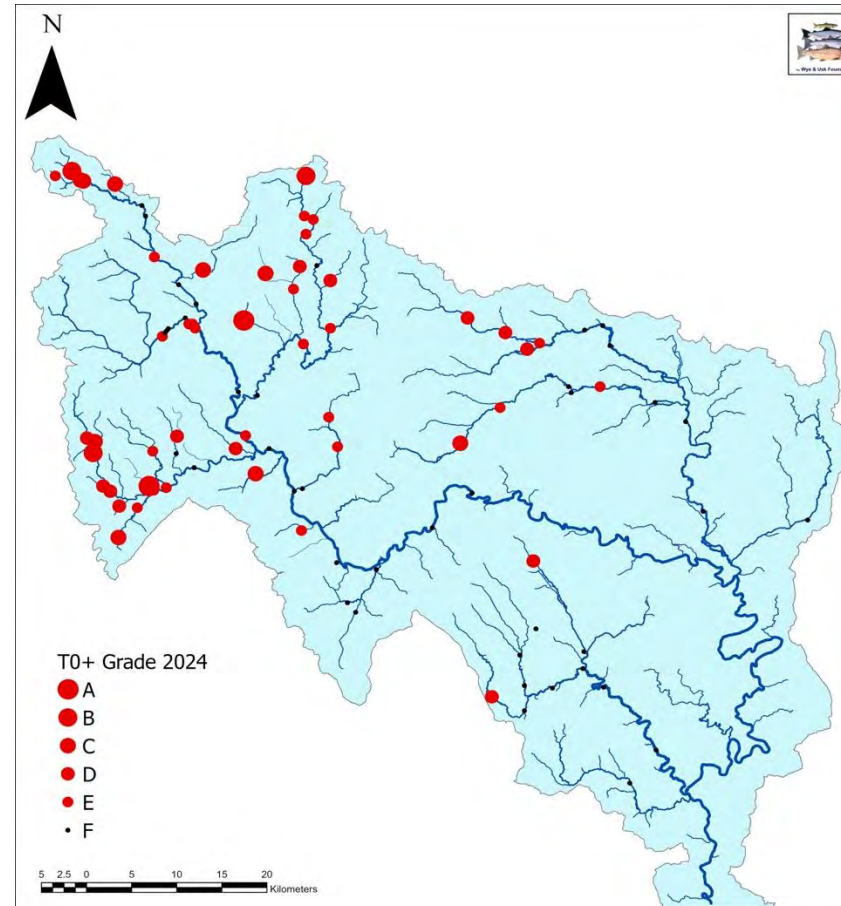
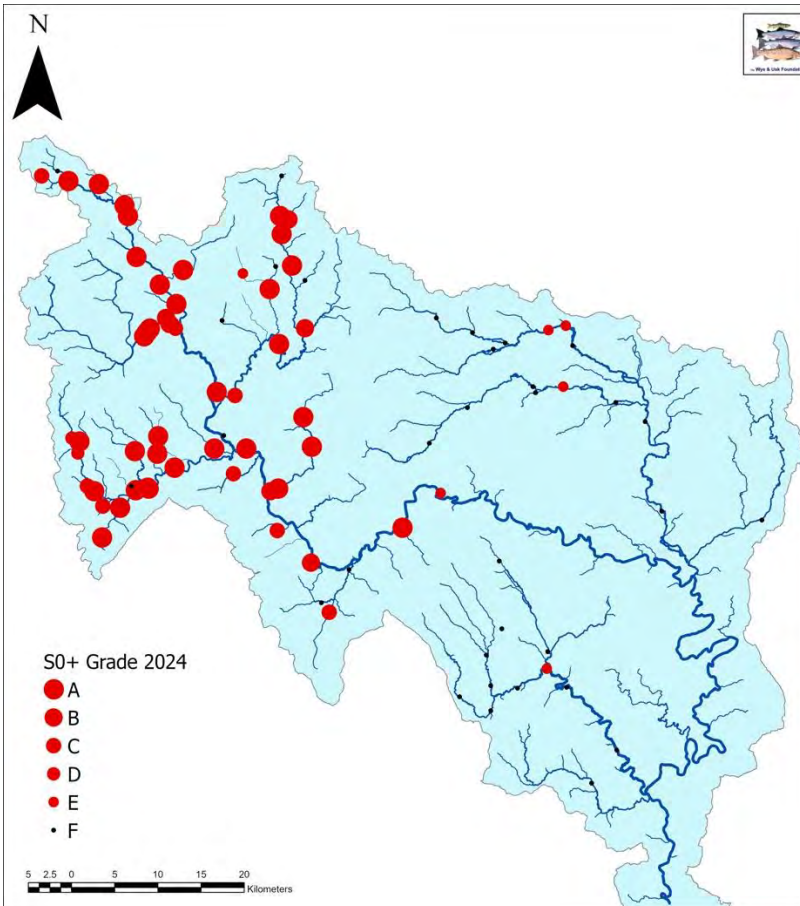
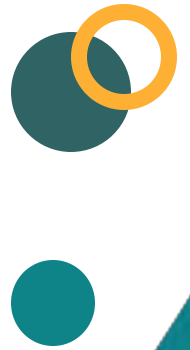


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All positive, except...



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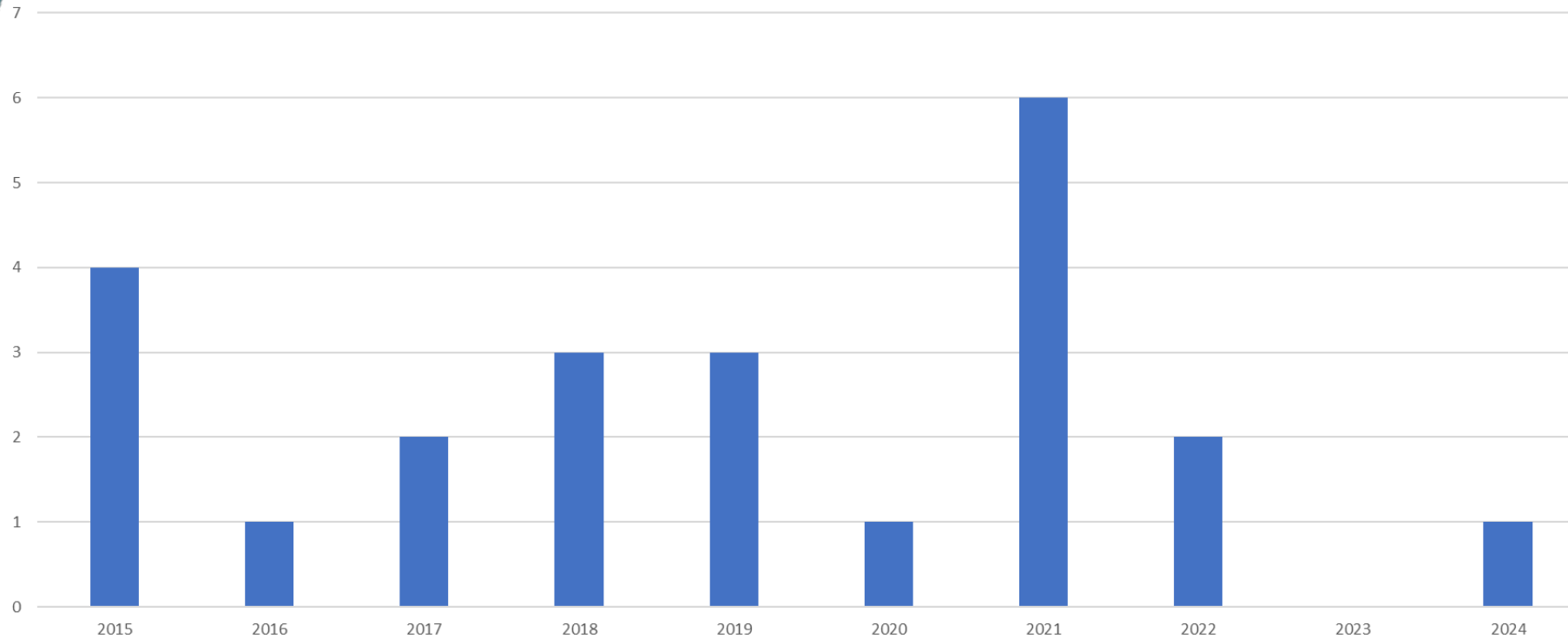
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Lugg – 2015 to 2024



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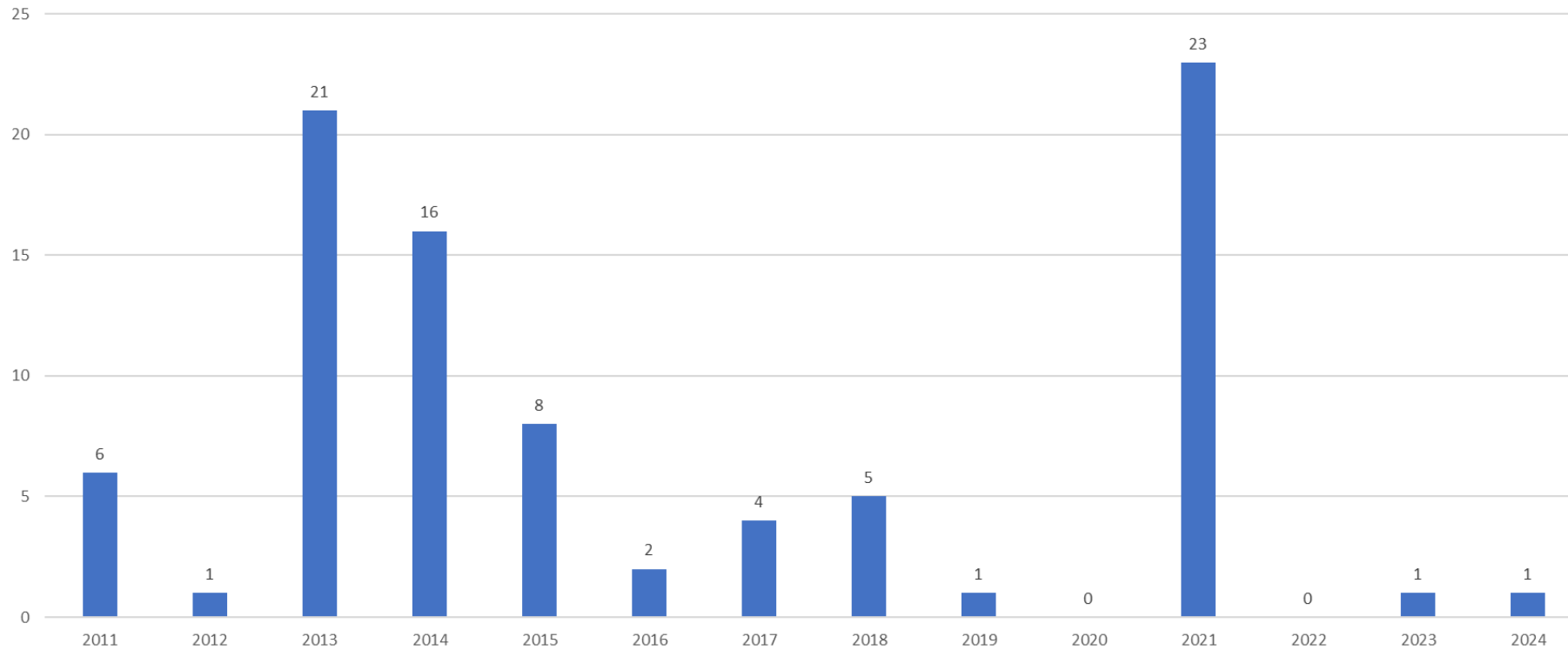
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Arrow – 2011 to 2024



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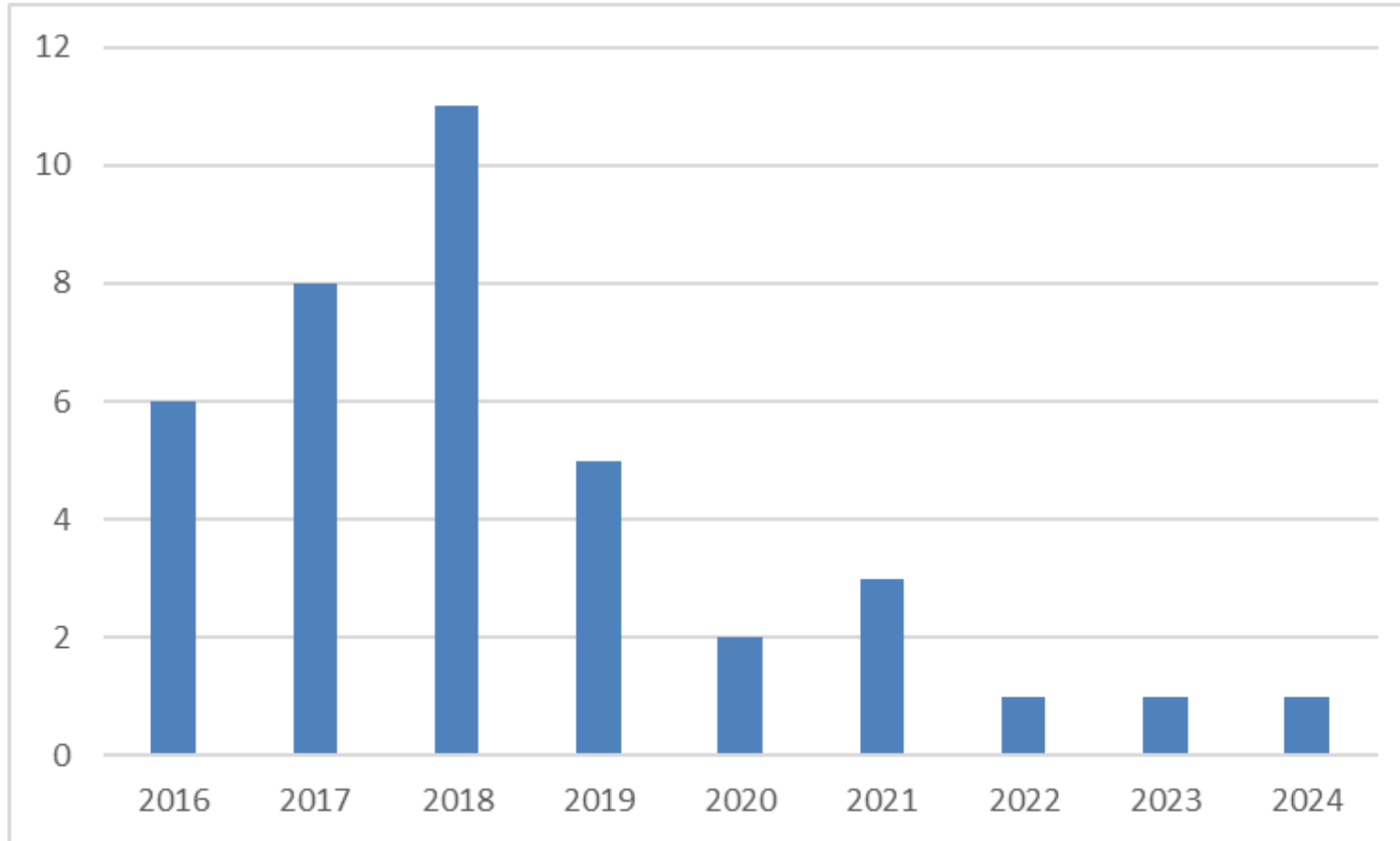
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Monnow Catchment – Trout 2016 to 2024



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Usk 2024



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Favourite site of the year: upper Senni



This site's catches

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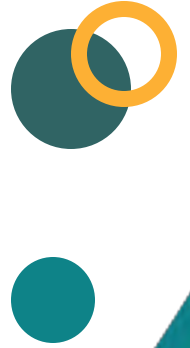
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Usk Tributaries Above Brecon



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- By far the best year since our comprehensive electrofishing programme began in 2016.
- Fry numbers bounced back to comparable levels to 2010–2015.
- Stand-out tributaries were the ones we'd expect: Crai, Senni, Cileini, Bran, Yscir.

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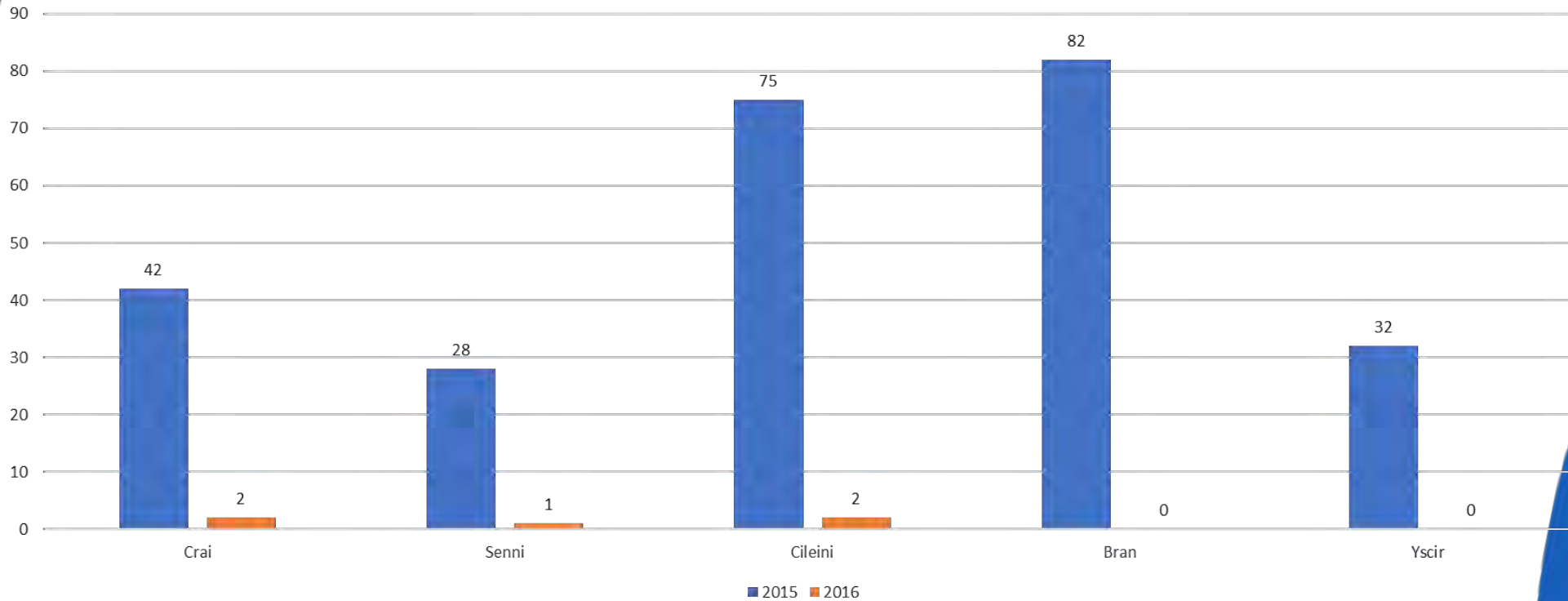
Upper Usk Tributary Average Salmon Fry 2015 vs 2016



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Upper Usk Tributary Salmon Fry 2015 vs 2016



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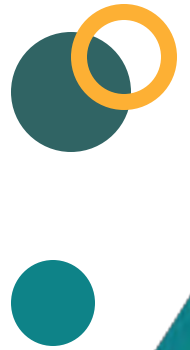
Determine

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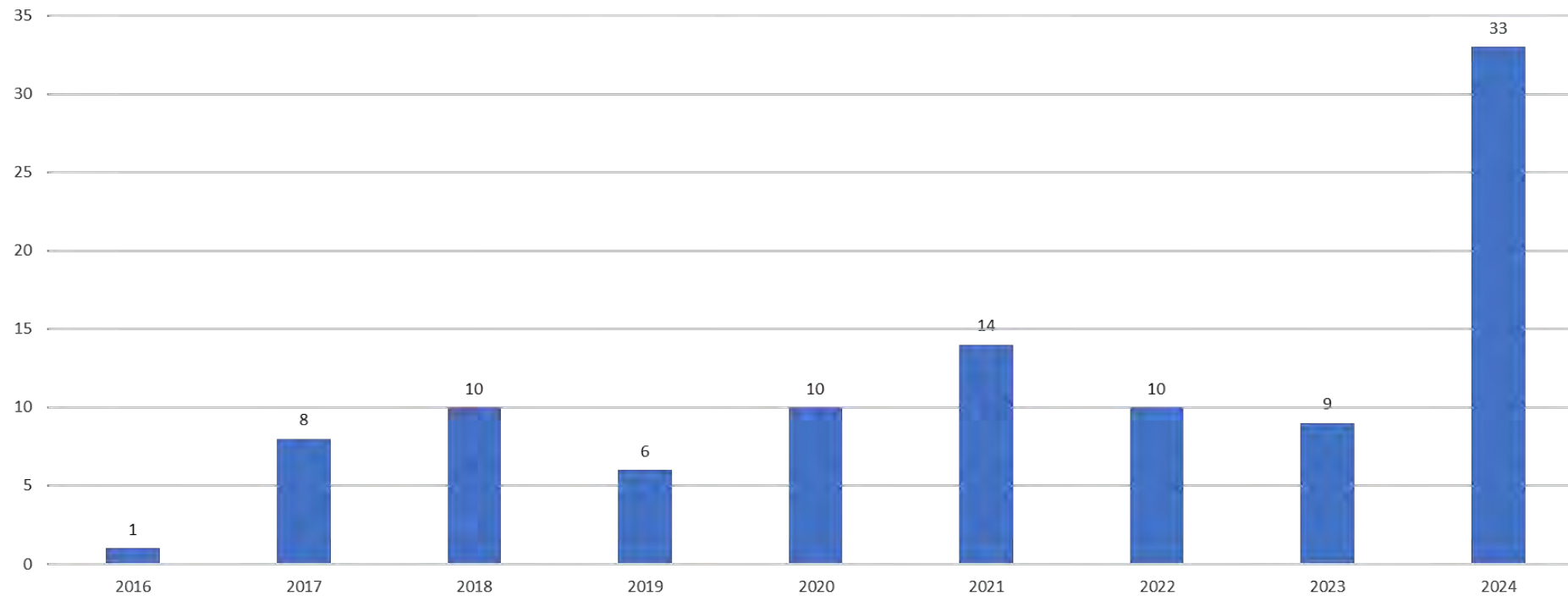
Senni Average Salmon Fry Catch 2016-2024



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Senni Average Salmon Fry Catch Since 2016



Investigate

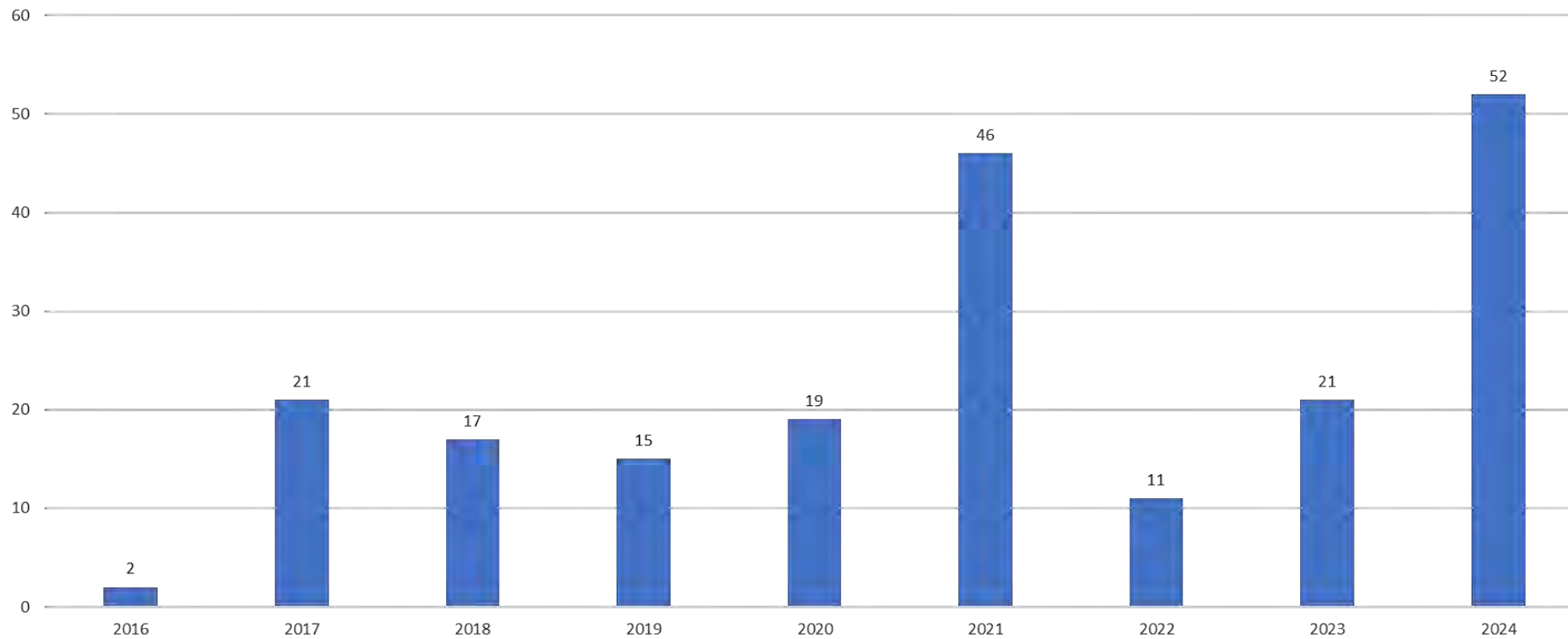
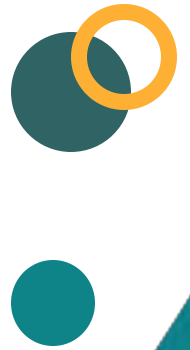
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Crai Average Salmon Fry Catch 2016-2024



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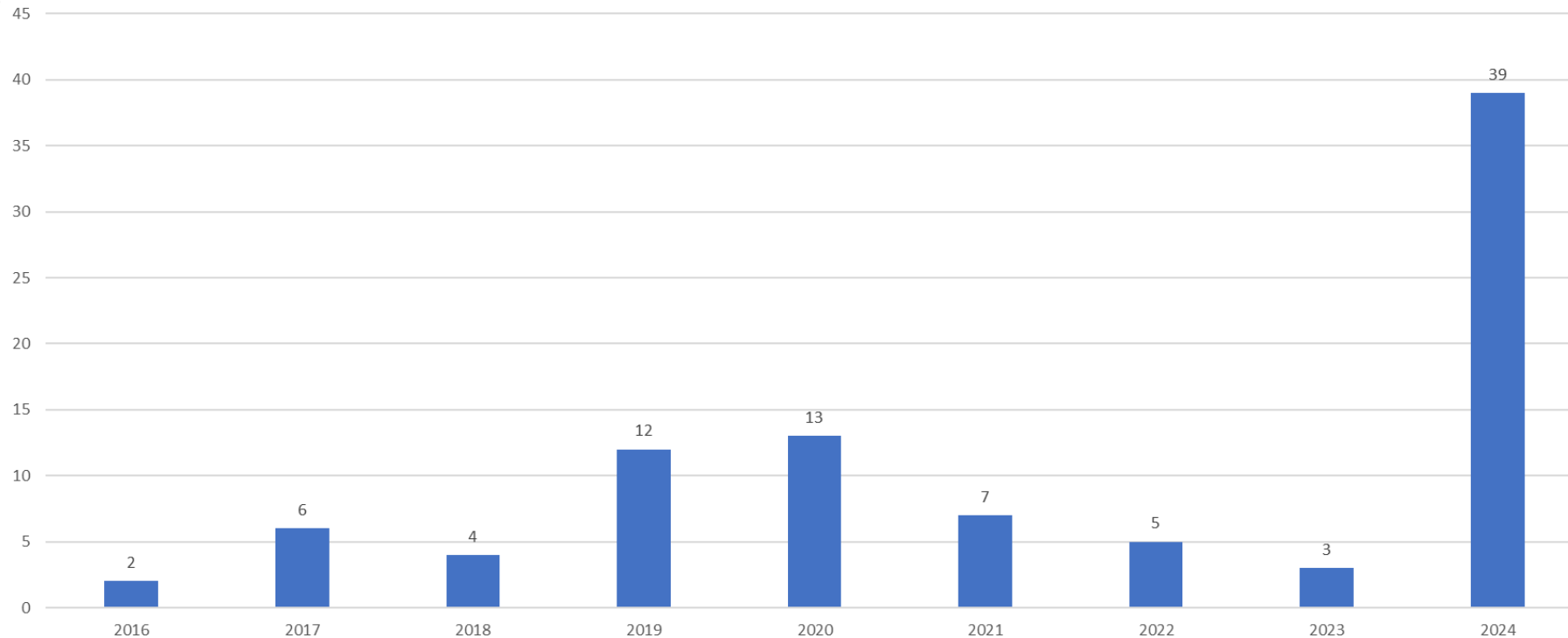
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Cileini Average Salmon Fry Catch 2016-2024



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Determine

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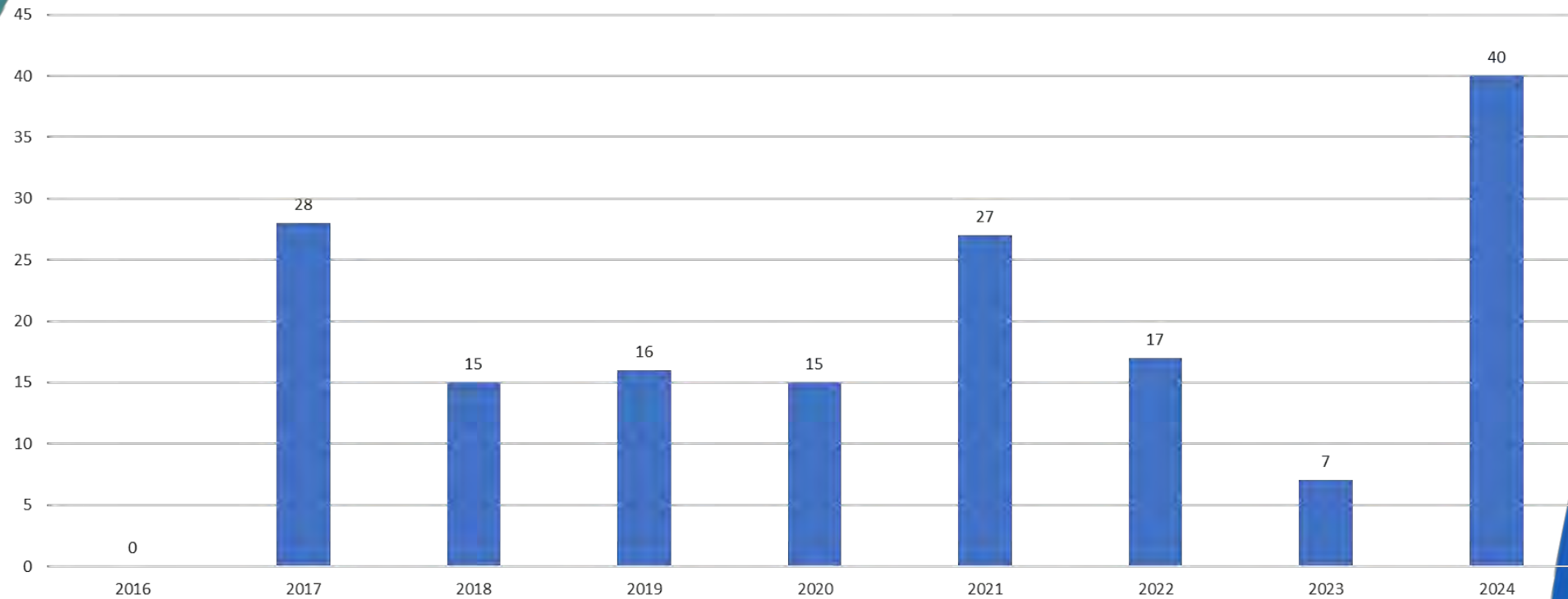
Bran Average Salmon Fry Catch 2016-2024



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Chart Title



Investigate

Determine

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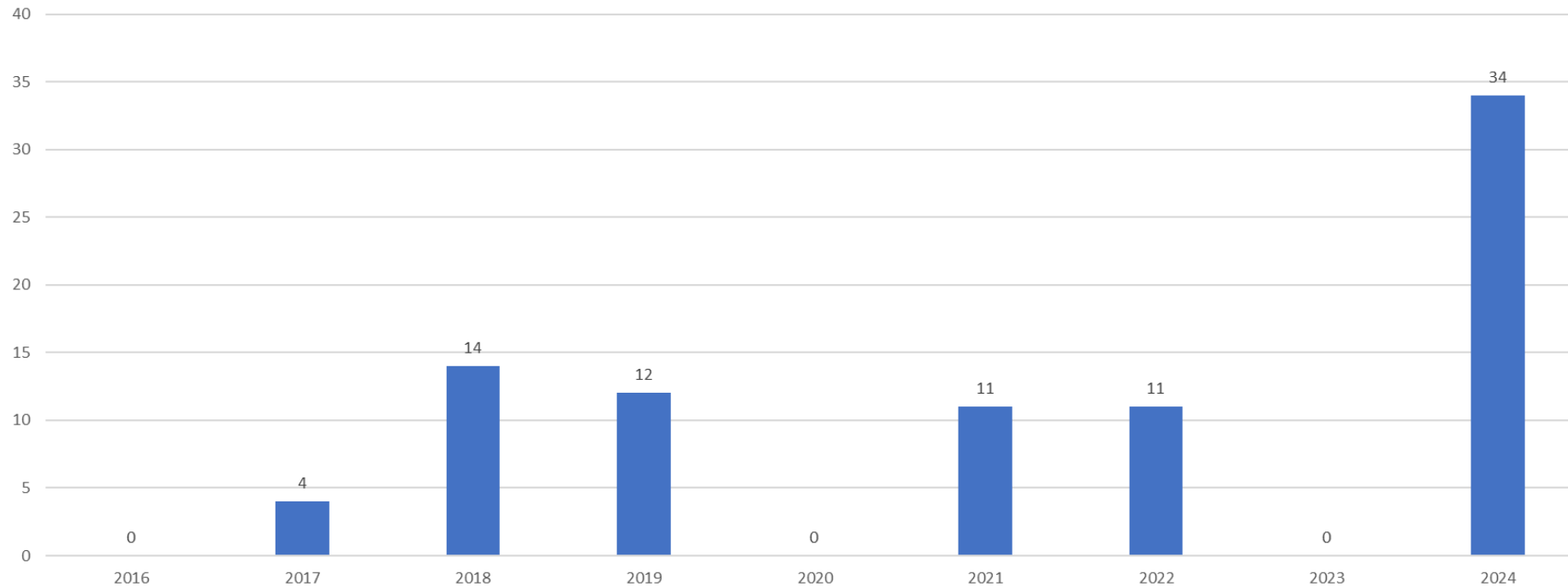
Yscir Average Salmon Fry Catch 2016-2024



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Chart Title



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Usk tributaries – Brecon to Crickhowell



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- Main Tributaries in this area: Tarrell, Honddu, Rhiangoll, Cynrig and Gwryne.
- All these tributaries dropped off at various times between 2010-2020 and have remained poor, including 2024.

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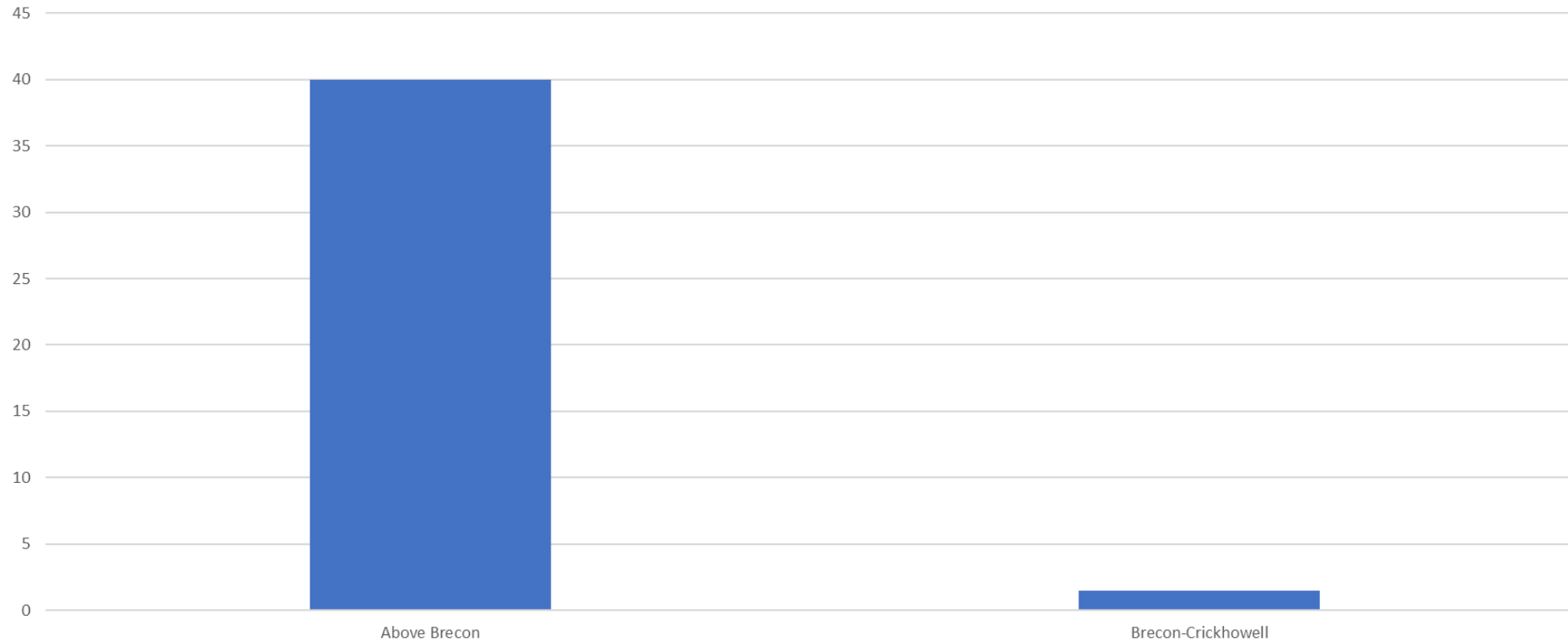
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2024 Average Salmon Fry Catch – tribs above Brecon vs Brecon-Crickhowell



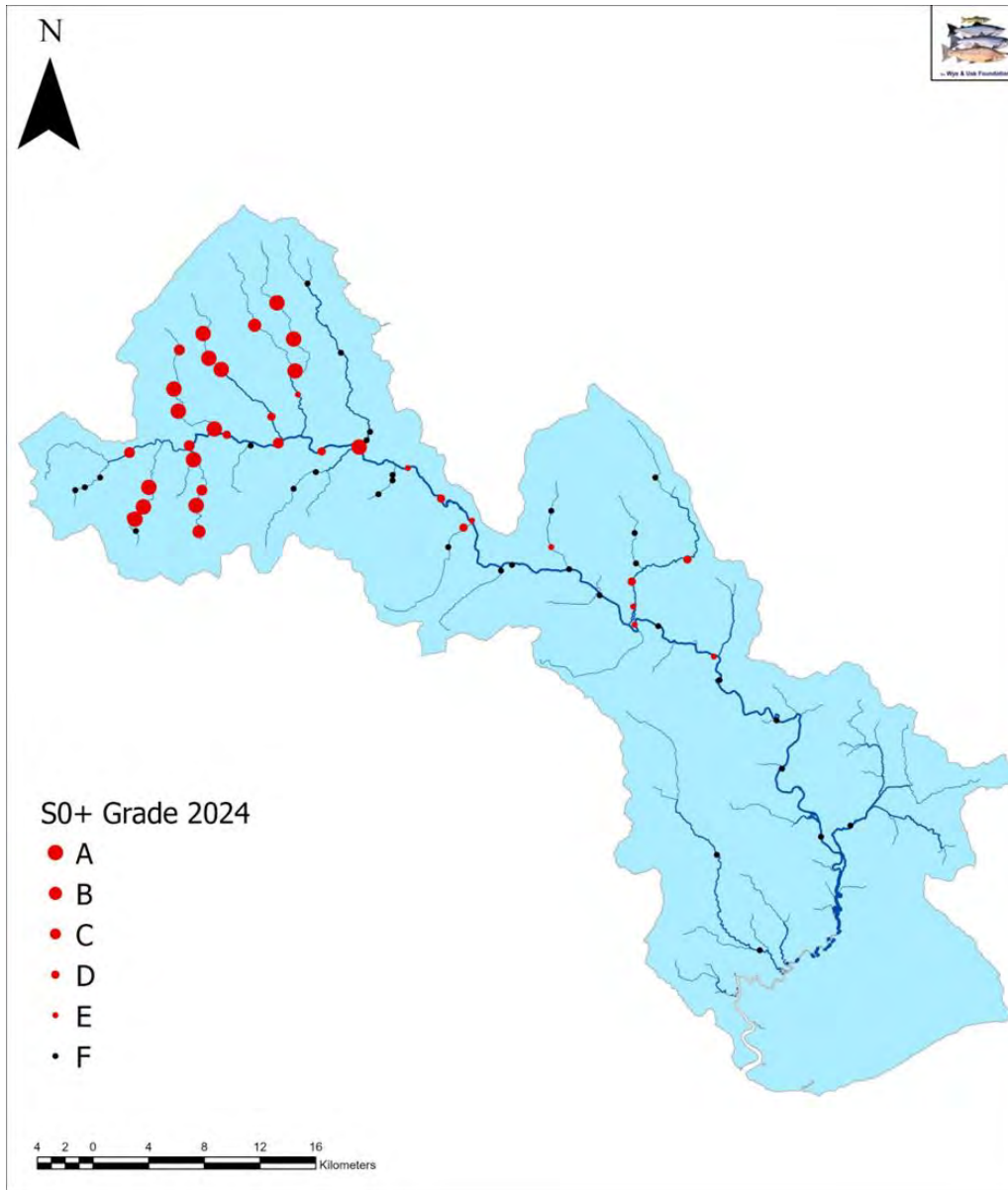
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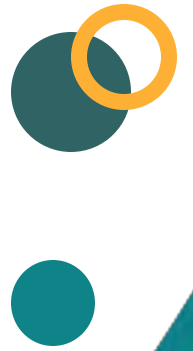
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Mainstem Usk



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- Bounced back from disastrous year last year.
- Fairly similar to last decade but still well below historic numbers, largely due to reduction in successful spawning below Talybont.

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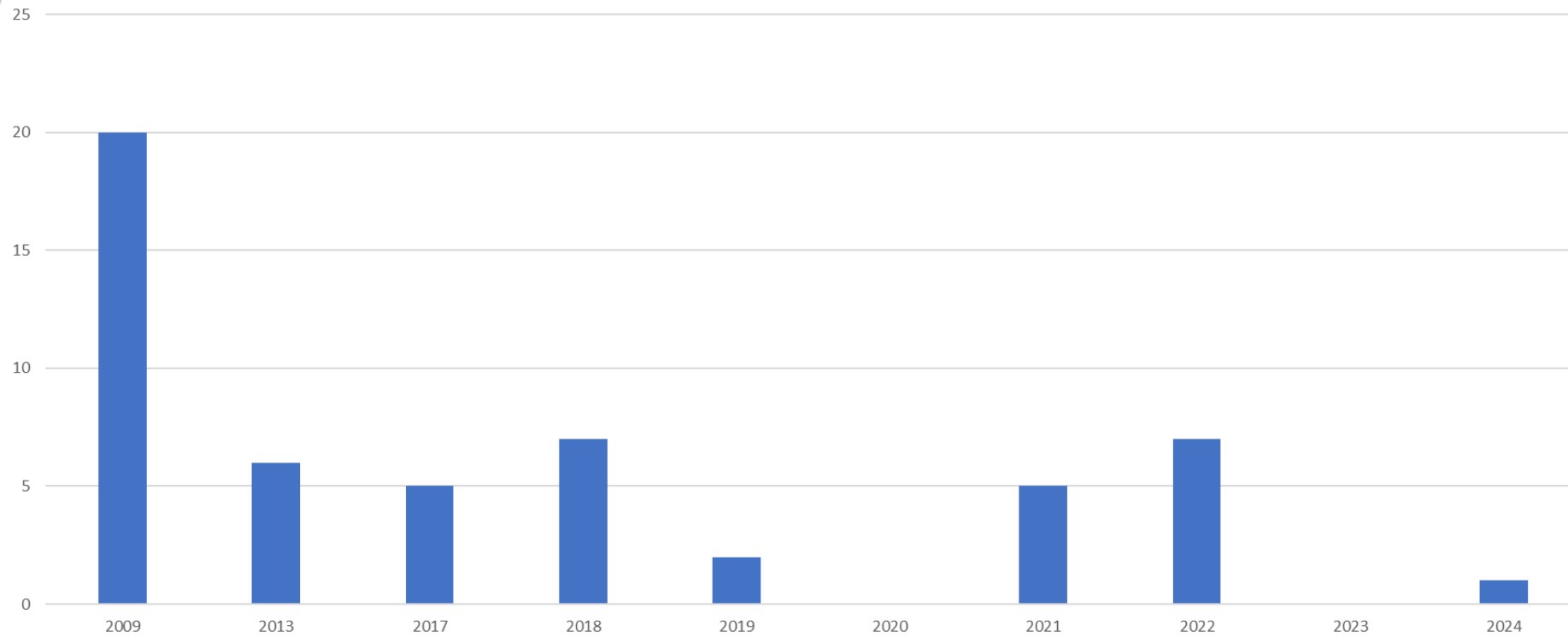
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Average salmon fry catch below Talybont



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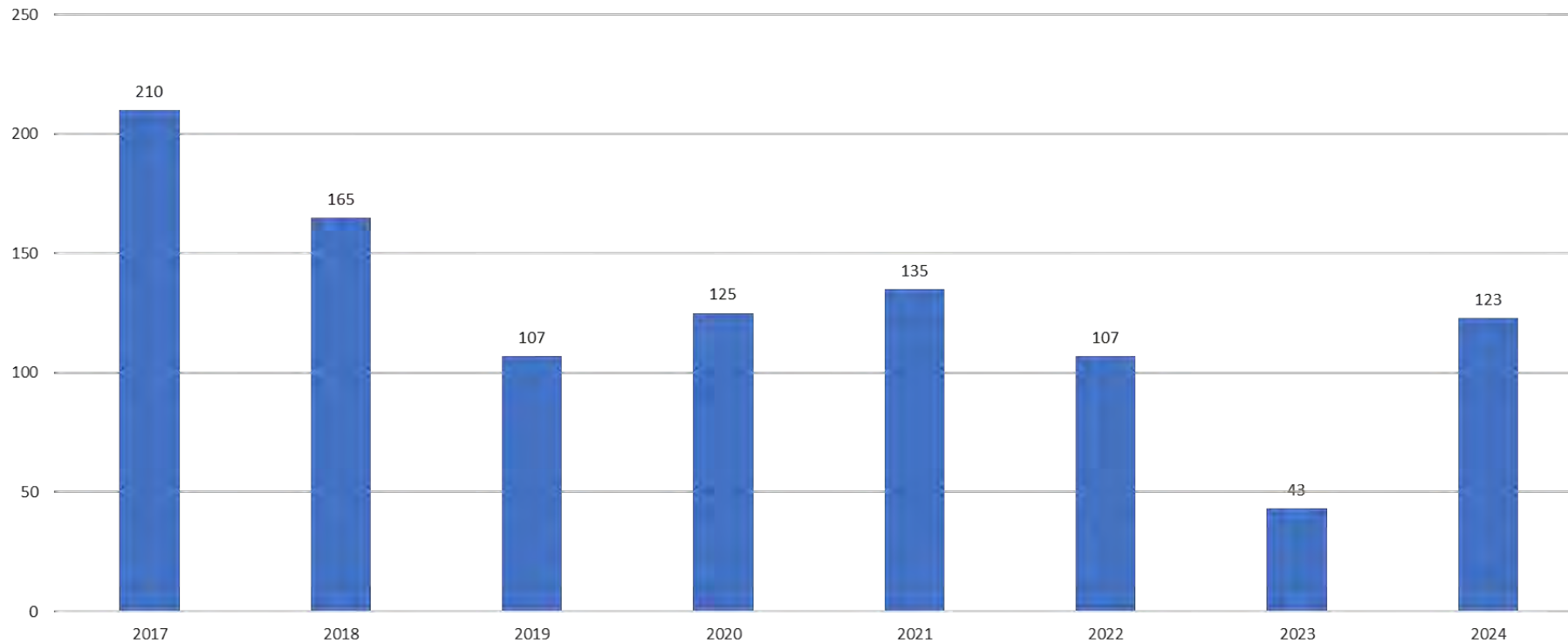
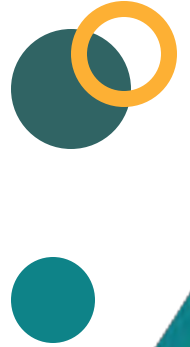
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Mainstem Usk juvenile salmon catch 2017-2024



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Wye & Usk 2024 – Overall Patterns



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- We saw similar patterns on both the Wye and Usk.
- Many parts of both catchments were fantastic, bouncing back to near-record levels of salmon fry.
- However, both catchments had notable areas which had not shown that same response. Lugg, Arrow, Monnow on Wye. Middle/lower Usk and its tributaries.
- Usk catchment scale monitoring has given us a plethora of information to contextualise electrofishing results.
- Due to the consistency in patterns between both catchments, we can apply conclusions from Usk to the Wye.

Investigate

Determine

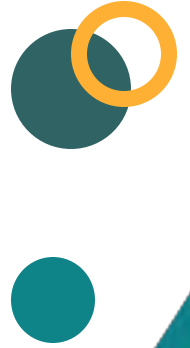
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Why was the bad, bad?

Likely case-by-case



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- Disappointing Usk tributaries dropped off at different times between 2010 and 2020. Points to different reasons for drop-off?
- Enough data to start to paint a picture.
- Honddu – Citizen Science indicates notable ammonia and turbidity spikes. Issues with migratory barriers.
- Rhiangoll – Citizen Science and sonde indicates very high winter ammonia and turbidity spikes.
- Grwyne – Unidentified migratory barrier (now removed). Citizen scientist identified extreme ammonia spikes out of the Grwyne Fechan.
- Main-stem Usk drops off where these tributaries flow in.

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Why was the good, good? More 2023 adult Salmon than we thought



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- As unlikely as it seems, more salmon must have run these rivers than 51 and 238 rod catch on Usk and Wye respectively suggests.
- Using 8% catch rate, 638 Usk and 2,975 Wye salmon. Simply cannot have produced the widespread, high numbers of 2024 salmon fry.
- Usk fish counter trialled for two weeks in June and two weeks in October. Counted 414 salmon entering the river in those four weeks.
- For 65% of total salmon suggested by rod catch to have run during <15–20% of period we know salmon run the river, with good water levels throughout, extremely unlikely.
- 2021 had good spring flows leading to 84% tagged wild smolt survival (vs 24% in 2022 with poor spring flows). 2SW salmon predominant in Wye and Usk. 2024 fry would be their progeny.

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Why was the good, good? Excellent egg-fry survival



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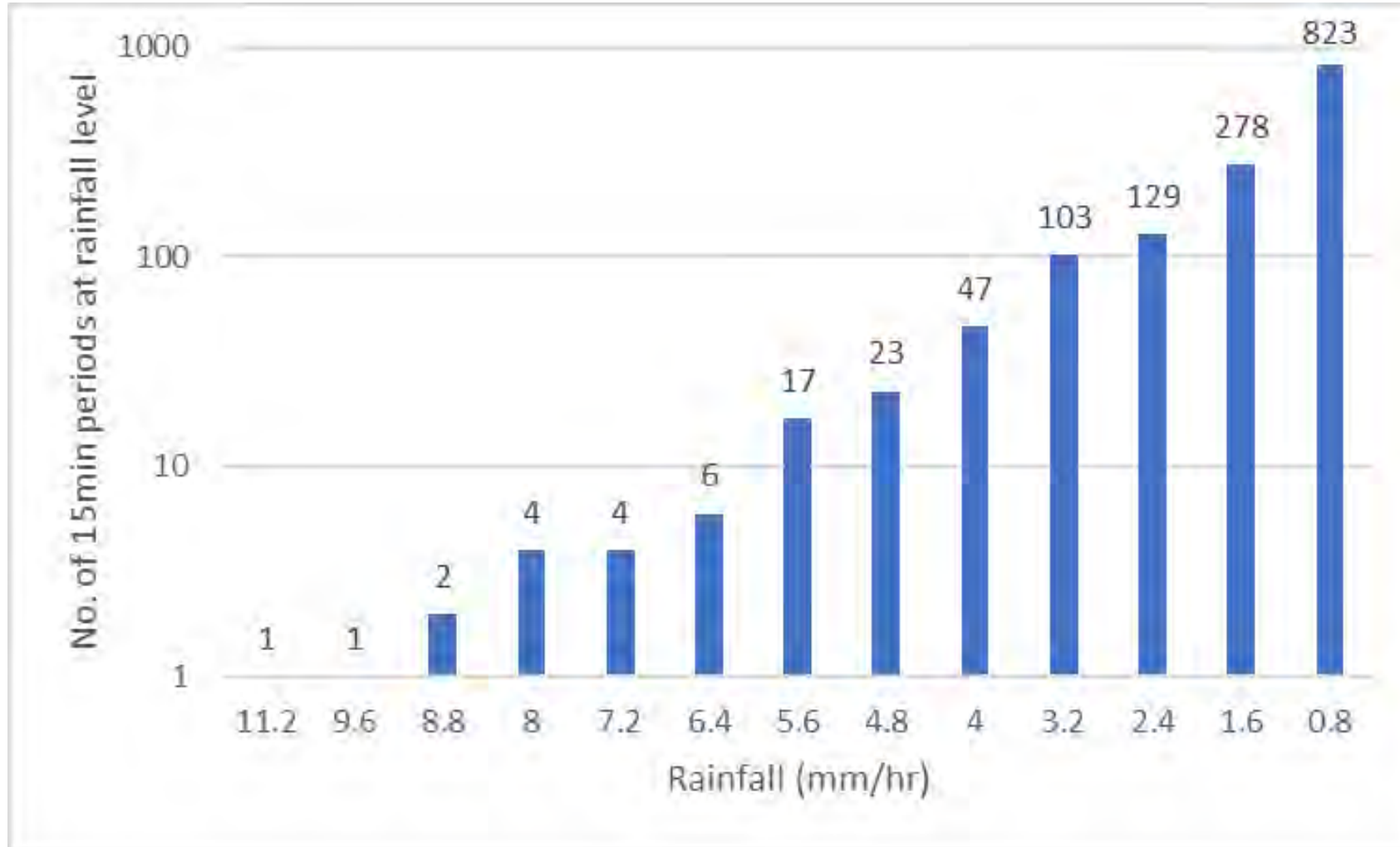
- We have seen decent spring flows/smolt survival in some other recent years without the same resulting fry numbers as this year. Points to high survival of eggs last winter to fry this summer.
- Many sub-catchments across two separate rivers affected. Has to be caused by a shared major factor.
- Points to weather conditions from Autumn 2023 to Spring 2024.
- Temperature or rain?
- Tested 'degree day' theory using sonde and citizen science temperature data. Possibly cooler winter/lower water temperatures? No evidence, in fact, winter was warmer.
- Tested winter rainfall using historic rainfall and river level data. Less extreme rainfall last winter?

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2023 Winter Rainfall



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Why was the good, good? Excellent egg-fry survival



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- Despite even higher than average total winter rainfall, the rainfall was exceptionally soft.
- Which led to maximum infiltration, reduced soil-runoff/turbidity.
- Turbidity damages gills, compacts gravel and covers redds.
- Supported by citizen science data. Areas without major turbidity spikes had great fry numbers. Areas with high winter turbidity remained poor.

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What we have learnt



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- We need to get to a place where:
- Smolt survival doesn't drop from 84% to 24% when there is low spring rainfall.
- Catchments are resilient enough that, even with more extreme rainfall, turbidity levels remain under control.
- Currently, we need the luck of perfect spring flows and exceptionally soft winter rainfall to re-create the conditions which resulted in this year.
- After the break, Simon will be talking about how we can allow the catchments to consistently re-create these conditions, even when tested by increasingly volatile and unpredictable weather.

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