

Changes in otter diet in South Wales 1984-2016

NRW Evidence Report No:943b

Addendum to report:

“Changes in otter diet in South Wales 1984-2016. NRW Evidence Report Series Report No: 943, 38pp, NRW”: a 2024-25 update

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This addendum provides an update to the report *NRW Evidence Report Series Report No: 943, 38pp*, by presenting new data from the same six catchments, collected in 2024-2025.

Methods

The same methods were employed as in the original report and are only described here where they differ.

Spraints were collected during the 7th Otter Survey Wales in 2024 and 2025 from 290 sites across the six river catchments (Table 1). Previously we restricted analysis to spraint collected May to September to avoid variability resulting from seasonal patterns in otter diet. This was not possible for the 7th OSW and so spraint were collected between July 2024 and June 2025.

Clean up of spraints was completed by Cardiff University students. Identification of prey remains was undertaken by Dave Groves, co-author of newly published Mammal Society reference material on the topic (Ramsey and Groves, 2026). Two samples were excluded because they were considered likely to be bird pellets rather than otter spraint.

Data were grouped to match the categories used in the previous report, allowing comparison over time. Differences in diet between catchments and years were assessed using relative frequency of occurrence (RFO). The spatial distribution of samples differs from previous surveys and may influence comparisons (see Discussion).

Table 1 Sample number across six catchments

Hydrometric area	Number of OSW survey sites	Number of spraints analysed from 2024-25 surveys
Cleddau	67	41
Severn	101	62
Teifi	75	54
Tywi	90	54
Usk	62	37
Wye	122	42
TOTAL	517	290

Results

Overview of prey remains in spraint collected 2024-25

All 290 samples had some identifiable remains. As in other years, otter diet was dominated by fish, with a small proportion made up of other prey types (amphibians, mammals, birds, and crustaceans) (Table 2). Overall, Bullhead were the most frequently recorded prey type (61% of samples) followed by salmonids (45% of samples) with amphibians and minnows also occurring frequently (27% and 23% of samples). Once presumed a favoured prey type, eels were only recorded in 16% of samples, at similar levels to crayfish, birds and stickleback (15%, 11% and 11%). Other prey types including cyprinids, mammals, marine fish and other fish were infrequently recorded.

One record of a marine fish from the cod family (Gadidae) was made, which had not been recorded in previous years (1984-85, 1991, 2015-16).

Table 2 Prey types recorded and the number of spraints containing each prey type

Prey type	Details	Number of spraint containing prey type	% of spraints containing prey type
Bullhead	<i>Cottus gobio</i>	178	61%
Salmonid	Species not identified	130	45%
Amphibian	Anurans (73), Newts (9)	77	27%
Minnow	<i>Phoxinus phoxinus</i>	67	23%
Stone Loach	<i>Barbatula barbatula</i>	61	21%
Eel	<i>Anguilla anguilla</i>	46	16%
Crayfish	Species not identified, N.B. it is not possible to distinguish remains of crayfish species and shore crab	44	15%
Avian	Species not identified	33	11%
Stickleback	Species not identified	31	11%
Other Cyprinidae	Most not identified to species, 1 Gudgeon	14	5%
Mammal	Most not identified to species, 1 water shrew	12	4%
Other fish	Pike (3), Perch (4), river lamprey (2) and other non-identified fish (3)	12	4%
Marine fish	Rockling (1) flatfish (4), Gadid (1) Goby (1).	7	2%

Changes to otter diet over time

Across South Wales, the results suggest a continued shift toward a more varied diet, with a broader range of prey types than in previous years, and a more balanced frequency of occurrence rather than reliance on a small number of fish species (Figure 1).

The nature and extent of change differ between catchments. For example:

- In the Usk, the proportion of salmonid prey in otter diet was lower in 2024-25 than in 2015-16. In other areas the proportion of salmonid prey appeared relatively stable.

- Eel occurrence in otter diet has continued to decline in the Tywi and Cleddau catchments, but slightly increased in the Teifi, Wye and Usk.
- Eels were not recorded on the Wye and Usk in the 2015–16 but were present in both catchments in 2024-25.
- Crayfish were recorded for the first time in Teifi, Tywi and Usk, and increased in the Wye and Severn.
- Minnow increased on the Cleddau.

Comparison with electrofishing data

Preliminary examination of NRW electrofishing records for these six catchments for 2024-2025 revealed largely similar patterns in fish species presence between electrofishing and otter diet. Differences between the two datasets in occurrence of fish species in each of the six catchments were:

- Eel were recorded in the Severn by electrofishing but not in otter diet.
- Electrofishing resulted in records of lamprey in all six catchments, but they were only recorded in otter diet in the Teifi. Lamprey have a simple, cartilaginous skeletons meaning few identifiable remains can survive otter digestion: teeth like structures made of keratin being the only exception (Ramsey and Groves, 2026).
- Stickleback were recorded in otter diet but not in electrofishing in the Wye and Usk (although low frequency of occurrence in both datasets).
- Differences in infrequently recorded species (less than 5 records in either dataset) were disregarded. These were gudgeon, perch, tench, grayling, flounder, dace, chub.

More detailed analyses of otter diet in comparison to fish occurrence data are possible. Any analyses should have high consideration of the unique biases in each dataset that are likely due to selection for particular species e.g. the NRW electrofishing data includes some eel targeted monitoring.

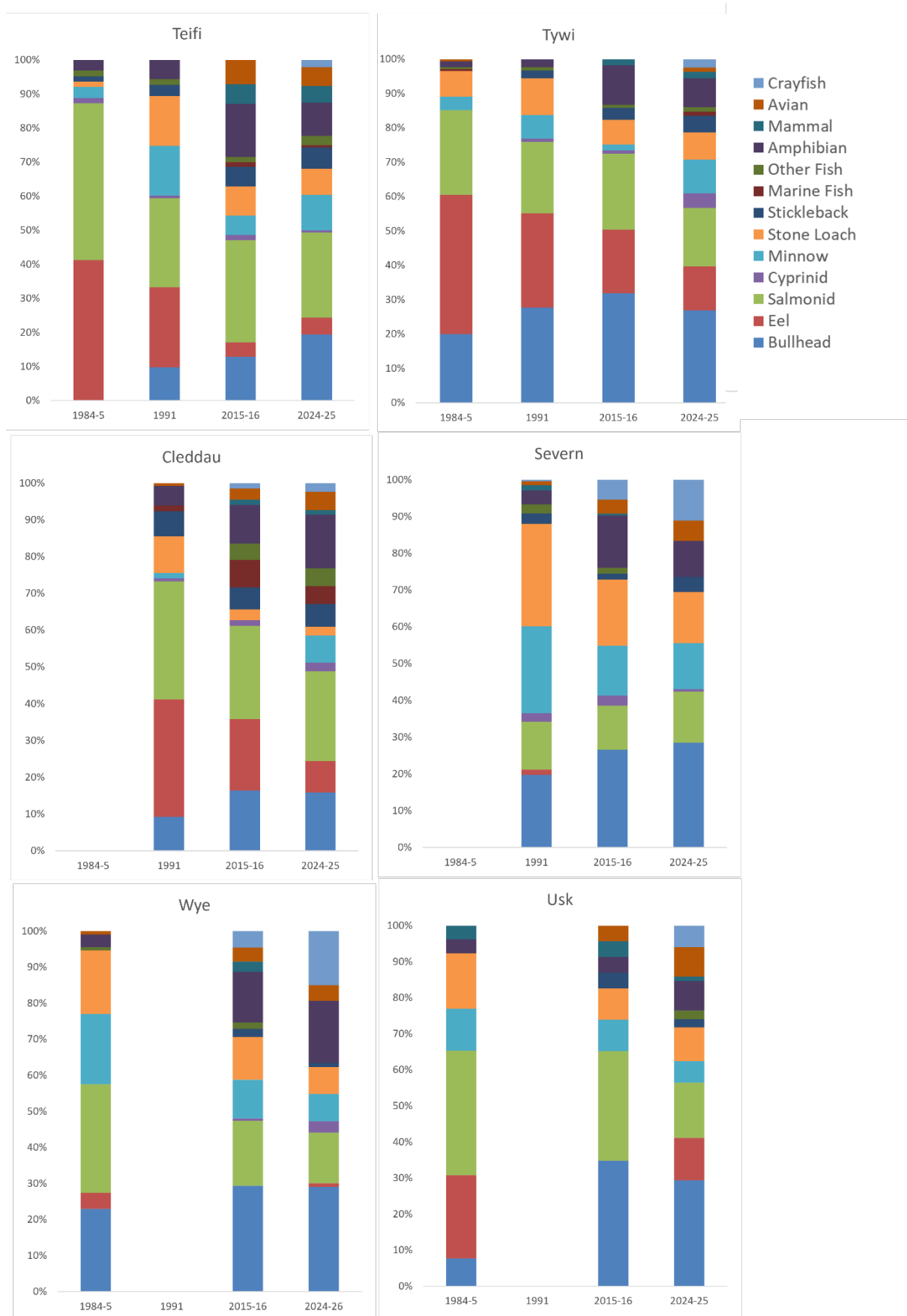


Figure 1 Composition of otter diet illustrating differences over time and between hydrometric areas.

Discussion

These patterns should be interpreted with caution. Differences may partly reflect variation in sampling locations between years. For example, only the upper Usk was analysed in previous years, whereas both upper and lower reaches were included in 2024-25 (Figure 2). All eel records in this catchment from 2024-25 were from the lower reaches, so eel may have been consumed by otters in the Usk in 2015-16 but went undetected.

In addition, because data are presented as relative frequency of occurrence, percentages must sum to 100% - therefore where one category increases others must inevitably decrease (and vice versa). This may disguise subtleties within the data. RFO provides a simple, readily interpretable output which is useful as a simple summary, but to more robustly evaluate the significance of changes over time across catchments, additional analysis is required to:

1. account for differences in sampling location and season between surveys.
2. assess whether changes over time are statistically or ecologically meaningful.
3. account for compositional effects arising from the use of proportion-based data.

Cardiff University and Dr Eleanor Kean welcome further collaboration with Natural Resources Wales to extend these analyses, and to expand the spatial scope of the 2024-25 analysis to all other hydrometric areas of Wales, through analysis of additional spraint that was collected and stored as part of the seventh Otter Survey of Wales.

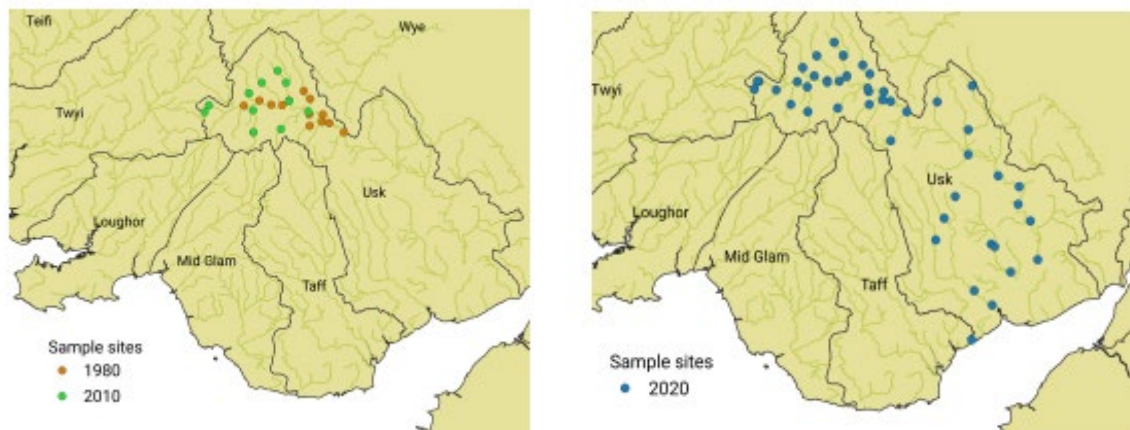


Figure 2 Changes in sampling distribution in the Usk catchment

References

- Kean, EF, Bedmar S, and Chadwick, EA. 2024. *Changes in otter diet in South Wales 1984-2016*. NRW Evidence Report Series Report No: 943, 38pp, NRW
- Kean, EF and Chadwick EA. 2026. *Otter Survey of Wales 2024-2026*. NRW Evidence Report Series Report No: 890, 1-81pp, NRW
- Ramsey SJ and Groves DJ. 2026. *A Photographic Guide to Prey remains in Otter Spraint*. Cornwall Mammal Group, The Mammal Society and The Nature Collection