Report on Asker, Mangerton and Lower Brit Riverfly monitoring in 2023

Summary

1. Analysis of the data collected in 2023 by a wide range of ecological indicators confirms the conclusion from previous years that the rivers studied have a high water quality and support a wide range of invertebrates.
2. Evidence from data collected by the EA and more recently by our monitors indicate a progressive increase in water quality of the Asker over the last 30 years.
3. There was evidence of a minor, local pollution event in July 2023 at the Uploders site with evidence of partial recovery by September.
4. Otters were frequently recorded at Yondover, Loders with the seasonal variation in their occurrence peaking in September.
5. Mink were detected in the Asker and Mangerton. Their presence probably prevents water voles from re-colonising much of the catchment.
6. The data collected by the monitors represents the most intense data set per river length in Dorset although the number of Riverfly monitors is building progressively across the county.

This report considers Riverfly monitoring at the following locations on the Asker: 1) above Askerswell village, 2) by Folly Farm, 3) Butterwells, Uploders, 4) Loders below its weir and 5) by the Co-op, Bridport. The Mangerton River is now monitored at two sites Milton Mill and for the first time in 2023, Bradpole bottom just before its confluence with the Asker. In addition, the report covers Plottingham on the river Brit in Bridport.

1: Anglers' Riverfly Monitoring Initiative (ARMI) based on the abundance of 8, pollution sensitive invertebrates

Locations were subject to Riverfly monitoring for the 8 invertebrates at monthly intervals from April to September in 2023. The data showed both site and seasonal changes in the proportion contribution of each invertebrate to the total number of individuals recorded for each month (Figure 1).

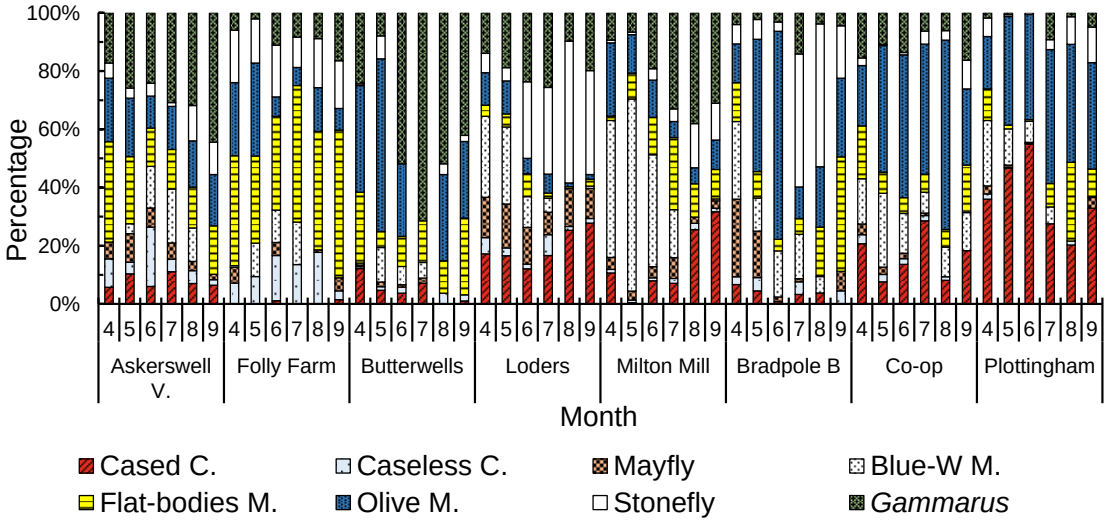

Figure 1: The percentage contribution of each of the 8 recorded invertebrates to the total collected from April to September based on eight monitoring locations in 2023.

The proportion of each of the group differed significantly by site for some months for all expect Blue-winged olive mayfly, Olive mayfly and *Gammarus* (P<0.05, Bonferroni test, Multivariate ANOVA [analysis of variance]).

Seasonal change with more abundance earlier rather than later in the collection season was evident for Mayfly (*Ephemera*). Their abundance declined from April through spring and summer. Peak abundance of blue-winged olives was estimated using a 3rd polynomial regression curve. This approach estimated peak abundance to occur on 23rd April which is slightly earlier than the estimate of 9th May in 2022 (Figure 2a). If correct, this difference probably relates to a warmer river water in 2023 than 2022 prior to emergence as temperature influences the timing of both development and emergence of the nymphs of this species (by day-degree accumulation). In contrast, *Gammarus* and stoneflies became more abundant in the later collection months with a predicted maximum for the latter occurring on 8th August.

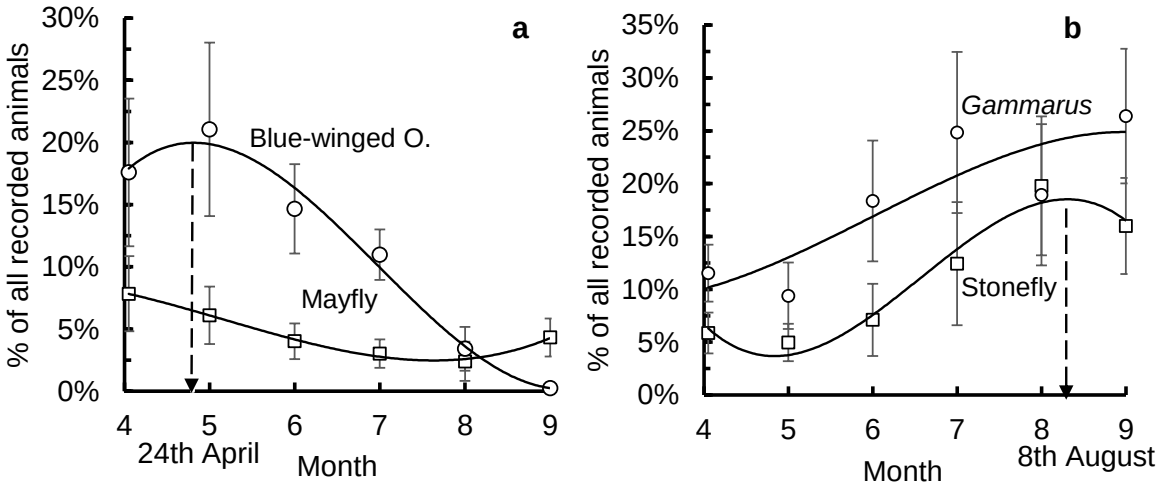

Figure 2: Blue-winged olive mayflies and mayfly showed well defined seasonal changes in abundance in 2023. The grand means (± SEM) are based on all eight sites. The maximum presence of blue-winged olives was predicted by 3rd polynomial curve as 24rd April (a). In contrast (b) both *Gammarus* and Stonefly became more abundant as the collection season progressed. The predicted maximum for stoneflies occurred on 8th August.

Members of the group of 8 were not found in equal abundance at all sites. Cluster analysis was used to identify those whose grand mean abundance per site followed a similar pattern using all the collected data for the years, 2021, 2022 and 2023 (Figure 3a). The analysis suggests three clusters: 1) caseless caddis, mayfly, blue-winged olives, stonefly and flat-boded mayfly 2) just *Gammarus* 3) cased caddis and olive mayflies. The clusters indicate similar habitat requirements and are likely to be influenced by factors such as substrate and flow rate. The same approach was used to achieve a cluster diagram for the similarity of sites based on the grand mean abundance of the invertebrates (Figure 3b). This analysis also suggests three clusters indicative of similar habitats. Loders, Milton Mill, Askerswell village and Butterwells are in one cluster, Folly Farm and Bradpole in a second with the Coop and Plottingham

sites in the third group. The placement of Bradpole is provisional as it is based on data for just 2023.

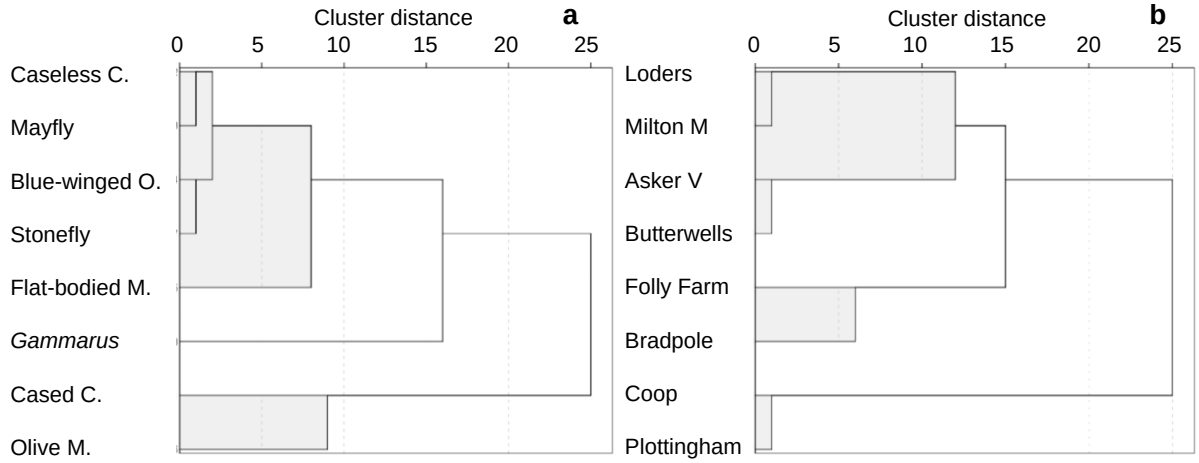

Figure 3: a) cluster analysis to establish similarities of distribution for the invertebrates for all collection months in 2021, 2022 and 2023; b) the same approach to determine similarities of eight collection sites.

The group of 8 score varies with month. Univariate analysis allows the sites to be compared for adjusted means at the end of June 2023 alongside values for previous years (Figure 4). Bradpole had a significantly lower value than either Loders and Milton Mill ($P<0.04$ and $P < 0.02$ respectively). All other sites have no significant differences. The data established very little change within a site for the four years compared. This suggests little change on river health over the years studied.

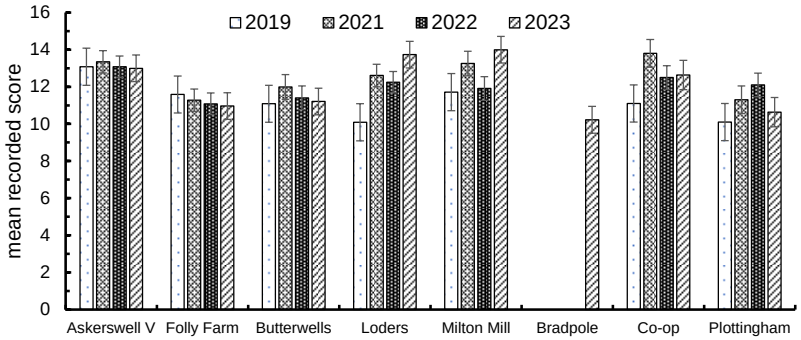

Figure 4: The adjusted mean recorded scores given for the end of June for the eight sites for each year of monitoring after adjusting for the effect of sampling month (Univariate ANOVA).

The low ARMI group of 8 scores at Butterwells were recorded on 31/07 (shown as August) and 5/09 with a slightly suppressed value persisting later (Tables 1 and 2). The overall effect is consistent with an extended recovery period from a possible pollution event after 30/06 and before 31/07. No such adverse effect was detected by sampling at the nearer upstream site (Folly Farm) on 13/07, 11/08 or 7/09. It was also not evident for the nearest downstream site (Loders) for data collected on 27/07, 25/08 and 25/09. This suggests that the pollution event occurred downstream of the Folly Farm site and was localised with the adverse effect not evident c1.5km downstream from Butterwells at Loders.

Table 1: Differences between ARMI group of 8 scores for each site by month relative to the average score for all months at that site.

Month	Askerswell V.	Folly Farm	Butterwells	Loders	Milton Mill	Bradpole	Co-op	Plottingham
April	-0.2	0.8	2.0	1.3	0.0	2.2	0.2	1.2
May	-0.2	-0.2	4.0	1.3	1.0	-0.8	1.2	2.2
June	1.8	1.8	4.0	1.3	2.0	-0.8	1.2	1.2
July	-0.2	-1.2	-5.0	0.3	0.0	2.2	-2.8	-2.8
August	0.8	-0.2	-3.0	-2.7	-2.0	-1.8	0.2	-1.8
Sept	-2.2	-1.2	-2.0	-1.7	-1.0	-0.8		
mean for site ± SEM	13.2 ± 0.54	11.2 ± 0.48	11.0 ± 1.57	13.7 ± 0.71	14.0 ± 0.58	9.8 ± 0.70	12.8 ± 0.73	10.8 ± 0.97

Table 2: Differences between ARMI group of 8 scores for each site by month relative to the average score for all sites that month.

Month	Askerswell V	Folly Farm	Butterwells	Loders	Milton Mill	Bradpole	Co-op	Plottingham	mean for month (±SEM)
April	0.0	-1.0	0.0	2.0	1.0	-1.0	0.0	-1.0	13.0 ± 0.38
May	-0.1	-2.1	1.9	1.9	1.9	-4.1	0.9	-0.1	13.1 ± 0.77
June	1.4	-0.6	1.4	1.4	2.4	-4.6	0.4	-1.6	13.6 ± 0.80
July	2.1	-0.9	-4.9	3.1	3.1	1.1	-0.9	-2.9	10.9 ± 1.03
August	3.3	0.3	-2.8	0.3	1.3	-2.8	2.3	-1.8	10.8 ± 0.80
Sept	0.3	-0.7	-1.7	1.3	2.3	-1.7			10.7 ± 0.67
mean for site ± SEM	13.2 ± 0.54	11.2 ± 0.48	11.0 ± 1.57	13.7 ± 0.71	14.0 ± 0.58	9.8 ± 0.70	12.8 ± 0.73	10.8 ± 0.97	

Scores for sites that are greater than 2 above the overall mean for that month are shaded green, those 2 to 4 less than that mean orange and more than 4 below that mean, red.

The recorded scores in June 2023 can be compared with the range of values for 338 sites so far entered into the national ARMI website (Figure 5). The position of each of the seven sites on this bar chart is shown. The difference in values along the Asker may not reflect variation in water quality as other factors such as riverbed substate and water flow rates at each location. As stated last year, a limitation on such comparisons is that the AMRI group of 8 is influenced by the total number of invertebrates recorded. This depends in part on the collection effort which may be more or less than two person hours / sampling occasion. However, the data does suggest that the Asker normally has a very high water quality with no evidence of pollution. The one exception is local to Bradpole. Its low group of 8 may indicate continual local pollution or reflect flow and substrate condition at that location. Further data will be collected in 2024.

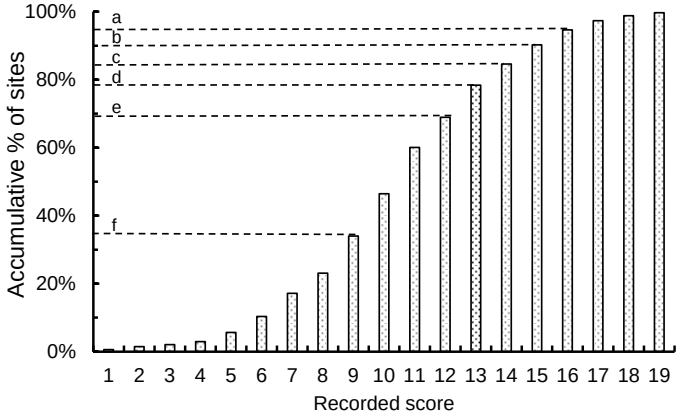

Figure 5: Accumulative percentage of ARMI group of 8 scores in June 2023 for all sites in its national data base by 1/11/2023. The positions of 7 sites are shown, a) Milton Mill, b) Askerswell village, Butterwells, Loders, c) Coop, d) Folly Farm, e) Plottingham and f) Bradpole.

2: Analysis based on extended Riverfly scores

This system differs from the group of 8. It provides scores for 33 different invertebrates including the original 8. It also has positive or negative weights of the score for the different invertebrates depending on their tolerance to low water quality. Consequently, the score may be lower or higher than obtained with the group of 8. The extended scoring system recorded most invertebrates collected during sampling and so it increases the range of analyses possible. This data was collected at 6 sites in 2023.

Some estimates used in ecological studies: The Shannon index increases as both the range of different organisms increases in a community and the similarity in the number present of each. A value of 0 would occur if only one species was recorded. Typical values are generally between 1.5 and 3. Simpson's index is another widely used approach to characterise a community's diversity. It increases from 0 to a maximum of 1 as the number of different organisms present increases also taking into account the number of each present.

Both indices changed significantly with sample month and year (Bonferroni test, Univariate ANOVA, $P < 0.05$). The indices means at Loders and Askerswell sites were significantly higher than those at Folly Farm, Co-op and Plottingham sites. Milton Mill was intermediate being similar to both the highest two sites and that at the Coop. The small albeit significant differences in values with year at the same site do suggest that the communities remained stable over the three years. The lower values of some sites probably relate to differences river and substrate conditions. This has implications on the range of organisms colonising that location. For example, the Folly Farm site has a higher flow rate and less sedimentation than elsewhere (See LIFE and PSI, Table 3). The Shannon and Simpson indices are significantly correlated (R^2=0.92, $P<0.001$) indicating they are consistent indicators of the biodiversity at the sites.

Table 3: Difference in Shannon and Simpson's indices for year relative to their respective grand means for 2021-2023.

	2021		2022		2023		2021-2023	
	Difference†	**Std. Error**	**Difference†**	**Std. Error**	**Difference†**	**Std. Error**	**Difference†**	**Std. Error**
Shannon Index								
Askerswell V.	0.23	0.085	0.16	0.078	0.26	0.047	0.22	0.046
Folly Farm	-0.30	0.085	-0.09	0.078	-0.14	0.088	-0.17	0.046
Loders	0.30	0.085	0.24	0.078	0.35	0.057	0.30	0.046
Milton Mill	0.02	0.085	0.03	0.078	-0.01	0.093	0.04	0.046
Co-op			-0.19	0.078	-0.17	0.077	-0.19	0.060
Plottingham			-0.18	0.078	-0.16	0.123	-0.19	0.060
Grand mean							**2.05**	**0.021**
Simpson's Index								
Askerswell V.	0.021	0.011	0.016	0.009	0.024	0.0021	0.021	0.0056
Folly Farm	-0.029	0.011	0.003	0.009	-0.004	0.0122	-0.010	0.0056
Loders	0.025	0.011	0.021	0.009	0.026	0.0028	0.024	0.0056
Milton Mill	0.009	0.011	0.007	0.009	0.003	0.0110	0.006	0.0056
Co-op			-0.022	0.009	-0.010	0.0074	-0.017	0.0072
Plottingham			-0.030	0.009	-0.017	0.0181	-0.024	0.0072
Grand mean							**0.958**	**0.0025**

†, difference of each mean from the grand mean. Values below the grand mean are highlighted. Values 2021-23 are estimated in June and vary significantly with both month and years (Bonferroni test, Univariate ANOVA, $P < 0.05$). There is no data available for 2021 from the Coop and Plottingham sites.

Species at risk (SPEAR): this index is used by the Environment Agency (EA) to record water quality from a measure of species at risk (SPEAR) from pollution. Data was collected for many years at Yondover, Loders by the agency. These values and those obtained from the group of 33 by some monitors are given in Figure 6. Curves fitted to just the EA data and the data collected by our monitors suggest a clear trend in values for SPEAR from moderate to good and now high water quality for invertebrates at the sites currently being monitored.

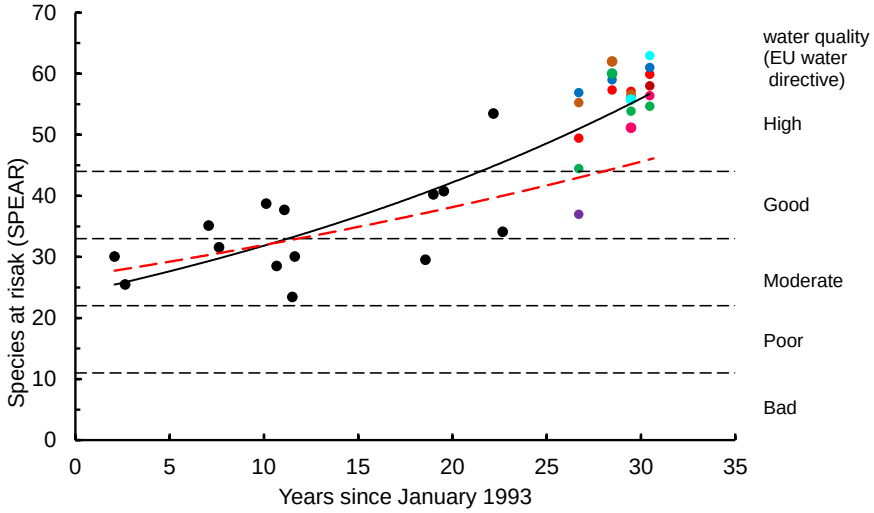

Figure 6: The relationship between the index of species at risk (SPEAR) from pollution and lapsed years since data was first collected in 1993. Data from the EA for Yondover, Loders (•) and collected in 2019, 2021, 2022 and 2023 for sites at Askerswell village: (•); Folly Farm (•);Loders below the weir (•); Milton Mill (•), Loders Mill race (•) Co-op (•) and Pottingham (•). Exponential curves are fitted to the Yondover data (R^2 = 0.34) extrapolated to 2023 and to all the data (R^2 = 0.79). Both curves are statistically significant ($P < 0.05$).

Lotic Invertebrate Flow Evaluation (LIFE): Invertebrates vary with different stream flow rates that favour their abundance. Each of the extended groups has a flow group value that weights their log scale abundance based on the same scoring system as used for the group of 8. To set the context, flat-bodied mayflies and caseless caddis are associated with high flow rates of typically more than 100cm/second. The remaining six of the groups of 8 are associated with the next flow rate down of 20-100cm/second. Some other members of the extended group fit into a third group associated with slow flowing and standing waters such as dragonfly nymphs.

The accumulated score (one value per group) is divided by the number of groups. A LIFE score of less than 6.00 generally indicates sluggish or still water conditions. The value increases with higher flow rates with values greater than 7.5 indicating a very fast flow.

Folly Farm and the Co-op site had the highest LIFE values but all sites had values indicative of fast water flows with an overall mean and standard error of the mean (SEM) of 8.12 ± 0.07. The EA has recorded the LIFE value at Yondover, Loders with a gradual increase from c7 in the mid-1980s to c7.5 in 2014. This value is lower than any recorded in 2023.This may arise from factors such as reducing pollution (as measured by SPEAR) rather than an increase in river flow rates.

Proportion of sediment-sensitive invertebrates (PSI index): This is calculated similarly to the LIFE index but different weightings are allocated to four groups depending on their sensitivity to sediment. As a result there are five categories on a scale of 0-100. Table 4 provides the categories for the six sites studied. The values for Folly Farm and Co-op indicate minimal sedimentation with Askerswell village and Plottingham being slightly sedimented. Loders and Milton Mill sites fall at the cusp of moderately and slightly sedimented. The overall value for all sites of 71 ± 0.91 is slightly higher than recorded in 2021 and 2022 and the values obtained by the EA in 2012 and 2014.The sedimentation level and flow rates indicated by PSI and LIFE are correlated (R^2 = 0.58; P<0.001). Sedimentation is likely to be reduced in faster rather than slower flow rates.

Table 4: LIFE and PSI values for 2023 are means ± SEM with similar values sharing the same suffix (P> 0.05).

Site	LIFE	PSI score and interpretation of riverbed sediment	
Askerswell V.	7.67 ± 0.13^{c}	70.72 ± 2.1^{b}	slightly
Folly Farm	8.53 ± 0.06^{a}	81.79 ± 2.1^{a}	minimally
Loders	7.91 ± 0.12^{b,c}	60.68 ± 2.1^{c}	moderately
Milton M	8.12 ± 0.05^{b}	60.50 ± 2.1^{c}	moderately
Co-op	8.60 ± 0.17^{a}	83.73 ± 2.4^{a}	minimally
Plottingham	7.95 ± 0.07^{b,c}	68.28 ± 2.4^{b,c}	slightly

LIFE values are compared by SNK, Oneway ANOVA as values at a site did not differ with the sample month. All values indicate a very fast flow rate.
PSI comparisons are based on the Bonferroni test (Univariate ANOVA) for estimates in mid-June because values at a site varied with month.

3: Water chemistry

The Asker has a stable water chemistry. The river at both Askerswell village and Folly Farm have a constant alkaline pH of 8.3 ± 0.02 in 2023 whereas this year that at Loders was less alkaline (pH 7.6 ± 0.03). This fall was probably due to a change in method of measuring pH. The water at the four sites assessed (Table 5) were moderately hard, or bordering on that range, (500-640µS/cm). All sites had phosphate levels within the revised system of moderate level (second highest of four categories: UKTAG Final report 2013). They are in the expected range for a chalk river of 100-300µg/L (*https://catchmentbasedapproach.org/wp-content/uploads/2021/10/CaBA-CSRG-Strategy-MAIN-REPORT-FINAL-12.10.21-Low-Res.pdf*). The data suggests the phosphate levels recorded are not elevated appreciably by activities such as agriculture, or sewage outflows. The river can be considered therefore as a stable aquatic environment, free of pollution concerns for its invertebrates which probably underpins its high ARMI scores.

Table 5: Mean conductivity and phosphate concentrations in the Asker and Mangerton rivers in 2019, 2021, 2022 and 2023.

Site	2019		2021		2022		2023	
	Conductivity	Phosphate	Conductivity	Phosphate	Conductivity	Phosphate	Conductivity	Phosphate
	µS/cm	µg/L	µS/cm	µg/L	µS/cm	µg/L	µS/cm	µg/L
Ask. Vill.	553 ± 10.5	109 ± 30.4	493± 6.4	150 ± 12	491 ± 15.1	209± 33.0	484 ± 15.0	147 ± 31.7
Folly farm	591 ± 10.5	115 ± 10.5	501 ± 15.2	193 ± 32.4	499 ± 12.0	200 ± 36.5	469 ± 14.9	100
Loders			537 ± 11.1	120 ± 12.2	591 ± 13.0	146 ± 12.5	521 ± 34.2	95 ± 5.0
Milton mill			617 ± 77	150 ± 32	560 ± 8.6	190 ± 40.0	550 ± 7.9	125 ± 25.0

The status of the Asker and Mangerton as the most westerly chalk streams in the UK and the status of fish in the Asker was considered in the 2022 report.

4: Birds and mammals associated with the Asker.

The accumulated species of wild birds (43) and mammals (18) recorded to date are listed in Table 6 indicating locations. The list includes species observed but not imaged by the trail cameras. More detail is given below about the presence of mink and otters in our rivers. Muntjac deer was observed at Loders and Butterwells where a dipper was recorded for the second year in succession. A polecat was observed at Loders.
A distinction can be made between animals that are 1) more or less riverine (e.g. kingfisher, dipper, water shrew, water vole, otter and mink), 2) those that visit the river as well other locations to feed (e.g. swallow, house martin), 3) to drink or wash (e.g. deer, buzzard, tawny owl), 4) local animals merely crossing the river when recorded (e.g. deer, and badger) and 5) others merely passing through the location (e.g. peregrine falcon and cuckoo).

Table 6: List of birds and mammals imaged by the trail cameras or seen.

Birds	Buzzard^{ALM}, Peregrine^{L}, Hobby^{L}, Kestrel^{L}, Red Kite^{L}, Sparrowhawk^{M}, Tawny Owl^{LM},Barn Owl^{L} Pheasant^{AULM}, Woodpigeon^{AULM}, Collared Dove^{L}, Heron^{ULM}, Little Egret^{LM}, Gulls^{L,} Moorhen^{LM}, Dipper^{LMU},G.S Woodpecker^{LM}, Green Woodpecker^{LM}, Wren, Bluetit^{L}, Grey Wagtail^{LM}, Blackcap^{L}, Crow^{AUL}, Rook^{UM}, Jay^{U}, Jackdaw^{U}, Magpie^{AL}, Raven^{L}, Kingfisher^{LM}, Mallard^{LM}, Cuckoo^{L}, Skylark^{L}, Yellowhammer^{L}, Blackbird^{UM}, Redwing^{M}, Robin^{M}, Swift^{L}, Swallow^{L}, H. Martin^{L}, Goldcrest^{L} Chaffinch^{M}, Long-tailed tit^{L}, and chickens^{L}.
Mammals	Hedgehog^{L}, G. Squirrel^{LM}, Rabbit^{AUL}, Roe^{AULM}, Fallow^{AL}, <u>Muntjac</u>^{UL}, Fox^{AULM}, Badger^{AM}, Otter^{ULM}, Mink ^{AUM}, Polecat^{L}, Brown Rat^{AULM}, Mouse (field?)^{AU}, Water Shrew^{L}, Water Vole^{B}, Dog^{A}, Cat^{A}, Sheep^{A} Human^{A}.

The list is those species reported in 2022 with additional species detected for the first time in 2023 underlined. Suffixes indicate records for: ^{A}Askerswell parish; ^{U}Uploders (Butterwells); ^{L}Loders; ^{M}Mangerton (Milton Mill) and ^{B} Bridport (Co-op).

Bats

The considerable range of bats detected particularly around Askerswell village were reported in the report for 2021. Only a subset of these species such as Daubenton's bat are specifically associated with aquatic environments.

Mink

Mink monitoring rafts were set up in April following on from the talk provided by Andy Jefferies to the group, on 8th February 2023. A single mink was spotted in April and May on the Mangerton but no tracks were obtained from a mink monitoring raft. The raft in Askerswell did detect the animal (Figure 6a). Mink footprints were recorded on the raft on 4 occasions, 2 in April, when placed at the Askerswell Village ARMI site

and twice when sited near the Washingpool, Askerswell in late June and early July (Figure 6b). The latter location is midway between that site and that at Folly Farm. Mink have also been observed at Loders about six times in September and October 2023 and at Uploders.

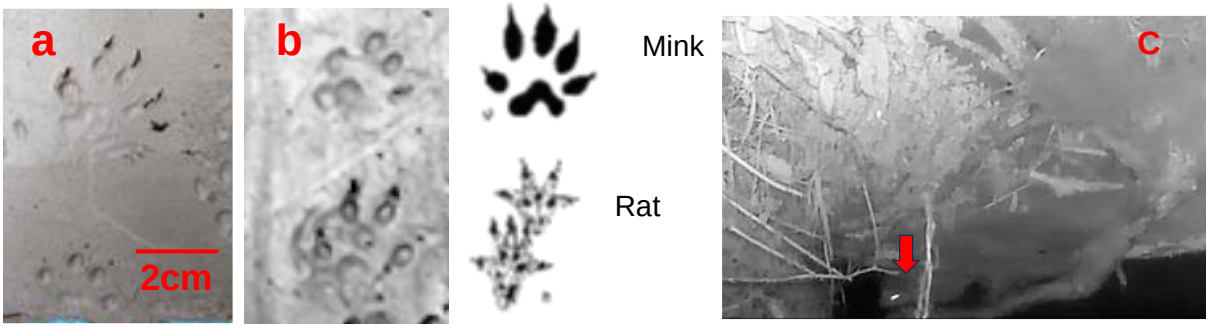

Figure 6: Example footprints from mink monitoring rafts, a) on 16th April when located at the Askerswell Village ARMI site © G. Barrett), b) on 5th July near the Washingpool, Askerswell. Mink entering the Asker near Uploders (head arrowed, c, © Chuck Wilmott).

Otters

Otters have been seen frequently at Loders in 2023 with video images captured by a trail camera (Figure 7a & b).

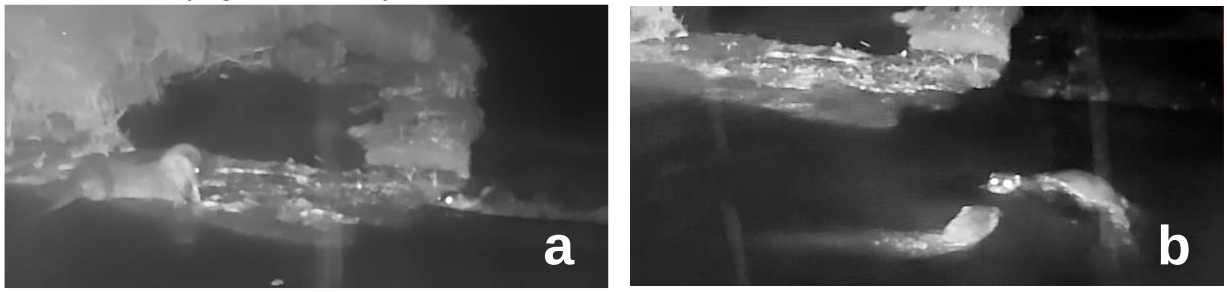

Figure 7: Two otters at Loders in 2023, a) one of the two feeding on a fish and b) a pair playing in the river (© Chuck Wilmott).

There were 44 and 80 sightings respectively in 2022 and 2023 at Loders. There seems to be a similar seasonality in both years which is particularly apparent when values are given as the proportion for total sightings by month. Otter reproduction is not seasonal. There was a decline from late winter through spring and summer and an increased frequency in autumn (Figure 8).

Otters have been seen less frequently in the Mangerton at Milton Mill but detected in Jan, Feb, April and May with an increased frequency of sightings with two together and a single male in the latter two months. A male was also observed further up the Mangerton in August. Two were recorded swimming in the Asker at Butterwells on 28th October 2023. There have been no recordings on the trail camera in Askerswell Parish in the reporting year.

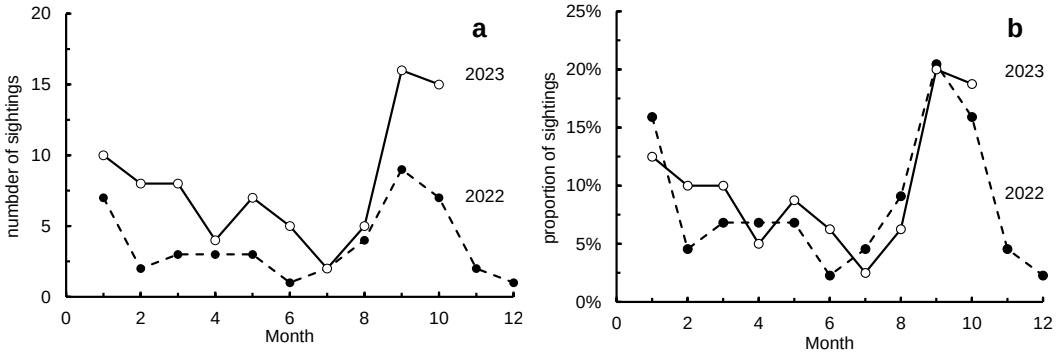

Figure 8: Changes in number of sightings that otters were detected at Loders by month in 2022 and 2023; a) number of occasions, b) as percentage of total sightings.

5: Summary of annual update from Angus Menzies (Riverfly Volunteer Coordinator)

Riverfly Monitors

There are now over 40 Riverfly monitoring sites in Dorset (Figure 9). Angus thanked us for our extraordinary commitment to acquiring and submitting Riverfly data and to Chuck for submitting his fascinating photos and videos.

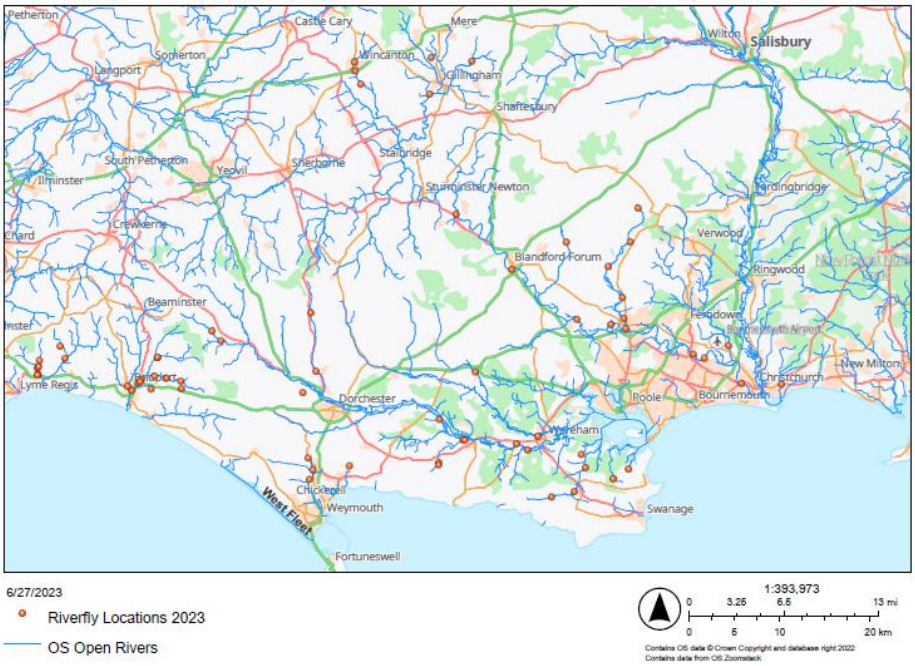

Figure 9: ARMI monitoring sites in Dorset and surrounding areas in late 2023

Several workshops have been held to train further monitors. Well attended sessions have been run at Brooklands DWT HQ and elsewhere in the county (and nearby): These include two group of 8 workshops at Brooklands (May/June), one at Lyme Regis (May 2023) and one at Charstock with an attendee from Charminster. Two more were held at Burton Bradstock led by Ian Rees and Roger Guppy. A Training workshop for the group of 33 was held at Brooklands (June) with 17 attendees (tutor, John-Davy Bowker).

A Cartographer Database: This is being established for the online submission of data for a number of Riverfly projects www.riverflies.org/newsblog/cartographer-migration.

There are useful explanatory videos. Although implementation is in its early stages, transfer of historic and recent data seems to be going well. There are plans to develop the graphics of data presentation and open access for interested individuals further. The Freshwater Biological Association has recently increased staff working on the Riverfly project from one (Trine Bregstein) to three.

Beavers

Studies at the enclosed site in Dorset has found a pond line fauna is being established above the site and invertebrates often associated with river flow are maintained downstream of it.

White Clawed Crayfish.

Surveys have established populations occur on the Piddle and at Tadnoll Brook.

6: Future Work and Conservation Issues

Future work

1. To continue monitoring the existing sites in 2024 as in 2023. Revise the current threshold of 4 informally to 7 with each monitor alerting all others when such a low value occurs as this indicates a suppression of river health.
1. To maintain mink monitoring rafts during the Riverfly collection season in 2024 and seek expert advice on managing this alien predator. The aim would be to favour water voles re-colonising much of the Asker and Mangerton. They are endangered and have been lost from 90% of waterways in the UK with mink being a major contributor to this decline.
2. To consider transplanting water crowfoot plants (*Ranunculus* spp) from localities of abundance on the Asker to other sites that have a likely similar habitat. The aim is to extend the plant's range on the river for its refuge value for small fish. Landowner permission must be sought.
3. To press for completion soon of the already commissioned evaluation of options to remove Loders weir as a barrier to upstream fish migration. The hope is that expert assessment be completed for a cost/benefit analysis of the extent of suitable spawning grounds for salmonids along the Asker.
4. Press for installation of a standard eel pass, if practical progress cannot be achieved soon on mitigating the weir as a barrier to all fish. The aim is to enhance this fish's colonisation of the river. The European eel is among the rarest and most threatened animals in the UK and on the critically endangered category on the IUCN Red List.
5. Consider Signal (American) crayfish monitoring along the Asker by Environmental DNA-based (eDNA) detection. The aim is to confirm the conclusion from 4 years of monitoring that this species has not colonised the upper Asker. A recent expert study elsewhere has established that local barriers, as may prevail on the Asker, can prevent upstream invasion by the alien species. If funds allow, the eDNA screening should be extended to the upper reaches of the Mangerton. The aim would be to introduce a founder population of native white-clawed crayfish providing the American crayfish is absent. An initial step needed is to seek Dorset Wildlife Trust's support for any introduction.

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