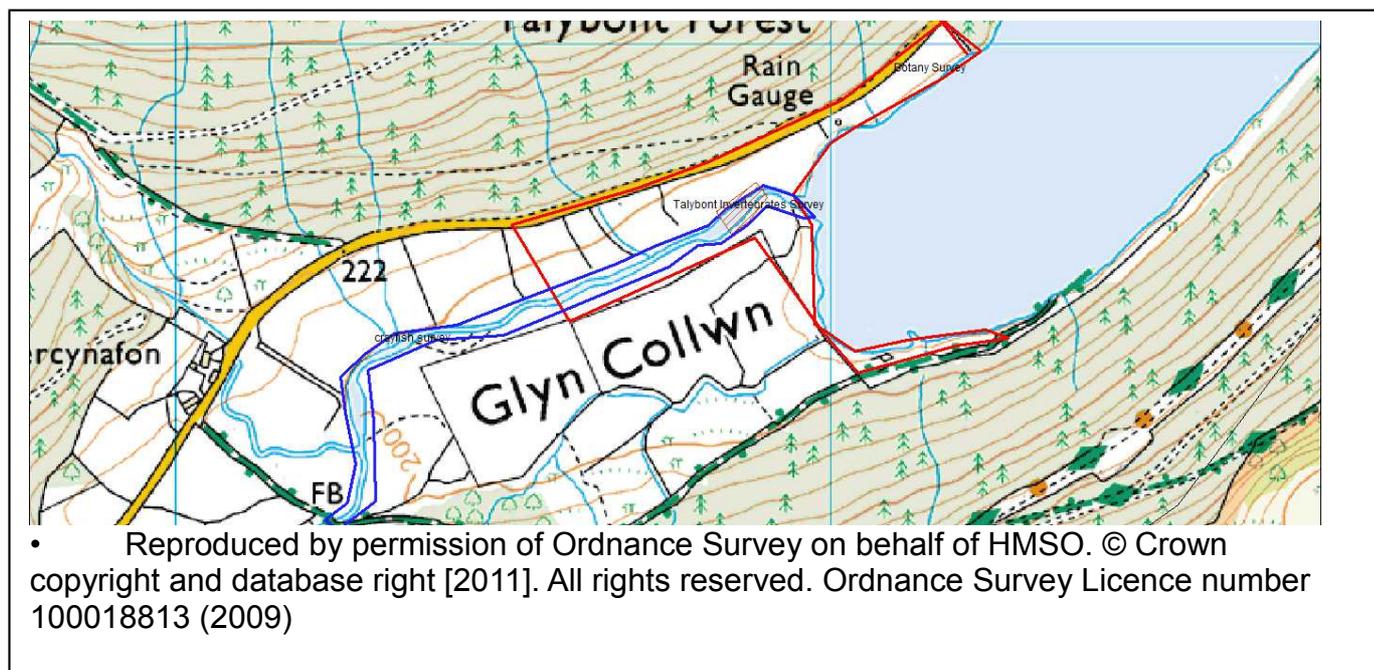


## Invertebrate Survey of Caerfanell, the inflow to Talybont Reservoir, 14/05/2013

Phil Ward, Kaitie Gaisford, Stephanie Coates

The aim is to do a snapshot survey using standard methodology to gain a measure of the biodiversity and water quality using the Environment Agency Biological Monitoring Working Party (BMWP) methodology that can be repeated in a year's time.

Phil Ward (Radnorshire Wildlife Services ) led the surveying and identification and is an experience entomologist specialising in beetles.



The survey site was up stream of the delta at SO 08840 17730 to 08900 17770

The length of stream surveyed is 7 times the average width, this was  $7 \times 12 = 84\text{m}$ . The stream is surveyed by kick sampling for 3 minutes and stone lifting for a further minute.

Identification is required to family level in order to calculate the BMWP water quality score. Invertebrates families present within a river or stream are given scores based on their tolerance to organic pollution.

Family Name	Species and notes	Score
Planorbidae	<b><i>Ancylis fluviatilis</i></b> River Limpet	5.6
Heptagenidae	The mayfly family of stone clingers with dorsal eyes and strong clinging legs	9.8
Baetidae	Including <b><i>Centroptilum luteolum</i></b> . The swimming mayfly family, more torpedo shaped and wiggly swimming action	5.3
Dytiscidae	<b><i>Oreodytes septentrionalis</i></b> & <b><i>Oreodytes sanmarkii</i></b> . Water beetles, small species found	4.8
Nemouridae	Family of large stonefly, the larvae were full grown	9.1
Leuctridae	Family of stonefly with long narrow bodies, the adult also with wings rolled around body – a.k.a.needleflies	9.9
Rhyacophilidae	A free living caddis, often greenish with feathery gills	8.3

	down the side of the body and a narrow head end	
Philopotamidae	A caddis fly	10.6
Limnephilidae	A caddis fly family which uses many different forms of case	6.9
Limoniidae	A crane fly	-
Chironomidae	Larvae and pupa. A couple of species of biting midge were seen	3.7
Gammaridae	<i>Gammarus pulex</i> common freshwater shrimp	4.5
Hydracarina	A tiny water mite <1m with a gold stripe	-
Bullhead	Fish of fast flowing rivers, indicator of good water quality	
<b>TOTAL WATER QUALITY SCORE</b>		<b>78.5</b>

The total score of 78.5 places this stream midway within the average water quality threshold (between 51 – 100).

The mayfly and stonefly populations seem healthy, but freshwater shrimps are scarce. There is sediment on the rocky base but little plant matter was caught- the stream is mostly unshaded.

The shingle banks are also good for beetles and a brief search under the pebbles found a green tiger beetle *Cicindela campestris*, the ground beetles *Agonum assimile* and *Clivina fossor*, as well as sheltering stonefly adults.



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Phil Ward, Kaitie Gaisford, Stephanie Coates, Liza Ross (work experience)

28 March 2014

Since the last survey the grazing was supposed to have stopped along the river corridor. It is possible that the grazing is less intensive with less poaching but the sward was still short and sheep seen.



### Results:

After sampling the following families were found, those highlighted are new records, the rest were found the year before.

28/03/2014	Caerfanell, Talybont Reservoir inflow	
Family name	Species name	Common name
Leuctridae	Leuctridae	a needlefly stonefly
Nemouridae	Nemouridae	a stonefly
Gammeriidae	Gammerus pulex	Common freshwater shrimp
Baetidae	Baetidae	a swimming mayfly
Chironomidae	Chironomidae	a midge
<b>Oligochaete</b>	<b>Oligochaete</b>	<b>a freshwater worm</b>
Heptageniidae	Ecdyonurus	a clinging mayfly
<b>Ceratopogonidae</b>	<b>Ceratopogonidae</b>	<b>a biting midge</b>
Limnephilidae	Limnephilidae	a caddis fly
Rhyacophilidae	Rhyacophila	a caddis fly

### Summary

We only got 10 families in 2014 compared to 14 in 2013. We gained Ceratopogonidae in 2014, but in 2013 we also had Planorbidae, Dytiscidae, Philopotamidae, Limoniidae and Hydracarina

The Biological Monitoring Working Party (BMWP) score in 2014 was only 50.6 compared to 78.5 in 2013, this is quite a significant percentage decrease. Why this is we really don't know, although the survey took place slightly later in May 2013, but this shouldn't really be such a factor as most freshwater invertebrates are more abundant as larger larvae in the Spring anyway.

During the last few months there has been some periods of exceptional rain, perhaps this has affected the stream invertebrates.



*Figure 1 29/03/2014 Silt and algae on rocks*

As the picture shows there is some silt on the stream rocks.

The forest above was clear-felled last year and the upstream fields are improved pasture, liable to being fertilised and ploughed. Their management is likely to impact upon the stream, despite it being partly fenced off.

Both the forestry and farming operations may cause some diffuse pollution and sediment from these activities.

The silt on the rocks could be from the above or simply because the force of the water is not strong enough to wash them because the stream so wide and shallow.

## **Recommendations**

All effort possible should be made to reduce diffuse pollution in this catchment. Invertebrates are very sensitive to chemical pollution and sediment levels.

Fencing of some of the bank will allow more vegetation to take hold and stabilise it.

Shallow shingle is good for invertebrates and fish spawning but where the river is heavily grazed on a shingle bed the stream has become very wide and shallow.

With a more stabilised strong bank the river may develop more diversity of character with more meanders and sheltered deep pools. Some open bank should also be maintained as it is interesting floristically and is good for some invertebrates.

Report compiled by S Coates 02/05/2014