Riverfly Recording

10 years of progress

Ian Wallace

Riverfly Recording Schemes
(Caddis Scheme Organiser)

What are riverflies?

Caddis (Trichoptera)

Mayflies
(Ephemeroptera)

Stoneflies
(Plecoptera)

Cased caddis larvae

Mayfly nymph

Caseless caddis larva

Stonefly nymph

riverfly recording schemes

Official collaboration since
2004

The Riverfly Partnership

Talk will cover

- A brief history of Riverfly Recording
- What is recorded and why
- How might data collection change in the future

Recording Freshwater Invertebrates for Water Quality Assessment

- Record the families present in a sample
- Families vary in their tolerance to pollution and can be given a score on a sliding scale
- Add up the scores to give a water body total
- Compare that against a standard to see how stressed your water body is.

- BMWP (Biological Monitoring Working Group) (set up 1981)
- ASPT (Average Scores per Taxon), RIVPACS (River Invertebrate Prediction and Classification System), LIFE (Lotic Invertebrate Index for Flow Evaluation)

BMWP and LIFE scoring taxa

All taxa on this list should be routinely identified for "BMWP family level" analyses. Those in bold are the additional taxa required by the LIFE score system and will be included in 2006-2011 CEH audit.

FLATWORMS	BMWP	LIFE
Planariidae	5	4
-Dugesiidae	5	4
Dendrocoelidae	5	4
MOLLUSCS		
Neritidae	6	2
Viviparidae	6	3
Valvatidae	3	4
Hydrobiidae	3	4
-Bithyniidae	3	4
Physidae	3	4
Lymnaeidae	3	4
Planorbidae	3	4
Ancylidae	6	2
-Acroloxidae	6	4
Margaritiferidae	-	2
Unionidae	6	4
Sphaeriidae	3	4
Dreissenidae		4
LEECHES		

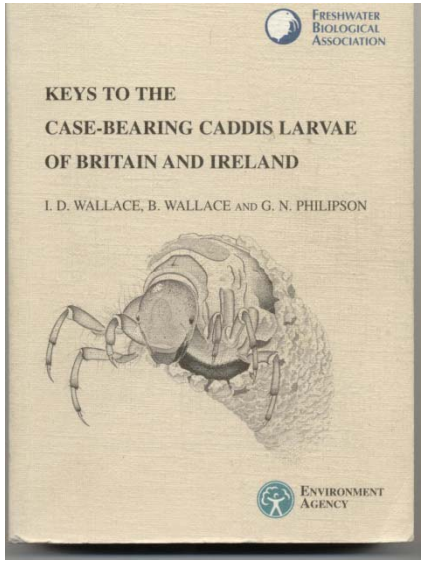
STONEFLIES	BMWP	LIFE
Taeniopterygidae	10	2
Nemouridae	7	4
Leuctridae	10	2
Capniidae	10	1
Perlodidae		
Perlidae	10	1
Chloroperlidae	10	1
	10	1
DRAGONFLIES/DAMSELFLIES		
Platycnemididae	6	4
Coenagriidae	6	4
Lestidae	8	4
Calopterygidae	8	3
Gomphidae	8	3
Cordulegasteridae	8	2
Aeshnidae	8	4
Corduliidae	8	4
Libellulidae	8	4
BUGS		
Mesoveliidae	5	5
Hebn'dae	-	4

ALDERFLIES/LACEWINGS	BMWP	LIFE
Sialidae	**4**	**4**
OsmyNdae	**-**	**2**
Sisyridae	**-**	**4**
CADDISFLIES		
Rhyacophilidae	**7**	**1**
-Glossosomatidae	**7**	**2**
Hydroptilidae	**6**	**4**
Philopotamidae	**8**	**1**
Psychomyiidae	**8**	**2**
-Ecnomidae	**8**	**3**
Polycentropodidae	**7**	**4**
Hydropsychidae	**5**	**2**
Phryganeidae	**10**	**4**
Brachycentridae	**10**	**2**
Lepidostomatidae	**10**	**2**
Limnephilidae	**7**	**4**
Goeridae	**10**	**1**
Beraeidae	**10**	**2**
Sericostomatidae	**10**	**2**
Odontoceridae	**10**	**1**

Recording required

- Professionals with fancy equipment

- Difficult identification works



Citizen Science

- Water Quality Monitoring by Amateurs

- A lot of testing and development especially after 2002 led to the launch of

  the **Angler Monitoring Initiative** in 2005

- and publication in 2007 of :-

FSC

BRINGING
ENVIRONMENTAL
UNDERSTANDING TO ALL

River invertebrate monitoring for anglers

A Riverfly Partnership initiative

AIDGAP

Aids to Identification in Difficult Groups of Animals and Plants

5. Carry out an additional one minute manual search of large liftable stones within the sample area. Wipe all surfaces of the stone with your hand in front of the net.

Washing the sample

To ease the counting process it is important to remove as much of the unwanted debris, e.g. silt, weed, gravel, stone and leaves, as possible without losing any of the required invertebrates.

6. Tip the whole sample into a large bucket or tray of river water. Strain the water back through the net whilst agitating the stones and gravel to dislodge the invertebrates, leaving the unwanted stones and gravel in the bucket.
7. Refill the bucket with fresh river water and repeat the process until all of the invertebrates appear to have been dislodged from the stones and gravel and are now in the net.
8. Check through the stones and gravel for remaining invertebrates, especially cased caddis. Examine the stones for attached invertebrates before discarding them. (A number of empty caddis cases may be collected. Discard these when confirmed empty.)
9. To remove most of the unwanted fine silt through the mesh, hold the net into the current and move the material around in the net. Plant material can be removed after ensuring that any invertebrates have been retained.
10. Return the remaining sample from the net into the bucket, half filled with clean water, for sorting.

Sorting the sample

11. Take small 'sub-samples' from the bucket (using a small aquarium net) and place into a shallow white tray half filled with clean water. If a large tray is used the whole sample can be processed in one go.
12. Using a large pipette transfer the targeted invertebrates described overleaf into a segmented tray ready for counting. Sorting the sample and estimating the numbers of the target groups becomes quicker with experience.

Target groups

The presence of the eight target groups will naturally vary in abundance throughout the year. Note that all groups will not be present at all sites.

Caddisflies
- Cased caddis
- Caseless caddis

Up-winged flies
- Mayfly (Ephemeridae)
- Blue-winged olive (Ephemerellidae)
- Flat bodied (Heptageniidae)
- Olives (Baetidae)

Stoneflies

Freshwater shrimp (*Gammarus*)

Additional invertebrate groups e.g. leeches, snails, water hoglouse, may be recorded within the monitoring to contribute further biological information. The local EA / SEPA Ecology Contact may recommend species for inclusion on a regional basis.

Recording data

13. Record the category and **estimate** the numbers of each group as noted on the recording sheet. Recording the estimated number is optional.

Abundance	Category	Estimated number*
1-9	**A**	Quick count
10-99	**B**	Nearest 10
100-999	**C**	Nearest 100
over 1000	**D**	Nearest 1000

*Optional

14. Decant the sample into the river, keeping selected specimens for further identification, if appropriate.
15. Transfer the records onto a database held by the Monitoring Group. Communicate as agreed with the local EA / SEPA Ecology Contact. As stability and credibility of data builds the *trigger levels* may be revised with finer detail.
16. The Monitoring Group needs to ensure a continued high quality in the recorded data, for example, via guidance and support from the Monitoring Group Coordinator and feedback from the EA / SEPA Ecology Contact.

Using the data

The data, owned by the Monitoring Group, is copied to the EA / SEPA as agreed. The data provides a seasonal baseline of the biological quality of the water course which can be used to monitor change. *Trigger levels*, agreed with the local EA / SEPA Ecology Contact, will highlight data that indicates a severe perturbation in water quality. In such cases the Monitoring Group Coordinator should contact the local EA / SEPA Ecology Contact who will ensure appropriate action by the EA / SEPA.

River invertebrate monitoring for anglers

	Example month	Month 1	Month 2
Organisation			
Site name			
River			
Grid reference			
Monitoring Group Coordinator			

River invertebrate monitoring for anglers

Organisation	
Site name	
River	
Grid reference	
Monitoring Group Coordinator	

		Example month		Month 1		Month 2	
	Date	27/06/2005					
	Recorded by	C Macadam & C Bennett					
		Category	**Est. number***	**Category**	**Est. number***	**Category**	**Est. number***
Caddisflies	Cased caddisfly	B	20				
	Caseless caddisfly	A	2				
Up-wing flies	Mayfly (Ephemeridae)	B	10				
	Blue-winged olive (Ephemerellidae)	B	20				
	Flat-bodied up-wings (Heptageniidae)	C	100				
	Olives (Baetidae)	A	4				
Stoneflies	Stoneflies	A	3				
Freshwater shrimp	*Gammarus*	A	8				
	Notes	Hatches seen. River looking good.					

Note the category and estimate the numbers of each group from the sample, for example:

If less than ten Cased caddis: enter Category A and estimate the number

If between 10 and 100 Caseless caddis: enter Category B and estimate the number to the nearest 10

If between 100 and 1000 Mayflies: enter Category C and estimate the number to the nearest 100

If more than 1000 Olives: enter Category D and estimate the number to the nearest 1000

Available on line at www.riverflies.org

Abundance	Category	Estimated number*
1-9	A	Quick count
10-99	B	Nearest 10
100-999	C	Nearest 100
over 1000	D	Nearest 1000

*Optional

Recording sheet

Only trained people can submit data

…and they can get a ‘qualification’

The Riverfly Partnership

certificate

This is to certify that

.....

successfully completed the Riverfly Partnership

RIVER INVERTEBRATE MONITORING WORKSHOP

Date .....

Location .....

Tutor .....

Signature .....

Certificate Number .....0007.....

Paul Knight, Chairman

www.riverflies.org

- Anglers led the way

- Now most new monitoring groups come from the conservation movement so activity re-named **Riverfly Monitoring**

Collaboration between professionals and amateurs

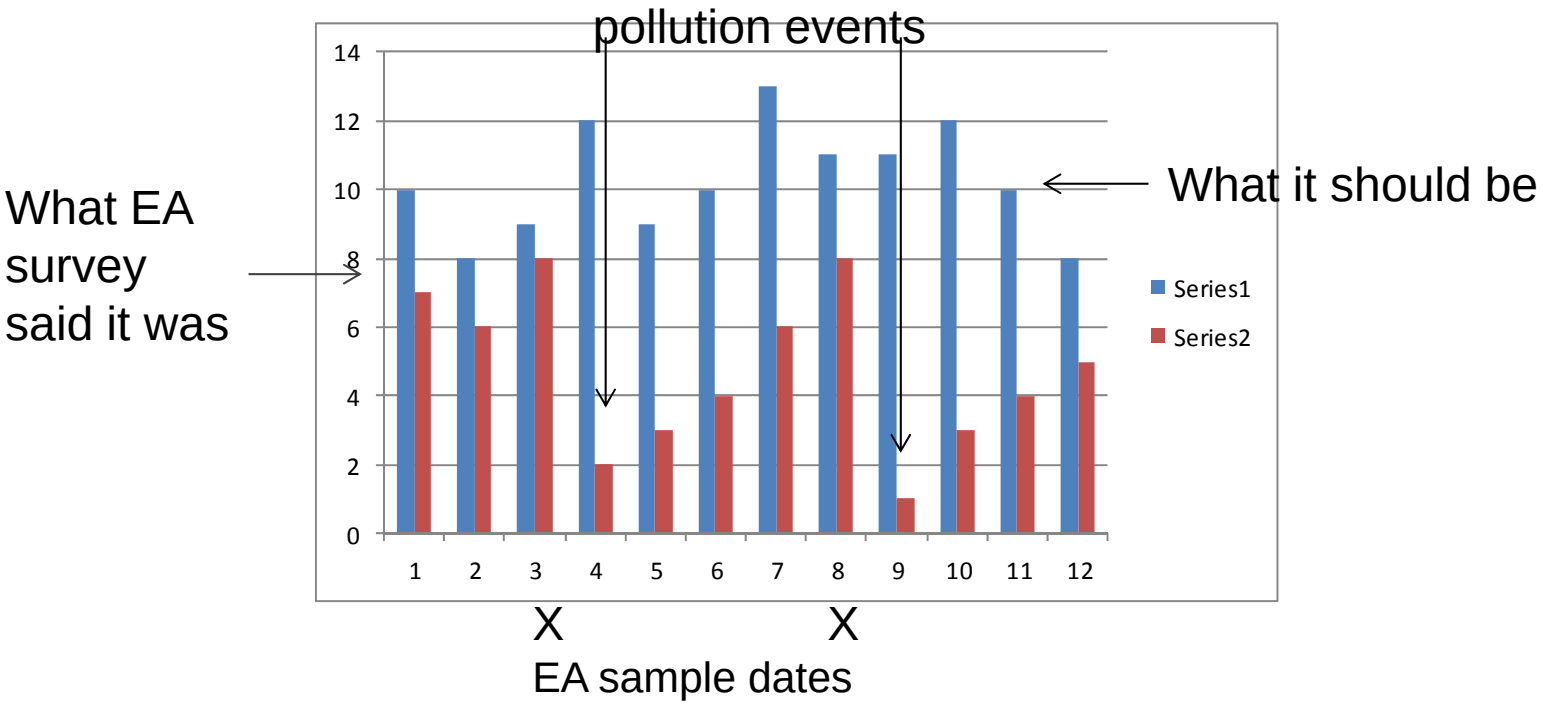
- Sampling collection method the same between Environment Agency and Riverfly Monitoring
- Much simplified analysis e.g. caddis 19 EA Trichoptera families become 2 Riverfly categories – cased and caseless
- EA data can be converted down to a Riverfly Monitoring level so existing data for a river, and new data can be compared

Trigger Levels

- Every Riverfly Monitoring Group has an Environment Agency mentor
- The mentor uses EA data to assess a trigger level of abundance for each recorded group
- Below that figure requires a confirmatory survey
- Still below that figure triggers a visit and survey by the EA professionals

Value of Riverfly Monitoring Data

- Monthly sampling shows pollution that might otherwise be missed



- Several pollution incidents in South Wales detected initially by angler monitoring and significant fines ultimately imposed on polluters
- Sometimes the anglers did not need to take an invertebrate sample to detect a problem

Quality of data?

Riverfly Monitoring method tested against BMWP

- As good when it came to detecting poor quality
- Riverfly Monitoring failed to differentiate between good and very good
- The higher the level of identification the better is the answer

Two rivers

- Good river
- 2 families of Stonefly
- 10 stoneflies in total per sampling tray

- Better River
- 4 families of stonefly
- 10 stoneflies in total per sampling tray

Both score the same using Riverfly Monitoring

Better river scores higher under BMWP

Increasing the number of categories would improve Riverfly Recording – a goal for the future?

Riverfly Monitoring could -

- Build up a Long Term data set for a river site for a variety of purposes
- Does provide Social benefits – popular

  hands-on science

  useful for conservation

  awareness

  out doors

  educational

- A centralised data set to be established by the FBA and made available via NBN

80 monitoring groups now operating and number is growing all the time

3 full-time organisers appointed

So its all looking good

BUT…..

riverfly recording schemes

- Act as ‘champions’
- Produce identification guides
- Provide training opportunities
- Encourage recording
- Research and Conservation


Ephemeroptera (Mayflies)


Trichoptera (Caddisflies)


Plecoptera (Stoneflies)

Ephemeroptera Recording Scheme

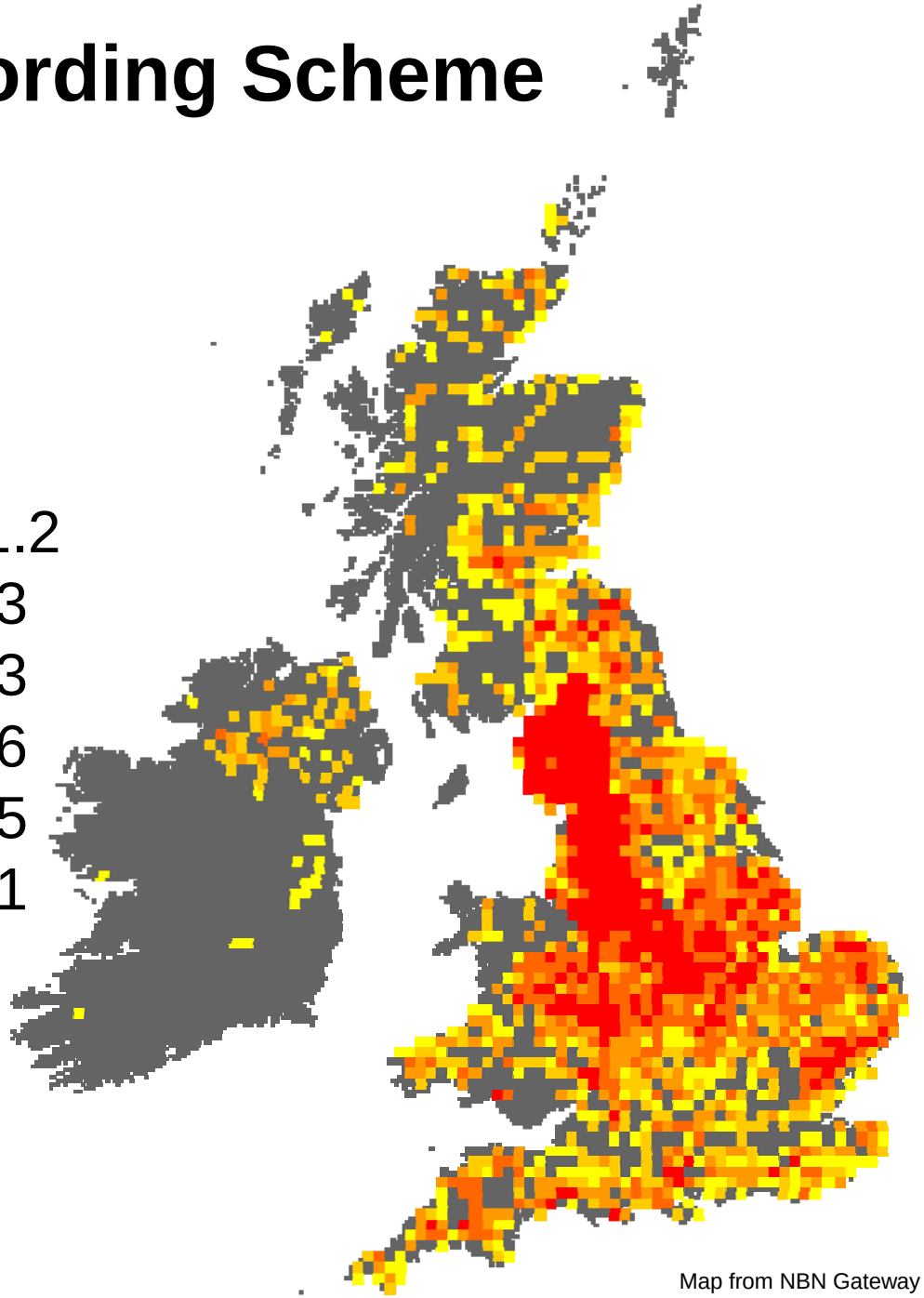
Established in 2000

185,000 records

Source of Records	**%**
Environment Agency	91.2
CEH Dorset	6.3
SEPA	1.3
Consultancies	0.6
Local Record Centres	0.5
Individuals	0.1

99% of records are of larvae

All data on NBN Gateway

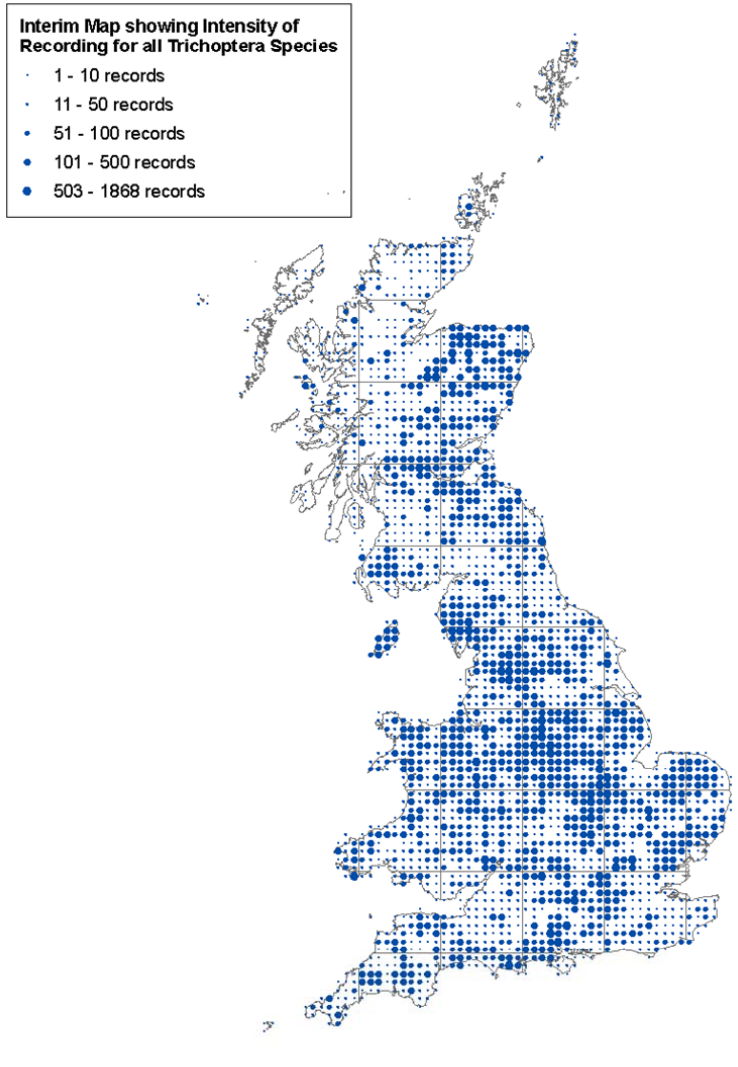


Map from NBN Gateway

Trichoptera Recording Scheme

founded 1976

- 248,000 records
- only 45% from monitoring agencies
- much historic data (i.e. pre 1976)
- 30% adults
- All currently with BRC for NBN



Plecoptera Recording Scheme

- Founded 2003
- Data mainly from statutory agencies
- Data on NBN Gateway

Quality of their species-level data

- Existing records checked against specimens where possible *or*

- Assessed as probable by scheme organiser

Data use

- Source of site specific species data
- Providing an overall picture of a species distribution for assessment of site data
- Baseline to plan future recording work

Verification rule

- Working with BRC to produce a set of criteria against which records coming to NBN can be assessed for probable correctness
- Use to retrospectively check current NBN data set
- NBN maps that will be the standard and believable reference point

New keys

- Encourage new recorders to take up riverflies
- Moth trappers to add caddis to their suite

Butterfly Conservation

Saving butterflies, moths and our environment

Moths Count Newsletter 2011

Caddis at light-traps – some feedback

In a previous issue of this newsletter I encouraged light-trap users to take an interest in the caddis they attract. About 700 records have accrued as a result – whilst small in comparison to moth recording, these are very useful, and hopefully the number of recorders will continue to increase. Many of the records I received are for new for sites, 10km squares or even new vice-county records.

There have been a few surprises. For example *Ecnomus tenellus* has turned up at several traps. Difficult to locate as a larva, it may be increasing, or perhaps it is susceptible to light traps. The biggest surprise to date, is a *Triaenodes* species found by Kevin Royles in a trap surrounded by a Huntingdonshire agricultural desert, it is certainly new to the UK list – what the species is, is currently under investigation.

Your recording efforts are leading to better maps on the National Biodiversity Network (NBN) Gateway. The database currently has 248,000 records, these are being edited and they will be available for you on the NBN Gateway at the end of this year with an Atlas next year.

To take part in the Caddisfly Recording Scheme simply take a good quality photograph of the Caddisfly and email your image stating your **name**, the **date** and **time**, and **location** (6 figure grid reference or postcode) where the photograph was taken to **ian.wallace@liverpoolmuseums.org.uk**.

Ian Wallace
Caddis Recording Scheme, World Museum Liverpool

So its all looking good

BUT…

For Riverfly Monitoring

also looking good

BUT…..

Our Key Challenge

- Maintaining Motivation

De-motivators

Demotivators for Riverfly Monitors

- No prospect of improved water quality
- Nothing different each time
- Solution monitor river habitat improvements

- Increase number of things to monitor

Demotivators for Recording Scheme contributors

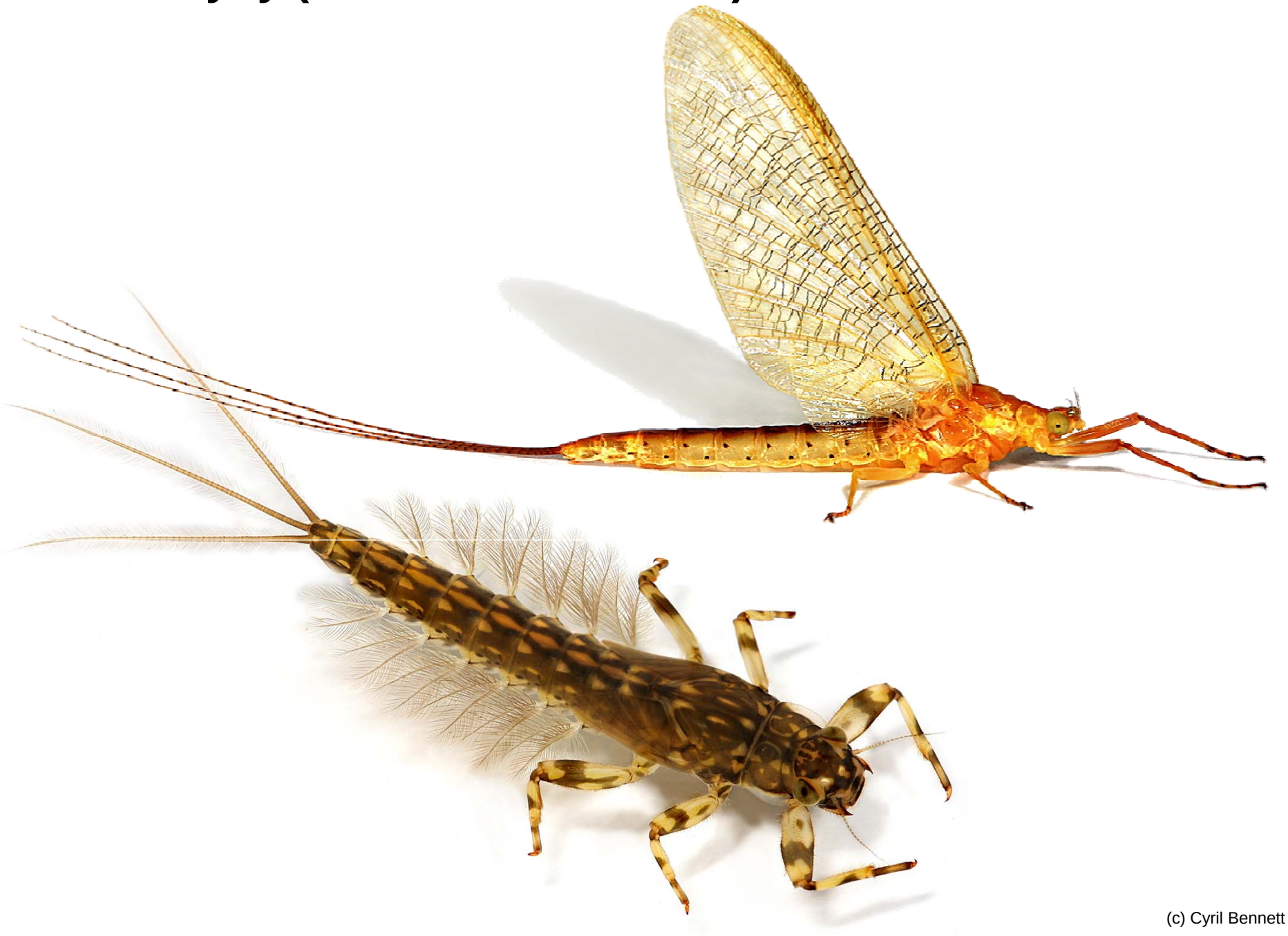
- Discouraging for beginners
- Identification still difficult (despite new keys)
- Long time period from record submission to Map Dot

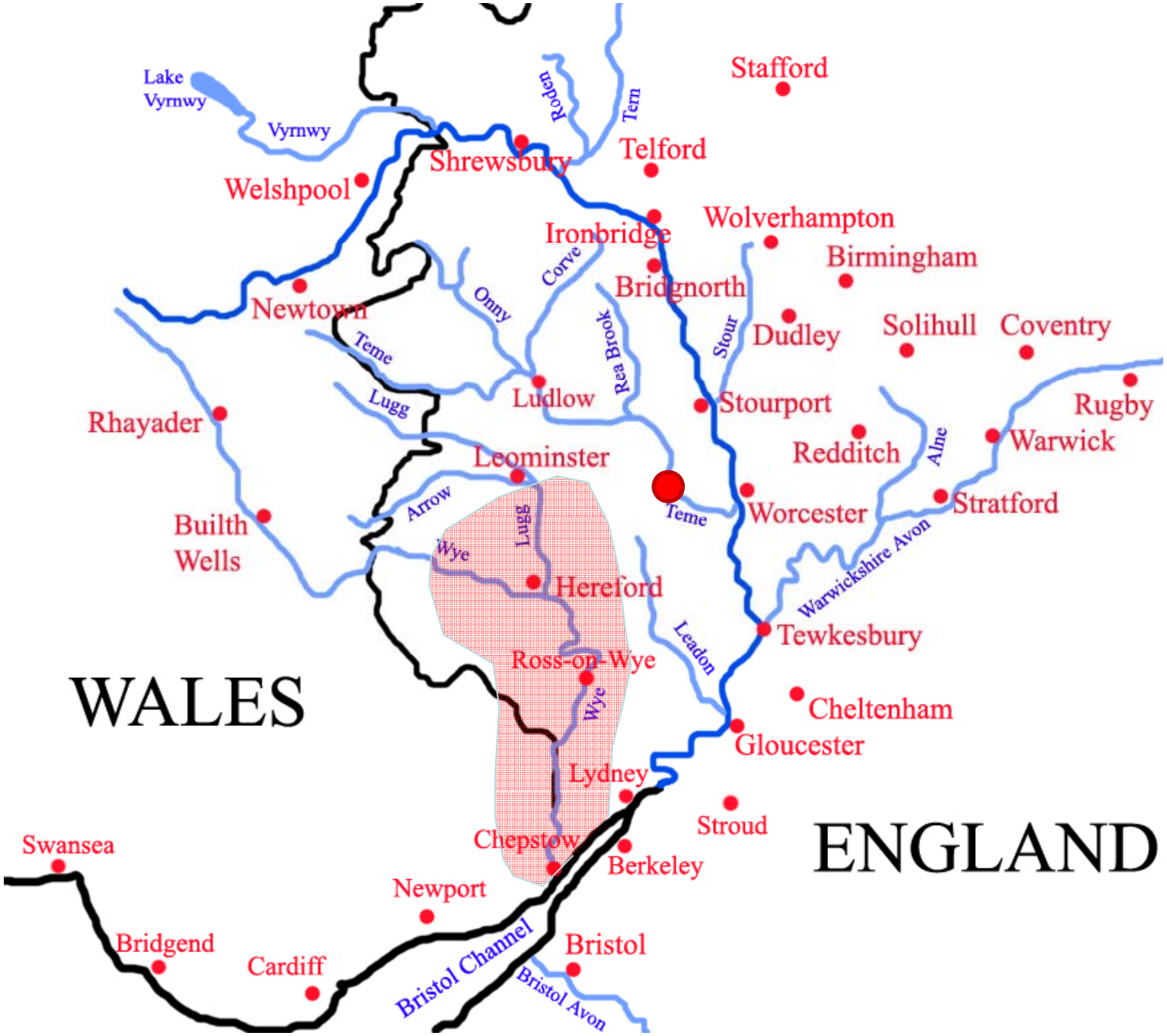
Identification guides

Recording focussed on individual species

- Easy to identify
- Increases interest for basic level Riverfly Recorders
- An entry level for Recording Schemes

Yellow mayfly (*Potamanthus luteus*)




Lake
Vyrnwy
Vyrnwy
Welshpool
Newtown
Rhayader
Builth
Wells
Shrewsbury
Roden
Tern
Telford
Stafford
Ironbridge
Corve
Onny
Teme
Lugg
Ludlow
Rea Brook
Bridgnorth
Wolverhampton
Birmingham
Stour
Dudley
Solihull
Coventry
Stourport
Rugby
Redditch
Alne
Warwick
Leominster
Arrow
Lugg
Wye
Hereford
Teme
Worcester
Stratford
Warwickshire Avon
Tewkesbury
Leadon
Ross-on-Wye
Wye
Cheltenham
Gloucester
Lydney
Stroud
Chepstow
Berkeley
Swansea
Newport
Bridgend
Cardiff
Bristol Channel
Bristol
Bristol Avon
WALES
ENGLAND

ID Postcards

Habitat management advice

SPECIES MANAGEMENT SHEET

Small grey sedge

(Glossosoma intermedium)

The Small grey sedge is a small to medium sized caddisfly and over the last ten years its numbers have declined rapidly in the UK. Due to its rarity and decline in numbers the insect has been added to the UK Biodiversity Action Plan. The case of this caddis is very distinctive because they are made of large sand grains and are shaped like a tortoise. However the identification of the larvae is difficult and requires a microscope. The adults are moth-like, dark grey-brown in colour, and fly in the early evening and at night.

Caddisflies have larvae (young) that are caterpillar like but with six strong legs. There are two distinctive types, 'cased' and 'free-living'. The cased caddis larvae make intricate shelters from a variety of materials such as small snail shells, precisely cut leaves, twigs and stones, all sewn together with a silk secretion. Adult caddisflies are moth-like in appearance but they have hairy, rather than scaly, wings. The wings are held 'tent like' over their body when resting. Like moths they often fly in the evening or at night.

Life cycle

This caddisfly has a year long life cycle with adults in flight between April and May. Rapid larval growth occurs from April to July. Then they change into a pupa in small stone structures which are attached to larger stones. They remain here until the spring when they emerge as adults in April or May.

Distribution map

This caddisfly has only ever been found for certain in four Lake District streams, these are the Hoathwaite Beck near Coniston, Pull Beck near Hawkshead, inflow of Hayeswater above Ullswater and also from the Troutbeck somewhere along its course. The records for this caddis vary over the last 40 years and it may have been lost from some of its original sites.

Dark green = recent records (after 1980)
Light green = historic records (before 1980)

Threats and causes of decline

There are a number of factors impacting the habitat that may be contributing to the decline of this insect; pollution by pesticides, nutrient enrichment by the construction of impounded dams, nutrient enrichment from sewage or farm run-off, siltation and disturbance from drainage works, alteration of flow regime from drainage works and shading by afforestation.

Worthwhile?

- Do records have to be genuinely useful for recording of them to be motivational
- Rarities few will ever see may not be a good choice
- Common species everyone will see may yield little useful information

Window-winged sedge (*Hagenella clathrata*)

Collecting evidence

The Silver Sedge *Odontocerum albicorne*

- Expected from stony streams and rivers from the North of Scotland to the South of England
- No conservation concern
- Surprisingly uncommon on the Isle of Man

Aesthetic pleasure

- The pleasure in recognising this amongst a netful of stream life
- Fascinating case construction
- Lovely ‘gizz’
- Interesting parasite
- Attractive adult
- Unusual adult antennae ….

All traditional records and recording to become obsolete?

A lake fauna in a shot-glass

Danish research team leads the way for future biodiversity monitoring using DNA traces in the environment to keep track of threatened wildlife – a lake water sample the size of a shot-glass can contain evidence of an entire lake fauna.

- When / if *Odontocerum albicorne* is found to be 3 species
- Old records will have less scientific and conservation value
- Still as nice to find and admire as an aggregate species!

Change of emphasis?

- Learn to identify more riverflies
- Not because it makes you a more valuable recorder
- But because it is interesting

Good identification guides and web-sites

Home » SP68. Guide to Freshwater Invertebrates

SP68. Guide to Freshwater Invertebrates

by MICHAEL DOBSON, SIMON PAWLEY, MELANIE FLETCHER and ANNE POWELL

Edited by ALAN CROWDEN

Due to be published by The Freshwater Biological Association, Ambleside, November 2012
ADVANCED ORDERS ACCEPTED

216 pages. Hardback. Size 201 x 143mm.
ISBN 978-0-900386-80-0
ISSN 0367-1887

Price £33.00 plus p&p

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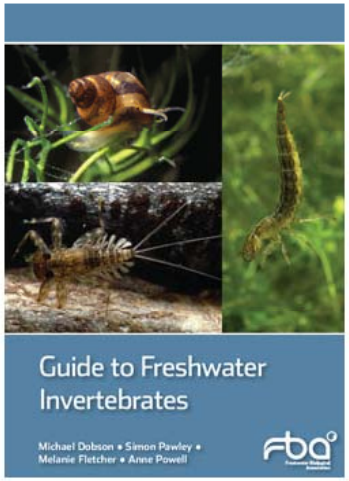

The invertebrates that live in our rivers, streams, lakes, ponds and wetlands are endlessly fascinating and hugely important in the ecology of fresh waters. This guide provides an introduction to their great diversity and the means to identify the many different types, from flatworms to beetles. A series of easy-to-follow keys, along with notes on ecology and distribution, allow identification of the more commonly encountered freshwater invertebrates occuring in Britain and Ireland, while 460 line drawings illustrate whole animals and the features of importance in distinguishing different groups. Identification is typically to family level, and beyond where this is straightforward to do so, with a bibliography of other keys and guides for those who want to pursue identification further.

With introductory notes on the classication of animals and the collection and preservation of specimens, as well as a detailed glossary, this guide is aimed at anyone interested in identifying freshwater invertebrate animals, from established naturalists and biologists to those new to the field. Written by staff from the Freshwater Biological Association, it is intended as a tribute to T.T. Macan, one of the 'founding fathers' of freshwater biology.

(This book was produced thanks to a grant from the Esmee Fairburn Foundation.)

v.ephemeroptera.pwp.blueyonder.co.uk

Ephemeroptera Recording Scheme

Introduction

Welcome to
The Ephemeroptera Recording Scheme!

This website is dedicated to the study of Ephemeroptera in the British Isles. You will find information on collecting and identifying British Ephemeroptera, together with information on the distribution, habitats and ecology of all 51 species know from the British Isles.

EPHEMEROPTERA
Recording Scheme

**********NEW**********

Online recording now available!

****

Details of our survey

****

Newsletter now available!

****

Did You Know?

Ephemeroptera are some of the oldest insects known.

There are around 2100 species known from the World.

Mayflies are the only insects to have two winged adult stages

Menu

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    - Orange-striped Stonefly Survey
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Riverfly Recording Schemes

The Riverfly Recording Scheme, established by the national recorders for caddisflies (Trichoptera), mayflies (Ephemeroptera) and stoneflies (Plecoptera), celebrates the common ground that exists between the three groups of insects.

Caddisflies, mayflies and stoneflies form a natural group and are found in similar habitats as both young and adults. The Riverfly Recording Scheme aims to:

- champion caddisflies, mayflies and stoneflies;
- produce identification guides to the groups;
- encourage and facilitate recorders to widen their expertise across these groups;
- run joint and specific training/recording events;
- contribute information to inform UK conservation priorities;
- and play an instrumental role in the Riverfly Partnership.

The Riverfly Recording Schemes Report 2010/11

Riverfly Recording Schemes Report 2010-11 -PDF-File, 711.9 KB

The Riverfly Recording Scheme welcomes your records

The Recording Scheme Coordinators welcome your records - and they will be pleased to assist you with advice regarding identification and recording.

Send your riverfly questions to Craig Macadam by email craig.macadam@buglife.org.uk.

Volunteers from the Anglers Monitoring Initiative are invited to send their caddisfly images to Ian Wallace for identification - see here.

Riverflies on Twit

- Riverflies: Demon shrimp UK sites including Severn & Trent. See NNSS f info and ID guide http://t.co/fAiDF77U #CheckCleanDry
- Riverflies: RT @cumbriai Interim breifing note av Dikerogammarus haemol https://t.co/l0JdzGsx
- Riverflies: RT @SteveOr Some of the first field ev that "killer shrimps" affe composition of freshwat invertebrate assemblag
- Riverflies: RT @RiverChe >1 year dry, water r August & in Octobe Gammarus was detected Meades Water Gardens
- Riverflies: RT @ThamesA Only managed to #Rivert 2 of 4 spots due to high good number of Mayfly a Penton Hook and plenty

BRC - Shemes - Riverflies

www.brc.ac.uk/schemes/RRS/homepage.htm

The Riverfly Recording Schemes - for Caddisflies, Mayflies and Stoneflies

(Previously known as CAMSTARS)

Home | Ephemeroptera | Plecoptera | Trichoptera | Links

Home of the Riverfly Recording Schemes

Background

The Riverfly Recording Schemes , established by the Caddisfly, Mayfly and Stonefly Recording Scheme Officers, celebrates and exploits the common ground that exists between the three groups of flies. Although retaining their individual identity, the recording schemes are increasingly working together.

- **Ephemeroptera (Mayflies or up-winged flies)**
- **Plecoptera (Stoneflies)**
- **Trichoptera (Caddisflies or sedges)**

Mayflies, stoneflies and caddisflies form a natural group and are found in similar habitats as both young and adults.

The three recording schemes collaborate in order to:

- Champion caddisflies, mayflies and stoneflies;
- Produce identification guides to the groups with the Field Studies Council;
- Encourage and facilitate recorders to widen their expertise across these groups;
- Contribute information to inform UK conservation priorities;
- Collaborate with colleagues in the Riverfly Parnership to deliver Riverfly invertebrate monitoring for angl coordinated by The Natural History Museum/English Nature partnership;
- Continue to play an instrumental role in the Riverfly Partnership;
- Run joint and specific training and recording events.

The key objectives of the recording schemes are to:

UKmoths

Your guide to the moths of Great Britain and Ireland

Moth name search: Go

2155 Species illustrated (6468 photos) 3834160 visitors

Welcome to **UKMoths**, your online guide to the moths of Great Britain and Ireland.

Traditionally, moth fieldguides have concentrated on the so-called "macro-moths", of which there are around 800 regular British species. To study all of Britain's species including the often very interesting microlepidoptera, requires an expensive library of reference material.

White Colon *Sideridis albicolon*
(Photo © Graham Austin)

The aim of this site is to illustrate as many species of British moths as possible and to provide this information in an accessible format. Over 2400 species have been recorded in the British Isles, and currently **2155** of these are illustrated, featuring **6468** photographs.

If you have good quality photos of British moths or lifecycle stages **not yet featured on UKMoths** and would like to contribute, please check the guidelines for contributors.

UKMoths is maintained entirely on a voluntary basis. Please consider making a small donation to help keep the project running and expand the feature set. Any donation, however small, is very much appreciated.

Donate

Many people use the site as an identification resource. If you do, please check the disclaimer.

Found an unusual moth? Don't know where to start looking? Try the beginner's top 20, the 20 most commonly requested identifications, or check out the Keyword search

Environment Agency Species Identification Inititiative

- Train EA biologists to identify easier groups to species level
- Manuals written
- Launch planned soon
- (Possibly/Probably to be made available outside EA)

Mention was made of "Classic" examples but many are more problematical.

You might like to try the characters out on some of the following pictures and then try the optional exercise for the *Hydropsyche* at the end of this section with some of your own specimens.

Instabilis

Hydropsychidae

A Diplectrona felix

cool clean streams

B Hydropsyche angustipennis

warm enriched streams

Pollution that changed a stream's hydropsychid from A to B would not be detected by family level BMWP

European Water Framework Directive

- Make the bad better
- Keep the good good and unchanged

- The latter difficult to do without species level identification

Fit for purpose?

- For conservation
- Increases enjoyment
- The spectrum of records ranging from those at a basic level of identification to the highest level are useful for increasing enjoyment
- More of them

Recording freshwater life is always enjoyable