

THE STONEFLIES (PLECOPTERA) of LANCASHIRE and CHESHIRE
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Stoneflies form a small order of 34 British species, of which two are doubtfully British; two are very rare, at least from present knowledge; and two are Scottish. Another species is restricted to south-eastern England. The total of 25 species now recorded from Lancashire and Cheshire represents a good proportion, and few other species can be expected, although much remains to be known about the detailed distribution of the species. Stoneflies are aquatic when immature (larvae or nymphs) and most occur in running water; it is the number and variety of the Pennine streams and rivers which account for the richness of the stonefly fauna. Even though the counties have polluted waters, these are concentrated in the industrial areas, and many streams and rivers have an extremely large stonefly fauna.

During the past few years the present author has worked on a survey of the stoneflies, both as larvae and adults, of Lancashire and Cheshire, using the 10 kilometer square system, and although much remains to be surveyed, especially in Cheshire, the distribution of stoneflies in the two counties has become better known. The number of individual stoneflies, and the number of species is high on the Pennines and their western slopes, and the fauna becomes much poorer as the coast is approached. This would be expected from their known preferences for fast flowing water, and as the streams and rivers become slower, the stoneflies disappear. They are extremely sensitive to pollution and are the first to disappear from the insect fauna when any pollution occurs.

No previous list of the stoneflies of Lancashire and Cheshire has been published, which accounts for the blanks in the vice-county maps for stoneflies in Hynes (1967), where VC 59 in particular is almost unrecorded, records being shown for only two species. Records of these insects have, however, been kept for some fifty years in the Manchester Museum, and these records, together with data from specimens in the Museum, and the records from the 10 kilometer survey mentioned, form the basis of the present list. Some previous records are erroneous and are mentioned in the list. The distribution given is restricted to vice-counties — VC 58 (Cheshire); VC 59 (Lancashire south of the Ribble); and VC 60 (Lancashire north of the Ribble). The former Lancashire part of VC 69 is not included. The notes on distribution refer to Lancashire and Cheshire, as do the dates given which refer to the adult flight period. The nomenclature follows Kloet and Hincks (1964) and the determination of adults and larvae are from Hynes (1967).

TAENIOPTERYGIDAE

1. *Taeniopteryx nebulosa* (L). 58 : 59
Sporadic in slower moving water generally, in rivers or sluggish streams where emergent vegetation occurs, or in faster rivers where vegetation breaks the force of the current. February to April.
2. *Brachyptera risi* (Morton) 58 : 59 : 60
Common in hilly areas, the larvae being sometimes abundant locally in hill streams or in woodland streams. Mainly April to May, occasionally July.

NEMOURIDAE

3. *Protonemura meyeri* (Pictet) 58 : 59 : 60
Common, especially along hill streams, and, with *praecox*, one of the earliest stoneflies to appear in any numbers. Mainly February to May, occasionally June or September.
4. *P. praecox* (Morton) 58 : 59 : 60
Common, along with *meyeri* but often in larger streams or rivers. Mainly March to early June, occasionally August.
5. *Amphinemura sulcicollis* (Stephens) 58 : 59 : 60
Very widely distributed, the larvae often abundant in the slower parts of streams and rivers where detritus occurs, the larvae usually being coated with silt. They occur both in hill streams and lowland streams and rivers. May to July.
6. *A. standfussi* Ris 58
Apparently scarce and local; no larvae have yet been recorded. May.
7. *Nemurella inconspicua* (Pictet) 58 : 59 : 60
Widely distributed but not common; larvae usually in small numbers in slower waters. March to May; July; October.
8. *Nemoura cinerea* (Retzius) 58 : 59 : 60
Almost the only stonefly whose larvae occur in still water, these often being abundant in acid pools on moorlands, in lowland ponds and lakes, and in a variety of still waters. April to July, also September and October.
9. *N. avicularis* Morton 58 : 59 : 60
Local, not common. Larvae on shores of lakes or in slower stretches of streams and rivers, both in higher altitude waters or in lowland stretches. March to May.
10. *N. cambrica* (Stephens) 58 : 59 : 60
Common along most stony streams, the larvae often abundant in fast flowing water. April to June.
11. *N. erratica* (Claassen) 58 : 59 : 60
Frequent, occurring along with *cambrica*, but apparently less common. March to May.

LEUCTRIDAE

12. *Leuctra geniculata* (Stephens) 58 : 59 : 60
Common along the larger streams and rivers, the distinctive larvae appearing in samples from April or May onwards. July to September.
13. *L. fusca* (L.) 58 : 59 : 60
Very common at the end of summer and in autumn along most stony streams and rivers; larvae abundant. August to November.

14. *L. nigra* (Olivier) 58 : 59 : 60
Local, usually along wooded streams and rivulets in which the larvae occur, but these are never plentiful, and are found in small numbers. May to July, also September.

15. *L. inermis* Kempny 58 : 59 : 60
Very common along most stony streams and rivers in Spring; larvae abundant especially in collections of dead leaves caught under stones in the water. February to June, mainly in April and May

16. *L. hippopus* Kempny 58 : 59 : 60
Common along most stony streams and rivers in Spring; larvae common. March to June.

? *L. mosleyi* Morton Recorded from Woodhead and Goyt Valley, (VC 58) by H. Britten but confirmation is needed. The Goyt specimens have been re-determined as *L. inermis* by Dr. Hynes, and the Manchester Museum has no specimens from Lancashire or Cheshire. The species should occur in Cheshire, and Hynes (1967) records it from VC 60.

CAPNIIDAE

17. *Capnia bifrons* (Newman) 58 : 59 : 60
Curiously sporadic in distribution; in both hill streams and in lower woodland streams, but absent from some which appear identical with recorded habitats; larvae sometimes in numbers, sometimes in isolated specimens. March to May.

18. *C. vidua* Klapalek 58 : 59
Local, apparently sometimes common where it occurs. Only recorded from Woodhead and Goyt Valley (VC58), and from Boulsworth (VC 59). In hill streams. February to April.

PERLODIDAE

19. *Perlodes microcephala* (Pictet) 58 : 59 : 60
Widely distributed in streams and rivers; larvae frequent; adults less often seen, since they tend to hide beneath loose bark or in detritus. April to early June.

20. *Diura bicaudata* (L.) 60
Local; only recorded so far in the counties from Blaze Moss, VC 60, in a small stony stream above 1000 ft. A record from Siddington, Cheshire, 17.5.1947 (G.C. Bartindale) and determined by H. Britten, is erroneous and the specimen is a tenereal *Isoperla grammatica* Poda. Occurs also on stony lake shores in Cumbria.

21. *Isoperla grammatica* (Poda) 58 : 59 : 60
Very common along most streams and rivers; the larvae are common and of various sizes, indicating a long flight period of the adults. May to August.

PERLIDAE

22. *Dinocras cephalotes* (Curtis) 58 : 59 : 60
Larvae frequent, often common, especially in limestone streams and rivers, where they seem to dominate the stonefly fauna. Adults less often seen and they have a very short flight period, from the end of May to early, sometimes mid, June; they hide in debris or vegetation, occasionally amongst stones by the water.
23. *Perla bipunctatus* (Pictet) 59 : 60
Larvae frequent, but less so than *cephalotes*, with which they often occur, but not invariably. In high hill streams, over 1000 ft., and in lowland streams and rivers, particularly in limestone waters. Adults less often seen, as with *cephalotes* and with a similar short adult flight period. Occasionally on hot days in early June both these large stoneflies are readily beaten from vegetation or are seen flying.
24. *Chloroperla torrentium* (Pictet) 58 : 59 : 60
Adults common along most stony streams and rivers; larvae never plentiful but widely distributed. May to July.
25. *C. tripunctata* (Scopoli) 58 : 59 : 60
Adults less frequent than *torrentium*, and possibly more restricted to higher streams; larvae sporadic, never in large numbers. May to June.

REFERENCES:

- Kloet, G.S., and Hincks, W.D., 1964. A Check List of British Insects (second edition, revised). *Handbk Ident. Br. Insects* 11 (Part 1) : 1-119.
- Hynes, H.B.N., 1967. A key to the adults and nymphs of British stoneflies. *Freshwater Biol. Ass. Sci. Pub.* No. 17.