

THE STATE OF TAXONOMIC AND FAUNISTIC RESEARCH ON THE CADDISFLIES OF EUROPE AND ADJACENT REGIONS

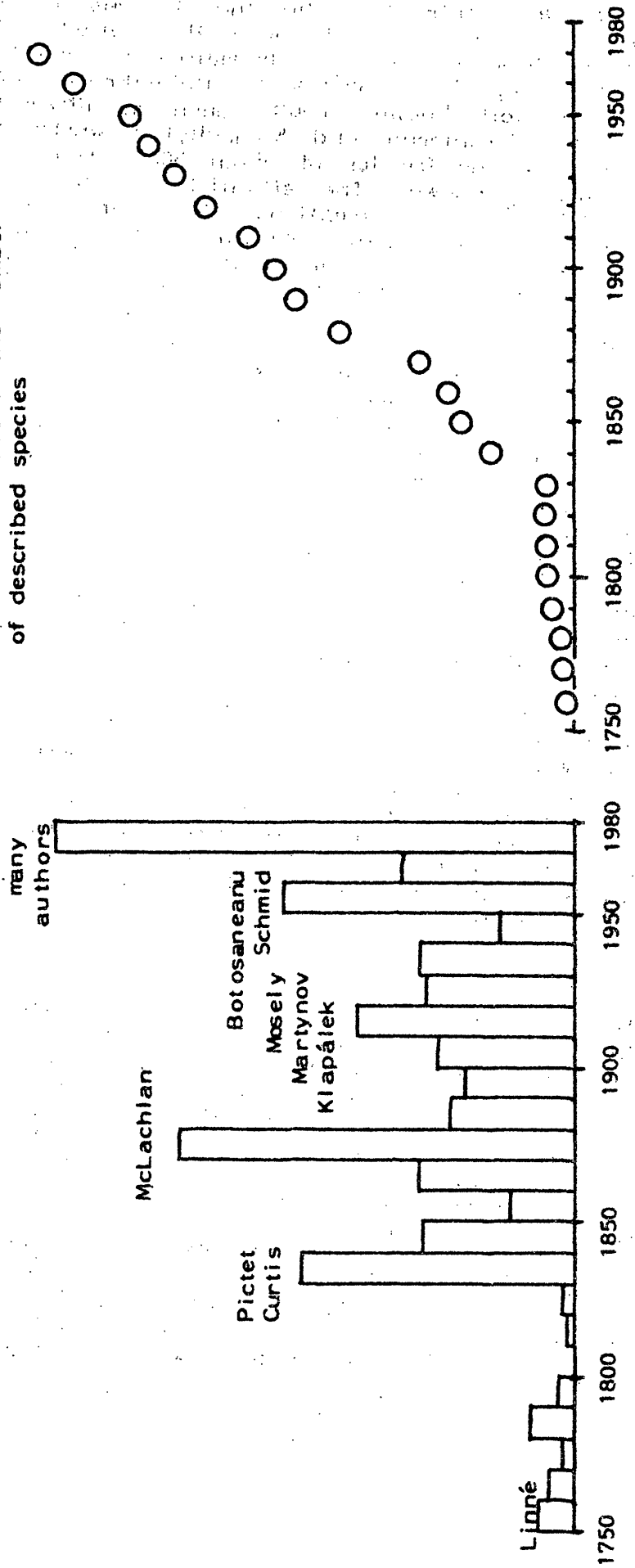
In recent years I have been preparing an Atlas for the identification of adults caddisflies which will soon be finished. It was necessary to examine all species and to compare much material, including types. This is a good occasion to present a survey of our present knowledge. The Atlas will cover not only Europe in its geographical sense, but also the Mediterranean area including northern Africa and southwestern Asia, with the mountain ranges of western and northern Iran, and the Atlantic islands of the Canaries, Madeira and the Azores. This area is a faunistic unit for Trichoptera. The term Western Palaearctic has been used for it, but I avoid the term because the trichopterous fauna of temperate Central and Eastern Asia has not much in common with that of Europe. In many cases I have had to decide about the taxonomic state of species or subspecies. Several new synonyms and the correction of presumed synonyms have resulted.

About 1030-1040 species are now known from the area. The accompanying figure shows the increase of our knowledge in the last 200 years. The columns in the left histogram present the number of species described in the respective decades, and the right figure gives the corresponding cumulative curve. It might be suggested that the number of species will continue to increase in the same manner. This is unlikely because the survey of species is now nearly completed. For the groups discussed below, and allowing for unexpected findings which are always possible, the total number of species will not exceed 1150. The number of species described by the different authors is as follows: McLachlan 208, Malicky 127, Martynov 104, Schmid 78, Botosaneanu 61, Curtis 46, Mosely 42, Pictet 33, Klapálek 27, Hagen 22, Marinković 22, Navás 22, Rambur 20, Ulmer 19, Linné 16, Morton 16, Kumanski 15, Kolenati 14, Zetterstedt 14, Brauer 13, Fabricius 11, Ris 10; there are also more than 60 authors who have described smaller numbers.

The state of research varies in different countries. During recent years, countries which had formerly been neglected are now well investigated; they are Portugal, Spain, Morocco, Italy, Yugoslavia, Greece, Rumania, Bulgaria, Latvia, Israel, and Iran. On the other hand, new faunistic literature is scarce in some countries which were well investigated earlier, e.g. the British Isles, the Netherlands, Belgium, France, the Federal Republic of Germany, and Switzerland. Certainly new faunistic literature gives partial information, but some of the older lists are not up to date, and a total survey is lacking. For zoogeographical purposes, synoptic tables with the distribution of species in the provinces of a given country, in combination with maps, are particularly needed. These tables save the foreign scientist the hard work of looking for many doubtful localities on a variety of maps. Such synoptic tables have existed since 1942 for Sweden and are still useful with the table of 1975 for Scandinavia. Other tables have existed for Austria since 1977, for the German Democratic Republic since 1979, and are now in press for Italy. Extremely poorly investigated countries are Algeria, Tunisia, Libya, Egypt, Syria, Lebanon, and Iraq, which have a relatively limited fauna, and also Turkey whose fauna is of particular richness and interest.

Tri choptera species described
in the respective decades

Cumulative curve of the number
of described species



The state of knowledge of Trichoptera is good for most systematic groups. In the recent years several difficult groups have been revised and now offer no more problems, e.g. *Micrasema* (except in the Iberian Peninsula) and the *Hydropsyche guttata* group. Much work is necessary for good descriptions and differential diagnoses of females, e.g. in *Hydroptilidae*, *Wormaldia*, *Tinodes*, *Polycentropodidae*, *Hydropsychidae*, *Dinarthrum*, and *Micrasema*, but also in well known groups such as *Rhyacophila*, *Drusus*, *Leptoceridae*, *Micropterna* and *Stenophylax* where several females are not known. The females of about 500 European species remain more or less unknown. The situation for larvae is still more chaotic. With a few exceptions, the European caddis larvae cannot be identified with certainty. This must be emphasized because contrasting opinions are sometimes published.

Even in the males, which have in general good distinguishing characters, there remain many problematic groups: (1) The sub-specific division of *philopotamids*, above all in *Wormaldia*, is in a catastrophic state. I will therefore not consider any subspecies of *philopotamids* in my Atlas. (2) The *Hydropsyche instabilis* group in the Mediterranean area is in a similar chaotic state. A careful revision with much new material is needed. As for *Wormaldia*, I have thousands of specimens of both groups in my collection, and have therefore an idea of the dimension of the problem. (3) Most species of *Sericostoma* are still doubtful. The shape of the parameres, which has been used for identification, is too variable. Even the two Central European species *flavicornis* and *personatum* are doubtful. (4) The *Glossosoma spoliatum* group, (5) the genus *Micrasema* in the Iberian Peninsula, (6) the genus *Dinarthrum* in the far Southeast, and (7) the *Phryganea grandis* group should be revised. (8) *Hydropsyche pellucidula* seems to consist of a polymorphic complex of 'forms' whose taxonomic significance is not clear. Material should be collected for a better study of these 'little species'. (9) *Beraea maurus* is stable in general, but in the central Mediterranean area it splits into a number of 'forms' or species which merit more attention. (10) *Mesophylax aspersus* and *M. impunctatus* are considered as two separate species. Both are extremely variable; I confess that I cannot distinguish between them. Perhaps they are varieties of one polymorphic species?

Suggestions for future work.

(1) Trichopterists are asked to produce synoptic tables with the distribution of caddisfly species in their countries, together with a map, like those from Sweden, Austria and Italy. One of the next symposia could be a good occasion to present such tables. It is clear that corrections will be necessary later, so that we could envisage the publication of corrected editions every 10-20 years.

(2) Fellow entomologists should be asked not to abandon the by-catches of Trichoptera, in particular from poorly investigated regions, and to supply specialists with this material.

(3) Much material of problematic groups should be collected and stored for revisions, which should, if possible, be made in contact or collaboration with interested colleagues. In such groups, descriptions of single taxa should be avoided until

(4) The collection of larvae with reliable identifications is urgent. Keys should be made only from specimens whose identity is beyond any doubt. Descriptions of single larvae are useless for taxonomy, except in exceptional cases. The literature is already overloaded with doubtful descriptions of larvae.

Category	Item	Value	Unit	Notes
Food	Meat	100	kg	
	Vegetables	50	kg	
Clothing	Shirts	20	pieces	
	Jeans	10	pieces	
Electronics	Smartphones	5	units	
	Laptops	2	units	
Furniture	Sofas	3	units	
	Tables	1	unit	
Services	Travel	1000	USD	
	Education	500	USD	
Healthcare	Medicine	200	USD	
	Consultation	100	USD	
Utilities	Electricity	100	USD	
	Water	50	USD	
Transportation	Gasoline	100	USD	
	Public Transport	50	USD	
Miscellaneous	Books	10	units	
	Tools	5	units	

[illegible]

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Other activities and interests: Nymphal taxonomy of Leptophlebiid mayflies of Australia, ecology of running water invertebrates.

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