Important aspects of the ecology of chironomid larvae have been discussed in Part I, Chapter 2. Some aspects of the ecology of the Chironomini, treated in Chapter 2 of Part II apply more or less to the Orthocladiinae and will not always be summarised in this book.

2.1 SYSTEMATICS

For a long time the subfamily Orthocladiinae was divided into two tribes: Orthocladiini and Metriocnemini (e.g. Goetghebuer, 1940–50; Pinder, 1978). The former author included Corynoneura and Thienemanniella in a separate subfamily Corynoneurinae (Goetghebuer, 1939). Saether (1977a, 1979a) stated that some genera take a more plesiomorphic position, which led to a provisional division into eight tribes. The most plesiomorphic genera are Stilocladius and some genera often combined as the Brillia group, followed by the Corynoneurini and then the Orthocladiini and Metriocnemini (Cranston et al., 2012). In general this division has been universally followed, but the most recent keys and ecological publications do not use the division into tribes.

To make identification of larvae easier, Pankratova (1970) and Moller Pillot (1984) included the subfamilies Diamesinae and Prodiamesinae in their books on Orthocladiinae. There is no doubt about the separate status of these three subfamilies. In this book they are treated separately (Chapters 3, 4 and 5).

2.2 IDENTIFICATION

Langton & Pinder (2007: key to adult males) and Langton & Visser (2003: key to exuviae) are the most up to date keys to these stages. The latter publication also gives descriptions. In Chapters 3 to 8 we only mention whether it was possible or not to identify the adult male of a species using Pinder (1978) when this is necessary for interpreting the literature. In most cases, the key to exuviae by Langton (1991) is still very useful. In the text we mention when a species is not known from the British Isles, and therefore absent from Langton & Pinder (2007).

Identification of fourth instar larvae

A key to genera with descriptions of each genus is given in Cranston et al. (1983). Very good descriptions and figures of all genera can be found on Peter Cranston’s website: http://chirokey.skullisland.info/#taxa. The keys to species by Cranston (1982) and Moller Pillot (1984) have to be revised. A very good key with short descriptions and very good figures is given by Schmid (1993), but this book is out of print. A significant part of the information given in these books has been incorporated into the key by Janecek (2007). A useful key in the Slovak language is made by Bitušik (2000). The keys by Chernovskij (1949) and Pankratova (1970) are sometimes mentioned in this book because they have been used for many years by most workers in Eastern Europe. Some valuable characters are rarely used in the current keys to larvae. Fig. 1 shows that the shapes of the ventromental plates, and especially the bases of them in combination with the location of the setae submenti, differ widely between genera or species.

It seems probable that head length and head width are not influenced by water temperature, or only very slightly, although the total length of fourth instar larvae of the winter generation can be much larger (e.g. Hannesdóttir et al., 2012).
Younger larvae

Hitherto all existing keys apply only to fourth instar larvae. However, as in other subfamilies of the Chironomidae, most characters apply also to the third and second instar. The stated morphometric characters are specific to fourth instar larvae, unless otherwise mentioned. As a rule, head length and head width in the third instar are about 60% of those of the fourth instar, and in the second instar are about 60% of those of the third instar. However, the first antennal segment is relatively shorter in younger instars and so the antennal ratio is also lower in younger instars. Younger larvae usually have relatively longer setae, but this may vary even within a genus. For information about factors causing intraspecific differences in body size, see Vallenduuk & Moller Pillot (2007: 18).

The descriptions of the species in Moller Pillot (1984) sometimes include the head length of the third instar larva. More exact measurements of head length and head width of third and often also second instar larvae can be found in Schmid (1993). Only very few authors describe all instars of a species separately; such descriptions are mentioned in the species descriptions in this book.

First instar larvae usually have a quite deviating mentum. Other characters of the fourth instar are also not useful for identifying first instar larvae (e.g. first instar Cricotopus larvae have a simple I₄). Schmid (1993: 493–501) contains figures of the mentum and antenna of 13 species of the Orthocladiinae. Some other authors give figures and descriptions of the first instar of one species (e.g. Rodova, 1966: Cricotopus sylvestris; Zelentsov, 1980: Psectrocladius s.s.).

2.3 DISTRIBUTION

Most of the data on the distribution of chironomid species in Europe are taken from Fauna Europaea (Saether & Spies, 2010). For the Netherlands different sources have been used; Limnodata.nl gives all data supplied by the water authorities. Because Fauna Europaea and Limnodata are often incomplete and include some misidentifications, we have added many of our own data and omitted many doubtful records, usually without further comment. Nevertheless, some mistakes in the text are inevitable. The author is not responsible for the checklist published under his name in Beuk (2002: 109–128).

A complete picture of the distribution of species can rarely be given. This is because in the Netherlands identification is mainly restricted to larvae and in many other countries too few scientists work on chironomids. Inhabitants of special water types (e.g. temporary water) are poorly known because most investigations have been restricted to lakes and streams.