

A General Section

As explained in the preface, the monograph has been split into two volumes. This applies also to the general section. In volume I, the general morphology, the life cycle, and the principal investigation methods are described, while volume II will deal mainly with ecology and geographic distribution, phylogeny, evolution, and classification. Further, it will contain a user-friendly key to all species.

1 Morphology and Principal Terms

In this section, the principal morphology and terminology will be explained, using simple but well-defined figures. Indeed, this is a first step to the urgently needed general methodology of ciliate descriptions. Partly, figures and terms were taken from STEARN (1992), who reviewed the terms used in descriptive botany. There are still some uncertainties, also in botanical terminology, which should be clarified in a more comprehensive treatment of the matter.

For general ciliate terminology, we refer to the excellent compilations of CORLISS (1979) and MARGULIS et al. (1993), while the general ciliate morphology is exhaustively treated in CORLISS (1979) and PUYTORAC (1994).

1.1 Size and shape, morphometry (Fig. 1–3, 5)

The spathidiids range from about $60 \times 10 \mu\text{m}$ to $400 \times 50 \mu\text{m}$ in vivo. The volume of one of the largest species, that is, *Epispathidium securiforme* is 35 times larger than that of one of the smallest species, that is, *Edaphospathula minor*. This is a small range when compared to those found in colpodids (200 000, FOISSNER 1993) and oxytrichid stichotrichs (140, BERGER 1999). We have used seven categories of size (as reflected in body length; arbitrarily if unrealistically set up with non-overlapping ranges) as follows: very small, 10–30 μm ; small, 30–60 μm ; moderately small, 60–90 μm ; medium sized, 90–150 μm ; large, 150–300 μm ; moderately large, 300–500 μm ; very large, > 500 μm .

According to the name, spathidiids should be spatula-shaped. Unfortunately, this hardly applies (Fig. 1–3, 5)! Most are very narrowly to broadly bursiform with a more or less slanted anterior end and a rounded posterior. Others are cylindroidal, vermiform, clavate, axe-shaped etc. Thus, a huge variety of shapes exists, and the ratio of body length to body width ranges from about 1:1 to 30:1. Most species are slightly to distinctly flattened laterally, some are even leaf-like. Many of the terrestrial species are small and/or slender, as is typical for soil organisms in general (FOISSNER 1987a). However, those living in mosses and leaf litter may be large, for instance, the common *Epispathidium amphoriforme*. The shape is stabilized by bundles of cortical microtubules (WILLIAMS et al. 1981), but usually the cortex remains flexible and the shape may thus strongly deform in over- or under-nourished cells. Theronts and trophonts occur, but true polymorphism is lacking. Likewise, metaboly and pronounced contractility do not occur because myonemes are absent.

Invariably, the oral apparatus occupies the anterior body end, forming a more or less

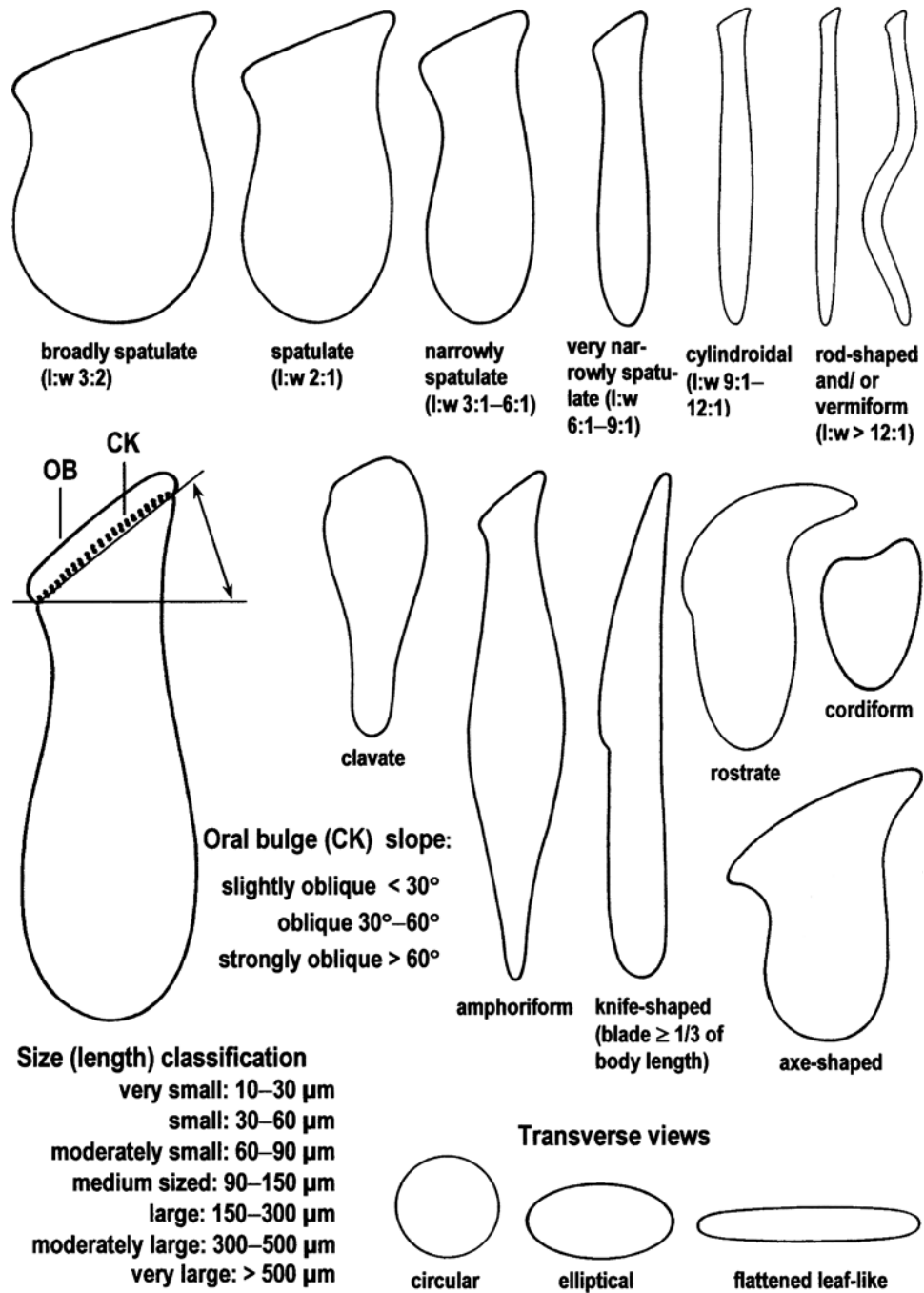


Fig. 1 Classification (terminology) of body shape in lateral and transverse view, size (length), and slope of oral bulge in spathidiid ciliates. CK – circumoral kinety, l:w – ratio of body length to width, OB – oral bulge.