CHAPTER 2-2
PROTOZOA: CILIOPHORA AND HELIOZOA DIVERSITY

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Other Ciliophora Known from Bryophytes

Figure 1. *Amphileptus pleurosigma*, a free-swimming, predatory ciliate. Photo by William Bourland.

Figure 2. *Chilodontopsis depressa*, an algivorous ciliate (Risse-Buhl & Küsel 2008). Photo by William Bourland.

Figure 3. *Cinetochilum margaritaceum*, a bryophyte-inhabiting ciliate that Mieczan (2007) found in peatland ponds of Poland with pH of 5.0. Photo by William Bourland.

Figure 4. *Cinetochilum margaritaceum* stained to show organelles. Photos by William Bourland.

Figure 5. *Didinium nasutum*, a bryophyte-dwelling ciliate that feeds on *Paramecium*. This species is capable of encysting to avoid unfavorable conditions. Photo by William Bourland.
Figure 6. *Oxytricha fallax*, a ciliate, has a complex grouping of cilia that are used for sweeping food into the gullet. It lives among bryophytes, as well as other habitats. Lower organism has been stained. Photos by William Bourland.

Figure 7. *Stentor multiformis*, a ciliate that occurs in peatlands (Mieczan 2006) and can attach to moss leaves. Photo by William Bourland.

Figure 8. *Stentor* showing green algal symbiont. Photo by Wim van Egmond.

Figure 9. *Colpoda steinii*, a constant member of *Sphagnum* communities in two Polish peatlands (Mieczan 2006). Photo by Yuuji Tsukii.

Figure 10. Two *Holophrya* species, ciliates that can inhabit *Sphagnum* in peatlands (Mieczan 2006). Photos by Yuuji Tsukii.
Figure 11. *Monodinium*, a ciliate that sometimes occurs on *Sphagnum* in peatlands (Mieczan 2006), showing ring of cilia. Photo by Yuuji Tsukii.

Figure 12. *Monodinium* dividing. Photo by Yuuji Tsukii.

Figure 13. *Paramecium bursaria*, a common species that can occur on *Sphagnum* in peatlands in Poland (Mieczan 2006). This one has algal symbionts. Photo by Yuuji Tsukii.

Figure 14. *Spathidium muscicola*, a ciliate that can live among mosses. Photo by Yuuji Tsukii.

Figure 15. *Steinia sphagnicola*. Normal cell. Photo by Yuuji Tsukii.

Figure 16. *Steinia sphagnicola* cell dividing. Photo by Yuuji Tsukii.

Figure 17. Upper: *Urotricha farcta*. Lower: *Urotricha platystoma*. This genus occurs on mosses in Polish peatlands (Mieczan 2006). Photo by Yuuji Tsukii.
Heliozoa

The heliozoans look like a sunburst with their sticky, wirelike pseudopods. About 20 species live among Sphagnum in pools with pH ranging 5-5.6 (Hingley 1993). The sticky pseudopods, known as axopods, are used to ensnare food such as algae and smaller protozoa, and to protect the organisms. They also facilitate a slow movement, since these organisms lack cilia or flagella. The beautiful and delicate moss dwellers include Actinophrys sol (Figure 19) and Actinosphaerium eichhorni (Figure 20–Figure 21).

Summary

Although they are more difficult to detect, the Ciliophora are quite common among bryophytes. They are best detected by culturing, and then the many species seen in this chapter become active. Heliozoa are not common among bryophytes, and only the few species shown here are familiar ones in a bryophyte habitat.

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Literature Cited


