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Ollicola vangoorii (Chrysophyceae, Chromulinales): an unfamiliar loricate protist newly documented in U.K. freshwaters from a southern upland loch, Scotland

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Ollicola vangoorii (W. Conrad) Vørs [= *Calycomonas vangoorii* (W. Conrad) J.W.G. Lund] is a flagellate protist belonging to the chrysophyte ('golden') algae (Lang *et al*., 2011), with a coastal temperate to polar distribution (Vørs, 1992). The protective envelope of this alga is characterized by transverse striations that produce the distinctly corrugated appearance of the species' vase-like lorica (Lund, 1960; Starmach, 1985) (Fig. 1*a*, *b*). Until now, *O. vangoorii* has not previously been recorded in U.K. freshwaters (G. Novarino & D. John, *pers. comm*.).

In the course of analysing phytoplankton samples collected as part of the Scottish Environment Protection Agency's ongoing assessment of the ecological status of freshwater lochs in Scotland (Lang *et al*., 2013), small numbers (5 – 10 cells per 100 ml) of *O. vangoorii* were found in Loch Grannoch during the summer months of 2012. Loch Grannoch is situated in a largely afforested catchment of the southern uplands of Scotland (NGR: NX 54153 69674). It is an elongated lake with a surface area of *c*. 1.14 km^2, characterized by an acid-sensitive (annual mean -0.82 mg L^{-1} as $CaCO_3$ in 2012) and slightly mesotrophic water chemistry [annual mean total phosphorus (TP) concentration 15.4 µg L^{-1} in 2012].

Although *O. vangoorii* is typically known as a marine taxon (e.g., Novarino *et al*., 2002), and is hence not currently featured in John *et al*. (2011), the species has also been documented from less saline Danish inland waters (G. Novarino, *pers. comm*.). Therefore, its occurrence in a freshwater environment is probably not unexpected, and furthermore suggests the species is adapted to a wide salinity range. This may well depend upon distinct eco-physiological variants. However, there seem to be no noticeable morphological differences in relation to salinity (G. Novarino, *pers. comm*.). Whether the *O vangoorii* found to occur in freshwater is genetically similar to those inhabiting the marine environment, remains to be determined.

Besides the potential for a mixotrophic existence [i.e., capacity to derive energy from photosynthesis and by ingesting bacteria (Novarino *et al*., 2002)], the ecological significance of *O. vangoorii* is poorly understood. Nonetheless, we present another interesting algal find that is completely new to the freshwaters of the British Isles.

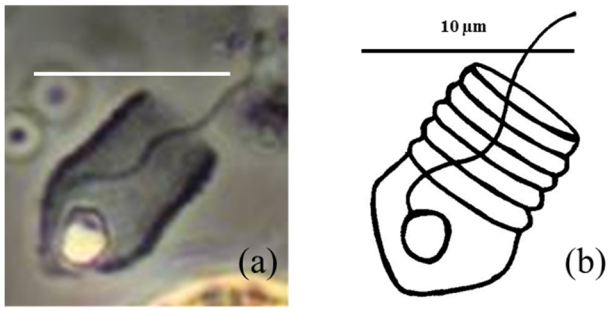

Fig. 1. *Ollicola vangoorii*. (a) Photomicrograph of *O. vangoorii* preserved in Lugol's iodine. Scalebar, 10 µm. (b) Line drawing of *O. vangoorii*.

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