

A New Genus Record for the Freshwater Algal Flora of Turkey

Fatma ÇEVİK^{1,*}, Brian A. WHITTON², Okan ÖZTÜRK¹

¹Çukurova University, Fisheries Faculty, 01330, Balcalı, Adana - TURKEY

²School of Biological and Biomedical Sciences, University of Durham, Durham DH1 3LE - UK

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Abstract: The genus *Hydrurus* C.Agardh 1824 and a species belonging to this genus, *Hydrurus foetidus* (Villars) Trevisan 1848, are reported for the first time for Turkish inland waters. The morphological characteristics of this species are described and information about its ecological distribution is given.

Key Words: Chrysophyceae, *Hydrurus foetidus*, Şiryan River, Turkey

Türkiye Tatlısu Algal Florası için Yeni Cins Kaydı

Özet: Chrysophyceae'ye ait *Hydrurus* C.Agardh 1824 cinsi ve bu cinse ait *Hydrurus foetidus* (Villars) Trevisan 1848, Türkiye iç sularında ilk kez rapor edilmiştir. Bu türün morfolojik özellikleri tanımlanmış ve ekolojik dağılımları hakkında bilgiler verilmiştir.

Anahtar Sözcükler: Chrysophyceae, *Hydrurus foetidus*, Şiryan Nehri, Türkiye

Introduction

Chrysophyceae, or golden-brown algae, are widely distributed in inland waters. However, a few species are found in brackish or marine waters, and some of these apparently grow equally well in marine and inland waters (Van den Hook et al., 1997; Nicholls & Wujek, 2002). It was reported by Van den Hook et al. (1997) and Kristiansen (2002) that there are about 1000 species belonging to the chrysophytes and most are unicellular or colonial. A few have a simple multicellular organisation, such as simple filaments, with or without mucilage, or form a pseudoparenchymatous thallus.

Hydrurus is a freshwater form, which has mostly been reported from streams and rivers in mountainous districts, especially during the colder months of the year (Lund & Lund, 1998). There is a single species, *H. foetidus* (Kristiansen, 2002). Perhaps because of its characteristic habitat, there are fewer records for

different countries than might be expected. This note is the first report for Turkey (Gönülol et al., 1996; Koray, 2001).

Materials and Methods

Samples were collected from Şiryan River (also known as Seriyen River), Eleşkirt, Ağrı (39°44'15" N, 42°51'48"E) at an altitude of about 1959 m in February and March 2005. The study area and the location of the sampling point are shown in Figure 1. Plants were collected by hand on rocks. The samples were preserved in Lugol's iodine solution and kept in the laboratory in the Faculty of Fisheries, University of Çukurova, Adana. Material was examined using an Olympus BX-50 phase-contrast microscope for identification and photomicrography. Identification was carried out using John et al. (2002) and Wehr & Sheath (2002).

*E-mail: fcevik@cu.edu.tr

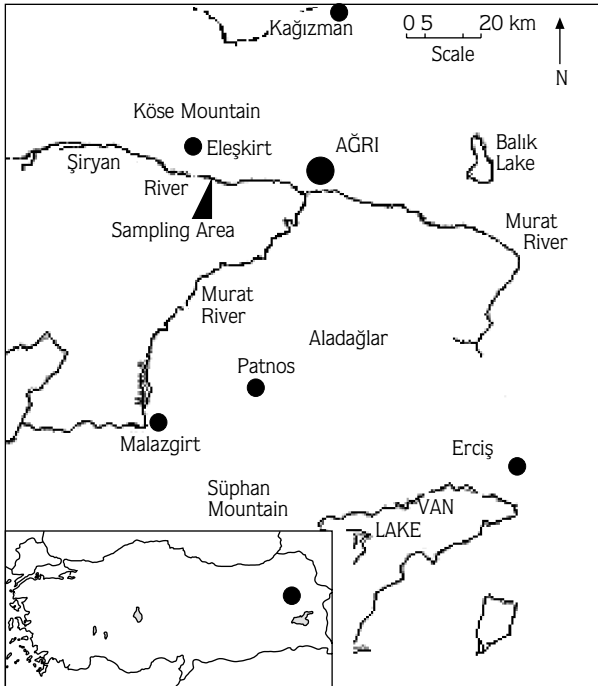


Figure 1. The location of the sampling area.

Result and Discussion

The taxonomy of this species is as follows:

Phylum: Chrysophyta

Class: Chrysophyceae

Order: Hydrurales

Genus: *Hydrurus* C.Agardh 1824

Species: *Hydrurus foetidus* (Villars) Trevisan 1848

Hydrurus was found epilithic on submerged rocks in a well-aerated, moderately agitated and clear stream with a depth of 20-50 cm. The density of material and the macroscopic structure of the alga made it visually very obvious to the naked eye. The mucilaginous, somewhat moss-like structures, fitted well with accounts by Nicholls & Wujek (2002) and Kristiansen (2002). The thalli are 1-30 cm in length, branched, bushy to feathery (Figure 2) and dark brown. The cells are subspherical to ellipsoid, being 8-12 μm in the longest axis (Figure 3a). Growth is apical. Cells are arranged peripherally in mucilage (Figure 3b).

Hydrurus foetidus is a cold-water stenotherm (Izaguirre & Pizarro, 1998; Vavilova & William, 1999; Hieber et al., 2001; Nicholls & Wujek, 2002; Kristiansen, 2002; Kristiansen, 2005) and rheophilic that can resist strong currents (Izaguirre & Pizarro, 1998; Hieber et al., 2001; Lindstrøm et al., 2004). One of the most important governing factors for seasonality is temperature variation (Kristiansen, 2005). When water temperature rises much above 10 °C, this alga begins to disappear (Lund & Lund, 1998; Nicholls & Wujek, 2002; Kristiansen, 2005). Some cells swim away, others form Chrysophycean cysts, many probably die and the feathery colonies break up and disappear (Lund & Lund, 1998).

Hydrurus is widely distributed in mountain streams and rivers (Hieber et al., 2001; Kristiansen, 2002; Nicholls & Wujek, 2002; Lindstrøm et al., 2004; Robinson et al., 2004). It produces foetid odours (Lund & Lund, 1998; Kristiansen, 2002, 2005; Nicholls & Wujek, 2002).



Figure 2. General morphology of *H. foetidus*.

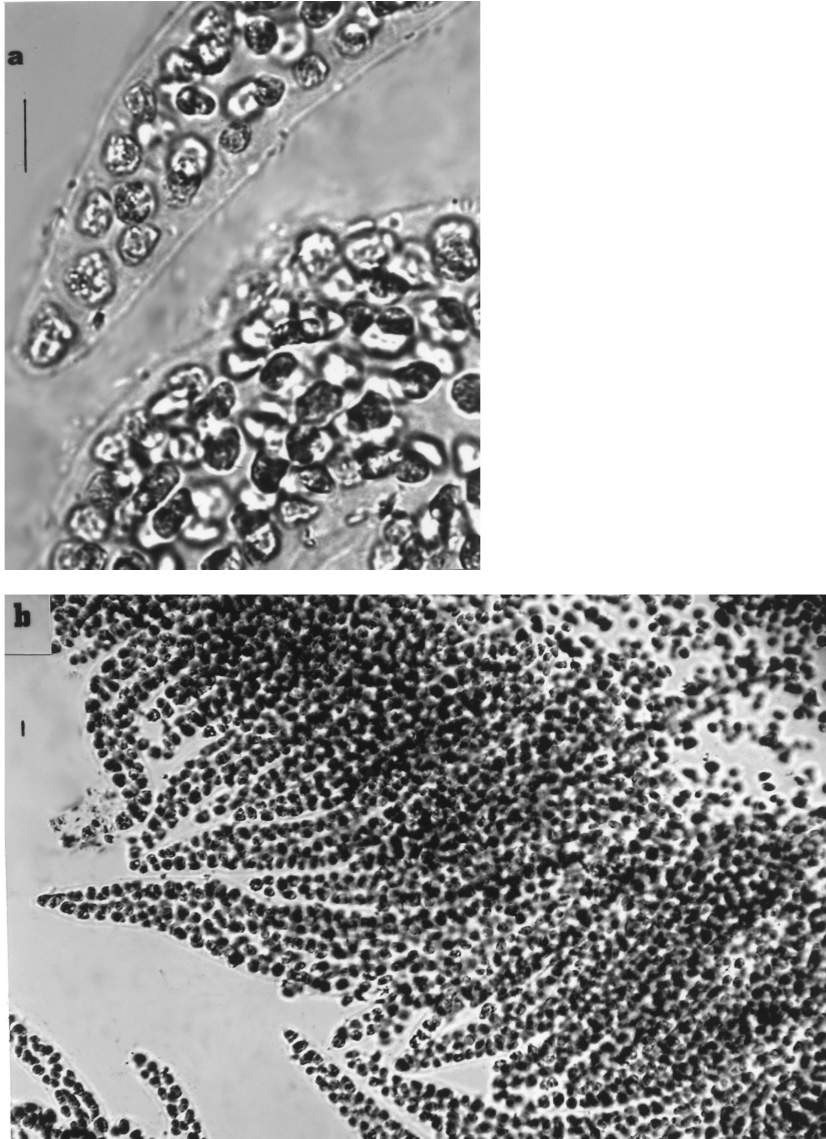


Figure 3. Microphotographs of *H. foetidus* a- Detailed view, b- General view (scale bar is 10 μm).

This species has not been recorded so far in Turkey (Gönüloğlu et al., 1996; Koray, 2001). When the biogeographical distribution of *H. foetidus* is considered, the occurrence of this species in mountain streams, particularly kryal streams, is normal. However, there are very few studies in such streams in Turkey (Ertan & Morkoyunlu, 1998; Kolaylı et al., 1998; Çevik et al., 1999; Kara & Şahin, 2001; Atıcı et al., 2003; Şahin,

2003). More investigations and field collections should be done to explore the rich algal flora in this country.

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