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## Comments on cladocerans of crater lakes of the Nevado de Toluca Volcano (Central Mexico), with the description of a new species, *Alona manueli* sp. nov.

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### Abstract

Cladoceran communities of two lakes of Nevado de Toluca Volcano, Central Mexico, were studied. A new species of Aloninae, *Alona manueli* sp. nov., is described. It was previously confused with Palearctic *Alona intermedia* Sars, 1862, but clearly differs from it in the morphology of postabdomen, head shield and head pores, and thoracic limbs. Position of *Alona manueli* sp. nov. within the genus is unclear, it did not belong to any species-group within *Alona* s. lato. Other species recorded in the studied lakes are *Alona ossiani* Sinev, 1998, *Alonella pulchella* Herrick, 1884, *Chydorus* belonging to *sphaericus*-group, *Eurycercus longirostris* Hann, 1982 and *Pleuroxus* cf. *denticulatus* Birge, 1879.

**Key words:** cladocera, crater lake, Mexico, Neovolcanic Province, endemic, taxonomy

### Introduction

Cladocera of Mexico have been intensively investigated during last decades, and the fauna of the region was recently reevaluated (Elías-Gutiérrez *et al.* 2008). One of the intensively revised groups is the subfamily Aloninae (Anomopoda: Chydoridae). Several new species and subspecies of the group were recently described from Mexico (Ciros-Pérez. & Elías-Gutiérrez 1997; Elías-Gutiérrez & Suárez-Morales 1999; Kotov *et al.* 2003; Dumont & Silva-Briano 2000; Elías-Gutiérrez & Valdes-Moreno 2008; Sinev & Silva-Briano 2012). But still, diversity of Mexican cladocera in general, including Aloninae, is underestimated (Sinev & Silva-Briano 2012). Some of Mexican populations of Aloninae are still presumed to be conspecific with Palearctic taxa. This contradicts to “Frey’s non-cosmopolitanism paradigm” (Frey 1982, 1987), now universally accepted by the experts in the cladoceran taxonomy (Kotov *et al.* 2010), and such taxa should be reevaluated. One of such Mexican doubtful taxa is *Alona* cf. *intermedia*, described by Elías-Gutiérrez *et al.* (1997), from Lago del Sol, State of Mexico as *Biapertura intermedia*. The description of this species leaves no doubt that this population is not conspecific to the European *Alona intermedia* Sars, 1962, as it strongly differs from it by the shape of postabdomen and head shield. This lake, together with smaller Lago de la Luna are located in the Nevado de Toluca volcano crater, at altitude 4620 m.a.s.l.

Cladocerans of both lakes were investigated by Elías-Gutiérrez *et al.* (1997), who reported *Alona affinis* (Leydig, 1860) and *A.* cf. *setulosa* Megard, 1967 from Lago de la Luna, and *A. intermedia* Sars, 1862 and *Ilyocryptus* sp. from Lago del Sol. The latter species was lately revealed to be a new species, *Ilyocryptus nevadensis* Cervantes-Martínez, Gutiérrez-Aguirre, M. & Elías-Gutiérrez 2000, this taxon is supposed to be a local endemic (Cervantes-Martínez *et al.* 2000). Dimas-Flores *et al.* (2008) reported three species of Cladocera, *Daphnia ambigua* Scourfield, 1947, *Alona* cf. *setulosa* and *Alonella pulchella* Herrick, 1884 from the both lakes, and *Eurycercus* cf. *pompholigodes* Frey, 1975 from Lago del Sol only. So far, it is the only record of Nearctic *Alonella pulchella* in Mexico, but no drawings of the species were provided. According to Bekker *et al.* (2012), *Eurycercus* population from Lago del Sol belongs to *E. longirostris* Hann, 1982 instead of *Eurycercus pompholigodes*. Recent