

## Tardigrades of Sweden; an updated check-list

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### Abstract

Tardigrades occur worldwide and in a variety of ecosystems and habitats representing an important component of the micrometazoan biodiversity. Several studies documenting the occurrence of tardigrades in Sweden have been published since the first reports in early 1900, but no comprehensive summary of these studies have been published. We compiled the available information on recorded tardigrades from Sweden, using material from published studies and museum and university collections. In total, our review document 101 species of tardigrades that have been recorded from Sweden (an updated checklist of tardigrades from Sweden will be available online), of which 14 species are new records for the country. The highest number of species was recorded in the northernmost province of Lappland and the more southern provinces of Uppland and Skåne, while much lower species numbers are reported from the middle part of Sweden. This pattern probably represents biased sampling activities of biologists rather than real differences in biodiversity of tardigrades. In view of the few studies that have been made on tardigrade biodiversity in Sweden, the relatively high number of tardigrade species recorded, representing almost a tenth of the species recorded worldwide, indicates that many more species remain to be found. In this respect, more studies of the marine ecosystems along the Swedish west coast and the long Baltic Sea coastline would be of particular interest.

**Key words:** Tardigrada, Sweden, literature, museum collections, biodiversity

### Introduction

In spite of the wide and constant presence of tardigrades at almost all latitudes and longitudes and all kinds of environments (deep and shallow marine waters, lentic and lotic freshwater basins, dry and ice deserts, grassland and forests, etc.) extensive studies related to their biodiversity and biogeography are quite rare (e.g. Maucci 1986; Dastych 1988; McInnes 1994; Meyer 2013). This is probably related to the so called “taxonomy crises” (e.g. see Agnarsson & Kuntner 2007) leading to a reduced number of specialists, but it may also derive from the difficulty in finding information related to taxonomic references (especially the oldest) and in locating the type material. However, documenting the distribution and diversity of different organism groups represents an important task, providing not only basic information within the biological sciences but also knowledge of importance for monitoring impacts of human activities on ecosystems. The checklist of tardigrades of Sweden presented here should therefore be useful both for specialists of this animal group and for other researchers interested in biodiversity.

The first tardigrade species (*Macrobiotus hufelandi*) was formally described in 1834 (Schultze, 1834) and the first available monographs on this animal group were available quite soon thereafter (Doyère 1840, 1842a,b). The first report on tardigrades from Sweden appeared in the beginning of the 20<sup>th</sup> century. Richters (1904b) reported 12 species from mosses collected in the southern part of Sweden, and Carlzon (1909) added 9 more species, including the first reported marine species from Sweden, *Echiniscooides sigismundi* (Schultze, 1865). Gustav Thulin (1911) expanded the list of species found in Sweden to include 40 species, and provided the first detailed report on