

The first record of tardigrades (Tardigrada) from the Sinai Peninsula, Egypt

by Ralph O. Schill, Frauke Huhn and Heinz-R. Köhler

Abstract. Tardigrades were found in the high mountain wadi systems of the St. Katherine protectorate in the south of the Sinai Peninsula, Egypt. Specimens were collected during the months of December 2003 and January 2004, when temperatures are often below zero. *Thulinus ruffoi* (Berlotani, 2003) was found for the first time and exclusively in the cyst stage and was distributed frequently in moss from higher altitude wadis. The distribution and abundance of the two other species, *Cornechiniscus lobatus* (Ramazzotti, 1943) and *Echiniscus testudo* var. *quadrifilis* (Doyère, 1840), however, seem to be more influenced by unknown microclimatic factors and food availability.

Key words. Diversity, ecology, Eutardigrada, Heterotardigrada, Tardigrada, wadi, cyst, water bear.

Introduction

Tardigrades are microscopic metazoans and the phylum consists of over 930 species which live in marine and brackish water, as well as in freshwater and terrestrial habitats. They are known from extreme environments worldwide but require water or at least water films on soils, moss and lichens (RAMAZOTTI & MAUCCI 1983). If the environmental conditions are not suitable, tardigrades have the ability to undergo a reversible process called cryptobiosis. In this latent stage tardigrades form a “tun” (BAUMANN 1927), resistant to cold, heat, drought and chemicals. Another form of a resting stage is the cyst stage. Cysts have a contracted and oval distinctive form, and evident thick and dark cuticular layers (RAMAZOTTI & MAUCCI 1983). In the cyst stage, tardigrades contain more water than in the tun state, and still have a measurable metabolism. Both forms of latent stage allow them to live in extreme habitats (PIGON & WEGLARSKA 1953, WEGLARSKA 1957, WRIGHT 2001).

The Sinai Mountains and their extensions form a network of semi-isolated desert valleys (wadis) which create extreme ecosystems and habitats. Although much wildlife research has been carried out in the Sinai Mountains in recent decades, no research so far has focused on the tardigrade fauna, and information on species composition and distribution is absent. This study focused on the tardigrade fauna in the mountainous region above 1750 m asl in the St. Katherine protectorate, located in the south of Sinai. The climate there is classified as semi-arid. Based on the vegetation in the area, the average annual rainfall was estimated at about 300 mm (MARES 1999; WALTER & BRECKLE 1984). However, there are great variations between years, with periods of great drought as well as periods of devastating floods. In the mountains, the average daily temperature reaches around 27°C in July and August and, during the winter months, temperatures can drop below freezing at night with frequent snow at high elevations (MARES 1999, STRÄBER 1999).