

Spiders active on snow in eastern Turkey

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Abstract: At temperatures below zero in winter months, a total of 202 spiders was collected by pitfall traps from a snow-covered grassland in eastern Turkey. 16 genera and 20 species were recorded, belonging to the families Gnaphosidae, Lycosidae, Linyphiidae, Thomisidae, Theridiidae, Philodromidae, Salticidae, and Tetragnathidae.

Kurzfassung: In den Wintermonaten wurde in der Ost-Türkei bei Temperaturen unter 0°C mit Bodenfallen auf schneebedeckten Weiden 202 Spinnen gefangen. Es wurden 20 Arten aus 16 Gattungen festgestellt, die zu den Familien Gnaphosidae, Lycosidae, Linyphiidae, Thomisidae, Theridiidae, Philodromidae, Salticidae und Tetragnathidae gehören.

Key words: Spiders, Araneae, winter activity, Turkey, Middle East.

Introduction

Ecological and faunistic studies show that spiders are important predators in agricultural ecosystems, and recent reviews of spiders in such ecosystems indicate an increasing interest in spiders as natural control agents of insect crop pest (HEONG et al. 1989, ORAZE & GRIGARICK 1989, RUBIA et al. 1990, DENIS 1991). Another aspect is the potential of spiders as indicators of environmental conservation and management (CLAUSEN 1986). For this reason, a great deal of research has been undertaken to establish life cycles, habitat selection, feeding ecology, seasonal and diurnal activity, and reproduction in this group of animals.

Increasing attention has also been paid to the winter activity and overwintering strategies of spiders (BALKENHOL & ZUCCHI 1989, LOCKLEY & YOUNG 1993, BAYRAM & LUFF 1993a). In Scandinavia, for example, the feeding of *Bolyphantes index* on the snow surface (HAGVAR 1973), the predation of overwintering spiders (GUNNARSSON 1985) and the activity of spiders on snow (HUHTA & VIRAMO 1979) have been studied. ASHMOLE et al. (1983) investigated the spider and insect populations on snowfields in the Cairngorm mountains of Scotland in summer. The life cycles of winter-active spiders have also been studied by SCHAEFER (1977) in Germany, and by AITCHISON (1984) in Canada. SCHAEFER found that *Floronia bucculenta* could resist up to -31°C in the winter months. Cold hardiness was also studied in wolf spiders by BAYRAM & LUFF (1993b), and in theridiid spiders by TANAKA (1996).

In Turkey, there has been no study on winter-active spiders except for a few studies undertaken to investigate the arthropod fauna of grass tussocks covered with snow in eastern Turkey (BAYRAM 1994, 1996, BAYRAM & VAROL 1999). This paper deals with the presence, abundance, species composition, their dependence on weather conditions and activity of spiders collected on snow in eastern Turkey.