

Tiger beetles as bioindicators of habitat degradation in the Çukurova Delta, southern Turkey (Coleoptera: Cicindelidae)

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Abstract. The distribution of tiger beetles in the Çukurova Delta is analyzed and new records within the delta are presented. The data indicate that *Megacephala euphratica euphratica*, *Lophyridia concolor*, *L. littoralis winkleri*, and *Myriochile melancholica melancholica* are abundant and widely distributed, in contrast to *Lophyridia aphrodisia aphrodisia* and *Cylindera trisignata* which are rare and occur only locally. Tiger beetle habitats and abundance were determined for the delta area between 2001 and 2004. Salt marsh and salt meadows, rocky coasts, sandy beaches, banks of rivers, brooks and lagoons, as well as arable lands are the main habitats of tiger beetles in the delta. *L. a. aphrodisia*, which only occurs in restricted coastal areas with flat rocks, may have disappeared from the Çukurova Delta because of tourist activity.

Kurzfassung. Die Verbreitung von Sandlaufkäfern wird im Çukurova-Delta analysiert. Die Daten zeigen, dass *Megacephala euphratica euphratica*, *Lophyridia concolor*, *L. littoralis winkleri* und *Myriochile melancholica melancholica* häufig und weit verbreitet sind, *Lophyridia aphrodisia aphrodisia* und *Cylindera trisignata* dagegen lokal und selten. Die Habitate und Abundanz aller Arten im Delta wurden in den Jahren 2001-2004 untersucht. Salzwiesen, Salzmarschen, Felsenküsten, Sandstrände, Ufer von Flüssen, Gräben und Lagunen sowie Ackerland sind die wesentlichen Habitate von Sandlaufkäfern im Delta. Die Vorkommen von *L. a. aphrodisia*, die nur auf kleinen flachen Küstenfelsen lebt, sind auf Grund von touristischen Aktivitäten im Çukurova Delta wahrscheinlich erloschen.

Key words. Mediterranean coast, river delta, sand dunes, tiger beetle, distribution, habitat, indicator.

Introduction

The Çukurova Delta, with an area of more than 110 km², is the largest lagoon and sand dune area on the Turkish Mediterranean coast and represents one of the most important moist biotope systems of the entire region (YILMAZ et al. 2003). The Turkish Government plans to establish the country's first Biosphere Reserve in the delta. Nevertheless, a large part of the delta is used by agriculture, logging and tourism. Dunes are removed for the cultivation of watermelon, peanuts and sesame. Reeds are cut in the lagoons for use in homes, and the vegetation is impacted by cattle grazing in several regions. These human activities have an enormous impact on the unique vegetation and fauna of the delta.

One of the insect groups characteristic of shorelines and dunes are tiger beetles (Cicindelidae). Tiger beetles have been used as indicator groups in biodiversity research and nature