

Changed substrate preferences shown by Fringe-toed Lizards, *Acanthodactylus scutellatus*, from Kuwait's Al-Burgan oil field

(Reptilia: Lacertidae)

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Abstract. Oil pollution in desert locations in Greater Al-Burgan oil fields of Kuwait generated by the 1990 Gulf war has changed field behaviour and morphology of the Fringe-toed Lizard *Acanthodactylus scutellatus* (Audouin, 1827). Lizards from the dark 'tar mat' locations are notably darker in colour than those from the control sites. Consequently, *A. scutellatus* collected from 'tar mat' and counterparts from lighter control sites were compared in laboratory studies where the lizards could choose between a dark and a light side of an enclosure. The former lizards showed a clear preference for darker substrates whereas the latter clearly preferred the light substrate. Dark lizards on tar mat have more effective crypsis but also some advantages in terms of solar gain (surprisingly, reptiles from tar mat sites are generally larger than counterparts from uncontaminated sites). It is uncertain whether the presence of dark substrates for more than a decade (this study was conducted in 2003) has resulted in a selection of morphologically dark sand lizards with a preference for dark surfaces or whether these reptiles simply use their skin chromatophores to adapt to different surfaces but show a preference for substrates similar to their body colouration. .

Key words. Kuwait, oil pollution, *Acanthodactylus scutellatus*, body colouration, substrate preference.

Introduction

The deliberate burning of the oil wells at Burgan and Ahmadi in the 1990 Gulf war has had profound effects on the surrounding desert ecosystems (AL-HASSAN 1992, OMAR et al. 2000). It was thought important, some 13 years later, to establish whether the contamination was still influencing organisms within this environment.

Lizards are important components of terrestrial ecosystems, forming an important link in food chains between invertebrate prey and predatory vertebrates such as birds and snakes. Such animals have rarely been used as bioindicators of pollution for a variety of reasons including the difficulty in sampling sufficient numbers of lizards and their relative lack of economic importance (LOUMBOURDIS 1997). LAMBERT (1993) has, however, strongly advocated using lizards as potential bioindicators of pesticides entering the environment and our previous studies (AL-HASHEM et al. 2007, 2008) suggest that reptiles can reveal valuable information about oil pollution in desert locations. The Fringe-toed Lizard *Acanthodactylus scutellatus* (Audouin, 1827) was chosen for the present studies in Kuwait because of its wide distribution which was quite common in the study area (see AL-HASHEM et al. 2008).