

# Calls of the Levantine Frog, *Rana bedriagae*, at Birket Ata, Israel (Amphibia: Anura)

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**Abstract:** The calling behaviour of Levantine frogs at Birket Ata, a lake near Hadera, Israel, was observed during the frogs' prespawning season, and calls were recorded at different water temperatures (19.1–29.3°C). During the evening calling phases the calling males showed pronounced territoriality. Four call types were distinguished: the advertisement call and three territorial calls. Several parameters of the advertisement call are correlated with water temperature.

**Kurzfassung:** Bei Levantefröschen von Birket Ata, einem See bei Hadera, Israel, wurden während der Vorlaichzeit der Frösche Beobachtungen über das Rufverhalten gemacht und Rufe bei unterschiedlichen Wassertemperaturen (19,1–29,3°C) registriert. Während der abendlichen Rufphasen waren die rufenden Männchen ausgesprochen territorial. Als Rufotypen wurden der Paarungsruf und drei Revierrufe nachgewiesen. Mehrere Parameter des Paarungsrufes sind mit der Wassertemperatur korreliert.

**Key words:** Advertisement call, territorial calls, call analysis, *Rana bedriagae*.

## Introduction

Bioacoustic studies of anurans in Israel, carried out over many years, have not only amassed information about their calls and calling behaviour but have also provided clues to the systematic position of these frogs. Analysis of the advertisement call and the calling behaviour of the tree frog native to Israel (SCHNEIDER & NEVO 1972, BRZOSKA et al. 1982, SCHNEIDER et al. 1984) and comparison with the advertisement call of the tree frog of Central Europe (SCHNEIDER 1966, 1967) revealed major differences. It was concluded that the form living in Israel is a distinct species and not a subspecies of *Hyla arborea*, as had previously been thought. In a continuation of this bioacoustic approach, NEVO & SCHNEIDER (1976) analysed the advertisement call of a toad living in Israel, *Bufo v. viridis*, and compared it with the advertisement call of the *B. v. viridis* in Austria (SCHNEIDER 1966, LÖRCHER & SCHNEIDER 1973). In this case the differences were limited to the pitch of the call, which was determined by the different sizes of the animals in the two regions.

The next step was to analyse the mating call of the water frogs inhabiting various sites in Israel (NEVO & SCHNEIDER 1983). Although preliminary information was already available on the structure of the advertisement call of *Rana ridibunda* (GÜNTHER 1969, SCHNEIDER 1973), the study by NEVO & SCHNEIDER (1983) provided the first analysis of the calls of a form assigned to *R. ridibunda* in which the effects on the important call parameters of both water temperature and body size were examined.