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Reproduction, growth and circadian activity of the snail *Bradybaena fruticum* (O. F. Müller, 1774) (Gastropoda: Pulmonata: Bradybaenidae) in the laboratory

Research Article

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Abstract: Selected life cycle parameters of the snail *Bradybaena fruticum* were studied in the laboratory. The initial material for the laboratory culture was taken from a population in South Western Poland; the snails were kept in Petri dishes and plastic containers. The temperature, humidity and lighting conditions were maintained at a constant level (day 18°C, night 12°C, rh 80%, light:dark 12:12). Circadian activity observations were conducted outside the climatic chamber. Eggs – calcified, slightly oval, of mean dimensions 2.67x2.56 mm – were laid singly or in batches of 6-62, as a result of both biparental and uniparental reproduction. Incubation took 27-76 days and hatching was asynchronous. Hatching success was lower among eggs produced by single parents compared to eggs produced by two parents (*c.a.* 56 and *c.a.* 88%, respectively). Growth included fast (2.25 to 5 whorls) and slow (1.9-2.25 and >5 whorls) phases as well as lip formation, and took 261 to 420 days. The first eggs/batches were laid *c.a.* one year later, and for uniparentally reproducing snails the period was even longer. The growth of snails kept singly was faster than in those kept in groups. Juvenile snails were much more active than adults in the spring, summer and autumn but the adults were more mobile in the winter. In all seasons, juveniles were more active at night than adults.

Keywords: *Life history • Uniparental reproduction • Land snail • Bradybaena fruticum • Bradybaenidae*

1. Introduction

The snail *Bradybaena fruticum* (O. F. Müller, 1774) (Gastropoda: Pulmonata: Bradybaenidae) is the only European bradybaenid. It is an East-European species, reaching the Urals and the Caucasus in the East, France in the West, the Balkans in the South and southern Scandinavia (65°N) in the North [1]. B. *fruticum* is found throughout Poland except in mountains, at high altitude (Karkonosze, higher parts of the Tatra, Babia Góra, high altitudes in the Bieszczady). It is very common in the lowlands, less so in the mountains and highlands, and only local in the Beskidy Mts and the Sudetes [2]. *B. fruticum* is euryoecious. It occurs in damp places with lush herbs in forests, scrub, on river banks, in parks and in wet meadows where it feeds on decaying and fresh plant material (*i.e. Urtica dioica* L., *Aegopodium podagraria* L.). It is usually found crawling on plants or attached to the underside of big leaves and it spends dry periods in leaf-litter.

Information on the life cycle, reproduction and population dynamics of this species is important for evolutionary and phylogenetic inferences, community ecology and conservation. However, as with many European terrestrial gastropods, very little is known about this species. The life cycle of *B. fruticum* has been studied only partially [3-5] since this species has been of interest mainly to population geneticists [6-12]. The objective of our study was to describe selected aspects of the life cycle of *B. fruticum* based on laboratory observations. For field observations on the species, see Proćków *et al.* [13].

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