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Short Communication

Behaviour associated with moulting in *Bufo melanostictus* (Schn.) (Anura; Bufonidae)

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Abstract

The behaviour associated with moulting in the common Indian toad *Bufo melanostictus* has been described in detail. This behavioural pattern is compared with that of other species.

Key words: Common Indian toad, moulting behaviour

1. Introduction

The process of moulting (more aptly the process of shedding the 'slough') in the species of *Bufo* is known to be associated with an elaborate but specific pattern of behaviour. There are several observations on the moulting behaviour in different species[1–4]. While species-specific variations in this behavioural pattern have not been recognised, the existence of a particular hypothalamic region—'a moulting centre'—that regulates the normal shedding behaviour in these species has been indicated[4,5]. The present paper describes the detailed observations on the pattern of the 'shedding behaviour' in *Bufo melanostictus*.

2. Material and methods

Observations on the moulting behaviour were made both in the field and in the laboratory. In the laboratory, individual toads which had reached the pre-moult stage (*see* 6) were isolated and used for recording the moulting behaviour. The sequential events that occurred during the shedding of the 'slough', as also the time taken for completing each event, were recorded.

3. Observations and discussion

Individual toads approaching shedding are markedly sluggish, preferring dark corners of the aquaria (in the laboratory; fig. 1), or isolating themselves and seeking shelter under

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vegetation or stones (in nature). Subsequently, the toads exhibit an elaborate sequence of behavioural events.

A few hours prior to the initiation of shedding, the individuals adopt a characteristic 'moulting posture' in which the limbs are stretched and the belly is lifted above the ground (fig. 2). This is followed by repeated gaping of the mouth and withdrawal of the eyeballs (figs 3 and 4). By this time, a clear mid-dorsal slit appears in the outer keratinised layer (fig. 3), accompanied by a copious secretion of mucous below the separated slough.

Shedding of the separated 'slough' begins thereafter and is accompanied by independent movements of all the four limbs. The toad separately uses any one of the limbs and repeatedly and violently attempts to peel off the 'slough' (figs 5–8). The bits of slough thus gathered are thrust into the gaping mouth, mostly by the use of the forelimbs and these bits are ingested by the animal (figs 9-12). The process is repeated till most of the slough from the right side (figs 9-12) and the left side (figs 13-16) of the animal is gathered and consumed. The toad finally relaxes the limbs and the belly and resumes the normal posture (fig. 16). At each shedding, the slough is almost completely eaten by the toad, leaving behind a few bits which subsequently shrivel, dry up and are cast off.

The typical sequence of behaviour during shedding as described above, was repeatedly observed in as many as 300 toads. It was interesting to note that if disturbed, the toads that have just entered the phase of shedding, would momentarily give up the characteristic moulting posture, but resume it within a few minutes. The same sequence of behaviour was observed even in toads from which the slough was forcibly removed. The slough of *B. melanostictus* showed a similar structure as described for *B. bufo*[2, 7]. The behavioural pattern associated with moulting in *B. melanostictus* was also similar to that described for other species[1–4].

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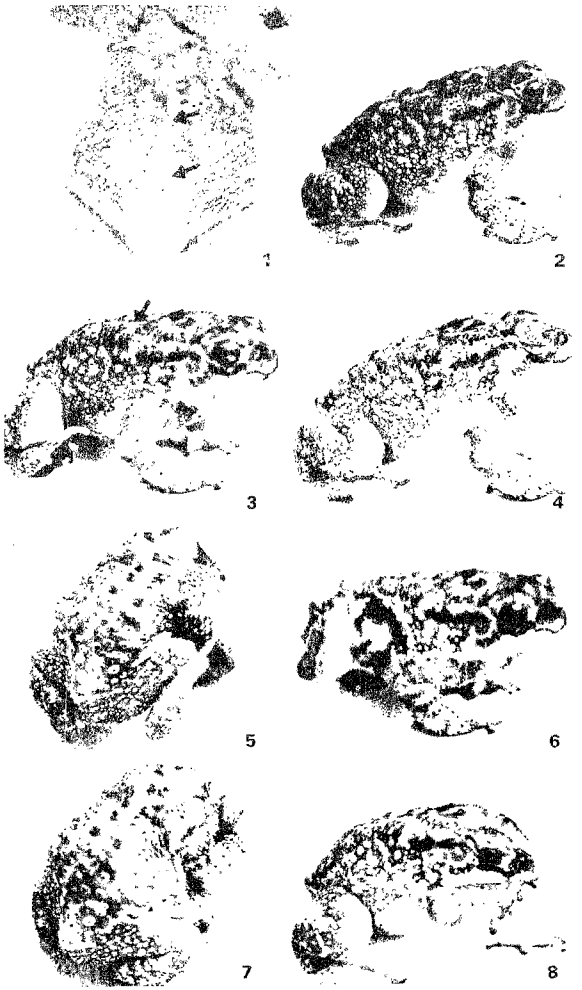
FIGS. 1–8. (1) *Bufo melanostictus*. A sluggish female about 30 min before assuming the moult-related posture. ★ denotes wall of the aquarium. Arrow denotes the groove where the mid-dorsal slit would appear subsequently. (2) The toad in its characteristic 'moulting posture'. Note the stretched forelimbs and the belly lifted above the ground. (3) The toad exhibiting gaping of the mouth. Arrow denotes the mid-dorsal slit. (4) The toad exhibiting gaping as well as withdrawal of eyeballs. Note the widely stretched webbed feet. (5–8) The toad repeatedly using the limbs to peel off the 'slough' and gather it with the forelimbs.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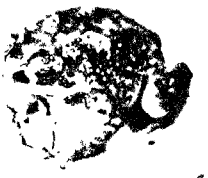

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FIGS. 9–16 (9–11) *Bufo melanostictus*. The toad using the right forelimb to peel, gather and consume the 'slough' from its right side. Note the blanched right cranial ridge of the head consequent on the removal of the 'slough'. (12) Note the clear cranial ridge of the right side and portions of the 'slough' adhering to the limbs. Arrow points to the 'slough' being ingested by the toad. (13–15) The toad using the left forelimb to peel, gather and consume the 'slough' from the left side. Note the intention of the posture, stretched limbs and gaping of the mouth. (16) The toad resuming the normal posture. Note the presence of bits of uneaten 'slough' adhering to the body and limbs.