

Rediscovery of *Pelobates fuscus insubricus* in the Asti Province, north-western Italy

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Abstract. The amphibians of the pond complex “Stagni di Belangero” in the Po Plain, Asti Province, have been studied. The species living in the pond are *Bufo bufo*, *Bufo viridis*, *Hyla intermedia*, *Pelobates fuscus*, *Rana dalmatina*, *Rana synklepton esculenta*, *Rana* cf. *kurtmuelleri*, *Triturus carnifex* and *Triturus vulgaris*. Species composition, migration period of *P. fuscus*, and biometric data are provided. Relevant importance has been given to *P. fuscus*, since we reconfirm its presence in one of the ponds 13 years after its first finding in the area. This toad is also one of the most threatened species of amphibians in Europe and needs particular attention in order to be protected adequately.

Keywords. *Pelobates fuscus insubricus*, rediscovery, CIS Stagni di Belangero, community composition, migration period.

INTRODUCTION

In the last years, the Italian subspecies of the spadefoot toad, *Pelobates fuscus insubricus*, has been object of an increasing interest for its natural history, distribution and conservation (Andreone and Pavignano, 1988; Lapini et al., 1993; Andreone et al., 1993, 2004; Gentilli et al., 1996; Mazzotti et al., 2002; Scali and Gentilli, 2003).

This anuran was considered one of the most endangered taxon of all European herpetofauna by Bruno et al. (1974), Corbett (1989), and Andreone and Luiselli (2000, 2001): for this reason it was included in Annex II of the European Directive 92/43 Habitat among the species with priority of conservation (Council Directive 92/43/EEC, 1992).

The Asti Province is characterised by only few recent and scattered data inherent to amphibians and reptiles distribution (Gambino et al., 1993; Andreone and Sindaco, 1998). Among the formerly listed species, *P. fuscus* is of particular interest (Gambino et al., 1993).

Its presence in the “Stagni di Belangero” was detected on the basis of tadpoles discovery (I. Pavignano, pers. comm.), but no voucher specimen is available to confirm the locality record.

After a period of 13 years since this finding in the “Stagni di Belangero”, the current study has been conducted in order to reconfirm the presence of *P. fuscus*. Moreover, we here provide some information regarding the composition of the amphibians community inhabiting the same ponds.

MATERIAL AND METHODS

Study area

The study area is known as “Stagni di Belangero” (ID Code IT1170003). It is considered as a Communitarian Important Site (CIS) and is located on the right shore of the Tanaro River, in the “S. Marzanotto” alluvial plain, Asti Province, north-eastern Italy (coordinates: 43°78'73”E, 49°70'66”N; 120 m a.s.l.).

The area is 591 ha in size. It is mainly covered by maize fields, which constitute about the 45% of the land cover, uncultivated fields, some water bodies and aspen plantations, together reaching the 38% of the coverage. The riverbed of the Tanaro and the vegetation associated to the humid areas form an additional 10%, represented by *Populus alba*, *Salix alba* and *S. caprea*. The remaining part of the area is occupied by buildings and roads.

The aquatic vegetation is present in almost all the water bodies. It is referred to the alliances of *Nymphaeion albae* and/or *Hydrocharition*, while the terrestrial vegetation is almost entirely represented by a dense bush of *Amorpha fruticosa* and *Robinia pseudoacacia*. Wet areas are represented by 20 ponds of anthropic origin of different dimension and by an extensive system of drainage canals. Introduced fish species are *Ictalurus melas*, *Lepomis gibbosus* and *Micropterus salmoides*.

Data collecting

Opportunistic surveys were carried out from 26 March to 06 May 2004. The observations were aimed to determine spadefoot toad occurrence by means of direct observations during diurnal and nocturnal excursions.

From the end of March to the beginning of May 2004, we monitored intensively amphibians in a selected site by means of drift-fence and pitfall traps. The selected site is an ephemeral drainage canal 100 m long, 1-5 m wide, and 10-60 cm deep. Other ponds occur all around the canal within a range of 200 m, but these are inhabited by fish. The selected site was partially fenced with 30 pitfalls (25 cm diameter, 25 cm deep) located at a distance of 5 m one from each other. The traps have been checked twice a day, in the morning and in the evening, for a period of permanence on the field variable in function to the presence of the animals in activity. Collected toads were marked with single toe-clipping and photographed for dorsal pattern identification.

Regarding the other species of amphibians the following biometrical measurements were taken: weight (W), snout vent length (SVL), and tail length (TL) only for newts.

RESULTS

Pelobates fuscus insubricus

During the study period 14 individuals were trapped: 12 adult males and 2 adult females. Three males and one female were recaptured, while two other toads were observed out of the pitfall traps. In particular, on 26 March, while digging out to build up the drift-fence, we found an adult burrowed about 20 cm deep underground and 4 m far from the shore of the focal site. The first breeding spadefoot toad was found in water on 2 April, even if no spadefoot toad was directly seen entering the canal. On the contrary, the first toad leaving the pond was observed on 5 April and the last on 30 April. The migration at the “Stagni di Belangero” is resumed in Fig. 1.

Biometric values (mean ± SD) of the sampled individuals are reported in Table 1.

Amphibians community associated to spadefoot toads

The total of amphibians other than spadefoot toads captured in the pitfall traps was 275. Following, the species found and in parenthesis the number of individuals: *Triturus carnifex* (130), *T. vulgaris meridionalis* (6), *Hyla intermedia* (37), *Bufo viridis* and *Rana dalmatina* (12 each), *B. bufo* (6) and *Rana synklepton esculenta* (72). Probably, the low

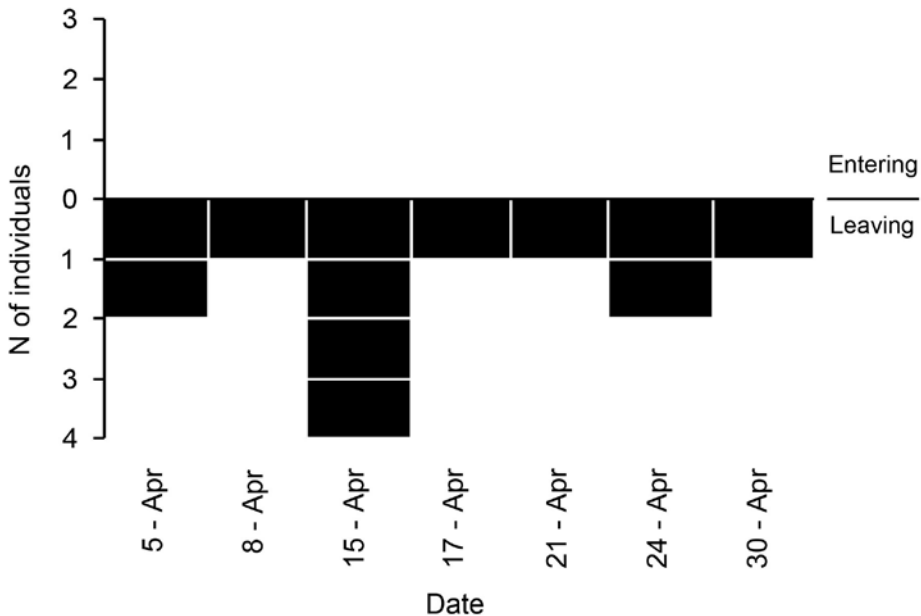


Fig. 1. Migration from the breeding site of *Pelobates fuscus insubricus* at the study site.

Table 1. Biometric values (in mm \pm standard deviation): SVL, snout-vent length mean; TL, tail length; W, weight; n, number of examined specimens; (M), males; (F), females.

Species	n		SVL		TL		W	
	M	F	M	F	M	F	M	F
<i>P. fuscus</i>	12	2	45.6 \pm 2.3	52.3 \pm 0.4			13.2 \pm 2.1	29.4 \pm 0.5
<i>B. viridis</i>	1	2	61.6	67.4 \pm 3.7			33.0	35.3 \pm 2.5
<i>H. intermedia</i>	6	7	34.05 \pm 3.63	40.36 \pm 3.84			5.0 \pm 0.96	7.55 \pm 1.06
<i>R. dalmatina</i>	2		33.62 \pm 3.99				4.95 \pm 0.07	
<i>R. cf. kurtmuelleri</i>	3	1	68.72 \pm 10.86	86.0			39.83 \pm 14.37	94.0
<i>T. carnifex</i>	1838		70.64 \pm 17.13	73.78 \pm 22.68	45.99 \pm 7.34	50.13 \pm 8.39	5.22 \pm 1.06	6.06 \pm 1.6
<i>T. vulgaris</i>	2	1	39.0 \pm 16.69	50.0	33.73 \pm 13.11	46.0	2.25 \pm 2.33	5.50

numbers of *T. vulgaris*, *B. bufo*, *B. viridis* and *R. dalmatina* are related to the late timing of the research rather than reflecting their relative abundance in the area.

Biometric values (mean \pm SD) of the sampled individuals are reported in Table 1.

DISCUSSION

This study allowed us to rediscover *P. fuscus* in the alluvial plane of the Tanaro River in the Asti surroundings, an area characterised by intensive agricultural exploitation. The sampled population appeared to be small, with a total of 14 specimens intercepted. We ignore if this result reflects a sign of the rarity of the species, or rather if it is a consequence of the study methods or of the meteorological conditions. However, results of a recent study carried out in 33 ponds in Scania (south Sweden), with the use of hydrophones, analysed some populations of the nominal subspecies and they showed an average of 13 males per pond, with a number of specimens ranging between 1 and 80 (Nyström et al., 2002).

On the other hand, as for our study, if we take into account (1) that all the trapped individuals were already leaving the breeding site, (2) the bias between the number of males and females (sex ratio = 6), and (3) that the site was only partially fenced, we are inclined to believe that the real population could be bigger than the detected one.

We failed to contact the animals during the migration to the breeding site which likely started before 26 March, in spite of the low temperatures and of the absence of rain. Indeed, meteorological data inherent to this previous period report low temperatures (0 °C), going from the end of February to 11 March, with snowy precipitations and frost on nights. This harsh period was then followed by an odd and abrupt increase of temperatures up to 13° C in the period comprised between 12 and 16 March (www.meteo.it/almanacco/anno/681_awEpson.htm).

From examination of still unpublished data upon a population of *P. f. insubricus*, located in Poirino (Turin Province), about 30 km Eastward from our study site, it emerged that the reproductive migration of the observed population started on 15 March (Crottini and

Andreone, 2006), in coincidence with the temperature increase. From the comparison with these data, we hypothesise a similar timing for the studied population. Further investigations are needed to understand if temperature increase could play an important role as it is stated for the spring rain to end the wintering period of *P. fuscus* (Scali & Gentilli, 2003).

The migration period of our population of *P. fuscus* comprised between the first and the last intercepted specimen lasted 25 days. Basing upon the available comparative data on *P. fuscus*, a similar migration period is reported by Andreone et al. (2004), in a study carried out near Ivrea surroundings. Here the migration period lasted 18 days, from 17 April to 4 May. On the other side, our result differs significantly from what reported by Andreone and Pavignano (1988), whose data show a quickly migration of only three days. From such cases, the species turned out to be an explosive breeder but with a reproductive period strongly influenced (that is, prolonged or shortened) by the different climatic conditions.

Among the detected species, and besides the spadefoot toad, of particular interest it is the probable presence of *Rana* cf. *kurtmuelleri*. Of the nearly 80 “green frogs” observed, some of them presented very large body dimension (a female had a 150 mm SVL, and weighed 130 g), whereas all individuals presented a dorsal pattern composed by green blotches on a grey-brown ground color. These characteristics fit with the description of this introduced taxon.

The *Pelobates fuscus insubricus* represents a remarkable presence in the Stagni di Belangero and in the Asti Province. Unfortunately, despite the rediscovery after more than ten years from the first record, and although the area has been included inside “Natura 2000 Net” (Council Directive 92/43/EEC, 1992), the situation for this population of *P. fuscus* turns out to be very rough, since the area is heavily affected by anthropogenic disturbance and intensive agricultural exploitation.

From all we have hereby exposed, it seems imperative the necessity to carry out further researches about *P. fuscus*, in order to improve our still scarce knowledge.

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