International Zoological Congress of
“Grigore Antipa” Museum

CZGA

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19 - 22 November 2014
Bucharest - Romania

Book of Abstracts

Edited by:
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Salinity tolerance in early-developmental stages in *Pelobates fuscus* (Laurenti, 1768) and *Pelobates syriacus* (Boettger, 1889) (Anura: Pelobatidae)

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**Key words:** salinity, embryo, larvae, spadefoots, survival, tolerance.

We tested the survival thresholds under different salinity conditions in early-developmental stages of two syntopic species of spadefoots (genus *Pelobates*) from the Black Sea coast, Romania. Water salinity of breeding and potential breeding ponds ranges from 0.5 to over 10 ‰ in the study area. We used an experimental design with three salinity treatments (moderate – 3 ‰, high – 6 ‰ and extreme – 9 ‰ NaCl), and a control (dechlorinated tap water – 0.3 ‰ NaCl). Portions of freshly deposited egg clutches were collected from the natural habitats and randomly introduced in five to nine replicates per treatment. The experiment lasted until all embryos achieved Gosner stage 25. We expressed survival as the percentage of living larvae from the initial number of eggs in each replicate.

No embryos survived in the extreme salinity treatment. Both species showed similar tolerance thresholds under moderate salinity conditions, which is in accordance with our observations in natural breeding ponds. We found differences between the species’ survival in the high salinity treatment (*W*=15, *p*<0.01), with a significant lower survival in *P. fuscus* embryos. *P. syriacus* seems to cope better with high osmotic stress in early-development stages (mean survival±SD: 43.8±17.2) compared to *P. fuscus* (mean survival±SD: 3.2±2.2). We suggest that the increased salinity tolerance of *P. syriacus* explains its higher abundance in the coastal areas.
SALINITY TOLERANCE IN EARLY-DEVELOPMENTAL STAGES IN
PELOBATES FUSCUS AND PELOBATES SYRIACUS
(ANURA: PELOBATIDAE)

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INTRODUCTION

Water salinity is an important factor that may shape distribution and diversity patterns in amphibians (1). Anuran amphibians are most vulnerable and sensitive to habitat quality in their early-developmental stages.

We tested and compared the survival thresholds under different salinity conditions in early-developmental stages of two spadefoot species (genus Pelobates) inhabiting the Black Sea coast of Romania (44°37'14.47"N, 28°48'26.39"E; 44°25'53.59"N, 28°44'5.07"E). Pelobates fuscus and P. syriacus are highly specialized, burrowing species, sympatric in the south and south-eastern regions of the country (Fig. 1).

They occur in syntopic populations in the study area, where water salinity ranges from 0.5 to over 10 ‰.

RESULTS AND DISCUSSION

Descriptive statistics of our experiment are summarized in Table 1. No embryos survived in the extreme salinity treatment (9 ‰). Both species showed similar tolerance thresholds under moderate salinity conditions (3 ‰: U=13, p > 0.05). We found significant differences in the species’ survival in the high salinity treatment (6 ‰: U=0, p < 0.01), with a significant lower survival in P. fuscus larvae (Fig. 4). These results are in agreement with a previous study that showed that survival in P. fuscus larvae is impaired at salinities that go beyond 4 ‰ (2).

Table 1. Embryos survival (%) to the larval phase (Gosner 25) in the studied species. N = number of replicates used in the experiment.

<table>
<thead>
<tr>
<th>Species</th>
<th>Treatment</th>
<th>N</th>
<th>Min</th>
<th>Max</th>
<th>Mean±SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pelobates fuscus</td>
<td>moderate</td>
<td>5</td>
<td>59.6</td>
<td>100.0</td>
<td>89.7±17.3</td>
</tr>
<tr>
<td></td>
<td>high</td>
<td>5</td>
<td>00.0</td>
<td>5.5</td>
<td>3.2±2.2</td>
</tr>
<tr>
<td>Pelobates syriacus</td>
<td>moderate</td>
<td>9</td>
<td>84.1</td>
<td>95.7</td>
<td>90.3±4.1</td>
</tr>
<tr>
<td></td>
<td>high</td>
<td>8</td>
<td>17.3</td>
<td>66.9</td>
<td>43.8±17.2</td>
</tr>
</tbody>
</table>

P. syriacus seems to cope better with high osmotic stress in early-development stages compared to P. fuscus. This is expected since the species is also known to cope well with pond drying during larval development (3). Our results may provide a suitable explanation for the higher abundance of P. syriacus in the coastal areas.

REFERENCES


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Visit us and find out more on the project website: www.pelobates.ro