

Spawning preference of the agile frog, *Rana dalmatina* B.

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Plant animal interactions are the focus of many ecological investigations. Besides obvious food interactions there are many other different relationships, too. Macrophytes are important for many amphibian species during the period of breeding as they provide suitable substrate for spawning.

Material and methods

We studied the spawning preference of the agile frog (*Rana dalmatina* B.) in the floodplain of the River Ipoly between Parassapuszta and Hont in 1988. In 1989 two other spawning ponds (Lake Bajdázó, Királyrét, Börzsöny Mts; Lake Budakeszi, Budakeszi, Budai Mts) were also studied. The plant communities of the spawning areas were described. Plant species on which egg clutches were fixed were identified. In addition, we recorded the water depths in those areas where the egg clutches were located.

Results and discussion

In 1988 29 egg clutches were found in water bodies in the floodplain of the River Ipoly. The area in which the clutches located was overgrown by rich macrophyte community but 69% of the egg clutches were found on reed sweet-grass (*Glyceria maxima* L.) (Fig. 1). The water depth at which 83% of the egg clutches had been deposited was 20-30 cm with the average of 24.4 cm (SD = ± 4.4 cm).

In 1989 36 egg clutches within other small water bodies in the same floodplain were studied because the previous spawning sites were dry. These ponds were overgrown by a long sedge community. Agile frogs (*Rana dalmatina* B.) were spawning in deeper water, where reed sweet-grass grew. This plant was preferentially chosen by 86% of the frogs for the deposition of the eggs. The average depth of those areas in which eggs were deposited was 21.2 cm (SD = ± 5.2 cm). The chemical composition of the lake water and the water bodies in the floodplain is richer in calcium, magnesium, chlorid and more deficient in sulphate ions. The higher concentration of calcium is unfavourable for the reproduction of amphibians.

In Lake Bajdázó 27 egg clutches were studied. 59% of the egg clusters were fixed onto reed sweet-grass (*Glyceria maxima* L.). The average water depth in those

areas in which the eggs were found was 27.2 cm (SD = ± 12.9 cm). Lake Budakeszi was overgrown by reeds. 20 egg clutches were studied. All of those were fixed onto the common reed (*Phragmites communis* TR.). The average water depth of those areas was 21.9 cm (SD = ± 4.3 cm).

The agile frog (*Rana dalmatina* B.) used both living and dead macrophytes for the deposition of its eggs. The water depth of the breeding sites ranged between 10-58 cm which is in agreement with STRÖMBERG's (1988) and WARINGER-LÖSCHENKOHL's (1991) results (Fig. 2). Yet approximately 60% of the eggs were deposited on plants found in 20-30 cm deep water. Table 1 lists the plant species chosen by the frogs. When there was a diverse vegetation in the breeding pond

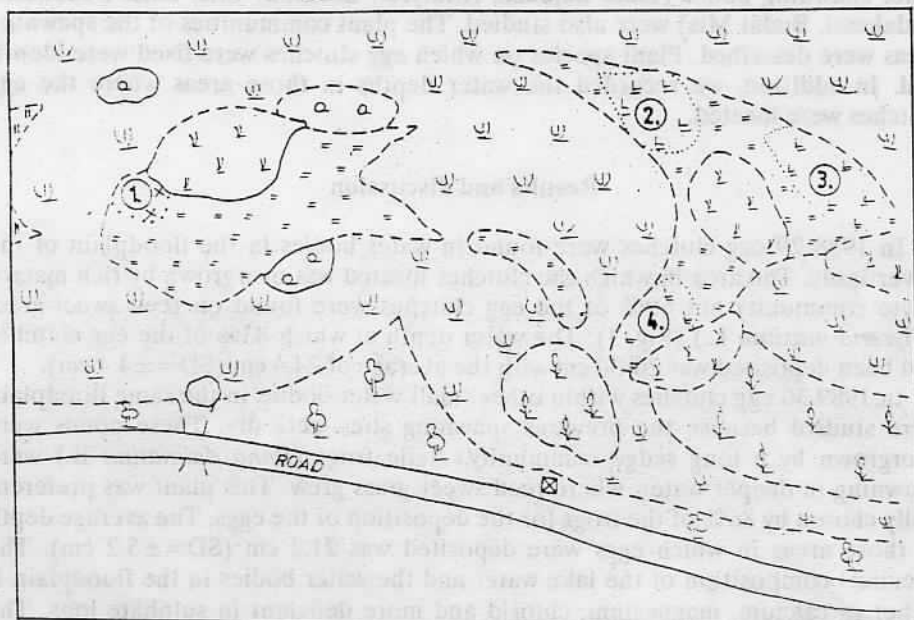
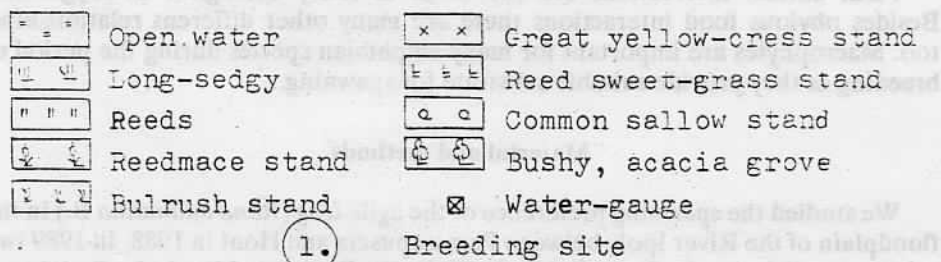


Fig. 1. Vegetation map of the breeding area in the floodplain of the River Ipoly in 1988

Spawning preference of *Rana dalmatina*

Table 1. Number of egg clutches fixed onto different plants

Plant species	Flood plain of the River Ipoly		Lake Bajdázó	Lake Budakeszi
	1988	1989	1989	1989
Reed sweet-grass – <i>Glyceria maxima</i>	20	30	16	
Great yellow-cress – <i>Rorippa amphibia</i>	8	2		
Sedge species – <i>Carex</i> sp.		2		
Common reed (dead + live) – <i>Phragmites communis</i>				20
Great waterdock – <i>Rumex hydrolapathum</i>	1			
Great reedmace – <i>Typha latifolia</i>			5	
Water-crowfoot species – <i>Batrachium</i> sp.		2		
Branch		1	6	

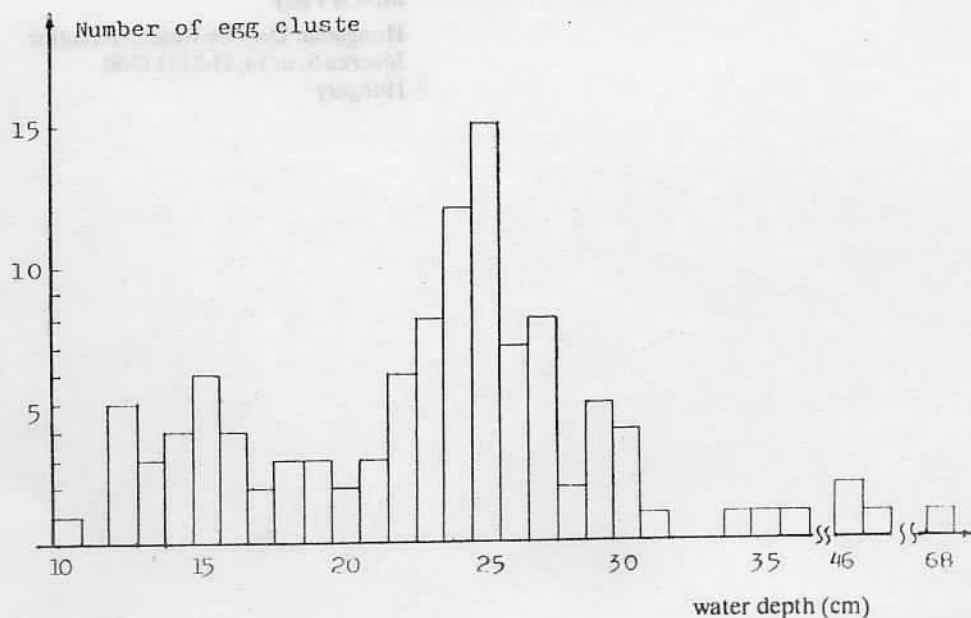


Fig. 2. Number of *Rana dalmatina* egg clutches at different water depths (n= 113)

Glyceria maxima was used in 71% of the cases to fix egg clutches onto. At sites with diverse vegetation *Glyceria maxima* either inhabit those areas which are the most favourable for *Rana dalmatina* to spawn or it provides a small but at the moment unclear advantage.

References

- STÖRMBERG, G. (1988): A study of the jumping frog (*Rana dalmatina*) in Blekinge, Sweden, 1982-88. – *Memoranda Soc. pro Fauna et Flora Fennica* 64(3): 107-109.
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