

Endohelminths of some amphibians from Northern Greece (Trematoda, Acanthocephala, Nematoda; Amphibia: *Triturus*, *Rana*, *Bombina*)

Endohelminthen von einigen Amphibien aus Nordgriechenland (Trematoda, Acanthocephala, Nematoda; Amphibia: *Triturus*, *Rana*, *Bombina*)

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ABSTRACT: 28 specimens of 5 species of amphibians (*Triturus alpestris*, *Triturus vulgaris*, *Triturus cristatus*, *Rana ridibunda*, *Bombina variegata*) from different localities in Northern Greece were investigated regarding their endoparasitic helminths. The helminthic species are listed, and the occurrence of some species is discussed. All species records are new to Greece.

KURZFASSUNG: 28 Amphibien aus 5 Arten (*Triturus alpestris*, *Triturus vulgaris*, *Triturus cristatus*, *Rana ridibunda*, *Bombina variegata*) von verschiedenen Fundorten in Nordgriechenland wurden hinsichtlich endoparasitischer Helminthen untersucht. Die Helminthenarten werden aufgelistet, das Vorkommen einzelner Arten wird diskutiert. Alle nachgewiesenen Parasiten sind Neunachweise für Griechenland.

KEYWORDS: Amphibia, *Triturus alpestris*, *Triturus vulgaris*, *Triturus cristatus*, *Rana ridibunda*, *Bombina variegata*, parasites, helminths, Trematoda, Acanthocephala, Nematoda, Northern Greece.

In the course of an investigation on endoparasitic infection of *Triturus alpestris* and some sympatric Amphibians (SATTMANN 1989a) also some specimens from Greece were dissected. All helminth species recorded are first records for Greece, because no paper has been published on this topic till now.

19 specimens of *Triturus alpestris*, 3 of *Triturus vulgaris graecus*, 1 of *Triturus cristatus*, 1 of *Rana ridibunda*, and 2 of *Bombina variegata* have been dissected. In addition, helminths are included from 1 specimen of *T. cristatus* from Korfu and 1 of *R. ridibunda* from Kefallonia, which I received from P. KEYMAR and H. TUNNER respectively (both Vienna). Detailed information about material and methods is provided in SATTMANN (1989a).

LOCALITIES

Along with the list of localities species of amphibians and number of specimens

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() are given. Findings of freshwater molluscs are mentioned also, for they possibly play a role as intermediate hosts of trematodes.

1. Greek Makedonia, Grammos Mountains, Arena, ridge, puddle about 300 m², depth 20 cm, 1800 m above sealevel; no aquatic macrovegetation; *T. alpestris* (2 specimens).
2. Greek Makedonia, Grammos Mountains, Arena, clearing, puddle, about 30 m², depth 150 cm, 1400 m asl; rich aquatic vegetation. *T. vulgaris graecus* (3), *T. alpestris* (5), *B. variegata* (1). About two thirds of female Alpine Newts seen were neotenous forms!
3. Epirus, Timphi Mountains, Lake Dragolimni, small lake with several springs around, depth about 100 cm, 1700 m asl; snails: *Lymnaea peregra* in high numbers; *T. alpestris* (12), *B. variegata* (1).
4. Greek Makedonia, Lake Micra Prespa, 850 m asl, high species diversity of freshwater molluscs (comp. REISCHÜTZ & STUMMER 1989); *T. cristatus* (1), *Rana ridibunda* (1).
5. Kefallonia: Trematoda from *R. ridibunda* (leg. H. TUNNER).
6. Korfu: Acanthocephala from *T. cristatus* (leg. P. KEYMAR).

SPECIES ACCOUNT

T r e m a t o d a

Pleurogenoides medians (OLSON, 1876):

R. ridibunda, Kefallonia.

Prosoctus confusus (LOOS, 1894):

R. ridibunda, Kefallonia, Lake Micra Prespa.

Astiotrema trituri GRABDA, 1959:

T. cristatus, Lake Micra Prespa.

Opisthioglyphe ranae (FRÖLICH, 1791):

R. ridibunda, Lake Micra Prespa.

Dolichosaccus rastellus (OLSON, 1876):

T. alpestris, *B. variegata*, Epirus.

This is the first record of *D. rastellus* in Alpine Newts. Similar to the close

related *Opisthioglyphe ranae* (FRÖLICH, 1791) this species normally occurs in anura. Nevertheless under distinct circumstances newts can also serve as main hosts for *O. ranae* (SATTMANN 1989a). In newts from Lake Dragolimni juvenile specimens of *D. rastellus* were found in the small intestine as well as metacercaries encysted in the muscular system around the buccal cavity and in the gut wall. Likewise in the gut contents of one newt a specimen of the snail *Lymnaea peregra* occurred with metacercaries encysted in the visceral sack. (For composition of prey of Alpine Newts compare SATTMANN 1989b). By this observation different ways of invasion were verified (GRABDA-KAZUBSKA 1969). A fully grown specimen of *D. rastellus* was found in none of the newts, but in the intestine of *B. variegata*.

A c a n t h o c e p h a l a

Acanthocephalus anthuris (DUJARDIN, 1845):

T. cristatus, Korfu.

This species is known from amphibians (*Rana*, *Triturus*) from France, Italy und Albania (GOLVAN 1969; VOJTKOVA 1979).

Acanthocephalus falcatus (FRÖLICH, 1789):

T. alpestris, Epirus.

Acanthocephalus ranae (SCHRANK, 1788):

R. ridibunda, Lake Micra Prespa.

N e m a t o d a

Cosmocerca longicauda LINSTOW, 1885:

T. alpestris, Epirus

Cosmocerca ornata (DUJARDIN, 1845):

B. variegata, Epirus.

Megalobatrachonema cf. *terdentatum* (LINSTOW, 1890):

T. alpestris, Epirus, Makedonia.

The prevalence in Greek Alpine Newts is about the same as ascertained in a sample of Alpine Newts from Austrian lowlands (25% vs. 28,6%). In newts from alpine and subalpine localities of Austria there was no record of this species (SATTMANN 1989a). Because of insufficient preservation of the specimens,

determination of the species is uncertain. G. HARTWICH (in lit.) mentions the shorter spicula of Greek animals in comparison to Austrian material, which I also sent him. But he nevertheless tends to the opinion that the Greek material represents specimens of *M. terdentatum*.

Oswaldocruzia filiformis (GOEZE, 1782):

T. vulgaris, Makedonia.

Table 1: Puddle at Arena (locality no. 2). Intensity and prevalence (%) of helminths.

Tabelle 1: Waldtümpel Arena (Fundort 2). Intensität und Prävalenz (%) der Helminthen.

Parasites	Hosts				
	<i>Triturus alpestris</i> n=5		<i>Triturus vulgaris</i> n=3		<i>Bombina variegata</i> n=1
	intens.	%	intens.	%	intens.
<i>O. filiformis</i>	-	-	1	33	-
<i>C. ornata</i>	-	-	-	-	4
<i>M. terdentatum</i>	1-2	40	-	-	-

Table 2: Puddle at Arena (A) and Lake Dragolimni (D) (locality no. 1 and 3 resp.). Intensity and prevalence (%) of helminths.

Tabelle 2: Almtümpel Arena (A) und Dragolimni (D) (Fundorte 1 bzw. 3). Intensität und Prävalenz (%) der Helminthen der untersuchten Amphibienarten.

Parasites	Hosts				
	<i>Triturus alpestris</i> A n=2		<i>Triturus alpestris</i> D n=12		<i>Bombina variegata</i> D n=1
	intens.	%	intens.	%	intens.
<i>D. rastellus</i>	-	-	2-4	17	9
<i>A. falcatus</i>	-	-	1-3	25	-
<i>C. longicauda</i> adult	2-3	100	1-7	66	-
<i>C. longicauda</i> larv. (3/4 in lungs)	3-6	100	1	17	-
<i>C. ornata</i>	-	-	-	-	1
<i>M. terdentatum</i>	2-12	100	1	8	-

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