

ENTERIC PROTOZOA OF SOME AMPHIBIANS OF THE ELK MOUNTAINS, COLORADO.—A survey was made of the enteric protozoa of amphibians of the Elk Mountains, in the vicinity of Crested Butte, Colorado. Fifty-seven specimens were collected from six localities: six adult and eight larvae of *Bufo boreas* (Baird and Girard), thirty-six adult *Ambystoma tigrinum* Green and seven adult *Rana pipiens* (Schreiber). All collections were made at elevations above 9500 feet. Water temperatures recorded at the time of collection were below 7°C at all locations.

The results of this investigation are summarized on Table 1. All specimens were infected with one or more of the protozoa indicated. All identifications were

TABLE 1  
Distribution of protozoan parasites in some Colorado amphibians

Host parasite	<i>B. boreas</i>		<i>R. pipiens</i>	<i>A. tigrinum</i>
	A <sup>1</sup> 6 <sup>2</sup>	L 8	A 7	A 36
<i>Euglenamorphia hegneri</i> (Wenrich)	0	1 <sup>3</sup>	0	0
<i>Hexamita</i> (sp.?)	0	0	0	1
<i>Opalina</i> (sp.?)	0	0	0	3
<i>Oxymonas grandis</i> (Cleveland)	2	0	0	0
<i>Proteromonas</i> (sp.?)	2	0	0	0
<i>Protoopalina mitotica</i> Metcalf	6	0	7	0
<i>Retortamonas</i> (sp.?)	0	0	0	3
<i>Tetramitus rostratus</i> Perty	0	0	0	36
<i>Tritrichomonas augusta</i>	6	8	7	36
<i>Tritrichomonas batrachorum</i> (Perty)	6	8	7	36

<sup>1</sup>A = adult, L = larvae.

<sup>2</sup>Number examined.

<sup>3</sup>Number positive.

made according to Kudo (1954). Fecal material was mixed with 5% methyl cellulose and the protozoa tentatively identified under bright field. Coverslip smears were fixed in Schaudinn's fixative and stained with Heidenhain's iron haematoxylin for confirmation of genera and species. I was unable to identify four genera to the species level.

Only one specimen of *A. tigrinum*, from those taken from a large population was infected with *Hexamita* (sp.?). Frandsen and Grundman (1959) recorded this genus from *B. boreas* and *R. pipiens* in Utah, but listed no species. Wenyon (1926) notes that *H. ovata* and *H. batrachorum* have been recorded from the amphibian intestine. One specimen was infected with *Tetramitus rostratus*. Three specimens were each infected with *Opalina* (sp.?) and *Retortamonas* (sp.?). Frandsen and Grundman reported *O. carolinensis* from *B. boreas* and *R. pipiens* in Utah. Cairns (1953) reported *R. dobelli* from *B. boreas* and experimentally transmitted it to *R. pipiens*. *Euglenamorphia hegneri* was found in one *B. boreas* larvae. *Oxymonas grandis* and *Proteromonas* (sp.?) occurred in each of two *B. boreas* adults from two locations. *P. longifila* has been recorded from *A. tigrinum* (Cairns; Frandsen and Grundman), *B. boreas* and *R. pipiens*. *O. grandis* is normally xylophagous, restricted to termites and wood roaches. This may be an accidental occurrence. *T. rostratus* is normally considered parasitic in rats, but apparently is indigenous to *A. tigrinum* in the Elk Mountains, as it was found in all specimens examined. *Tritrichomonas augusta* and *T. batrachorum* were found

in all specimens examined; *Protoopalina mitotica* was found only in *B. boreas* and *R. pipiens*. No coccidia were observed in any specimen examined. This is believed to be the first time any of these protozoa have been reported for amphibians in Colorado.—ERIC PANITZ, *Department of Veterinary Medicine, Oregon State University, Corvallis, Oregon.*

## LITERATURE CITED

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