Stress and Snail Trematode Larvae

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Introduction

This report is a summary of a study of the possible effect on larval flukes when their snail hosts are subjected to the stress of altering daylight hours. Some cercaria emerge from snails only during the late afternoon. The time of emergence is undoubtedly correlated with the circadian rhythms of their hosts. It would seem that shortening the number of daylight hours would result in a change in the numbers of cercariae released from a snail at any one time during the day.

Method

On 3 July 1972, 30 lymnaeid snails were collected from an irrigation canal in the lower end of Teton National Park. The extent of infection in each was estimated by weighing the snail, crushing it, and giving it a value of 0 to 4 on the basis of the numbers of cercariae observed under a microscope. An additional 200 snails were collected in the same area. One hundred were placed in each of two 2-foot square aluminum screen cages anchored in the stream within 5 feet of each other. The experimental group (cage A) was covered with a light-proof cap each day at 1600 hours. The cover was removed after dark. The control group (cage B) was left uncovered. Periodic checks were made of the temperatures within each cage and of the ambient areas. Sunset occurred at about 1030 hours. On 20 July, 17 days later, only 15 snails remained alive in the experimental cage. These 15, along with 15 snails selected at random from the 63 snails in the control cage, and 15 from outside the cages (group C) were weighed individually, crushed, and examined under a dissecting microscope.

Results

	Group A	Group B	Group C
Average weight in mg	225	207	176
Average numbers of cercariae per mg of snail body weight	.008	.008	.007

Comments

If the figure of .007 for the uncaged snails (Group C) is considered normal, it would seem that the 14% increase to .008 represents the effect

of caging rather than of any influence from shortening the number of daylight hours. The increase in size (weight) of snails in the cages was noted in my studies in another stream nearby during the summer of 1971. The cause and significance of this increase has not yet been determined.

In order to eliminate some of the variables, another experiment is planned that involves placing each snail in its own vial and checking for the presence of larval flukes by noting swimming cercarial stages. In this manner only infected snails will be used and the normal time of emergence of the parasites from this species of host will be known.

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