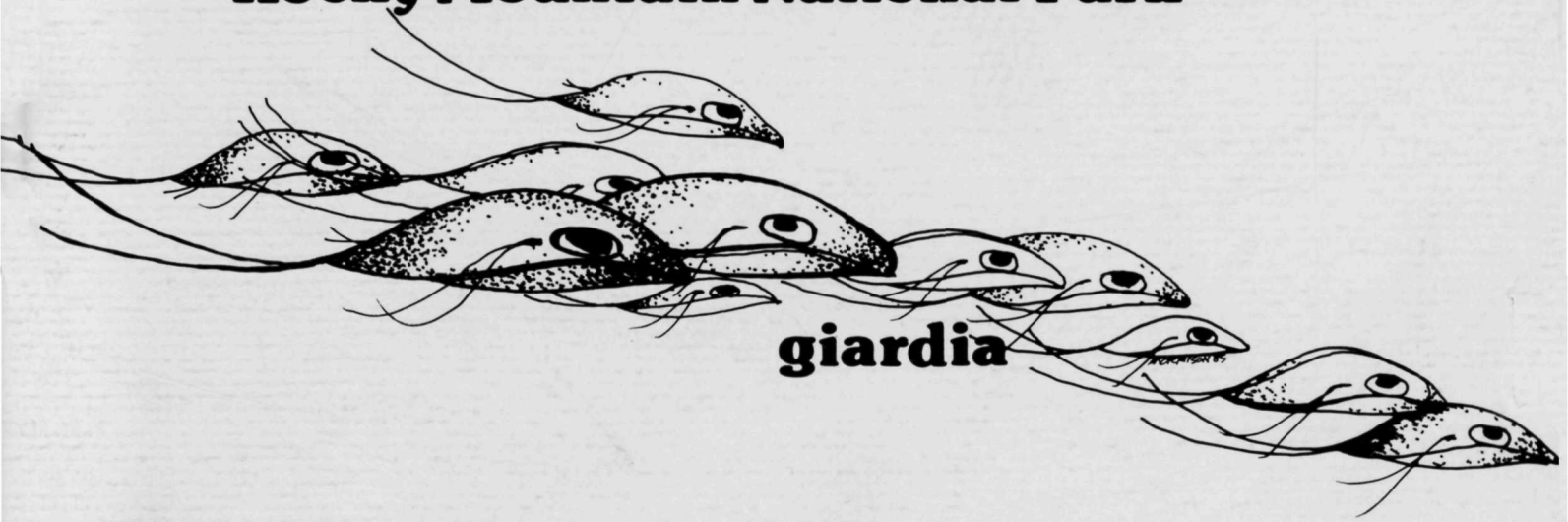
Field Survey of *Giardia* in Streams and Wildlife of the Glacier Gorge and Loch Vale Basins, Rocky Mountain National Park



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FIELD SURVEY OF *GIARDIA* IN STREAMS AND WILDLIFE OF THE GLACIER GORGE AND LOCH VALE BASINS, ROCKY MOUNTAIN NATIONAL PARK

Natural Resources Report Series 85-3

Prepared by

Water Resources Division
National Park Service

in cooperation with

Rocky Mountain National Park

and the

Colorado State University
Department of Pathology
Department of Microbiology and Environmental Health
and
Department of Recreation Resources and Landscape Architecture

Principal Investigators:

Sam Kunkle
Nancy Cowdin

Contributors:

Juliette Wilson
Jerry Grondin
Tom Ricketts
Mark Flora

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Applied Research Branch
Water Resources Division
National Park Service
Fort Collins, CO 80521

ABSTRACT

Two popular, high-elevation watersheds in Rocky Mountain National Park, the Glacier Gorge and Loch Vale basins, were surveyed in the summer of 1984 for *Giardia* and indicator bacteria. Stream water was pumped through a filtering mechanism designed for use in the study and was analyzed for *Giardia* cysts. Water samples were collected and analyzed for fecal coliforms, total coliforms, and fecal streptococci. Hikers were interviewed to determine patterns of water use, water purification methods used in the backcountry, and any prevalence of gastrointestinal illness.

Bacterial counts were low overall, with fecal coliforms being mostly under 10 colonies per 100 ml. *Giardia* was found at elevations up to 3365 m (11,040 feet) in concentrations of between 3 and 11 cysts per 1000 ℓ in 7 of the 35 stream pumpings done during August, September, and October. Thirty-six scat samples from the typical high-country fauna (marmots, pikas, deer, elk, bears, coyotes, mountain sheep, and snowshoe hares) were collected, and all were negative for *Giardia*.

Interviews of 556 hikers showed that 13.7 percent of all hikers drank water directly from the streams without treating it in any way. This 13.7 percent of recreationists drinking raw water containing an average of 9 *Giardia* cysts per 1000 ℓ theoretically have a 2 percent chance of ingesting a cyst for every 2 ℓ of raw water they consume in the high country.

Since all wildlife scat analyzed were negative for *Giardia*, and because the three highest concentrations of *Giardia* cysts occurred in samples taken from stream sites located below camping and bivouac areas, the possibility exists that the *Giardia* that is present is brought in by the estimated 9,800 recreationists using the area each year. However, further research would be needed to definitively confirm whether the *Giardia* found in the study area is of human or animal origin.