Department of Biology
Upper Iowa College
Fayette, Iowa. 52142. U. S. A.

January 1, 1969.

The Director
National Parks Branch
Department of Northern Affairs and National Resources
Ottawa, Ontario, Canada.

Dear Sir:

Enclosed please find "A REPORT ON OBSERVATIONS ON THE BIOLOGY OF CERTAIN AMPHIPODS (CLASS CRUSTACEA) IN BANFF, JASPER, YOHO, & KOOTENAY NATIONAL PARKS AND ENVIRONS IN ALBERTA-BRITISH COLUMBIA, CANADA" by Perdis C. Coleman and Richard W. Coleman, Ph. D., Professor of Science, Department of Biology, Upper Iowa College, Fayette, Iowa. U. S. A. 52142.

In 1964 all of the superintendents and staff in Banff, Jasper, Yoho and Kootenay National Parks were most cooperative during this survey.

Other invertebrate animal groups collected from this survey are still being studied by various specialists for eventual specific determinations. When these determinations of these invertebrates not mentioned in this report have been received, other reports on this investigation will be forthcoming.

Although by now I have conducted biological surveys in every province and territory of Canada, having started those studies in 1947 as a graduate student visiting the Province of Saskatchewan during a Dominion black fly investigation, I still hope to be conducting biological investigations in Canada in the summers for many years to come.

Respectfully yours,

Richard W. Coleman, Ph. D.
Professor of Science.
"A REPORT ON OBSERVATIONS ON THE BIOLOGY OF CERTAIN AMPHIPODS (CLASSE CRUSTACEA) IN BANFF, JASPER, YOHO, & KOOTENAY NATIONAL PARKS AND ENVIRONS IN ALBERTA-BRITISH COLUMBIA, CANADA."

TO THE
DIRECTOR, NATIONAL PARKS BRANCH,
DEPARTMENT OF NORTHERN AFFAIRS
AND
NATIONAL RESOURCES,
OTTAWA, ONTARIO, CANADA.

by
Persis C. Coleman

and
Richard W. Coleman, Ph. D.
Professor of Science
Department of Biology,
Upper Iowa College
INTRODUCTION

This study has been based upon a general invertebrate survey conducted in Banff, Jasper, Yoho, and Kootenay National Parks in the summer of 1964, the data presented in this report representing only one of several animal groups being under study in this investigation.

The preliminary report, Part I, cites the localities where organisms were collected on this general invertebrate survey of certain areas in Banff, Jasper, Yoho and Kootenay National Parks in 1964 so that an idea can be arrived at as to the breadth and scope of this survey. In addition it is important to indicate in what areas these organisms have not been found so that ecological interpretations may be made of this data for other workers at a later date.

The definitive report, Part II, elaborates information pertaining to specific amphipods that were collected from certain areas in Banff, Jasper, Yoho and Kootenay National Parks. The other collections in Part I that were not reported in Part II did not show any of these specific amphipods. Specific acknowledgement for determinations of these specimens made by members of the staff of the National Museum of Canada, Ottawa, Ontario, Canada may also be found in Part II.

Although biological surveys have been conducted in all of the provinces and territories of Canada, such surveys will be continued in Canada for many years to come.
Part I

Part I of this report enumerates the individual collections made in this general invertebrate survey in order that the reader may obtain an idea on the scope and extent of the survey in question. The following collections are cited from this survey:


7. At marginal zone of Johnson Lake, near Two Jack Lake Road, 0.4 road mi. N. junction Two Jack Lake Road to Highway #1, Banff National Park, Alberta, Canada. June 17, 1964. colls.: Persis C. & Richard W. Coleman.
8. Vermilion Lake, approximately 0.8 road m. of junction of Vermilion Lakes Scenic Drive to Banff Road, Banff National Park, Alberta, Canada. June 17, 1964. coll. Richard W. Coleman.


Although we investigated Lake Louise and its outflow, due to lack of proper equipment we couldn't successfully search for invertebrates because Lake Louise was in an overflow stage.


Please turn to page 38.
(3) continued: "A REPORT ON OBSERVATIONS ON THE BIOLOGY OF CERTAIN ANTHOPODS (CLASS CRUSTACEA) IN BANFF, JASPER, YOHO & KOOTENAY NATIONAL PARKS AND ENVIRONS IN ALBERTA-BRITISH COLUMBIA, CANADA" by Persis C. Coleman & Richard W. Coleman, Ph.D.: 


Please turn to page #4:


(5) continued "A REPORT ON OBSERVATIONS ON THE BIOLOGY OF
CERTAIN MOLLUSCS (CLASS GASTROPODA) IN BANFF, JASPER,
Yoho & Kootenay National Parks and Environ in Alberta-British
Columbia, Canada" by Persis C. Coleman & Richard W. Coleman, Ph.D.

42. Near Old Fort Point Viewpoint at edge of Athabasca River,

43. From Miette River near picnic area, collecting area near
where Miette River crosses Yellowhead Highway (Highway #16),
approximately 9 road mi. W. of junction of Yellowhead High-
way to Banff-Jasper Highway, Jasper National Park, Alberta,

44. From Deer Creek, near Deer Creek Campground, 14.5 road mi.
from junction of Yellowhead Highway to Banff-Jasper Highway,
off Yellowhead Highway (Highway #16), Jasper National Park,

45. Deer Creek Campground, from rotted tree under rocks:
Deer Creek Campground, 14.5 road mi. from junction of Yellowhead Highway to Banff-Jasper High-

46. Patricia Lake, near Patricia Lake Bungalows, Jasper

47. Near Patricia Lake, found in rotted wood near Patricia
Lake Bungalows, Jasper National Park, Alberta, Canada. June

48. Pyramid Lake area, from pools near boat piers & parking lot,

49. In ground cover, Cottonwood Creek Tent and Trailer Camp,
near Highway #16, Jasper National Park, Alberta, Canada.

50. Lake Annette, near Lake Annette picnic grounds, off of
Maligne Road, Jasper National Park, Alberta, Canada. June 21,

51. Lake Annette picnic grounds, from under rocks off of
Maligne Road, Jasper National Park, Alberta, Canada. June 21,

52. Maligne Canyon River, near Maligne Canyon Tearoom, Jasper
C. & Richard W. Coleman.

53. From rocks and rotten lumber near Maligne Canyon Tearoom,
A REPORT ON OBSERVATIONS ON THE BIOLOGY OF CERTAIN ARTHROPODS (CRUSTACEA) IN EARLY JASPER, YOKOM & KOOTENAY NATIONAL PARKS AND ENVIRONS IN ALBERTA-BRITISH COLUMBIA, CANADA* By Persis C. Coleman & Richard W. Coleman, Ph.D.*


Please turn to page #7:
(7) continued "A REPORT OF OBSERVATIONS ON THE BIOLOGY OF CERATHECIA (CLASS CRUSTACEA) IN BANFF, JASPER, YOHO & KOOTENAY NATIONAL PARKS AND ENVIRONS IN ALBERTA-BRITISH COLUMBIA, CANADA" by Persis C. Coleman & Richard W. Coleman, Ph.D.


Please turn to page #8:
(8) continued "A REPORT ON OBSERVATIONS ON THE BIOLOGY OF CERTAIN AMPHIPods (CLASS CRUSTACEA) IN BANFF, JASPER, YOHO & KOOTENAY NATIONAL PARKS AND ENVIRONS IN ALBERTA-BRITISH COLUMBIA, CANADA" by Persis C. Coleman & Richard W. Coleman, Ph.D.


Please turn to page #9:
(9) continued "A REPORT ON OBSERVATIONS ON THE BIOLOGY OF
SOMAIA HYPNOS (CLASS CRUSNACTA) IN BANFF, JASPER,
Yoho & Kootenay National Parks and Environs IN ALBERTA-BRITISH
COLUMBIA, CANADA" by Perseis C. Coleman & Richard W. Coleman, Ph.D.

87. In creek, near parking lot and trail to Stanley Glacier and
near Highway #93, Kootenay National Park, British Columbia,

88. Tokumm Creek Trail, Marble Canyon, Kootenay National Park,

89. Tokumm Creek, Marble Canyon, Kootenay National Park,
Coleman.

90. Hawk Creek, near where it crosses Highway #93 near Hawk
Creek Road Camp, Kootenay National Park, British Columbia,

91. From ground cover near where Hawk Creek crosses Highway #93
near Hawk Creek Road Camp, Kootenay National Park, British

92. Vermillion River, collecting area near Highway #93 near
where Vermillion River crosses under Highway #93, near
Vermillion Lodge Bungalows, Kootenay National Park, British

93. From ground cover, Vermillion Lodge area, Kootenay National
Coleman.

94. Wardle Creek near picnic area, Kootenay National Park,
& Richard W. Coleman.

95. From ground cover near Wardle Creek and picnic area,
Kootenay National Park, British Columbia, Canada. June 24,

96. Kootenay Pond, collecting area near wayside stop, approxi-
mately 2 road m. N. E. Kootenay Crossing Park Warden District
#12, Kootenay National Park, British Columbia, Canada. June 24,

97. McLeod Meadow Campground, from creek near foot bridge,
Kootenay National Park, British Columbia, Canada. June 24,

Please turn to page #10:
(10)continued "A REPORT ON OBSERVATIONS ON THE BIOLOGY OF CERTAIN AMPHIPODS (CLASS CRUSTACEA) IN BANFF, JASPER, Yoho & Kootenay National Parks AND ENVIRONS IN ALBERTA-BRITISH COLUMBIA, CANADA" by Persis C. Coleman & Richard W. Coleman, Ph.D.


Part II

Part II of this report cites the specific determinations of certain amphipods of the class Crustacea collected from certain areas cited in Part I of this report. These amphipods were determined by members of the staff of the National Museum of Canada, Ottawa, Ontario, Canada. A kodachrome picture of the breeding area as well as a series of environmental tests were taken for each collection. Such kodachromes and data pertaining to this investigation will form the basis for a paper to be presented to a scientific meeting in the near future.

Collection # 7: At littoral zone of Johnson Lake, near Two Jack Lake Road, 0.4 road mi. X, junction Two Jack Lake Road to Highway #1, Banff National Park, Alberta, Canada. June 17, 1964. colls.: Persis C. & Richard W. Coleman. [Water test: pH 8.0; 9.2 ppm. dissolved oxygen and total hardness expressed as 10 grains per gallon or 171 ppm.]:

a. Cammarus lacustris lacustris Sars
b. Hyalella azteca Sauss.

d. Hyalomedus azteca


a. Cammarus lacustris lacustris Sars
b. Hyalella azteca Sauss.

c. Hyalella azteca

d. Hyalomedus azteca

Collection # 19: Herbert Lake, Campground, near Banff-Jasper Highway, Banff National Park, Alberta, Canada. June 19, 1964. colls.: Persis C. & Richard W. Coleman. [Site: datums: bed of lake-mud with decomposed organic debris and small to large rocks; water test: pH 6.0; 7.8 ppm. dissolved oxygen and total hardness expressed as 9 grains per gallon or 153.9 ppm.]:


Please turn to page #12:
(12) continued "A REPORT ON OBSERVATIONS ON THE BIOLOGY OF
CERTAIN ACARI (CLASS CRUSTACEA) IN BANFF, JASPER,
YUKON & KOOTENAY NATIONAL PARKS AND ENVIRONS IN ALBERTA- BRITISH
COLUMBIA, CANADA" by Persis C. Coleman & Richard W. Coleman, Ph. D.: 

Collection # 21: Bow Lake, near Bow Lake Campground, Banff
colls.: Persis C. & Richard W. Coleman. [Lake data: Sandy bottom with gravel and small
to large rocks; water test: pH 7.8; 8.0 ppm. dissolved oxygen and total hardness expressed
as 8 grains per gallon or 102.6 ppm.]


Collection # 32: Honeymoon Lake, near campground, Banff-
pH 8.0; 6.6 ppm. dissolved oxygen and total hardness expressed as 5 grains per gallon
or 85.3 ppm.]


Collection # 34: Leach Lake, near picnic area off Banff-
Sandy bottom area with small to large rocks; water test: pH 8.2; 7.6 ppm. dissolved
oxygen and total hardness expressed as 7 grains per gallon or 109.7 ppm.]


Collection # 46: Patricia Lake, near Patricia Lake Bungalows, 
[Lake data: Bed of lake in collecting area sandy with small to large rocks; water test:
pH 8.5; 8 ppm. dissolved oxygen and total hardness expressed as 15 grains per gallon or 256.6 ppm.]

a. Carcassus lacustris lacustris Sars
b. Hyalella azteca Sauss.

Please turn to page #13:
Collection #  50: Lake Annette, near Lake Annette picnic grounds, off of Maligne Road, Jasper National Park, Alberta, Canada. June 21, 1964. colls.: Persis C. & Richard W. Coleman. [Lake data: Sandy bottom with small to large rocks; water test: pH 8.2; 9.0 ppm. dissolved oxygen and total hardness expressed as 8 grains per gallon or as 136.8 ppm.]


Collection #  60: Talbot Lake, off Edmonton Highway, near picnic area, Jasper National Park, Alberta, Canada. June 21, 1964. colls.: Persis C. & Richard W. Coleman. [Lake data: Collecting area sandy bed with small to large rocks; water test: pH 7.8; 7.0 ppm. dissolved oxygen and total hardness expressed as 14 grains per gallon or as 239.4 ppm.]


Collection #  65: Sink Lake, near Lake Louise Road, approximately 4/5 road mi. E. of junction of Lake Louise Road to Highway Number 1, Yoho National Park, British Columbia, Canada. June 23, 1964. coll. Richard W. Coleman. [Lake data: Mud bottom with decayed vegetation and with small to large rocks; water test: pH 8.0; 8.6 ppm. dissolved oxygen and total hardness expressed as 7 grains per gallon or 119.7 ppm.]


Please turn to page #14:
Collection # 96: Kootenay Pond, collecting area near wayside stop, approximately 2 road mi. N. E. Kootenay Crossing Park, District #2, Kootenay National Park, British Columbia, Canada. June 26, 1964. coll. Richard W. Coleman. [Pond data: Soil sample grey sandy clay bottom which appeared to be very oozy in places at the edge of the pond; water test: pH 9.25; dissolved oxygen in collection areas registered in chemical tests as too low a concentration for a reaction or for trace readings; and total hardness expressed as 14 grains per gallon or 239.4 ppm.]

a. Gammarus lacustris lacustris Sars
b. Ilyalissa azteca Sauss.

Collection # 98: Olive Lake, near campground, Kootenay National Park, British Columbia, Canada. June 24, 1964. colls. Persis G. & Richard W. Coleman. [Lake data: Lake bottom collecting area with small to large rocks and with decomposed vegetation and organic matter; water test: pH 8.0; 9.2 ppm; dissolved oxygen and total hardness expressed as 10 grains per gallon or 171 ppm.]

a. Gammarus lacustris lacustris Sars
b. Ilyalissa azteca Sauss.