Queen's University Biology Station
1975
Annual Report and Newsletter

Raleigh J. Robertson
Director
January, 1976
INTRODUCTION

This year's annual report has been expanded into a combination report and newsletter in an effort to provide a vehicle for communicating not only a record of Biology Station use during the year, but also synopses of research projects, publication lists, etc., that should be of interest and value to those who use the Station. I have made an initial step in putting together a complete bibliography of theses and publications that have emanated from work done at the Biology Station. Included in this newsletter are those I know about, largely from Queen's. I would appreciate additions to what I realize must be a very incomplete list. Also, as before, I would like reprints and copies of theses based on Lake Opinicon area research so that a collection of this literature can be maintained in the Field Station Library.

Two years ago it was suggested a bench fee might be instituted so that a portion of the maintenance costs of the Station might be shared by non-Queen's users. A modest fee of $20.00 per student or staff per month has been added to the 1976 fee schedule (see Table 5). This fee should be chargeable to research grants, and should not impose a hardship on individual student researchers. If current research budgets do not include sufficient funds to pay this fee, it may be waived, but it should be included in future requests to granting agencies for research to be conducted at the Field Station. Other changes in fees include an increase of $10.00/month for board and room, and a 50 cent per night increase for single night accommodation.

As before, field modules in the Ontario Universities Programme in Field Biology made extensive use of the Station as summarized in Tables 1 and 1.1. Research use is summarized in Table 2 and conference use in Table 3. Many of the resident research students were instrumental in organizing a seminar series this summer, and the list of speakers and topics appears in Table 4.
"NEW LAND"

1000 Acre - Terrestrial Research Tract

During 1975, the "New Land", our recently acquired and still unnamed research tract at the Southern end of Lake Opinicon, became an integral part of the Biology Station. Classes in Plant Ecology, Avian Ecology, and the Ecology of Small Mammals made extensive use of the land as did research projects on Redwinged Blackbirds, Cowbirds, Tree Swallows, Plant Succession, Insect-Goldenrod Interactions, and Bats. A fund raising campaign with the theme "Buy an Acre" (for $70.00!) has resulted in contributions of from 1/2 to 30 acres from a number of Alumni and Friends of Queen's.

The generous gift from Mrs. G.E. Graham, (Dorothy Dowsley Graham, Arts '27) and Mrs. R.H. Bissell (Marjory Dowsley Bissell, Arts '28) was given in commemoration of their father, William Clinton Dowsley, MA Queen's 1898. An especially beautiful and interesting pond on the new land has been named "Dowsley Pond" in honour of Mr. Dowsley. A sketch of part of Dowsley Pond, by one of our summer student residents, Kathleen Graham, graces the cover of this newsletter.

Following is a list of donors who made contributions for the purchase of land during 1975:

Mrs. M.R. Benson  W. Fred Hampton
Mrs. R.H. Bissell  Charles A. Lewis
Mrs. David H. Brind  Mr. R.D. Lisk
Dr. L.H. Colinvaux  Mrs. M. Eleanor MacMillan
D.W. East  Alan B. McBurney
Miss Mary E. Elliott  Mrs. Norman Miller
Mrs. P.J. Fortune  D.G. Thacker
Mrs. G.E. Graham  Dr. L.K. Weresub
Queen's Alumnae Branch  Kingston Horticultural Society

The staff and students who use the Biology Station are grateful for all of these contributions which have made possible the purchase of this land which is so important to present and future research and teaching in Ecology at Queen's.
Colgan, P.W. Studies in Fish Behaviour. Biology Department, Queen's University.

Gross, M. Dynamics of aggression in pumpkinseed sunfish (Lepomis gibbosus) over the nesting phase.

This season's work was a continuation and expansion of that of the previous season on changes in pumpkinseed aggression during nesting. This project is one of several ongoing field studies into the motivation of fish behaviour. Nests were marked as they appeared, and the owners were tested daily by presenting a "Normal" painted-wood model of a pumpkinseed and one of the "Subordinate", "Aggressive", "Pike", and "Minnow" models. Data were collected for 49 fish over the entire nesting phase. Analysis showed that the data were free of confounding effects from several possible sources (time of day of testing, individual difference, colony difference, annual differences). Sunfish undergo great changes in aggressive responsiveness over the nesting phase, with aggression being relatively low during the initial territorial and final vacating periods and very high during the intermediate spawning and brooding periods. The test fish treated the models as conspecific or heterospecific. Positive correlations among the four dominant responses (Approach, Retreat, Opercular Spread, and Bite) indicated a unitary intraspecific aggression system. External and internal stimuli combine additively to elicit aggressive reactions.


Preliminary experiments were run to investigate the feasibility of studying the behavioural ecology of rock bass, Ambloplites rupestris, in Lake Opinicon. Fish were seined early in the season and held in a large pool and a penned off section of the lake. This was to facilitate observation of nesting and reproductive behaviour. As well, nesting of rock bass in the lake was monitored each day by snorkelling. The results were disappointing as the rock bass in captivity failed to nest for no apparent reason, and only minimal data were obtained from the rock bass nesting in the lake because they occur in such low numbers. It was concluded that Lake Opinicon is not a good study site for rock bass but that perhaps the project would be feasible for a long-term study.

Harmsen, R. Succession of terrestrial ecosystems. Biology Department, Queen's University.

A new project was initiated in 1975. It is a long term project with involvement from several biology staff. Its objective is to follow ecosystem structure and dynamics over a twenty year period, as deserted farmland reverts to forest. Mrs. Haywood was hired to execute the surveys of insect populations in several research plots under supervision of Mr. Reid. The vegetation analysis was carried out by Dr. Crowder and students. So far only Solidago communities (old school house site) are being studied, but next year open ground and grassland communities (cemetery site) will be included. Mammalian and Avian population dynamics will be included in the surveys. In 1975 the project was coordinated by Dr. Harmsen. The samples were analysed by Mr. D. Reid and M.S. Davy in Earl Hall.
Project 2: Population regulation of tent caterpillars

In May and June, Ms. Haywood executed a series of controlled field experiments, establishing mortality factors of *Malacosoma disstria* first instar larvae in various habitats and in various population densities. A site near the field station was used.

The results failed to refute our hypothesis of wetland refugia: that *M. disstria* can suffer low mortality in wetlands and that in dry conditions low population densities suffer more severe mortality than do high density populations.

Keast, J.A. Studies on the Lake Opinicon Fish Fauna, Emphasizing Resource Subdivision. Biology Department, Queen’s University.


Four inshore sites were sampled for fish and invertebrates over a 9 month period, May to November. Diet analysis of the 7 major fish species showed that the diet changed both temporally and spatially. Diets were generally more varied in the weedy habitats which hosted a greater and more diverse invertebrate fauna. The seasonal cycles in feeding could be directly related to the body sizes of the food organisms for each species of fish. Fluctuations in Niche Overlap Indices between several fish species were caused by changing prey availabilities and varied according to habitat richness.

The field research for this project was done during the summers of 1972-1974; the final draft of the thesis was completed this past summer, 1975, at the field station.

D. Turnbull and J. Harker. Seasonal Patterns in Odonate Emergence relative to Habitat Type.

Adult Aeshnidae and Zygoptera were collected with nets during May, June, and July at 10 different sites around the lake and on the New Land. *Tetragonura spinifera* was the most common dragonfly species found, both throughout the sampling period and at all sites. *Enallagma boreale* was the most abundant damselfly found, occurring at all 10 sample sites. Rare species showed definite habitat preferences. For example, *Enallagma hageni* was only found in grassy areas on the New Land while *Leptes rectangularis* occurred only in Cow Island Bay.

These data will later be correlated with the distribution of (aquatic) Odonata nymphs which have been collected in previous summers.

Robertson, R.J. Reproductive Strategies in Birds. Biology Department, Queen’s University.

Three somewhat separate, yet inter-related projects on avian ecology were based at the Biology Station in summer 1975. Patrick Weatherhead completed his M.Sc. thesis research on Redwinged Blackbird mating systems. Karen Clark studied the functional role of alarm calling for nesting Yellow Warblers and attempted to determine how nesting density and the response of neighbouring birds to alarm calls influenced nesting success. Since Cowbird parasitism is an important factor determining Yellow Warbler success, this project related closely to the investigation of Defenses Against Brood Parasitism by Hosts of the Brownheaded Cowbird that is being carried out by Richard Norman. Our avian ecology group and a number of other students at the Station were also involved in the Tree Swallow nest box study that was established at Dowsley Pond and Beaver Marsh on the Newland.
This project was greatly aided by Kathleen Graham and Julia Berg, two students from England, who spent the summer working at QUBS. Geoff Holroyd kindly provided the nest boxes, and he, Liz Karen Brown, Frank Phelan, Richard Norman and Pat Weatherhead set up the boxes in early April before the Swallows arrived.

P.J. Weatherhead. The selective advantage of the polygynous mating system of the rewinged blackbird (Agelaius phoeniceus).

The 1975 field work concluded a study initiated the previous summer at Lake Opinicon. Over the two years 381 nests' in 97 male territories were observed. Nest success was found to be directly related to territory quality as determined from nest-site parameters and inversely related to breeding density. Harem size was not correlated to either territory quality or breeding density indicating that females were not always choosing the territories which offered the best chances of successful reproduction. For this mating system to be selectively advantageous it was postulated that females that appeared to have made a poor choice were influenced to do so by the territorial males. Although lowering their chances for reproductive success in the 1st generation they actually gained an advantage by producing male offspring that would inherit their father’s ability to procure large harem. Behavioural testing of territorial males conducted in 1975 verified that major behavioural differences existed between males and that these differences were strongly correlated with the males’ actual success in recruiting females.

Clark, K. The significance of alarm calling and nesting density in the Yellow warbler.

A pilot study to determine the survival value of the alarm calls given by Passerine birds, with emphasis on the Yellow Warbler (Dendroica petechia), was performed at several areas around Lake Opinicon. The study was concentrated at a 15 hectare plot of land along the shoreline of the North-East Fish Sanctuary. Recordings of the alarm calls of the Yellow Warbler, Robin and Redwing, and the chatter of a female cowbird were played at Yellow Warbler nests. The responses of all species to the tape recordings were scored to give a value for the intensity of the response at a nest to an alarm call, or in the case of the female cowbird chatter, to the response of a brood parasite. These scores were then related to nesting success, predation pressure, and incidence of brood parasitism. Alarm calling was found to be important in reducing the incidence of brood parasitism. Further experimentation will be necessary to draw any relationships between predation and alarm calling.


The field experiments conducted in the sumer of 1975 completed a 3 year study on the selection relations of host aggression and incidence of parasitism. Experimentation involved testing the aggressiveness of various potential cowbird hosts by placing freeze-dried cowbird mounts beside host nests and scoring host behavior on a scale of aggressiveness. It was found that the most heavily parasitized hosts are most aggressive, and aggression is an effective anti-parasite defense in high density host populations. The experimental results support the notion that host aggression is largely innate, however there is suggestive evidence that a minor learned component is involved. This intriguing possibility and its relation to general anti-predator behavior will be studied in 1976.

The research also included banding and individually marking 50 cowbirds in order to monitor daily activity, home ranges, host densities, and other aspects of the parasite strategy of the Brown-headed Cowbird.
Tree Swallow - Hole-nesting Bird Study

In early spring, a grid of 30 nest boxes was set up through a habitat transition of meadow, wood, marsh at both Dowsley Pond and Beaver Marsh. Another 17 boxes were erected on the Station peninsula. Nest box occupancy, building, incubation, and brooding were monitored by bi-weekly visits throughout the nesting season in an effort to determine habitat selection and other parameters related to the reproduction of hole-nesting birds. Nest occupancy for this first year of the study was 60% for Beaver Marsh, including 3 Tree Swallows, 2 Eastern Bluebirds, and 2 Black-capped Chickadees; 30% for Dowsley Pond, including 7 Tree Swallows and 3 Eastern Bluebirds; and 41% for Station Grid, including 4 Tree Swallows and 3 House Wrens.

Fenton, M.B. Feeding ecology and habitat use - studies of bats and birds. Department of Biology, Carleton University, Ottawa, Canada.

During the summer of 1975, we continued several projects relating to feeding ecology and habitat use by bats and birds. This year, several discrete projects were involved: 1 analysis of prey selected by Myotis lucifugus by examination of feces - B.Sc. Honours Project, J.J. Belwood; 2 testing of light tags as a technique for studying habitat use by bats - B.Sc. Honours Project, M. Harrison; 3 responses of arctiid moths to the calls of bats, and analysis of the sounds of these moths - M.Sc. project, J.H. Fullard; and 4 feeding ecology of Belted Kingfishers - B.Sc. Honours Project. We also made some attempt to study the responses of bats to fireflies - these were not entirely successful.

Belwood, J.J. Some aspects of prey selection by Myotis lucifugus (Chiroptera Vespertilionidae).

On the basis of quantitative and qualitative comparison of insect remains in bat feces and populations of nocturnal insects, it is obvious that M. lucifugus exhibits great flexibility in the way it selects food. Adult M. lucifugus of both sexes fed mainly on small diptera, particularly midges, but when populations of these insects were low, also moths and caddis flies. In any case, the bats appeared to feed on locally abundant insects, with lactating females apparently selecting large individual prey items. Juvenile bats fed on a greater variety of insects which could reflect a lack of familiarity with good feeding locations. Populations of M. lucifugus in northern Ontario (Dorion) behaved more like juveniles at Chaffey's Locks with respect to feeding, as they fed on a larger variety of insects than adults of this species in southern Ontario.

Harrison, M. An evaluation of light tags as a means of studying bat ecology.

By attaching small glass spheres (10 mm outer diameter) filled with a chemiluminescent fluid to the ventral surfaces of bats (using 'Branding Cement' as a glue), it is theoretically possible to follow the flights of individual bats. This technique is most valuable in areas of good visibility (over water, fields, etc.), but is of limited use in forested areas. The light tags do not appear to severely hamper the bats in their activities, and using a bat detector we were able to establish that tagged bats fed in a 'normal' manner. To effectively use this technique around Chaffey's requires several people, preferably in contact by 'walkie-talkie'. The results of this summer's work will be used as the basis for further research next summer.
Pullard, J.H. Sounds of the Arctiidae (Lepidoptera).

Using a high speed (30 ips) tape recorder and appropriate microphones and amplifiers, I was able to record the sounds of 16 species of arctiid moths, and to determine that another 6 species did not make noise. These data are now being analysed to examine the relationship of the noises produced with the structure of the noise makers. The sounds appear to be part of an aposematic display, directed in at least some instances at bats. Behavioural research of last summer included experiments designed to determine the responses of moths to the noises of conspecifics and others, and the responses of bats and insectivorous rodents to moth sounds.

Allan, J.L. The feeding and breeding ecology of the Belted Kingfisher.

This research was conducted only in part at the Biology Station, the other study sites having been located in and around Ottawa. Ten of 21 nests examined (both active and deserted) were located in artificial settings such as gravel pits and roadcuts, and the rest in natural river banks. Fishing efficiencies, expressed as percentage of successful dives per total dives made, were similar for rural and urban sites, and adults of both sexes had similar performances, with a slight enhancement of efficiency after the fledging of the young. Juveniles were significantly less efficient (14%). Males dive most often making 62% of the observed dive before and during incubation, 84% of the observed dives during brooding, and 70% after fledging of the young. Analysis of perches used for hunting showed that adults preferred overhanging structures without obstructions and are most successful in dives from perches 8 to 10 m above the water. Juveniles use lower perches, and their rates of success decline sharply when roosts greater than 2 m above the water are used.

Barr, D. Taxonomy and ecology of water mites. Associate Curator, Department of Entomology and Invertebrate Zoology, Royal Ontario Museum, Toronto.

During 1975 a project to study water-mites was begun at Lake Opinicon. Under the supervision of Dr. Barr, Nancy Gerrish worked in close conjunction with Pia Pehtia in the project described below.

Gerrish, N. Parasitic strategies of water mites in the genus Armortus. M.Sc. research, Univ. of Toronto.


Pehtia, P. In an M.Sc. programme at Carleton under the Adjunct Professor supervision of Drs. Oliver and Smith of Agriculture Canada, Pia did a study of the host-parasitic relationship between a water-mite genus (Oxus) and chironomids concentrating on host specificity, resource sharing, and concordance of life-cycles of the two groups.
8.

B.Sc thesis from research done at QUBS


McIntosh, D.C. 1945. Forest regeneration on sub-marginal land and wood waste utilisation. B.Sc. thesis, Queen's University, Biology Dept. 119.


Weresub, L. 1950. Preliminary work in physiological and ecological studies of vegetation at Queen's University Biological Station, Chaffey's Lock, Ontario. B.Sc. thesis, Queen's University, Biology Dept. 46 pp.

Graduate theses from research done at QUBS.


Thompson, W.K. 1948. Scale reading of Sunfish scale. B.Sc. thesis, Queen's University, Biology Dept.


<table>
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<th>Module Topic</th>
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<p>| Total Student Weeks not QUBS | 26 | 11 | 35 | - | 14 | - | 87 | 43.5 |
| Total Student Weeks at QUBS (from Table 1) | 53 | 47 | 18 | 3 | 6 | 2 | 129 | 64.5 |
| Total Student Weeks in Bio. 307 | 79 | 58 | 54 | 3 | 20 | 2 | 216 |
| Total Half Course Equivalents in Biol. 307/407 | 39.5 | 29.0 | 27 | 1.5 | 10 | 1 | 108 |</p>
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<th>Project Supervisor</th>
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| Dr. J.A. Keast     | Resource Division Among Freshwater Fish  
(a) Fish Distribution - Strip Census  
(b) Feeding Ecology of Fish in Lake Opinion  
(c) Odonata distribution Studies | Deb Turnbull  
Jennifer Harker (M.Sc. thesis)  
Jennifer Harker & Deb Turnbull | May - Aug.  
May - Sept. |
| Dr. P. Colgan      | 1) Mating Behaviour in Rock Bass  
2) Patterns of aggression in nesting sunfish  
3) Sound Production in sunfish | Karen Brown (M.Sc. thesis)  
Mart Gross  
Bill Nowell  
Patricia Ballantyne | Apr - Sept.  
May - Aug.  
Occasional |
| Dr. R.J. Robertson | 1) Polygyny in Redwinged Blackbirds  
2) Behavioural Ecology of Cowbirds & Their Hosts  
3) Alarm Calling and its significance to Nesting Yellow Warblers  
4) Nesting ecology of Tree Swallows | Patrick Weatherhead (M.Sc. Thesis)  
Richard Norman  
Karen Clark (B.Sc. Thesis)  
Karen Clark  
Julia Berg  
Kathie Graham | Apr - Aug.  
May - Aug.  
May - Aug.  
June - Aug.  
June - Aug. |
| Dr. J.M. Bristow   | Aquatic Invertebrate - Plant Associations | Nancy Gerrish (U of T) | May - Sept. |
| Dr. M.B. Fenton    | 1) Prey Selection by *Myotis lucifugus*  
2) Light tags as a technique for studying habitat use by Bats  
3) Responses of arctiid Moths to the Sounds of Bats | Jackie Belwood (B.Sc. Thesis - Carleton)  
Mike Harrison (B.Sc. Thesis - Carleton)  
Jim Fullard (M.Sc. project - Carleton) | May - Sept.  
May - Sept.  
May - Sept. |
<table>
<thead>
<tr>
<th>Project Supervisor</th>
<th>Description</th>
<th>Students (Queen's unless stated)</th>
<th>Residency</th>
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<tr>
<td></td>
<td>5) Fire flies &amp; Bats</td>
<td>Megan Hughes (Carleton)</td>
<td>May - Sept.</td>
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<tr>
<td>Dr. D.W. Barr (Royal Ontario Museum)</td>
<td>Taxonomy and Collection of Lepidoptera</td>
<td>Liz Perry</td>
<td>Apr - Aug.</td>
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<tr>
<td>Dr. D.R. Oliver (Agriculture Canada)</td>
<td>Ecology of Water Mites in Lake Opinicon</td>
<td>Nancy Gerrish (M.Sc. project U. of T.)</td>
<td>May - Sept.</td>
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<td></td>
<td>Host-parasite relationships between water mites (<em>Genus Oxya</em>) and Chironomids</td>
<td>Pia Pehtla (M.Sc. project - Carleton)</td>
<td>May - Sept.</td>
</tr>
<tr>
<td>D.H. Dale (Guelph)</td>
<td>Substrate Temperatures in Lake Opinicon</td>
<td>Gord Miller (Guelph)</td>
<td>Occasional</td>
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<tr>
<td>Dr. Sam VanderKloot (Acadia)</td>
<td>Blueberry Habitat Associations and Pitch Pine Distribution</td>
<td>-</td>
<td>June</td>
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<tr>
<td>Dr. P.H. Johansen (Queen's)</td>
<td>Studies of Sunfish Hybrids</td>
<td>Peter Boxall</td>
<td>Occasional Collecting</td>
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<tr>
<td>Dr. R. Harmse (Queen's)</td>
<td>Succession of terrestrial ecosystems and Tent caterpillar population regulation</td>
<td>Jayne Haywood</td>
<td>May - Sept.</td>
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<td>Organizer</td>
<td>Function</td>
<td>No. Participants</td>
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<tr>
<td>Dr. M.B. Fenton (Carleton)</td>
<td>Vertebrate Zoology, Carleton University, Field Trip</td>
<td>25</td>
<td>24-26 January</td>
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<tr>
<td>Drs. R.J. Robertson and R. Harmsen</td>
<td>Population Ecology Class, Field Trip (Bio. 439)</td>
<td>40</td>
<td>31 January - 2 February</td>
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<tr>
<td>Drs. R.J. Robertson and D.A. Culver</td>
<td>Biology 202 Field Trip</td>
<td>25</td>
<td>7-9 February</td>
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<tr>
<td>Dr. Reeve (German Dept.)</td>
<td>German Dept. Weekend of Language Practice</td>
<td>27</td>
<td>1-2 March</td>
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<td>Dr. Reeve (German Dept.)</td>
<td>German Dept. Week of Language Immersion</td>
<td>23-30</td>
<td>26 April - 4 May</td>
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<td>Drs. Dale, Girathe, and Gillespie (Guelph)</td>
<td>Consulting re: Meteorological Station for Opinicon</td>
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<td>8-9 June</td>
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<td>Dr. R.J. Robertson and Biology Station</td>
<td>Opinicon Open House - Departmental Picnic</td>
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<td>13 July</td>
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<tr>
<td>Dr. M.B. Fenton (Carleton)</td>
<td>Carleton Univ. Evolution Class</td>
<td>23</td>
<td>19-21 September</td>
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<td>Dr. M. Bristow</td>
<td>Aquatic Vascular Plant Course Field Trip</td>
<td>25</td>
<td>26-28 September</td>
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<tr>
<td>Drs. R.J. Robertson and A. Crowder</td>
<td>Biology 202, Field Trips</td>
<td>150</td>
<td>28 September and 4 and 5 October</td>
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<tr>
<td>Dr. J.A. Keast</td>
<td>Biology 428, Field Trip</td>
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<td>17-19 October</td>
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<tr>
<td>Sgt. Cambell</td>
<td>Militia Training - Camp</td>
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<td>15 November</td>
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<td>Dr. R.J. Robertson</td>
<td>Biology 202, Field Trip</td>
<td>25</td>
<td>21-23 November</td>
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<td>Speaker (Affiliation)</td>
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<td>Richard Norman (Queen's)</td>
<td>Behavioural Interactions of Cowbirds and Their Hosts</td>
<td>26 May</td>
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<td>Geoff. Holroyd (U. of Toronto)</td>
<td>Foraging Strategies of Sympatric Swallows</td>
<td>28 May</td>
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<tr>
<td>Frank Phelan (Queen's)</td>
<td>Predator Prey Interactions Between Raptors and Small Mammals</td>
<td>29 May</td>
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<td>Nigel Lester (Queen's)</td>
<td>Evolution of a Model (for Fish Feeding)</td>
<td>3 June</td>
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<tr>
<td>Raleigh J. Robertson (Queen's)</td>
<td>Fallout Studies and Ecology at Brookhaven Nat'l. Lab</td>
<td>12 June</td>
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<tr>
<td>Dr. Lewellyn Colinvaux (Ohio State)</td>
<td>Autecology of Halimeda (algae)</td>
<td>19 June</td>
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<tr>
<td>Dr. Paul Colinvaux (Ohio State)</td>
<td>Pollen Analysis - Alaska and the Galapagos Islands</td>
<td>19 June</td>
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<tr>
<td>Dr. M.B. Fenton (Carleton)</td>
<td>Bat &amp; Bug Collecting in Arizona</td>
<td>7 July</td>
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<tr>
<td>Patricia Ballantyne (Queen's)</td>
<td>Scaling Behavioural Events</td>
<td>21 July</td>
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<tr>
<td>Jennifer Harker (Queen's)</td>
<td>Resource Division Among Lake Opinicon Fish</td>
<td>22 July</td>
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<tr>
<td>Karen Clark (Queen's)</td>
<td>Alarm Calls and Yellow Warbler Nesting Success</td>
<td>23 July</td>
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<tr>
<td>Dr. Nelson Watson (Canada Centre for Inland Waters)</td>
<td>The CCIW Programme and Invertebrates in the Great Lakes</td>
<td>29 July</td>
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<tr>
<td>Jennifer Harker (Queen's)</td>
<td>Fish Collecting on the Amazon</td>
<td>4 Sept.</td>
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<tr>
<td>Dr. John Terborgh (Princeton)</td>
<td>A Different View of Plant Community Diversity</td>
<td>18 Oct.</td>
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<td>Dr. Peter Grant (McGill)</td>
<td>Galapagos Finches</td>
<td>18 Oct.</td>
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<tr>
<td>Table 5. Fee Schedule for 1976</td>
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</table>

I. Accommodation (Board and Room)  
- **$90/month** - involves obligation for dish washing or other chores on a rotating schedule.  
- **$130/month** - no obligation for chores.  
- **$35/week** - including weekend, e.g. Field Camp - no chores (also includes a lab fee).  
- **$30/week** - single week - involves chore obligation  
- **$5.00/day** - 24 hour board and room  
- **$1.00/meal** - breakfast or lunch, meal only  
- **$2.00/meal** - dinner; meal only  
- **$1.00/person** - for weekend use by groups who provide and prepare their own food  
- **$1.00/person** - overnight accommodation - no food  

II. Boats  
- Fee for exclusive use of boat and motor - includes maintenance and upkeep.  
- **$250.** - entire summer  
- **$65.** - single month  
- **$25.** - single week  
- No charge for occasional or non-exclusive use of boats and motors.  

III. Bench Fee  
- **$20.** - month - per non-Queen's student or staff.