Queen's Biology

Autumn 2008, Volume 3

"… Biology faculty members continue to be highly competitive for research funding and awards."

A message from the Head

During 2007/2008 I was on sabbatical; for six months in the University of St. Andrews, Scotland, and for the remainder of the time in my own lab here at Queen's. This was possible because the Department was left in the very capable hands of Acting Head Bill Bendena and Associate Head Steve Lougheed. I thank them for their efforts. My sabbatical was very productive for my research and I have to admit to some predictable reluctance at the prospect of reoccupying the Head's Office. Nevertheless I am recharged and keen to engage the issues facing the Department.

Last year saw considerable change in the Department as Paul Martin and Bill Nelson established their laboratories and we said farewell to David Layzell and Kathy Wynne-Edwards who left to take up exciting opportunities in Calgary. On the staff side we lost Celine Muis-Griffin (Program Associate, Biol 201* and 202*) and Kelly Shoemaker (Program Associate, Communications and Marketing) who left for a position in the VP Research Office. It was also a year when we had to plan for a significant operating budget cut with the likelihood of an equally severe cut for next year. This financial challenge faces the entire University, not just the Biology Department, and under the new leadership of Principal Tom Williams the problem is receiving close attention. There are no obvious or easy solutions to the budget crunch but Biology will do its best to come up with innovative plans to try and maintain the quality of our programs while reducing their cost. It may be time to re-examine how we offer our Core Curriculum, which has been in place for as long as I have been at Queen's (20 years).

On a more pleasant note Biology faculty members continue to be highly competitive for research funding and awards and this greatly improves the infrastructure that enables ground-breaking research. Craig Hawryshyn, Paul Young and Ian Chin-Sang were co-applicants on a successful CFI application that will see a $0.75M confocal microscope for biological imaging installed in the Biosciences Complex during the fall. This will greatly facilitate their research but will also provide an outstanding technical resource for others in the Department. I expect to use it myself in the not too distant future. On the teaching side the introduction of Lonnie Aarssen's new upper level course on the Evolutionary Ecology of Humans has had quite an impact, attracting more than 300 students for its first offering. Elsewhere in this newsletter you can find out about numerous other achievements in research and teaching as evidence for the continuing health and development of the Department.

In conclusion, I'm pleased to be able to update you on the activities of your old Department via this Newsletter and I encourage you send us feedback about content, or news about your own fortunes.

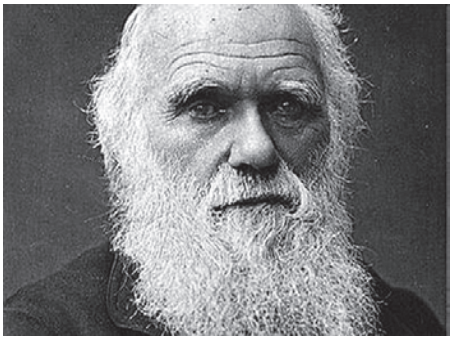
With very best wishes,

Dr. R. Meldrum Robertson

1997 Biosciences Complex

We're interested in YOUR feedback, your own experiences in our department, and your suggestions for what you would like to see in future issues of Queen's Biology. Please email the Newsletter Editor Dr. Raleigh J. Robertson (robertsr@queensu.ca).

The Biology Department launches a new course: BIOL-350* – Evolutionary Ecology of Humans



Charles Darwin, whose tremendously rich and powerful theory of evolution provides a foundation for much of today's study of biology, including that of humans.

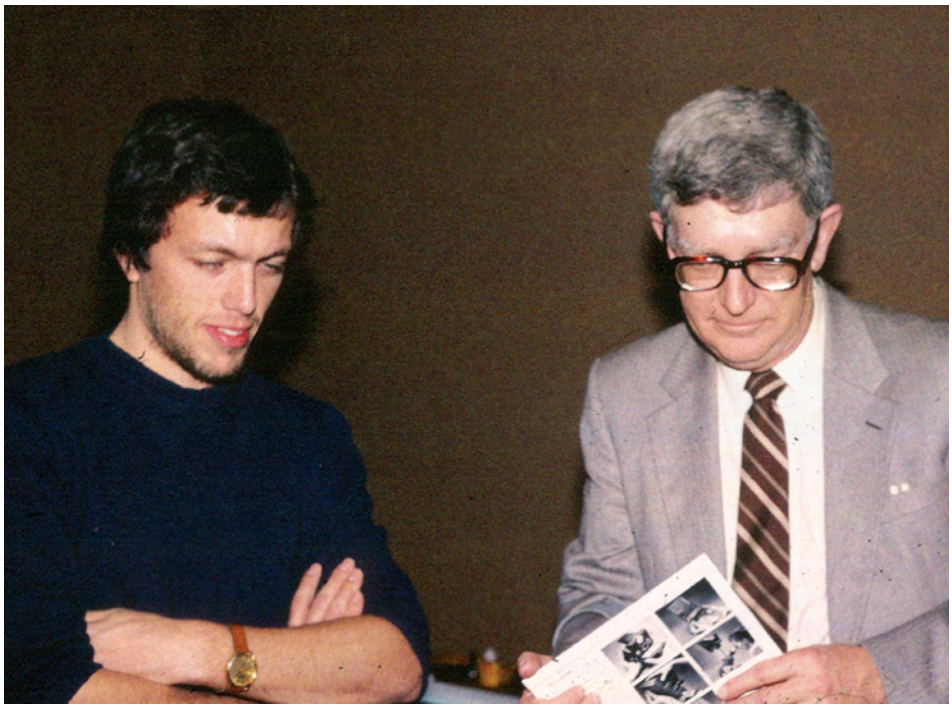
In the 1970's, a new discipline of biology emerged with the publication of E.O. Wilson's controversial books, Sociobiology – A New Synthesis, and On Human Nature. The backlash was jolting. Even a century after Darwin, the general public and even many professional academics recoiled in horror and disgust; they were still not ready to accept suggestions that evolution by natural selection might have contributed in shaping human thinking and behaviours, and thus might in some respects contribute in accounting for their consequences.

Some biologists nevertheless continued to study the topic cautiously, almost in disguise, without drawing much or any public attention. Now, several decades later, biologists are more openly revisiting the core themes of sociobiology. They are discovering not only that the theory has matured, but importantly, that human societies are evolving the culture necessary for a deeper and broader understanding of the application of evolutionary principles to human affairs, and even showing signs of embracing it, unclouded by the cultures of fear and denial that squashed it in earlier generations. These exciting advances are examined in a new course developed by Biology professor, Lonnie Aarssen. BIOL-350* – Evolutionary Ecology of Humans is available to senior undergraduates in their 3rd or 4th year of study, not just from Biology, but from any program at Queen's. Already broadly popular, its enrolment is over 300 students in just its first year offered (September, 2008). The mission of the course is to explore how evolutionary thinking affects our understanding of our lives, our species and our ability to share the planet with other species. Through lectures, films, debates, discussion forums, and poster presentations, students investigate and speculate whether evolution by natural selection can explain how and why humans have arrived at the converging catastrophes of the twenty-first century, how this journey might inform our understanding of a wide range of human affairs, and how these effects could define the future direction of our civilization.

GRADUATE STUDIES IN BIOLOGY

Our graduate studies programs continue to flourish, with almost 140 students registered this year for the MSc (79) and PhD (55) degrees. With 35 full-time faculty, we have about 4 grad students per supervisor, as has been the pattern for the past 20 years or so. With these numbers we are able to achieve a productive level of graduate education without sacrificing quality. External recognition of the quality of our program is highlighted by frequent awards for presentations at international meetings (most recently by Brenden Hurley who is doing his MSc in Bill Plaxton's lab), for theses (e.g., Tristan Long in Adam Chippindale's lab), and for publications of outstanding quality (e.g., Sam Gennidakis in Plaxton's lab). Moreover, though the university's award for quality graduate supervision has only been offered for the past 3 years it has already been awarded twice to profs in Biology (Smol in 2006 and Montgomerie in 2007). While our program remains consistently strong, it has seen some subtle changes over the past three decades or so, with an increasing emphasis on the PhD degree, a welcome diversification of students from both across Canada and around the world, and a much greater emphasis on preparing students for the future with training in both research techniques and communication skills. We have also achieved a healthy balance of students in different disciplines and at different career stages, including more than a dozen postdoctoral fellows now conducting research in the department. Although our graduate program is unlikely to increase in size in the near future, we are currently reviewing both course and thesis options as a means of improving the quality of our graduate training so that we can continue to attract the very best students to do their graduate work in Biology.

The inaugural Aylward (Al) Downe Memorial Lecture by Dr. Peter Billingsley



Dr. Al Downe (right) with then grad student Peter Billingsley in about 1985. Peter gave the inaugural Al Downe Memorial lecture in the department on 3 March 2008

Many Biology alumni will remember Dr. Al Downe with great fondness. Dr. Downe taught introductory biology classes for literally thousands of students, and advanced courses in entomology, invertebrate biology and physiology to at least hundreds of students from the late 1960's through to his retirement in 1992. Dr. Downe passed away in 2002, and to honour his memory, his former students and colleagues at Queen's and in the Entomological Society of Canada have established an endowed lectureship.

Dr. Downe exemplified a career of excellence in research, teaching and administration. He was a keen entomologist serving as a Research officer and Entomologist in the Veterinary and Medical Entomology Unit of Canada Agriculture from 1954-1961. Upon moving to Kansas State University (1961-1964) as a researcher and teacher in Medical Entomology, he published a single authored paper in the prestigious journal "Science" on the serology of mosquito species. Al continued his research on blood feeding insects, bringing him to the University of Saskatchewan, Regina campus (1964-1967) and then finally to Queen's University as an Associate Professor (August 1967). Al became Acting Head (1975-77) then Head of Biology (1977-1980).

Al was known as a great storyteller, a trait that made him an engaging lecturer. He was nominated for the prestigious Queen's Alumni Teaching Award and in 1991 and 1993 was presented with an award for "Excellence in Teaching in the Department of Biology", selected by the Biology Student Council. Also an effective graduate student supervisor, Al mentored 42 graduate students and served as committee members for an additional 52 during his career at Queen's.

The inaugural lecture in this series was fittingly presented by Dr. Peter Billingsley (Queen's Ph.D. '86), one of Dr. Downe's PhD students. Since finishing at Queen's, Peter has held positions at University College, London, and the University of Aberdeen. He's a Fellow of the Royal Society of Tropical Medicine and Hygiene, and has been very active in the fight against malaria, including participating in the "World Swim Against Malaria", which in his case meant swimming in the North Sea in December! Peter is currently Senior Director, Entomology and Quality Systems, Sanaria Inc, in Maryland, USA. Dr. Downe would surely be proud of all these accomplishments.

Dr. Al Downe (centre), along with Drs. Gerry Wyatt and Virginia Walker in the molecular lab at Queen's Biology in the mid-1980's.

Anyone interested in contributing to this endowed fund is encouraged to contact Lisa Menard at Queen's Office of Advancement .

Biology faculty reminisce – careers in perspective: Focus on Drs. Adele Crowder & Ted Brown

Adele Crowder at work in the Fowler Herbarium, about 1990.

On August 9th, I (Raleigh Robertson) spent a very pleasant morning with Adele Crowder and Ted Brown at Ted's home in Sydenham visiting about the early days of teaching General Ecology (Biology 202), field courses, and the role of the Biology Station in our curriculum. To continue reminiscences of some of our former faculty members, I've woven together the following notes about Adele's and Ted's careers in the Biology Department at Queen's.

Adele Crowder arrived at Queen's in 1966 when her husband Chris took up a position in the History Department. Having completed her PhD on the chemistry of peat bogs at Dublin University, and as a recent research associate in Palaeoecology at the University of Belfast, Adele was keen to get involved in the Biology Department at Queen's. Nevertheless, when she was offered a full-time position by Bev Smallman, Head of Biology, she turned it down – preferring instead a part-time position so she could devote more time to raising her young family. The opportunity for a part-time appointment emerged in 1967 when Bill Roff and Roland Beschel, who were teaching summer school, engaged Adele to help with the lab programs. At about the same time, a Geography professor, Ed Ongley, introduced her to Wilton Creek, which provided excellent bog and creek habitat for her palaeoecology work, so Adele soon found herself with an emerging research and teaching program at Queen's. On top of that, Dr. Beschel had some funds for herbarium work, so Adele also began curating the extensive moss collection of Fowler, a task that would take many years, and one that led to Adele being named Curator of the Fowler Herbarium, a position she held from 1970 to 1995. When Beschel died in 1970, Adele stepped in to teach Biology 200 for that and the following year. Then, when the new Biology curriculum was introduced in 1971, Adele, along with Ted Brown and I, taught one of the new core courses - General Ecology (Biology 202). Indeed, although Ted retired along the way, Adele and I co-taught this course for the next 20 years.

That new core curriculum, introduced in '71, was developed in the fall of 1970 when Harold Good was acting head. The Head at the time, Bev Smallman, was on sabbatical in Australia, so Harold Good held a departmental curriculum planning retreat at his family home in Brantford, with faculty such as Al Downe, Fred Cooke, Dolf Harmsen, Nancy Simpson, Al West, Ken Budd, Mike Bristow, Bill Roff, Henry Hood, Allen Keast, Peter Johansen, Dave Canvin, David Dennis, Gerry Morris, and of course Adele Crowder and Ted Brown. From that retreat emerged a Biology curriculum made up of a full yearlong course in each of cell biology, whole organism biology, genetics, ecology and physiology, with the mandate that skills such as library research, report writing, and presentation of oral seminars were to be developed. That core program served the department well with only a few modifications through the 1990's, and in fact, today's core curriculum is still really an evolved version of that original core program.

Adele made many valuable contributions to the teaching of General Ecology. As a field biologist, she was strongly committed to providing the students with field experience, so the lab program included local afternoon field trips to the Vivarium, and later to the Little Cataraqui Creek Conservation Area just north of Kingston. Within a few years, we also began weekend fieldtrips to the Biology Station on Lake Opinicon – a popular tradition that continues even today. Since anything can happen on a field trip, this involvement in various field studies is one of the things that kept our interest piqued, and kept the course fresh over the many years that we co-taught it. Another important contribution to keeping the course fresh, as it is for so many courses, is that we had a superb series of instructors to help organize the lab programs. Through the 20 years we team-taught ecology, Ted, Adele and I each had former grad students and colleagues who served for at least a year, and in some cases up to 6 years, as an instructor, including Roger McNeely, Lorenz Rhomberg, Frank Phelan, Floyd Connor, Shelagh Hurley, Kevin Teather, Sheila Macfie, Sean Sharpe and Adele Mullie. These instructors, plus the constant flow-through of grad student demonstrators, meant that the course was continually being rejuvenated.

In research, working with Michael Bristow, Adele developed projects focusing on the role of phosphorus and metallic toxins on aquatic vascular plants (espe-

CONTINUED ON PAGE 5

Biology faculty reminisce (con't)

cially during the Myriophyllum invasion of the late '70's) and bluegreen algae in both Lake Opinicon and the Bay of Quinte. They employed teams of diving botanists who included Sam VanderKloet (now retired Head of the Botany Department at Acadia) in the 70s, Bill Dushenko (now at Royal Roads University) in the 80s, and Alison McLaughlin (now Department of Environment) and Bruce Cameron (now Bamfield Marine Station) in the 90s. Bruce Cameron decided a new barge was needed, and with help from Frank Phelan and Floyd Connor, built the RAPINICON, naming it after the team's dive sites in Quinte and the Rideau. She also worked with Ken Rutherford (Geography) and Gary Vanloon (Chemistry) on the water chemistry and aquatic plants in tailings ponds near Sudbury. It was here that grad student Greg Taylor (now Dean of Science at the University of Alberta) discovered that the iron plaque, an iron hydroxide, on cattail roots allows them to adsorb toxic metals, a trait that Dr. Vanloon applied to rice culture.

As Adele notes, in the early days of teaching Biology 202, Ted, Adele and I learned from each other. We all sat through each other's lectures, so we were all intimately involved in the entire course. Interestingly, Adele found that Ted and I had a more 'gentle' approach to the course, for example encouraging student representation in lab meetings, in contrast to the more authoritarian system she had experienced in the British Isles. We all felt very strongly that students should have 'hands-on' field and lab experience, so field trips were given a high priority. Ted, along with his grad students, was a key player in developing the lake sampling modules that are still an integral part of the ecology weekends at Lake Opinicon, while Adele contributed to plant ecology studies, and to autecology reports which were a major independent project write-up required of all students. Adele was also a strong advocate for having the students learn to apply their knowledge to real world situations, so another component of the course was the EIA (Environmental Impact Assessment), in which for lab discussions students would participate in the role of ecologists, lawyers, and project proponents. With the same goal of applying ecology to local situations, Adele and David Turpin (now Principal , University of Victoria) twice presented a binationally developed course called "Decisions for the Great Lakes" in eastern Ontario. The course was funded by environmental groups, government agencies and Queen's, and was attended each time by about 30 invited participants from government agencies, municipalities, businesses, schools, media and other local interests. Grad students acted as reporters, producing edited weekly reports on the topics presented by speakers from the U.S. and Canada. David and Adele enjoyed this format and later, with Nancy Olewiler, then at the Department of Economics, and Ken Minns from the Canada Centre for Inland Water, organized a grad course comparing economic and ecological models. The grad students were an efficient and belligerent mix of biologists, geographers, and engineers, some from Royal Military College.

Ted Brown (far side, centre) at the dinner table in the lodge at QUBS, about 1949. Also at the table, Wes Curran, Margaret Currie, Donald Clark, Arliss Denyes and Anne Boyle.

Ted Brown has a somewhat longer history in the department. A native Nova Scotian, Ted completed one year of Normal College in his home province and he then began teaching high school in the late 1930's. His teaching was interrupted, however, when he joined the army in 1941 – military service that would find him in Normandy on the fourth day after the invasion. A committed educator, Ted did manage to do some teaching while in the army by serving in the instructional corps in Holland once the fighting had subsided, and then in Hampshire. When he was repatriated to Canada in March of 1946, Ted came

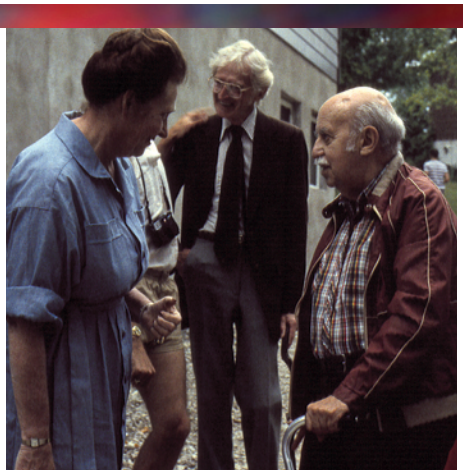
CONTINUED ON PAGE 6

Biology faculty reminisce (con't)

directly to Queen's as an undergrad. At that time, to facilitate returning veterans, the course program at Queen's was designed in half-year segments, so that a full-year of curriculum was covered in just five and one-half months. While an undergrad at Queen's, Ted took courses with Drs. Earl, West, Krotkov and of course, Wes Curran who, with Dr. Earl's and Principal Wallace's encouragement, had recently established the Queen's University Biological Station at Lake Opinicon. An important part of the rationale (and funding!) for establishing QUBS was to provide the types of programs anticipated to be valuable for returning veterans. Following his graduation from Queen's in 1951, Ted went to Yale for graduate studies, working with Prof. G. Evelyn Hutchinson in the early days of what blossomed into a world-renowned limnology program. Upon completion of his Ph.D. at Yale, Ted came back to Queen's as an Assistant Professor in 1959. He developed a very productive program of research and graduate training in palaeolimnology at Queen's; in this he had valuable intellectual and practical help from Roger McNeely, Ralph Daley and Joe Hollywood. This discipline has recently been fundamental to our understanding patterns of global warming and climate change. Indeed, Ted was the PhD supervisor for our own faculty colleague, John Smol, who won Canada's top award in science, the Herzberg Prize, in 2004, for his work on climate change. At the same time he was team-teaching with Adele and me in the General Ecology course, Ted was also establishing an undergraduate program in limnology in the department.

Beginning as a student and throughout his career as a professor, Ted played a very active and constructive role in the development of the Queen's University Biological Station. He served as Director of QUBS from 1959 until 1972, and despite some external pressures and funding difficulties, Ted managed to improve and expand many of the buildings at QUBS as well as to establish a position for a year-round resident manager. In 1985, a new laboratory was named the S.R. Brown Lab, in Ted's honour.

In the late 1960's, as a strong advocate of field studies, Ted played a key role in initiating an inter-university program of field courses. Along with Brock Fenton (Queen's BSc '65) at Carleton and Barry Loughton (Queen's MSc '62, PhD '66) at York, he began a program of field courses in which Queen's students could take modules offered by professors from the other participating universities, for Queen's credits. Many of these early courses took place at QUBS. In the 1970's, Adele, Ted and I were all actively involved in teaching field modules in this program. By the 1980's this program had grown to include nearly every university in the province, and today the Ontario Universities Program in Field Biology provides an array of more than 40 modules annually, at field sites ranging from QUBS to the tropics, arctic, and Asia – it is virtually a world-wide program in which about 65 Queen's students, and over 400 students from Ontario universities in general, annually earn a half-course credit in what many describe as the highpoint of their academic program.



Ted Brown (center) visiting with Dr. H Wes Curran, funding director of QUBS and Chancellor Agnes Benedickson.

Happily, both Drs. Crowder and Brown continue to enjoy a long and healthy retirement. Ted lives in a wonderful old limestone house in the village of Sydenham where he is frequently visited by past students, former colleagues, and caring neighbours. Adele and husband Chris live on a lovely farm west of the village of Yarker where they continue to garden and keep active with grandchildren.

QUEEN'S BIOLOGY PROFS AWARDED CFI LEADERS OPPORTUNITY FUND AWARD

Optical imaging technologies are at the cutting-edge of research in modern cell, developmental and physiological research. At their heart is confocal microscopy, which offers many advantages over conventional fluorescent microscopy, including improved resolution and a higher level of sensitivity. Recently, Drs. Craig Hawryshyn, Ian Chin-Sang and Paul Young were awarded a Canadian Foundation for Innovation – Leaders Opportunity Fund Award of $302,000 to purchase a confocal microscope with enhanced capacity to function in two-photon microscopy mode. Matching funding was kindly provided by the Ontario Innovation Trust ($302,000) and Queen's University ($171,000). The Principal Investigators will be using this state-of-the-art microscope to study disease models, specifically diseases of the eye (macular degeneration, glaucoma), cancer and HIV. Other investigators in the Department, as mentioned by Mel Robertson, will now have access to unprecedented imaging facilities to enhance their research programs.

FIELD COURSE PROF EXTRAORDINAIRE STEPHEN LOUGHEED

Students invariably have many indelible experiences during their time at Queen's. In Biology among the most enduring memories for some are field courses, often at our own wonderful Queen's University Biological Station, but sometimes in quite exotic locales around the world. Indeed Queen's Biology has been at the forefront of education in field biology since the late 1960s. Over the last two years, Biology Associate Professor Stephen Lougheed has taught [an exhausting] five field courses, one in northeastern Argentina (February 2008), one in western Mexico (February 2007) and three at the Biological Station. Lougheed taught the Mexico course with Queen's Biology alumnus, Javier Salgado (Ph.D. 2005; now with the Universidad Michoacana de San Nicolás de Hidalgo). Salgado, Lougheed and 25 students (21 Canadian & 4 Mexican) visited 4 locales in the topographically rugged state of Jalisco, spanning the Pacific coast, dry seasonal forest, cloud forest, and the high altitude environment of Parque Nacional Nevado de Colima (>3500 metres) where they stayed in facilities in the caldera of an extinct volcano. The Argentine course, co-taught with Linda Campbell (Queen's) and Pablo Tubaro (Museo Argentino de Ciencias Naturales, Buenos Aires), was an exploration of environments and biodiversity in northeastern Argentina culminating in a visit to famous Iguazu Falls. Students found an incredible array of species but were particularly taken with a toucan, howler monkeys, a caiman, and a piranha. Lougheed has taught the Ecology of Amphibians and Reptile course annually since 2000, and co-taught with Gabriel Blouin-Demers (Ottawa) since 2003. The collaboration works exceptionally well as Lougheed's research focuses on evolutionary genetics of amphibians, skinks and snakes, while Bouin-Demers works on spatial ecology of snakes and turtles. The "herp course" has been fully subscribed since its inception, typically with a waiting list, speaking to its popularity. The final field course taught by Lougheed over the last 2 years was a wonderful collaboration between Queen's Biology (Associate Professor Yuxiang Wang & Lougheed) and two Chinese universities: Fudan University in Shanghai and Southwest University in Chongqing. The theme was environmental impacts and biodiversity assessment - contrasting the rapidly developing, highly-populated China, to the developed, low population density Canada – and the course brought together 5 Chinese students, two visiting professors, and 14 Canadian students at our Biology Station for two weeks in August. The experience was so rewarding that Wang and Lougheed intend to run a full exchange version of the course next year with 2 weeks spent in each country – in Canada focusing on Lake Ontario and the St. Lawrence and in China on the Yangtze River. We'll try to tell you all about it and other field courses in the next newsletter!

Dr. Stephen Lougheed (centre) along with co-teacher Dr. Linda Campbell to his left, with a group of students in the field in Argentina, February 2008. Lougheed won the DSC's "Excellence in Teaching Award" in 2008, at least in part because of his outstanding performance as a teacher of field courses.

QUEEN'S UNIVERSITY BIOLOGICAL STATION

The summer of 2008 was one of the busiest in QUBS history. For the first time, requests for space exceeded the capacity of QUBS' accommodations. In the end, everyone squeezed in, but things were pretty tight for the first part of the season. The growing number of requests for space at QUBS is indicative of changing demographics. Many of the excellent students who have conducted research at QUBS over the years are now returning to the station as recently hired professors with their own research programs. By all accounts, QUBS is thriving. However, we are also in a position where we must expand our facilities if we are going to accommodate this next generation of researchers.

Expansion of QUBS facilities is already underway. In 2008, a new 3 bedroom cabin, Cedar cottage, was completed. Another one of our older cabins was also replaced. The next big step in this expansion plan is a year-round duplex style cabin that will accommodate up to 12 people. In the future, we intend to expand our operations into the spring/fall months when this type of accommodation will be needed. Construction of this new building will begin as soon as appropriate funding can be secured.

Two of Queen's most recently hired professors also began to ramp up their operations at QUBS in 2008. Dr Paul Martin, the new Baillie Chair in Conservation Biology, had a large crew of students in the field for much of the summer. One of their projects is a collaboration with RJ Robertson (previous Baillie Chair) and R Vallender (Cornell University) to learn more about the biology of Golden-winged Warblers. Although populations of this species are threatened worldwide, there are still significant num-

CONTINUED ON PAGE 8

CONTINUED FROM PAGE 7

bers at QUBS that can be studied to gain information that may help with conservation efforts. Dr Bill Nelson also began setting up a field site at Round Lake on the QUBS property. Bill uses zooplankton as a model system to further our understanding of the evolutionary ecology of organisms. The isolated lakes at QUBS should be ideal for field studies in this area.

QUBS is best known for the research conducted on site, but it is also an important site for undergraduate teaching. In 2008, the station hosted thirteen weeks of undergraduate field courses. The vast majority of these courses are part of the Ontario Field Course Program. QUBS has been an integral part of this program since its inception because of its excellent facilities, easy access and broad diversity of habitats and species.

QUBS FORGES PARTNERSHIP WITH NATURE CONSERVANCY OF CANADA

QUBS is in the process of forging an exciting partnership with the Nature Conservancy of Canada for the acquisition and stewardship of properties that have conservation value in the area. As part of this effort, the Nature Conservancy of Canada has recently purchased an 1,100 acre property from Hewlett Packard north of Loughborough Lake, which may ultimately end up in Queen's hands, if appropriate funding from the university can be secured. This property, now renamed the Elbow Lake property, would provide a substantial addition to the property available for research and educational purposes at QUBS. The property also has an impressive combination of cabins and other facilities in a beautiful setting next to Elbow Lake that could be used by the entire university for many different purposes. Another 5 acre parcel of land adjacent to Opinicon Road was also added to QUBS landholdings this past year, bringing the total QUBS landholdings to 7,000 acres. These purchases of small parcels of land adjacent to QUBS land ensure that the land will be put aside for conservation, research and educational purposes and that there will be no major development in the areas adjacent to QUBS properties.

ENDOWMENT FUND LAUNCHED FOR QUBS

The most important new initiative in 2008 was the establishment of an Endowment Fund for QUBS. The main purpose of this Fund is to ensure that QUBS is able to reach its full potential for research and teaching in future years. With its growing landholdings, new Operations Centre and ideal location in Eastern Ontario, the station is poised to become one of the top places in the world to conduct field biology. Unfortunately, university budgets have become severely stressed in recent years and must meet a wide variety of needs. Financial support from other sources is therefore an absolute necessity if QUBS is going to reach its potential.

QUBS already has a Land Trust, which is used to help with the purchase of key properties for the field station as they come available. The Endowment Fund, which will be used for the growing operational expenses of a large field station will now be an excellent complement to the Land Trust. Anyone desiring more information about the new QUBS Endowment Fund, or the QUBS Land Trust, should contact the Director at the following address: Dr. Bruce Tufts, Director, Queen's University Biological Station, c/o Department of Biology, Queen's University, Kingston, Ontario K7L 3N6. email: tuftsb@queensu.ca

Queen's University
DEPARTMENT OF BIOLOGY
Faculty of Arts and Science
Queen's University
Kingston, Ontario K7L 3N6

SUPPORTING BIOLOGY AND QUBS

Anyone interested in making a donation to the new QUBS Endowment Fund, or to other initiatives mentioned in the newsletter that support the work of the Department of Biology, can use the enclosed gift form. If you would like to speak with someone directly about supporting the work of the Biology Department, please don't hesitate to contact Lisa Menard (lisa.menard@queensu.ca), Faculty Advancement Officer for Biology or Corrine Rahman (corrine.rahman@queensu.ca), Development Officer for Biology at 1-800-267-7837.

QUEEN'S MARKETING AND COMMUNICATIONS 08-0632