

**REPORT OF THE ACADEMIC PLANNING COMMITTEE  
TO THE REGULAR March 2016 SENATE**

**FOR INFORMATION**

**QUALITY ASSURANCE - CYCLICAL PROGRAM REVIEW OF LAURENTIAN  
UNIVERSITY'S  
Ph.D. PROGRAM IN BOREAL ECOLOGY  
FINAL ASSESSMENT REPORT & IMPLEMENTATION PLAN**

In accordance with the Laurentian University's Institutional Quality Assurance Process (IQAP), the Final Assessment Report has been prepared to provide a synthesis of the external evaluation and Laurentian's response and action plan. This report identifies the significant strengths of the program, opportunities for program improvement and enhancement, and sets out and prioritizes the recommendations that have been selected for implementation.

The report includes an Implementation Plan that identifies who will be responsible for approving the recommendations set out in the Final Assessment Report; who will be responsible for providing any resources made necessary by those recommendations; any changes in organization, policy or governance that will be necessary to meet the recommendations; who will be responsible for acting on those recommendations; and timelines for acting on and monitoring the implementation of those recommendations.

**SUMMARY OF THE CYCLICAL PROGRAM REVIEW OF THE Ph.D. PROGRAM**

At Laurentian, the Ph.D. program in Boreal Ecology has been offered since September 2005 with the initial goal of having a program that at maturity would support approximately 12 Ph.D. students per year. Since 2009, when those who entered the program started to graduate, the program has had 13 successful graduates in total. From its inception, the program has been housed within Laurentian University's Department of Biology.

In various academic and strategic plans, the program has been designated as a "signature program" of the University since it takes its inspiration and focus on science issues related the University's location at the southern apex of Canada's largest ecozone, the Boreal Shield, a massive U shaped area underlain by ancient Precambrian bedrock. This area, often called the "Canadian Shield", contains much of Canada's freshwater, its forestry and mining resources and a rich biodiversity of terrestrial and aquatic organisms. However, the scope and breadth of the research generated by those associated with the program are not strictly confined to these geographic limits. Instead, Boreal Ecology is defined as the study of all aquatic and terrestrial aspects (genetic, physiological, morphological, behavioral, and ecological) of boreal and associated ecosystems at micro- and macro-habitat scales, with emphasis on stressed systems, impacts of disturbance, restoration, and species sustainability and conservation.

In December 2014, the program submitted its self-study to the Office of Vice-President Academic and Provost of Laurentian University.

Part 1 of the self-study presented an overview of the program and then reviewed the program's self-perception of the faculty, physical resources, students, program regulations, comprehensive exam and course requirements, and how the program harmonized with the strategic goals and mission of the University. Included in Part 1 were five Appendices: i. Laboratory Equipment ii. Course Outline BIOL6056 iii. Comprehensive Examination Report iv. Comprehensive Examination Form Submitted to the Dean of Graduate Studies and finally v. Details of Comprehensive Examination.

Part 2 of the self-study contained the curriculum vitae of the full-time faculty in the program followed by the curriculum vitae of the adjunct professors associated with the program.

On June 9 and 10 2015, the Review Team conducted a site visit. At the head of the team were Dr. Jules Blais, Professor of Biology & Environmental Toxicology, University of Ottawa and Dr. Brock Fenton, Professor Emeritus, Department of Biology, University of Western Ontario. The two externals were joined by Dr. Brett Buchanan, Director, School of the Environment, representing a program within the faculty and Dr. Céline Larivière, Director, School of Human Kinetics, representing a program outside the faculty. The two students within the program that were included on the team were Michael Carson and Gretchen Lescord.

The site visit was thorough and included a campus tour, a trip to the library, a tour of Science 1 and of course a visit to the Living with Lakes Centre which houses the program. Along the way, the Review Team met with the Dean of the Faculty of Science, Engineering & Architecture, Dr. Abou-Rabia, the Acting Dean of Graduate Studies, Dr. David Lesbarrères (who is also one of the core faculty in the program), the Director of Research, Dr. Yves Alarie (who replaced the Vice President of Research, Dr. Rui Wang on this occasion), the University Librarian, Mr. Brent Roe and the librarian supporting the program, Mr. Alain Lamothe. In addition to these officials, the team met with core faculty, adjunct professors, current graduate students and the GTA facilitator. The team also met with industry officials and federal government partners as well as research managers attached to the Ontario Ministry of Natural Resources and Forestry, mostly with a view to discussing support for graduate students. Finally, the two lead reviews debriefed with the Vice-President Academic and Provost, Dr. Robert Kerr and the Dean, Dr. Abou-Rabia.

In their report dated 16 June 2015, the reviewers emerged "with a strong and positive impression of the Ph.D. program in Boreal Ecology" and lauded "the strong leadership by Professor John Gunn" which was "evident at all levels." It added that "The program, through its interdisciplinary research, teaching, outreach activities and interactions with external agencies, is dynamic and productive. Faculty members supervising students in the program have generally strong records. The students in the program (and those that have previously graduated) have received quality training as evidenced by their records of research productivity. The program has been particularly successful at recruiting outstanding Canadian and international students, many of whom have external scholarships. Whether the measure of output is contributions to the training of highly qualified personnel or publications in scientific journals, the record of productivity is laudable. The Department of Biology and Laurentian University provide excellent facilities for graduate students in the Boreal Ecology Program."

In their covering letter to the Provost and Vice President Academic, the reviewers observed that “LU should be very proud of the Boreal Ecology Ph.D. Program” and they concluded by offering 10 recommendations designed to make the program even stronger.

Amidst all these encomiums, there were no concerns expressed about any aspects of the program in the body of the report. That said, these may be deduced from an examination of the recommendations and they include concerns about:

- Range of course offerings, particularly if program is allowed to expand its output of Ph.D graduates in the next five to ten years
- Staffing both professional and non-professional
- Governance

Each of these concerns are of course, related.

On September 10 2015 the Department of Biology received the Reviewer’s recommendations and submitted its own comments on September 30. These were followed by a set of comments from Dr. Hélène Joly, Acting Dean, Science, Engineering and Architecture which nicely summarize the Reviewers’ recommendations, the Department’s (Unit’s) reaction to those recommendations, the reactions of two Deans, Dr. Abou-Rabia (who was unable to complete his report) as well as herself and finally, the reaction of Dr. David Lesbarrères, Acting Dean of Graduate Studies. Dr. Joly’s report was received on November 23, 2015 and is summarized below:

**SUMMARY OF THE REVIEW TEAM’S RECOMMENDATIONS (R) THE DEPARTMENT’S (U) RESPONSES AS WELL AS THOSE OF THE DEAN OF SCIENCE, ENGINEERING AND ARCHITECTURE (D1) THE ACTING DEAN OF SCIENCE, ENGINEERING AND ARCHITECTURE (D2) AND THE ACTING DEAN OF THE FACULTY OF GRADUATE STUDIES (GS)**

**R1) The name, Boreal Ecology Ph.D. Program should be retained.**

U) Agrees, but recognizes the need to both expand and communicate the expanded interdisciplinary scope of the program.

D1) Agrees with both the external reviewers and the Department of Biology that the name of the program should remain the same. However, the program should be more inclusive in terms of its membership. The more supervisors the program has, the more students it will be able to attract. A review of the Program membership should be conducted on a regular basis. The Program should also diversify the graduate courses it offers. This should help attract students from non-biology background.

D2) Agrees with Dean Abou-Rabia’s comment.

**GS)** The advertising of the program has always been wider than the boreal ecozone and should continue to be. GS agrees with the reviewers that the name can be retained as long as the admission committee is flexible on the research project intended by the student.

**R2) The connection of research to policy is an important feature of the Boreal Ecology Ph.D. Program and should be continued and celebrated.**

**U)** Strongly supports the need to emphasize “science for public policy” with strong partnerships (e.g. through adjunct professorships, research contracts and grants) with government agencies such as Ontario Ministry of Natural Resources and Forestry, the Ontario Ministry of the Environment and Climate Change, Parks Ontario, Parks Canada, Canadian Forest Service etc. The program needs to capitalize on its history and promote its niche area of “applied resources management and conservation science” to emphasize its student’s contributions to mining, forestry and fish and wildlife conservation to distinguish the program from other more purely theoretical Ph.D. programs in Canada.

**D2)** Agrees with the external reviewers and the Unit. The Boreal Ecology Ph.D. program, in interacting closely with agencies and organizations responsible for establishing public and private policy, makes it unique among other programs and provides students with opportunities to make a tangible contribution to important environmental issues. In addition, collaboration with the Science Communication program provides an opportunity for the Boreal Ecology Ph.D. program to communicate to the public the important research that is being done by the researchers. These avenues should be exploited to the fullest.

**GS)** Several students carry very applied research within the program, whether it is the mitigation of road impact in collaboration with Ontario Parks and the Ontario Ministry of Transportation or the continuous improvement of damage lake ecosystems through partnership with the Ontario Ministry of the Environment and Climate Change. Such undertakings are very important both for our society and the students’ careers as well (as we know, academic jobs are becoming scarce) and the links established by the program with governmental agencies is strong. The Dean did not see any adverse reason why it would stop.

**R3) The University should promote and support the diversification of the Boreal Ecology Ph.D. Program to promote the research and educational scope of the Program. This approach also may make it easier to achieve the goal to doubling enrolment in the Program.**

**U)** Thinks that the most critical need is to address the faculty shortage in the program with only 5 regular faculty currently supervising Ph.D. students. Recent retirements without replacement has been a major source of this problem. The Unit therefore recommends that the University proceed quickly with hiring one new professor in each of the next four years, based on the approved 2013 Biology Hiring Plan ( 1.Envir. Microbiologist (francophone); 2. Restoration and Conservation Ecologist; 3. Ecological Modeller, 4. Environmental Animal Physiologist).

**D2)** Resource allocation is always a complex issue especially in times of financial restraint. Every year the needs of all departments and schools in the Faculty of Science, Engineering and Architecture are reassessed and prioritized with the view of maintaining programs and growing

those deemed to be of strategic importance. The Biology Hiring Plan will be included in the deliberations surrounding the hiring of new faculty members in Science, Engineering and Architecture. However, as an initial step the program should consider the possibility of engaging members of other units with complimentary research interests to increase the number of potential supervisors.

**GS)** While new hires would benefit the program, GS is convinced that several existing faculty in Sciences but also in other units (e.g. School of the Environment) could join efforts to supervise students in Boreal Ecology. In fact, the upcoming development of Northern Ontario alone will beg ethical, aboriginal and environmental question that could be form new directions for the program. GS believes the diversity can be achieved within existing walls and through collaborations across institutions as much as by hiring new faculty.

**R4) Replace the “Oversight Committee” with an Executive Committee whose focus should be the Boreal Ecology Ph.D. Program.**

**U)** Agrees that a name change is needed, but more importantly a renewed focus and transparency in the governance structure is required with more formal procedures to encourage participation by other units to achieve the broader diversity needs as the program goes forward. The program also needs to capitalize on communication opportunities such as those with the Science Communication Program of the School of the Environment to enhance the science outreach of the Boreal Ecology Program.

**D1)** There is an immediate need to review the role and the membership of the existing Oversight Committee. The mandate of the Committee should be well defined in relation to the Department of Biology and should include more non-biology members.

**D2)** Agrees with Dean Abou-Rabia’s comment. The creation of an Executive Committee that is concerned only with the Ph.D. program matters, as suggested by the external reviewers, would encourage participation from other units.

**GS)** Agrees and adds that such a change of governance can go a long way in promoting the program and giving it a better representation of its interdisciplinarity.

**R5) Working with the Department of Biology, the Executive Committee and members of the Boreal Ecology Ph.D. program should produce a Strategic Plan and a Constitution. This should be in place with minimal delay.**

**U)** Members of the Ph.D. Oversight Committee will be informed of the need to establish the Executive Committee, draft a policy on how to select members of this committee and to establish a strategic plan. Since the Ph.D. Program is part of the Biology department, the program will use the departmental constitution as the foundation for procedures of the Ph.D. program.

**D2)** Agrees that the Boreal Ecology Ph.D. program should have its own constitution. This will clarify important procedures necessary to ensure the smooth operation of the program.

**GS)** As above, those documents would clarify the expectations and directions of the program; and position it well for the upcoming Laurentian Strategic Plan

**R6) Expand the offering of 6000 level courses in Biology.**

**U)** Recognizes the need for more 6000 level courses and will instruct the Ph.D. Oversight Committee to draft plans to add additional courses.

**D2)** In addition the committee should consider the possibility of using courses offered in other programs as this would add diversity to the course offerings.

**GS)** The Faculty of Graduate Studies continuously encourages graduate programs to share courses as it benefits both the general offering but also the learning opportunities for the students in an era where discipline-silos should disappear.

**R7) Ensure that diversification of the research activities of Ph.D. students is not constrained by a biology-focused comprehensive examination.**

**U)** Agrees that the diversification of the program also means that the required reading list, examination questions and composition of examiners for the comprehensive exam must also reflect the expanded diversity of the program into fields like environmental science, biogeochemistry, environmental microbiology, etc.

**D2)** Agrees with the unit response.

**GS)** As mentioned in responses above, the program is ripe to expand the roster of faculty supervising from outside the Department of Biology and consequently consider the nature of the Comprehensive exam. This should be reflected in the constitution of the program.

**R8) Use an annual meeting of members of the Boreal Ecology Ph.D. program to promote interactions and exchanges of information.**

**U)** Strongly agrees that there is a need for regular annual meetings and exchanges between students, faculty and partners, etc. and requests the Dean provide a small budget (\$500/yr) to support lunch and other meeting costs.

**D2)** The Unit should approach the Dean's office when planning their event and if possible we will help defray meeting costs.

**GS)** Thinks this is a very good recommendation and strongly encourages the program to implement it, especially as the diversity of student and supervisors expand. Such event is key in the cohesion of a graduate program and other Laurentian programs/units have taken this approach successfully that could be consulted on the logistics.

**R9) Assign an administrative staff member in the Department of Biology to serve as the contact point for students in the Boreal Ecology Ph.D. Program**

U) Believes that the university needs to proceed immediately with hiring an administrative staff member who can support both the Ph.D. and M.Sc. signature programs in Biology. This is also a key element of successional planning with a secretary and at least 2 technologists planning to retire within the next 3 years.

D2) Please see the response for R3.

GS) There may be different avenues for administrative support depending of the number of students involved. The program should take advantage of upcoming retirements to open a Dialogue with the Faculty Dean in order to reshuffle the tasks of current and future support staff within the Department.

**R10) These housekeeping matters (e.g. comprehensive exam procedures, orientation, seminars, Bio 6000 course content, international student GTAs, Career training courses, FN engagement, social club) merit what should be routine assessments of local procedures.**

U) Recommends that all international students be granted a GTA and that the oversight committee establish a regular review to address the other existing procedures.

D2) The Boreal Ecology Executive Committee should address the procedural modifications outlined by the external reviewers under the section entitled 'Housekeeping Matters'

GS) As the program takes a new departure (executive committee, constitution), it will be time to address those housekeeping matters.

**R11) A Challenge to Members of the Department of Biology, as well as Laurentian University:**

**Succession planning. Ensuring replacement positions for colleagues who retire, as well as ensuring (as much as possible) that other members of the Department have enough direct experience, energy and enthusiasm to drive the Boreal Ecology Program.**

U) Believes the University needs to respond to this challenge and ensure that the current and future hiring plan in Biology and associated units (School of the Environment, Chemistry/Biochemistry etc.) are executed as soon as possible to attract top young researchers to Laurentian who will sustain and grow this Boreal Ecology Ph.D. Program. The program also needs to rotate members through various roles and responsibilities within the program to expand the suite of experienced participants (e.g. serving on executive committee, chairing comprehensive exams, etc.).

D1) A succession plan as part of a 5-year strategic plan should be proposed to ensure the stability and continuation of this signature program.

D2) Agrees with Dr. Abou-Rabia's comment.

**GS)** The rotation of roles should be explored and part of the constitution of the program. More importantly, both wide (inside and outside Biology) and junior/senior participation should be implemented in order to make transitions smooth and guarantee the continuity of the program without waiting for the director to retire or quit.

### **ACAPLAN’S RESPONSE**

ACAPLAN endorses the recommendations of the Review Team and notes on at least the first recommendation—retaining the name of the program—no follow-up is necessary. In addition, in the time that has elapsed since the Review Team’s recommendations were received the program, it has replaced the Oversight Committee with an Executive Committee which includes representation from other departments. Thus the fourth recommendation is redundant. So is the seventh recommendation since the program has already “Ensured that diversification of the research activities of Ph.D. students is not constrained by a biology-focused comprehensive examination.”

### **LAURENTIAN QUALITY ASSURANCE IMPLEMENTATION PLAN FOR THE Ph.D PROGRAM In BOREAL ECOLOGY February 2016**

<b>Recommendation</b>	<b>Proposed Follow-up</b>	<b>Responsibility for Leading Follow-up</b>	<b>Timeline</b>
<b>1. Maintain the connection of research to policy</b>	a. Enhance strong partnerships (e.g. through adjunct professorships, research contracts and grants) with government agencies such as Ontario Ministry of Natural Resources and Forestry, the Ontario Ministry of the Environment and Climate Change, Parks Ontario, Parks Canada, Canadian Forest Service <hr/> b. Collaborate with Science Communication program to communicate importance of research being done	Program Director	June 1017 and ongoing



<b>2. Promote and support the diversification of the Boreal Ecology Ph.D. Program</b>	a. New hires: ( i.Envir. Microbiologist (francophone); ii. Restoration and Conservation Ecologist; iii. Ecological Modeller, iv. Environmental Animal Physiologist). <hr/> b. Expand participation in program using existing faculty	Dean <sup>1</sup> in context of overall hiring plan for faculty <hr/> Program Director in consultation with Dean	June 2016, 2017, 2018, 2019 <hr/> June 2017 and ongoing
<b>3. Improve governance</b>	Produce a Strategic Plan and a Constitution	Executive Committee, Biology Department and program members	June 2016
<b>4. Expand the offering of 6000 level courses in Biology.</b>	Add courses including those in other programs, <i>including at other universities</i>	Program Director in consultation with Executive Committee	June 2017 and ongoing
<b>5. Promote interactions and exchanges of information</b>	Use an annual meeting of members of the Boreal Ecology Ph.D.	Program Director working with the Dean (for funding)	June 2016 and ongoing
<b>6. Assign an administrative staff member in the Department of Biology to serve as the contact point for students in the Boreal Ecology Ph.D. Program</b>	Hire a new staff member or reassign such duties to an existing staff member	Dean in context of overall hiring plan for faculty	June 2017
<b>7. Attend to various housekeeping matters</b>	Examine the procedural modifications outlined by the external reviewers under the section entitled 'Housekeeping Matters'	Program Director working with Executive Committee; one of these recommendations concerning the expansion of the eligibility for GTA's	June 2017

<sup>1</sup> Except where otherwise noted, the Dean refers to the Dean of the Faculty of Science, Engineering and Architecture.

		for international students is the responsibility of the dean of Graduate Studies	
<b>8. Maintain staffing</b>	Ensure replacement positions for colleagues who retire, as well as ensuring (as much as possible) that other members of the Department have enough direct experience, energy and enthusiasm to drive the Boreal Ecology Program	Dean in context of overall hiring plan	Ongoing

The Dean of the Faculty of Science, Engineering & Architecture shall be responsible for monitoring the implementation plan. The details of progress made shall be presented in the Dean's Annual Report and filed with the Vice-President Academic and Provost. The executive Summary and the monitoring reports will be posted on Laurentian University's web site.

### **CONCLUSION**

The Ph.D. program in Boreal Ecology is approved to continue and it will be reviewed starting in the fall of 2023.