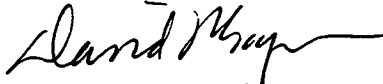


SIMON FRASER UNIVERSITY

OFFICE OF THE VICE-PRESIDENT, ACADEMIC

MEMORANDUM

To: Senate

From: D. Gagan, Chair 
Senate Committee on Academic Planning

Subject: Faculty of Science –
Centre for Environmental Biology
(SCAP Reference: SCAP 98 – 59)

Date: November 5, 1998

Action undertaken by the Senate Committee on Academic Planning gives rise to the following motion:

Motion:

"that Senate approve and recommend to the Board of Governors as set forth in S.98 - 96, the proposed Centre for Environmental Biology within the Department of Biological Sciences."

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SIMON FRASER UNIVERSITY
MEMORANDUM

To: Alison Watt, Secretary
SCAP

From: C.H.W. Jones, Dean
Faculty of Science

Subject: Centre for Environmental Biology

Date: October 19, 1998

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At its meeting of October 13, 1998, the Faculty of Science approved the proposal for the creation of a Centre of Environmental Biology within the Department of Biological Sciences.

This Centre will replace the Centre for Pest Management and will oversee the Masters in Pest Management and Masters in Environmental Toxicology programs.

Please include this item on the agenda of the next meeting of SCAP for consideration and approval.



C.H.W. Jones

c. N. Haunerland, Chair, Biological Sciences

**SIMON FRASER UNIVERSITY
DEPARTMENT OF BIOLOGICAL SCIENCES
MEMORANDUM**

TO: Colin Jones, Dean
Faculty of Science
RE: Centre for Environm. Biol.

FROM: Michael J. Smith, Chair
Dept. of Biological Science
DATE : August 4, 1998

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Enclosed is a proposal for the creation of a Centre of Environmental Biology within the Department of Biological Sciences. This Centre would be an administrative replacement of the Centre for Pest Management and would have the charge overseeing the M.P.M. and M.E.T. graduate programs.

This proposal was developed over approximately a two and half year period by Zamir Punja, the Director of the CPM. He should be commended for his vision and industry in developing this proposal. The proposal went through many revisions and was discussed at length by both the pest managers and environmental toxicologists in this Department. Ultimately it was sent to our Graduate Studies Committee and Strategic Planning Committee and the final version was brought to the Department for approval and endorsement on July 28, 1998. The motion to accept the amended proposal was passed by a large majority of the Faculty at the Departmental meeting.

The essential elements of the proposal are:

1) The Centre of Environmental Biology will replace the Centre for Pest Management with a mandate expanded to include administration of both the MPM and MET degree programs.

2) This is essentially an administrative restructuring within the Department of Biological Sciences to address the management of the two applied programs and to enhance environmental biological studies in the Department.

3) The position of the Director of the CPM will be replaced by a position designated as Director of the CEB. Thus no new stipended positions are required. The only budgetary requirements are the release of the MET Sessional lecture funds held in the Dean of Science office for initiation of MET program.

4) We recommend that the replacement of the CPM with the CEB occur no later than 1 September 1999 if not sooner.

5) I recommend that an interim Director of CPM be appointed during the transition period. My candidate for this would be Dr. Zamir Punja.

6) A director of CEB should be appointed and ratified as soon as possible.

7) Director of the CEB would be responsible to Chair of Department as Administrative Officer and provide Annual Reports of the CEB activities to Dean and Chair.

8) The CEB should undergo an external Program review by the fourth year after its activation, that is after 3 complete years.

In conclusion, I think that this is an exciting proposal that has every measure of potential success. It brings together our two applied Master's programs under an umbrella structure that will enhance their content, it will foster in interdisciplinary development, and will provide a future basis for an expanded area of fundamental research in the Department of Biological Sciences.



Michael J. Smith, Professor & Chair

**A PROPOSAL FOR THE DEVELOPMENT OF
A CENTRE FOR
ENVIRONMENTAL BIOLOGY (CEB)**

EXECUTIVE SUMMARY

This proposal outlines the rationale and need for the development of a Centre for Environmental Biology (CEB) within the Department of Biological Sciences, to address issues relating to pest management and environmental toxicology in the 21st century. The goals of the CEB will be to enhance teaching and research in areas related to ecological and sustainable management of pests, advance the understanding and management of terrestrial and aquatic environments, and improve productivity of agricultural, forest and aquatic environments exposed to stresses and/or toxic factors. The CEB shall encourage the development and utility of contemporary approaches to research and teaching in the above areas, as well as foster and promote additional linkages with areas such as resource management and environmental sciences. The CEB shall further promote its mandate nationally and internationally and shall develop its research expertise to be in a position to address relevant pest and environmental issues on a global scale. In the process, the CEB shall retain its strong ties with the fundamental sciences, strengthen its two unique professional degree programs, and provide opportunities to undergraduate and graduate students to enhance their education.

PREAMBLE

As the world human population increases and global expansion encroaches upon previously undisturbed and ecologically sensitive areas, major constraints to food and fibre production, negative impacts on environmental stability, and huge burdens on natural resources are a growing reality. These pressures on the earth's ecosystems have led to radical shifts in agricultural, fisheries and forestry practices, driven by an increased demand by consumers for food and fibre. Presently, there is enhanced consumer awareness and concern over pest problems, pesticide and drug residues in food, contaminants in groundwater and coastal seawater, lakes and streams, and global climatic changes. These environmental perturbations and the associated decline in natural habitats, such as forests and oceans, have directly or indirectly resulted from human activities.

The disruptions to the stability of natural ecological and environmental systems have raised scientific, economic, political, social and environmental awareness of society at large. Protection of ecosystems has consequently become a high priority for scientific, regulatory and environmental groups in Canada and throughout the world. As we approach the next century, there is an urgent need to address these issues. The development of a Centre for Environmental Biology will be a major step forward to focus efforts on enhancing pragmatic research and teaching in the area of environmental biology. There already exists a core group of faculty that are committed to such an endeavour within the Department of Biological Sciences.

The mandate of the proposed CEB will be to promote research and teaching, and enhance expertise in the areas of pest management and environmental toxicology. The inclusion of the CEB within the Department of Biological Sciences enables the essential fundamental sciences (ecology, physiology and genetics) upon which the Centre is based to be retained. Scientific research and broadly-based education in these areas are vital to development of necessary expertise to address issues in environmental biology as we approach the 21st century.

The understanding of increasing pest and environmental problems will require a combination of scientific research methods and skills as well as an awareness of the economic, political and social constraints that can influence how decisions can be implemented. The CEB will enhance outreach to industry, government and scientific organizations, foster development of additional linkages with disciplines such as resource management, atmospheric sciences, and economics, and improve collaborations with other emerging centres worldwide, to become an international centre of excellence. This mandate also reflects the University's mission of supporting professional and applied programs and the interest of industrial and governmental agencies in graduates with skills and a research focus that enables them to address immediate environmental needs.

The disciplines of pest management and environmental toxicology within the Department of Biological Sciences are unique to the Faculty of Science and the University. There is no university in Canada, and few if any in North America, with this combination of expertise and the necessary excellence in the basic sciences that we presently have at Simon Fraser University. Thus, the creation of the CEB will continue to provide a unique opportunity for the University, but on an enhanced and interdisciplinary scale.

THE DIRECTIONS OF THE CEB

- a) The CEB shall provide the infrastructure within which teaching and research in the areas of pest management and environmental toxicology shall be enhanced.
- b) The CEB shall evolve into an infrastructure within which interactions among broad research disciplines will be promoted. This will facilitate increased collaboration, improved networking, and a strengthened vision for the future.
- c) The CEB shall design its professional degree programs to respond to contemporary needs, and enhance cross-disciplinary teaching and course offerings for these programs as well as for MSc and PhD degree programs.

- d) The CEB shall provide a mechanism through which an increased awareness of important issues in environmental biology is promoted, both nationally and internationally, and through which an increased recognition of the role of the CEB is achieved.

MISSION STATEMENT

The Centre for Environmental Biology shall have the following goals:

1. To conduct interdisciplinary research that will advance the understanding of biological relationships, management of pests, and impact of environmental stresses and toxicants on terrestrial and aquatic organisms and ecosystems, and to promote applications of knowledge and technologies that will improve the efficacy of pest management strategies and tactics, and lessen or eliminate adverse environmental impact;
2. To offer contemporary teaching programs leading to Master of Pest Management (MPM) and Master of Environmental Toxicology (MET) degrees. The two professional degree programs will provide students with opportunities to conduct research and use their knowledge and skills to solve problems in pest management and environmental toxicology;
3. To contribute to the Department of Biological Sciences and the University as a whole by teaching, research, and participating in other academic services; and
4. To serve society at the local, national and international levels, as individuals and collectively as a Centre, by providing insight, interpretation and advice on issues relating to the biology of pests, and on the impact and management of environmental issues.

The CEB shall meet its Mission Statement by:

1. Administering and providing comprehensive Master of Pest Management and Master of Environmental Toxicology curricula and providing a stimulating research and learning environment for students in these degree programs as well as in the Master of Science and PhD programs;
2. Offering relevant graduate courses that serve the needs of both the Centre for Environmental Biology and the Department of Biological Sciences; and
3. Fostering a collegial and academically productive environment and maintaining selected support services for faculty and their students.

In achieving these goals, the CEB will be guided by the following principles:

1. A recognition of diverse approaches to research and teaching;
2. A commitment to excellence in teaching, research and service;
3. A recognition that research and teaching in the CEB can ensure continued world food and fibre supplies, and achieve a viable balance between human needs and the environment;
4. A recognition that advances in the development and application of effective pest management and environmentally sustainable practices are based on results from basic and applied research programs, coupled with field experience; and
5. A commitment to the highest scientific, professional and social ethics.

RATIONALE FOR THE DEVELOPMENT OF A CENTRE FOR ENVIRONMENTAL BIOLOGY

The Centre for Pest Management (CPM), initiated in 1967 with a complement of eight faculty members, has grown to national and international stature in the intervening 30 years. A prominent feature of the CPM was the development of the Master of Pest Management (MPM) degree program, first offered in 1973, and from which over 185 students have graduated in the subsequent 25 years. A broadly-based education in pest management theory and practice was a major factor contributing to the success of this professional degree program. In addition, the resources available with regard to faculty complement and supporting infrastructure, were consistent with the needs and goals of the program.

In recent years, the discipline of pest management has seen the development and utility of contemporary research tools and approaches to study pest populations and understand their biology. These include, for example, the development of sophisticated computer-assisted systems to monitor pest populations, the development of ecologically-based semiochemical lures to manipulate pest behavior, the utility of molecular techniques to study population diversity and to monitor geographic distribution, an increased acceptance of the importance of basic biochemical, ecological, and physiological processes to study organismal and population biology, and the creation of pest-resistant plants through recombinant DNA techniques.

Coupled with this explosive growth in new technologies over the past 5-10 years has come an awareness of the importance of environmental health and sustainability and the impact (positive and negative) of agricultural, urban, aquatic and forestry-related activities on environmental stability. The balancing of public, economic, and political sentiments requires that education on relevant issues include broadly-based scientific disciplines.

Associated with this growth in public awareness, the discipline of environmental toxicology has dramatically increased in profile within SFU over the past 5-10 years. This has resulted in the development of a minor in ENTOX, a PBD program in ENTOX and an approved Master of Environmental Toxicology (MET) program, as well as increased enrolments in related undergraduate and graduate courses. Research in this area has also grown dramatically and it addresses the adverse impact of environmental pollutants and toxicants on aquatic and terrestrial organisms and ecosystems. The emphasis on principles, methods, and approaches to understand and alleviate these negatively impacting activities on aquatic and terrestrial environments parallels closely those used to study and manage pest populations. On many fronts, the environmental toxicology and pest management programs share not only a common vision but also a common scientific foundation and approach.

A gradual change in faculty complement has occurred within the disciplines of pest management and environmental toxicology within the Department over the last 5-10 years. To accommodate these new and diverse strengths, research and teaching programs should evolve to capture new opportunities and ideas, to consolidate their strengths and create a shared vision with equal partnership. It is envisioned that the CEB will be a contemporary and interdisciplinary Centre that addresses the research and teaching needs of the 21st century in the areas of environmental biology. This will be achieved through progressive interactions between the MPM and MET programs, and with the support of the Department of Biological Sciences, the Faculty of Science, and the University as a whole, as well as external agencies and organizations. Once approved, the CEB shall replace the existing Centre for Pest Management.

The benefits associated with the creation of the CEB in the Department and the Faculty of Science as a whole are as follows:

- 1) Bridge the disciplines of pest management and environmental toxicology to address issues, advise on policies, and foster high-quality research into the 21st century
- 2) Develop a Centre that is cost-effective, broad enough in scope to accommodate growth and attrition, and yet diverse enough to respond to needs and opportunities
- 3) Enhance cross-disciplinary teaching and provide bridging courses for the professional degree programs
- 4) Provide enhanced opportunities for collaborative research among various disciplines represented in the Centre
- 5) Provide one administrative infrastructure to accommodate the two professional degree programs (MPM and MET).
- 6) Increase the profile of the Centre and the Department by promoting linkages with national and international institutions

STRUCTURE AND FUNCTION OF CEB

The Faculty

The CEB shall be open to all faculty members who have active, demonstrable biological research programs and who have a continuing commitment to teaching and/or supervising graduate student research, in areas that are compatible with the Mission Statement of the CEB.

Associate Members

Faculty members from Biological Sciences and other Departments with a secondary role in teaching in the areas of pest management and environmental toxicology, as well as researchers and professionals from outside the University, can be made Associate members of CEB. The CEB shall also include those Emeritus and Adjunct Professors currently appointed in the Department of Biological Science who share the goals of CEB.

Contributions to teaching

The CEB faculty shall contribute to teaching in the Master's degrees in Pest Management (MPM) and/or Environmental Toxicology (MET), as well as toward MSc and PhD degrees. All CEB members shall also contribute to teaching in the core Biological Sciences curriculum. There will be concerted emphasis to provide bridging courses among the various degree programs. Student applications for the professional programs shall be evaluated by the CEB Admissions Committee, with recommendations made to the Departmental Graduate Studies Committee for final approval.

Each faculty member in the CEB should be willing to teach one or contribute significantly to one or more CEB-designated graduate-level courses relating to pest management or environmental toxicology every 2 years, and/or provide direct supervision to graduate students. These courses may consist of either 600-level or 800-level offerings, and should be relevant to the training of students in the areas of pest management and environmental toxicology. Courses will be offered to students in both professional programs, as well as those in MSc and PhD programs, subject to recommendation by the Biological Sciences Course Planning Group and approval of the Chair of the Department. Faculty members who have not contributed to teaching and/or supervision of graduate students over the previous 24 months shall be re-evaluated for eligibility as a CEB member.

Contributions to research and national and international activities

It is anticipated that faculty members within CEB shall pursue and acquire research grants, contracts, or sponsors to support their individual research programs in the areas of pest management and environmental toxicology. These programs include both basic and applied research. Collaborative, interdisciplinary, and international research initiatives shall be encouraged by the Centre. Such initiatives will be supported by the CEB to the extent they are compatible with the research and teaching objectives of the program. External funding to support these initiatives shall be actively pursued.

Expenditures for CEB

The expenditures for the CEB shall be predicated on the anticipated separate costs of running each professional program, which are administered through the Department of Biological Sciences. The CEB shall be assisted by a Secretary to the Director and one Coordinator.

The Director

The function of the Director of CEB will be as follows:

- To ensure that the administrative needs of the Centre are appropriately addressed and are consistent with the goals and needs of the faculty and the Department;
- Enhance and promote the CEB through research and teaching in the area of pest management and environmental toxicology, and by so doing, create an environment that is conducive to collaboration and research within the Department of Biological Sciences;
- Ensure that the professional degrees are contemporary, well-structured programs that provide broadly-based education and experience to students;
- Increase the national and international outreach of the Centre, and secure external funding to enhance the CEB;
- Coordinate the two professional programs within the CEB.
- Encourage and facilitate the evolution and interdisciplinary development of CEB.

The MPM and MET programs will each elect a Coordinator, one of whom shall be the Director of the CEB. The Director shall be a tenured/tenure-track faculty member in the Department of Biological Science, at any rank, who is approved by a majority of the CEB members. This position shall normally rotate between faculty in the MPM and MET programs.

RESEARCH AREAS WITHIN THE CEB

The CEB shall foster and enhance research and teaching in areas that include, but are not limited to, the following:

-
- Ecologically-based principles and methods for sustainable crop and forest health
 - Studies on the impact of environmental stresses on growth and physiology of plants and aquatic organisms
 - Use of plants and fungi for bioremediation of soils
 - Application of molecular principles and methods to detect pests and monitor populations
 - Elucidating the biochemical and physiological bases for pesticide resistance
 - Developing biological principles and strategies for pest management, particularly insects, weeds, and pathogens
 - Assessing the impact of environmental pollutants on aquatic environments and on the biodiversity of their fauna and flora
 - Promoting appropriate uses of biotechnology in pest management and environmental ecology
 - Studying ecological bases for pest behaviour and control strategies
 - Use of semiochemicals for monitoring and changing pest behaviour
 - Application of molecular principles and techniques to study population diversity in plants and fungi
 - Elucidating the cellular and molecular mechanisms of insecticide and environmental toxicant action
 - Understanding the molecular basis of pest and plant responses to the environment
 - Studying the physiological responses of aquatic organisms to toxicants
 - Principles and strategies for control of diseases on plants and aquatic organisms