I wish to provide my recommendation and support for the enclosed program name change proposal for consideration by the Graduate Faculty Executive Committee. Following Institute procedures, the proposal was considered by the Governance Committee and received a unanimous favorable vote. The proposed name change from an M.S. in Conservation Biology and Sustainable Development (CBSD) to an M.S. in Environmental Conservation fully matches with the tactical planning of the Nelson Institute and the goals of our academic programs. As the CBSD curriculum successfully moves into a professional masters of science program model this June, the new program name will not only better capture the scope of the discipline and our updated curriculum, it will also help to distinguish among academic programs within the Nelson Institute, while still reflecting the Institute’s suite of programs in the environment.

Our recruitment for the revised curriculum has proceeded under the CBSD name and we expect a first cohort of 24 students, exceeding our expectations. We believe that the proposed name will enhance our ability to recruit as it more clearly aligns with the current direction of the field.

The enclosed proposal further outlines our arguments for how the new program name will better reflect the applied offerings of this Nelson Institute program. Please consider this proposal at the next available spring GFEC meeting.
Nelson Institute for Environmental Studies

Program Name Change Proposal

MS in Conservation Biology and Sustainable Development to: MS in Environmental Conservation

We are expanding our educational mission at the Nelson Institute to train environmental leaders through professional programs, reaching broader audiences of international and working students. The graduate MS program in Conservation Biology and Sustainable Development (CBSD), since its inception in 1990, has offered both a research (thesis) and a professional (internship) track. For the past several years the CBSD Program Committee has recognized the need to emphasize the professional track, both as our strength among environmental graduate degrees on campus, and to meet a growing demand in the professional conservation sector. With the Education Innovation impetus, we have been able to re-imagine this emphasis as a blended professional masters of science program in Environmental Conservation to: train conservation professionals in leadership and critical interdisciplinary skills to tackle complex socio-environmental decisions in a changing world.

The curriculum is redesigned to be accessible and attractive to early career working professionals seeking to advance their mobility and leadership opportunities through a compressed 15 month program - half immersed on campus and half through remote experiences. A student’s program will kick off with a Nelson Summer Conservation Institute – a cohort-intensive practical training, and culminate in a summer leadership experience with foremost environmental organizations and agencies worldwide. Competing professional programs such as those at Duke, Yale, Cambridge, and UC-Santa Barbara provide focused and applied environmental science training. We believe the redesign of the current program, as a professional masters of science, will be competitive with these top for-revenue professional conservation programs. Our unique expertise and offerings in conservation planning, sustainable development, and the Summer Conservation Institute will draw new audiences of working professionals regionally and abroad. We propose here to change the program name to Environmental Conservation to:

1. More accurately reflect the updated curriculum and training in the program;
2. More broadly capture the scope of the discipline and semantic changes in the field (e.g. see attached Frontiers 2010 article);
3. Better reflect the nature of the program with a recognizable brand for the long-term future.

The CBSD Program Committee voted unanimously at their October 29, 2013 meeting in favor of advancing a proposal to change the program name to Environmental Conservation. On March 3, 2014 the Nelson Institute Governance also voted unanimously in support of the proposed name change.

In relation to our comparative schools with profession programs, many use professional masters degree/program names (e.g. Master of Forestry - MF, Masters in Environmental Management-MEM), some use an MS or similar degree (e.g. MFS, MES, MPhil), many use ‘Environmental’ or ‘Conservation’ in the program or specialty name (of note - MPhil in Conservation Leadership, University of Cambridge). Only one school (U-Mass Amherst) uses exactly the same degree/program name as proposed: an M.S.
in Environmental Conservation. And none of these professional masters use the terms ‘Conservation Biology’ or ‘Sustainable Development’ in their names (see attached list of comparative programs). We believe that an M.S. in Environmental Conservation reflects UW faculty’s strengths in science and research, while capturing our program mission and the broad, synthetic and applied nature of the profession around conservation and management of natural and human environments. Moreover, with Wisconsin’s remarkable legacy of leaders in the environment and conservation, including most notably John Muir, Aldo Leopold, and Gaylord Nelson, a professional graduate program that broadly captures the breadth of work in the field and our strengths in visionary leadership will be better captured with the proposed name:  Master of Science in Environmental Conservation

**Attention to in-course students:**

Enrollment in the current MS-Conservation Biology and Sustainable Development (CBSD) program has averaged less than 10 students matriculating each fall over the past 10 years. It has been in a slight decline in recent years. We began discussing the program’s curricular changes with the 2012 CBSD cohort, who understand and accept the need for program changes. For those who were admitted to CBSD in spring and fall 2013, we described the curricular change as well as expected name change. These students were then able to make the decision to matriculate to CBSD with an awareness of expected changes. In no case did an admitted student choose not to enroll in CBSD in 2013 due to the proposed name change to Environmental Conservation.

All current in-course CBSD students will complete the program and finish with an MS in Conservation Biology and Sustainable Development. The effective date of the proposed name change will be June 2014 to correspond with the start of the first cohort under the professional masters-based curriculum model. In effect, we propose the *phase-in implementation*, in which students starting before May 2014 and graduating by May 2016 will retain the Conservation Biology and Sustainable Development M.S. name and the students starting summer 2014 will be in the program under the name “Environmental Conservation M.S.”

Students wishing to pursue environmental conservation through a research oriented, thesis-based program will be able to obtain traditional degrees through our very flexible flagship research program, Environment and Resources, with an emphasis in conservation biology and sustainable development through their course selections and advising. We will request to discontinue the PhD minor in CBSD via a separate memo to the Graduate School. Presently there are no enrolled students seeking the CBSD minor and any future students interested in a doctoral minor in the areas of conservation biology and sustainable development will be redirected to the doctoral minor in Environment and Resources.

**Potential issues of overlap:**

Across campus the most similar program names are 1. Nelson Institute’s Environment and Resources graduate program, or Environmental Studies undergraduate major, 2. CALS / L&S Environmental Science undergraduate major, and, 3. Biological Aspects of Conservation (BAC) undergraduate major, also exploring a name change to Conservation Biology. If adopted, the undergraduate name change would be complimentary, and less overlapping with our proposed name than with our current name (CBSD). The BAC program, along with CALS and L&S APC’s, has endorsed our name change proposal.
Has the term “conservation biology” had its day?

The “conservation biology” literature has increased tremendously in volume during the past two decades. Furthermore, the field has expanded in breadth to include various disciplines, reaching far beyond biological or ecological science. Consequently, is it time for a name change?

Although the importance of social science disciplines within conservation biology has already been acknowledged in Soule’s landmark paper (Soule 1985), non-biological disciplines therein were largely neglected during the 1980s and 1990s. For example, the topics covered at the Society for Conservation Biology’s (SCB’s) first annual meeting, held in 1987, were almost entirely restricted to biology and land management (Ginsberg 1987). Since then, there is no doubt that conservation biology has—in practice—developed into a truly interdisciplinary subject (see e.g., Meine et al. [2006] for a historical account). Thus, the list of topic areas for SCB’s 2009 annual meeting included—in addition to more “traditional” conservation topics—environmental economics, politics and policy, anthropology, sociology, and psychology.

A question that is increasingly being asked is whether the term “conservation biology” is appropriate in light of that conceptual expansion. We do not think so. In “conservation biology”, the word “conservation” is used as a noun adjunct modifying “biology”. Linguistically, this makes conservation biology a subdiscipline of biology, just like cell biology, freshwater biology, or invasion biology.

Are there any alternative naming conventions that would capture the full contemporary span of this discipline? The term “conservation research”, which is already being used to some extent (e.g., Bhagabati 2007), would better acknowledge the field’s breadth. In cases where the ecological context may not be obvious, it may also be necessary to add qualifiers to distinguish the field from other disciplines that involve conserving things (e.g., architecture, art, or digital information). Here, terms such as “biodiversity conservation research” could be used.

The term “conservation biology” is certainly appropriate as a name for the discipline addressing biological aspects of conservation. However, when referring to the wider interdisciplinary field that has developed over time, we argue that adopting a new terminology is warranted. This is an important step toward embracing the broad range of actors—from many disciplines—who are needed to save the world’s biodiversity.

Jean-Michel Roberge, Grzegorz Mikusiński, and Hugh P Possingham

1Department of Wildlife, Fish and Environmental Studies, Swedish University of Agricultural Sciences, Umeå, Sweden (Jean-Michel.Roberge@sfm.slu.se); 2Grimsö Wildlife Research Station, Department of Ecology, Swedish University of Agricultural Sciences, Riddarhyttan, Sweden; 3The Ecology Centre, School of Integrative Biology, University of Queensland, St Lucia, Queensland, Australia

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Dose-response versus ANOVA

Recently, I reviewed manuscripts that reinforce a pattern I previously observed in published papers, whereby ecologists are improperly using analysis of variance (ANOVA) designs when they should be using the dose-response model. This pattern is present in such diverse areas as Bacillus thuringiensis (Bt)-corn non-target toxicity, biotic effects of ultraviolet light, and invasion biology. My advocacy builds on Cottingham et al. (2005), who argued for the use of replicated regression over ANOVA, and other, similar reasoning. The dose-response model also generates a curve (in this case non-linear and typically analyzed with logistic regression) to evaluate the response (typically, but not exclusively, mortality) of test subjects to varying doses of a stressor. Curve generation provides insight into test-subject vulnerability, and allows lethal or effect doses to be calculated and compared with other stressors. Lethal doses (LD) are typically expressed as doses needed to kill 50%, 95%, or 99% of test subjects (LD50, LD95, LD99, respectively) over specified time periods, typically 24 hours, although there is no reason why duration cannot be tailored to the system in question. It is a standard toxicological method of analysis.

Unfortunately, many ecologists apparently choose not to use the dose-response model or are unaware of it. Instead, they employ an ANOVA-based analysis of survival between treatment groups exposed to different doses or exposure times. Yet, when evaluating toxicity, choosing what doses and durations to compare with ANOVA is completely arbitrary. The dose-response model eliminates such subjectivity. Investigators are omitting treatment levels, especially at low doses. Test-subject responses to low doses provide valuable information, especially when evaluating the toxicity of agents that might be improperly applied in the field as part of a management protocol (e.g., through unintended dilution of a biocide). In addition to the “good” reasons to use the dose-response model, there are few, if any, reasons not to use it when evaluating toxicity. Dose-response reveals patterns that ANOVA cannot. Use of ANOVA reduces comparability between studies and stressors, obscuring evaluations of relative toxicity.
Comparable Program / Degree Names to Nelson Institute Professional Masters in Conservation

25 March 2014

Professional programs:

**University of Cambridge**
- Master of Philosophy in Conservation Leadership (MPhil)

**Duke – Nicholas School of the Environment**
- Master of Environmental Management (MEM)
  - Ecosystem Science and Conservation (ESC) concentration
- Master of Forestry (MF)
- Duke Environmental Leadership Master of Environmental Management (DEL-MEM)

**Yale**
- Master of Environmental Management (MEM)
- Master of Forestry (MF)
- Master of Forest Science (MFS)
- Master of Environmental Science (MFS)

**UC Santa Barbara – Bren School of Environmental Science and Management**
- Master of Environmental Science and Management (MESM)
  - Conservation Planning concentration

**Colorado State University**
- Master of Science in Conservation Leadership through Learning

**Michigan Tech – School of Forest Resources and Environmental Science**
- Master of Forestry (MF)
- Master of Science in Forest Ecology and Management (MS) - thesis

**Oregon State**
- Professional Science Masters (MS) in Environmental Sciences

**University of California at Berkeley**
- Master of Forestry (MF)

**UMass-Amherst**
- Master of Science (MS) in Environmental Conservation (Eco) – professional or thesis
Research thesis programs:

Antioch University
● Master of Science (MS) in Resource Management and Conservation

Colorado State
● Master of Science (MS) in Ecosystem Science and Sustainability

Cornell University
● Master of Science (MS) in Ecology and Evolutionary Biology
  ○ Concentrations in various graduate fields of study

North Dakota State University
● Master of Science (MS) Environmental and Conservation Sciences

University of Maryland
● Sustainable Development & Conservation Biology (CONS) Graduate Program (MS)

University of Michigan – School of Natural Resources and the Environment
● Master of Science (MS) in Conservation Ecology

University of Minnesota
  Master of Science (MS) in Conservation Biology

University of New Hampshire
● Master of Science (MS) in Natural Resources
  ○ Environmental Conservation concentration
25 March 2014

TO: Paul Zedler, Associate Director for Academic Programs and Research--Nelson Institute

FROM: Richard Straub, Associate Dean--College of Agricultural and Life Sciences

RE: MS Name Change Proposal

Your request for feedback on a proposed name change from Conservation Biology and Sustainable Development M.S. to Environmental Conservation MS was presented to the CALS department chairs at their meeting on February 24 and the CALS Academic Planning Council on March 4, 2014. Both groups discussed the proposal and expressed no reservations in moving forward. In addition, specific departments that have similarly named courses/majors were consulted, and they too expressed no reservations in making this change. The comments from all groups were generally positive and overall they felt the name change better reflected the content and focus of the program.

cc: Kathryn VandenBosch
7 March 2014

TO: Paul Zedler, Associate Director for Academic Programs and Research – Nelson Institute
Paul Robbins, Director – Nelson Institute

FROM: John Karl Scholz, Dean

RE: Proposal to rename MS-Conservation Biology and Sustainable Development to MS-Environmental Conservation (Nelson Institute)

CC: Elaine Klein, Assistant Dean for Academic Planning, L&S
Jocelyn Milner, Associate Provost and Director, Academic Planning and Institutional Research
Janet Silbernagel, Professional Programs Director – Nelson Institute
Hope Simon, Associate Director for Administration – Nelson Institute

On February 18 and March 4, 2014 the L&S Academic Planning Council considered the request for L&S support concerning the proposal to rename MS-Conservation Biology and Sustainable Development to MS-Environmental Conservation. We appreciate the time taken by Dr. Silbernagel to respond to the council’s questions; we are equally grateful for Dr. Milner’s guidance in explaining the status of the various elements of the proposal. I’m pleased to report that the L&S APC agrees that this change in name, considered in light of the reorganization of the MS-CBSD program, is needed to make the program name conform to the new reality.

The council approved unanimously a motion in support of the change in name. We wish you all success with these program changes.
Dear Janet:

Thank you for sharing the documents outlining the proposal to change the name of our Conservation Biology and Sustainable Development (CB/SD) MS program in the Nelson Institute to "Environmental Conservation" (Program Name Change Proposal). I find the arguments and justification convincing, especially given that it will coincide with a new structure, audience, and direction. I predict that the re-defined program will succeed in recruiting an able and appreciative body of new professional MS students – as indeed it already appears to be doing. I was also not surprised to see it pass our CB/SD Executive Committee unanimously at today's meeting.

As you know, and acknowledge in the name change document, the undergraduate major in "Biological Aspects of Conservation" (BAC) is currently planning to propose its own name change – to the simpler and more contemporary moniker "Conservation Biology." This timing for changing the name of the CB/SD program works well for facilitating this change in name for an undergraduate program by minimizing any chance for confusion between the two. The letter you included to 'Frontiers in Ecology' further justifies both name changes.

Let me know if there is anything further I can do to support the name change proposal, and I look forward to working with you further on our conservation programs and initiatives.

Sincerely,

Donald M. Waller
John T. Curtis Professor and Chair,
Department of Botany
Biological Aspects of Conservation major