

# A SCHOOL OF THE ENVIRONMENT AT UC SANTA CRUZ: PRE-PROPOSAL

October 1, 2007

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## **Executive summary**

UC Santa Cruz has a rare opportunity to launch one of the most innovative schools of environment in the country, in time, rivaling the schools at Michigan, Duke and Yale. We can do so because of our extraordinary faculty, proven interdisciplinary programs, and unique willingness to experiment with new teaching and research methods. Far more than most universities, UC Santa Cruz's mission-oriented dedication to addressing the greatest challenges of our time spurs us to seamlessly integrate research with policy and management. A school of environment would expand our ability to inform policy and management with rigorous, first-rate environmental science.

Our initial exploration of this exciting possibility convinces us that 1) a relatively small number of additional FTE, particularly to round out the professional program, would help us reach the critical mass to launch a school; and 2) UCSC has unique environmental research strengths that combine in complementary and synergistic ways.

We find three compelling reasons to launch a school of the environment at UC Santa Cruz. First, to integrate, expand, and publicize environmental research on campus. A sufficiently funded school would house a larger number and greater variety of environmental scholars than is currently possible in any one department and would facilitate efforts to bring in additional extramural funding. A school would also increase the type and frequency of informal interactions across disciplinary boundaries through cluster hires, seed funding, formal and informal colloquia, co-teaching, and (in the longer term) physical proximity.

Second, to integrate, expand, and publicize environmental instruction on campus. Unlike other schools of the environment, which focus primarily on masters and doctoral students, a school at UC Santa Cruz would have a strong undergraduate presence as well as unique professional degrees built upon campus strengths. These could include tracks in sustainable resources (water, food, energy, ecosystems, land), environment and development, and environmental equity and health.

Third, to train leaders dedicated to solving environmental problems. A two-year professional masters degree in environmental science, policy, and management would provide ~25 students per year with the training and skills necessary to begin addressing several key

types of environmental problems. A important goal of the professional program would be to provide students with the analytic and creative thinking skills that will prepare them to effectively address not only today's environmental problems, but those that are likely to emerge in the future.

Looking ahead to a full proposal, the committee specifically recommends the following:

- UC Santa Cruz should focus exclusively on founding a school, not an umbrella institute like those initiated at several other UC campuses.
- A school of the environment at UC Santa Cruz should use a hybrid model involving all three approaches to FTE affiliation (core, joint, and affiliated). If appropriately balanced, this approach would combine the advantages of each type while minimizing their respective deficiencies.
- Although a detailed funding model is beyond the scope of this pre-proposal, it is evident that successful schools around the country enjoy significant commitments from their campus leadership, system-wide office, and private donors. If major commitments of new resources from all of these various sources are unavailable, then it is unlikely that a new school would succeed.

### **Introduction and vision**

We believe that it is possible to create a vibrant and innovative new school of the environment at UC Santa Cruz that is deeply rooted in our traditions. Whether a school is created or not, we aspire to catalyzing and connecting the many environmental initiatives across campus. We want to motivate students from many fields to engage thoughtfully with environmental issues; in essence, to consider the ecological and human dimensions of all their disciplines.

We believe that a school of the environment at UC Santa Cruz would expand our ability to engage critically with the century's most compelling problems and promises while at the same time strengthening existing programs and departments that are already deeply committed to meaningful research and problem-solving.

We envision a school where new synergies and additional resources lead to important and relevant advances in our understanding of environmental problems while also training the next generation of environmental leaders—students equipped with compassion and healthy outrage, to be sure, but with highly developed critical, analytic, scientific, and political skills as well. We imagine a school where students can practice sustainable living immediately, rather than waiting until they leave Santa Cruz or earn enough money to afford new technologies. Extensive consultation across campus leads us to conclude that a new school is worth launching if it can foster exciting interdisciplinary collaboration across the entire campus and if it brings new resources to the table rather than reshuffling existing assets.

### **Institutional context**

Environmental research and training is alive and well at UC Santa Cruz. Faculty have recently discussed whether professional schools have a role to play in expanding graduate education at UC Santa Cruz. Several schools have been investigated, including schools of management, education and development, public health, public policy, and, with this pre-proposal, a school of the environment.

In spring 2007, several campus leaders—Stephen Thorsett, Dean of Physical and Biological Sciences; Sheldon Kamieniecki, Dean of Social Sciences; and Lisa Sloan, Dean of Graduate Studies—appointed a faculty committee to develop a pre-proposal for a School of the Environment at UC Santa Cruz. Daniel Press (Chair, Environmental Studies) chaired the

committee, which also included Jeff Bury (Environmental Studies), Mark Carr (Ecology & Evolutionary Biology), K.C. Fung (Economics), Ronnie Lipschutz (Politics), Lisa Sloan (Earth & Planetary Sciences; Graduate Division), and Erika Zavaleta (Environmental Studies). A doctoral student, Pete Holloran (Environmental Studies), served as staff to the chair and committee. Three scoping meetings were held during May and June 2007 for the department most likely to be affected by the proposal (Environmental Studies) and for faculty and staff outside that department.

During summer 2007, committee members, working with the chair and staff, developed a list of several key questions that need to be addressed:

- A. Are there sustainable models for a School of the Environment?
- B. Why launch a School of the Environment at UC Santa Cruz?
- C. On which themes should the School focus its research and teaching?
- D. What tracks would be offered in a professional masters program?

After discussing each question, we offer recommendations to the deans who commissioned our work. A summary of the recommendations is gathered together at the end, with a brief discussion of some issues that should be addressed in a proposal. Before moving to the first question, we provide our very first recommendation:

**The committee recommends that this pre-proposal be circulated widely among faculty and staff prior to embarking on a formal proposal.** We do not believe that a school of the environment should be pursued without extensive discussion, consultation, and enthusiasm among faculty and staff. If the response is favorable, then the concept should be developed in a proposal that addresses the eight evaluative criteria listed in a March 2007 memo from Vice Provost Allison Galloway (“Response to request by CPB for criteria upon which professional school proposals will be evaluated”), reprinted here as Appendix I.

#### **A. Are there sustainable models for a School of the Environment?**

Faculty engaged in environmental research and problem-solving can be found in a wide range of departments, both here at UC Santa Cruz and elsewhere. The organization of faculty into departments sorted by discipline does not necessarily preclude interdisciplinary collaborations, but these may be easier to achieve when faculty from multiple disciplines are housed in an administrative unit focused on a problem or topic. These units may be programs, centers, institutes, departments, or schools. Units focused on environmental issues or problems at UC Santa Cruz include every type except the school, e.g., Science Communication Program, Center for Agroecology and Sustainable Food Systems, STEPS Institute for Innovation in Environmental Research, and Environmental Studies Department.

During summer 2007, staff compiled information about other universities that have developed schools of the environment. It quickly became clear that environmental institutes confronted issues similar to those found at schools of the environment, so the study expanded to include institutes as well. All told, staff compiled information on 26 institutes and 9 schools of the environment, as examples of the range of options and challenges. Appendix II describes efforts at each UC campus. Two additional appendices provide brief summaries of selected schools (Appendix III) and institutes (Appendix IV) outside the UC system. We searched for lessons from institutional failures, e.g., schools or institutes that were launched, then closed, but such examples are by definition almost impossible to learn about.

After examining other models, it became apparent that any university thinking about institutional alignments focused on the environment had to address three key issues:

- whether an umbrella administrative unit should be an institute or a school
- how to compensate faculty and academic staff for participation
- how to allocate resources to a new unit

This discussion of models is organized around these primary concerns.

Whether an umbrella administrative unit should be an institute or school

Facilitating interdisciplinary research is not the only reason for environmental research units that cut across traditional disciplinary boundaries. Our review of different environmental institutes and schools suggests that there are many different reasons, some explicit and others implicit. But some justifications are more common than others.

A growing number of universities are forming institutes of the environment that appear to address three basic goals:

- to promote public awareness about the wide range of environmental research being conducted across the university
- to facilitate interdisciplinary research by faculty either within the institute or outside it
- to provide an administrative home for independent or legacy research units

Examples from within the UC system include the Berkeley Institute of the Environment (UC Berkeley), the John Muir Institute of the Environment (UC Davis), and the Institute of the Environment (UCLA). The first two objectives are emphasized at the Berkeley Institute, which provides seed funding to interdisciplinary research projects but is at this point primarily a “one-stop-shop” website for environmental research and events on the Berkeley campus. Founded in 1997, the John Muir Institute at UC Davis emphasizes the last objective, becoming the administrative home for “centers and programs which crossed the boundaries of traditional academic colleges, schools and departments.” The Institute of Ecology was the first to join. Current centers and programs include the Center for Watershed Sciences, UC Davis Natural Reserve System, Tahoe Environmental Research Center, Public Service Research Program, Center for Health and the Environment, Center for Small Affordable Water Systems, Road Ecology Center, Environmental Justice Project, Information Center for the Environment (ICE), and Center for Natural Resources Policy Analysis. It is now an “enhanced” Organized Research Unit (ORU) with a more ambitious mission, including initiating in 2007 a professional MS degree in environmental policy and management.

These different types of administrative units—programs, centers, institutes, departments, and schools—are hardly mutually exclusive. In fact, they tend to form nested sets, with institutes or schools tending to form the umbrella unit into which other types are stuffed. Our review of environmental institutes—such as the Gaylord Nelson Institute at the University of Wisconsin or the University of Minnesota’s new Institute on the Environment—suggests that institutes are rarely degree-granting units in their own right, although they can sometimes evolve into full-fledged schools. (There are some exceptions: the Institute for the Environment at Brunel University in London grants MSc and PhD degrees.) Even schools sometimes perceive the need to establish an institute within its borders. At Arizona State University, for example, the Global Institute of Sustainability, founded in 2004 with a \$15 million gift, became a School of Sustainability in 2007. The Nicholas School of the Environment at Duke, formed in 1991 and renamed in 1995 after a \$20 million gift from the Nicholas family, recently created in its midst the Nicholas Institute for Environmental Policy Solutions following an additional \$70 million gift from the Nicholas family.

Although intended to unify environmental research on campus, even a well-funded

school may become just another center of gravity, albeit large. The Nicholas School, with 50 faculty and a \$40 million annual budget, has achieved a certain critical mass and yet, in its recent strategic plan, it felt compelled to note its desire to build stronger relationships with others Duke schools.

There are many centrifugal forces acting on university faculty, particularly when the school is smaller and the affiliations weaker. In 2005, the UC Santa Barbara Executive Vice Chancellor commissioned an Environmental Issues Task Force to evaluate environmental research and education on that campus. They identified a strong and complex network of environmental research, teaching, and outreach, with a strong inner core of institutional nodes (e.g., Bren School, Ecology, Evolution, & Marine Biology Dept.) and a weaker outer core (e.g., History Dept., Chemical Engineering Dept.). Rejecting the status quo of doing nothing, the task force recommended further exploration of several initiatives meant to unify and integrate.

These ranged from building a web-accessible database of environmental courses offered in all departments to creating an “interdisciplinary umbrella institute across existing programs” or an “interdisciplinary center based on broad cross-cutting theme” (e.g., Sustainability). They even imagined founding an “academic Division, College, or School of the Environment” that would incorporate the existing departments of EEMB, Geography, Earth Science, Chemical Engineering, the Program in Environmental Studies, and the Donald Bren School of Environmental Science & Management, formed in 1991 and renamed in 1997 after receiving a \$15 million gift from the Donald Bren Foundation.

The latter two options, forming a Sustainability Institute or a College of the Environment, were rejected by the task force as being too divisive. The former would award resources to a single college or department, excluding others; the latter would impose losses on existing divisions and colleges. Instead, the task force preferred creating an umbrella institute, tentatively titled the Consortium for Education and Research on Environment and Society, that would increase the external visibility of environmental research conducted at UC Santa Barbara, promote collaborations internally, and provide a venue for fundraising. As of 2007, there is no evidence on the UC Santa Barbara website that these recommendations have been pursued.

**The committee recommends that UC Santa Cruz should not explore founding an umbrella institute like those initiated at several other UC campuses.** Since the charge to the committee makes no mention of an institute, this recommendation might seem superfluous. But their missions and functions show considerable overlap with schools of the environment; institutes can form a stepping stone towards a school. In our opinion, the three goals often cited for forming institutes are not compelling enough to warrant the expense and opportunity costs. The second mission, to promote interdisciplinary research, is compelling, of course. But UC Santa Cruz already has an environmental institute: the STEPS Institute for Innovation in Environmental Research. Creating an umbrella institute that in this way would duplicate one of the key missions of STEPS does not seem wise. That said, a school of the environment would also seek to promote interdisciplinary research, but it would aim to do so by incorporating the STEPS Institute and expanding its efforts in ways that complement rather than duplicate.

#### How to affiliate faculty and academic staff

In terms of FTE, environment schools vary along a gradient ranging from FTEs held entirely in the school to affiliates whose positions reside entirely in other campus units, much like our “below the line” status. Joint appointments are in the middle of these two extremes.

Institutes tend to gravitate towards a 100%-affiliated faculty model more than schools.

Although affiliations allow for low overhead costs and informal and flexible participation, they provide few incentives for sustained participation in research and teaching. Conversely, positions held 100% in an institute or school are expensive and tend to lock in certain research foci. Jointly held FTE can provide a school with wider and more diverse faculty participation, but bring their own complications, especially regarding the personnel review process.

**The committee recommends that the proposal for a School of the Environment at UC Santa Cruz focus on a hybrid model involving all three approaches to FTE affiliation (core, joint, and affiliated).** If appropriately balanced, this approach would combine the advantages of each type while minimizing their respective deficiencies.

We imagine that, at the outset, a number of existing campus FTE would move their affiliations to the school, to be joined by additional new FTEs to be hired as core faculty or academic staff using centrally-held FTEs. Non-ladder-rank faculty employed by the school would be recruited from the professions and would comprise a mix of full-time academic staff and visiting lecturers. Academic staff in particular could help advise masters students.

The school would also offer opportunities for faculty in other departments to request a joint appointment, whereby up to 50% of their FTE could be moved to the school as a way to compensate them for teaching and mentoring duties associated with undergraduate and graduate students enrolled in the school. Departments that lose full or partial faculty FTEs to the school would have to be compensated in some way for the loss of their FTEs, perhaps through backfilling using centrally-held FTEs.

The core faculty (ladder-rank faculty holding 100% FTE appointments in the school) would manage personnel actions of the school's faculty in the usual manner. Personnel actions for those holding joint appointments could be made solely by their home department or by their home department as the lead unit, with input from school faculty. Where bylaw rights would reside remains an open question. This is a matter of administrative discretion and faculty consultation; we only raise these possibilities here because faculty have expressed interest in these issues and other environment schools have had to address them explicitly as well.

The school would also offer opportunities for faculty in other departments to request affiliation, which involves no transfer of FTE but identifies their interest and alignment with the school and its mission. It remains to be seen how faculty affiliates would be encouraged to participate more than in name; some possibilities include course buyouts for courses taught in the school, seed funding for larger research grants, and graduate student advising.

#### How to allocate resources to a new unit

As discussed above, several institutions are moving forward with new environmental institutes or schools—sometimes both at the same time—or major expansions. Whether these are at public (Minnesota, Wisconsin, Arizona State) or private universities (Stanford, Duke), the funding models are strikingly similar: campus leaders, strongly supported by their systemwide regents or presidents, commit substantial new campus resources to the effort and raise large initial and ongoing gifts from private donors.

**We recommend that the full proposal assess to what extent commitments of existing resources (e.g., current faculty and staff) as well as new resources (e.g., significant commitments from the campus, the UC Office of the President, and private donors) are available.** If major commitments of new resources from all of these various sources are unavailable, then it is unlikely that a new school would succeed. If underfunded initially, it would likely serve as a drag on the scholarly and educational

productivity of current faculty and staff. We acknowledge the difficulty of securing substantial commitments from either the campus or the UC Office of the President; therefore, we feel that it will be vitally important to demonstrate our comparative advantage in establishing a school. If a market analysis conducted as part of the full proposal process indicates that our potential for growth is strong, then that will strengthen our case for public funding, which would in turn provide a better platform from which to launch private fund-raising campaigns. Similarly, forward-funding new FTE and support staff from campus funds could signal the University's seriousness and resolve, especially to private donors and UCOP.

Elaborating a complete funding model for a school at UC Santa Cruz is beyond the scope of this pre-proposal. But based on experiences from all other schools of the environment, it is clear that the commitments listed above must be in place for a new school to succeed. At a minimum, a sustainable financial model would need to find the right mix among the following categories of revenues and expenditures:

### Revenues

- Budgets for any currently existing units added to a school of environment
- Additional FTE from campus resources, possibly including those held for professional programs
- Tuition from masters students—a full proposal should explore the possibility of charging differential fees for professional programs, as others have already done in the UC system (especially law schools)
- Extramural grants for research, instruction, and program building—a subsidiary financial issue to be explored in a full proposal includes consideration of who should be credited for external funds (departments of joint or affiliated faculty vs. the school) and how indirect costs and overhead should be handled (in some institutional models, new units like a school might be allowed to keep more than is customary, at least initially, in order to cover startup costs)
- Naming gifts and endowments; corporate partnerships (e.g., green tech, Silicon Valley)

### Expenditures

- Faculty and staff salaries, including professional lecturers
- Graduate student support, including fellowships for students from underrepresented communities
- Instructional support
- Facilities (many new schools and institutes raise substantial capital funds for new buildings, which are often LEED-certified and demonstrate green building practices)

## **B. Why launch a School of the Environment at UC Santa Cruz?**

Faculty and academic staff at UC Santa Cruz are already innovative leaders in many aspects of environmental research and teaching. In order to justify the time, effort, and expense in launching a new school, there ought to be several compelling reasons for doing so. We've identified at least three potential reasons:

- To integrate, expand, and publicize environmental research on campus. A sufficiently funded school would house a larger number and greater variety of environmental scholars than is currently possible in any one department. A sufficiently funded school would facilitate efforts to bring in additional extramural funding in direct and indirect ways. The competitiveness of interdisciplinary research collaborations could be

improved by offering seed funding in the form of GSRs, summer salary, or course buyouts. A sufficiently funded school also increases the type and frequency of informal interactions across disciplinary boundaries through school governance activities, formal and informal seminar series, co-teaching courses, and physical proximity (in the event that the school is housed in a single building or adjacent buildings at some point in the future).

Unlike a department or ORU, a school could actively pursue vertically-integrated cluster hires within programmatic areas. For example, if “water resources” was a thematic area the school elected to strengthen, appointments could be across ranks and disciplines ranging from hydrology, toxicology, and freshwater ecology to policy, economics, and public health. Such positions could be housed in either the school as core faculty (100% appointment in the school) or as joint appointments with appropriate departments (50% appointment in the school). Similarly, FTE could be set aside for professional lecturers to provide applied training in areas that would not likely be represented by ladder-rank faculty.

- To integrate, expand, and publicize environmental instruction on campus. Unlike other schools of the environment, which focus primarily on masters and doctoral students, a school at UC Santa Cruz would have a strong undergraduate presence. If managed well, this can lead to important synergies. The first masters students may very well come from undergraduates interested in a 5-year coterminous BS/MS or BA/MA program. Relatively low enrollments in specialized graduate courses (e.g., coastal and marine law) could be supplemented by qualified advanced undergraduates. There is strong unmet demand among Environmental Studies undergraduates for upper-division enrichment courses; such courses could also relieve enrollment pressures on other departments within the Social Sciences Division.
- To train leaders dedicated to solving environmental problems. A two-year professional masters degree in environmental science, policy, and management would provide ~25 students per year with the training and skills necessary to begin addressing several key types of environmental problems. It remains an open question, to be investigated during the crafting of a proposal, what form and name these masters degrees and tracks would take. For example, would it be an MS or MA degree? Or would both be offered? Would it be a “Master in Environmental Science, Policy, and Management,” to follow UC Berkeley’s language? Or a “Master of Environmental Science and Management,” following the Bren School approach? The choice among these and other options may rest on whether faculty think of the professional masters as a policy degree rather than a research/science degree, albeit a policy degree with a much stronger foundation in one or more scientific fields than those offered at schools of public policy.

The third mission is the most important in light of the current opportunity to establish professional schools at UC Santa Cruz. Determining the market for environmental science and policy professionals will require a proper market survey, which is beyond the scope of this pre-proposal. Nevertheless, a few trends are worth mentioning here.

The job market for environmental professionals has grown steadily since the 1970s. In 1970, fewer than 230,000 people were employed in “environmental” and conservation work. By 1998, nearly 2.5 million people were working in this field; thousands of additional jobs



have been added in the last decade.<sup>1</sup> Increasing concerns regarding climate change and resource management challenges strongly suggest that the market for professional environmental science and policy masters degrees will remain strong for some time to come, as several widely circulated news reports have suggested.<sup>2</sup> Here in California, for example, 123 new staff positions will be added to the California Air Resources Board alone to help implement the state's new climate change law (AB 32). Similar growth is to be expected in other states. Nationally, the Bureau of Labor Statistics (BLS) estimated that over 70,000 environmental and health scientists and specialists had masters degrees in 2004 and that demand for such professionals would increase by 17.1% over the next decade.<sup>3</sup> According to the BLS, the pool of environmental employees with only a bachelors degree is much larger and also projected to grow.

Here at UC Santa Cruz, interest in environmental disciplines is also increasing. According to data from the VP/DUE's office, the number of frosh indicating their intent to register in Environmental Studies increased by 58% in 2007 over the 2006 incoming class. Enrollments and declared majors in the Environmental Studies are also growing rapidly. If current trends continue, the number of majors could almost double in just three years.

Across all fields, the demand for professional masters degrees in the United States is increasing. The number of masters degrees awarded has doubled since 1980, as a recent *New York Times* article pointed out, largely because of real or perceived increases in lifetime earning potential for graduates and additional tuition fees for graduate schools.<sup>4</sup> We have heard that some universities have decided that doctoral programs can accommodate a reasonable increase in graduate class sizes (e.g., seminars going from 10 to 15 students) with relatively little drain on resources. Other innovations that have increased the number of masters degrees include co-terminal bachelors/masters degrees and dual masters degree programs that allow students to receive two masters in three years.

A full proposal would investigate the increasing number of masters programs with a focus on the environment. In particular, while the discussion of competing schools here and in the appendices is suggestive, a proposal should develop a more complete analysis of the ratio of applicants to matriculated students at different institutions and assess latent demand. As part of that investigation, a more thorough review of several influential institutional models should be pursued. Committee members working on the proposal may want to interview key personnel at schools of the environment that are clearly successful as well as at those that appear to be struggling.

### **C. On which themes should the school focus its research and teaching?**

We offer table 1 as evidence of the broadly similar yet also widely divergent nature of thematic emphases adopted by other schools of the environment. It also illustrates the variation across schools in terminology. We use the term "theme" here by default.

Even within a school, there are multiple taxonomies at work. The Nicholas School of the Environment at Duke has a mission statement with three clauses; it has also adopted five "commitments" (e.g., to "interdisciplinary approaches"), an "overall objective," three

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1 Environmental Business International. 2007. Accessed at [www.ebiusa.com](http://www.ebiusa.com).

2 James Kanter, "In London's financial world, carbon trading is the new big thing," *New York Times*, 6 July 2007; Barbara Whitaker, "Office space: Fresh start; drive to cut emissions creates jobs engine," *New York Times*, 13 May 2007.

3 US Bureau of Labor Statistics. 2007. "High Wage, High Growth Occupations, by Educational Attainment Cluster and Earnings" (Table 1-5), accessed at [www.bls.gov/emp/optd/optdtabi\\_5.pdf](http://www.bls.gov/emp/optd/optdtabi_5.pdf)

4 Hannah Fairfield, "Master's degrees abound as universities and students see a windfall," *New York Times*, 12 September 2007.

“emphases,” and eight “curriculums”—all of them described on a single webpage. In its masters program, they also offer eight “specialized concentrations,” only some of which overlap with the “curriculums.”

**Table 1.**

Themes at selected schools of the environment.

School	Term for “theme”	Themes
Donald Bren School of Environmental Science & Management (UC Santa Barbara)	“specializations” within masters	Coastal Marine Resources Management Conservation Planning Corporate Environmental Management Political Economy of the Environment Pollution Prevention & Remediation Water Resources Management
Department of Environmental Science, Policy & Management (UC Berkeley)	“research areas”	Ecosystem Stewardship Environmental Governance Global Change Organisms and Biodiversity Science, Technology, and Environment
Nicholas School of the Environment (Duke)	“curriculums”	Coastal Environmental Management Environmental Toxicology Chemistry and Risk Assessment Forest Resource Management Resource Ecology Resource Economics and Policy Water and Air Resources The ocean sciences The earth sciences
School of Natural Resources & Environment (Univ. of Michigan)	“research foci”	Ecosystem Management & Conservation Biology Climate Change Enabling Sustainable Production & Consumption Great Lakes Basin and Ecosystem Dynamics
School of Environment & Development (Univ. of Manchester)	“areas of demonstrable world-leading or world-class research”	Poverty Development Economics Urban Sustainability Political Ecology/Environmental Governance Environmental Change International Development
School of Geography & Environmental Science (Monash Univ.)	“research strengths”	Physical Geography Geographic Information Science Environment & Society Australian Indigenous Archaeology Human Geography Political Ecology
Yale School of Forestry & Environmental Studies (Yale)	“focal areas” = “areas of academic strength”	Ecology, Ecosystems, and Biodiversity Social Ecology of Conservation and Development Urban Ecology and Environmental Design Water Science, Policy, and Management Forestry, Forest Science, and the Management of Forests for Conservation & Development Global Change Science and Policy Environmental Health Industrial Environmental Management Policy, Economics, and Law

**We recommend that well-crafted themes be developed during the extensive faculty consultation that would take place during the preparation of a proposal.** Simply deciding whether to call them themes, research strengths, focal areas, or whatever is a question also best set aside until later. Regardless, the resulting themes, and the closely related and reinforcing tracks offered in a professional masters program, should emphasize our comparative advantage. They should also represent our undergraduate majors and curricula faithfully. The themes and tracks ought to satisfy several additional key criteria:

- Are they broad enough that a diverse range of faculty would feel comfortable identifying with the school's mission and themes?
- Are they narrow enough to emphasize the particular academic strengths of UC Santa Cruz?
- Will the themes sound dated in a decade or two?
- Will the themes appear relevant to the state of California and its residents?

We would be surprised if the eventual themes do not address some aspect of the following issues that came up in many conversations so far:

- sustainable resources (water, food, energy, land, biodiversity)
- the marine environment
- environmental change
- environment and society and/or environment and development
- environmental health and equity

One possibility the committee found promising was to organize these themes as well as the professional masters tracks under the general rubric of "Regional Environmental Change Across the Globe." Such a moniker captures the essentially local and place-based nature of environmental issues and solutions, but also the global dimensions and consequences of such problems. Reprising again the example of "water resources," climate-induced changes in water quality and supply will affect large areas of the globe, including California. Although it is important and fruitful to analyze these issues statewide, the Central Coast—with its overwhelming reliance on groundwater and concerns over seawater intrusion—provides an excellent laboratory for producing first-rate interdisciplinary water resources research and applying that knowledge to the challenges of managing water in this region. Our strengths in sustainable agro-food systems, along with our region's innovative and important agricultural industry, provide another example of "regional science" that our school would be uniquely qualified to take advantage of.

#### **D. What tracks would be offered in a professional masters program?**

If enrollments are ~25 students per year, with ~50 masters students on campus in any given year, then it makes sense to have no more than three or four tracks. During our deliberations, we heard many different types of tracks suggested; several of these are listed below, to illustrate that range. The list is by no means exhaustive and is quite open for discussion and additional suggestions.

**We recommend that the tracks eventually offered in a professional masters program should be developed in the full proposal.** The criteria for evaluating the viability of proposed tracks are similar to those for the school's themes and include market analysis, fit with existing UC Santa Cruz research and instructional strengths, opportunities for expanding into new areas, and how the tracks might age over several

decades.

Sustainable resources. This broad umbrella could cover and extend several research and teaching strengths already found at UC Santa Cruz, including:

- Water quality, management, and policy. Requires coursework in Earth Sciences (hydrology), Environmental Toxicology (groundwater dynamics and contamination, aquatic toxicology), ecology, climate science, economics, law, policy, etc. This track is particularly relevant in light of California's continuing population growth and likely changes in its climate and water resources; it's also consistent with one of the main STEPS Institute research themes.
- Coastal and marine biology, management, and policy. This track would be based on the program already proposed by Gary Griggs and would draw heavily from courses currently in Ocean Sciences, Ecology and Evolutionary Biology, and Environmental Studies: "A coastal policy [masters] program is based on the need for both a sophisticated understanding of the role and limits of science in the policy process, and an equally sophisticated understanding of the institutions and institutional processes necessary to resolve the coastal problems we face today."
- Ecosystem management. Requires coursework in Ecology and Evolutionary Biology and Environmental Studies (conservation biology, restoration ecology), policy, management, land use planning. Could be a two-track emphasis, one more focused on conservation research (possibly preparing students to go on to Ph.D. programs), the other in ecosystem management. Restoration, in particular, is a rapidly maturing field for which there are increasing professional opportunities.
- Sustainable food systems. Requires coursework in Environmental Studies (agroecology), Earth Sciences, Environmental Toxicology, with possible area foci in business economics and marketing, development studies, or geography, and potential collaboration with the Center for Agroecology and Sustainable Food Systems (CASFS). Professional tracks could go many different directions, including 1) applied training in sustainable food systems production, finance, marketing and distribution; 2) sustainable agriculture and development in the context of international aid (e.g. preparing students for international NGO/UN aid work); or 3) sustainable food systems policy and planning.
- Land use and low-impact development. Requires coursework in planning, architecture, water, transportation, policy, economics, engineering, earthquake and natural hazards, etc. This track builds on rising undergraduate interest in sustainability and green building. UC Santa Cruz doesn't have strengths in all these areas, but the county (with one of the first green building codes in the country) and the Bay Area offers opportunities to bring in professionals to serve as lecturers. Strong overlap with the recent proposal for undergraduates by Ronnie Lipschutz et al. focused on Sustainability Engineering and Ecological Design (SEED).
- Environment, society, and development. Requires coursework in development studies, geography, and political economy, possibly supplemented by area foci in agroecology, economics, public health, and toxicology.
- Environmental health and equity. Requires coursework in environmental toxicology, public health, geography, policy, economics, sociology, etc. This track would address growing interest in environmental justice from a problem-solving point of view. The viability of this track would depend on what happens with the proposed school of public health.

## Conclusions and summary of recommendations

We believe that the prospect of a School of the Environment at UC Santa Cruz is exciting enough that a full proposal is definitely warranted. To that end, we offer a series of recommendations to guide the preparation of a proposal.

- **This pre-proposal should be circulated widely among faculty and staff prior to embarking on a formal proposal.** We do not believe that a school of the environment should be pursued without extensive discussion, consultation, and enthusiasm among faculty and staff.
- **The proposal should focus exclusively on founding a school, not an umbrella institute like those initiated at several other UC campuses.** The goals often cited for forming institutes are not compelling enough to warrant the expense and opportunity costs.
- **The proposal should focus on a hybrid model involving all three approaches to FTE affiliation (core, joint, and affiliated).** If appropriately balanced, this approach would combine the advantages of each type while minimizing their respective deficiencies.
- **The proposal should assess to what extent commitments of existing resources (e.g., current faculty and staff) as well as new resources (e.g., significant commitments from the campus, the Office of the President, and private donors) are available.** If major commitments of new resources from all of these various sources are unavailable, then it is unlikely that a new school would succeed.
- **The proposal should develop well-crafted themes for a School of the Environment.** Deciding whether to call them themes, research strengths, focal areas, or whatever is a question that should also be addressed. The resulting themes should emphasize our comparative advantage and represent our undergraduate majors and curricula faithfully while also satisfying the other criteria listed on page 11.
- **The proposal should identify three to four tracks that would be offered in a professional masters program.** The criteria for evaluating the viability of proposed tracks are similar to those for the school's themes (page 11) and include market analysis, fit with existing UC Santa Cruz research and instructional strengths, opportunities for expanding into new areas, and how the tracks might age over several decades.

In addition to these suggestions, a full proposal will also need to address, at a minimum, the criteria for evaluating professional school proposals forwarded to us by Vice-Provost Alison Galloway (see Appendix I below). Several of these criteria have been addressed above but need to be addressed in more detail in a full proposal.

## Appendix I

### **Response to Request by CPB for Criteria upon which Professional School Proposals will be Evaluated 20 March 2007**

The basis for any assessment and decision on whether a concept for a school should be promoted to the full proposal and ultimately to initiate the formal approval process depends on the assessment of the benefits which the program will bring to the academic mission of the campus versus the costs it will have, taking into account all the components that need to be in place for a successful program and the programs that will not be mounted or enhanced as a result of this effort.

In July 2004 the UC Academic Council endorsed the Systemwide Professional School Planning: Recommended Guidelines and Model. This document details the components needed for a professional school and the criteria upon which its approval will be based. In addition, other factors may be of particular importance to the individual campus for promotion of a proposal. The following unranked list combines these perspectives to provide a comprehensive viewpoint.

- State need for professionals in this discipline – is there an expressed need within the state (primarily) but also within the region, nation or internationally for trained professionals in this area. What is the scale of this need and is it sufficient to drive enrollments in the proposed program.
- Existing strengths within UCSC – does the school build upon existing strengths within UCSC so that joint appointments, collaborative research and shared facilities are a possibility. Building on existing strengths provides assistance with “branding” in that UCSC may already be recognized as a leader in that area so the professional school appears as a natural extension.
- Competition – what universities within the region are the likely competitors and how closely do their programs match that proposed by UCSC. This factor becomes important in the CPEC review at which time possible competitors to the program become aware of our plans and may voice concerns. Competitors within the UC system are also of concern as UC Office of the President is not likely to support direct competition between campuses unless sufficient high-caliber students are available to fill all programs.
- Enrollment – with a campus commitment to substantially increase graduate enrollment and with professional programs being one of the more direct ways of accomplishing this objective, the ability of a program/school to provide capacity for a large number of students is seen favorably. Sustainability of such demand is also a factor as the scale of investment will necessitate that this school meet an on-going rather than temporary need.
- Funding model – do we have or can project a means to acquire the resources needed to initiate this project? What is the anticipated funding model at build-out and how much of our permanent resources will be devoted to this school? How will any excess funds be used (general campus funds v. reinvestment in the school)? The space and facilities

needed to mount and maintain such a school or program also must be anticipated and a means of acquiring these planned. While gifts/donations may be possible, the funding model should also anticipate a relatively small return on these to anticipate the maximum possible cost to the campus.

- Potential for excellence – aside from the need, we must also ask if this school has the potential for a strong reputation in its field. Producing a school whose graduates are not seen as particularly competent or innovative will do little to enhance our overall reputation. Similarly, the faculty should be seen as leaders in their field.
- Research – what is the research potential for the school if any? Some professional schools are focused almost entirely upon training with a heavy reliance on faculty whose sole contribution is instruction. Others include significant number of ladder rank faculty who are expected to have an active research career in addition to their work in the classroom and in student mentoring. While external funding of research grants is a benefit, of greater importance is whether the research itself will be of a caliber to contribute significantly to the discipline and enhance the reputation of UCSC as a leading research facility.
- What will we not do – as important to asking what we are planning to do, is the question of what will we not be doing or postponing in order to devote the time and funds needed to initiate this school. What are the potentials that the programs not implemented may contribute more towards meeting our overall goals than a professional program?



## Appendix II

### Environmental schools, institutes, and departments at UC campuses

#### UC Berkeley

##### The Berkeley Institute of the Environment

“The University of California at Berkeley has long been a leading environmental research center, with some 100 individual undergraduate and graduate programs with foci in the environment, in addition to dozens of top research centers. The *Berkeley Institute of the Environment* (BIE), established in 2005, brings together and helps enhance these diverse campus programs and research units in new and innovative ways. The Institute’s goals are to address complex environmental problems by: making research tools and understanding accessible across disciplinary lines; fostering collaboration and new ways of thinking about critical environmental problems across disciplines; and training a new generation of environmental researchers, citizens and professionals. Through its initiatives the BIE seeks to confirm Berkeley as the premier institution in environmental theory, understanding, actions and solutions.” Daniel Kammen (ERG) and Inez Fung (ESPM) serve as co-directors of the small institute, which consists of an executive director, two administrative staff, a GSR, and two interns, most of whom were hired in 2006. Its website, initiated in late 2006, is meant to be a “one-stop-shop” for research and events on the environment at UC Berkeley. It also offers seed funding to interdisciplinary research projects by students (three awards, \$10,000) and faculty (seven awards, \$100,000). The institute has been awarded several grants, including a \$700,000 planning grant from the Gordon and Betty Moore Foundation for the Urban Sustainability Initiative and \$1.6 million from the Keck Foundation for the Keck Hydrowatch Center. The BIE is one of nine research centers within the College of Natural Resources. Others include the Berkeley Water Center, the Center for Biocontrol, the Center for Forestry, and the Center for Sustainable Resource Development.

##### California Climate Change Center, Goldman School of Public Policy

“In 2003, the California Energy Commission, through its Public Interest Energy Research (PIER) program, established the California Climate Change Center to undertake a broad program of scientific and economic research on climate change in California. The Center is organized as a ‘virtual’ institution with sites at both the UC Berkeley campus and the Scripps Institute of Oceanography (UC San Diego campus). The Berkeley Center, based at the Richard & Rhoda Goldman School of Public Policy, is focusing on economic and policy analysis, while the Scripps Center focuses on physical climate modeling.” Participating faculty are drawn from many different departments and schools.

##### Center for Environmental Public Policy, Goldman School of Public Policy

“The Center for Environmental Public Policy (CEPP) at the Goldman School of Public Policy (GSPP) aims to bridge the gap between environmental theory and policy implementation. It integrates interdisciplinary environmental theory and policy implementation through its seminars, workshops, and conferences. CEPP’s programs seek to educate, direct and motivate those in environmental public policy. In particular, CEPP activities are geared to help fill the local and global need for competent environmental managers who are adept at policy-making within the context of limited and varying resources. Recognizing that public policy is by nature interdisciplinary, CEPP aims to bring together faculty across the Berkeley campus. It also draws on resources outside of the Berkeley campus through its Environmental Policy Practitioner in Residence and Visiting Lecturers programs. Combined, this team represents some of the nation’s leading academic researchers, practitioners, and advocates of environmental public policy.” It has no dedicated staff or FTE.

## Department of Environmental Science, Policy, and Management (ESPM)

The department is “is a community of natural and social scientists working together to improve the quality of our environment. The mission of ESPM is to advance our knowledge and understanding of natural resource systems in order to develop innovative solutions to complex environmental challenges. Approaching this goal through multidisciplinary research, teaching, and extension, the department focuses on [five “research areas”]: ecosystem stewardship; environmental governance; global change; organisms and biodiversity; and science, technology and environment. Our faculty is organized into three divisions representing research that builds from individuals and populations of organisms (Organisms & Environment), to biological communities and their interaction with the physical environment (Ecosystem Sciences), and human communities and societies in the context of environment (Society & Environment). . . . The largest of the four departments in the College of Natural Resources, ESPM currently has 59 faculty, 15 extension specialists, 2 Professors of the Graduate School, 34 postdoctoral fellows, 230 graduate students, over 400 students enrolled in our undergraduate majors, and 32 administrative support staff.” It offers four graduate degrees: MS & PhD in environmental science, policy, and management; master’s in forestry; MS in range management. The MS in ESPM has two tracks, one requires course work and a thesis, the other course work and an oral examination. The department offers four undergraduate degrees: conservation and resource studies; forestry and natural resources; molecular environmental biology; society and environment. The last major was introduced in mid-2006 and offers three concentrations (US environmental policy and management, global environmental politics, and environmental justice and development).

## **UC Davis**

### Department of Environmental Science and Policy

This department, with 23 faculty (20 of whom are full professors) and 14 administrative staff, is one of 18 departments within the College of Agricultural and Environmental Sciences. It offers a BS in environmental biology and management (three areas of specialization: conservation biology and management; environmental biology; environmental management) or a BS in environmental policy analysis and planning (six areas of specialization: advanced policy analysis, city & regional planning, resource management, energy policy, transportation planning, and water quality planning).

### Graduate Group in Ecology

“The UC Davis Graduate Group in Ecology (GGE) is a diverse and dynamic group of ~200 students and 125 faculty from 24 different departments/units on campus. With the largest and most comprehensive ecology graduate training group of its kind, GGE offers unparalleled diversity and depth in course work and research opportunities. Offering both Master's and PhD degrees, the Graduate Group is organized into nine areas of emphasis that include both basic and applied ecology. The GGE defines ecology broadly to span scales from genes to landscapes and explicitly includes human ecology and policy.”

### John Muir Institute of the Environment

Founded in 1997 and modeled after the thirty-year-old Institute of Ecology, the institute began as an “Organized Research Unit” directed by Bob Flocchini of the Department of Land, Air, and Water Resources. It became the administrative home for “centers and programs which crossed the boundaries of traditional academic colleges, schools and departments.” The Institute of Ecology was the first to join. Current centers and programs include the Center for Watershed Sciences, UC Davis Natural Reserve System, Tahoe Environmental Research Center, Public Service Research Program, Center for Health and the Environment, Center for Small Affordable Water Systems, Road Ecology Center, Environmental Justice Project,

Information Center for the Environment (ICE), and Center for Natural Resources Policy Analysis. Dennis Rolston became director in 2002 and instituted an affiliated faculty program as an effort to bring in environmental experts at Davis not already associated with a center or program. "In 2005, a plan to establish the institute as an 'enhanced' Organized Research Unit was developed. This enlarged the scope and range institute activities to form an innovative research unit vested with interdisciplinary academic program responsibilities and limited assigned staffing. Deb Niemeier, Department of Civil and Environmental Engineering, became director July 1, 2005, with a joint appointment as associate vice chancellor for interdisciplinary environmental research in the Office of the Vice Chancellor of Research. The enhanced institute promotes interdisciplinary research and graduate education in applied environmental problem solving. The John Muir Institute of the Environment was created to harness and integrate the dispersed environmental strength of UC Davis. It provides leadership and promotes visibility to benefit all the environmental units of the campus." Annual funding is largely dependent on state and federal support (77-90% between 2002-2005) and has ranged from \$16.8 to \$25.7 million over the same period. There are nine core administrative staff and 119 affiliated faculty and researchers. In 2007 it initiated a MS in environmental policy and management intended to attract students with science and engineering backgrounds. "As one faculty member put it, 'A high-level Environmental Policy and Management graduate degree is desperately needed in this region...at all levels; private firms, local, regional, state and federal government and NGO's, knowledgeable, highly skilled and analytical professionals are needed to solve complex environmental problems.' This master's degree will combine coursework in engineering, economics, law, political science, management, management science, human geography, sociology, psychology, anthropology, and ecology."

## **UC Irvine**

### Minor in global sustainability

An interdisciplinary program with no FTEs.

### Department of Environmental Health, Science, and Policy, School of Social Ecology

"Our department has dual foci on the environment and health. We are concerned with environmental health as well as the conditions that support the health of the environment. The interests and expertise of our faculty are diverse and crossdisciplinary, extending across natural sciences, biological sciences and statistics/mathematics. In recent years we have forged strong linkages to eight units in the College of Medicine as well as other schools on campus. . . . The range of courses, faculty and research programs in the department reflect the range and scope of questions being addressed. With regards to environmental health science, we are studying agents of disease, both bacterial and viral, and heavy metals in the environment through environmental biotechnology, transport media (air, water, and soil), exposure assessment, developing new biomarkers in animal models, humans and the environment. We have projects focused on environmental epidemiology (lead and manganese exposure of children) and social epidemiology (suicide, child abuse and violence). We are engaged in understanding the etiology of disease (Alzheimer's among adults, autism and attention deficit hyperactive disorders among children) as well as the role of alternative medicine. Likewise, we are attempting to understand the linkages to behavior (smoking or tobacco, exposure to heavy metals) of exposure to environmental hazards. With regards to environmental analysis, we are studying the geophysical parameters of recent tectonic activity, their relationships to the built environment and potential for natural disaster in California. We are concerned about limits of water resources, impacts to quality and derivation of both local and international policy. . . . The overriding goal of our department is

to advance knowledge of the interactions among natural and social environments as well as health and behavior.” It offers two undergraduate majors (environmental analysis and design, applied ecology) and one PhD degree in environmental health, science, and policy (four concentrations: environmental biotechnology, environmental health science, epidemiology and public health, environmental management and policy). One part of the website claims that the department has 10 full-time faculty FTEs and 14 affiliated faculty, but another section lists fewer faculty in both categories.

## **UCLA**

### Environmental Science and Engineering Program

Housed in the School of Public Health, this graduate program is an interdepartmental collaboration involving twelve departments in the college of letters and science and the schools of engineering, public health, public policy, and law. It offers a doctorate in environmental science and engineering. Eight core courses and eight breadth courses are required. Other requirements include a 12-15-month problems course and an internship at an outside institution. Around 40 doctoral students are enrolled at any one time. Among the four core faculty members are Arthur Winer, who directed the program from 1989 to 1997, and Richard Ambrose, the current director. There are 21 associated faculty members and 33 “outside” faculty members participating in the program. More than 200 doctorates have been awarded since the program began in 1971. According to one of its founders, it was deliberately modeled on medical training and aimed to create “Environmental Doctors” who could serve as general practitioners, make diagnoses, and call in specialists when necessary.<sup>5</sup>

### Institute of the Environment

From their website, it appears that the institute has eight FTEs (two faculty appointments, including the director, and six administrative staff). There are also four joint appointments, sixteen affiliated faculty, and one researcher. Five research centers are situated within the institute, as is Sea World UCLA, a 64-foot research vessel. Founded in 1997, the institute’s “signature” publication is the Southern California Environmental Report Card. In 2006, the institute initiated a new undergraduate major (BS) in environmental science that is co-sponsors with other departments. A minor in environmental systems and society is also available in one of eight areas of concentration, each associated with a particular UCLA department.

## **UC Riverside**

### Department of Environmental Sciences

Formerly an agricultural chemistry research unit, the department offers BA and BS degrees in environmental sciences (five areas of concentration: natural science, social science, soil science, environmental education, and environmental toxicology) and a minor in environmental sciences. Its MS and PhD program in soil and water sciences is ranked as the top graduate program in soil science according to the faculty scholarly productivity index. It has 27 faculty FTEs (mostly physical scientists, some economists), 12 administrative staff, and a large number of research staff and post-docs.

## **UC Santa Barbara**

### Donald Bren School of Environmental Science & Management

Approved by the Board of Regents in 1991, the school didn’t have a dean until Jeff Dozier was appointed in 1994. Its first faculty members joined in 1995, its first master’s students in 1996;

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5 W. F. Libby, “Profession of Environmental Doctor, five years old,” *Bioscience* 26 (1976): 751-752.

its first cohort of 20 students graduated in 1998. A PhD program was added ca. 1997 and graduated its first three students in 2002. Current enrollment is around 135 master's students and 35 doctoral students. "In 1997, after receiving a major gift from the Donald Bren Foundation to provide funding for endowed faculty chairs, faculty scholars, visiting lecturers, conferences, and student support, the School was renamed the Donald Bren School of Environmental Science and Management. Construction of Bren Hall began a year later, and the building opened in April 2002 as a model of sustainable design and construction." "The mission of the Bren School is to play a leading role in researching environmental issues, identifying and solving environmental problems, and training research scientists and environmental management professionals." In addition to a dean, an associate dean, and 24 administrative staff, there are 19 permanent faculty with their appointments within the school. There are also three adjunct faculty, five affiliated faculty, and six visitors. There are more than 45 corporate partners (\$1,000-\$10,000/year) of the Bren School and a Dean's Council with representatives from real estate developers, venture capitalists, law firms, environmental consulting firms, and politicians. Forty-four students were awarded named prizes or fellowships in 2005-2006 (a donation of \$1,000 establishes a one-year prize; \$5,000 a one-year fellowship; as of 2006-2007, six fellowships and one prize are endowed). Donald Bren's first gift was for \$15 million in 1997. A second gift of \$5 million occurred in 2004. Paul Allen has contributed \$5.4 million to the Bren School over the last three years. Other recent gifts include a \$250,000 endowment for the dean; \$300,000 to name a student commons; \$300,000 for solar panels for Bren Hall. In 2005, the UCSB EVC appointed an Environmental Issues Task Force to explore opportunities for improving environmental study at the university.<sup>6</sup> They concluded that interdisciplinary research collaborations were happening, but that there could be stronger linkages between the "sciences" on one side and the social sciences and humanities on the other. They sketched ten different scenarios for UCSB's "Environmental Future." These included creating a new umbrella institute across existing programs; forming a new Division, College, or School of the Environment; or creating an interdisciplinary Sustainability Institute.

#### Environmental Studies Program

Formed in 1970, this is one of the oldest undergraduate environmental studies programs in the country. It offers three degrees (BA in environmental studies, BS in environmental studies, BS in hydrologic sciences) to ca. 300 current undergraduates. The program has 12 faculty FTE (most are joint appointments), 9 affiliated faculty, 10 lecturers, and 5 administrative staff.

#### **UC San Diego**

##### John Muir College

This undergraduate college offers an environmental studies minor organized by a board of affiliated faculty.

##### Division of Physical Sciences Research Initiative in Environmental Sciences

As one of eight research initiatives within the division, this "will draw together diverse efforts in environmental research at the Scripps Institution of Oceanography, the School of Medicine, the San Diego Supercomputer Center, and science and social science departments on campus to address the most critical issues in environmental sciences in a collaborative, cross-disciplinary fashion. These issues include defining the human dimension of climate change and resolving the notion of sustainability as the population of the planet approaches 10 billion people. UCSD has unparalleled strengths in environmental research and is uniquely equipped

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<sup>6</sup> [www.evc.ucsb.edu/evc/memos/view.cfm?file=06-09-05.html](http://www.evc.ucsb.edu/evc/memos/view.cfm?file=06-09-05.html)

to address large-scale questions about the environment in an integrated fashion.”

## Appendix III

### Environmental schools at non-UC universities

#### **Arizona State University**

##### Global Institute of Sustainability

##### School of Sustainability

Founded in 2004 with a \$15 million gift from Julie Wrigley, the institute grew out of the ASU Center for Environmental Studies, which opened in 1974 and was folded into the institute. When the gift was announced, ASU President Michael Crow noted that it would become a degree-granting school within two years. Charles Redman, director of the Center for Environmental Studies and co-director of the Central Arizona/Phoenix LTER, was appointed its first director. Not long after a School of Sustainability was founded in January 2007, Wrigley contributed an additional \$10 million to create four new chairs (renewable energy systems, sustainable business practices, global environmental change, and complex systems dynamics) in the new school. Rob Walton, chairman of Wal-Mart, serves as chairman of the institute's board.

University President Michael Crow, who arrived at ASU in 2002 after eleven years at Columbia, has played a major role in the development of the institute. According to a profile in the *Christian Science Monitor*, "in May 2004, Crow organized a three-day retreat in the Yucatan, with leading experts from around the world, to brainstorm what an institute of sustainability would have to do to succeed. 'We asked them, "If you could design an entire university to attack sustainability issues, what would you do?"' recalls Crow. 'What they said is that "You can do this, and we need you to," and they urged us to move forward.' At the meeting was Ms. Wrigley, who later wrote the university a check for \$15 million as a planning grant. Crow subsequently allocated the university's resources. He committed to dozens of new faculty positions, four distinguished chairs, and a new building that would meet exacting environmental standards."

In May 2007, Crow, promoting the Global Institute of Sustainability (GIOS) as one of two "major world-class initiatives" at the university, appointed a seasoned administrator, Jonathan Fink, ASU's vice president for research and economic affairs for ten years, as institute director to help guide it through a "critical maturation process." Fink was also appointed chief sustainability officer, a new position within the ASU president's office. Charles Redman remains director of the ASU School of Sustainability. From their website, it appears that GIOS and the school have ca. 32 FTEs on the administrative staff. Faculty range from full appointments (4 total, three of them assistant professors) to joint appointments (15 total, six of them assistant professors and six full professors) and affiliated faculty (29 total, five of them assistant professors and 18 of them full professors). According to an account in the *AAC&U News*, most of the faculty will be joint appointments; coordinating those appointments and "deciding who gets credit for team-taught courses and maintaining communication between the school and outside departments are just a few of the challenges that now confront planners."

The school currently offers MA, MS, and PhD degrees in sustainability and plans to offer BA, BS, and minors in sustainability by 2008. By 2012, they hope to have 50 masters students, 50 doctoral students, and 450 undergraduates. The school also offers a graduate certificate in sustainable technology and management in association with the schools of engineering and business. Five courses are required for the certificate and can be completed online.

## **Duke University**

### Nicholas School of the Environment

“The Nicholas School celebrates its creation date as 1991, but it represents a coming together of three entities that are almost as old as the university itself. The School of Forestry and Environmental Studies and the Duke University Marine Lab (both formed in 1938) came together in 1991 to become the School of Environment, which was named the Nicholas School in 1995 following a \$20 million gift from Peter M. and Ginny Nicholas of Boston. In 1997, the Department of Geology (formed in 1936) joined the school as the Division of Earth and Ocean Sciences, bringing with it new resources and a new name for the school in December 2000—the Nicholas School of the Environment and Earth Sciences. In December 2003, the Nicholases ended the Campaign for Duke with a \$70 million gift to the school, which created the Nicholas Institute for Environmental Policy Solutions.” Its mission is “education, research and service to understand basic earth and environmental processes, to understand human behavior related to the environment and to inform society about the conservation and enhancement of the environment and its natural resources for future generations.”

“Nicholas School faculty are helping to develop environmentally-friendly energy sources in Kenya; improve nuclear waste disposal in the United States; investigate new devices to exclude dolphins, porpoises and sea turtles from fishing nets; and measure the effects of increased carbon dioxide emissions on trees and soils. More than 50 faculty members hold primary or joint appointments in the school, and a large number of faculty have secondary or adjunct status from other units or institutions.” There are 53 “core” faculty and 52 “affiliated” faculty. The school is divided into three “research divisions:” marine science and conservation, earth and ocean sciences, and environmental sciences and policy.

The school offers a Master of Environmental Management (MEM), a Master of Forestry, and joint degree programs with its law, business, and public policy schools. At last count, there were 112 Ph.D. students and 225 masters students. Within the MEM degree, students pick one “specialized concentration” out of eight offered: coastal environmental management, ecosystems science and conservation, energy and environment, environmental economics and policy, environmental health and security, forest resource management, global environmental change, and water and air resources.

For more details, examine their 2006-2011 strategic plan at <http://www.nicholas.duke.edu/about/strategicplan.pdf>.

## **Indiana University**

### School of Public and Environmental Affairs (SPEA)

The school offers BS degrees in public affairs, environmental science, and public health; MS in environmental science (MSES); masters in public affairs (MPA); a joint MSES/MPA degree; and joint MSES or MPA degree with other professional masters degrees offered by other schools at the university; PhD in public affairs, environmental science, or public policy. More than a dozen institutes or centers are housed within SPEA or affiliated with it. Several dozen ladder-rank faculty appear to have their primary appointment within SPEA. The school was formed in 1972 and now consistently ranks in the top ten public policy schools in the US.

## **Oxford University**

### Environmental Change Institute

The Environmental Change Institute, which confusingly brands itself as the Centre for Research, Outreach, and Graduate Studies in Environmental Change and Management, is housed within the Oxford University Centre for the Environment. Since 1994 it has offered an MSc in Environmental Change and Management, which “consistently attracts around 200



applicants per year to fill 32 places.” “ECI is an interdisciplinary unit administered within the Oxford University Centre for the Environment that undertakes research on environmental issues, teaches an MSc in Environmental Change and Management, and fosters university-wide networks and outreach on the environment. Founded in 1991 through benefactions, ECI was designed to answer questions about how and why the environment is changing and how can we respond through public policy, private enterprise, and social initiatives. ECI research and teaching is characterised by a focus on global and regional environmental change, projects that bring together the natural and social sciences, and by an orientation to applied and public policy. Many of the research projects have a goal of influencing and informing public policy and decisions about the environment. The Institute is currently organized around three major research themes—Climate, Energy, and Ecosystems—the latter two with close links to the OUCE research clusters: Climate Systems and Policy and Biodiversity. Most ECI staff are full time researchers and scientists working on specific externally funded projects within these research themes although we also host a number of senior research fellows working more independently on cross-cutting issues.”

#### International Graduate School

Also housed within the Oxford University Centre for the Environment, the school “is a key feature of the intellectual community and ambition of the Oxford University Centre for the Environment (OUCE). One of the largest concentrations of graduate students in geography and environmental studies, the School consists of some 120 students studying one of OUCE's five taught Masters courses; and some 100 students at various stages of studying for a research degree (usually a D.Phil.). Students come from over 40 different countries and are supported by a wide variety of scholarships and grants,” including Rhodes and Commonwealth scholarships.” It offers three research degree programs (D.Phil., M.Litt., MSc by Research) and five coursework MSc degrees (Biodiversity, Conservation, and Management; Drylands Science and Management; Environmental Change and Management; Nature, Society, and Environmental Policy; Water Science, Policy, and Management).

#### Oxford University Centre for the Environment

“The Oxford University Centre for the Environment (OUCE) aims to be a world-class environmental research and educational hub spanning the natural and social sciences at the University of Oxford. The OUCE has: research excellence in its core disciplines, a world-class International Graduate School, one of the UK's leading Undergraduate Honours Schools in Geography. The Oxford University Centre for the Environment consists of the academic department of the School of Geography and two established research centres—the Environmental Change Institute and the Transport Studies Unit.” “The Oxford University Centre for the Environment (OUCE) has over thirty academic staff members engaged in internationally recognised research and teaching. The OUCE is also home to more than sixty researchers and a dedicated team of support staff.” “The OUCE has five major research clusters, with permeable boundaries and significant cross-cutting interests. These clusters are underpinned by external research funding; support staff; specialist computing and laboratory facilities; active postgraduate and postdoctoral communities; and non-academic collaborations.” The “research clusters” are Arid Environmental Systems; Biodiversity; Climate Systems and Policy; Technological Natures: Materials, Cities, and Politics; and Transformations: Economy, Society, and Place.

#### School of Geography

The relationships among these administrative units are confusing, but it appears that the OUCE is the overarching umbrella unit. “The School of Geography is the academic department at the heart of the Oxford University Centre for the Environment (OUCE) and home to the University of Oxford’s Undergraduate Honour School of Geography.

The School of Geography has recognised international leadership in research in physical and human geography and in the interdisciplinary field of environmental science. Our academic and research staff underpin the OUCE's research clusters. . . . The oldest geography department in the country, we pride ourselves on also being at the intellectual forefront, as well as providing a stimulating and supportive environment for exploring the diversity of the discipline."

## **SUNY**

### College of Environmental Science and Forestry

"Founded in 1911, the [college] is the nation's oldest and most respected school dedicated to the study of the environment, developing renewable technologies and building a sustainable future. The ESF campus occupies 12 acres in Syracuse and 25,000 acres on its regional campuses throughout Central New York and the Adirondack Park. The ESF student body consists of approximately 1,500 undergrads and 600 graduate students. ESF offers 22 undergraduate and 26 graduate degree programs to choose from, including bachelor's, master's, and doctoral (Ph.D.) programs in the sciences and engineering, and an accelerated B.L.A./M.S. program in landscape architecture." The school is divided into 8 departments, including an Environmental Studies Department with 9 core faculty and several affiliated faculty. "A new Master's program (M.S. and M.P.S. [Master of Professional Studies]) in Environmental Studies has been proposed for the Fall of 2008. It has been approved by SUNY-ESF faculty governance and is currently under review by SUNY Central." For the current masters and doctoral degrees in Environmental Studies, students are required to select one of six "graduate areas of study:" environmental communication and participatory processes; environmental and community land planning; environmental systems and risk management; environmental policy and democratic processes; water and wetland resource studies; environmental and natural resources policy.

## **University of Georgia**

### Odum School of Ecology

After several previous incarnations, the Institute of Ecology came into being in 1967 and formally assumed the status of a school within the Franklin College of Arts and Sciences at the University of Georgia in 1993. "The new responsibilities of the Institute included the development of instructional programs, the appointment and promotion of faculty, and the awarding of tenure and degrees, as well as responsibilities in college and university governance and public service programs, typical of other units of the college. In 2001, the Institute of Ecology merged with the School of Environmental Design to form the College of Environment and Design. In 2007, the Institute became the Eugene P. Odum School of Ecology, the first of its kind in the world. The mission of the Odum School of Ecology is to foster the study of interrelations of organisms and their environment, to train future generations of ecologists, to cooperate with other units of the University, to promote ecological literacy among students and the public, and to collaborate with other units in interdisciplinary studies of the scientific and human dimensions of our environment. In order to achieve this mission, the Odum School will provide an integrated curriculum of graduate and undergraduate courses, offer undergraduate and graduate degrees in Ecology, provide facilities to promote interdisciplinary research and the exchange of ideas, and participate with other units of the University in promoting ecological literacy. Our goal is to develop a level of excellence in our teaching program equal to that already achieved in our research programs. The academic program now includes the Ph.D. (Ecology), the M.S. and Graduate Certificate (Conservation Ecology and Sustainable Development, and Ecology), and the B.S. (Ecology)."

Now associated with the school are more than 350 people, a number that includes faculty, staff, technicians, and graduate students. "There are three categories of faculty membership in the Odum School of Ecology: Regular, Adjunct and Courtesy. The term of membership for all Adjunct and Courtesy faculty members shall be three years. . . . Only Regular faculty members will vote on matters pertaining to the appointment, promotion, and tenure of other Regular faculty. Regular, Adjunct and Courtesy faculty members will vote on appointment and promotion of Adjunct and Courtesy faculty. . . . Regular faculty are those tenure-track faculty and on-campus, non-provisional research-rank faculty who receive their salary from the Odum School of Ecology. . . . Adjunct and Courtesy faculty are elected by the Regular faculty of the Odum School to participate in the teaching and research programs of the Odum School of Ecology. Courtesy faculty are defined as faculty who are permanent University of Georgia employees. Courtesy faculty members will be chosen from those tenure-track faculty in other schools and departments of the University of Georgia who have expressed an interest in participating in our programs. Adjunct faculty are defined as faculty who are not University of Georgia employees." Faculty are further organized into subunits of the school known as "program faculties." There are currently two program faculties: the Faculty of Conservation and Sustainable Development and the Faculty of Savannah River Ecological Laboratory. "The school will incorporate the institute's faculty, which includes 17 tenured faculty members, six non-tenure-track faculty, four faculty with joint appointments in other units and seven adjunct faculty members."

### **University of Michigan**

#### School of Natural Resources and Environment

"In 1950, the University of Michigan formally established the School of Natural Resources, the first of its kind in the world, but the study of natural resources and environmental problems has been part of the University for over 100 years. Fittingly, the school changed its name to the School of Natural Resources and Environment in 1992. The school remains an international leader in educating students to be innovative and effective stewards of the environment. The school's facilities include terrestrial, aquatic, and analytical laboratories; a microcomputer laboratory; a remote-sensing laboratory; a computer graphics laboratory for landscape architecture; and a geographic information systems laboratory. In addition, Nichols Arboretum, Stinchfield Woods and Saginaw Forest, and the University's Biological Field Station and Matthaei Botanical Gardens are available to the school for research and field work." The school has more than 40 core faculty, a dozen or so research faculty, and a dozen adjunct or emeritus "faculty affiliates."

"We are a professional school and the only one in the country to integrate the study of natural science, social science and design into one shared educational experience. This interdisciplinary approach sets us apart from competitors and affords our graduates an unparalleled breadth and depth of knowledge, enabling them to thoughtfully work across boundaries to address the pressing, highly complex environmental issues found around the world and in our front yards. We offer two master's degree programs, two doctoral degree programs and two graduate certificate programs. In partnership with our sister school, the College of Literature, Science and the Arts, we offer the undergraduate degree, Program in the Environment." The degrees are: MS or PhD in natural resources and environment (8 concentrations include aquatic sciences—research and management; behavior, education, and communication; conservation biology; environmental informatics; environmental justice; environmental policy and planning; sustainable systems; terrestrial ecosystems); MLA or PhD in landscape architecture; dual degrees with law or business schools; graduate certificates in industrial ecology or spatial analysis.

## **University of Wyoming**

### William D. Ruckelshaus Institute of Environment and Natural Resources

The institute “represents a partnership among research Faculty in related disciplines, a prominent Advisory Board of leaders in the field of environment and natural resources, and the aspirations of a land-grant university. The Institute's mission is to advance effective decision-making on environmental and natural resource issues through research, policy analysis, education, process support, and proactive outreach. The Institute accomplishes its mission by partnering and coordinating with University of Wyoming faculty and students, and with government agencies, business, non-governmental organizations, communities, elected officials, and other citizens.” Most of its efforts are focused on a series of particular projects and also public outreach activities. Research programs across the university are grouped into six “research clusters:” energy and mineral resources, ecosystem dynamics, economic systems, human interactions, land and water resources, and atmospheric quality.

### Helga Otto Haub School of Environment and Natural Resources

“Recognizing that environmental and natural resource (ENR) issues inherently possess political, scientific, cultural, sociological, economic, and legal aspects, the Haub School of Environment and Natural Resources at the University of Wyoming seeks to transcend disciplinary boundaries and examine these complex issues from the full range of perspectives. ENR programs are designed to allow students to specialize in a specific field while simultaneously exposing them to the thought processes of the many other disciplines that are involved with environmental and natural resource studies. Rather than offer a program that provides a basic understanding of a variety of environmental issues but no specific training in any one discipline, our program requires students to complete a major in an ‘affiliated discipline,’ which can be housed in any other department at UW, while also completing course work in interdisciplinary Haub School classes.”

The school was established in 1994 and received in 2004 a naming endowment from Erivan and Helga Haub of \$3 million that qualified for a matching fund established by the state legislature, increasing the endowment to \$6 million. Not long after the gift was announced, faculty, staff, and students attended a workshop to discuss ways in which endowment earnings could be spent. “Earnings from the fund might be used for development in several areas including courses and curriculum; student and faculty enrichment; organization, marketing, and recruitment; and others. Much of the endowment will likely focus on student support within the Haub School including scholarship awards, international programs, field experiences, and graduate stipends. Other areas of use might include bringing visiting professionals to campus to participate in teaching activities; public outreach and education programs; purchase of equipment, supplies, and minor facility maintenance; and faculty support for teaching, research, outreach, and development.”

Undergraduate degrees are offered as an ENR major or minor; a recent count showed 54 majors and 5 minors. “Like the undergraduate program, graduate studies in ENR are always completed in conjunction with a degree program in another discipline at UW. In this way, ENR adds a breadth of perspective to the depth of study in a particular, traditional discipline.” The masters degree can be taken as a double major or as a minor. Examples include MS in Geology/ENR or MA in American Studies/ENR. At last count, there were 22 majors and 11 minors in masters programs. Ph.D. students in other departments and schools can obtain a minor; this is similar to our parenthetical notation. A dozen or so undergraduate and graduate courses are taught within the school, which has only a few dedicated administrative staff positions and no ladder-rank faculty of its own.

## **Yale University**

### Yale School of Forestry and Environmental Studies

“In 1900, two Yale College graduates who had been obliged to go to Europe to study forestry established the first professional forestry school in the United States. The founders of the Yale School of Forestry, Gifford Pinchot and Henry S. Graves, pioneered forest management in this country. As the school grew, its faculty members expanded their research and teaching to incorporate not only forestry but also broader environmental issues. To reflect this evolution, the school changed its name in 1972 to the Yale School of Forestry & Environmental Studies.” “The Yale School of Forestry & Environmental Studies offers the Master of Environmental Management, Master of Forestry, Master of Forest Science (MFS), Master of Environmental Science (MESc), One-Year Mid-career Master’s Degrees and Joint Degree Master’s Programs.” There are nine “focal areas” that “represent the scope and depth of environmental research” conducted by the school’s faculty (see list in Table 1).

There are ~ 32 core faculty, ~12 lecturers, numerous academic research staff and administrative staff, 7 centers, 2 institutes, 1 initiative, ~75 doctoral students, more than 200 masters students, and numerous undergraduates. For more details, check out the report on strategic plan progress as of November 2006 at <http://environment.yale.edu/documents/downloads/o-u/StrategicPlanNovember06.pdf>.

## Appendix IV

### Selected environmental institutes at non-UC universities

#### **Bard College**

##### Bard Center for Environmental Policy

“The Bard Center for Environmental Policy was created in 1999 to promote education, research, and public service on critical issues pertaining to the natural and built environments. Its primary goal is to improve environmental policies by facilitating the use of the best available scientific knowledge in the policy-making process at the local, regional, national, and international levels. The Center's premise is that to address environmental problems and pursue sustainable use of natural resources, scientists, economists, lawyers, ethicists, and policy makers must understand one another's perspectives and values, and communicate effectively with the general public. At the core of the Center is an innovative graduate program leading to either the Master of Science degree in environmental policy or a professional certificate in environmental policy. The emphasis on science-based policy enables students to progress from knowledge of the issues to the formulation of feasible, effective policy responses. The program's unique combination of interdisciplinary modular study, a full-time internship, and intense thesis research allows students to delve deeply into individual areas of interest. One cohort of approximately 20 students matriculates each year, which leads to a close rapport between students and faculty members. The intensive, campus-based first-year curriculum requires students to synthesize information from a range of disciplines and sources. The value of this approach has been recognized through established partnerships with Pace Law School, the Bard Master of Arts in Teaching program, and the Peace Corps.” Six “core” faculty have their appointments within the center; five are “affiliated” faculty and hold appointments in other departments (it's unclear whether the appointments are joint [50%] or simply affiliated [0%]).

#### **Brunel University [West London, UK]**

##### Institute for the Environment

“Environmental training at Brunel University began over 30 years ago, operating as a dedicated Centre (and more recently Institute) since 1991. The Institute is a leader in postgraduate training in environmental management, environmental science, environmental technology, environmental change and ecotoxicology. Through its masters and flexible research degree programmes it has trained over 500 environmental practitioners, technologists, regulators, managers and consultants world-wide.” “The Institute combines its research activities with its MSc and PhD programmes to foster career development and organisational capacity building. We also offer specialist short courses, such as Spatial Epidemiology.” The three tracks for an MSc in Environmental Science are: ecosystems and public health, pollution and monitoring, and legislation and management. “The Institute has research excellence in: chemical pollution, clean production technology, ecotoxicology, environmental change/climate change/geological & hydrological hazards. There are 7 members of academic staff, 6 postdoctoral fellows, and 25 postgraduate thesis students who work across the main research areas. Nearly all the research is funded by external research bodies and much is carried out collaboratively with people in other organisations in Britain and overseas.” The academic staff hold 100% FTE appointments in the institute.

## **Cornell University**

### Center for the Environment

“The Center for the Environment is a Cornell-wide unit which specializes in crafting interdisciplinary collaborations among scientists and professors from Cornell and partnering institutions to apply new knowledge to environmental problems and needs around the world. The CfE’s goal is to advance knowledge on environmental and human systems, and to promote a sustainable relationship supporting a quality life for people. The CfE’s specific objectives are to catalyze interdisciplinary and multiinstitutional research on the environment, develop ways that science can solve environmental problems, connect Cornell’s environmental research capacity to needs around the world, and engage Cornell’s scientific talent as new environmental issues and problems emerge.” Current “research frontiers” or “themes” are pollution mitigation, marine and coastal environments, environmental complexity, sustainability, international, Great Lakes, New York State, and New York City. The center’s activities are to “initiate, operate, and support conferences, symposia, workshops, and task forces on environmental research needs and policy issues; appoint and host international visiting scholars and external affiliated scientists; operate and maintain sponsored fellowship and scholarship award programs for Cornell students (Student Environmental Research Grants and Teresa Heinz Scholars for Environmental Research); issue weekly newsletter with announcements on environmental research news, opportunities, and events; and conduct Geographic Information Systems Mapping and Modeling.” It has a few administrative staff positions and no ladder-rank faculty.

## **George Washington University**

### Institute for the Environment

Created to carry out the GW Green University Initiative, this institute is staffed by a director and assistant director and is focused on campus sustainability rather than providing academic courses or research.

## **Harvard University**

### Harvard University Center for the Environment

“The Harvard University Center for the Environment (HUCE) encourages research and education about the environment and its many interactions with human society. The Center draws its strength from faculty members and students across the University who make up a remarkable intellectual community of scholars, researchers, and teachers of diverse fields including chemistry, earth and planetary sciences, engineering and applied sciences, biology, public health and medicine, government, business, economics, religion, and the law. The most pressing problems facing our natural environment are complex, often requiring collaborative investigation by scholars versed in different disciplines. By connecting scholars and practitioners from different disciplines, the Center for the Environment seeks to raise the quality of environmental research at Harvard and beyond. The Center seeks to provide the next generation of Harvard-educated researchers, policymakers and corporate leaders with a comprehensive interdisciplinary environmental education, while fostering linkages and partnerships amongst different parts of the University as well as between the University and the outside world. Through a variety of grants and fellowships, the Center supports research related to the environment at every level, from undergraduates through senior faculty members. By sponsoring symposia, public lectures, and informal student convocations, the Center connects people with an interest in the environment.” It has a small administrative staff; affiliated faculty come from many departments and schools across the university. “The Center awards faculty seed grants to support preliminary explorations of environmental

issues that show promise for further scholarship. The awards are intended to seed the most exciting and innovative projects that could not be tackled without support from the Center. The awards are available through a competition open to all Harvard faculty members, regardless of any past affiliation with the Center. A portion of the funding will be reserved for faculty members who have not done prior environmental research. The Center has awarded 17 faculty seed grants since 2003 worth a total of \$596,578." Other HUCE programs include a short-term visiting scholars program, funding for undergraduate summer research, and the Environmental Fellows Program, which funds six two-year postdoc positions.

### **Monash University [Australia]**

#### Monash Sustainability Institute

Established in 2007 to supersede the Monash Environment Institute, the institute "seeks to enhance the university's delivery of research, consultancy and training programs related to the environment and sustainability" by "coordinating interdisciplinary and collaborative research across the University, providing research and consulting services, and developing new environment and sustainability-related courses, units, short courses and fee-for-service training programs." There are a few administrative positions and no dedicated faculty.

### **Plymouth State University**

#### Center for the Environment

The center "is a collaborative effort between Plymouth State University academic departments, government agencies and regional nonprofit organizations. Established in 2004, the goal of the Center for the Environment is to address the science, policies, culture and economics of the natural environment in northern New England through research, education and collaboration. The Center has a special commitment to the North Country and lakes region of New Hampshire and PSU is geographically well situated to serve this role. The Center focuses on applied environmental problems and engages local communities and organizations in environmental demonstration projects that integrate the natural and human environments. The work of the Center enhances the North Country economy, and fosters regional environmental understanding and literacy." It "provides a gateway for the people of New Hampshire to access the resources of PSU in its role as a regional University. The Center serves a diverse research, education, and public engagement role addressing the science, policies, culture and economics of the natural environment in northern New England: applied research—collaborative interdisciplinary projects to promote understanding and stewardship; education—advanced undergraduate and graduate education and internships in environmental science; public engagement—science translation and educational outreach for New England citizens, government, and businesses. The Center offers laboratory and research services to the public when these services do not compete with the private sector in New Hampshire." The university's "College of Graduate Studies offers a Master of Science degree in Environmental Science and Policy which is administered by the Center for the Environment. The theme of our program is that *environmental issues are as much social and economic issues as they are science based*. To complement the sciences, student programs typically include courses in GIS, remote sensing, sociology, science education, planning, statistics, journalism, tourism, and business. These course options prepare students to be better communicators of science in future employment, and as well-informed citizens. Our graduate students (and selected honors undergraduates) have the opportunity to solve real-world problems, gaining the skills, experience, and contacts for employment with state and federal agencies, local governments, planning commissions, consulting firms, environmental groups and educational institutions. Off-campus professionals and faculty serve on student



thesis committees, enhancing the rich, real-world experience.”

## **Princeton University**

### Princeton Environmental Institute

Consisting of more than 65 affiliated faculty from 18 different departments, the institute offers a Certificate in Environmental Studies through its Program in Environmental Studies. The institute’s research program has strengths in global change, biogeochemical cycles, molecular geochemistry, biodiversity and conservation, and environmental science and policy. Most of the work takes place in four research centers, including the Princeton Climate Center. Their website lists ten administrative staff.

## **RMIT University [Australia]**

### Global Sustainability Institute

“The Global Sustainability Institute (GS@RMIT) is a Research and Innovation Institute at RMIT University in Melbourne, Australia. It is dedicated to the intellectual and material development of the key emerging and multi-disciplinary field of knowledge around sustainability, inside and outside the University. The Institute was established initially as a project supported by RMIT’s Vice Chancellor, Professor Ruth Dunkin. Our Vision is to be a leader in the intellectual and practical exploration, development and application of global sustainability in Australia and the Asia-Pacific region. Our Mission is to create working models of global sustainability through collaboration with government, corporate, academic and community leaders in the application of global sustainability principles – with RMIT University as one of those working models.” There are four administrative staff positions and no dedicated faculty. Its “Three Pillars” include the traditional ones of 1) serving as a hub for interested people inside and outside the university and 2) fostering relevant scholarship but also 3) engaging the corporate and commercial world. Only the Bren School explicitly focuses on the corporate dimensions of environmental problem-solving.

## **Stanford University**

### Woods Institute for the Environment at Stanford

Initiated in February 2003 with \$1.5 million in seed money from the university president to fund interdisciplinary environmental research projects over three years. Thirty-nine pre-proposals were put forward from 87 faculty members in 29 departments. Thirteen of them went ahead to full proposals and nine were funded in 2004 and six in 2005 in this Environmental Interdisciplinary Initiatives Program, later rebranded the Environmental Venture Projects. In spring 2004, when the co-directors Jeffrey Koseff (School of Engineering) and Buzz Thompson (School of Law) were appointed, the principal goals of the Institute were to continue the interdisciplinary research seed funding program, develop “new outside research funding opportunities,” and develop “new core and shared facilities.” They received funding for one senior faculty billet in the institute to be hired by the end of 2004. (I couldn’t find out if this happened; Jenna Davis is listed as the first faculty joint appointment within the institute, and she’s junior faculty.) Of 250 Stanford faculty conducting research on the environment, more than 100 are affiliated with the institute. Its strengths are in four focal areas: energy & climate, land use and conservation, oceans & estuaries, and freshwater. The institute hosts the Aldo Leopold Leadership Program and several other programs, including four “Strategic Collaborations” involving organizations beyond the campus. Gifts to the institute include \$50 million for the new Environment and Energy building (2007); a \$30 million naming gift (it’s now known as the Ward W. and Priscilla B. Woods Institute for the Environment). In 2001, the university launched the Interdisciplinary Graduate Program in

Environment and Resources (IPER) that offers a Ph.D. degree as well as dual M.S. degrees (M.S. in Environment and Resources) in conjunction with Stanford's law, medicine, and business schools; only students enrolled in those schools may apply for the dual M.S.

### **SUNY at Albany**

#### Institute for Health and the Environment

"The Institute for Health and the Environment was created with the primary purpose of promoting interdisciplinary research and grants in this broad area. Our faculty are drawn from several schools and colleges of the University, and other local universities and medical centers. Faculty who have research interests in environmental health, environmental sciences, environmental policy, environmental law, ecology, geographical information systems, hazardous waste management, occupational health, risk assessment, risk management, risk communication and social and psychological aspects of environmental pollution regarding human behavior are encouraged to join. The Institute goals are to: foster interdisciplinary research grant applications; hold a regular seminar series that will help participating faculty to become better acquainted; provide a support infrastructure that will facilitate collaboration on interdisciplinary activities; promote linkages between community grassroots organizations/leaders and University researchers, particularly in areas related to environmental justice; facilitate communication and collaborating research among UA faculty and faculty from other academic institutions in the region and the nation who are concerned with Health and the Environment; promote interdisciplinary training of graduate students; serve as a bridge to professional staff in the New York State Departments of Environmental Conservation, Health and Transportation, and in the Empire State Development Corporation, NYSERDA etc., with regulatory responsibilities in these areas; and promote interdisciplinary international activities in the broad area of health and the environment." It has no apparent dedicated staff.

### **SUNY at Buffalo**

#### Environment and Society Institute

"The Environment and Society Institute (ESI) was established by Provost Thomas E. Headrick in January 1998 to promote interdisciplinary research on environmental problems important to the regional community, function as an environmental clearinghouse for the UB community and the general public, and review and facilitate development of environmental curricula. ESI shares with numerous departments and organized research centers and programs the larger mission of increasing UB's overall strength and prominence in the environmental science and education arena." Primary activities include seed funding for academic research relevant to regional, national, and international environmental problem-solving; graduate fellowships; community outreach; curriculum enrichment; clearinghouse for environmental information; and an annual Environment and Society Colloquium. It has a few administrative staff positions and no ladder-rank faculty.

### **Tufts University**

#### Tufts Institute of the Environment

Formed in 1998, fourteen years after the founding of its undergraduate Environmental Studies program, the institute is the "interdisciplinary, university-wide education and research institute devoted to advancing and disseminating knowledge about the many ways human interactions affect the environment. TIE brings together existing environmental efforts at Tufts, and helps to catalyze new research, outreach, service and teaching initiatives." "University, departmental and individual efforts evolved into the present-day coordinated

structure of TIE. The distinguishing characteristics of TIE are that it places environmental activities administratively at the center of Tufts in the Provost's office, yet allows the Institute to be highly responsive to each School through a Steering Committee comprising of representatives from across the university. Tufts has made a commitment to support the Institute financially, thereby allowing staff time to be dedicated to the work of TIE rather than the administration of the organization. These changes in TIE's structure enhance its ability to facilitate communication about environmental projects and courses within the university; to disseminate accurate, up-to-date information about environmental work at Tufts to the public; and to support each school and department in various ways." It does so by providing grants and logistical support to faculty and graduate students for interdisciplinary research, new interdisciplinary courses, and events and meetings.

### **University of Denver**

#### International Institute for Environment and Enterprise

"The International Institute for Environment & Enterprise is a collaboration of intellectual inquiry and principled action concerning the relationship between people and planet Earth. I2E2 was established as the Environment Institute in 1996 as part of the University's Academic Strategic Initiatives Process. I2E2 presents a collaborative, multidisciplinary approach to environmental research and scholarship. I2E2 advocates environmental literacy and sustainable development in the 21st century-where prosperity, social justice, and environmental quality are the guidelines for living." There are five "Faculty Associates" and no dedicated staff.

### **University of Guelph [Canada]**

#### Guelph Institute for the Environment

"The University of Guelph is pioneering new approaches to linking researchers, communities, and policy makers to address 21st century environmental problems. The new [launched in 2007] Guelph Institute for the Environment (GIE), headed by the Hon. David Anderson, former federal environment minister and long-time conservationist, will help lead the way. The new institute will provide a link between the university's environmental researchers and the broader community, seeking to promote dialogue and policy development on key issues. It will provide a public face for the university's very widespread expertise on environmental issues, from biodiversity to environmental ethics, from water resource conservation to ecosystem health, from environmental toxicology to nutrient management. The institute will establish ties with government and non-government organizations committed to environmental issues, explore ideas for new environmental initiatives, and promote public discussion on pressing environmental policy issues. . . . As [part-time] Director, David Anderson will assist faculty members in making connections with the appropriate policy sectors while also guiding overall public engagement in the institute." Anderson also serves as president of the Governing Council for the UN Environment Program.

### **University of Louisville**

#### Kentucky Institute for Environment and Sustainable Development

Established in 1992 to provide multidisciplinary research and public service "on environmental and sustainable development issues at the local, state, national, and international levels." It serves as an administrative home under the VP for Research for eight centers, including Center for Environmental Law and the Center for Watershed Research. The centers received ca. \$2 million in grants and contracts per year during the late 1990s. No apparent dedicated staff.

## **University of Minnesota**

### Institute on the Environment

“In May 2006, the Provost’s Advisory Committee was named to propose recommendations for consideration by the Provost for a world-class, system-wide Institute on the Environment. The impetus for such an Institute originally arose from a recommendation made by one of the strategic positioning task forces. This committee concluded its work in September 2006.”

Their blueprint makes for interesting reading:

<http://www.academic.umn.edu/provost/interdisc/environment/IOEfinalreport.pdf>. They concluded that “The Institute’s primary objective will be to identify, organize, and support collaborative interdisciplinary research teams to develop and disseminate innovative and practical solutions to the most pressing environmental problems of our era. The Institute will focus its activities on selected research themes that will emerge from discussions among Institute Fellows, Associates, affiliates and external partners. The research teams addressing a particular theme will take a systems, or integrated, approach to addressing a particular environmental problem. Themes will not be permanent, but will change over time as problems are solved and new challenges emerge. A competitive Discovery Grants program will be initiated to assist in forming interdisciplinary teams of scholars. An equally important function of the Institute is to facilitate and coordinate environmental programs, activities, and courses, and disseminate relevant information on environmental research and expertise of the University of Minnesota system. This facilitation role is intended to supplement, enhance and further promote ongoing activities at the University and not to supplant them. A guiding principle of the Institute on the Environment is that it be a system-wide organization that assembles problem-solving expertise from across all campuses. In this spirit, a number of steps will be taken to maximize and facilitate participation in the Institute’s research, outreach and coordination mission. We recommend that there be two primary forms of formal participation in the Institute: Institute Fellows and Associate Faculty. We recommend that there be approximately 20 to 30 Institute Fellows at any given time who hold joint appointments with the Institute and with their home departments. Tenure of faculty members will continue to reside in the home departments of the fellows; the Institute will not grant tenure. Associate Faculty will constitute the majority of active participants (on the order of 100), and will serve as collaborators on research projects, organize synthetic events, and advise graduate students. In addition, we envision Affiliates, Visiting Scholars, Postdoctoral Fellows and graduate students, and undergraduate research assistants and interns. Participants within the Institute will span a range of disciplines across physical, biological and social sciences, engineering, policy, law, design, public health, and the humanities.” “Now launched, and under the direction of Interim Director Deb Swackhamer, the impetus for a world-class, system-wide Institute on the Environment originally arose from a recommendation made by one of the strategic positioning task forces.”

## **University of Newcastle [Australia]**

### The Tom Farrell Institute for the Environment

“The Newcastle Region is one of the most rapidly changing regions in the country. The University of Newcastle has a long record of quality research and teaching in the natural and built environment and innovative approaches to understanding the interactions of people with the environment. The Tom Farrell Institute for the Environment has been established to draw this expertise together and to engage with the community in an integrated way while coordinating a whole-of-University approach. This engagement of the University's expertise with the region's environmental, social and economic needs is critical for the maintenance and repair of environmental assets and the implementation of sustainable development

strategies to accommodate and employ the growing population.” There is a director and one or two administrative staff. The institute has a lecture series, offers scholarships, and appears to be situating itself to provide advice to the region on environmental issues, should someone appear with funds available to ask for that advice.

### **University of Newcastle upon Tyne [UK]**

#### Institute for Research on Environment and Sustainability

“IRES is an interdisciplinary, cutting-edge research institute based within the University of Newcastle upon Tyne. Within the Institute, we draw together researchers from a number of different academic schools of the university, including biologists, geochemists, civil engineers, toxicologists, medical scientists, social scientists and geographers, all of whom are involved in some aspect of environmental research. Through our collaborative, interdisciplinary structure, we aim to use existing expertise to develop new, holistic solutions to some of the most pressing environmental issues. We also aim to form new strategic national and international alliances in order to develop a fundamental understanding of the processes involved in the Earth’s terrestrial, oceanic and atmospheric environments. . . . We believe that a coordinated effort between natural, social and medical scientists is key to success, and so our strategic focus is to progress integrated systems-level research in six key areas:

Bioresource Systems, Earth Systems, Energy Systems, Health Systems, Social Systems, Water Systems.” These are the six Research Directorates. “Within the Institute, there are a number of active research groups, cutting across a number of different disciplines such as Biology, Geosciences, Medical Sciences, Geography and Social Sciences. All of these groups work together under the umbrella of the Institute to develop new, interdisciplinary approaches and methodologies.” “Our postgraduate students are enrolled onto research programmes run and coordinated by a wide range of the University’s academic schools, but undertake their research within IRES. Admissions to these research programmes, and academic support are based within the relevant University schools;” at last count, there were 10 schools that had faculty affiliated with the institute. The institute is housed in its own awardwinning building.

### **University of North Carolina-Chapel Hill**

#### UNC Institute for the Environment

“With environmental expertise in literally every discipline on the campus, we were faced with a question: How can we bring together these diverse groups, forming them into an interdisciplinary community, and focus them on the most significant environmental issues? Our solution is the Institute for the Environment (IE), building on the collaborative spirit of Carolina. Through it, faculty, students and staff from across the campus have joined together to offer multidisciplinary programs in education, research and outreach, while retaining the disciplinary strengths of our College of Arts and Sciences, Kenan-Flagler Business School, School of Public Health, School of Medicine, School of Law, School of Government and School of Journalism and Mass Communication. This unique arrangement allows our students and faculty to move smoothly between the participating disciplines, and to adapt quickly to the ever-changing terrain of environmental studies. These schools and their departments are integrated through the Institute, which has three missions: 1) to act as the “public face” of all environmental programs on the campus, providing information on these programs and a way to celebrate their success and expertise; 2) to bring these programs together to tackle interdisciplinary environmental problems that lie at the intersection of their interests; 3) to create new interdisciplinary areas of study, and to bring to campus the resources and expertise needed to tackle these areas.”

## **University of Oregon**

### Institute for a Sustainable Environment

“The University of Oregon **Institute for a Sustainable Environment** is a center for special, collaborative, and applied research projects. The institute's activities aim to produce information that can help resolve complex problems and enable people to sustain the economies and environmental systems that support their communities. [Its] projects assist regions and communities in the U.S. Pacific Northwest and around the world. The projects are initiated by faculty and funded by foundations and agencies outside the university. The institute does not have any instructional programs and only employs faculty, students, and visiting scholars.”

## **University of Ottawa [Canada]**

### Institute of the Environment

“The Institute of the Environment (IE) was formed in May 1999 by a statute of the University of Ottawa and has as its research mandate: the facilitation of interdisciplinary environmental research on campus and elsewhere and the identification and colonization of developing niches in the environmental research and education landscape by building on existing strengths or interests of institute members. The IE research mandate is achieved through the: identification of subject areas with a critical mass of institute members in different problem domains (environmental research foci); identification of linkages between researchers/educators in common subject areas (e.g. biodiversity conservation) but different problem domains (physical science, policy, regulation, management etc.); identification of research opportunities, especially emerging environmental research and education niches; matching of existing IE member expertise with research opportunities, and, where needed, recruit external expertise/partners.” It came about following an external review of the university’s Institute for Research on Environment and Economy that had been founded in 1989. It serves as the administrative home for the International Center for Low Dose Radiation Research. Its staffing and structure resembles the Institute of the Environment at UCLA.

## **University of Southern California**

### USC Wrigley Institute for Environmental Studies

“With generous donations from the Wrigley family, the University of Southern California created the USC Wrigley Institute for Environmental Studies (WIES) to unify and advance USC's efforts in environmental education and research. Under the directorship of Dr. Anthony F. Michaels, the institute brings together new and veteran faculty, programs and facilities with a renewed commitment to objective and relevant environmental science. The Institute serves as an environmental headquarters for the university. WIES gives interested faculty and students from all disciplines a physical center for their work and a set of innovative programs to focus their attention on goals that are meaningful. It is here that researchers from areas such as biology, economics, public administration, medicine and many more can work together at understanding and solving society's toughest environmental problems and preparing for future issues. Perhaps our most important objective is to effectively communicate the findings of this truly interdisciplinary center to the public and especially those who can effect positive environmental change.” The institute was initiated in 1995 with a founding gift from the Wrigley family, folding a marine science center on Catalina Island into the institute. The university aims to raise a total of \$60 million for the institute. More than 80 faculty from 7 departments and as many schools are affiliated with the institute, but none hold their FTE in the institute. Around 18 administrative staff are employed by the

institute and its marine science center.

## **University of Wisconsin-Madison**

### Nelson Institute for Environmental Studies

Established in 1970 as the Institute for Environmental Studies and renamed in honor of Gaylord Nelson in 2002. Summary from recent search for new institute director:

“Approximately 150 faculty members from more than 50 natural and social science, engineering, and humanities departments across the campus are affiliated. Besides offering more than 100 courses in partnership with the university’s schools and colleges, the Nelson Institute administers three graduate degree programs (in conservation biology and sustainable development, environment and resources, and water resources management), four graduate-level certificate programs (in air resources management, energy analysis and policy, transportation management and policy, and the certificate for humans and the global environment) and an undergraduate certificate program (in environmental studies). Total enrollment in the graduate programs is approximately 200 students; enrollment in the undergraduate program averages approximately 300. The Nelson Institute is the administrative home for four interdisciplinary research centers (Center for Climatic Research; Center for Culture, History and Environment; Center for Sustainability and the Global Environment; and Land Tenure Center), and conducts a variety of outreach activities.”

Three types of faculty are associated with the institute: those with 50% or more appointment in the institute, those affiliated with the institute, and those serving on its executive committee (these must have a 50% or more appointment). In its statement of “basic premises,” the institute noted that “because faculty participation in the Nelson Institute is based largely on voluntary contributions of time, and because the governance and administration of the institute cut across several schools and colleges and many disciplines, the role of the institute staff in coordinating these efforts is crucial. They provide integrative functions and serve as coordinators for campuswide efforts.” Extensive internal governance discussions are available on the Nelson Institute blog at [www.nelson.wisc.edu/blog/](http://www.nelson.wisc.edu/blog/). Also interesting is their guidelines for merit evaluation and criteria for excellence in interdisciplinary scholarship in the Nelson Institute for Environmental Studies at [www.nelson.wisc.edu/facstaff/policies/criteria.pdf](http://www.nelson.wisc.edu/facstaff/policies/criteria.pdf).

## **Western Washington University**

### Huxley College of the Environment

The dean’s office has 5 FTE including the dean, with two departments within the college, a department of environmental sciences (12 faculty FTE, including etox, ecology, limnology, physiology, oceanography, forest ecology) and a department of environmental studies (15 faculty FTE, mostly geography, with some planning, psychology, law, environmental education and anthropology). The college offers B.S. and B.A. degrees as well as several masters degrees: M.S. in Environmental Science with four specializations (freshwater ecology; environmental toxicology and chemistry; regional, global, and terrestrial ecosystems; marine and estuarine science); M.S. in Environmental Science, Marine and Estuarine Science; M.S. in Geography, with three specializations (resource conservation and management; regional development and environmental policy; earth surface processes); M.Ed. in Environmental Education. They recently received funding from the Washington State Legislature to develop a new majors track in Emergency Planning and Hazards Mitigation and to create a new Institute for Global and Community Resilience. They recruited two new faculty to teach in the new major and hired staff for the new institute. As of FY2006-2007, Huxley College receives \$2.66 million in state funds and \$78k in “self-sustaining funds” for 35 FTE.

## **Wright State University**

### Institute for Environmental Quality

“Wright State is a national leader among university environmental health sciences programs and it’s one of only twenty-four in the U.S. to be accredited. Students can focus on public health, worker health and safety, environmental protection, or natural resource management.” There are 21 faculty in 5 departments who contribute to the institute’s programs; most conduct research on the “on the fate, effects and treatment of contaminants.”

### Environmental Sciences Ph.D. Program

Like the UC Davis Graduate Group in Ecology, this program is a cooperative effort involving several departments. “The Environmental Sciences Ph.D. program at Wright State is designed to provide skills and training to better understand and solve complex environmental problems, such as those caused by anthropogenic pollutants, invasive species, habitat fragmentation and loss of biodiversity, that can affect both human and ecosystem health. Our students receive training in preparation for careers in academia, state and federal agencies, industry, and non-profit organizations.” Their “areas of excellence” are environmental biology (genes, organisms, and ecosystems), environmental earth science, environmental chemistry, and environmental complexity. It started in 2002.