

Envisioning the Future of Higher Education in Natural Resources

9:00 AM – 3:00 PM, Monday, July 28th, 2014
Chesapeake Conference Room
McKenna Long & Aldridge LLP
1900 K Street, N.W.
Washington, D.C. 20006

Minutes

Introductions

Participants introduced themselves. A list of participants is distributed with these minutes.

Setting the context

Eric Hallerman welcomed the group and thanked them for taking time to attend to the meeting. He thanked Randy Nuckolls and McKenna Long and Aldrich for hosting the meeting. To open up a general discussion on Envisioning the Future of Higher Education in Natural Resources, he set the context by identifying a few key issues:

- *Guidance issues:* Guiding students into pathways where they gain skills that will lead to employment.
- *Curricular issues:* How to maintain depth while being multidisciplinary, within the constraints of a 120-hour curriculum; how to keep offering the –ologies (ichthyology, mammalogy, ornithology, herpetology) when ranks are thinning and research so highly valued.
- *How to encourage innovations in classroom instruction:* Making instruction less content-driven, more oriented to gaining critical skills, such as critical thinking, integration, numeracy, and communications; whether and how to “flip” the classroom.
- *Enhancement of distance education:* How can we best promote use of distance education opportunities? Where might there be opportunities to create consortia of interested institutions?
- *Implementation and evaluation of experiential learning:* Undergraduate research, independent study, internships, and study abroad often comprise a critical moment in a student’s education. How can we promote that? We might share our practices and experiences.
- *Enhancement of diversity in enrollment:* What can we do to enhance diversity in our profession? We might share our practices and experiences.
- *Continuing education:* Donna Parrish and Doug Austen asked that continuing education be added to the agenda.

Open discussion

At the outset of the discussion, Ken Williams noted that we should base our discussion on several key reports that have come out lately, including The Future of the Wildlife Profession, a report of the Coalition of Natural Resources Societies, and the Science, Education, and Outreach Roadmap for Natural Resources. Janaki Alavalapati noted that the same issues are pertinent for forestry, and that NAUFRP will be pleased to work with organizations represented around the table on those issues. Randy Nuckolls called for us to develop a list of achievable action items on which to hold ourselves accountable for progress.

Enhancement of distance education. – Eric Hallerman distributed a listing of universities offering distance education courses in fisheries and wildlife. Donna Parrish noted that the University of Vermont was not listed, and that UV has a nice model for distance education. Keith Owens noted that the *real* list of interest is that of universities allowing students at *other* institutions take their distance education courses. Ken Wilson asked whether the National Conservation Training Center (NCTC) might have a useful role to play. NCTC wants to work with people to develop courses of as long as two weeks; they would even be interested in developing a series of courses. Randy Nuckolls asked whether there was something that the federal agencies might fund for their and everyone's benefit? We could put together a proposal for prospective federal or foundation funding. Ken Wilson noted that a distance education program on developing the next generation of natural resources scientists could be very saleable to foundations (e.g., Quinne, Packard) and federal agencies. The question came up of what had become of the Natural Resources Distance Learning Consortium that had been based at Virginia Tech. Eric Hallerman replied that the coordinator had moved on to a new position and that the status of the unit was unclear.

Subsequent to the meeting, Ken Wilson found that Chris Luecke has become director of the Master of Natural Resources degree at Utah State University. This online degree makes good use of the Natural Resources Distance Learning Consortium opportunities and so with Virginia Tech's blessing, Utah State University has taken over the operation and maintenance of the web site. The URL for the site is: <http://nrdlc.usu.edu/htm/members>. During the past couple of months, they have revived the consortium by asking former members if they were interested in continuing the program. It doesn't require much more than the commitment to cooperate in the offering of these courses. Tuition and fees are set by each institution. It's basically a clearinghouse to catalogue courses that could apply to a variety of online degrees in the natural resources areas. USU will continue to operate and maintain the web site. They need to do a bit of work on the page and hope to have a better description of the program in place by mid-August.

Keith Owens said that the Society of Range Management has a curriculum supported by seven universities in the Great Plains and western states; the PI (Karen Lauchabaugh? Melanie Conrad?) is at the University of Idaho. He also noted that there is a quality assessment issue of assessing whether distance learning courses offered are good. Jim Allen noted that NAUFRP had recently had a very parallel discussion of distance education (and other) issues at the North American Summit on Forestry and Forest Science Education, which brought up points relevant to today's discussion. That discussion is summarized at: <http://ucanr.edu/filevault/temp/1A4A27BC-FCEC-8710-E1E81C065B00B602-43161.pdf>. Tom Franklin noted that while many of today's students have strong background in ecology, they aren't ready to manage fisheries and wildlife resources. Lacking skills range from negotiation strategies to driving a tractor.

Discussion then turned to focus on graduate education in fisheries and wildlife. Keith Belli noted that other fields are developing degrees modeled on the MBA, and that our field might benefit from a natural resources MBA with one year of programming aimed at polishing skills. Eric Hallerman said that Virginia Tech has a Master's of Natural Resources degree offered through its National Capital Region campus that include classroom and online courses, plus a project; additionally, there is a cohort-based Executive MNR degree modeled after existing Executive MBA degrees. Dan Edge reported that Oregon State University offers a professional sciences degree; an enrollee must have five years of experience as a state or federal employee. There are certifications in fisheries management and wildlife management; often requiring 18 credits. Tom Bigford noted that Master's of Marine Affairs degrees exist, which might

be a model for an MNR. Each MNR program might have its own strength: Oregon State for quantitative analysis, another for international fisheries and wildlife affairs, and another for federal fisheries and wildlife affairs. Steve Bullard added that Colorado State University has an MS in Conservation. Stephen F. Austin State University has an MS in Natural Resources Interpretation that is aimed at training National Park Service personnel.

Action items: Against the background of this discussion, Eric Hallerman will keep advancing discussion of enhancing distance learning opportunities in fisheries and wildlife for university students and for continuing professionals. This will include identifying MNR-type programs, evaluating QO/QC issues, and assessing outcomes. He will explore the possibility of establishing linkages to existing programs or consortia or to developing them anew (e.g., at Oregon State University or at North Carolina State University). With help from others around the table, he will develop proposals for presentation to prospective public- or private-sector funding entities to bring greater opportunities for distance education in fisheries and wildlife subjects to fruition. The proposals might seek to use resources to develop a particular curricular product. We must assess demand for such curricula.

Implementation and evaluation of experiential learning. – Eric Hallerman introduced the topic of experiential learning by describing Virginia Tech’s new experiential learning requirement. He distributed a printout of Tech’s policy (http://fishwild.vt.edu/experiential_learning.html) and the partnership agreement form between a student, mentor, and department (http://fishwild.vt.edu/documents/exper_learning_Append_1.pdf). Dan Edge noted that there are many ways to get great experiential learning, including shadowing practicing professionals, attending AFS/TWS national meetings, as well as the model incorporated into VT’s program. At Oregon State, professional staff members – two people that worked with agencies and know whom to call – help students find experiences. Many of these are essentially three-month jobs. The Oregon Department of Fisheries and Wildlife helps by offering 10 fisheries and 10 wildlife opportunities each year, many of them paid positions. Afterwards, the job placement rate is high. Having two or three such experiences is really helpful. The question came up, how can we better serve as a matchmaking service for connecting students to experiential learning opportunities? The Texas A&M University Wildlife and Fisheries Job Board is a useful resource. Could we find contractor companies that hire for the federal government, perhaps through Pathways? Could our professional societies include experiential learning in their certifications? Ken Williams asked whether we can document the importance of experiential learning for publication in *The Wildlife Professional*, *Fisheries*, and *Journal of Forestry*?

Action items: Dan Edge, Eric Hallerman, and Tom Bigford will work (with others) to assess outcomes, identify best practices, and publicize the benefits of experiential learning. George Kuh has written on such matters. We might challenge federal agencies to offer more paid internships. NAUFRP’s undergraduate study has an agenda item on experiential learning; Terry Sharik might be a good resource. This is a matter discussion at the biennial conference of natural resources education, and more of us should attend and participate actively on this (and other) topic(s).

Enhancement of diversity in enrollment. – Students in natural resources curricula tend not to be diverse. Dan Edge reported that Oregon State University has a diversity officer, which has led to a mild increase in enrollment diversity. Steve Bullard mentioned that the U.S. Forest Service have engaged a firm that produced a model for a national program to achieve and sustain high levels of workforce diversity in forestry, wildlife, and related natural resources disciplines, which is distributed with these Minutes. The question, then, is how to sustain this effort through the future. Among the foresters, Terry Sharik and Cameron Ambulahe are involved. Jim Allen noted that the Wildlife Society has a Facebook

page, “Women of Wildlife”. TWS, and indeed all of our professional societies, might consider launching other such pages to cover a wider range of diversity. There is a Native Americans student group within TWS, which supports attendance of representatives at the national meeting.

Ken Wilson noted that enhancing diversity in our profession is as much as anything a K-12 issue. We also have to work with state agencies regarding hires and internships. Doug Austen noted that AFS has its Hutton Program, which recruits 25 young people for eight weeks each summer. Many shadow federal workers. The question remains as to how many subsequently recruit into our profession; an evaluation is underway. AFS also has an Equal Opportunity Section. The National Wildlife Federation has a similar program. Tom Bigford noted that NOAA aims at minority prospects with its Education Partners Program. Dozens of young people are given summer jobs and tuition funded by the “Hollings tax”. A fall meeting will assess its effectiveness.

Action items: NAUFWP will interact with NAUFRP on how to promote diversity in our professions, focus effort into recruiting 1890 Schools as members, and devote effort into recruit females onto its Board. AFS, TWS, and SAF will consider using social media such as Facebook, as well as launching student sections to promote diversity.

Guidance issues. – Discussion focused upon successful practices at particular universities. Dan Edge noted that for purposes of curricular guidance, Oregon State University utilizes guidance professionals as opposed to faculty. There are three programs offering fisheries and wildlife coursework, so student often transfer between them early in their academic programs. The guidance professionals help with orientation courses. Faculty members become the primary advisors later as career path issues come to the fore. Keith Owens reported that Oklahoma State University has an eight-week short-course for transfer students. Ken Wilson noted that Colorado State University has an academic support assistant. Doug Austen noted that a new AFS book will come out this fall, *Future of Fisheries: Perspectives of Emerging Professionals*, covering how to get internships, fellowships, into graduate school, and similar topics.

Curricular issues. – Eric Hallerman opened the discussion, noting that curricula may be very content-oriented and prescriptive or competency-oriented with more room for individualization of coursework. Professional society certification drives much of the content-oriented approach. Some states value certification highly, although its influence may be waning. Forestry has accreditation of programs as opposed to certification of individuals; forestry departments of 13 states demand this. Only two states, Alabama and Mississippi, do so. The private sector, e.g. consulting firms, likes to hire certified wildlife biologists. Dan Edge noted that the curriculum at Oregon State offers “bounded flexibility”, with 24-credit specializations to be selected by students. The content-oriented approach tends to build a curriculum of required courses, while the competency-oriented approach starts with critical skills and maps them across multiple classes through the curriculum. In the latter case especially, how do you validate outcomes? Complementary approaches include e-portfolios built through the educational experience (see, for example, <https://eportfolio.vt.edu/training.html>) and integrative capstone courses.

Innovations in classroom instruction. – Key topics discussed included “flipped” courses (in which students assimilate information by reading or hearing podcasts of lectures outside of class and participate in active learning in class), the learning emporium concept (e.g., the Math Emporium at Virginia Tech (<http://www.emporium.vt.edu/>), the SCALE-UP concept (student centered active learning environment, <http://en.wikipedia.org/wiki/SCALE-UP>), and the special challenges of offering life-long to

fisheries and wildlife professionals. Discussion also addressed the expectation that faculty members continually train up on advances in pedagogy.

Continuing education. – Donna Parrish opened the discussion by asking how might we get agencies and employers to support attendance at continuing education events. How might we make conferences more meaningful to agencies? Responses focused upon selecting topics of greatest interest and offering continuing education opportunities not only at the national, but also at division and chapter meetings.

What should our next steps be?

Action items that came up at today's meeting are noted above. We should report back to one another at future meetings involving participants in today's discussion. These meetings might include:

- NAUFWP and NAUFRP should meet together in early March.
- The biennial meeting on Higher Education in Natural Resources seems highly appropriate.
- AFWA meets in late September in St. Louis and may have session on reconnecting science and NRM policy.

Questions on minutes, follow-ups:

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