

**Graduate Program Review
Department of Natural Resource Management
Texas Tech University**

February 21, 2012

To: Clifford Fedler, Associate Dean of the Graduate School
Randy Jeter, Chair of the Graduate Program Review Committee

From: Stuart E. Marsh
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Chair, Arid Lands Resource Sciences Ph.D. Program
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Executive Summary

The Department of Natural Resource Management (NRM) review committee [Tala Awada (University of Nebraska), Stuart Marsh (University of Arizona), Jeff Johnson (Ag and Applied Economics), Jeff Lee (Geosciences), and Chair Randy Jeter (Biology)] had its initial meeting the morning of January 23, 2012 with Department Head Mark Wallace and Graduate Advisor Ernest Fish. The meeting was followed by a tour of office space for faculty and students. In the afternoon the review committee met with NRM faculty for approximately two hours. The review committee had dinner with Associate Dean Fedler and Marlene Kenady from the Graduate College where discussions concerning the review continued. On Tuesday January 24, 2012 the committee met with College of Agricultural Sciences and Natural Resources Dean Michael Galyean. That meeting focused the Dean's goals and perceptions for NRM. The remainder of the morning was spent meeting with approximately 20 NRM graduate students to hear their comments on their educational experiences within NRM. After lunch the committee was given a tour of the NRM facilities and resources on and off campus. A final meeting of just the review committee discussed overall impressions and departmental ratings; we concluded with a final exit interview with Department Head Wallace.

The NRM mission statement clearly defines their commitment to instructional excellence, high quality disciplinary and multidisciplinary research, and local, regional, and state wide relevance. Overall results of the review indicate that NRM is in a far better place now to fulfill that mission than over the past several years. Working from a base of new leadership, re-dedicated faculty and an excellent cohort of graduate students the department is clearly in a position to excel. The addition of five new faculty in the coming year should prove invaluable and it is clearly important that the very best young scientists be hired. NRM and the College should make every effort to secure competitive salaries and reasonable start-up funding for these new faculty members. With their addition, continued recruitment of high quality graduate students in greater numbers should be very possible.

Clearly the department needs to invest in their newest faculty resources to ensure they have the time and support to initiate a productive funded research program. Past models of support for summer salary and research assistants from the Texas legislature line-item budget must now be invested in faculty who will develop larger interdisciplinary grant proposals. It is apparent that the new Department head and most faculty are anxious to embrace these new models and are anxious to help acquire the physical and financial resources for NRM to grow. Given all of these changes in progress the department should plan on re-engage in discussing the “value proposition” the department will be presenting to prospective graduate students and funding agencies. This should ultimately aid in guiding their specific hiring decisions, the allocation of limited resources and attracting high quality graduate students.

Program Overview and Vision – Rating: Good-Very Good

The Department of Natural Resource Management has had a distinguished history of providing a quality educational experience, both in terms of courses and research experience, to its graduate students. NRM plays a key role at the state, region, and national level in the education of natural resource management graduate students who go on to successful careers. Faculty have been recognized through internal teaching and research awards and by recognition by the Society of Range Management and the Wildlife Society. Faculty are also serving as editors and members of editorial boards of high impact professional journals. Faculty have also been very successful in securing research funding to support graduate student research and are clearly doing all they can to provide a high quality experience for their graduate students. An employment rate of 93% for their graduates clearly attests to both NRM’s commitment to their graduate students and the success of their efforts. The number of inquiries by prospective graduate students (~100/year) and the very high rate of graduate students that accept admission are particularly impressive. Finally, NRM’s \$7.5 million endowment also attests to the department’s reputation and efforts to grow this fund continue.

Over the review period NRM clearly suffered the effects of the loss of senior faculty (25%), budget cuts, and internal friction. Currently, the new Department Head with the support of the faculty are in the process of overcoming these problems and Dr. Wallace was given great credit by colleagues for these positive changes. In December 2011, NMR was given four new faculty lines to address faculty loss. These positions in Aquatic Sciences, Fire Ecology and Modeling, Quantitative Applied Ecology, and Regional Natural Resources Planning and Management represent an incredible opportunity to revitalize NRM. In addition, the Department is part of an interdisciplinary targeted hire initiative through the TTU Climate Science Center to bring in more senior faculty in Climate Response Modeling and Analysis. Clearly, making the right hires into these positions and providing sufficient salary and start-up funding to attract excellent new faculty will be critical to the future success of NRM. The opportunity presented by these multiple hires would be unique for any Department and I am confident that the Department Head and faculty, Dean of the College and the Administration will provide the support to bring in great new faculty.

The impact of budget cuts has clearly affected NRM. The state line item funding for NRM has been used to provide summer salary and a research assistant for faculty as well as operational

support. Though clearly a wonderful advantage for faculty and graduate students which appears to have been used productively, the uncertainty of this funding into the future requires implementing a new model. These funds, whatever they might be in the future, must be directed to support new and junior faculty to allow them the best chance of implementing their research career. Such a shift would also provide further incentive to existing faculty to develop and submit more proposals to support their research and their graduate students. When the review committee met with the faculty all seemed to understand the need to implement a new budgetary model that incentivizes grant writing and submission and supports the next generation of faculty.

With the implementation of Responsibility Centered Management (RCM) budgeting, NRM is also faced with the need to attract more undergraduate and graduate students and put greater emphasis on securing state, federal and private research grants. NRM is clearly pursuing both goals and is assessing alternative graduate models (non-Thesis Masters and 5-yr co-terminal Bachelors/Masters) which will clearly position them for the future.

What perhaps remains to be resolved by NRM faculty and the Department Head is developing how they wish to market themselves to prospective graduate students. Development of their new recruiting video “Securing the Legacy” and the B.S. in Conservation Law Enforcement were excellent steps in the recruitment of undergraduates. Now NRM needs to clearly develop and state what they are best at and what they have to offer to future graduate students. By developing the “value proposition” of the department they will be able to better guide their hiring decisions, allocation of limited resources and attract new graduate students.

Curriculum and Programs of Study – Rating: Good

NRM’s curriculum and programs of study have undergone significant change in the past year. The decision to combine the multiple individual degrees in Wildlife Sciences, Fisheries Science, and Range Science into a single M.S. and Ph.D. degree in Wildlife, Aquatic, and Wildlands Science and Management is a step many natural resource sciences departments have already taken and should surely benefit the department as it moves forward. The recent (2010-2011) comprehensive review of courses and content and procedures for adding new courses appears to have been successful in having faculty work in a unified direction for the overall benefit of NRM.

There are currently 51 graduate students in the department and the five-year yearly average has been 39.8. Average rates for graduates per year (5.89 MS and 3.6 Ph.D.) are quite reasonable given expected yearly recruitment but certainly there is room for growth. Average time to completion statistics are also quite good, M.S. and Ph.D. students appear to have the courses and guidance they need to complete their degrees efficiently. One issue raised by both faculty and graduate students is the penalty to the department and thus the students regarding time to completion (99 SCH rule) set by the University. It is unclear how many waivers have been issued or what the financial impact has been to NRM but clearly the department’s implementation of annual reviews of each graduate student’s progress should help students complete their degree within the University guidelines. (Obviously the University faces

conflicting objectives – demonstrate productivity in terms of graduate graduation rates compared to RCM funding metrics based upon SCH.)

Review of NRM's graduate curriculum, particularly in light of the 4-5 new faculty hires indicates that the department will be well positioned to meet the needs of their students. Concern for the need for more graduate only courses, a teaching wet laboratory, and advanced biometrics – quantitative methods classes were expressed by both faculty and students. This clearly can be addressed in the coming years as the new faculty hires are recruited and assigned teaching responsibilities and may be a source of increased SCH if these courses also attract graduate students from outside the department. NRM in light of the additional new faculty positions will need to perform a curriculum assessment and implement restructuring to align offerings with current and future graduate student needs and faculty vision for the department.

Faculty Productivity – Rating: Very Good

Between 2005 through 2010 the number of full time faculty has been between 12 and 14. The productivity of the faculty in terms of referred articles and abstracts has been impressive (averaging ~ 4 publications per faculty FTE/year). In terms of teaching over the period 2005 through 2010 the College average SCH/FTE was 184 while NMR's averaged 147. Though somewhat lower than the College average the loss of a significant number of faculty over this same period would clearly have impacted these numbers. Encouragingly over the past three years the SCH/FTE has grown steadily and in 2010 the number was essentially equivalent to the College average. Numerous faculty have also been recognized with outstanding teaching awards and is a clear indication of the teaching expertise of many of the faculty. A significant number of faculty also serve on and have positions of responsibility in professional societies.

The number of successfully funded grants since 2005 has totaled ~\$5.5 million dollars and has average ~\$900,000 per year. This level of funding is below identified comparison universities some of which are Research I institutions. The need to increase external funding is apparent to all faculty who were interviewed. They also recognize that because current funding from multiple agencies is in decline faculty will have to diversify the sources of funding to which they apply and be more active in the development of interdisciplinary research grants. Connection to the TTU Climate Center will hopefully help to facilitate the development of interdisciplinary proposal. Clearly, the future success of NRM will depend on the commitment, initiative, and resourcefulness of its faculty.

On a final note concerning faculty, the lack of diversity is something recognized by all concerned and it is hoped that this can be addressed by the new faculty searches that are underway.

Quality and Quantity of Graduate Students and Graduates – Rating: Very Good

Perhaps the most impressive aspect of NRM is the quality and dedication of their graduate students. The academic quality of the students is very high and they play an important role in performing the wide range of research initiatives being carried out by the faculty. M.S. research

assistants receive \$15,000/A and Ph.D. students receive \$18,000/A plus benefits. This level of compensation is reasonable but clearly could be increased if research funding increases on a sustainable basis.

The review committee met with approximately 20 students over the course of several hours. The students were particularly appreciative of:

- The dedication of the faculty
- The encouragement by faculty for students to design their own research projects and their participation in writing research proposals with faculty
- The department's efforts to find alternative funding when graduate student projects either fall through or reach completion
- The department's financial and moral support for travel to meetings and making presentations at those meetings
- The department's support in helping the students find positions upon graduation
- Support by the department for the student organization

Concerns voiced included:

- The need for an ecological statistics course
- The need for more graduate only classes
- Summer support for research
- The requirement to register for 9 credit hours over the summer
- Many TA's are actually bearing the full teaching responsibility for freshman and sophomore courses and sometimes find it difficult to meet the associated demands on their time and focus on their studies and research
- The variable oversight of graduate student teaching by faculty (particularly in general education courses) unless it is sought out by the graduate student
- The need to increase the diversity of the faculty
- The desire to have more focus on professionalization through seminars that would include grant writing and preparation for Ph.D. students for academic positions

Overall the student cohort appears happy with their educational experiences and were doing very well. These students represent a great asset to NRM, should continue to be nurtured, and they appear to really want to help the department move forward and grow.

Facilities and Resources – Rating: Good

Dr. Wallace led a two hour tour of NRM's facilities. It was clear from our tour that the department has sufficient instrumentation but the overall infrastructure is quite old and in various levels of decay. The inspection and through discussion it appears that there is also a very real need for a new wet lab. Though space is at a premium across campus it would certainly be of great value to the department to co-locate as many faculty and students as possible to enhance the opportunity to develop new collaborations among the faculty.

The tour included a visit to the range site that sits next to campus. This is an outstanding resource for both teaching and research and all efforts should be made to maintain and enhance this area.

Its use for both undergraduate and graduate classes, student and faculty research, and as unique preserve of a range environment is particularly important to the department. Ultimately the site could prove valuable as an interdisciplinary research site for cooperative work between NRM faculty and scientists with the new Climate Science Center.

Co-location with NRM of the Texas Cooperative Fish and Wildlife Research Unit and its three on-site scientists is a significant asset for the department. The research facilities under the unit and the teaching and advising done by the three adjunct faculty members is of clear benefit to both the research and instruction goals of the department.