UNIT REVIEW FOR CY 2014

Unit Name: School of Natural Resources and the Environment

Unit Head: Stuart E. Marsh

Date of review: February 18, 2015
A. Unit finance and business (10 min presentation + 10 min discussion)

1. Business personnel assessments
   Ashleigh Grogan – Lindsey Fera – Norma Montano
   Ashley Stewart – Kathi Moroz

2. Finance and budget – focus on overview of strengths and weaknesses of the unit financially
   - Reaching a clearer understanding of all aspects of our complex budgets
   - Existing commitments of IDC return limits ability to make large strategic investments
   - Handout 1: Q2 All Funds Budget – Handout 2: Q2 Encumbrances

3. New resource generation – specific opportunities you are exploring
   - Summer teaching revenue – UAOnLine BS-GIST with Geography
   - Agency Training Initiative

4. How are business functions in your unit helping achieve the goal of being “the most effective, efficient, responsive, flexible, and financially sustainable college on campus”?
   - Proactive engagement with faculty – Proactive learning by staff
   - Providing monthly budget information to faculty and responding to concerns
   - On-site pre-award grants management
   - BizSNRE email address to enhance internal communications and response
   - All forms and instructions for faculty, students, staff on SNRE Website
   - Weekly and daily meetings of staff – Newly organized job duties
B. Cooperative Extension Total Extension FTE annually for the last 3 years:

FY 13: 3.53 – FY 14: 3.63 – FY 15: 3.98

Unit’s Extension outcomes and impact for stakeholders by individual program, in terms of economic impact (e.g. dollars and jobs), by individual program:

• In 2014 over 200,000 acres of Arizona were consumed by wildfire, suppression costs across the US exceed $1.5 billion/year – Gregg Garfin’s has directly provided over 2400 people information on drought, climate change, and wildfire preparation to help mitigate these impacts and costs.
• Fort Huachuca brings $2.4 billion to the Cochise County economy – Gregg Garfin’s briefings to DOD personnel on the impacts of climate change on their natural resources and archeological assets has directly helped the Fort maintain its positive impacts on the state.
• 73% of the State’s land is used for grazing and the Arizona beef industry contributes $1.7 billion and over 8000 jobs to the State’s economy – Doug Tolleson, George Ruyle and Larry Howery’s extension activities work directly with operators to improve range monitoring methods and thus range health and cattle production throughout the state.

Describe the level of program integration (e.g. with county Extension programs, center programs, and stakeholders) of Extension programs in your unit:

• Excellent integration with the public, state and federal agencies and at the county level.

Describe the level of integration between the research and Extension components of faculty programs in your unit:

• All of our Extension faculty are research active and they continue to foster increased integration a great example is the new Ranchers and Jaguars project (Ruyle, Lopez-Hoffman, Bonar) which is assisting the southern Arizona ranching community and the U.S. Fish and Wildlife Service achieve a better understanding of how to successfully operate within the context of endangered species habitat thus maintaining this important industry in southern Arizona.

Unit’s Extension social outcomes and impact by individual program:

• Because information available on drought, wildfire and climate change to the people of Arizona is imperfect our extension programs directly provide this information as a service so that consumers across the state can make better choices in the way they live their lives. This translates into action by those our extension programs touch resulting in improved wildfire preparedness, less wasteful use of limited water resources, more sustainable grazing methods, and drought action planning which preserves our natural resources, jobs, industries, and the traditional livelihoods of Arizona.
• SNRE Extension has served as an objective and informed voice to: 1) facilitate collaboration between individual ranchers and farmers and regulatory agencies, 2) bring science to bear on all resource and management issues within Arizona, 3) find and promote ecologically and economically sustainable management solutions to help grow the Arizona economy.

Unit’s Extension summary in one or two sentences:

• We are extending relevant science-based knowledge pertaining to Arizona’s natural resources in an understandable and usable form. We are facilitating and encouraging the application of this knowledge to solve natural resource problems on both public and private lands.
List company, corporation or industry interactions with Cooperative Extension in your unit this past year including advisory boards, individual faculty/industry research projects, and classroom or curricular participation.

Corporate Interaction:
- Large Segments of the SW Ranching Community
- Salt River Project
- Altar Valley Conservation Alliance
- American Water Works Association
- California Energy Commission
- Arizona Commerce Authority

Class Room and Curricular Contributions:
- Ruyle – Seminar Sustainable Ranching with Laura Lopez Hoffman
- Tolleson - Team taught RAM 599 at UA in cooperation with Texas A&M
- Garfin – Climate Adaptation with Larry Fisher
- Howery – SW Noxious Weeds Short Course (20th Event)

Proposed New Extension Positions Coming in 2015:
- Assistant Cooperative Extension Specialist - Water Resources Management (w/WRRC)
- Assistant Cooperative Extension Specialist - 4-H Natural Resource (w/4-H)
C. Research. Units fill in bold only, CALS central Admin will provide you with the other data. (slides 5-8; 15 min presentation + 15 min discussion)

1. Total State-Funded Research FTE annually for the last 5 years (5 numbers):

<table>
<thead>
<tr>
<th></th>
<th>FY 10</th>
<th>FY11</th>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research FTE's</td>
<td>34.06</td>
<td>NA</td>
<td>27.00</td>
<td>24.68</td>
<td>24.19</td>
<td>25.17</td>
</tr>
<tr>
<td>Research FTE as Total of CALS</td>
<td>10.00%</td>
<td>NA</td>
<td>11.51%</td>
<td>10.18%</td>
<td>9.96%</td>
<td>10.6%</td>
</tr>
<tr>
<td>Research T/C Track Faculty</td>
<td>NA</td>
<td>15.64</td>
<td>13.59</td>
<td>13.16</td>
<td>13.93</td>
<td>13.93</td>
</tr>
</tbody>
</table>

2. Unit Research Expenditures CY14: $5,896,920 (Sponsored Projects)
$10,332,335 (Total)

3. Unit's share of CALS research input (research FTE, start-up and any other investment) for the last 5 years (5 percentages):

<table>
<thead>
<tr>
<th></th>
<th>FY 2010</th>
<th>FY 2011</th>
<th>FY 2012</th>
<th>FY 2013</th>
<th>FY 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNRE Research Expenditures</td>
<td>$10,951,045</td>
<td>$11,805,701</td>
<td>$11,293,846</td>
<td>$11,079,660</td>
<td>$10,332,335</td>
</tr>
<tr>
<td>CALS Total Research Expenditures</td>
<td>$66,217,094</td>
<td>$69,735,731</td>
<td>$76,332,415</td>
<td>$65,533,284</td>
<td>$64,538,646</td>
</tr>
<tr>
<td>SNRE Percent of Total</td>
<td>16.5%</td>
<td>16.9%</td>
<td>14.8%</td>
<td>16.9%</td>
<td>16.0%</td>
</tr>
</tbody>
</table>
4. Number of extramural proposals submitted by the unit divided by faculty FTE annually for the last 5 years (5 numbers):

<table>
<thead>
<tr>
<th>SNRE</th>
<th>FY 2010</th>
<th>FY 2011</th>
<th>FY 2012</th>
<th>FY 2013</th>
<th>FY 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposals</td>
<td>150.00</td>
<td>163.00</td>
<td>149.00</td>
<td>129.00</td>
<td>120.00</td>
</tr>
<tr>
<td>Faculty FTE</td>
<td>29.63</td>
<td>28.00</td>
<td>27.14</td>
<td>24.43</td>
<td>25.06</td>
</tr>
<tr>
<td>Percent</td>
<td>5.06</td>
<td>5.82</td>
<td>5.49</td>
<td>5.28</td>
<td>4.79</td>
</tr>
</tbody>
</table>

5. Number of peer-reviewed publications divided by faculty FTE annually for the last 5 years (5 numbers):

<table>
<thead>
<tr>
<th>SNRE</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Publications:</td>
<td>96</td>
<td>82</td>
<td>76</td>
<td>90</td>
<td>85</td>
</tr>
<tr>
<td>Faculty FTE:</td>
<td>29.63</td>
<td>28.00</td>
<td>27.14</td>
<td>24.43</td>
<td>25.06</td>
</tr>
<tr>
<td>Ratio:</td>
<td>3.24</td>
<td>2.93</td>
<td>2.80</td>
<td>3.68</td>
<td>3.39</td>
</tr>
</tbody>
</table>

6. List of successful proposals, sponsors, direct funding amount, total amount and match amount on separate Excel spread sheet for CY14. – See Attached Handout 4
SNRE RESEARCH – Contributions of the COOPS, CESU and NPN

AZ Cooperative Fish & Wildlife Research Unit:  
Bonar and Culver + Open Position  
CY 14 Research: $464,851  
CY 14 Pubs: 11  
CY 14 Students Employed: 13

Sonoran Desert Research Station:  
Van Ripper, Thomas, Nagler, Sigafus, Selleck  
CY 14 Research: $138,108  
CY 14 Pubs: 25  
CY 14 Students Employed: 14  
CY 14 Post-Docs: 1

National Phenology Network:  
Allyssa Rosemartin + 10 UA Staff  
CY 14 Research: $867,000  
CY 14 Pubs: 8  
CY 14 Students Employed: 0

Desert Southwest CESU:  
Five Year Renewal Submitted Feb 2, 2015  
FY 11-14 $11,7000,000 to UA
SNRE Intellectual property data for FY14

Disclosures: None
Provisional Patents: None

Patents: Revised Patent Application #13/063,825
Withaferin A Analogs and Uses Thereof

Licenses: License Agreement with Yumanity Therapeutics on:
A Water-soluble Pro-drug for the heat-shock inducing
compound Withaferin A – dated 11/20/14

Companies spun out: None
1. **Describe** all anticipated changes, deletions or additions in your **majors, minors** and/or **certificates**.
   - We added a new option under the Natural Resources major and minor, Global Change Ecology and Management which became effective Fall 2014.
   - We are planning a simplification of the Natural Resources Minor and will be eliminating the options in the minor.
   - We are adding an in–person undergraduate certificate in Geographic Information Science.

2. **List** current distance certificate programs, study abroad, executive and continuing education.
   - We currently do not have these offerings, but plans are being developed for one or more.
D. Academic Programs (slides 9-13; 15 min presentation + 15 min discussion)

3. List new courses planned and/or course changes or closures for courses offered in winter or summer sessions.

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Catalog Number</th>
<th>Units</th>
<th>Session</th>
<th>Course Title</th>
<th>Instructor</th>
<th>Summer 2014</th>
<th>Summer 2015</th>
<th>Total Net Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>RNR</td>
<td>160D1</td>
<td>3</td>
<td>Summer 1</td>
<td>Wildlife, Conservation, and American Culture</td>
<td>cancelled</td>
<td>x</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>RNR</td>
<td>170C1</td>
<td>3</td>
<td>Summer 1</td>
<td>Biology and the environment</td>
<td>Smith, Steven E</td>
<td>9</td>
<td>x</td>
<td>3,742.63</td>
</tr>
<tr>
<td>RNR</td>
<td>200</td>
<td>3</td>
<td>Summer 1</td>
<td>Foundations and History in Natural Resources</td>
<td>Field, Jason</td>
<td>cancelled</td>
<td>not offered</td>
<td>0.00</td>
</tr>
<tr>
<td>RNR</td>
<td>230R</td>
<td>2</td>
<td>Summer 1</td>
<td>Field Botany Lecture</td>
<td>Smith, Steven E</td>
<td>6</td>
<td>x</td>
<td>1,663.39</td>
</tr>
<tr>
<td>RNR</td>
<td>400</td>
<td>3</td>
<td>Summer 1</td>
<td>Noxious, Invasive Plants of Arizona</td>
<td>Howery, Larry D</td>
<td>cancelled</td>
<td>not offered*</td>
<td>0.00</td>
</tr>
<tr>
<td>RNR</td>
<td>403</td>
<td>3</td>
<td>Summer 1</td>
<td>Applications of Geographic Information Systems</td>
<td>Guertin, D Phillip</td>
<td>5</td>
<td>x</td>
<td>2,079.24</td>
</tr>
<tr>
<td>RNR</td>
<td>503</td>
<td>3</td>
<td>Summer 1</td>
<td>Applications of Geographic Information Systems</td>
<td>Guertin, D Phillip</td>
<td>2</td>
<td>x</td>
<td>466.79</td>
</tr>
<tr>
<td>RNR</td>
<td>422</td>
<td>3</td>
<td>Pre-session</td>
<td>Resource Mapping</td>
<td>Guertin, D Phillip</td>
<td>7</td>
<td>x</td>
<td>3,326.78</td>
</tr>
<tr>
<td>RNR</td>
<td>522</td>
<td>3</td>
<td>Pre-session</td>
<td>Resource Mapping</td>
<td>Guertin, D Phillip</td>
<td>1</td>
<td>x</td>
<td>933.58</td>
</tr>
<tr>
<td>RNR</td>
<td>450</td>
<td>2</td>
<td>Pre-session</td>
<td>Conflict and Collaboration in Community and Environmental Decision Making</td>
<td>Fisher, Lawrence</td>
<td>cancelled</td>
<td>not yet scheduled</td>
<td>0.00</td>
</tr>
<tr>
<td>RNR</td>
<td>550</td>
<td>2</td>
<td>Pre-session</td>
<td>Conflict and Collaboration in Community and Environmental Decision Making</td>
<td>Fisher, Lawrence</td>
<td>cancelled</td>
<td>not yet scheduled</td>
<td>0.00</td>
</tr>
<tr>
<td>RNR</td>
<td>497F</td>
<td>6</td>
<td>Summer 1</td>
<td>Conservation Biology in Developing Countries</td>
<td>Herrmann, Hans-Werner</td>
<td>6</td>
<td>x</td>
<td>0.00</td>
</tr>
<tr>
<td>RNR</td>
<td>909</td>
<td>3</td>
<td>Summer 1</td>
<td>MS Report</td>
<td></td>
<td>0</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>RNR</td>
<td>910</td>
<td>1</td>
<td>Pre-session</td>
<td>Thesis</td>
<td></td>
<td>4</td>
<td>x</td>
<td></td>
</tr>
</tbody>
</table>

Total: 12,212.41

* Will be offered summer 2016

** Note Net Income is Split with Faculty Instructor
4. **Describe** any anticipated changes in instruction faculty that will either streamline your operation or disrupt your course instruction.

- Loss of faculty member – Human Dimensions and Economic Components of Natural Resource Management
- Two faculty on phased retirement – both in Wildlife and Fisheries Conservation and Management
- One new faculty member actively searching for a position in the NW

5. **Describe** your most compelling academic program need.

- New faculty in Wildlife Conservation and Human Dimensions of Natural Resource Management
- Bringing our Grad/Undergrad Program Advisor (Katie Hughes) to 1.0 FTE
6. **Complete** the attached course grid (image below)

7. **Describe** your marketing/recruitment plans to increase the following ABOR metrics:

   - Number of Bachelor's Degrees Awarded - 36
   - Undergraduate Enrollment (Official 21st Day) - 147
   - Number of Graduate Degrees Awarded – 24
   - Graduate Enrollment - 85

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### Course Adjustments

**Additions**

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Course #</th>
<th>Expected Launch (Session)</th>
<th>Fall (F), Spring (S), Winter (W), Summer I (SI), Summer II (SII), Pre-session (PS), evening (E), weekend (W). with Yr (F 2015)</th>
<th>001 seats</th>
<th>Anticipated Enrollment (#)</th>
<th>960 seats</th>
<th>Anticipated Enrollment (#)</th>
<th>910 seats</th>
<th>Anticipated Enrollment (#)</th>
<th>0</th>
<th>GE Academy (anticipated enrollment)</th>
<th>List Venue: online (O), hybrid (HB) or Traditional (FTF)</th>
<th>Instructing Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working with Ecological Data in R</td>
<td>RNR 620</td>
<td>Spring 2015</td>
<td>20</td>
<td>20</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>FTF</td>
<td></td>
<td>Christianson</td>
</tr>
<tr>
<td>National Climate Assessment</td>
<td>RNR 496G/596G</td>
<td>Fall 2014</td>
<td>20</td>
<td>20</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>FTF</td>
<td></td>
<td>Breshears, Law, Buizer, Jacobs</td>
</tr>
<tr>
<td>Ecosystem Ecology</td>
<td>RNR 458/558</td>
<td>Spring 2015</td>
<td>30</td>
<td>30</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>FTF</td>
<td></td>
<td>Monson, Gallery</td>
</tr>
</tbody>
</table>

**Deletions**

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Course #</th>
<th>Expected Timie (Session)</th>
<th>Fall (F), Spring (S), Winter (W), Summer I (SI), Summer II (SII), Pre-session (PS), evening (E), weekend (W). with Yr (F 2015)</th>
<th>Anticipated Loss in SCH</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
8. Number of undergraduate students in the unit involved in

i. Research experiences: 28 students in 2014

ii. Extension experiences: 2 students in 2014

iii. Internships: 55 students in 2014

iv. Experiential learning: 0
9. List the top 5 employers of your graduates:

<table>
<thead>
<tr>
<th>Employer</th>
<th>Graduates</th>
<th>Undergraduates</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Arizona</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Federal</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Other University</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>State</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Private/NGO</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Graduate School</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Unknown</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

10. **Describe** company, corporation or industry interactions with your unit this past year including advisory boards, individual faculty/industry research projects, and classroom or curricular participation.

Bureau of Land Management’s Resource Advisory Council

- OX Ranch
- Raytheon
- Tucson Electric Power Company
- Science Commission of Pima County
- National Advanced Fire and Resource Institute
- JoNah – Start-up sequencing company
- TEVA – Hungarian Pharmaceutical Co.
- Sierrita Natural Gas LLC
- Hudbay Resources
- ImStar Therapeutics
- Leidos Biomedical Inc.
- GenSpera Inc.
- Salt River Project
- ECODIT
E. List faculty awards/recognitions (1 min presentation + 1 min discussion):

- Gregg Garfin – Co-Convening Lead Author Southwest Chapter of the Third National Climate Assess.
- John Koprowski – Elected Fellow The Wildlife Society and Professional of the Year AZ Chapter
- Larry Howery – Elected 2nd VP International Society for Range Management (SRM President in 2017)
- Mitch McClaran – Elected Fellow Society for Range Management
- Don Falk – Selected Fellow UA Udall Center for Studies in Public Policy
- Dave Breshears – Named Walter Murdoch Distinguished Visiting Collaborator
- Don Falk and Dave Christianson - each received VPR Seed Grants
- Don Falk and Randy Gimblett – each received IE Faculty Exploratory Research Grants
- Laura Lopez Hoffman – USGS Powell Center Fellow
- Craig Wissler – Chair, City of Tucson Planning Commission
- Barron Orr – Selected for a Marie Curie Actions International Fellowship
- Barron Orr – Selected Member UNCCD Science-Policy Interface Panel
- Scott Bonar – Named Professional of the Year by the AZ-NM Chapter of the American Fisheries Soc.
- Chuck Hutchinson – Receives Martha Maiden Award from the Federation of Earth Science Partners