Status and Demand for Soil Science Undergraduate Programs

Dr. Susan Edinger Marshall
Rangeland Resources and Wildland Soils
Humboldt State University, CA
sem11@humboldt.edu
(707)826-4064
Status and Demand for Soil Science Undergraduate Programs

1. What’s our motivation?
2. How many students are currently enrolled in soil science and affiliated programs?
3. What is the demand for entry level soil scientists?
4. Ideas for survival
What’s our motivation?

• Retiring faculty are not being replaced.
• Administrators seek to eliminate small programs with low enrollments.
• We won’t give up!
• Our graduates are doing important work in the agricultural, environmental and engineering sectors of society!
What’s our motivation?

- Jobs are being vacated by baby-boomer retirements.
How many students? Methodology

• August 2005, contact list acquired from SSSA

• Contact people on list by phone and e-mail

• Contacts included 1862 & 1890 Land Grant Universities, State Universities and others
How many students? Methodology

Questions:

• Do you have a “soil science undergraduate major? If not, what is the most closely allied major or course of study?

• How many students are currently enrolled in the above program?

• On average, what would be the maximum number of units (or courses) in soil science that these students take?

• Any other reflections on the status of undergraduate programs in soil science would be appreciated.
Results – Difficulties in interpretation

- Few majors are named “Soil Science” any more.
- Most soil science education comes under the title of Environmental Sciences, Agronomy, or Plant and Soil Sciences.
- Other programs emphasize waste management, Land use planning, land rehabilitation, forest and range soils, geomorphology, etc.
Currently Enrolled Soils and Affiliated Undergraduate Majors
Currently Enrolled Soils Majors
(estimate of OPM Qual. Soil Scientists)
Further Observations

- Responses from about 85 institutions
- Potential Soil Conservationists (GS-457) currently enrolled – about 2,000 (1,880 U.S. only)
- Potential Soil Scientists (GS-470) currently enrolled – about 600
What about non land grants?

University of California vs. California State Universities
(Undergraduate Enrollments in Soils or Affiliated majors)

- University of California (Davis, Berkeley, Riverside)
- California State University (Cal Poly San Luis Obispo and Chico, Humboldt, Fresno and Chico)
What is the demand for entry level soil scientists?

• U.S Bureau of Labor Statistics predicts lower than average hiring (3 to 9%) for soil scientists and conservation scientists.

• NSF data indicate that in 2002 there were 3,870 soil conservationists and 1,311 soil scientists in federal service.
What is the demand for entry level soil scientists?

USDA Forest Service (pers. comm. John Kusano)

<table>
<thead>
<tr>
<th>Job</th>
<th>Series</th>
<th>Total Perm.</th>
<th>Age 55+</th>
<th>% Total</th>
<th>Attrition Projections</th>
<th>Hiring Projections</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 year</td>
<td>5 years</td>
</tr>
<tr>
<td>Range</td>
<td>454</td>
<td>380</td>
<td>85</td>
<td>17</td>
<td>12</td>
<td>60</td>
</tr>
<tr>
<td>Forestry</td>
<td>460</td>
<td>2460</td>
<td>696</td>
<td>23</td>
<td>119</td>
<td>603</td>
</tr>
<tr>
<td>Soil Science</td>
<td>470</td>
<td>172</td>
<td>39</td>
<td>26</td>
<td>7</td>
<td>33</td>
</tr>
<tr>
<td>Hydrology</td>
<td>1315</td>
<td>333</td>
<td>79</td>
<td>20</td>
<td>10</td>
<td>48</td>
</tr>
</tbody>
</table>
What is the demand for entry level soil scientists?

Bureau of Land Management (pers. comm. Colin Voight)

- BLM will likely hire only 5 to 10 soil scientists in the next five years (without further authorizing legislation).
- Most are working on O&C timber lands in Oregon.
- Need field skills, policy savvy and ability to work with both agronomic and engineering colleagues.
What is the demand for entry level soil scientists? MOSTLY from NRCS

- Assuming that about 70% of NRCS employees are soil scientists, soil conservationists or soil technicians, the following map shows the eligible soils-related retirees by 9/30/08 according to NRCS Set. 18, 2003 Workforce Plan.
NRCS demand for soils professionals?

Est. soils-related NRCS retirees - by 2008

(Number of soils and affiliated students are in parenthesis)
Summary of Demand

- NRCS anticipating about 150 Soil Conservationists and 45 Soil Scientists retiring each year for the next five years.
- Divide currently enrolled students by 4 (years in college?), we will be graduating about 430 Soil Conservationists and 146 Soil Scientists each year.
Conclusions

• Federal service alone could hire about 1/3 of anticipated graduates.
Conclusions

Where else will B.S. level soils students go?

• Graduate School!
• Environmental Consulting firms
• Agricultural Consulting firms
• Back to the farm?
• Teacher credential programs
Ideas for survival?

Integrate soils courses with other courses in service-type projects

- road decommissioning in community forest (soil physics)
- basic resources inventory for land trust (pedology, GIS, GPS courses)
- land application of whey at local cheese factory (soil microbiology)
Ideas for survival?

We don’t get as many majors because they don’t learn about it soon enough!

- Recruit at community colleges
- Participate in Freshman and transfer Interest Groups on campus (FIGs and TRIGs)
- Web site development and brochures
- Any other advice is very welcome!
Dr. Susan Edinger Marshall
Rangeland Resources and Wildland Soils
Humboldt State University, CA
sem11@humboldt.edu
(707)826-4064

P.S. We’re hiring a temporary faculty to teach Wetlands, Forest & Range and Agroforestry
www.humboldt.edu/~rrws/