Measures of Success: Survey of Graduates from Oregon State University's Department of Fisheries and Wildlife, 2009—2011



Fish and Wildlife Club trip to Zion and Bryce Canyon National Parks, Spring 2013

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INTRODUCTION

The Oregon State University (OSU) Department of Fisheries and Wildlife Survey of Alumni graduating from 2009 to 2011 was conducted by the Survey Research Center (SRC) at OSU from April through July 2012. The goal of the survey was to evaluate the Fisheries and Wildlife undergraduate and graduate programs for the past three years. Specifically, we wished to obtain information on employment and our graduates' perception of the value of their OSU education. We also wanted information on the value of internships, specialization, and capstone class in the undergraduate curriculum. This information will be used to recruit students and to inform curriculum changes in the future.

SAMPLING DESIGN AND OPERATION

We used the same survey we developed for the 1998-2002, 2003-2005 and 2006-2008 surveys with a few modifications in the order of questions and additional questions about online degrees which have been offered through the Department since 2009. According to OSU Foundation records, 250 domestic undergraduate and graduate students obtained degrees from the Department between 2009 and 2011. Four graduates were removed from the survey mailing list due to either confidential contact information or a non-domestic mailing address. The 2009-2011 alumni survey was implemented differently than in past years. First, an online instrument was created as an additional mode of data collection. Second, we used a color photo on the cover page of the paper survey. Third, email addresses (when available) were used for survey participation recruitment. For mailings, graduates were placed in either the Email treatment group (n=76) or the Mail treatment group (n=174).

A pre-notification email was sent to the Email group on 30 April 2012. Another email containing the link to the online survey followed on 2 May. A follow-up mailing including a paper survey and a cover letter printed on department letterhead with the link to the online survey was sent on 15 May to all non-respondents through the U.S. Postal Service. Another follow-up recruitment mailing was sent on 31 May. Due to a low response rate, the Email group received an additional email message on 13 June. The pre-notification letter was printed on department letterhead and mailed through the U.S. Postal Service to the 174 graduates in the Mail group on 26 April 2012. On 1 May the first survey mailing was sent to this group with a follow-up survey mailing on 15 May. An additional survey mailing was sent on 31 May to all non-respondents. Copies of the pre-notification letter, questionnaire, and other cover letters are available from the department head.

RESULTS

Of the 250 alumni who were sent surveys, 94 returned the survey; 37 surveys were returned undeliverable as addressed, and 1 refused to respond. Thus, we had an adjusted response rate of 44%. Of the 94 graduates, 51 (54%) earned Bachelor of Science degrees (B.S), 10 (11%) earned a graduate certificate, 23 (25%) earned Masters of Science degrees (M.S.) and 10 (11%) earned Doctor of Philosophy degrees (Ph.D.).

Employment

Of the 94 graduates who responded to the survey, 87 (93%) were currently working for pay. Of those working for pay, 40% were permanently employed, 89% were working full time, and 83% were working in a natural resources field (e.g., fish, wildlife, forestry, range, or water resources).

Employment status in either the natural resources or non-natural resources profession at the time of survey was as follows: 90% of graduates with a B.S. were employed, all respondents with a graduate certificate were employed, and 90% and 96% of M.S. and Ph.D. graduates were employed, respectively (Fig. 1a). Most employment was in the natural resources professions for all degree types and the certificate (Fig. 1b).

All graduates with a M.S. were working for pay and employed in the natural resources profession, followed by 89% of those with Ph.D.s, 72% of those who earned a B.S., and 70% of those with graduate certificates. Permanent employment for all groups regardless of profession was reported as

follows: 55% for graduates with a M.S., 40% for those with graduate certificates, 37% for B.S. graduates and 22% for those with a Ph.D. (Fig 1c).

Linking the data described above (and shown in Figure 1a-1c) to individual respondents, resulted in 85

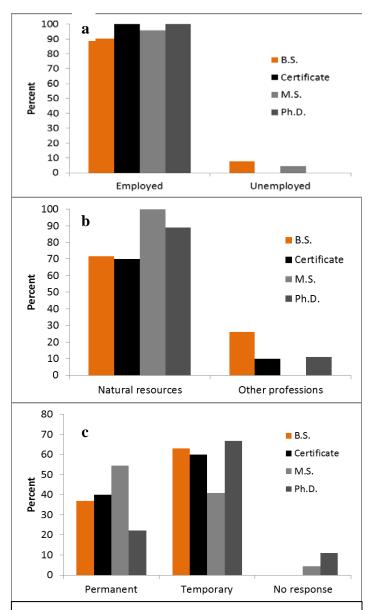


Figure 1. Success of OSU Fisheries and Wildlife graduates in finding or maintaining employment (a), employment in natural resources versus other professions (b), and permanent versus temporary employment (c) by degree for students graduating between 2009 and 2011.

complete survey responses (see Appendix A). The percentage of individuals working for pay in permanent positions in the natural resources field based on education level was 19% for a B.S., 30% for graduate certificates, 37% for a M.S., and 63% for a Ph.D. The percentage of individuals working for pay in temporary positions in the natural resources field based on education level was 56% for a B.S., 40% for graduate certificates, 53% for a M.S., and 12% for a Ph.D. (see Figure 2).

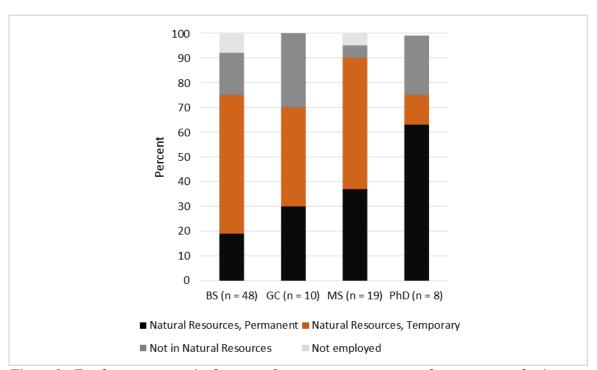


Figure 2. Employment status in the natural resources or non-natural resources profession up to three years post-graduation for Oregon State Department of Fisheries and Wildlife graduates who earned degrees or certificates from 2009 to 2011.

A total of 15 alumni (7 certificates and 8 B.S. degrees) responded that they earned their degree/certificate through Ecampus (online). All 7 Ecampus certificate recipients were working for pay; 4 had permanent positions. Out of 8 online B.S. degree graduates, 5 were in permanent, paying positions. Of the 46 on campus graduates, there were 3 certificate recipients and all were

permanently employed. Out of the 43 remaining B.S. graduates, 40 stated they were working for pay, and of these, 16 were in permanent positions and 24 were in temporary positions.

The likelihood of being permanently employed appeared to increase over time with a B.S. Less than half of the students graduating in 2010 and a quarter of those graduating in 2011 were permanently employed (Fig. 3), but 64% of our B.S. graduates from 2009 were permanently employed.

Income level of respondents depended on education level; graduates with more advanced degrees/certificates earned more income (Fig. 4). Annual income ranged from under \$10,000 to

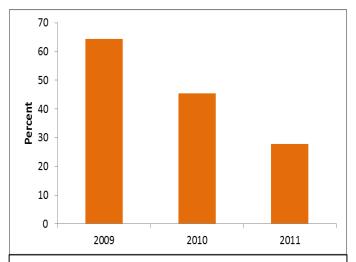


Figure 3. Percent of OSU Department of Fisheries and Wildlife BS degree graduates who were permanently employed, for graduation years 2009 to 2011 (n=51).

greater than \$70,000 for graduates with a B.S; the most frequently occurring salary range (modal income) was \$10,000 to \$19,900. The salary range for certificate recipients was \$10,000 to \$59,900 with a modal income of \$30,000 to \$30,999. Graduates with a M.S. earned \$20,000 to greater than \$70,000 with a modal income of \$30,000 to \$39,000, and Ph.D. graduates earned \$20,000 to \$69,900 with a modal income of \$40,000 to \$49,000.

Place of employment for our graduates who responded to our survey depended on their education level. Over half of the recipients of B.S. degrees, the certificate, or M.S. degrees obtained

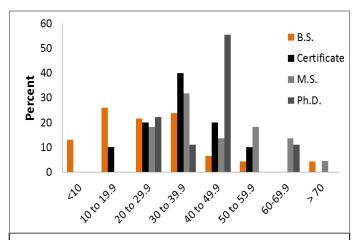


Figure 4. Annual income (in \$1,000s) of OSU Fisheries and Wildlife graduates by degree for students graduating between 2009 and 2011.

employment with a state or federal agency (Table 1). Oregon Department of Fish and Wildlife employed 21% of our B.S., 22% of our certificate, 14% of our M.S., and 13% or our Ph.D. recipients. State agencies outside of Oregon employed 44% of the certificate recipients. OSU and other universities employed 18%, 23%, and 63% of our B.S., M.S., and Ph.D. graduates, but none of our certificate recipients. Nonprofit organizations employed 6%, 22%, and 9% of our B.S., certificate, and M.S. recipients, respectively, but none of our Ph.D. graduates. Consulting firms employed 6% and 23% of our B.S. and M.S. graduates, respectively, but none of graduate certificate or Ph.Ds.

Bachelor of Science Curriculum

We sought to determine how graduates perceived components of the internship, specialization, and capstone class (which replaced our group problem solving class from the previous surveys) from the undergraduate curriculum. Of the 51 former undergraduates who returned the survey, most thought that each of the components was very or somewhat valuable (Fig. 5).

Positive perceptions were highest for the internship requirement: for on campus B.S. graduates, 95% thought internships were very (81%) or somewhat (14%) valuable. The self-designed specialization was viewed as very (42%) or somewhat (32%) valuable, while only 5% responded that the requirement was not at all valuable. The capstone class requirement was viewed as very (35%) or somewhat (44%) valuable. E-campus B.S. graduates (n = 8) respondents thought that the internship was very (75%) to somewhat (25%) valuable, the specialization was very (13%) to somewhat (38%) valuable, and the capstone class was very (25%) to somewhat (38%) valuable.

Table 1. Percent of working OSU Fisheries and Wildlife alumni who graduated between 2009 and 2011(n=94) by employer and degree/certificate earned, one to three years postgraduation.

		Degree/Certificate						
Agency	B.S.	Certificate	M.S.	Ph.D.				
Oregon Department of Fish and Wildlife	21.2	22.2	13.6	12.5				
Oregon State University	9.1	0	18.2	12.5				
Other college or university	9.1	0	4.5	50.0				
Other Oregon state agency	0	0	0	0				
Other state agency	0	44.4	0	0				
U.S. Forest Service	9.1	0	4.5	0				
U.S. Fish and Wildlife Service	3	0	9.1	0				
Bureau of Land Management	3	0	0	0				
National Marine Fisheries Service	0	11.1	0	0				
Other federal agency	12.1	0	13.6	0				
Non-profit organization	6.1	22.2	9.1	0				
Consulting	6.1	0	22.7	0				
Private firm	12.1	0	0	0				
Native American tribes	6.1	0	0	12.5				
Self-employed	3.0	0	0	0				
Other	0	0	4.5	12.5				

We sought to determine B.S. graduates' perceptions of how well OSU prepared them in knowledge, skills, and abilities (KSAs) typically used by natural resources professionals. We also wanted to know how often our graduates needed these KSAs in their current jobs. With the exception of plant ecology, the majority of respondents stated that the KSAs identified in our survey are sometimes or often used in current jobs (see Appendix B).

The following KSAs were reported as being used often (≥65% of the time) by respondents in their current jobs and that Oregon State does a good to excellent job of preparing them. These areas and the percentage of times they received a good to excellent rating

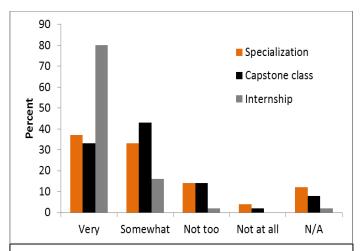


Figure 5. Perceptions of OSU Fisheries and Wildlife B.S. graduates (2009-2011) regarding the value of undergraduate curriculum components one to three years post-graduation.

include: interpersonal communications (67%), team work and leadership (78%), computers (73%), critical thinking (85%), and interpretation of information (81%), and data collection (72%). Over 50% of responses indicated that respondents received only fair or poor preparation in three KSAs that were sometimes or often used in their jobs. These three areas, all in the human dimensions aspects of fish and wildlife work, were conflict resolution, public policy, and laws and regulations (see Appendix B).

Distance and Continuing Education

Online classes are becoming an increasingly common method by which college students complete degree requirements. One of the goals of the Department of Fisheries and Wildlife is for our graduates to be life-long learners. The department has made substantial investments in distance education (DE) over the past 15 years as a means of increasing access to our educational programs throughout the state and country, and to provide flexibility to student schedules. We began offering our B.S. degree and fisheries management graduate certificate online in 2009; in this survey, 16% of our B.S. graduates and 70% of our graduate certificate students responded that they completed their degree/certificate online. We have developed 37 undergraduate and 16 graduate DE classes in web-delivery formats. Fifty-eight percent of respondents (78%, 90%, 13%, and 30% of B.S., certificate, M.S., and PhD students, respectively) had taken at least one DE class from the department and over 58% of our students took at least 1 class online.

With respect to continuing education, 37% of the respondents to our survey are planning to, or have already continued their education since graduating from the department; 32% were undecided, and 30% had no plans to continue their education. Of the 24 respondents who were planning to or were already continuing their education, 66% were planning to or were currently

pursuing a M.S.; 26% a Ph.D.; and 3%, each were planning to or were currently pursuing a second B.S., graduate certificate, or professional degree (e.g., Law, Veterinary Medicine, Medicine, etc.), respectively.

Alumni Relations

We want to understand how alumni from our department keep in touch with the department after graduating. Sixty-eight percent of the graduates (n = 64) reported that they receive the department's annual newsletter, *News and Views*. Of these 64 respondents, 93% stated that it was a valuable source of information regarding the department. Fifty-one percent of respondents had visited the department's website within the past 6 months. Only 14% had subscribed to the department's alumni list serve. Since the last survey, the department has established and regularly posts to two Facebook pages: OSU Fisheries and Wildlife, and Fisheries and Wildlife Ecampus. Eighty percent (n = 75) of our respondents reported they have a Facebook account and 52% of those have "liked" one or both of our Facebook pages.

DISCUSSION

Our survey of Fisheries and Wildlife majors from the graduating classes of 2009 to 2011 provides us with valuable information on the success of our academic programs. Graduates are generally successful in either maintaining or obtaining employment. Ninety-three percent of all graduates who responded to the survey were employed in some status in either the natural resources (77%) or non-natural resources (16%) profession three years after graduating from OSU, with the remaining 7% unemployed.

Although most graduates were employed in natural resources professions, those with a graduate certificate, M.S., or Ph.D. were most successful at either obtaining or maintaining employment in their chosen professions. Although an M.S. has always increased the likelihood of permanent employment in the natural resources professions, data on the three graduating classes suggest that the likelihood of employment for the B.S. graduate increases with time since graduation. Thus, students who persist in searching for jobs and who have a series of temporary jobs are likely to find permanent employment over time. Developing employment histories in the natural resources field and developing contacts among natural resource professionals will continue to be a very important role of our internship program.

Most employed graduates are being paid consistent with 2010 salary rates reported by the Bureau of Labor Statistics- Pacific region (http://www.bls.gov/ncs/ocs/ncs_pac2010.htm). Entry-level salaries for M.S. and Ph.D. degree holders were \$20,000 more than those for B.S. degrees. Survey respondents included temporary and part-time employment (11%). Those with permanent positions had substantially higher salaries; most respondents earning less than \$19,900 were employed temporarily or part-time.

Although the sample size was small, the 2009-2011 survey provides some information about our Fisheries Management Graduate Certificate. Applicants to this program are required to have two years of professional experience in the NR field to enter the program; some students in the certificate program may be working in the NR profession already, and seeking to advance their careers. Graduate certificates are becoming common throughout the country in other fields,

but OSU may be the only institution offering a certificate for the fisheries profession. Graduate certificates may provide B.S.-degree students an opportunity to experience graduate coursework, improve their GPA, or to meet professional development or professional certification requirements for career advancement.

Our employment and salary survey represents a snapshot in a dynamic job market. The graduating classes represented by these data were seeking employment during a period of poor economic growth compared to our previous surveys. However, respondents were more successful at either obtaining or maintaining employment than we anticipated; responses were similar to previous surveys (see Appendix C). These higher-than-expected employment statistics may be due to the large pulse of retirements that most state and federal employers are experiencing, which may further increase the likelihood of employment in the natural resources fields.

Our undergraduate degree program appears to be well designed for producing successful graduates (see Appendix D). The current degree program has three innovative features: internships, a capstone sequence, and a self-designed specialization. Over 70% of the graduates from this program had somewhat or very positive perceptions regarding the value of each of these curriculum components. Internships are especially well received. Most respondents believed that OSU had done a good or excellent job in teaching them most KSAs needed in their current positions, especially the frequently used KSAs. These skill areas are likely to be important and transferable to any career our graduates may pursue.

Over 50% of responses indicated that respondents received only fair or poor preparation in three KSAs that were sometimes or often used in their jobs. These three areas, all in the human dimensions aspects of fish and wildlife work, were conflict resolution, public policy, and laws and regulations. Each of these areas was covered in our human dimensions requirements, where students could select three courses from a list of over 30 offered. These results suggest we should encourage students to take classes in conflict resolution, policy, and laws and regulations when selecting courses in the human dimensions or specialization components of our curriculum.

RECOMMENDATIONS

- Because the employment status of graduates either before or during their degree program can influence the ability to either find or maintain employment, additional survey questions should be added. Graduate certificate applicants may be employed in the natural resources field prior to or during degree program, giving them an advantage in obtaining or maintaining employment afterward. Masters students may be participating in internship programs, such as "Pathways" during their degree program, with a high likelihood of obtaining a permanent position upon graduation.
- Depending on their perspective, post-doctoral students may respond they are working for colleges/universities in permanent positions; others may respond that their positions are temporary. A question should be added to the survey to help people identify the nature of their position. Within agencies and some universities, employees on fixed-term appointments might be confused as to how to designate their position.

- An employer's perception of KSAs of their employee may be different from the graduates' perspective. Employers could be contacted with follow up questions as to how well their employees are prepared for the natural resources profession.
- Graduates surveyed initially in this report and past reports could be resurveyed 5- 10 years later to learn how their FW degrees have influenced employment or professional careers in the long term.
- Sample sizes were too small to make a meaningful comparison between on campus and Ecampus students. As more Ecampus students graduate it will become increasingly important to evaluate the Ecampus program in future surveys; additional questions may be needed.
- Post baccalaureate and double degree graduates are two more graduate degree types that should be included in the survey.
- It is possible that those with employment are more likely to answer the surveys, thereby skewing the results a positive outcome. This can be remedied, in part, by increasing sample size. In addition to offering the online survey, the Department of Fisheries and Wildlife is working on ways to advertise the graduate survey in order to get more to respond.

ACKNOWLEDGMENTS

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Appendix A. 2009-2011 Department of Fisheries and Wildlife graduate survey data for categories 1) employed, 2) permanent,

3) NR profession.

Degree Type/	Total # valid			% of			% of	Working in Natural		% of
Certificate	responses	Employed	#	total	Permanent/temp	#	total	Resources Profession	#	working
	Bachelor of 48				Permanent	15	31%	Yes	9	19%
D11		Yes	44	92%	1 Critianent	13	3170	No	6	13%
Science		1 65	44	92/0	Т	29	600/	Yes	27	56%
Science					Temporary	29	60%	No	2	4%
		No	4	8%						
		10 Yes 10			Damesanant	6	600/	Yes	3	30%
G 1	Graduate 10		10	1000/	Permanent		60%	No	3	30%
Certificate			100%	Temporary	4	40%	Yes	4	40%	
Certificate					4		No	0	0%	
		No	0	0%						
	V 10		D	8	420/	Yes	7	37%		
		10	95%	Permanent	8	42%	No	1	5%	
Masters of Science	Masters of 19	Yes 18		T	T 10	520/	Yes	10	53%	
Science					Temporary	10	53%	No	0	0%
		No	1	5%						
		Yes 8	<u> </u>	D		750/	Yes	5	63%	
			0	100%	Permanent	6	75%	No	1	13%
Doctorate	8		8				250/	Yes	1	13%
			Temporary		2	25%	No	1	13%	
		No	0	0%						

^{*3} B.S., 4 M.S., and 2 Ph.D. graduates did not respond to all linked questions in the graduate survey; subsequently their responses were removed.

Appendix B. Perception (%) of respondents graduating with a B.S. degree between 2009 and 2011 on how often different knowledge, skills, and abilities (KSAs) are used in their current job and how well Oregon State University prepared them in these areas (n = 51).

	Frequency of use in current job				OSU	J prepara	ation		
Knowledge, skills, and abilities	Never	Sometimes	Often	No response	Excellent	Good	Fair	Poor	No response ^a
Technical writing	20	49	28	4	40	37	24	0	0
Public speaking	35	33	28	4	20	47	30	3	0
Interpersonal communication	0	8	90	2	30	37	27	6	2
Team work and leadership	2	16	80	2	39	39	18	4	0
Conflict resolution	8	45	45	2	13	33	40	13	0
Computers	8	20	71	2	22	51	20	2	4
Statistics	39	47	10	4	31	48	21	0	0
Mathematical concepts or modeling	49	43	4	4	25	67	8	0	0
Critical thinking	6	16	77	2	35	50	13	2	0
Interpretation of information	8	20	71	2	44	37	17	2	0
Synthesis of information	14	35	49	2	42	35	21	0	2
Data sampling and design	37	18	43	2	36	45	19	0	0
Data collection	22	12	65	2	26	46	26	3	0
Data management	20	29	47	4	11	61	21	8	0

Appendix B. Continued.

	Fı	requency of use	e in curre	nt job	OSU preparation				
Knowledge, skills, and abilities	Never	Sometimes	Often	No response	Excellent	Good	Fair	Poor	No response ^a
Fish ecology	39	24	35	2	37	43	17	3	0
Wildlife ecology	33	28	37	2	58	39	3	0	0
Plant ecology	51	39	8	2	17	39	35	9	0
Population management	37	33	28	2	45	39	16	0	0
Habitat management	43	28	26	4	37	41	22	0	0
Ecosystem management	41	35	20	4	25	57	14	4	0
Fish identification	43	16	40	2	48	22	26	4	0
Wildlife identification	26	33	37	4	54	34	6	6	0
Plant identification	45	38	14	2	21	42	17	21	0
Public policy	29	51	16	4	24	21	35	18	3
Laws and regulations	24	45	28	4	17	26	34	23	0
People management	14	41	41	4	10	50	33	7	0

^a Includes those who had no basis for opinion.

Appendix C. Comparison of Oregon State University, Department of Fisheries and Wildlife graduate survey results among surveys, 1998 to 2011.

	2009-2011	2006-2008	2005-2003	1998-2002
Population	250	197	230	365
Responses	94	115	114	177
Adjusted response rate (%)	44	64	54	54
Employed (%) B.S.	90	96	86	88
Certificate	100	N/A	N/A	N/A
M.S.	96	100	86	91
Ph.D.	100	100	96	100
Permanent job (%) B.S.	37	57	59	
Certificate	40	N/A	N/A	N/A
M.S.	55	72	64	
Ph.D.	22	56	57	
Natural resources job (%)				
B.S.	72	78	70	78
Certificate	90	N/A	N/A	N/A
M.S.	100	89	90	90
Ph.D.	89	100	70	93
Permanent employment after				
3 years (%) B.S.	64	66	82	67
Modal income (\$) B.S.	10,000-19,900	20,000-29,000	10,000-19,900	20,000-29,000
Certificate	30,000-39,000	N/A	N/A	N/A
M.S.	30,000-39,000	40,000-49,000	30,000-49,000	30,000-39,000
Ph.D.	40,000-49,000	40,000-49,000	30,000-39,000	50,000-59,000
Curriculum components				
very or somewhat useful (%)				
Internship	96	89	87	73
Specialization	70	82	77	73
Capstone/Group Problem				
Solving	76	73	70	68
≥1 class online (%)	58	42	33	N/A
Planning to or have				
continued education (%)	37	34	34	N/A

Appendix D. Comparison among surveys for perception (%) of respondents graduating with a B.S. degree between 2003 and 2011 on how often different knowledge, skills, and abilities (KSAs) are used in their current job and how well Oregon State University prepared them in these areas. Use = percent of responses indicating the KSA was used "often". Prepared = percent of responses indicating that OSU did a "good" or "excellent" job of preparing them in this area.

	2009-2011		2006-2008		2005-2003	
Knowledge, skills and abilities	Use	Prepared	Use	Prepared	Use	Prepared
Technical writing	28	77	45	78	51	83
Public speaking	28	67	23	68	18	64
Interpersonal communication	90	67	96	64	87	57
Team work and leadership	80	78	86	79	74	61
Conflict resolution	45	46	36	43	35	40
Computers	71	73	89	82	82	74
Statistics	10	79	31	73	34	69
Mathematical concepts or modeling	4	92	20	83	18	57
Critical thinking	77	85	78	85	76	79
Interpretation of information	71	81	78	84	76	80
Synthesis of information	49	77	69	81	69	74
Sampling, data collection and management ¹	52	67	66	79	68	67
Ecological concepts ²	27	78	31	74	31	62
Management concepts ³	25	81	28	82	23	74
Plant and animal identification ⁴	30	74	29	66	31	64
Public policy	16	25	29	39	24	33
Laws and regulations	28	43	36	35	30	31
People management	41	60	47	41	37	33

¹ Mean of responses for data sampling and design, data collection and data management.

² Mean of responses for fish ecology, wildlife ecology and plant ecology.

³ Mean of responses for population management, habitat management and ecosystem management.

⁴ Mean of responses for fish identification, wildlife identification and plant identification.