

Workforce succession and training needs

among National Park Service program managers

By William E. Hammitt, Lisa K. Machnik, Ellen D. Rodgers, and Brett A. Wright

Workforce succession—the dynamic change that occurs with the personnel and management of any institution—is an ongoing process that varies in both character and rate. Like natural succession, certain events and forces can initiate more dramatic types and rates of change in workforce succession than is normal. Retirement can be such an event and force. As the American population ages, so does its workforce. The baby boomer generation, born between 1946 and 1964, is preparing to retire and agencies and institutions must be concerned with who will replace those leaving the workforce. The National Park Service (NPS) is not immune to this successional event: it too must be cognizant of the dynamics of its workforce relative to the recruitment, training, and transfer of bureau knowledge during periods of employee and management succession. During employee succession certain questions become more pertinent: From what ranks will replacements come? Will they come from within the bureau, or should they be recruited from other institutions? What competencies are needed within the new workforce? What training will be needed in order to step into existing positions? How will bureau “heritage and tradition” be maintained as large numbers of senior personnel exit the workforce? Basically, what will be walking out of the doors of the National Park Service and what should or must be walking through these doors within the next 5–10 years so that competency erosion does not occur?

Our research addresses some of these questions as we investigated the impending retirement/workforce succession of natural resource program managers within the National Park Service. We examined employee perceptions of how prepared they are to perform specific competencies, which the National Park Service identified as pertinent to senior-level job classifications (pay grade GS-12 and higher).

The situation

The Natural Resources Stewardship Career Field has been in existence only since 1995 and we were unable to obtain data for retirement rates for the period 1995–2005. However, in a study of federal employee retirement projections for 1999 through 2006, the United States General Accounting Office estimated that approximately 31% of employees of federal agencies became eligible for retirement in 1998. By 2006, according to the report, approximately half of the eligible employees will have retired; a number equivalent to 15% of the 1998 federal agency workforce in question (United States General Accounting Office 2001). This estimate translates into resource management agencies such as the National Park Service facing the loss of experienced personnel, which could present a knowledge drain, potentially leaving these agencies to manage and protect many of the nation’s most treasured environmental and natural resources with insufficient numbers of experienced and prepared workers.

Nowack (1994) concludes and we concur that agencies undergoing retirement-related change need to be innovative in their approach toward employee preparation and development. The tradition of *replacement planning* often examines specific positions and identifies strengths and weaknesses, but lacks a comprehensive analysis of knowledge sharing and advancement. By contrast, *succession planning* is more comprehensive and open, with increased identification of critical competencies. As stated in Weston (1996), “If you’ve done some succession planning, you’ve done serious thinking about values and management processes that you believe are core to your organization.” Still more comprehensive is *succession development*, where linkages are further developed, performance evaluated, and identification and ongoing monitoring of development/training needs are emphasized (Nowack 1994). Both succession planning

How will bureau “heritage and tradition” be maintained as large numbers of senior personnel exit the workforce?

and succession development contend that developing the talent pool of an agency, sharing knowledge and skills, and consciously and continuously identifying potential training needs will ultimately best serve the mission of an agency. However, at the core of succession planning and development is performance assessment and training development.

National Park Service response

In 1995, the U.S. National Park Service adopted the *NPS Employee Training and Development Strategy*. This strategy was designed to support the intent of the Government Performance and Results Act in that all federal agencies were required to establish clear goals and measure progress toward those goals through intensive performance evaluation. As a result, the National Park Service consolidated approximately 225 occupational specialties into 17 distinct career fields and established a list of “essential” competencies for each. From this exercise came a three-fold training mission statement in 2001, describing the National Park Service’s commitment to build and maintain an effective, competency-based system of employee performance evaluation.

Implementing a system to track training effectiveness and developing “an agile workforce that is capable of responding to changing organizational and personnel needs” requires systematic research into issues such as employee retirement and workforce succession (National Park Service 2003). Therefore, the National Park Service initiated a research contract in 2002 (Rodgers 2003) to evaluate the preparation of natural resource management personnel to address prescribed competencies and the need for employee training and development programs. This article highlights findings from the 2002 study, which addresses some of the job performance/competency concerns of NPS senior employees, and further analyzes differences of perceived preparedness among upper-level program managers (i.e., GS-12, GS-13, and GS-14+). The analysis was restricted to GS-12 and higher-level positions because these positions are more multidisciplinary, requiring specific managerial and leadership competencies, than GS-11 and lower-level positions.

Methods

Sample

Participants were drawn from a larger pool of individuals that participated in a needs assessment in 2002 (Rodgers 2003); this study included all classifications of employees in the NPS Natural Resources Stewardship Career Field (sample size [n] = 1,243 employees). For our analysis, we used a sub-sample (192 employees) of Advanced Level Natural Resources Program Managers

(hereafter referred to as “program managers”) closest to retirement. These employees oversee a comprehensive range of activities, including environmental management and natural resources planning within the Natural Resources Stewardship Career Field.

A panel of NPS experts in natural resource management prescribed seven categories of competencies, (i.e., *mega competencies*) for employees in the Natural Resources Stewardship Career Field. Thirty-four *specific competencies* (i.e., knowledge, skills, and abilities) were then prescribed by this same panel for the seven mega competencies of program managers (table 1, pages 74–75).

Survey instrument

We used mail surveys to collect data regarding the competencies prescribed by the National Park Service. Respondents recorded perceptions of their preparedness (at the time of completing the survey) to perform each specific competency task using a seven-point rating scale, ranging from “1 = unprepared” to “7 = fully competent/prepared.” Self-reports of employee perceptions of preparedness were used instead of more objective measures (e.g., performance results) because more than 1,000 NPS employees were surveyed in the original 2002 study.

Data collection and response rates

We generated mailing lists for the program managers based on information contained in the Federal Payroll and Personnel System (FPPS). Employees received a cover letter, questionnaire, and self-addressed business reply envelope during summer 2002. Persons who had not responded to the initial mailing received a follow-up letter and second questionnaire approximately four weeks later, requesting the completion and return of the questionnaire as soon as possible. We addressed concerns about confidentiality by assuring that all data would be reported in aggregate, never attributed to any individual. The effective response rate for program managers was 60.9% ($n = 117$).

Data analysis

We analyzed the perceived levels of preparedness to perform job competencies by computing average (mean) ratings and variation in ratings (standard deviations) for each of the 34 specific competencies. We then compared the competency ratings (means) among three sub-groups of program managers, based on GS grade level (i.e., GS-12, GS-13, and GS-14+). We tested the differences in preparedness (means among the three GS grade levels) using analysis of variance (ANOVA).



Verification of preparation ratings

To verify the perceived preparedness ratings for the NPS-generated competencies, we conducted three regional, focus-group interviews with 23 NPS professionals from a total of 11 different national park units. The Washington Office of the National Park Service identified potential interviewees from a representative sample of small and large parks in the West Coast, Rocky Mountains, and Mid-Atlantic regions. The purpose of the focus-group interviews was to validate the perceived preparedness ratings for accuracy and meaningfulness in terms of potential training needs (for additional detail, see Wright et al. 2005).

Results and discussion

Survey respondent characteristics

More than three-quarters (78.4%) of respondents were male, and 93% were white. They ranged in age from 36 to 62 (average = 48.7 years). Respondents had completed an average of 17.5 years of education, with 95.7% holding at least one advanced degree. The average number of years of NPS employment was 17.9, with seven years averaged in the current position. Nearly half were classified as GS-12 (47.8%), followed by GS-13 (31.2%) and GS-14+ (20.0%).

Table 1. Average preparedness ratings of NPS program managers for 34 natural resource management competencies

No.	Competency Description	Average ¹ Standard	Deviation ²
23.	Knowledge/ability recognized by agency/academic peers as leading in the natural resource field.	5.83	1.44
8.	Advanced knowledge of mission, goals, guidelines, policies of NPS, as well as mission/purpose of other agencies, groups, and private industry.	5.75	1.16
9.	Ability to develop innovative solutions, consistent with NPS policy, to complex situations.	5.51	1.06
13.	Ability to provide sound advice to upper-level managers on stewardship/actions at a landscape-level or Service-wide scale.	5.44	1.36
3.	Ability to integrate information across discipline, recognize patterns/draw conclusions, and adapt the results in innovative ways to resolve diverse/complex park resource issues.	5.40	1.24
32.	Ability to manage multiple programs including those in natural resource disciplines outside the field of expertise.	5.34	1.33
27.	Ability to evaluate/synthesize information from diverse/conflicting sources.	5.34	1.33
31.	Ability to develop/oversee innovative programs, involving multiple components/need for careful coordination/sequencing, to address complex/controversial resource management issues.	5.31	1.24
4.	Knowledge of environmental ethics/philosophy applied to natural resource management.	5.30	1.37
22.	Recognized ability to effectively represent the NPS on a multiagency task force to address natural resource issues.	5.30	1.34
2.	In-depth knowledge of ecosystem.	5.22	1.20
7.	Ability to evaluate research reports/scientific publications/diverse agency documents and legislation for applicability to specific natural resource issues/natural resource stewardship.	5.12	1.29
26.	Ability to convey information concerning politicized/controversial issues to potentially hostile audiences.	5.12	1.36
29.	Ability to give oral/written briefings from which decisions are made by high-level agency personnel/Congress.	5.10	1.49
12.	Ability to plan/direct large-scale resource stewardship programs requiring a multi-disciplinary approach/considerable potential for controversy.	5.07	1.37
14.	Ability to evaluate/synthesize results of relevant scientific studies/develop solutions to complex situations where scientific information, laws, policies, or guidelines may be lacking.	5.05	1.36
30.	Ability to persuade, effectively negotiate/solve problems with diverse individuals and organizations.	5.05	1.31
25.	Recognized ability to integrate representatives of agencies, academic institutions/diverse interest groups into an effective program of cooperation in achieving shared objectives for natural resource stewardship.	5.04	1.19

Preparation to perform competencies

Advanced-level natural resources program managers reported feeling prepared (i.e., average rating 5.0 or higher) for 21 of the 34 competencies (table 1). However, these program managers reported no competencies in which they felt highly prepared (rating near 6.0) or fully prepared (rating near 7.0). The specific competency in which program managers felt most prepared was “recognition by agency/peers as leading in the natural resources field” (number 23). Additionally, program managers felt prepared in policy and stewardship of natural resources management (number 8, 9, and 13; see table 1).

Competencies associated with natural resource stewardship, such as those dealing with scientific knowledge (number 2, 3, and 4) and project management (number 31 and 32), also received fairly high preparedness scores (i.e., mean values above 5.20).

The two competencies in which program managers perceived themselves to be least prepared (i.e., means less than 4.0) were “knowledge of case law as it relates to specific natural resource issues”(number 10) and “knowledge of precedent and case law related to planning and compliance” (number 18). The mean for these was 3.94. Other competencies related to law and planning/compliance also received fairly low preparation scores (number 5, 11, 19, and 21). In addition, program managers felt they were unprepared to publish their ideas in journals (number 24). Thus, program managers perceived themselves most prepared to handle tasks concerning natural resources stewardship, scientific knowledge, and project management; and least prepared with duties related to case law, planning and compliance, and publishing in scientific journals.

Table 1 (continued)

No.	Competency Description	Average ¹ Standard	Deviation ²
1.	Mastery of a natural resource discipline/current knowledge of state-of-the-art concepts.	5.03	1.34
34.	Ability to prepare complex/innovative cooperative agreements, MOUs/other agreement instruments.	5.03	1.43
20.	Ability to develop innovative solutions to complex or intractable issues.	5.02	1.26
15.	Ability to take the lead in interagency programs for critical resource protection on a landscape scale that crosses jurisdictional boundaries.	4.97	1.39
17.	Highly developed leadership skills, including skill in effective team-building.	4.94	1.37
6.	Ability to develop/coordinate complex multifaceted programs of research, inventory, monitoring, and resource management.	4.94	1.45
33.	Ability to effectively compete for funding through large-scale partnerships that may include diverse/opposing viewpoints.	4.93	1.45
28.	Ability to write highly complex documents dealing with natural resource issues/technical information.	4.90	1.58
16.	Ability to form effective partnerships with diverse/potentially hostile groups to address complex natural resource issues.	4.89	1.35
19.	Ability to orchestrate the development, completion/implementation of complex strategies/plans, consisting of distinct component parts/sequential actions, addressing complex/controversial actions.	4.82	1.42
5.	Advanced ability to apply scientific approaches/problem-solving techniques to complex natural resource problems, involving long-term/large-scale programs that cross jurisdictional boundaries.	4.71	1.33
21.	Ability to develop/carry out a public involvement program, working with public information personnel as appropriate, for plans that may include complex, controversial issues.	4.68	1.27
11.	Thorough interpretation of existing law/precedent/scientific information, ability to develop new policies, regulations, guidelines, programs, and concepts.	4.46	1.43
24.	Ability to publish syntheses/thought-provoking concepts in journals, recognized as providing leadership in advancing natural resource stewardship.	4.08	1.52
18.	Knowledge of precedent/case law related to planning and compliance.	3.94	1.55
10.	Knowledge of case law as it relates to specific natural resource issues.	3.94	1.54

Note: Competencies abbreviated from original text.

¹Scale: 1 = unprepared to 7 = fully competent/prepared.

²Standard deviations > 1.0 indicate increasing variation in perceived preparedness.



Preparation by GS grade

The perceived preparedness scores also contain considerable variation (i.e., standard deviations above 1.0), which indicates that the program managers varied in how they perceived their individual preparation for the various competencies (see table 1). This variation may be related to several factors, including the GS grade level of employees. For example, a logical assumption is that program managers of GS grades 14 and higher would be more prepared with respect to the specific competencies than GS-12 employees. Preparation among these three GS grade groups might also be expected to differ more for certain competencies than others. For these reasons, we analyzed the preparation scores by GS grade level to see if specific competency preparation differed significantly among the three GS levels examined.

Only six of the 34 competencies show a significant difference ($p \leq 0.10$) in average preparedness among the three GS levels (table 2). In four of the six, preparation increased from GS-12 through GS-14+ grade levels as expected. However, in the other two (number 22 and 25), GS-13 employees perceived themselves least prepared. Although not significantly different, statistically speaking, GS-13 employees had the lowest preparation ratings for seven more of the competencies listed in table 1 (numbers 15, 16, 19, 24, 26, 29, and 30).

Table 2. Significant differences in competency preparation among GS grade levels

No.	Competency description	GS-12	GS-13	GS-14+
13.	Ability to provide sound advice to upper-level managers on stewardship/actions at a landscape-level or Service-wide scale.	5.19 ^a	5.44 ^a	6.04 ^b
22.	Recognized ability to effectively represent the NPS on a multiagency task force to address natural resource issues.	5.15 ^a	5.09 ^a	5.96 ^b
23.	Knowledge/ability recognized by agency/academic peers as leading in the natural resource field.	4.61 ^a	4.67 ^a	5.61 ^b
32.	Ability to manage multiple programs including those in natural resource disciplines outside the field of expertise.	5.00 ^a	5.64 ^b	5.70 ^b
25.	Recognized ability to integrate representatives of agencies, academic institutions/diverse interest groups into an effective program of cooperation in achieving shared objectives for natural resource stewardship.	5.02	4.76 ^a	5.50 ^b
33.	Ability to effectively compete for funding through large-scale partnerships that may include diverse/opposing viewpoints.			

Note: Mean scores with different superscripts are significantly different, LSD $p \leq 0.10$. Fisher's Least Significant Difference (LSD) is a statistical procedure for determining the amount of difference between two mean scores.

^aSignificantly different from mean scores for this competency noted with the superscript *b*.

^bSignificantly different from mean scores for this competency noted with the superscript *a*.

Verification of preparation

Three major findings were gleaned from the focus-group interviews with natural resource professionals. First, the majority of participants agreed that the survey data accurately reflected the relative preparedness of employees to perform prescribed competencies in the management of park resources. Interviewees agreed that adequate preparation in the areas of case law and regulation compliance are ongoing needs within the National Park Service. Secondly, a fairly large percentage of deficiencies (26%) in competency preparedness seemed to be among mid-level program managers at the GS-13 grade. This may be an important finding in terms of training needs because this grade level is the next group of employees logically to ascend to the National Park Service's top management rank (GS-14+). Competency shortfalls needing the most emphasis include law compliance, scientific knowledge, and program leadership. The situation was described by one interviewee as follows:

Those trained in the classic disciplines typically have had little training in developing leadership and management skills. This presents a dilemma for [the] National Park Service, where employees without the needed technical, scientific background are moving into management positions because those with the scientific backgrounds do not have management skills or training. If not corrected, this practice will continue the tradition of non-science-based management at a critical time in National Park Service workforce succession history.

Finally, during the interviews participants discussed at length the differences between large and small parks. These differences were most evident with Natural Resource Stewardship competencies, particularly in the areas of law and directing large-scale resource stewardship programs. Participants noted that large parks frequently have staffs that concentrate on case law and compliance issues, and also possess multiple resource managers that can specialize in a disciplinary area (e.g., water or wildlife). Small parks, on the other hand, do not have this luxury; staff professionals are more dependent upon the Department of the

Interior's Office of the Solicitor for legal advice and required to focus on numerous resources, rather than specialize solely in their area of expertise.

Implications and conclusions

The National Park Service will experience, through approaching retirements, the inevitable loss of essential employee skills, knowledge, and institutional memory. This phenomenon stimulated our study of workforce succession among NPS natural resource managers. The National Park Service must be cognizant of the dynamics of its current and evolving workforce, relative to the recruitment, training, and transfer of agency knowledge, during periods of employee succession. However, concerns over the dynamics of workforce succession in the National Park Service go beyond the impending retirement of its employees. Agency change, employee evolution and development, and the management of institutional heritage are continual processes, and peak retirement events in the process only serve to increase the rate of workforce succession and needs in training.

In terms of competency preparation and training needs, we propose some implications for further consideration. First, program managers perceived themselves as least prepared in the competency areas of case law, planning and compliance, and complex/integrative project management. Second, though our study showed few statistically significant differences (i.e., six) in perceived preparedness among the three GS grades tested, GS-13 employees recorded the lowest ratings in nine of the 34 (26%) competencies compared. Though further research may be needed to refine this outcome, based on our findings, training should first be

Based on our findings, training should first be directed toward GS-13 personnel.

directed toward GS-13 personnel. This is particularly true if these employees are likely to advance into the GS-14+ grades, handling the most senior-level responsibilities.

In conclusion, this article reports our findings of the perceived competence of program managers in natural resources, particularly in the context of workforce succession and training needs. One comment during the focus-group interviews captures the essence of what the natural resource management community in the National Park Service faces:

We should not over-emphasize the retirement aspects of workforce succession. For me, the really important need is the fact that the legal mission of the National Park Service has become more and more complex, and that through the Natural Resource Challenge the National Park Service has greatly increased the number of technical experts in the agency. Many of these people are finding themselves lacking in leadership and management skill needed for their positions and careers. If we

are to move this agency toward more scientific management, we need to encourage people with science backgrounds to move into management positions. Thus we will need to look strategically at building these critical skills. This will constitute a fundamental shift in the leadership of this agency, and needs to be identified as a primary issue, if not *the* primary issue, for management succession.

“If we are to move this agency toward more scientific management, we need to encourage people with science backgrounds to move into management positions.”

Literature cited

- National Park Service. 2003. The learning place. Available at <http://www.nps.gov/training/mission.htm>. (accessed 16 January 2007).
- Nowack, K. M. 1994. The secrets of succession. *Training and Development* 48:49–54 (November 1994).
- Rodgers, E. B. D. 2003. Natural resource stewardship career field servicewide training needs assessment. Final Project Report. Center for Recreation and Tourism, George Mason University, Fairfax, Virginia, USA; and Stephen T. Mather Training Center, National Park Service, Harpers Ferry, West Virginia, USA. Available at www.nps.gov/training/nrs/nrsfinalreport2.doc (accessed 16 January 2007).
- United States General Accounting Office (GAO). 2001. Federal employee retirements: Expected increase over the next 5 years illustrates need for workforce planning. Report to the Chairman, Subcommittee on Civil Service and Agency Organization, Committee on Government Reform, House of Representatives. GAO-01-509. (April 2001). GAO, Washington, D.C., USA. Available at <http://www.gao.gov/new.items/d01509.pdf> (accessed 16 January 2007).
- Weston, R. 1996. The successor. *PC Week* 13:E1–E2.
- Wright, B. A., W. E. Hammitt, and L. K. Machnik. 2005. Toward a workforce succession plan for natural resource stewardship in the National Park Service: A gap analysis of competencies among senior natural resource program managers. Final Project Report. Department of Parks, Recreation and Tourism Management, Clemson University, Clemson, South Carolina, USA.

About the authors

William E. Hammitt, Lisa K. Machnik, and Brett A. Wright are with Clemson University, P.O. Box 340735, Clemson, South Carolina 29634-0735. **William E. Hammitt** is a professor in the Department of Parks, Recreation, and Tourism Management. He can be reached at 864-656-6123 and hammitw@clemson.edu. **Lisa K. Machnik** is a doctoral student in the Department of Parks, Recreation, and Tourism Management. **Brett A. Wright** is professor and head of the Department of Parks, Recreation, and Tourism Management. **Ellen D. Rodgers** is an associate professor at George Mason University in Fairfax, Virginia. 

