Line Officers' Views on Stated USDA Forest Service Values and the Agency Reward System

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Cover

In the background, a painting entitled "Forester in Snow with Crossbills" by Bruce Bomberger, 1959, is a traditional image of a forester in a field setting. This image is courtesy of Weyerhaeuser Archives, NP-190, P.O. Box 9777, Federal Way, WA 98063.

In the foreground is a contrasting image of today's forest managers who engage to a greater extent with the public about resource issues.

Abstract

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To update and expand a study done in 1989 (Kennedy et al. 1992), we surveyed line officers attending the third National Forest Supervisors' Conference (Chief, Associate Chief, deputy chiefs, regional foresters, directors of International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, and forest supervisors; January 2004) and a 40-percent sample of district rangers about USDA Forest Service (FS) values and the agency reward system.

These line officers believed in 2004, as did their line colleagues in 1989, that the public in the United States values national forest "outputs" of recreation, wildlife, and water much more than they value traditional commodities of wood or grazing. The public values mirror the personal and professional priorities of line officers in both 1989 and 2004. In 1989, however, line officers believed their agency valued wood much more than line officers or the public did; by 2004 the agency roughly valued all national forest uses equally.

The 2004 line officer sample ranked the six **most rewarded** FS "operational values" as: (1) teamwork, (2) agency loyalty, (3) meeting targets, (4) professional competency, (5) hard work, and (6) promoting a good FS image—the same six (ranked somewhat differently) as given in 1989. Similarly, the values that the 2004 line officer sample believed **should be rewarded,** (1) care for ecosystems, (2) professional competency, (3) consensus building, (4) care for employee development, (5) responsiveness to local publics, and (6) concern for future generations, are the same as those given in 1989, and similar to the values prominently stated in the 1986 FS vision statement of *Caring for the Land and Serving People*. Although line officers believe their agency reward system supports more of these "should-be-rewarded values" in 2004 than it did in 1989, this recent survey still illustrates opportunities to improve the FS reward system.

Keywords: Management values, ethics, organizational culture, organizational reward system, USDA Forest Service.

Summary

A survey of USDA Forest Service (FS) line officers (Chief, Associate Chief, deputy chiefs, regional foresters, directors of International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, forest supervisors, and district rangers) about their views on agency values and its reward system was conducted for the 2004 Arbird National Forest Supervisors' Conference. It updates and expands a study done at the 1989 Sunbird Conference held in Tucson, Arizona (Kennedy et al. 1992).

The 63 percent of line officers responding to the survey were divided into three types: (1) regional foresters, Chief, Associate Chief, deputy chiefs, and directors of International Institute of Tropical Forestry and State and Private Forestry North-eastern Area (n = 18), (2) forest supervisors (n = 100), and (3) district rangers (n = 111). They were 35 percent women and 11 to 15 percent ethnic minorities, a dramatic change from line-officer demographics at the Sunbird Conference (1989). Arbird (2004) line officers joined the FS later in life, were from more urban backgrounds, had more graduate education, and were more professionally diverse than the earlier group (all differences cited are significant at p ≤0.05). They believed their values were more like the FS vision statement values than were Sunbird line officers' views, 15 years earlier.

Multiple Uses and Other Goal-Value Priorities

The FS caring-and-serving vision (USDA FS 1986) represents two types of value statements: (1) **goal values** that indicate ends pursued and (2) **operational values** that shape means of achieving goals. Line officers in both studies ranked how they perceived the (1) **FS** and (2) **public** prioritization of these values, and then gave (3) their **personal** rankings. Scores of 1 to 10 were assigned, ranging from 1 as unimportant to 10 as extremely important.

In terms of **goal values**, the 2004 Arbird survey respondents believed that the public valued noncommodity multiple uses, such as recreation (9.2), wildlife (8.5), and water (7.8), much more than the traditional commodity resources of timber (4.3) and grazing (3.4). Their personal values ranked recreation (8.5), wildlife (8.0), and water (8.8) considerably higher than timber (6.1) and grazing (4.9), similar to what they perceived the public valued. They believed the FS, as an agency, valued traditional timber (7.2) and grazing (6.0) higher, and recreation (6.3) and wildlife (6.8) much lower.

Perceptions of the FS multiple-use priorities differed greatly between Sunbird (1989) and Arbird (2004) surveys. Arbird line officers believed the FS ranked

timber second at 7.2, down about 2.0 points (22 percent) from a rating of 9.1 in the Sunbird sample. Water changed from the least valuable agency-ranked resource in the 1989 survey to the most important national forest output in 2004 (from 6.3 to 7.5, an increase of 19 percent). Grazing dropped slightly from 6.6 to 6.0 (10 percent) between 1989 and 2004. Arbird respondents also believed FS noncommodity rankings rose for wildlife (6.6 to 6.8) but slipped for recreation (6.7 to 6.3, a decrease of 6 percent).

The 2004 Arbird survey added some national forest uses. Respondents believed the public supported landscape beauty (8.5) and fuels management (7.1) uses but were less supportive of the more abstract uses such as biodiversity (5.9) and vegetative management (5.3). Although they personally ranked landscape beauty (7.7) lower than the public, it was higher than where they perceived it in their agency's priorities (6.4). They believed the FS rated fuels management highest (8.7) of all uses. The Arbird survey participants ranked both fuels management (8.6) and vegetative management (8.3) as high priorities.

Forest Service Operational Values Rewarded Most and Least, and Values That Should Be Rewarded

Twenty operational values reflecting work habits, management attitudes, and professional identity were selected from key agency publications ranging from the *Use Book* (USDA FS 1907) to the *Caring for the Land and Serving People* vision statement (USDA FS 1986). Respondents picked the six values they believe the FS rewards **most** and **least**, and the six that it **should reward**.

Of the six values identified, teamwork was seen as the **most** rewarded (cited by 58 percent of Arbird [2004] line officers). Agency loyalty (52 percent) and meeting targets (52 percent) were ranked slightly higher than professional competency (50 percent), hard work (50 percent), and promoting a good FS image (49 percent).

Arbird (2004) line officers believed being innovative and willing to take risks (68 percent) and being independent and individualistic (63 percent) are the **least** rewarded FS operational values—followed by caring for future generations (59 percent), caring for one's family (58 percent), and caring for employee development (51 percent).

Arbird (2004) line officers identified some of the values that **should** be rewarded (in descending order of preference) as image, teamwork, responsiveness to local publics, consensus building, professional competency, and caring for ecosystems. Most of the "care values" (e.g., caring for ecosystems, employees, the public, and future generations), prominently stated in FS publications and press releases,

are the same ones cherished and respected by Arbird line officers. They would like the institutionalized agency reward system to recognize these same values.

A majority (76 percent) of Arbird (2004) respondents believed caring for ecosystems **should** be rewarded, but 22 percent believed it is among the **least** rewarded. There was more of an agreement that the reward system supports professional competence (50 percent believed it is the most rewarded value), whereas only 14 percent believed it is the least rewarded. Being a consensus builder, supporting local publics, and working as a team member (teamwork) were perceived as getting similar support from the FS reward system, and few believed them to be among the least rewarded values.

Consistent with Kaufman's (1960) findings, we found FS line officers' values to be closely aligned with the FS vision statement values (USDA FS 1986) and with the portion of the agency reward system supporting these "caring for the land and serving people" values.

Arbird (2004) line officers believed more stated vision values are actually supported by the agency reward system than did their Sunbird (1989) colleagues. Other evidence we see of the FS "walking its value-talk" is the increased ethnic, gender, and professional diversity of Arbird line officers, and evidence of the FS respecting and rewarding professional competency and increased graduate education. There also is abundant evidence that the FS is sharing more ideas and decisionmaking power both inside and outside the agency. For example, "teamwork," "consensus building," and "caring for local publics" all rose in the rankings for most rewarded values between 1989 and 2004.

This progress notwithstanding, there still remains room for improvement in consistency between the operational values Arbird (2004) line officers personally and professionally feel **should** be rewarded (which are the same ones highlighted in the agency caring-and-serving vision statement) and many of those values actually supported by the agency reward system.

Table of Contents

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Introduction

In 1985, for the first time in the agency's history, top line officers[1] of the USDA Forest Service (FS) (i.e., Chief, Associate Chief, deputy chiefs, regional foresters, and all forest supervisors) met at Utah's Snowbird Ski Resort. The primary goal of that Snowbird Conference was to reexamine and update the agency's traditional, progressive conservation values, resulting in the agency vision statement, *Caring for the Land and Serving People* (USDA FS1986). At the second forest supervisors' meeting (Sunbird Conference, Tucson, Arizona, 1989), attending line officers were surveyed to see if these "caring-and-serving" values were similar to their personal and professional values and if they believed the agency reward system supported the values (Kennedy et al. 1992).

In the 15 years since the Sunbird (1989) survey, the environment in which the FS operates has changed considerably. The most recent changes include implementation of the Government Performance Results Act (GPRA 1993); the development of the President's Management Agenda (2002) that presses for results and accountability; commitment to the National Fire Plan (USDA and USDI 2001)—including at least a threefold increase in fire funding; the passage of the Healthy Forests Restoration Act (2003); and continued commitment to embrace workforce diversity. So it was appropriate at the third forest supervisors' conference (Arbird Conference, held at the Arbor Day National Center, Nebraska City, Nebraska, 2004) to examine if the values of current FS line officers are in concert with the implied values in the *Caring for the Land and Serving People* vision statement and to compare them to the Sunbird (1989) survey.

Culture and Values and Survey Design Strategies

Forest Service line officers have held a common set of values. Some of these were shaped by early Chiefs such as Gifford Pinchot (fig. 1) and W.B. Greeley (see fig. 2) who combined vision and action. "Their principles and philosophies helped mold the Forest Service culture and values that have stood the test of time–conservation leadership, public service, responsiveness, integrity, a strong land ethic, and professionalism characterized by people who know their jobs and do them well"[2]

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[1] In Forest Service jargon, line officers are the Chief, Associate Chief and deputy chiefs, regional foresters (including the directors of International Institute of Tropical Forestry and State and Private Forestry Northeastern Area), forest supervisors, and district rangers who have supervisory and land management responsibilities consistent with their place in the organization.

[2] This quote is actually stated in a letter (dated February 1, 1905) from the Secretary of Agriculture to the Chief when the Forest Service was established. This letter is believed to have been drafted by Gifford Pinchot.
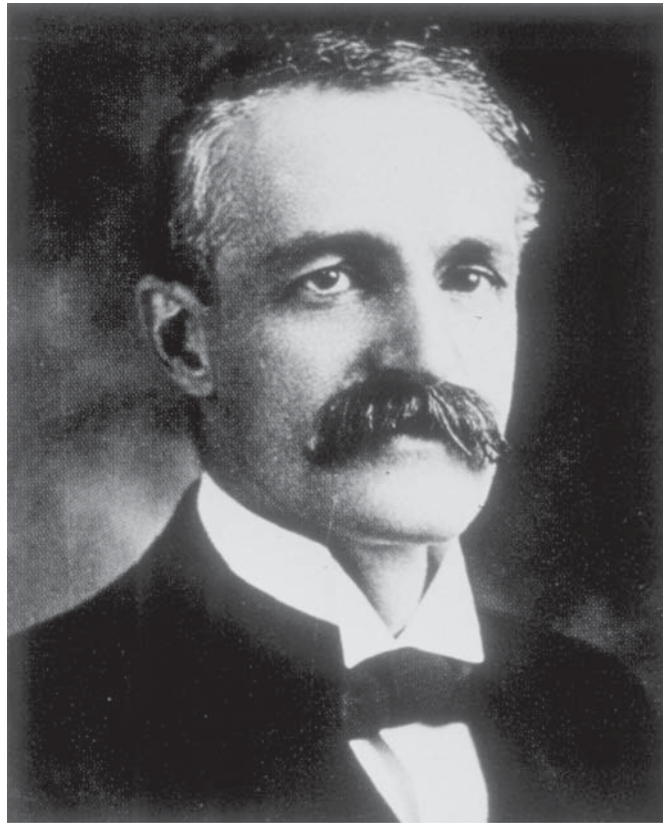
Figure 1—Gifford Pinchot was the first Chief of the Forest Service and established many of the values still evident.
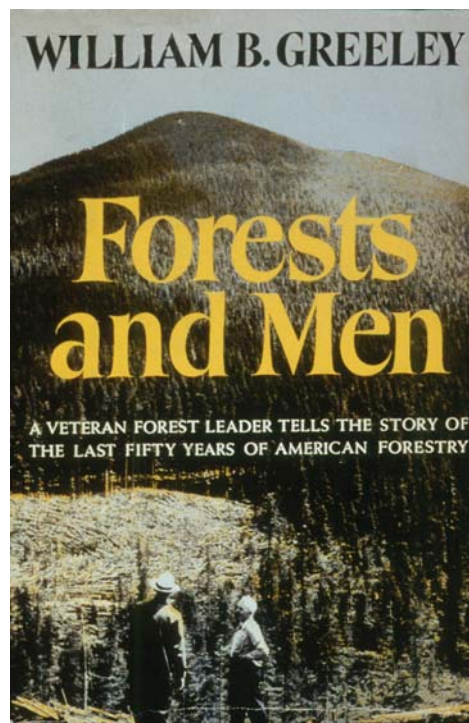
Figure 2—Retired Chief Greeley's book of Forest Service history (Greeley 1951) reflected an era when the agency culture was male dominated.

(USDA FS 1986). This common set of values helped weld the behavior of hundreds of geographically dispersed and isolated line officers (especially district rangers) into a relatively unified organizational pattern, by which the national policy is translated into consistent actions in the forests (e.g., Clarke and McCool 1985, Gold 1982). Gulick (1951) and Kaufman (1960) were the first to examine the FS and found this agency solidarity resulted from recruitment, training, and reward systems that shaped employee perceptions, thinking, and values—especially in its line officer corps. Some students of the FS see such central leadership power and solidarity primarily as a liability, anchoring the agency too much in the past (e.g., Twight and Lyden 1989). Like the Greek god, Janus, this line officer solidarity might have two faces and personalities, and also be powerful in shifting agency leadership culture to embrace newer perspectives and values in ecosystem management, workforce diversity, or collaborative stewardship (Kennedy and Quigley 1998). This conceptual context, and the likely yin/yang dynamics of influential centralized FS control in shaping and shifting line officer values, underlie the design and analysis of both the Sunbird (1989) and Arbird (2004) studies.

Examining personal or group values is a difficult task. First, values are not easily defined in theory or practice, and measuring them is difficult, as Brown (1984) and Bengston (1994) attest. Secondly, it is often emotionally demanding to examine our values or those of an organization to which we are bonded. Because of these factors, it was not easy for either those designing these FS surveys or the respondents documenting their views and values. It may also be difficult for those who ponder the results. But such introspective value analysis and reflection are necessary tasks of any organization that wants to understand itself, be honest and responsive to its core values, and successfully adapt to a changing internal and external world.

Understanding values is central to understanding people and their relationships with others or the organizations employing them (Kennedy and Thomas 1995, Kennedy et al. 1998, Simmons 1982). Values help define (1) goals (ends) people or organizations seek and (2) how these goals are pursued (means). Organizational achievement or **goal values** are usually found in an organization's mission, such as:
- Caring for the Land and Serving People (FS)
- Diminish or Eliminate Polio (March of Dimes, until revisions in the 1970s)
- Manage Flood Risk, Power, and Recreational Potentials of U.S. Waters (U.S. Army Corps of Engineers).

Preceding the Sunbird (1989) conference, multiple-use outputs generally defined FS achievement or goal values. A series of questions in both the Sunbird and Arbird (2004) values surveys asked respondents to score the importance of timber,

grazing, recreation, wildlife, and water on the national forests according to their **own** personal values. They also ranked how they believed the **FS** and the **public** prioritized these national forest values.

In addition to the values associated with goals or outputs, organizations have **operational values**. The Arbird (2004) survey provided 20 common FS operational values (e.g., meeting targets, agency loyalty, concern for welfare and development of other employees) for respondents to (1) rank the values the FS rewards **most**, (2) list those the FS rewards **least**, and (3) rank the values they believed the agency **should** reward. This allows comparison between stated FS values (as in the 1986 vision statement)—those the agency does, does not, and should reward—and comparisons between the Sunbird and Arbird surveys.

The FS value system was formed in the progressive conservation era (1900-1950s), when the United States was in transition from a frontier-agricultural to an urbanizing-industrial society. Chief Forester Pinchot (1898-1910) articulated and installed the operational values of elite, progressive-era professionalism into the agency culture to control the threats of wildfire and short-term resource exploitation, plus provide a sustained flow of multiple outputs to rural resource-dependent communities (Hays 1959, Kaufman 1960, Kennedy and Quigley 1998). During the 1950s and 1960s the emphasis was on developing a professional approach to land management that could efficiently sustain a range of forest outputs and conditions as shown in figures 3 and 4 and used in advertisements from the late 1950s.

Since the 1970s, the FS has been adapting to more noncommodity, environmental **goal values** of an urban, postindustrial American society. Agency **operational values** also have been adjusting to social pressures and legislative edicts—shifting from objective, paternalistic, professional foresters managing national forests and grasslands for the public (Kaufman 1960) to a professionally, ethnically, and gender-diverse workforce managing these national ecosystems with the public—called collaborative resource management (Kennedy 1991, Kennedy et al. 1998). Because of this shift, it is not surprising to find elements of the current FS value system that are different from its historical values or in tension with long-established reward systems.

The Arbird Values Study

The survey was emailed in December 2003 to all line officers who attended the Arbird conference (i.e., Chief, Associate Chief, deputy chiefs, regional foresters, directors of International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, and forest supervisors). In addition, 40 percent of district rangers were included, with the sample stratified to insure that one district

Figure 3—Forester as conservation hero in mid-20th century—a well-trained professional efficiently managing public or private forest lands for a sustained yield of outputs. (*Forester in Snow with Crossbills* by Bruce Bomberg, 1959, provided by Weyerhaeuser Company.)
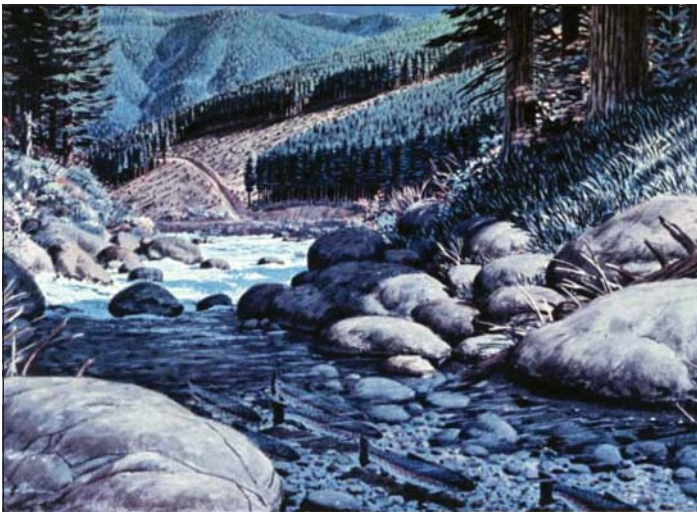
Figure 4—From the late 1950s, forest management for multiple uses illustrated a harmony among roads, clearcuts, and spawning steelhead. (*Spawning Steelhead* by Jack Dumas, circa 1960, provided by Weyerhaeuser Company.)

ranger per national forest participated. Responses were collected, stored anonymously, and statistically analyzed at the Pacific Northwest Research Station. The Arbird (2004) survey (see app. 1) repeats most of the Sunbird 1989 value survey, with some updating and several new questions. The results of the survey are summarized in appendix 2 (tables 13-68). Appendix 3 (tables 69-72) shows selected results from the Sunbird survey (1989) summarized for the same group definitions as used for the Arbird results. Appendix 4 (tables 73-75) is a discussion of the new environmental paradigm[3] questions.

Table 1 displays the Arbird (2004) line officer sample (see app. 3, table 69 for Sunbird [1989] results). The return rate was 63 percent and nonrespondents were not examined. In this report, Arbird respondents are divided into three types: regional foresters, Chief, Associate Chief, deputy chiefs, and directors of International Institute of Tropical Forestry and State and Private Forestry Northeastern Area (RF&Cs; n =18); forest supervisors (SUPEs; n =100); and district rangers (DRs; n =111). The FS National Leadership Team[4] was also sampled, but the responses are not included in the current analysis. Unless otherwise noted, all differences cited in this report are statistically significant at 5 percent or less.

Arbird (2004) respondents were about 35 percent women and 11 to 15 percent ethnic minorities (table 2). This is a dramatic change from the Sunbird (1989) survey, when only 5 percent of SUPEs and none of the RF&Cs were women. The percentage of Sunbird line officers who were ethnic minorities (about 3 percent) was so low it was not even cited (app. 3, table 70).

More than half of the Arbird (2004) line officers joined the FS when they were 25 years of age or younger (whereas 70 percent of Sunbird [1989] line officers did so). Additionally 41.5 percent of the Arbird respondents had (or subsequently earned) a master's degree or higher (versus only 28 percent of Sunbird respondents). Reflecting the U.S. urbanization, only 17 percent of Arbird RF&Cs and 6 percent of DRs had their initial values formed while growing up on a farm or ranch, compared to 36 percent of Sunbird RF&Cs and 12 percent of DRs.

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[3] The New Environmental Paradigm was developed by Dunlap and Van Liere (1978) and updated (Dunlap et al. 2000) to measure the degree of proenvironmental orientation.

[4] The National Leadership Team includes the Chief, Associate Chief, deputy chiefs, associate deputy chiefs, chief of staff, regional foresters, station directors, directors of International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, and several Washington Office directors.

Table 1—Arbird survey sample and responses

Line officer and NLT[a] categories	Total sample (N)	Sampling percent	Return (n)	Return rate (n/N)
				Percent
RF&Cs	n/a	100	18[b]	n/a
SUPEs	153	100	100	65
DRs[a]	177	40	111	63
NLT[a]	54	100	33[b]	61
Totals	384		229	63

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

[a] NLT: National Leadership Team includes the Chief, Associate Chief, deputy chiefs, associate deputy chiefs, chief of staff, regional foresters, station directors, directors of International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, and several Washington Office directors. It was sampled for future use and analysis, but owing to time constraints, is not included in this report.

[b] The RF&Cs group is composed of 18 line officers who are also part of the 33 NLT members who returned surveys (omitted were the non-line-officer members of NLT; chief of staff, station directors, Washington Office directors, and associate deputy chiefs).

Table 2—Description of Arbird survey respondents

Characteristics	RF&Cs[a] (n = 18)	SUPEs[a] (n = 100)	DRs[a] (n = 111)	Total (n = 229)
Age (mean years)	54	51	48	50
Gender (*percentage men*)	56	67	66	65
Ethnicity (*percentage white*)	89	85	89	87
Education (*percentage master's degree or more*)[b]	72	43	37	42
Joined FS young (*percentage joining at 19-25 yrs*)[c]	61	64	48	56
Raised on farm or ranch (*percentage*)	17	12	6	10
Initial professional identity[d] (*percentage*):				
Forester	28	35	31	32
Biologist	6	12	16	13
Recreation manager	11	6	10	8
Range manager	0	3	10	6
Planner	0	3	4	3
Soil/hydrologist	0	5	1	3
Engineer	0	2	1	1

[a] RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

[b] Chi-square (X^2) difference in graduate degrees significant at $p = 0.02$, meaning a difference this great could occur by chance 2 in 100 times.

[c] X^2 differences in ages joined is significant at $p = 0.05$.

[d] Professional identity when first hired.

Overview of Harmony and Tension Between the Values of the Agency and Those of Its Employees

We defined FS rewarded values (i.e., the FS "reward system") as those the agency rewards with "promotion, rank, and status." Three questions initially examined how employees perceive and respond to the FS value and reward system:

- Question 23. My values and the Forest Service's values are very similar.
- Question 42. Values I cherish and prize and values the FS rewards conflict.
- Question 43. Do any differences in values you cherish and prize and the values the FS rewards cause you stress?

As shown in table 3, 78 percent of Arbird (2004) line officers surveyed strongly or moderately agreed that their values and those of the FS were very similar; only 6 percent disagreed. On the surface this indicates a high level of harmony with personal, professional, and agency values. Yet we will see as data unfold that value analysis is a complex undertaking. For example, did respondents in this question compare their values to stated FS values, to those they and their colleagues pursue, to values the formal reward system endorses, or to any combination of the above?

Regardless of these qualifications, Arbird (2004) line officers expressed significantly stronger agreement and less disagreement between their own and FS values than did the Sunbird (1989) group 15 years earlier. For example, 28 percent of Arbird versus 17 percent of Sunbird line officers checked "strongly agree," and only 6 percent of Arbird versus 15 percent of Sunbird respondents selected any of the three disagree choices.

Do differences between one's values and those of the organization where one is employed cause conflict or stress? Table 4 (question 42) shows that Arbird RF&Cs have less conflict between the values they cherish and those that the FS rewards, with 56 percent of RF&Cs, 30 percent of SUPEs and 21 percent of DRs "seldom" or "never" experiencing conflict. For the majority of line officers surveyed (59 percent), this value conflict caused "little" or "no" stress. For others, 34 percent reported it caused "moderate" stress and 7 percent reported "great" or "very great" stress (table 4, question 43). There were no significant differences in responses to these three questions between Arbird men and women, but there were significant differences between Arbird (2004) and Sunbird (1989) respondents.

Perceived and Personal Resource Values

This section examines employees' perceptions of the values associated with the five traditional multiple uses of the national forests and grasslands (wood, water, wildlife, recreation, and grazing) and several emerging uses or values, such as

Table 3—Similarity between values of respondents and Forest Service

Agreement (Q 23)	RF&Cs (n = 18)	SUPEs (n = 100)	DRs (n = 111)	Total response (n = 229)
	Percent			
Strongly agree	28	29	28	28
Moderately agree	67	49	49	50
Slightly agree	5	16	11	13
Neither agree nor disagree	0	3	4	3
Slightly disagree	0	2	4	3
Moderately disagree	0	1	3	2
Strongly disagree	0	0	1	1

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

Table 4—Conflict and stress between values the Forest Service rewards and values that respondents cherish and prize

Category	RF&Cs (n = 18)	SUPEs (n = 100)	DRs (n = 111)	Total responses (n = 229)
	Percent			
(Q 42): Values I cherish and values the FS rewards				
Very often conflict	0	1	2	1
Often conflict	6	8	11	9
Sometimes conflict	39	61	66	62
Seldom conflict	56	29	21	27
Never conflict	0	1	0	1
(Q 43): Do any differences in values you cherish and values the FS rewards cause you any stress?				
Very great stress	0	1	1	1
Great stress	6	6	5	6
Moderate stress	39	34	33	34
Little stress	50	51	57	53
No stress	5	8	4	6

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

biodiversity, fuels management, and landscape beauty (see fig. 5). By using a relative value scale (1 = unimportant to 10 = extremely important), respondents were asked to rank these national forest uses from three perspectives: (1) their perception of **public** values, (2) their perception of **FS** values, and (3) their own **personal** values. In addition, a series of questions asked the employees to judge how FS relevancy has changed for certain communities and user groups in the past decade.
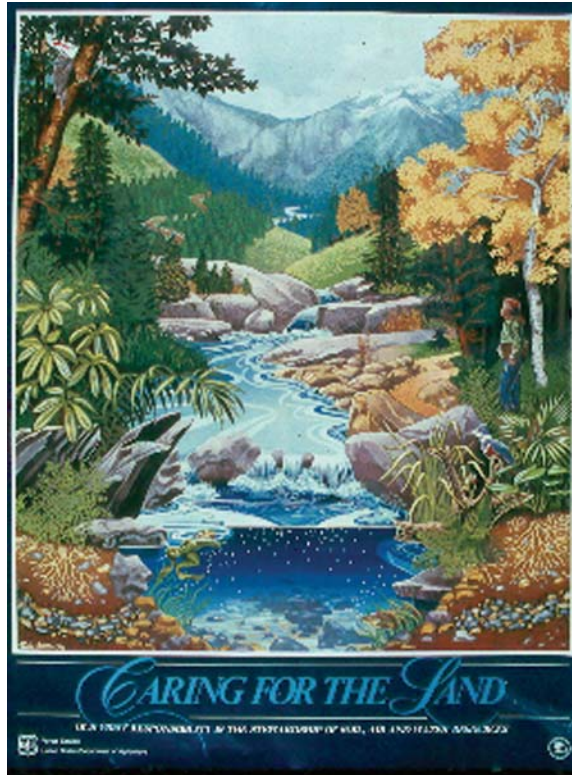
Figure 5—Poster displaying forests of diverse values, representing the shift from sustained yield to sustainable ecosystem management embodied in the caring-and-serving values expressed in the 1986 mission statement.

Values and Priorities of Traditional and Emerging National Forest Uses or Values

Arbird (2004) respondents (table 5) believed the **public** valued noncommodity multiple uses, such as recreation (9.2), wildlife (8.5), and water (7.8), much more than the traditional commodity resources of timber (4.3) and grazing (3.4). These line officers' **personal** values were similar to those they perceived of the public, ranking recreation (8.5), wildlife (8.0), and water (8.8) considerably higher than timber (6.1) and grazing (4.9). They believed the **FS** valued traditional timber (7.2) or grazing (6.0) higher, and recreation (6.3) and wildlife (6.8) lower than did the line officers and the public (fig. 6).

The Sunbird (1989, see app. 3, table 71) **personal** multiple-use or resource-use output scores were almost identical with those of Arbird (2004) respondents— differing from 0.1 to 0.5 points in all categories except timber. Over the 15 years between these two surveys, the timber priority dropped 0.5 (or about 8 percent) while grazing rose 0.5. Likewise, there was little change in the resource-use rankings line officers believe the **public** holds except for minor changes in timber and grazing. The perceived value held by the **public** for timber was seen as declining from 4.9 to 4.3 (2004), whereas grazing rose from 2.9 to 3.4.

Table 5—Relative rank of more recent resource use values as perceived by Forest Service employees (range: 1 = lowest to 10 = highest)

Resource use	Public view (n = 229)	FS view (n = 229)	Line officers' views (n = 229)
	Rank		
Water	7.8	7.5	8.8
Fuel risk management	7.1	8.7	8.6
Recreation	9.2	6.3	8.5
Vegetation management	5.3	7.9	8.3
Wildlife	8.5	6.8	8.0
Biodiversity	5.9	6.7	7.7
Landscape beauty	8.5	6.4	7.7
Timber	4.3	7.2	6.1
Grazing	3.4	6.0	4.9
Average value	6.7	7.0	7.6
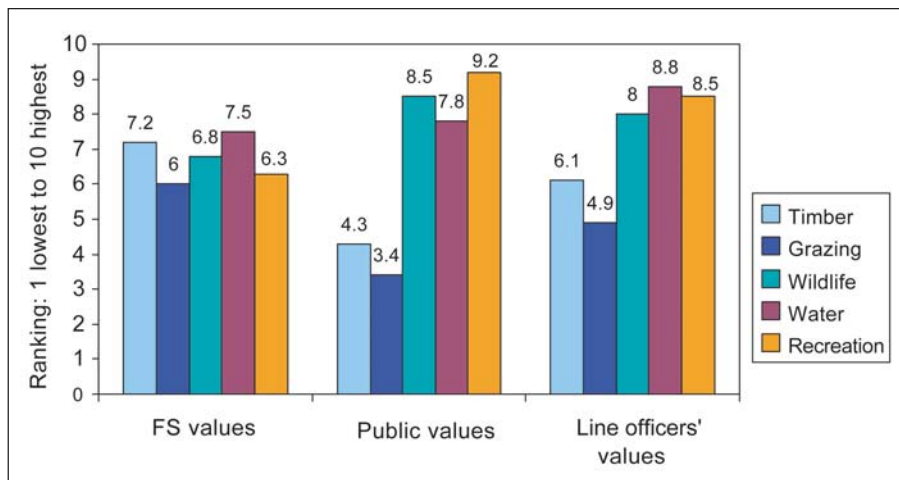
Figure 6—Line officers' perceptions of resource-use values ranking, Arbird.

The perception of **FS resource-use priorities** differed greatly between Sunbird (1989) (fig. 7) and Arbird (2004) surveys. Arbird line officers believed the FS ranked timber second at 7.2, down about 2.0 points (22 percent) since Sunbird. Water changed from the least valuable national forest output in 1989 to being ranked the most important resource value in 2004 (from 6.3 to 7.5, an increase of 19 percent). Grazing also dropped slightly from 6.6 to 6.0 (10 percent). Arbird respondents also believed noncommodity rankings were higher for wildlife (6.6 to 6.8) but lower for recreation than did Sunbird respondents (6.7 to 6.3, a decrease of 6 percent).
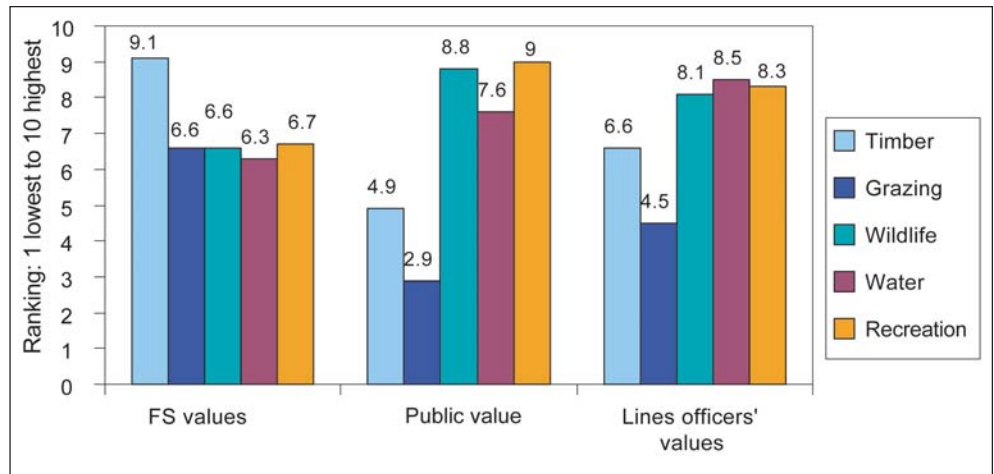
Figure 7—Line officers' perceptions of resource-use values ranking, Sunbird.

The Arbird (2004) survey added some newer national forest goal values (table 5). Respondents believed the **public** supported landscape beauty (8.5) and fuels management (7.1) goals but that the public had less support for the more abstract biodiversity (5.9) and vegetative management (5.3) goals or programs. Although they **personally** ranked landscape beauty (7.7) lower than their perception of the **public's** ranking, they ranked it higher than they believed their **agency** (6.4) ranked it. They believe the FS rated fuels management highest (8.7) of all achievement values, which they personally ranked high (8.6), along with vegetative management (8.3).

In the 1950s, national forest management normally focused on providing a mix of renewable resources that best met the needs of the American people (MUSYA 1960: sec. 4b). Since the 1970s, the **spatial focus** of national forest and grassland management has shifted from sites to watersheds to larger ecoregions. **System focus** has shifted from uses and product outputs, to goals of maintaining viable ecosystem structure and processes themselves. The **time dimension** in both progressive conservation (1900-1970s) and current sustainable ecosystem management eras is focused on the long-term (or future generations) perspective.

With current FS values and visions, healthy ecosystems themselves are becoming the goal or product (Haynes et al. 1996, Kennedy et al. 1998), and a question was added to the Arbird (2004) survey to examine this. Question 53 asked if respondents' work units tend to take a "product/target" or a "sustainable ecosystem" focus (table 6). A few respondents (5 percent) checked "not applicable," but of those who judged the question applicable, 22 percent believed their work group took a product/target focus "all" or "most of the time." There is a noticeable shift

Table 6—Production target versus ecosystem focus in thinking and management action of work unit

Focus (Q 53)	RF&Cs (n = 13)	SUPEs (n = 100)	DRs (n = 105)	Total responses (n = 218)
	Percent			
Production target all the time	0	1	1	1
Production target most of the time	23	14	27	21
About half and half	46	38	35	37
Sustainable ecosystem most of the time	31	41	28	34
Sustainable ecosystem all of the time	0	6	9	7

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

in attitudes and management behavior from an agency culture that once focused on full resource production goals, within the constraint of not damaging the long-term productivity of the land. The constraint is becoming the objective.

Ten-Year Trends in the Importance of the Forest Service to Communities

A series of questions (57 to 63) asked respondents to reflect on the importance and relevancy of the FS to traditional (e.g., timber industry) and emerging (e.g., recreational) groups or communities. Table 7 illustrates a general shift of priorities by the FS from rural to urban goods and services. There are different opinions about the importance of the FS to **local resource-based** communities, with about 40 percent of respondents believing it is highly or more relevant now than 10 years ago, and 47 percent believing it is less or no longer relevant. About 54 percent believe the FS is more relevant to **urban** communities than it was 10 years ago; only about 19 percent think it is less relevant.

Most respondents (79 percent) believe the FS is less relevant to the **timber industry**; 91 percent think it is more relevant or highly relevant to **recreational interests**; and 69 percent think it is more relevant or highly relevent to **environmental and resource conservation groups**. Even with these shifts in perception of FS relevance, most believed "relations between the Forest Service and local communities and stakeholder groups" were the same (25 percent) or better (51 percent) in 2004 than in 1990; 24 percent believed relations had declined (question 57, app. 2 table 41).

Table 7—Change in Forest Service emphasis over the past decade (n = 229)

Communities or group	Change in relevancy replies					
	No longer relevant	Less relevant	Same	More relevant	Highly relevant	Never was relevant
	Percent					
Q 58 Local resource-based communities	2	45	13	17	23	0
Q 59 Urban communities	2	17	24	40	14	3
Q 60 School/education	2	31	38	22	6	1
Q 61 Timber industry	7	72	8	7	6	0
Q 62 Recreational interests	0	0	9	45	46	0
Q 63 Environmental/ conservation groups	0	6	24	31	38	1

Values the Forest Service Rewards Most and Least

Multiple use and other output and achievement values in the FS have just been examined. We now focus on 20 of the most important agency **operational** (means-to-ends) **values** related to an individual's work habits, professional development, and agency attitudes. Our purpose is to identify values and attitudes perceived to be **most** and **least** rewarded, and those that line officers believe **should be** rewarded (app. 1, questions 24-41).

Overview of Values and Rewards

Values that respondents believed the FS rewarded most and least are displayed in figures 8 and 9. Among the Arbird participants, teamwork was seen as the value most often rewarded (cited by 58 percent as **among one of six** values the FS most rewards–priority ranks not considered). Loyalty (52 percent) and meeting targets (52 percent) were tied for second and third, followed by professional competency (50 percent), hard work (50 percent), and promoting a good FS image (49 percent, see fig. 8).

Notice that many of the most rewarded values on the surface appear to be generic organizational values of loyalty, productivity (i.e., meeting targets), or hard work. These are the commonly rewarded attributes of successful performance in most complex organizations, in the Roman Empire or the Western world today— military or civilian, public or private, secular or religious. Teamwork, professional competence, and responsiveness to local publics also are frequently cited as most rewarded, and are more unique FS values commonly encountered in the *Caring for the Land and Serving People* vision statement (USDA FS 1986). However, many values in the FS vision statement were frequently cited by the Arbird responders as
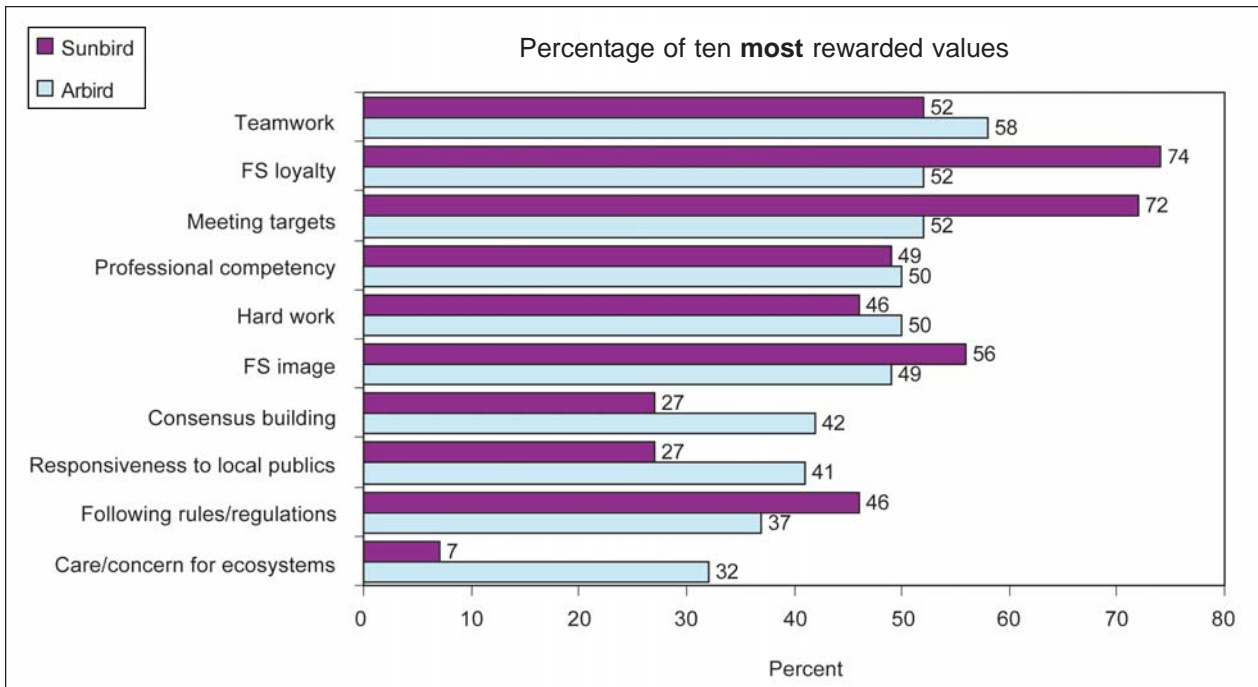
Figure 8—Forest Service values rewarded most, Arbird and Sunbird.
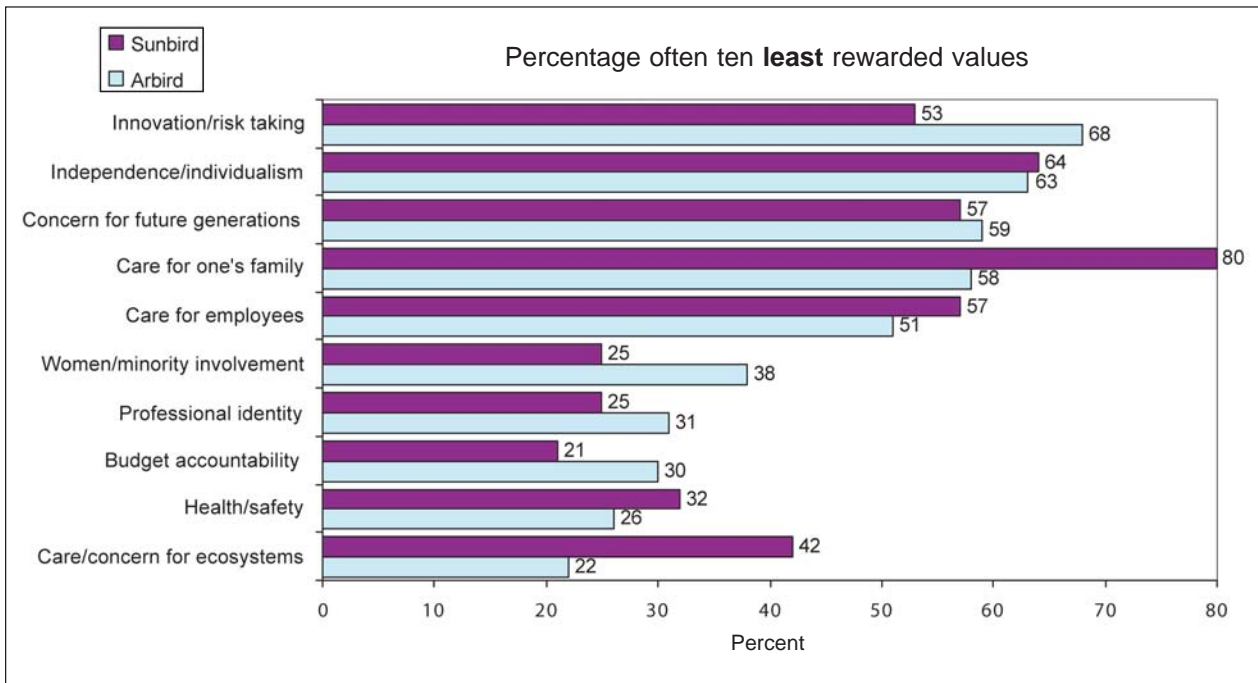
Figure 9—Forest Service values rewarded least, Arbird and Sunbird.

least rewarded—especially concern for future generations (59 percent), care for welfare and development of other employees (51 percent), and involvement in women and minority issues (38 percent, see fig. 9).

There are some compelling gender differences in these results from the Arbird survey (table 8). For example, men order the top six values rewarded as (1) team-work, (2) FS image, (3) professional competency, (4) loyalty, (5) meeting targets, and (6) responsiveness to local publics. Women order the top six values as (1) hard work (not in men's top six), (2) meeting targets, (3) teamwork, (4) loyalty, (5) professional competency, and (6) care and concern for ecosystems.

How Survey Participants Believe Values Are Rewarded

Regional foresters, Chief, Associate Chief, deputy chiefs, and directors of International Institute of Tropical Forestry and State and Private Forestry Northeastern Area (RF&Cs); forest supervisors (SUPEs); and district rangers (DRs) have different perceptions of the most rewarded FS values (listed in declining order for RF&Cs by percentage of response citing the value as one of six most rewarded):

RF&Cs	SUPEs	DRs
	Percent	
1 Teamwork (78)	Teamwork (59)	FS image (55)
2 Care: ecosystems (67)	Meeting targets (57)	FS loyalty (54)
3 Professional competency (66)	Hard work (54)	Teamwork (53)
4 Hard work (56)	Professional competency (52)	Meeting targets (50)
5 Consensus builder (45)	FS loyalty (52)	Professional competency (46)
6 Promoting image (44)	Consensus builder (44)	Hard work (45)
7 Local publics (44)	Local publics (44)	Follow rules/regs. (42)
8 FS loyalty (39)	FS image (43)	Consensus builder (41)
9 Meeting targets (33)	Follow rules/regs. (36)	Local publics (39)
10 National publics (28)	Care: ecosystems (35)	Meeting budgets (32)

The RF&Cs, SUPEs, and DRs all cite similar values that their agency rewards most, but the priority ranks differed in some cases.

Note above and in appendix 2 (table 34) that RF&Cs are unique in that 67 percent cited care for sustainable ecosystems as a highly rewarded value. It was ranked 10th by SUPEs and even lower by DRs, with only 23 percent of DRs listing it as among the six values the FS rewards

Women line officers in the Arbird (2004) survey also were significantly more likely to believe the FS rewards caring for sustainable ecosystems, with 44 percent of women versus 25 percent of men citing it as one of the six most rewarded values. The only other significant gender difference here was involvement in women's and minority issues. Almost no women in the sample (4 percent) cited it as a value most rewarded by the FS, whereas 23 percent of men did.

Table 8—Values Arbird's respondents think the Forest Service rewards most

Overall rank and category	Women	Men
	Rank	
1 Teamwork	3	1
2 FS loyalty	4	4
3 Meeting targets	2	5
4 Professional competency	5	3
5 Hard work	1	8
6 FS image	7	2

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

The value of being innovative and a risk taker was cited most frequently as the least rewarded (68 percent, fig. 9)[5] and may help explain the difficulty the national forests have had in implementing formal adaptive management approaches to broad-scale land management efforts that involve risk taking. The second least rewarded value (cited by 63 percent) is being independent and individualistic (fig. 9). This indicates how respected and rewarded FS values can change. Displaying individualism and independence is the traditional John Wayne heroic mode that elicited considerable respect in the early decades of the agency. In that era, Chief Pinchot described a ranger (USDA FS 1907: 33) as "…able to take care of himself and his horses under very trying conditions; build trails and cabins; ride all day and night; pack, shoot, and fight fire without losing his head….All this requires a very vigorous constitution." Today this seems to be the antithesis of the highly rewarded value of teamwork (cited by 58 percent of respondents as most rewarded) or consensus building (42 percent, fig. 8), characteristic of a successful line officer in the collaborative resource management era developing since the National Environmental Policy Act (NEPA 1969).

Concern for future generations, care for one's family, care for other employees, and involvement in women's and minority issues are the next most frequently cited values seen as least rewarded (fig. 9). These are followed by "strong professional identity and commitment." In the Sunbird (1989) survey, nonforesters were concerned that their "professional identity and commitment" might lead to their loyalty

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[5] Kaufman (1960: 79) also noted the tendency of district rangers to avoid risks that might lead to conflicts with local interests.

being questioned (Kennedy and Thomas 1995). Note that none of these commonly cited, least rewarded values were in any group's 10 most rewarded, above.

Consistent with gender differences in the most rewarded values above, women were significantly less likely to see care for ecosystems as **least** rewarded (14 percent) than men (27 percent); they were also more likely to believe that women's and minority issues are least rewarded (49 percent) than men (32 percent). Table 9 shows the six values men and women feel are least rewarded by the FS.

Arbird and Sunbird Survey Comparisons

Arbird (2004) line officers' list of 10 most rewarded FS operational values includes 8 also in the Sunbird (1989) group's top 10 (app. 3, table 72). But rank and scores differ significantly.

In the more recent survey, values the FS rewards **most** (see fig. 8) are seen as closer to what both surveys believe **should be** rewarded. For example, Sunbird (1989) line officers ranked loyalty first (74 percent citing it among the one of six most rewarded) and meeting targets second (72 percent) as the **most rewarded** agency values (see app. 2, table 34). Although still ranked second and third by Arbird (2004) respondents, their scores are significantly lower, 52 percent for loyalty and 52 percent for targets. Consensus building was cited as among the six values the FS rewards most by only 27 percent of Sunbird line officers and did not make their top 10 lists. It was seventh (42 percent) in 2004 for the Arbird group. Even more interesting was the proportion of respondents who placed care for sustainable ecosystems in their top 10 list (Sunbird 7 percent, Arbird 32 percent). However, women's and minority issues came in ninth (29 percent) in 1989 but did not make Arbird's list (16 percent), perhaps suggesting that these efforts are now a part of everyday operating procedures.

The same FS operational values are cited for both Arbird (2004) and Sunbird (1989) groups as the six **least** rewarded values, but their ranks and scores differ somewhat (see fig. 9). More Arbird line officers ranked being innovative and taking risks as least rewarded (68 percent) than did the Sunbird group (53 percent), and fewer Arbird respondents (58 percent) ranked caring for one's family as not rewarded than did Sunbird (80 percent) in 1989. There was similar optimism, of sorts, for caring about sustainable ecosystems, with 22 percent listing this as least rewarded in 2004, down from 42 percent in 1989.

Table 9—Values Arbird's respondents think the Forest Service rewards least[a]

Overall rank and category	Women	Men
	Rank	
1 Innovation/risk taking	1	1
2 Independence/individualism	2	2
3 Care for future generations	4	3
4 Care for one's family	4	4
5 Care for employee development	3	5
6 Women's/minority involvement	5	7

[a] Rank of 1 means it is valued least.

Values Employees Believe the Forest Service Should Reward

Most frequently cited values that survey respondents believe the FS **should reward** are presented in figure 10. Several values here also show up on the 10 most rewarded list, namely: teamwork, professional competency, image, consensus building, responsiveness to local publics, and care for ecosystems (table 10). Most of the care-values, such as caring for ecosystems, for employees, the public, and future generations (prominently stated in FS publications and press releases), are the same ones cherished and respected by these line officers. They would like the institutionalized agency reward system to reward these same values.

Similarities and Differences in Line Officers' Views of Values That Should Be Rewarded

There is more general agreement among Arbird (2004) line officers about the values they believe the agency **should reward** (app. 2, table 36) than about the values they perceive as **most** and **least** rewarded (app. 2, tables 34 and 35). One of the few notable differences in the values that should be rewarded is that 44 percent of RF&Cs rated meeting targets high, whereas only 24 percent of SUPEs and 23 percent of DRs did. In addition, the same top 10 values Arbird line officers believe the FS reward systems should support, with one minor exception, were also in the Sunbird (1989) line officers' list (fig. 10). Change in time and space dimensions between these two groups of FS leaders did little to change their vote that FS "caring-and-serving values" are the right ones for them and their agency—and should be rewarded.

Analysis of Rewards by Arbird Respondents

Appendix 2 (table 36) provides a quick comparison of how the perceived FS reward system endorses the values Arbird (2004) respondents believe should be
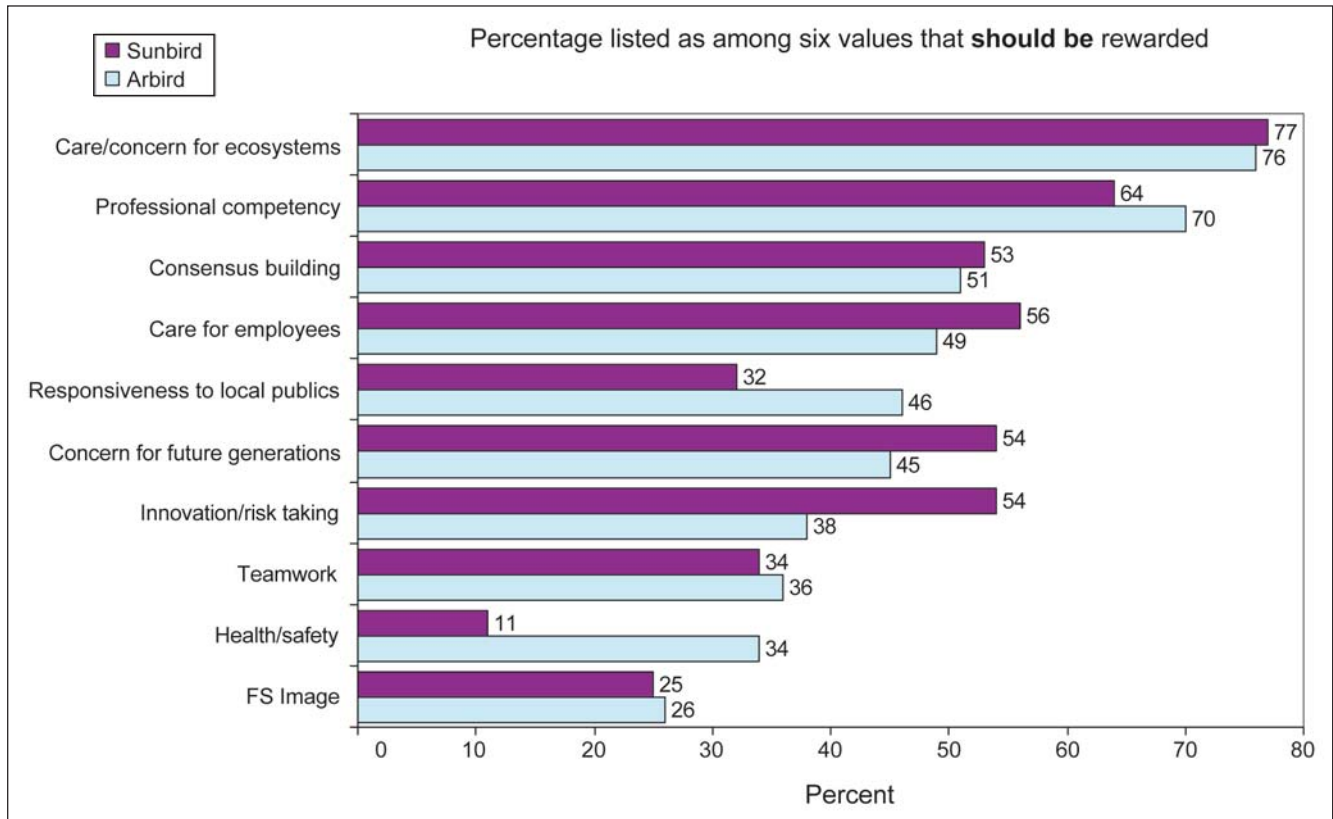
Figure 10—Forest Service values that should be rewarded, Arbird and Sunbird.

Table 10—Values Arbird's respondents believe should be rewarded and that the Forest Service rewards most and least (n = 229)

Should be rewarded overall ranking and values	Ranking the values among the six values that:		
	Should be rewarded	Are rewarded most	Are rewarded least
	Percent		
1 Care/concern for ecosystems	76	32	22
2 Professional competency	70	50	14
3 Consensus building	51	42	12
4 Care for employees	49	8	51
5 Responsiveness to local publics	46	42	16
6 Concern for future generations	44	5	59
7 Innovation/risk taking	38	10	68
8 Teamwork	36	58	11
9 Health/safety	34	18	26
10 FS image	26	49	17

rewarded. The FS reward system can be seen as receiving a "vote of confidence" when values line officers believe **should be** rewarded are perceived to be (1) those the agency rewards **most** and (2) those that are not frequently cited as **least** rewarded—as is the case with professional competence, consensus building, or responsiveness to local publics (see fig. 11). Caring for sustainable ecosystems is the top ranked value that should be rewarded, but it is placed at 10th for both the most and least rewarded value—on the margin of a vote of confidence. The FS reward system clearly gets a vote of no-confidence in caring for employee development (8 percent most and 51 percent least rewarded), or caring for future generations (5 percent most and 59 percent least rewarded; app. 2, tables 34 and 35).

A Focus on Trends in Collaborative Resources Management

During the past three decades national forest managers have evolved from being solitary decisionmakers to being more engaged with the public who care for and use the forests. This evolution in managing national forests not for, but with, the public involved efforts to reshape agency values and expectations and has recently been called collaborative resources management (CRM). Figure 12 illustrates some of the efforts to develop the attitudes and skills (teamwork, consensus building, or concern for local publics) necessary for successful CRM.

For the Arbird (2004) survey, the FS CRM committee requested that several questions (app. 1, questions 54-56) on the evolving status of agency CRM be included. Table 11 shows the majority of respondents (81 percent) believed CRM has increased since 1990. Yet there were significant differences in optimism between higher ranked and positioned RF&Cs (94 percent saw an increase) and SUPEs (90 percent increase) versus DRs, 70 percent of whom believed CRM increased since 1990. Most respondents rated CRM's importance at 8 or higher, with only 8 percent rating it 6 or less. Again the higher the line officer rank, the greater the likelihood to check the "extremely important" (10) end of the scale. This trend continued with 39 percent of RF&Cs believing engagement in CRM was highly rewarded; only 6 percent of SUPEs and 6 percent of DRs were that optimistic. Although most line officers believed CRM performance is moderately rewarded, 19 percent of DRs thought it was not rewarded.

Like many new attitudes and skills promoted by the FS, CRM is a process of personal and professional behavior. It is not an output or target of performance for which line officers have traditionally been held accountable. Admired (and often promoted) FS "can-do" professionals of the 1960s were often respected more for what they achieved in timber harvest, recreational visitor days accommodated, or fire suppression prowess than for employee, stakeholder, or ecosystem processes.

Figure 11—In the past three decades national forest management has evolved from planning decisions made by professionals to planning done collaboratively with the public.
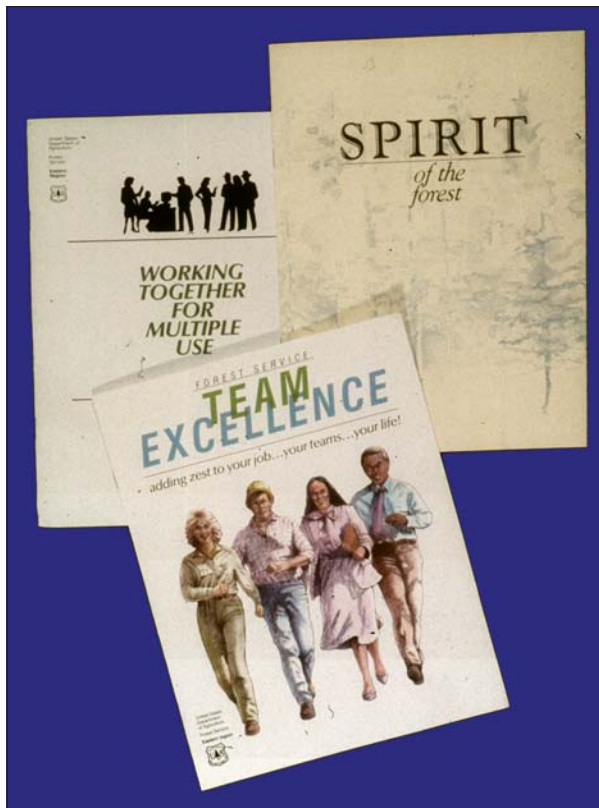
Figure 12—Forest Service (Region 9) publications, circa 1980s, illustrating teams of agency professionals and publics sharing national forest planning and management power (in what today is often called CRM: collaborative resource management).

Table 11—Importance, rewards, and trends in Forest Service collaborative resource management (CRM)

Scale	RF&Cs (n = 18)	SUPEs (n = 100)	DRs (n = 111)	Total responses (n = 229)
		Percent		
Q 54. Change in CRM since 1990				
Increased	94	90	70	81
Same	6	9	27	17
Decreased	0	1	3	2
Q 55. CRM importance to agency mission (1-10 scale)				
10=Extremely important	56	41	32	38
9	11	19	16	17
8	33	19	25	23
7	0	12	18	14
6 or less	0	9	9	8
Q 56. Is CRM engagement rewarded?				
Not rewarded	5	7	19	13
Moderately rewarded	56	87	75	79
Highly rewarded	39	6	6	8

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

Sensitivity and skills in processes of listening, sharing power, and shaping consensus have traditionally been considered feminine values in our society (Gilligan 1982). Consistent with this, women line officers in the Arbird (2004) survey were significantly more likely (53 percent; $p = 0.01$) to rate CRM as extremely important (rating it 10), whereas only 29 percent of men rated it at this level.

In the NEPA (1969) era, one often hears the lament that the agency is "bogged down in process"—such as interdisciplinary team negotiations, public involvement, or partnership maintenance. Regardless of this and some DR skepticism, the above CRM responses and the fact that teamwork and consensus building have increasingly been seen as most rewarded values indicate a FS shift to desiring and rewarding some processes. The next section examines the perceived benefits and drawbacks of many new and lauded processes that FS employees are encouraged to embrace in an attempt to relieve the "process predicament."

Benefits and Drawbacks of the "Process Predicament"

Four questions (64 through 67) were included in the Arbird (2004) survey to assess FS attempts to deal with perceived gridlock imposed by increased attention to processes. Each group of line officers agreed (84 to 94 percent; app. 2, table 43)

that "process gridlock" was detrimental to accomplishing FS mission and goals. Similar responses were given for statements that the FS should actively "promote streamlining procedures" (app. 2, table 44), and that respondents were personally aware of agency policies and programs to manage some of these problems. These results indicate both widespread recognition of the problem and agency action to manage it.

Question 67 responses, however, point to differences within the leadership community about the extent of progress. The RF&Cs all agree that some progress is being made, but a significant number (about 28 percent) of both SUPEs and DRs see little progress. These results suggest that top leadership needs to remain diligent in its attempts to promote, develop, and implement innovative ideas that support streamlining procedures and processes. To achieve the desired results might also take longer than expected.

Forest Service Organizational and Professional Commitments

Arbird (2004) respondents represented significantly more diverse types of professions (p = 0.001) than Sunbird (1989) line officers (question 68). Whereas about one-third of Arbird respondents were foresters (32 percent; app. 2, table 47), almost half (48 percent; app. 3, table 70) of Sunbird line officers were foresters in 1989. Biological professions more than tripled in those 15 years (4 percent to 14 percent), and recreation management stayed the same. The majority of both surveys (about 80 percent) checked responses of extremely strong, very strong, or strong commitment to their profession (question 69). The majority (about 77 percent) would choose the same profession if living their lives over again (question 70).

In a similar series of questions about their agency commitment, Arbird (2004) respondents gave significantly stronger answers on all items than Sunbird (1989) line officers when asked the strength of their commitment to stay in the FS (question 71); 55 percent of the Arbird group (versus 43 percent of Sunbird) checked the extremely strong commitment option, and only 4 percent checked any of the three weak commitment categories (versus 8 percent of Sunbird). If respondents were living life over again (question 72), 86 percent of Arbird (versus 74 percent of Sunbird) checked yes they would work for the FS again, whereas14 percent indicated no or undecided (versus 26 percent for Sunbird).

In the late 1960s, Hall et al. (1970) developed a FS organizational identification scale (FS ID-scale) and tested it in the Eastern Region (R9). Bullis (1984) applied this ID-scale to a servicewide sample, and it was repeated in the Sunbird (1989) and Arbird (2004) surveys for a 40-year glimpse of agency identification

(questions 16-23). This scale asks respondents to agree or disagree with eight items (e.g., question 16: Forest Service has a fine tradition of public service; or question 17: I feel a sense of pride in working for the Forest Service) that can be categorized into agency identification or career satisfaction. An ID-score can range from 1.0 (high) to 7.0 (low FS identification).

The increasing numeric scores in table 12 indicate a general decline in FS identification at all levels of the agency from the 1970s until the Sunbird (1989) survey. Table 12 also indicates that high FS identification (lower score) is consistently associated with higher line positions. Yet the 2004 survey scores show higher FS identification than the comparable line officer group in the Sunbird survey. Perhaps the decline of agency identification has stopped or even reversed direction.

At the close of both surveys two questions asked respondents to look 20 years into the future. One asked them to state how optimistic or pessimistic they were about the "FS ability to care for the land and serve people over the next 20 years" (app. 1, question 73). The majority of Arbird (2004) respondents (79 percent) checked "optimistic" or "very optimistic." Sunbird (1989) line officers were less optimistic, with 73 percent checking the two optimistic choices and 16 percent "pessimistic" or "very pessimistic" (versus 10 percent of Arbird). In the next question (74) Sunbird line officers were significantly less optimistic and more

Table 12—Hall et al. (1970) Forest Service identification scale by employee position

Employee position	Study names and dates			
	Hall et al. (1970)	Bullis (1984)	Sunbird (1989)	Arbird (2004)
	FS identification scores[a] and sample sizes			
RF&Cs	NA	NA	1.69 (n = 10)	1.59 (n = 18)
SUPEs	NA	1.60 (n = 18)	1.87 (n = 112)	1.75 (n = 100)
DRs	1.39 (n = 42)	2.06 (n = 67)	2.41 (n = 123)	1.85 (n = 111)
DC staff	NA	NA	2.92 (n = 36)	NA
Regional staff	1.15 (n = 18)	2.16 (n = 38)	2.99 (n = 186)	NA
Forest staff	1.59 (n = 34)	2.61 (n = 31)	3.08 (n = 512)	NA
District staff	1.62 (n = 39)	2.65 (n = 88)	3.22 (n = 616)	NA

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

[a] The composite score reflects the level of agency identification and career satisfaction. Responses weighted as follows: Strongly agree = 1.0, moderately agree = 2.0, slightly agree = 3.0, neither disagree nor agree = 4.0, and strongly disagree = 7.0.

Note: NA = not sampled.

pessimistic (p = 0.001) about the FS remaining a "satisfying and rewarding place to work over the next 20 years." More Arbird respondents (62 percent versus 48 percent) were "optimistic" or "very optimistic" and less pessimistic (19 percent versus 33 percent) than Sunbird line officers.

New Environmental Paradigm Scale

We used the New Environmental Paradigm developed by Dunlap and Van Liere (1978) to measure the environmental values of Forest Service leadership. Details are given in appendix 4, but in general the results indicate a balanced ecological worldview of Arbird (2004) line officers. Limited results from other groups suggest line officers may differ in having a more balanced view rather than sharing the general population's proecological worldview.

Conclusion

The Arbird (2004) study confirms much of what Mohai et al. (1994: 32) found in a 1992 survey of FS employees. When asked what have been the "most important positive changes in the FS over the past 10 years, the 800-some line officers stated "increased public responsiveness (40 percent), increased noncommodity emphasis (30 percent), workforce diversification (18 percent), better communications and open working conditions (17 percent), increased emphasis on ecosystem/biological diversity (11 percent), and increased environmental awareness/sensitivity (10 percent)." When asked what single most important change their agency still needed to make, few new policies or programs were suggested. Most line and staff employees essentially said "stay the course." This is a vote of confidence for the "caring for the land and serving people" core values (USDA FS 1986) developed after the first forest supervisors' conference in 1985.

Mohai and Jakes (1996) report that most employees feel there has been significant progress in fulfilling the caring-and-serving agency mission, and that the FS should continue that momentum. There is similar encouraging news with a greater proportion of Arbird (2004) than Sunbird (1989) line officers believing the FS reward system supports values they personally believe are rewarded (see fig. 8). Yet, another interpretation of both surveys is that much FS employee caring-and-serving behavior occurs without much help from the official reward system. In the Sunbird and Arbird surveys, line officers usually stated very generic values and performance as most rewarded: work hard and competently in teams that meet targets and exhibit FS loyalty. Much hard, loyal, professionally competent work and target achievement can include caring-and-serving core values, but many of these values were not explicitly stated on Sunbird or Arbird lists of **most** rewarded

FS values. In fact, these mission statement values are most boldly stated in the values survey respondents believe the agency **least** rewards, but **should**.

Similar to their Sunbird predecessors, Arbird line officers cited concern for future generations (58 percent), care for the development of other employees (51 percent), or women and minority involvement (38 percent) as their third, fifth, and sixth values **least** supported by the FS reward system. Yet the demographic changes in gender and ethnic diversity of line officers at Sunbird and Arbird meetings (see fig. 13) indicate considerable progress, even if "care and involve-ment in women's and minority issues" may not "pay off" if one is focused only on the formal reward system. Clear progress is indicated also by responses to question 53, where only 22 percent of Arbird respondents believe that on a month-to-month basis, their work unit(s) take a product or target focus most or all the time, versus 41 percent who checked "managing for a sustainable ecosystem" most or all the time.

Some progress in FS employees implementing the agency mission statement likely does result from official pay and reward incentives; but some of those actions of Sunbird (1989) and Arbird (2004) respondents in caring for sustainable ecosystems, the health and development of colleagues, or publics living and yet to be born seem to occur in spite of incentives of the official reward system. Perhaps other less obvious reward systems are operating in harmony and tension with the obvious official one, namely: (1) line officers' own personal/professional values and ethics, (2) sustaining the respect of other admired line officers or mentors, or (3) supporting the generic and specialized passions of respected staff colleagues in fire ecology, personnel training and development, wildlife management, or work-force diversity—all centripetal and centrifugal forces that Gulick (1951) and Kaufman (1960) observed in the FS about 50 years ago.

The FS is not unique in its attempt to focus on and reward certain values while also trying to maintain political constituency support and organizational productiv-ity, accountability, or control. Education, health delivery, or natural resource man-agement bureaucracies typically have constant tension between the values they cherish and the unavoidable, generic organizational values of loyalty, measurable productivity, and following rules and regulations. Some organizations **ignore** these core values and reward system tensions. Some organizations **accept** that there is nothing they can do about this in the oppressive world of bureaucracies and politics. Organizations of integrity **confront** these persistent and unavoidable political and bureaucratic realities to forge an organization that is committed to its core values and strives to remain true to its mission. Studies such as ours or that of Mohai et al. (1994) suggest that the Forest Service fits the latter category.
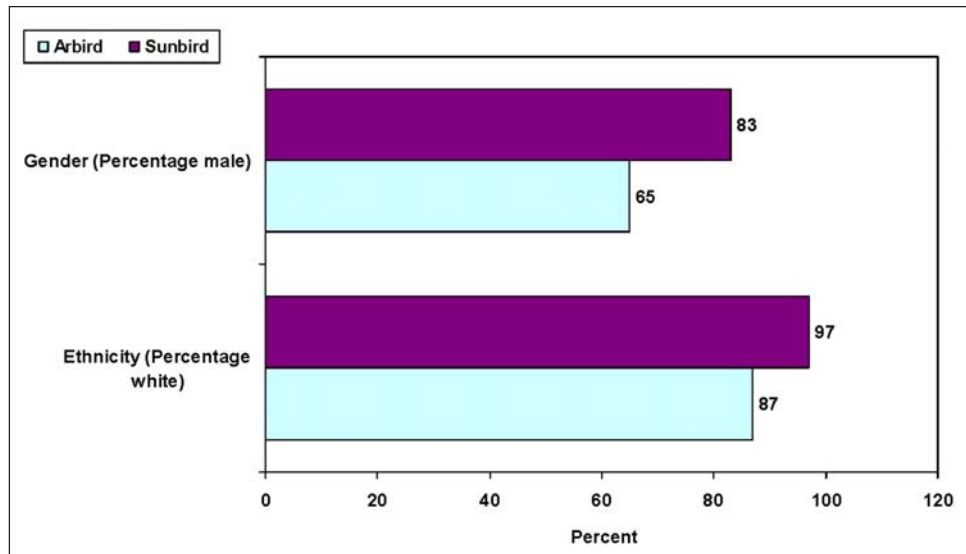
Figure 13—Gender and ethnic diversity.

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Appendix 1—Arbird Survey

2004 FOREST SUPERVISOR CONFERENCE SURVEY

Let's begin this survey by getting some basic background and descriptive information on you and your Forest Service (FS) position.

1.   In what year did you get your first permanent FS assignment? (year)
2.   How old were you then? (years)
3.   Your current age is? (years)
4.   a. What was your Forest Service Occupational Series (e.g., 460, 501, 810, 1301, etc.) when hired
     b. Current FS Occupational Series (e.g., 460, 501, 810, 1301, etc.)
5.   Pay Plan: (GS, SES)
6.   Current Grade (e.g., 5, 9, 12, 14, SES)
7.   Sex: (Male or Female)
8.   Ethnic data:
     a.   American Indian or Alaskan Native
     b.   Asian
     c.   Black or African American
     d.   Native Hawaiian or other Pacific Islander
     e.   Hispanic or Latino
     f.   White

9.   Which best describes the place where you lived the longest when you were growing up (and when your values were forming)?
     a.   large city (250,000 population or more)
     b.   medium-sized city (50,000-250,000) in the suburbs
     c.   medium-sized city (50,000-250,000) not in the suburbs
     d.   small city, town, village or unincorp. area (under 50,000) in the suburbs
     e.   small city, town, village or unincorp. area (under 50,000) not in the suburbs
     f.   in a rural area, but not on a farm or ranch
     g.   on a farm or ranch

10. A. Describe your formal education (a, b, c, d, etc.)
     a.   High School
     b.   Some college (AA)
     c.   College graduate (BS or BA, etc.)
     d.   Some masters work
     e.   Masters degree (MBA, MS, MF, MA degree)
     f.   Additional graduate credit or degree
     g.   PhD degree

11. Your current Forest Service job location:
     a.   Region Office
     b.   Station
     c.   Area
     d.   Washington Office
     e.   Research Work Unit
     f.   Project
     g.   Forest
     h.   Ranger District

12.   Your current Forest Service job type is:
        a.   Line
        b.   Staff
        c.   Other

13.   Emphasis of your current Forest Service job:
        a.   Forest/Vegetation/Fuel Management
        b.   Wildlife/Fisheries Management
        c.   Range
        d.   Water/Soil
        e.   Recreation
        f.   Fire Management
        g.   Engineering
        h.   Planning
        i.   Administration
        j.   Line
        k.   Other

14.   A.   Do you consider yourself a specialist or generalist?
        B.   Are your career plans to be a specialist or generalist?

15.   How many years have you been: (Enter 0 for positions not held)
        a.   District/Project staff
        b.   District Ranger
        c.   Forest staff/Research Work Unit
        d.   Forest Supervisor
        e.   Region staff
        f.   Regional Forester/Station Director/S&PF Area Director
        g.   WO staff
        h.   WO Chief, Deputy, or Assoc. Deputy

You are now asked to state some feelings about the Forest Service and being a Forest Service employee in a series of questions asked of Forest Service employees since the 1960s.

Listed below are a series of statements that represent possible feelings that individuals might have about the Forest Service. With respect to your own feelings about the Forest Service, please indicate the degree to which you agree or disagree with each statement in the left column by selecting one of the seven choices listed in the right column. Note that the middle of the scale, "Neither Agree nor Disagree (4)," is a neutral response.

Strongly Agree	Moderately Agree	Slightly Agree	Neither Disagree nor Agree	Slightly Disagree	Moderately Disagree	Strongly Disagree
7	6	5	4	3	2	1

16.   The Forest Service has a fine tradition of public service.
17.   I feel a sense of pride in working for the Forest Service.
18.   I would advise a young professional graduate to choose a career in the Forest Service.
19.   If I had my life to live over again, I would still choose to work for the FS.

20.   I feel the Forest Service is doing an important job in showing how public land should be managed.
21.   Generally speaking, my career in the Forest Service has been satisfactory.
22.   The record of the National Forests is an example of what dedicated people can achieve.
23.   My values and the Forest Service's values are very similar.

We now turn to an examination of values. This is the most important part of the questionnaire and will probably take the greatest amount of time and thought.

From the list of values/attitudes below, we ask you to select the six (6) that the FS most rewards with Agency respect, status, and promotion. Then select the six (6) the FS rewards least. Finally you will be asked to select the six (6) values you believe the FS should reward. First read the list of values/attitudes, then make your selections below.

a.   Work hard, do extra work
b.   Competent professional performance
c.   Care and involvement in welfare and development of other employees
d.   Works well with others and in teams.
e.   Care and involvement in health/safety of self and others
f.   Promotes good FS public image
g.   Achieves work targets on time
h.   Care/concern about healthy sustainable ecosystems and resources
i.   Care and involvement in women/minority issues
j.   Concern about future generations and the long-run (50+ years)
k.   Imaginative, innovative, a risk-taker
l.   Loyalty to and support of the Forest Service
m.   Accountable, stays within budget
n.   Being responsive to local publics and clients
o.   Strong professional identity and commitment
p.   Being responsive to national publics and clients
q.   Operates within rules and procedures
r.   Care/concern about one's family
s.   Consensus builder, brings groups together
t.   Independent, self-reliant, individualist

Questions 24 through 29:
Next, decide on the six (6) FS most rewarded values. Rank them in descending order of importance in the table with the top most rewarded value first to the lowest most rewarded value sixth.

Questions 30 through 35:
Next, select the six (6) values you believe the FS rewards least. You need not rank them, just select six (6).

Questions 36 through 41:
You have stated what you believe the FS actually does reward. What do you believe the FS should reward (with respect, status, and promotion)? Using the above list of 20 values, identify and rank the six (6) values you believe the FS should reward (they can be the same most-rewarded values you ranked in above or different ones).

42. The values I cherish and prize and the values the FS rewards:
    a. Very often conflict
    b. Often conflict
    c. Sometimes conflict
    d. Seldom conflict
    e. Never conflict

43. Do any differences in values you cherish and prize and the values the FS rewards cause you any discomfort or stress?
    a. Very great stress
    b. Great stress
    c. Moderate stress
    d. Little stress
    e. No stress

The next set of value questions deal with the priorities placed on the traditional multiple uses (wildlife, water, timber, grazing, and recreation) and several emerging uses or values.

Perceived values of the major uses of the National Forests are important in influencing decisions. In addition to the values you individually place on these uses, you also have perceptions of how you believe the public (society) at large values these uses and how the Forest Service, as a whole, values them.

Please indicate how you think the public values the major uses of the Nation Forest System lands, the value you think the Forest Service as a whole has for these uses, and how you personally value the major uses of these lands. Using a 1 to 10 scale of importance (where 10 is Extremely Important and 1 is Unimportant), record your answers below by clicking on a number in each column for the major uses listed at the right side of the table below. An entry of 1 would indicate that the value for that use would be Unimportant; an entry of 5 would indicate that the value was Moderately Important; and an entry of 10 would indicate that the value was Extremely Important.

Extremely Important		Important		Moderately Important		Minimally Important		Unimportant	
10	9	8	7	6	5	4	3	2	1

		Public	FS	You
44.	Timber	____	____	____
45.	Grazing	____	____	____
46.	Recreation	____	____	____
47.	Wildlife	____	____	____
48.	Water	____	____	____
49.	Vegetation	____	____	____
50.	Fuel Risk Mgmt	____	____	____
51.	Biodiversity	____	____	____
52.	Landscape Beauty	____	____	____

53.	Overall, my work unit(s) tend to take this perspective in their month-to-month thinking and, especially, management action.
    a.	Product, target or output focus ALL of the time
    b.	Product, target or output focus MOST of the time
    c.	About half and half
    d.	Sustainable ecosystem focus MOST of the time
    e.	Sustainable ecosystem focus ALL of the time
    f.	Question not applicable or relevant

When answering questions 54 to 56, consider "collaborative resource management" to be the pooling of resources (e.g., money, labor, information) by the Forest Service and communities or groups to achieve mutual objectives from which all parties will benefit.

54.	How has the Forest Service's engagement in "collaborative resource management" changed since 1990?
    a.	Increased
    b.	Stayed the same
    c.	Decreased

55.	How important is Forest Service engagement in "collaborative resource management" to achieving the agency's mission? (Scale 1-10 Extremely important to Unimportant)

56.	To what extent are employees who engage in "collaborative resource management" rewarded (respect, status, promotion) for the time and commitment required of such activities and processes?
    a.	Not rewarded
    b.	Moderately rewarded
    c.	Highly rewarded

57.	Since 1990, relations between the Forest Service and local communities and stakeholder groups have:
    a.	Improved
    b.	Stayed the same
    c.	Decreased

From your perspective, how has the importance or relevancy of the Forest Service to the following stakeholder groups changed in the last decade? Complete the sentences below by selecting one of the choices listed:
    a.	is no longer relevant
    b.	is less relevant
    c.	has the same level of relevancy
    d.	is more relevant
    e.	is highly relevant
    f.	never was relevant

58.	The Forest Service is __ to local resource-based communities.
59.	The Forest Service is __ to urban communities.
60.	The Forest Service is __ to schools/educational institutions.
61.	The Forest Service is __ to the timber industry.
62.	The Forest Service is __ to recreation interests/communities.
63.	The Forest Service is __ to environmental and resource conservation groups.

The next four questions about your feelings about the Forest Service attempt to deal with the Process Predicament. Please indicate the degree to which you agree or disagree with each of the statements listed below by selecting one of the seven choices listed:

    a.   Strongly Agree (7)
    b.   Moderately Agree (6)
    c.   Slightly Agree (5)
    d.   Neither Agree nor Disagree (4)
    e.   Slightly Disagree (3)
    f.   Moderately Disagree (2)
    g.   Strongly Disagree (1)

64.   Process Gridlock is detrimental to effectively accomplishing the Forest Service mission and goal.

65.   The Forest Service should actively promote, develop, and implement innovative ideas that support streamlining procedures and processes.

66.   I am aware of the current actions across the Agency that support streamlining procedures and processes.

67.   The Forest Service has made significant progress to reduce gridlock within the Agency.

The next set of questions ask about your commitment to a Forest Service career and to a career in a professional area.

68.   Do you identify with a particular profession in the Forest Service?
    a.   Foresters
    b.   Range managers
    c.   Biologist/Botanist
    d.   Recreation managers
    e.   Engineers
    f.   Hydrologists
    g.   Soil scientists
    h.   Planners
    i.   None
    j.   Other

69.   The strength of my commitment to stay involved in this professional area for most of my career (next 10 to 20 years) is:
    a.   Extremely strong commitment
    b.   Very strong commitment
    c.   Strong commitment
    d.   Weak commitment
    e.   Very weak commitment
    f.   Extremely weak commitment
    g.   No commitment

70.   If you could turn back the clock, would you choose this same professional area again?
    a.   yes
    b.   no
    c.   undecided

71. The strength of my commitment to stay in the Forest Service for the next 10 to 20 years (or until retirement) is:
    a. Extremely strong commitment
    b. Very strong commitment
    c. Strong commitment
    d. Weak commitment
    e. Very weak commitment
    f. Extremely weak commitment
    g. No commitment

72. If you could turn back the clock, would you choose to work for the Forest Service again?
    a. yes
    b. no
    c. undecided

73. How optimistic or pessimistic are you about the FS continuing to "care for the land and serve people" in the next 20 years?
    a. Very optimistic
    b. Optimistic
    c. Neutral
    d. Pessimistic
    e. Very pessimistic

74. How optimistic or pessimistic are you about the FS being a satisfying and rewarding place for someone like you to work in the next 20 years?
    a. Very optimistic
    b. Optimistic
    c. Neutral
    d. Pessimistic
    e. Very pessimistic

Next is a series of "agree-disagree" questions used for over a decade in measuring environmental attitudes in the USA and Europe. Please indicate the degree to which you agree or disagree with each of the statements listed below by selecting one of the five choices listed.

> Strongly agree
> Mildly agree
> Unsure
> Mildly disagree
> Strongly disagree

75. We are approaching the limit of the number of people the earth can support.
76. Humans have the right to modify the natural environment to suit their needs.
77. When humans interfere with nature it often produces disastrous consequences.
78. Human ingenuity will ensure that we do not make the Earth unlivable.
79. Humans are severely abusing the environment.
80. The Earth has plenty of natural resources if we just learn how to develop them.
81. Plants and animals have as much right as humans to exist.
82. The balance of nature is strong enough to cope with the impacts of modern industrial nations.

83.   Despite our special abilities, humans are still subject to the laws of nature.
84.   The so-called "ecological crisis" facing humankind has been greatly exaggerated.
85.   The earth is like a spaceship with very limited room and resources.
86.   Humans were meant to rule over the rest of nature.
87.   The balance of nature is very delicate and easily upset.
88.   Humans will eventually learn enough about how nature works to be able to control it.
89.   If things continue on their present course, we will soon experience a major ecological catastrophe.

Appendix 2—Responses to Arbird Survey Questions

Table 13—In what year did you get your first permanent Forest Service assignment? (Q 1)

Period	RF&Cs	SUPEs	DRs	Total
		Number of people		
1964-1970	4	9	5	18
1971-1975	5	16	16	37
1976-1980	3	53	34	90
1981-1985	3	16	20	39
1986-1990	1	2	24	27
1991-1995	0	2	9	11
1996-2000	0	1	1	2
2001-2003	2	1	1	4
**	0	0	1	1
Total	18	100	111	229

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

** Years not identified.

Table 14—How old were you when you got your first permanent Forest Service assignment? (Q 2)

Age	RF&Cs	SUPEs	DRs	Total
Years		*Number of people*		
Younger than 20	0	3	4	7
21-25	11	61	49	121
26-30	2	22	39	63
31-35	1	6	13	20
36-40	1	4	3	8
41-45	0	0	2	2
46-50	3	4	0	7
**	0	0	1	1
Total	18	100	111	229

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

** Age not identified.

Table 15—What is your current age? (Q 3)

Age	RF&Cs	SUPEs	DRs	Total
Years		*Number of people*		
32-35	0	0	4	11
36-40	0	0	11	33
41-45	0	12	21	67
46-50	2	36	29	80
51-55	10	33	37	28
56-60	5	15	8	4
61-65	0	3	1	1
66-69	1	0	0	1
**	0	1	0	
Total	18	100	111	229

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

** Age not identified.

Table 16—What was your occupational series when hired? (Q 4)

Series	RF&Cs	SUPEs	DRs
		Percent	
Forester	28	35	31
Biologist	6	12	16
Recreation manager	11	6	10
Range manager	0	3	10
Planner	0	3	4
Soil/hydrologist	0	5	1
Engineer	0	2	1

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

Table 17—What is your current pay plan? (Q 5)

Pay plan	RF&Cs	SUPEs	DRs	Total
	Number of people			
GM/GS	0	100	111	211
SES	18	0	0	18
Total	18	100	111	229

Note: RF&Cs–Regional foresters, directors of the International
Institute of Tropical Forestry and State and Private Forestry North-
eastern Area, deputy chiefs, Associate Chief and Chief, SUPEs—
forest supervisors, and DRs—district rangers.

Table 18—What is your current grade, gender, and ethnicity?
(Q 6, Q 7, Q 8)

Category (question)	RF&Cs	SUPEs	DRs	Total
	Number of people			
Grade (Q 6):				
GS-11 or 12	0	0	30	30
GS-13	0	0	81	81
GS-14	0	61	0	61
GS-15	0	39	0	39
SES	18	0	0	18
Total	18	100	111	229
Gender (Q 7):				
Female	8	33	38	79
Male	10	67	73	150
Ethnicity (Q 8):				
American Indian/Alaska Native	0	2	4	6
Asian	0	4	0	4
Black/African American	0	3	2	5
Native Hawaiian	0	0	0	0
Hispanic/Latino	2	6	6	14
White	16	85	99	200

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical
Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief
and Chief, SUPEs–forest supervisors, and DRs–district rangers.

Table 19—Which best describes where you lived longest when you grew up? (Q 9)

Place	RF&Cs	SUPEs	DRs	Total
	Number of people			
Large city	3	19	17	39
Medium-sized city in suburbs	5	15	20	40
Medium-sized city not in suburbs	2	6	9	17
Small-sized city in suburbs	0	13	15	28
Small-sized city not in suburbs	5	22	16	43
Rural area but not farm/ranch	0	13	27	40
Farm/ranch	3	12	7	22

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

Table 20—Describe your formal education (Q 10)

Degree	RF&Cs	SUPEs	DRs	Total
	Number of people			
High school	0	0	0	0
Some college	0	1	0	1
College graduate	2	34	44	80
Some master's work	3	22	26	51
Master's degree	6	27	29	62
Additional graduate credit	4	15	11	30
Ph.D.	3	1	1	5

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

Table 21—Your current Forest Service job location (Q 11)

Location	RF&Cs	SUPEs	DRs	Total
	Number of people			
Regional office	6	0	0	6
Station	3	0	0	3
Area	0	0	0	0
Washington office	9	0	0	9
Research work unit	0	0	0	0
Project	0	0	0	0
Forest	0	100	0	100
Ranger district	0	0	111	111
Total	18	100	111	229

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

Table 22—Your current Forest Service job type is (Q 12)

Job type	RF&Cs	SUPEs	DRs	Total
		Number of people		
Line	18	100	111	229
Staff	0	0	0	0
Other	0	0	0	0
Total	18	100	111	229

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

Table 23—Emphasis of your current Forest Service job (Q 13)

Emphasis	RF&Cs	SUPEs	DRs	Total
		Number of people		
Forest/vegetation/fuel management	0	2	1	3
Wildlife/fisheries management	0	0	0	0
Range	0	0	1	1
Water/soil	0	0	0	0
Recreation	0	0	1	1
Fire management	0	0	1	1
Engineering	0	0	0	0
Planning	0	0	0	0
Administration	6	4	14	24
Line	9	94	93	196
Other	3	0	0	3
Total	18	100	111	229

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

Table 24—Do you consider yourself a specialist or generalist? (Q 14a) Are your career plans to be specialist or generalist? (Q 14b)

	RF&Cs	SUPEs	DRs	Total
		Number of people		
Current				
Generalist	18	100	108	226
Specialist	0	0	3	3
Plan to be				
Generalist	18	98	104	220
Specialist	0	2	7	9

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

Table 25—During your career how many years have you been the following? (Q 15)

Position	RF&Cs	SUPEs	DRs	Total
	Average years			
District/project staff	3.1	7.4	9.7	8.1
District ranger	1.9	5.4	5.9	5.4
Forest staff/research unit	3.6	3.2	2.3	2.8
Forest supervisor	2.1	5.5	0	2.6
Regional staff	2.2	1.3	.5	1.0
RF/SD/S&PF area director	3.8	0	0	.3
WO staff	4.2	1.5	.1	1.0
WO Chief, deputies, Associate Chief	1.0	0	0	.1
Average service years in FS	21.9	24.2	18.5	21.2

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

Table 26—The Forest Service has a fine tradition of public service (Q 16)

Scale	RF&Cs	SUPEs	DRs	Total
	Percent			
Strongly agree	72	67	56	62
Moderately agree	28	26	39	32
Slightly agree	0	5	3	3
Neutral	0	1	1	1
Slightly disagree	0	0	2	1
Moderately disagree	0	1	0	0
Strongly disagree	0	0	0	0
Agreement index[a]	1.278	1.440	1.541	1.476

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

[a] Agreement index is computed as the average of the ratings. Smaller index values indicate higher levels of agreement.

Table 27—I feel a sense of pride in working for the Forest Service (Q 17)

Scale	RF&Cs	SUPEs	DRs	Total
	Percent			
Strongly agree	78	67	68	69
Moderately agree	17	30	23	26
Slightly agree	0	2	5	3
Neutral	0	0	0	0
Slightly disagree	6	0	3	2
Moderately disagree	0	1	0	0
Strongly disagree	0	0	1	0
Agreement index[a]	1.389	1.390	1.486	1.437

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

[a] Agreement index is computed as the average of the ratings. Smaller index values indicate higher levels of agreement.

Table 28—I would advise a young professional graduate to choose a career in the Forest Service (Q 18)

Scale	RF&Cs	SUPEs	DRs	Total
	Percent			
Strongly agree	56	37	30	35
Moderately agree	33	35	43	39
Slightly agree	0	21	15	17
Neutral	0	2	5	3
Slightly disagree	6	2	5	4
Moderately disagree	6	1	2	2
Strongly disagree	0	2	0	1
Agreement index[a]	1.833	2.080	2.180	2.109

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

[a] Agreement index is computed as the average of the ratings. Smaller index values indicate higher levels of agreement.

Table 29—If I had my life to live over again, I would still choose to work for the Forest Service (Q 19)

Scale	RF&Cs	SUPEs	DRs	Total
		Percent		
Strongly agree	83	59	57	60
Moderately agree	11	27	28	26
Slightly agree	0	7	6	6
Neutral	0	0	3	1
Slightly disagree	0	4	4	3
Moderately disagree	0	2	1	1
Strongly disagree	6	1	2	2
Agreement index[a]	1.444	1.730	1.784	1.734

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

[a] Agreement index is computed as the average of the ratings. Smaller index values indicate higher levels of agreement.

Table 30—I feel the Forest Service is doing an important job in showing how public land should be managed (Q 20)

Scale	RF&Cs	SUPEs	DRs	Total
		Percent		
Strongly agree	39	36	40	38
Moderately agree	33	38	37	37
Slightly agree	22	16	12	14
Neutral	0	2	1	1
Slightly disagree	6	4	9	7
Moderately disagree	0	3	1	2
Strongly disagree	0	1	1	1
Agreement index[a]	2.000	2.130	2.090	2.100

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

[a] Agreement index is computed as the average of the ratings. Smaller index values indicate higher levels of agreement.

Table 31—Generally speaking, my career in the Forest Service has been satisfactory (Q 21)

Scale	RF&Cs	SUPEs	DRs	Total
	Percent			
Strongly agree	78	66	59	64
Moderately agree	17	30	35	31
Slightly agree	0	2	5	3
Neutral	0	0	0	0
Slightly disagree	0	2	0	1
Moderately disagree	6	0	0	0
Strongly disagree	0	0	0	0
Agreement index[a]	1.444	1.420	1.459	1.441

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

[a] Agreement index is computed as the average of the ratings. Smaller index values indicate higher levels of agreement.

Table 32—The record of the national forests is an example of what dedicated people can achieve (Q 22)

Scale	RF&Cs	SUPEs	DRs	Total
	Percent			
Strongly agree	50	37	28	34
Moderately agree	44	49	47	48
Slightly agree	6	11	18	14
Neutral	0	3	6	4
Slightly disagree	0	0	1	0
Moderately disagree	0	0	0	0
Strongly disagree	0	0	0	0
Agreement index[a]	1.556	1.800	2.054	1.904

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

[a] Agreement index is computed as the average of the ratings. Smaller index values indicate higher levels of agreement.

Table 33—My values and the Forest Service's values are very similar (Q 23)

Scales	RF&Cs	SUPEs	DRs	Total
	Percent			
Strongly agree	28	29	28	28
Moderately agree	67	49	49	50
Slightly agree	5	16	11	13
Neutral	0	3	4	3
Slightly disagree	0	2	4	3
Moderately disagree	0	1	3	2
Strongly disagree	0	0	1	1

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

[a] Agreement index is computed as the average of the ratings. Smaller index values indicate higher levels of agreement.

Table 34—Values line officers think the Forest Service rewards most (Q 24-29)

Values	RF&Cs (n = 18)	SUPEs (n = 100)	DRs (n = 111)	Total (n = 229)	X^2	p
	– – – – – – – – – *Percent* – – – – – – – – –					
Teamwork	78	59	53	58	1.686	0.430
FS loyalty	39	52	54	52	0.686	0.710
Meeting targets	33	57	50	52	1.821	0.402
Professional competency	66	52	46	50	1.436	0.488
Hard work	56	54	45	50	0.978	0.613
FS image	44	43	55	49	1.618	0.445
Consensus building	44	44	41	42	0.169	0.919
Responsiveness to local publics	44	44	39	41	0.392	0.822
Following rules and regulations	6	36	42	37	5.737	0.057
Care/concern for ecosystems	67	35	23	32	9.628	0.008
Budget accountability	17	27	32	29	1.540	0.463
Responsiveness to national publics	28	33	23	28	2.099	0.350
Professional identity and commitment	11	16	22	18	1.464	0.481
Health/safety	11	12	23	17	4.383	0.112
Women/minority involvement	11	12	21	16	2.785	0.249
Innovation/risk taking	6	6	14	10	3.426	0.180
Care for employees	11	8	7	8	0.305	0.859
Independence and individualism	0	7	5	6	NA	
Concern for future generations	22	3	5	5	10.979	0.004
Care for one's family	6	0	1	1	NA	

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

NA = No observations in one or more groups.

Table 35—Values line officers think the Forest Service rewards least (Q 30-35)

Values	RF&Cs (n = 18)	SUPEs (n = 100)	DRs (n = 111)	Total (n = 229)	X^2	p
			Percent			
Innovation/risk taking	83	70	64	68	0.9446	0.6236
Independence and individualism	67	70	56	63	1.7171	0.4238
Concern for future generations	44	59	60	59	0.6776	0.7126
Care for one's family	56	56	59	58	0.1242	0.9398
Care for employees	56	57	44	51	1.8081	0.4049
Women/minority involvement	39	42	34	38	0.8386	0.6575
Professional identity and commitment	33	37	25	31	2.3857	0.3034
Budget accountability	11	28	34	30	2.9608	0.2275
Health/safety	22	37	17	26	8.0538	0.0178
Care/concern for ecosystems	6	17	30	22	6.2795	0.0433
Meeting targets	44	9	28	21	14.1334	0.0009
Hard work	0	13	31	21	NA	
Following rules and regulations	56	12	16	17	16.7616	0.0002
FS image	22	18	14	17	0.7803	0.6769
Responsiveness to local publics	17	11	21	16	3.0805	0.2143
Professional competency	11	10	19	14	3.0522	0.2174
Responsiveness to national publics	11	18	10	14	2.6277	0.2688
FS loyalty	6	12	14	12	0.8098	0.6671
Consensus building	17	10	13	12	0.6988	0.7051
Teamwork	0	14	11	11	NA	

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

NA = No observations in one or more groups.

Table 36—Values line officers think the Forest Service should reward (Q 36-41)

Values	RF&Cs (n = 18)	SUPEs (n = 100)	DRs (n = 111)	Total (n = 229)	X^2	p
			Percent			
Care/concern for ecosystems	78	79	74	76	0.185	0.912
Professional competency	89	66	70	70	1.149	0.563
Consensus building	44	58	46	51	1.664	0.435
Care for employees	56	47	50	49	0.247	0.884
Responsiveness to local publics	50	45	46	46	0.084	0.959
Concern for future generations	39	49	41	45	0.814	0.666
Innovation/risk taking	0	31	50	38	NA	
Teamwork	50	38	32	36	1.713	0.425
Health/safety	28	34	35	34	0.246	0.884
FS image	22	26	26	26	0.095	0.953
Meeting targets	44	24	23	25	3.047	0.218
Budget accountability	39	24	21	24	2.181	0.336
Hard work	17	17	22	19	0.651	0.722
Responsiveness to national publics	22	15	14	15	0.794	0.672
Professional identity and commitment	0	9	16	12	NA	
Care for one's family	0	13	11	11	NA	
FS loyalty	6	9	10	9	0.326	0.850
Women/minority involvement	17	9	6	8	2.109	0.348
Following rules and regulations	0	6	6	6	NA	
Independence and individualism	0	1	2	1	NA	

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

NA = No observations in one or more groups.

Table 37—Values I cherish and prize and values the Forest Service rewards (Q 42) and discomfort or stress caused by differences (Q 43)

	RF&Cs (n = 18)	SUPEs (n = 100)	DRs (n = 111)	Total (n = 229)
	Percent			
Q 42				
Very often conflict	0	1	2	1
Often conflict	6	8	11	9
Sometimes conflict	39	61	66	62
Seldom conflict	56	29	21	27
Never conflict	0	1	0	1
Q 43				
Very great stress	0	1	1	1
Great stress	6	6	5	6
Moderate stress	39	34	33	34
Little stress	50	51	57	53
No stress	5	8	4	6

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

Table 38—What major uses or outputs (average) are valued on National Forest System lands? (Q 44-52)

Resource values	Public view (n = 229)	FS view (n = 229)	Line officers' views (n = 229)	F-value	p
	Rank (1 = lowest, 10 = highest)				
Q 48 Water	7.8	7.5	8.8		
Q 50 Fuel risk management	7.1	8.7	8.6		
Q 46 Recreation	9.2	6.3	8.5		
Q 49 Vegetation management	5.3	7.9	8.3		
Q 47 Wildlife	8.5	6.8	8.0		
Q 51 Biodiversity	5.9	6.7	7.7		
Q 52 Landscape beauty	8.5	6.4	7.7		
Q 44 Timber	4.3	7.2	6.1		
Q 45 Grazing	3.4	6.0	4.9		
Average value	6.7	7.0	7.6	62.32	<0.0001

Table 39—Overall, my work unit(s) tends to take this perspective in month-to-month thinking and, especially, management action (Q 53)

Values	RF&Cs (n = 13)	SUPEs (n = 100)	DRs (n = 105)	Total (n = 218)
	Percent			
Production target all the time	0	1	1	1
Production target most of the time	23	14	27	21
About half and half	46	38	35	37
Sustainable ecosystem most of the time	31	41	28	34
Sustainable ecosystem all of the time	0	6	9	7

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

Table 40—How has the Forest Service's engagement in collaborative resource management changed since 1990, how important is Forest Service engagement in collaborative resource management to achieving the agency's mission, and to what extent are employees who engage in collaborative resource management rewarded (respect, status, promotion) for the time and commitment required of such activities and processes? (Q 54, Q 55, Q 56)

Scale	RF&Cs (n = 18)	SUPEs (n = 100)	DRs (n = 111)	Total (n = 229)
	Percent			
Q 54				
Increased	94	90	70	81
Same	6	9	27	17
Decreased	0	1	3	2
Q 55 (10 = extremely important, 1 = unimportant)				
10	56	41	32	38
9	11	19	16	17
8	33	19	25	23
7	0	12	18	14
6 or less	0	9	9	8
Q 56				
Not rewarded	5	7	19	13
Moderately	56	87	75	79
Highly rewarded	39	6	6	8

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

Table 41—Since 1990, relations between the Forest Service and local communities and stakeholder groups have: (Q 57)

Scale	RF&Cs n = 18	SUPEs n = 100	DRs n = 111	Total n = 229	X^2	p
	− − − − − − − − − *Percent* − − − − − − − − −					
Improved	28	54	51	51	4.461	0.347
Stayed the same	33	24	26	25		
Decreased	39	22	23	24		

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

Table 42—From your perspective, how has the Forest Service importance or relevancy changed in the past decade to the following? (Q 58-63)

Communities or group	Change in relevancy replies					
	No longer relevant	Less relevant	Same	More relevant	Highly relevant	Never was relevant
	Percent					
Local resource-based communities	2	45	13	17	23	0
Urban communities	2	17	24	40	14	3
School/education	2	31	38	22	6	1
Timber industry	7	72	8	7	6	0
Recreational interests	0	0	9	45	46	0
Environmental/conservation groups	0	6	24	31	38	1

Table 43—Process gridlock is detrimental to effectively accomplishing the Forest Service mission and goal (Q 64)

Scale	RF&Cs	SUPEs	DRs	Total
	Percent			
Strongly disagree	0	1	0	0
Moderately disagree	0	2	4	3
Slightly disagree	0	2	1	1
Neutral	0	1	2	1
Slightly agree	6	10	6	8
Moderately agree	28	26	17	22
Strongly agree	66	58	70	65

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

Table 44—The Forest Service should actively promote, develop, and implement innovative ideas that support streamlining procedures and processes (Q 65)

Scale	RF&Cs	SUPEs	DRs	Total
	Percent			
Strongly disagree	0	0	1	0
Moderately disagree	0	0	0	0
Slightly disagree	0	1	0	0
Neutral	0	0	0	0
Slightly agree	6	4	4	4
Moderately agree	11	19	16	17
Strongly agree	83	76	79	78

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

Table 45—I am aware of the current actions across the Agency that support streamlining procedures and processes (Q 66)

Scale	RF&Cs	SUPEs	DRs	Total
	Percent			
Strongly disagree	0	0	0	0
Moderately disagree	0	1	1	1
Slightly disagree	0	0	2	1
Neutral	0	1	2	1
Slightly agree	22	5	16	12
Moderately agree	33	42	54	47
Strongly agree	44	51	25	38

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

Table 46—The Forest Service has made significant progress to reduce gridlock within the Agency (Q 67)

Scale	RF&Cs	SUPEs	DRs	Total
		Percent		
Strongly disagree	0	5	5	4
Moderately disagree	0	11	7	8
Slightly disagree	0	13	16	14
Neutral	6	1	7	4
Slightly agree	39	38	50	44
Moderately agree	56	27	13	22
Strongly agree	0	5	3	3

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs– district rangers.

Table 47—Do you identify with a particular profession in the Forest Service? (Q 68)

Professions	RF&Cs	SUPEs	DRs	Total
		Percent		
Forester	28	35	31	32
Range manager	0	3	10	6
Biologist	6	12	16	14
Recreation manager	11	6	10	8
Engineer	0	2	1	1
Hydrologist	0	4	1	2
Soil scientist	0	1	0	0
Planner	0	3	5	3
None	6	20	9	14
Other	50	14	18	19

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs– district rangers

Table 48—The strength of my commitment to stay involved in this professional area for most of my career (next 10 to 20 years) (Q 69)

Scale	RF&Cs	SUPEs	DRs	Total
	Percent			
Extremely strong	39	20	19	21
Very strong	22	22	35	28
Strong	33	30	28	29
Weak	0	18	5	10
Very weak	0	2	0	1
Extremely weak	0	1	2	1
No commitment	6	7	11	9

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers

Table 49—If you could turn back the clock, would you choose this same professional area again? (Q 70)

Scale	RF&Cs	SUPEs	DRs	Total
	Percent			
Yes	83	75	78	77
No	11	12	8	10
Undecided	6	13	14	13

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

Table 50—The strength of my commitment to stay in the Forest Service for the next 10 to 20 years (or until retirement) is: (Q 71)

Scale	RF&Cs	SUPEs	DRs	Total
	Percent			
Extremely strong	50	55	57	55
Very strong	11	31	23	25
Strong	28	8	14	12
Weak	0	2	2	2
Very weak	0	1	3	2
Extremely weak	6	0	0	0
No commitment	6	3	3	3

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

Table 51—If you could turn back the clock, would you choose to work for the Forest Service again? (Q 72)

Choices	RF&Cs	SUPEs	DRs	Total
	Percent			
Yes	94	85	86	86
No	6	4	5	4
Undecided	0	11	10	10

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs– district rangers.

Table 52—How optimistic or pessimistic are you about the Forest Service continuing to "care for the land and serve people" in the next 20 years? (Q 73)

Scale	RF&Cs	SUPEs	DRs	Total
	Percent			
Very optimistic	44	30	21	27
Optimistic	50	52	51	52
Neutral	0	11	15	12
Pessimistic	6	6	10	8
Very pessimistic	0	1	3	2

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs– district rangers.

Table 53—How optimistic or pessimistic are you about the Forest Service being a satisfying and rewarding place for someone like you to work in the next 20 years? (Q 74)

Scale	RF&Cs	SUPEs	DRs	Total
	Percent			
Very optimistic	22	15	9	13
Optimistic	61	52	44	49
Neutral	6	16	24	19
Pessimistic	11	13	22	17
Very pessimistic	0	4	1	2

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs– district rangers.

See Appendix 4 for a discussion of the specific results for the New Environmental Paradigm Scale (Q 75-87).

Table 54—We are approaching the limit of the number of people the Earth can support (Q 75)

Scale	RF&Cs	SUPEs	DRs	Total
	Percent			
Strongly agree	22	25	27	26
Mildly agree	39	35	29	32
Unsure	0	17	15	15
Mildly disagree	33	14	21	19
Strongly disagree	6	9	8	8
Agreement index[a]	2.611	2.470	2.538	2.516

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

[a] Agreement index is computed as the average of the ratings. Smaller index values indicate higher levels of agreement.

Table 55—Humans have the right to modify the natural environment to suit their needs (Q 76)

Scale	RF&Cs	SUPEs	DRs	Total
	Percent			
Strongly agree	28	10	14	13
Mildly agree	50	62	46	53
Unsure	0	5	3	3
Mildly disagree	22	20	30	25
Strongly disagree	0	3	8	5
Agreement Index[a]	2.167	2.440	2.729	2.559

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

[a] Agreement index is computed as the average of the ratings. Smaller index values indicate higher levels of agreement.

Table 56—When humans interfere with nature it often produces disastrous consequences (Q 77)

Scale	RF&Cs	SUPEs	DRs	Total
	Percent			
Strongly agree	11	6	21	14
Mildly agree	50	42	34	39
Unsure	6	8	5	7
Mildly disagree	28	36	33	34
Strongly disagree	6	8	6	7
Agreement index[a]	2.667	2.980	2.700	2.821

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

[a] Agreement index is computed as the average of the ratings. Smaller index values indicate higher levels of agreement.

Table 57—Human ingenuity will ensure that we do not make the Earth unlivable (Q 78)

Scale	RF&Cs	SUPEs	DRs	Total
	Percent			
Strongly agree	39	11	11	13
Mildly agree	28	38	32	34
Unsure	17	26	16	21
Mildly disagree	11	19	32	25
Strongly disagree	6	6	9	7
Agreement index[a]	2.167	2.710	2.970	2.794

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

[a] Agreement index is computed as the average of the ratings. Smaller index values indicate higher levels of agreement.

Table 58—Humans are severely abusing the environment (Q 79)

Scale	RF&Cs	SUPEs	DRs	Total
	Percent			
Strongly agree	11	12	23	17
Mildly agree	44	49	41	45
Unsure	0	7	3	4
Mildly disagree	44	24	28	28
Strongly disagree	0	8	6	7
Agreement index[a]	2.778	2.670	2.547	2.620

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

[a] Agreement index is computed as the average of the ratings. Smaller index values indicate higher levels of agreement.

Table 59—The Earth has plenty of natural resources if we just learn how to develop them (Q 80)

Scale	RF&Cs	SUPEs	DRs	Total
	Percent			
Strongly agree	6	7	4	5
Mildly agree	39	30	31	31
Unsure	11	13	13	13
Mildly disagree	39	37	37	37
Strongly disagree	6	13	16	14
Agreement index[a]	3.000	3.190	3.312	3.236

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

[a] Agreement index is computed as the average of the ratings. Smaller index values indicate higher levels of agreement.

Table 60—Plants and animals have as much right as humans to exist (Q 81)

Scale	RF&Cs	SUPEs	DRs	Total
	Percent			
Strongly agree	22	19	30	24
Mildly agree	28	43	28	35
Unsure	6	5	5	5
Mildly disagree	33	22	27	25
Strongly disagree	11	11	11	11
Agreement index[a]	2.833	2.630	2.610	2.638

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

[a] Agreement index is computed as the average of the ratings. Smaller index values indicate higher levels of agreement.

Table 61—The balance of nature is strong enough to cope with the impacts of modern industrial nations (Q 82)

Scale	RF&Cs	SUPEs	DRs	Total
	Percent			
Strongly agree	0	2	1	1
Mildly agree	11	16	15	15
Unsure	11	17	7	12
Mildly disagree	50	41	47	45
Strongly disagree	28	24	30	27
Agreement index[a]	3.945	3.690	3.892	3.808

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

[a] Agreement index is computed as the average of the ratings. Smaller index values indicate higher levels of agreement.

Table 62—Despite our special abilities, humans are still subject to the laws of nature (Q 83)

Scale	RF&Cs	SUPEs	DRs	Total
	Percent			
Strongly agree	44	60	62	60
Mildly agree	44	35	35	36
Unsure	6	3	2	3
Mildly disagree	0	1	1	1
Strongly disagree	6	1	0	1
Agreement index[a]	1.778	1.480	1.414	1.471

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

[a] Agreement index is computed as the average of the ratings. Smaller index values indicate higher levels of agreement.

Table 63—The so-called "ecological crisis" facing humankind has been greatly exaggerated (Q 84)

Scale	RF&Cs	SUPEs	DRs	Total
	Percent			
Strongly agree	6	11	8	9
Mildly agree	39	32	39	36
Unsure	6	7	11	9
Mildly disagree	33	35	24	30
Strongly disagree	17	15	18	17
Agreement index[a]	3.167	3.110	3.051	3.087

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

[a] Agreement index is computed as the average of the ratings. Smaller index values indicate higher levels of agreement.

Table 64—The Earth is like a spaceship with very limited room and resources (Q 85)

Scale	RF&Cs	SUPEs	DRs	Total
	Percent			
Strongly agree	33	20	30	26
Mildly agree	44	52	42	47
Unsure	0	5	5	4
Mildly disagree	17	17	21	19
Strongly disagree	6	6	3	4
Agreement index[a]	2.167	2.370	2.241	2.293

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

[a] Agreement index is computed as the average of the ratings. Smaller index values indicate higher levels of agreement.

Table 65—Humans were meant to rule over the rest of nature (Q 86)

Scale	RF&Cs	SUPEs	DRs	Total
	Percent			
Strong agree	11	13	7	10
Mildly agree	22	15	29	22
Unsure	6	8	9	8
Mildly disagree	50	35	28	33
Strong disagree	11	29	27	27
Agreement index[a]	3.278	3.520	3.384	3.437

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

[a] Agreement index is computed as the average of the ratings. Smaller index values indicate higher levels of agreement.

Table 66—The balance of nature is very delicate and easily upset (Q 87)

Scale	RF&Cs	SUPEs	DRs	Total
	Percent			
Strongly agree	0	10	8	8
Mildly agree	33	31	31	31
Unsure	6	8	5	7
Mildly disagree	50	45	48	47
Strongly disagree	11	6	8	7
Agreement index[a]	3.389	3.060	3.172	3.139

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

[a] Agreement index is computed as the average of the ratings. Smaller index values indicate higher levels of agreement.

Table 67—Humans will eventually learn enough about how nature works to be able to control it (Q 88)

Scale	RF&Cs	SUPEs	DRs	Total
	Percent			
Strongly agree	11	1	1	2
Mildly agree	22	8	4	7
Unsure	0	8	10	8
Mildly disagree	39	45	54	49
Strongly disagree	28	38	32	34
Agreement index[a]	3.500	4.110	4.117	4.066

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

[a] Agreement index is computed as the average of the ratings. Smaller index values indicate higher levels of agreement.

Table 68—If things continue on their present course, we will soon experience a major ecological catastrophe (Q 89)

Scale	RF&Cs	SUPEs	DRs	Total
	Percent			
Strongly agree	6	5	9	7
Mildly agree	22	27	28	27
Unsure	6	24	18	20
Mildly disagree	56	33	27	32
Strongly disagree	11	11	18	14
Agreement index[a]	3.445	3.180	3.172	2.797

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

[a] Agreement index is computed as the average of the ratings. Smaller index values indicate higher levels of agreement.

Appendix 3—Sunbird Responses (1989), Data Recalculated to Match Arbird (2004) Survey

The original data collected from the 1989 Sunbird survey were recompiled following the group definitions for line officers used for the 2004 Arbird data. The primary differences were changes in the number of associates and deputies and dropping the respondents who were in staff positions (from the Sunbird data).

Table 69—Sunbird survey sample and responses

	RF&Cs	SUPEs	DRs	Total
Population (*number*)	17	121	182	320
Sampled (*percentage*)	100	100	28.6	
Returned (*number*)	11	106	139	256
Return rate (*percentage*)	65	88	76	80

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

Table 70—Age, gender, ethnicity, education, profession of survey participants (Q 2, 3, 4, 7, 8, 9, 10)

Characteristics	RF&Cs (n = 11)	SUPEs (n = 106)	DRs (n = 139)	Total (n = 256)
Age (*mean years*)	47.5	50.3	42.9	46
Gender (*percentage men*)	100	95	73	83
Ethnicity (*percentage white*)	100	96	97	97
Education (*percentage master's or more*)	45	24	30	28
Joined FS young (*percentage joining at 19-25 yrs*)	91	74	66	70
Grew up on farm or ranch (*percentage*)	36	20	12	16
Initial professional identity (*percentage*)				
Forester	73	52	43	48
Biologist	0	2	6	4
Recreation manager	0	4	12	8
Range manager	9	8	7	7
Planner	0	6	3	4
Soil/hydrologist	0	1	2	1
Engineer	0	1	0	1

Note: RF&Cs–Regional foresters, directors of the International Institute of Tropical Forestry and State and Private Forestry Northeastern Area, deputy chiefs, Associate Chief and Chief, SUPEs–forest supervisors, and DRs–district rangers.

[a] Professional identity when first hired.

Table 71—What major uses and other outputs (average) are valued on National Forest System lands? (n = 256) (Q 44-48)

Resource use	Public view	FS view	Line officers' views
	Rank (1 = lowest, 10 = highest)		
Q 44 Timber	4.9	9.1	6.6
Q 45 Grazing	2.9	6.6	4.5
Q 46 Recreation	9.0	6.7	8.3
Q 47 Wildlife	8.8	6.6	8.1
Q 48 Water	7.6	6.3	8.5
Average value	6.6	7.1	7.2

Table 72—Values line officers think the Forest Service rewards most, least, and should be rewarded (n = 256) (Q 24-41)

Most rewarded		Least rewarded		Should be rewarded	
Values/attitudes	*Percent*	Values/attitudes	*Percent*	Values/attitudes	*Percent*
FS loyalty	74	Care for one's family	80	Care/concern for ecosystems	77
Meeting targets	72	Independence and individualism	64	Professional competency	64
FS image	56	Concern for future generations	57	Care for employees	56
Teamwork	52	Care for employees	57	Concern for future generations	54
Professional competency	49	Innovation/risk taking	53	Innovation/risk taking	54
Following rules and regulations	46	Care/concern for ecosystems	42	Consensus builder	53
Hard work	46	Health/safety	32	Teamwork	34
Budget accountability	31	Hard work	26	Responsiveness to local publics	32
Women/minority involvement	29	Women/minority involvement	25	FS image	25
Responsiveness to local publics	27	Professional identity and commitment	25	Women/minority involvement	20
Consensus building	27	Budget accountability	21	FS loyalty	20
Responsiveness to national publics	21	Responsiveness to local publics	20	Hard work	17
Innovation/risk taking	16	Consensus building	18	Responsive to national publics	17
Professional identity and commitment	16	Professional competency	16	Professional identity and commitment	14
Care/concern for ecosystems	7	Responsiveness to national publics	15	Budget accountability	13
Independence and individualism	7	Following rules and regulations	11	Meeting targets	12
Health/safety	6	FS loyalty	9	Care for one's family	12
Care for employees	6	Meeting targets	9	Health/safety	11
Concern for future generations	4	FS image	7	Independence and individualism	8
Care for one's family	0	Teamwork	7	Following rules and regulations	5

Appendix 4—New Environmental Paradigm Scale Details

In the last quarter of the 20th century, the emergence of specific environmental issues as well as concerns about broad-scale environmental conditions as policy issues has focused attempts to measure public environmental concerns. Often this relation between society and the natural environment is seen in stark black-and-white terms. One group views technological development and economic growth as being antithetical to environmental preservation, whereas other groups see continued economic development as offering the best option for escaping from the world's ecological crisis. Such views, and their expression in U.S. democratic and legal processes, provide some of the context for land management decisions. Other parts of the context are tied to converging developments in forest science and management and to trends in society, technology, and politics.

Underlying these contextual changes are changes in societal views about the human relationship to Earth ecosystems. These changes have focused attempts to measure public environmental concerns. One such way has been the new environmental paradigm (NEP) developed by Dunlap and Van Liere (1978) to measure ecological worldviews, focusing on beliefs about limits to growth for human societies, humanity's right to rule over the rest of nature (expressed in terms of antianthropocentrism), and humanity's ability to upset the balance of nature. Dunlap et al. (2000) updated the NEP and broadened the scale's content by adding categories for "human exceptionalism" (the idea that humans are exempt from the constraints of nature) and the possibility of an "ecocrisis" (the likelihood of potentially catastrophic environmental changes). The NEP scale has been used for over two decades in measuring environmental attitudes in the United States and Europe.

We added the 15 NEP items to the Arbird survey, "agree-disagree" questions and offered five statements to describe the strength of respondents' agreement or disagreement with each of the following statements:

1. We are approaching the limit of the number of people the Earth can support.
2. Humans have the right to modify the natural environment to suit their needs.
3. When humans interfere with nature, it often produces disastrous consequences.
4. Human ingenuity will ensure that we do not make the Earth unlivable.
5. Humans are severely abusing the environment.
6. The Earth has plenty of natural resources if we just learn how to develop them.

7. Plants and animals have as much right as humans to exist.

8. The balance of nature is strong enough to cope with the impacts of modern industrial nations.

9. Despite our special abilities, humans are still subject to the laws of nature.

10. The so-called "ecological crisis" facing humankind has been greatly exaggerated.

11. The Earth is like a spaceship with very limited room and resources.

12. Humans were meant to rule over the rest of nature.

13. The balance of nature is very delicate and easily upset.

14. Humans will eventually learn enough about how nature works to be able to control it.

15. If things continue on their present course, we will soon experience a major ecological catastrophe.

These 15 questions are aggregated into five broad groups (see table 73): limits to growth (1, 6, 11); antianthropocentrism (2, 7, 12); balance of nature (3, 8, 13); human exemptionalism (4, 9, 14); and ecocrisis (5, 10, 15). The aggregated responses indicate the extent to which a sampled group shares a proecological worldview. The questions are designed so that agreement or disagreement with them indicates a proecological worldview.

Results in table 73 indicate a "balanced" ecological world view, with 48 percent anti- and 42 percent proenvironment, and 9 percent unsure. There was no difference among the three groups of line officers, but some among sets of questions.[1] For example, there is agreement that limits to growth do exist. There are also significant differences in how the two genders (see table 74) answered the questions indicating limits to growth, antianthropocentrism, and human exemptionalism. Women generally accept that there are limits to growth, and they also disagree with men about the extent human needs preempt nature. Another way of saying this is that men tend to be more antianthropocentric than do women working for the Forest Service. These results are similar to other studies finding that women report stronger environmental attitudes than do men (e.g., Taylor 2002 and Zelezny et al. 2000).

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[1] The extent that Forest Service leadership NEP values reflect those of Forest Service employees is unclear. A sample of Forest Service social scientists suggests that this might be the case for worldviews on limits to growth and ecological catastrophe, but it is mixed on worldviews about humanity's ability to upset the balance of nature, human domination over nature, and the extent humans are exempt from the constraints of nature.

Finally, there are only a few possible comparisons that can be made of this group of individuals with other groups in the U.S. population. One comparison is with a study of Washington state residents as shown in table 75 (and reported in Dunlap et al. 2000). The results suggest differences between the general population and the group of people first selecting to work in land management and second, choosing to be a line officer. Line officers tend to see slightly fewer limitations, more opportunities for greater balance, and less chance of an ecological catastrophe.

Table 73—New ecological paradigm scales

Groups	Agree	Disagree	Unsure
	Percent		
Limits to growth	55.6	33.8	10.6
Antianthropocentrism	52.6	41.9	5.5
Balance of nature	36.1	55.6	8.3
Human exemptionalism	50.5	39.0	10.5
Ecocrisis	46.9	42.2	10.9

Table 74—New ecological paradigm scales by gender

Groups	Women (n = 79)			Men (n = 150)		
	Agree	Disagree	Unsure	Agree	Disagree	Unsure
			Percent			
Limits to growth	64.6	28.3	7.2	50.9	36.7	12.4
Antianthropocentrism	46.4	45.2	8.4	55.8	40.2	4.0
Balance of nature	37.6	51.9	10.6	35.3	57.6	7.1
Human exemptionalism	47.7	44.3	8.0	52.0	36.2	11.8
Ecocrisis	48.1	42.6	9.3	46.2	42.0	11.8

Table 75—Trends in responses to selected new ecological paradigm items by selected groups

NEP items	Washington state residents[a]	Arbird
	Percent	
Ecological limits:		
We are approaching the limit of the number of people the Earth can support (agree)	67	58
The Earth is like a spaceship with very limited room and resources (agree)	80	72
Balance of nature:		
When humans interfere with nature, it often produces disastrous consequences (agree)	86	52
The balance of nature is very delicate and easily upset (agree)	84	39
Human domination:		
Humans have the right to modify the natural environment to suit their needs (disagree)	64	66
Ecological catastrophe:		
Humans are severely abusing the environment (agree)	89	62
The so-called "ecological crisis" facing humankind has been greatly exaggerated (disagree)	75	45
If things continue on their present course, we will soon experience a major ecological catastrophe (agree)	78	34

[a] Results reported in Dunlap et al. (2000).

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