

Executive Summary
Benchmarking Study of USDA Forest Service Fisheries
and Aquatic Ecology Programs

March 15, 2001

**Conducted in partial fulfillment of graduation requirements for the U.S.
Department of Agriculture Graduate School Leadership Development Academy
Executive Potential Program 2001 (EPP) by:**

Nanci Bowers, U.S. Department of the Navy

Doug Davis, U.S. Department of Interior, Bureau of Indian Affairs

Jim Gardner, U.S. Department of Transportation, Federal Aviation Administration

Mark Hudy, U.S. Department of Agriculture, Forest Service

Sharon Marchant, U.S. Department of Energy

Franz Stuppard, General Services Administration

LeaAnne Thorne, U.S. Environmental Protection Agency

Executive Summary

Purpose and need

Increased emphasis on ecosystem management and accountability by the United States Department of Agriculture (USDA) Forest Service and other federal land management agencies has led to the development of a series of strategic plans such as the Clean Water Action Plan and internal USDA Forest Service strategies such as the National Resources Agenda and the USDA Forest Service strategic plans (as required by the Government Performance and Results Act). The goals and objectives within these strategies have placed a significant challenge on managers seeking to implement these strategies because the agency is decentralized with each administrative national forest or grassland unit having a different level of staffing, budgets, skills, available resources, interests and priorities.

Benchmarking in a decentralized agency like the USDA Forest Service could greatly benefit the agency by identifying programs and best practices that have been successful in this changing environment that is focusing on ecosystem management, accountability and integration of specialized programs.

The fisheries and aquatic ecology program within the USDA Forest Service was chosen for this benchmarking because: 1) there was an excellent database of budget history and performance characteristics of the program on all 116 national forest and grassland units that could be used as a baseline for analysis; and 2) an internal strategy document identified the need to review and evaluate the “best” existing programs and quantify and validate the specific characteristics that make them successful in implementing the agencies strategic plans.

Methods

A Web-based survey instrument was used to benchmark the fisheries and aquatic ecology program on each of the 116 national forest and grassland units in the USDA Forest Service. The survey instrument consisted of 23 questions under the categories of program definition, workforce, accomplishments, fiscal responsibility and partnerships.

Participants were regional staff (regional fisheries program leader) and line (forest supervisors) and staff (staff officers, forest fisheries biologists and district biologists) from each of the national forest and grassland units.

The survey had a 74% return rate (525 respondents) with 49% of the respondents taking the time to write additional comments.

Individual national forests and grasslands

Nineteen national forests and grasslands (16.4%) had over 65% of the mean responses that were more than one standard deviation away from the national average for each question. These identified units could facilitate emulation of best practices or red flag the highest potential areas for improvement.

The greatest percentage of high scores from individual national forests and grasslands were from partnership questions relating to the working relationship with other government agencies (73.2%) and non-government agencies (57.3%).

The great percentage of low scores from individual national forests and grasslands were from the accomplishment questions, particularly those dealing with inventory (21.9%), implementation monitoring (32.1%), effectiveness monitoring (36.8%), and validation monitoring (48.5%). Improvements have been made in aquatic inventory and monitoring over the last decade but these improvements have not been uniform both within and among regions.

Monitoring and inventory of aquatic resources is a weak link on many national forests and grasslands in effectively integrating fisheries and aquatic ecology programs into the strategic plans of the agency.

Adequacy of fisheries budgets to protect, restore and enhance aquatic resources at forest plan levels had the highest percentage (60.7%) of low scores.

Differences among positions

There were differences in responses by the five position categories in the majority of program definition, workforce, accomplishment, and fiscal responsibility questions. There were few differences in partnership questions. In most cases the line officer (forest supervisor) and/or staff officer rated the program components higher than the specialized staff (regional program leaders, forest fisheries biologists or district biologists).

Differences among regions

There were differences in regional responses in questions relating to program definition, workforce, accomplishment, and fiscal responsibility questions. There were no differences in partnership questions. Region 6 had a significantly higher mean score (4.29) than region 4 (2.96), region 8 (2.96), region 2 (2.91), region 3 (2.84) and region 9 (2.79) relating to guidance and direction of forest plans to protect, restore and enhance forest aquatic resources (#1). Region 1 (4.30) had a significantly higher mean score than region 8 (3.22) and region 3 (2.95) for technical proficiency to protect, restore and enhance forest aquatic resources (#7). The region 6 (3.91) mean response was significantly higher than region 8 (2.91) for the strength of aquatic inventories to characterize aquatic resource conditions (#11). Region 10 (3.87) was higher than all the regions in the adequacy of fisheries budgets (#17).

Differences among budget categories

The three fisheries budget categories (bottom quartile (< \$117,000); middle 50% (> \$117,000 and < \$341,000); upper quartile (> \$341,000) of national forests and grasslands did not make a difference in scores of questions that related to; integration with other resource programs (#2); line involvement in program execution (#4); line involvement in program evaluation (#5); access to hydrology and soils specialists to implement watershed assessments (#9); line priority for inventory and monitoring of aquatic resources (#15); fairness of overhead assessments (#16); equitable distribution of funds by line officers (#18); effectiveness of leveraging funds (#19), early involvement of stakeholders (#20); working relationships with government agencies (#21); working relationships with non-government agencies (#22); and working relationships of line and staff with partners (#23).

Forests with the highest budgets (top 25%; > \$341,000) had higher scores than the lowest quartile (< \$117,000) national forests and grasslands in; guidance and direction of forest plans (#1); line officers views of aquatic resources in priority setting (# 3); consistency and integration among forest and district programs (#6); technical proficiency to protect, restore and enhance forest aquatic resources (#7); operational capability (#8); line commitment to identify and fill necessary positions for watershed assessments (#10); the strength of forest inventory programs (#11); implementation monitoring (#12); effectiveness monitoring (#13); validation monitoring (#14); and adequacy of budget (#17).

Baseline funding for national forests and grasslands in the bottom quartile budget category need to be improved to effectively integrate these units into the agencies strategic plans.

Differences among national forest and grassland rankings

The national forests and grasslands identified prior to the study as “best” programs had higher scores than programs identified as “significant improvement potential” in the questions dealing with: integration with other resource areas (#2); consistency and integration among ranger districts within a forest (#6); high operational capability (#8); effectiveness in leveraging funds (#19); early involvement of stakeholders in project planning (#20); good working relationships with government agencies (#21); and good working relationships with non-government agencies (#22).

Although it may be easier and more effective with higher budgets, many characteristics of “best” programs (except high operational capability (#8) and consistency and integration among ranger districts within a forest (#6)) were not related to budget category and can be improvement areas regardless of budgets.

Final Report
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Introduction

Increased emphasis on ecosystem management and accountability by the United States Department of Agriculture (USDA) Forest Service and other federal land management agencies has led to the development of a series of strategic plans such as the Clean Water Action Plan (CWAP 1998) and internal USDA Forest Service strategies such as the National Resources Agenda and the USDA Forest Service strategic plans (as required by the Government Performance and Results Act)(USDA 1998; USDA 2000a; USDA 2000b). The goals and objectives within these strategies have placed a significant challenge on managers seeking to implement these strategies because the agency is decentralized with each administrative national forest or grassland unit having a different level of staffing, budgets, skills, available resources, interests and priorities.

Benchmarking in a decentralized agency like the USDA Forest Service could greatly benefit the agency by identifying forest and grassland units, programs and best practices that have been successful in this changing environment that is focusing on ecosystem management, accountability and integration of specialized programs.

The fisheries and aquatic ecology program within the USDA Forest Service was chosen for this benchmarking because:

1. It was a good example of a national program operating in a decentralized federal agency that could benefit greatly by benchmarking those programs that are doing well in a changing environment that is focusing on ecosystem management and integration of specialized programs.
2. There was an excellent database of budget history and performance characteristics of the fisheries program on all 116 national forest and grassland units.
3. There was some published benchmarking data on the program (Forsgren and Loftus 1993) that was conducted in 1990 that would be useful for measuring historic changes.
4. There was a recent nationwide qualitative rating of “best” programs and “significant improvement potential” programs by fisheries experts that could be compared to programs with high scores from this study.
5. There was a willingness to conduct the benchmarking study by national office staff because it had been an identified action item in a recently completed strategy. They also indicated that the survey would be taken seriously by the potential respondents and a high rate of return (>65%) was expected.

One objective of a recently completed USDA Forest Service strategy for the fisheries and aquatic ecology program (USDA 2000c) was to review and evaluate the “best” existing programs and quantify and evaluate the specific characteristics that make them successful in implementing the agencies strategic plans. This benchmarking study will serve as the final report of this action.

The National Forest System is a nationally significant system (191 million acres) of federally owned units of forest, range and related land consisting primarily of national forests and national grasslands administrated by the USDA Forest Service (USDA 1997). Aquatic habitats on national forests and grasslands are world-class resources with significant biological, recreational and economic importance. These resources include over 200,000 miles of streams and more than 2 million acres of lakes, ponds and reservoirs many of which provide keystone habitats for the viability of many aquatic and riparian dependant species. Annually there are between 150 and 200 million pounds of commercially harvested fish that were either spawned and/or reared on national forest lands (USDA 2000 c). Annually over 46 million angler days of recreation and 2.1 million days of fish viewing/aquatic education occur on these waters resulting in more than \$8.5 billion in annual economic benefits.

Methods

The USDA Forest Service is a decentralized agency with 9 regional offices that oversee from 2 to 19 individual national forests or grasslands (116 administrative units in all) within distinct geographical areas. Each national forest or grassland has individual ranger districts (usually from 2 to 12 ranger districts per forest), over 600 total, that they administrate. The district ranger offices are the lowest administrative unit of the agency.

Questionnaire

The scope of the questionnaire was developed in conjunction with national and regional fisheries staff following the suggested guidelines found in Babbie (1973), Dillman et al (1998) and Dillman (2000). The questionnaire went through 5 cycles of extensive reviews in addition to being tested in a pilot study before being finalized (Appendix III). The questionnaire was designed to provide information in the areas of program definition, workforce, accomplishments, fiscal responsibility and partnerships.

Participants identified for participation were regional staff (regional fisheries program leader) and line (forest supervisors) and staff (staff officers, forest fisheries biologists and district biologists) from each of the national forest and grassland units. These participants were selected to give a peer appraisal or “360 degree” view of the fisheries and aquatic ecology program on each national forest and grassland unit (Peiperl 2001). It is thought that this type of peer feedback would have the best chance of identifying best practices (Tornow and London 1998).

A Web-based survey instrument was selected because we had complete coverage of the population under consideration (all USDA Forest Service employees with standardized e-mail and Web-site access). The Web-based survey saved money, time and allowed for a complete census of all national forests and grasslands. Potential respondents were made aware of the upcoming study and its importance by e-mail, newsletters, and conference calls in the weeks preceding the first e-mail contact on December 1, 2000 (Appendix I). A reminder E-mail was sent the following week (December 7, 2000) to those who had not yet responded. Phone call reminders to those who had not responded were conducted

the week of December 18 – 22, 2000. The time frame of the survey was later than planned because an unusually severe fire season across the country kept a high number of potential respondents away in travel status fighting fires. No additional attempts were made to increase the percentage of respondents after December 22, 2000 and no more responses were accepted after January 5, 2001.

Data Analysis

Mean responses were calculated for the 116 individual national forest and grassland units, 9 regions, 5 positions, 3 budget categories and 3 forest ranking categories.

Budget categories were based on each unit's total annual fisheries budget from FY 2000 (Budget Category B1 = lowest quartile < \$117,000; Budget Category B2 = middle 50% >\$117,000 and < \$341,000; Budget Category B3 = highest quartile > \$341,000).

Forest ranking categories were based on a forest unit's apriori ranking by fisheries experts (regional fisheries program leaders) as units with "significant improvement potential" (Ranking Rk1, two per region) or as "best" programs (Rk3, two per region). Forest units not classified were placed in the Rk2 category.

Statistical comparisons among means were conducted using ANOVA and when significant ($p < 0.002$), a Duncan's multiple range test was used to compare significant ($p < 0.002$) mean differences.

Content Analysis of Comments

All individual comments were read than grouped into common issues/themes or areas for reporting and to retain confidentiality.

Results

The overall return rate (580 possible; 5 positions, 116 forest units) was 74% with variability among regions and positions. The regional program leaders had the highest return (100%) and the staff officers (57%) and forest supervisors (57%) the lowest. Region 8 had the highest return (91%) and Region 3 (65%) the lowest (Table 1).

A total of 261 of the 525 respondents also wrote additional comments. These comments identified 397 issues that were categorized into seven areas: budgets/funding; personnel; planning/monitoring/implementing; leadership support; national direction; partnering; and communication/coordination (Appendix IV).

A. Program Definition

Individual Forest Responses

The individual national forest mean responses for each program definition question are found in Appendix V. Highlighted means in Appendix V are more than one standard deviation lower (shaded) or higher (shaded and underlined) than the national average for each question. When the sample sizes are adequate ($n = 3$ or more) these shaded areas may be useful in identifying best practices to emulate and/or potential red flag areas for improvement. Program definition questions that had the highest ratings (scores of 4 or 5) were questions relating to line officers views of aquatic resources in priority setting (# 3) (54%) and the effectiveness of integration with other resource area (#2) (50%). The lowest ratings (scores of 1 or 2) were questions relating to line involvement in program evaluation (#5) (35%) and line involvement in program execution (#4) (29%)(Table 2). A summary of additional individual comments made by respondents is found in the content analysis (Appendix IV).

Overall Responses by Position and Region

There were significant ($p < 0.002$) differences among the five position categories for all the program definition questions (Table 3). Forest supervisors were consistently and significantly higher ($p < 0.002$) in their mean scores than forest fisheries biologists and regional fisheries program leaders for all program definition questions except for the question relating to consistency and integration among forest and district programs (#6). Staff officers usually had the second highest mean scores.

There were no significant differences among the overall mean regional responses to the program definition questions except for the question relating to guidance and direction of forest plans to protect, restore and enhance forest aquatic resources (#1). Region 6 had a significantly higher ($p < 0.002$) mean score (4.29) than region 4 (2.96), region 8 (2.96), region 2 (2.91), region 3 (2.84) and region 9 (2.79) (Table 3).

Overall Responses by Budget and Forest Ranking Category

National Forests that were in the highest quartile for fisheries budgets (budget category 3: $> \$341,000$) had significantly higher ($p < 0.002$) mean responses than lowest quartile (budget category 1: $< \$117,000$) for program definition questions related to guidance and direction of forest plans (#1), line officers views of aquatic resources in priority setting (# 3), and consistency and integration among forest and district programs (#6) (Figure 2). Budget category did not make a significant difference ($p < 0.002$) in program definition questions that related to integration with other resource programs (#2), line involvement in program execution (#4) and line involvement in program evaluation (#5).

Forests that were apriori ranked as “best” of each region (ranking 3) had significant higher mean scores ($p < 0.002$) from those forests that were apriori ranked as “significant improvement potential” for program definition questions relating to integration with other

resource programs (#2) and consistency and integration among forest and district programs (Figure 3).

B. Workforce

Individual Forest Responses

The individual national forest mean responses for each workforce question are found in Appendix V. Highlighted means in Appendix V are more than one standard deviation lower (shaded) or higher (shaded and underlined) than the national average for each question. When the sample sizes are adequate ($n = 3$ or more) these shaded areas may be useful in identifying best practices to emulate and/or potential red flag areas for improvement. Workforce questions that had the highest ratings (scores of 4 or 5) were questions relating to workforce technical proficiency to protect, restore and enhance forest aquatic resources during watershed assessments (#7) (67%) and access to specialists to implement watershed assessments (#9) (59%). The lowest ratings (scores of 1 or 2) were questions related to line commitment to identify and fill necessary positions for watershed assessments (#10) (34%) and operational capability (#8)(20%)(Table 2). A summary of additional individual comments made by respondents is found in the content analysis (Appendix IV).

Overall Responses by Position and Region

The overall national averages by position and region are found in Table 5. Forest supervisors were consistently and significantly ($p < 0.002$) higher in their mean ratings than district biologists and regional fisheries program leaders on questions related to operational capability (#8), access to specialists to implement watershed assessments (#9) and line commitment to identify and fill necessary positions for watershed assessments (#10). There were no significant differences among the position categories on workforce technical proficiency to protect, restore and enhance forest aquatic resources during watershed assessments (#7) (Table 4).

Except for workforce ratings for technical proficiency to protect, restore and enhance forest aquatic resources (#7), there were no significant ($p < 0.002$) differences among the overall mean regional responses to the workforce questions (Table 4). Region 1 (4.30) had the highest mean score for technical proficiency (#7) and region 3 (2.95) the lowest.

Overall Responses by Budget and Forest Rankings

National Forests that were in the highest quartile for fisheries budgets (budget category 3: $> \$341,000$) had significantly higher ($p < 0.002$) mean responses than the lowest quartile (budget category 1: $< \$117,000$) for workforce questions related to technical proficiency to protect, restore and enhance forest aquatic resources (#7), operational capability (#8), and line commitment to identify and fill necessary positions for watershed assessments (#10) (Figure 5). Budget category did not make a significant difference ($p > 0.002$) in the

workforce question that related to access to hydrology and soils specialists to implement watershed assessments (#9).

Forests that were apriori ranked as “best” of each region (ranking 3) had significant higher mean scores ($p < 0.002$) from those forests that were apriori ranked as “significant improvement potential”(ranking 1) for workforce questions relating operational capability (#8)(Figure 6).

C. Accomplishments

Individual Forest Responses

The individual national forest mean responses for each accomplishment question are found in Appendix V. Highlighted means in Appendix V are more than one standard deviation lower (shaded) or higher (shaded and underlined) than the national average for each question. When the sample sizes are adequate ($n = 3$ or more) these shaded areas may be useful in identifying best practices to emulate and/or potential red flag areas for improvement. Accomplishment questions that had the highest ratings (scores of 4 or 5) were questions related to the strength of forest inventory programs (#11) (46%) and implementation monitoring (#12) (31%). The lowest ratings (scores of 1 or 2) were questions related to validation monitoring (#14) (49%) and effectiveness monitoring (#13) (37%)(Table 2). A summary of additional individual comments made by respondents is found in the content analysis (Appendix IV).

Overall Responses by Position and Region

The overall national averages by position and overall regional averages for accomplishment questions are found in Table 5. Except for ratings of the strength of forest inventory programs (#11) there were significant ($p < 0.002$) differences among the five position categories for the accomplishment questions (Table 5). Forest supervisors and/or staff officers were consistently and significantly ($p < 0.002$) higher in their mean rankings than district biologists and/or regional fisheries program leaders for accomplishment questions related to implementation monitoring (#12), effectiveness monitoring (#13), validation monitoring (#14) and line priority for inventory and monitoring of aquatic resources (#15) (Table 5).

Except for question 11, relating to the strength of the forest inventory program to characterize aquatic resources there were no significant ($p > 0.002$) differences among the overall mean regional responses to the accomplishment questions (Table 5). The region 6 (3.91) mean response was significantly ($p < 0.002$) different than region 8 (2.91) for the strength of aquatic inventories to characterize aquatic resource conditions.

Overall Responses by Budget and Forest Ranking Category

National Forests that were in the highest quartile for fisheries budgets (budget category 3: $> \$341,000$) had significantly higher ($p < 0.002$) mean responses than the lowest quartile

(budget category 1: < \$117,000) for accomplishment questions related to the strength of forest inventory programs (#11), implementation monitoring (#12), effectiveness monitoring (#13), and validation monitoring (#14) (Figure 8). Budget category did not make a significant difference ($p > 0.002$) in accomplishment question 15, relating to line priority for inventory and monitoring of aquatic resources.

Forests that were apriori ranked as “best” of each region (ranking 3) had no significant mean score differences ($p > 0.002$) from those forests that were apriori ranked as “significant improvement potential”(ranking 1) for any accomplishment questions (Figure 9).

D. Fiscal Responsibility

Individual Forest Responses

The individual national forest mean responses for each fiscal responsibility question are found in Appendix V. Highlighted means in Appendix V are more than one standard deviation lower (shaded) or higher (shaded and underlined) than the national average for each question. When the sample sizes are adequate ($n = 3$ or more) these shaded areas may be useful in identifying best practices to emulate and/or potential red flag areas for improvement. Fiscal responsibility questions that had the highest ratings (scores of 4 or 5) were questions related to equitable distribution of funds by line officers (#18)(41%) and overhead assessments (#16)(41%). The lowest rating (scores of 1 or 2) was for adequacy of budgets (#17) (60%)(Table 2). A summary of additional individual comments made by respondents is found in the content analysis (Appendix IV).

Overall Responses by Position and Region

The overall national averages by position and region for each fiscal responsibility question are found in Table 6. There were significant ($p < 0.002$) differences among the five position categories for all the fiscal responsibility questions (Table 6). Except for adequacy of budgets (#17), forest supervisors and staff officers were consistently and significantly ($p < 0.002$) higher in their mean rankings than forest fisheries biologists, district biologists and regional fisheries program leaders for questions related to overhead assessments (#16) and equitable distribution of funds by line officers (#18) (Table 6).

Except for Region 10’s high rating (3.87) on adequacy of budgets (#17), there were no significant differences among the overall mean regional responses to the fiscal responsibility questions related to overhead assessments (#16) and equitable distribution of funds by line officers (#18)(Table 6).

Overall Responses by Budget and Forest Ranking Category

National Forests that were in the highest quartile for fisheries budgets (budget category 3: > \$341,000) had significantly higher ($p < 0.002$) mean responses than the lowest quartile (budget category 1: < \$117,000) for fiscal responsibility questions related adequacy of

budget (#17) (Figure 10). Budget category did not make a significant difference ($p > 0.002$) in fiscal responsibility questions that related to overhead assessments (#16) and equitable distribution of funds by line officers (#18)(Figure 10).

Forests that were apriori ranked as “best” of each region (ranking 3) had no significant mean score differences ($p > 0.002$) from those forests that were apriori ranked as “significant improvement potential”(ranking 1) for any fiscal responsibility questions (Figure 12).

E. Partnerships

Individual Forest Responses

The individual national forest mean responses for each partnership question are found in Appendix V. Highlighted means in Appendix V are more than one standard deviation lower (shaded) or higher (shaded and underlined) than the national average for each question. When the sample sizes are adequate ($n = 3$ or more) these shaded areas may be useful in identifying best practices to emulate and/or potential red flag areas for improvement. Partnership questions that had the highest ratings (scores of 4 or 5) were questions relating to working relationships with government agencies (#21) (73%) and working relationships with non-government agencies (#22) (57%). The lowest ratings (scores of 1 or 2) were questions related to working relationships of line and staff with partners (#23) (20%) and effectiveness of leveraging funds (#19) (20%)(Table 2). A summary of additional individual comments made by respondents is found in the content analysis (Appendix IV).

Overall Responses by Position and Region

The overall national averages by position and region for partnership questions are found in Table 7. There were no significant ($p > 0.002$) differences among the five position categories for the partnership questions, except for question 20, relating to effectiveness in involving stakeholders early in the planning process (# 20), where forest supervisors (3.88) were significantly higher in their mean scores than district biologists (3.38).

There were no significant ($p > 0.002$) differences among the overall mean regional responses to the partnership questions (Table 7).

Overall Responses by Budget and Forest Ranking Category

National Forests that were in the highest quartile for fisheries budgets (budget category 3: $> \$341,000$) had no significant ($p > 0.002$) differences in mean responses than the lowest quartile (budget category 1: $< \$117,000$) for partnership questions. (Figure 13).

Forests that were apriori ranked as “best” of each region (ranking 3) had significantly higher mean scores ($p < 0.002$) from those forests that were apriori ranked as “significant improvement potential”(ranking 1) for partnership questions relating to effectiveness of

leveraging funds (#19), early involvement of stakeholders (#20), working relationships with government agencies (#21) and working relationships with non-government agencies (#22) (Figure 14). Forest ranking made no significant difference ($p > 0.002$) in the mean scores on working relationships of line and staff with partners (#23).

Discussion

The total survey return rate of 74% and the nature of the additional comments made by 49% of the respondents indicate that those polled were interested in the survey, took it seriously and were candid. We did not conduct any evaluation of non-response bias because we conducted a complete census of all the national forests and grassland units and the response rate was above 57% for all categories of analysis (Dolsen and Machlis 1991). We found no substantive reason to reject any of the results.

On application of this study would be for national, regional and forest staff to examine the mean scores of national forests and grasslands units. We conducted no formal statistical analysis or presentation of individual responses from specific national forests and grasslands because we had to maintain confidentiality and because of the small number of returns on some units. However, we note that a small percentage of national forests and grasslands (16.4%) had a higher than expected percentage of the mean responses (65.1%) that were more than one standard deviation away from the national average for each question. These identified units (Appendix V), particularly those with sample sizes greater than three, would be natural first places for staff to look to for emulating best practices and red flagging potential improvement areas.

Similar to a 1990 survey (Forsgren and Loftus 1993) line officers (forest supervisors) and/or staff officers rated many program components higher than their specialized staff (regional program leaders, forest fisheries biologists or district biologists). We have no information on if this view of line is unique to the fisheries program or if this gap in perceptions would also be found between line and staff specialists in other programs.

Forest plans are the foundation of protecting, restoring and enhancing aquatic resources on national forests and grasslands. In the past forest plans have not always adequately protected aquatic resources (Espinosa et al 1997). In the 1990 survey by Forsgren and Loftus (1993) region six (Pacific Northwest) was the only area of the country from which the majority of the respondents indicated that the forest plans adequately addressed fish habitat needs and provided clear direction and measurable objectives. In this study region 6 also ranked at the top in the question relating to guidance and direction of forest plans to protect, restore and enhance forest aquatic resources (#1). Region 6 (4.29) had a higher mean score than region 4 (2.96), region 8 (2.96), region 2 (2.91), region 3 (2.84) and region 9 (2.79). In general we observed that regions with forest plans that relied on larger scales of analysis and that have applied common standards and guidelines across this larger landscape have scored higher than those regions with forest plans that have a smaller scale of analysis.

Fisheries partnerships questions had high scores on the majority of individual national forests and grasslands and transcended any regional or positional differences. The

greatest percentage of high scores (4 or 5) were from partnership questions relating to the working relationship with other government agencies (73.2%) and non-government agencies (57.3%). While scores for partnership were generally high there were areas for improvement on many units.

In the 1990 survey (Forsgren and Loftus 1993) only 30% of respondents agreed or strongly agreed that inventory and monitoring of aquatic resources was adequate. Improvements have been made in aquatic inventory and monitoring over the last decade but these improvements have not been uniform within and among regions. The lowest percentage of high scores (4 or 5) in this survey were in the areas of validation monitoring (17%), effectiveness monitoring (29%), implementation monitoring (31%), and inventory (46%) of aquatic resources. Some of the lowest scores (1 or 2) in this survey were those for validation monitoring (49%) and effectiveness monitoring (37%). Monitoring and inventory of aquatic resources remains a weak link on many national forests and grasslands in effectively integrating fisheries and aquatic ecology programs into strategic plans of the agency.

Adequacy of fisheries budgets to protect, restore and enhance aquatic resources at forest plan levels had the highest percentage (60.7%) of low scores. Although low budgets were a common complaint in the additional comments and the main reason given for low performance, we found many areas of potential improvement that were not related to budget or were characteristics of “best” programs that could be incorporated regardless of budget.

A national forest or grassland units budget did not make a difference in scores of questions that related to; integration with other resource programs (#2); line involvement in program execution (#4); line involvement in program evaluation (#5); access to hydrology and soils specialists to implement watershed assessments (#9); line priority for inventory and monitoring of aquatic resources (#15); fairness of overhead assessments (#16); equitable distribution of funds by line officers (#18); effectiveness of leveraging funds (#19); early involvement of stakeholders (#20); working relationships with government agencies (#21); working relationships with non-government agencies (#22); and working relationships of line and staff with partners (#23). These elements should be incorporated into program and/or staff evaluations and reviews.

Forests with the highest budgets (top 25%; > \$341,000) had higher scores than the lowest quartile (< \$117,000) national forests and grasslands in; guidance and direction of forest plans (#1); line officers views of aquatic resources in priority setting (# 3); consistency and integration among forest and district programs (#6); technical proficiency to protect, restore and enhance forest aquatic resources (#7); operational capability (#8); line commitment to identify and fill necessary positions for watershed assessments (#10); the strength of forest inventory programs (#11); implementation monitoring (#12); effectiveness monitoring (#13); validation monitoring (#14); and adequacy of budget (#17). Baseline funding for national forests and grasslands in the lowest funding quartile needs to be increased if these units are expected to have the base level elements needed to fully participate and integrate into agency strategies and programs.

The national forests and grasslands identified prior to the study as “best” programs had higher scores than programs identified as “significant improvement potential” in the questions dealing with: integration with other resource areas (#2); consistency and integration among ranger districts within a forest (#6); high operational capability (#8); effectiveness in leveraging funds (#19); early involvement of stakeholders in project planning (#20); good working relationships with government agencies (#21); and good working relationships with non-government agencies (#22).

Although it may be easier and more effective with higher budgets, except for high operational capability (#8) and consistency and integration among ranger districts within a forest (#6) characteristics of “best” programs were not related to budget category and could be improved on many national forests and grasslands. These elements should be incorporated into program and/or staff evaluations and reviews.

Conclusions & Recommendations

1. Those polled were interested in the survey, took it seriously and were candid.
2. Identified program areas from specific national forests and grasslands (Appendix V) should be first places that national, regional and local staff look to for emulating and/or implementing best practices.
3. Forest supervisors and/or staff officers rated many program components higher than regional program leaders, forest fisheries biologists and district biologists. There is a need to evaluate what role improved education and communication can play in narrowing this perception gap.
4. There is wide difference among regions in guidance and direction of forest plans to protect, restore and enhance forest aquatic resources. The model used for national forest plans in region 6 should be evaluated for applicability to other regions.
5. Monitoring and inventory of aquatic resources remains a weak link on many national forests and grasslands in effectively integrating fisheries and aquatic ecology programs into strategic plans of the agency.
6. Baseline funding for those national forests and grasslands in the bottom quartile of funding needs to be increased if these units are expected to have even the base level elements needed to fully participate and integrate into agency strategies and programs.
7. Many characteristics of “best” programs can be emulated regardless of budget on many national forests and grasslands. These characteristics should be incorporated into program and/or staff evaluations and reviews.

Table 1. Response return (%); Overall and by Region and Position Category

	Total %	R 1	R 2	R 3	R 4	R 5	R 6	R 8	R 9	R 10
Over All	74%	70%	69%	65%	77%	68%	72%	91%	77%	90%
Forest Supervisors	57%	58%	55%	45%	69%	56%	30%	87%	71%	50%
Staff Officers	57%	33%	45%	73%	46%	33%	40%	87%	71%	100%
Forest Fisheries Biologists	86%	92%	91%	73%	92%	78%	100%	87%	79%	100%
District Biologists	68%	66%	45%	37%	77%	72%	80%	87%	71%	100%
Regional Program Leaders	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Figure 1. Average responses of Program Definition questions (1-6) by each region.

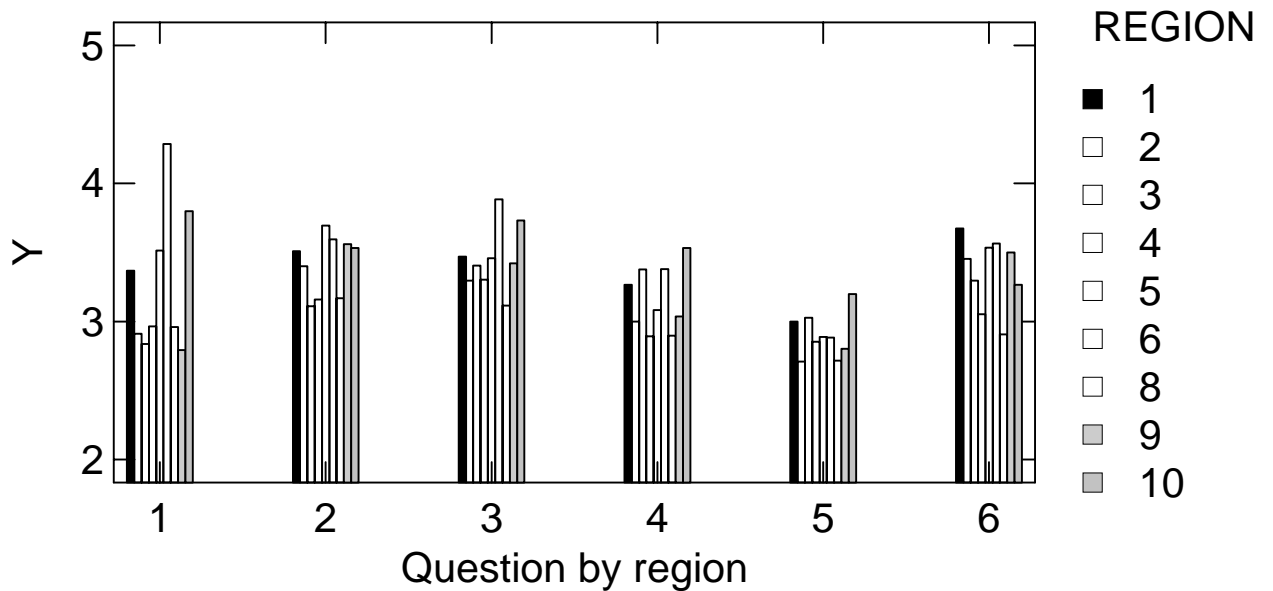


Table 2. Overall mean responses, standard deviations (SD), sample size (N), and frequency (%) of scores for all respondents to the 23 benchmarking questions. PD = Program Definition questions; W= Workforce questions; A= Accomplishments questions; FR= Fiscal Responsibility questions; and P= Partnerships questions.

Program Definition						
	# 1 PD	# 2 PD	# 3 PD	# 4 PD	# 5 PD	# 6 PD
Mean	3.26	3.40	3.42	3.31	2.84	3.29
SD	1.21	1.06	1.20	1.15	1.08	1.19
N	521	521	520	520	517	512
% 1	06.9	04.0	07.7	09.8	11.2	06.1
% 2	17.9	14.0	13.9	19.6	23.4	17.2
% 3	32.4	31.9	23.9	27.3	37.1	29.9
% 4	23.4	35.7	34.8	33.7	21.9	31.1
% 5	18.8	14.0	19.0	08.8	05.4	15.2
Workforce						
	# 7 W	# 8 W	# 9 W	# 10 W		
Mean	3.67	3.33	3.58	2.94		
SD	1.08	1.09	1.14	1.25		
N	521	520	519	513		
% 1	04.6	05.4	04.4	14.8		
% 2	09.8	15.0	13.5	19.3		
% 3	17.7	29.0	22.7	28.7		
% 4	46.3	37.3	36.2	26.1		
% 5	21.1	12.5	22.7	10.5		
Accomplishments						
	# 11 A	# 12 A	# 13 A	# 14 A	# 15 A	
Mean	3.28	2.91	2.81	2.30	2.80	
SD	1.09	1.05	1.08	1.20	1.13	
N	521	517	522	488	517	
% 1	05.6	08.3	11.9	21.7	13.0	
% 2	16.3	23.8	24.9	26.8	23.4	
% 3	31.3	36.6	33.9	33.8	35.2	
% 4	33.4	24.8	23.9	13.3	22.1	
% 5	12.7	05.8	04.6	03.5	05.8	
Fiscal Responsibility						
	# 16 FR	# 17 FR	# 18 FR			
Mean	3.02	2.30	3.15			
SD	1.36	1.06	1.21			
N	477	514	506			
% 1	06.7	23.9	08.7			
% 2	18.0	36.8	18.0			
% 3	33.5	23.9	31.6			
% 4	26.2	11.7	28.3			
% 5	14.9	02.9	12.8			
Partnerships						
	# 19 P	# 20 P	# 21 P	# 22 P	# 23 P	
Mean	3.40	3.31	3.96	3.53	3.29	
SD	1.26	1.31	0.97	1.02	1.13	
N	515	500	525	524	518	
% 1	06.4	04.2	01.1	03.2	04.2	
% 2	14.0	12.6	06.9	10.9	15.4	
% 3	24.5	28.2	18.7	28.2	32.6	
% 4	32.2	35.2	38.9	39.9	34.2	
% 5	22.3	19.2	34.3	17.4	12.9	

Table 3. Mean response to Program Definition questions (1-6) by position (FS= forest supervisor; SO = staff officer; RP = regional program leader; FF = forest fish biologist; DB = district biologist) and region (1-6,8-10); budget category (1,2,3); and ranking category (1,2,3). Means with the same letter in each column are not significantly different, Duncan's Multiple Range Test, $p > 0.002$.

Position					
#1	#2	#3	#4	#5	#6
FS 3.58 a	FS 3.87 a	FS 4.42 a	FS 4.01 a	FS 3.69 a	FS 3.71 a
SO 3.51 a,b	SO 3.51 a,b	SO 3.90 b	SO 3.64 a	SO 3.34 a	FF 3.59 a
DB 3.32 a,b	FF 3.40 b	FF 3.35 c	FF 2.95 b	DB 2.70 b	SO 3.46 a
FF 3.15 b	RP 3.34 b	DB 3.28 c,d	DB 2.83 b	FF 2.68 b	DB 3.27 a,b
RP 3.08 b	DB 3.24 b	RP 2.86 d	RP 2.76 b	RP 2.44 b	RP 2.97 b
Region					
#1	#2	#3	#4	#5	#6
R6 4.29 a	R5 3.69 a	R6 3.89 a	R10 3.53 a	R10 3.20 a	R1 3.67 a
R10 3.80 a,b	R6 3.59 a	R10 3.73 a	R6 3.38 a	R3 3.02 a	R6 3.57 a
R5 3.51 a,b,c	R9 3.56 a	R1 3.47 a	R3 3.38 a	R1 3.00 a	R5 3.54 a
R1 3.37 a,b,c	R10 3.53 a	R5 3.46 a	R1 3.27a	R5 2.89 a	R9 3.50 a
R4 2.96 b,c	R1 3.51 a	R9 3.42 a	R5 3.08 a	R6 2.88 a	R2 3.45 a
R8 2.96 b,c	R2 3.40 a	R3 3.41 a	R9 3.04 a	R4 2.85 a	R3 3.30 a
R2 2.91 b,c	R8 3.17 a	R4 3.30 a	R2 3.00 a	R9 2.80 a	R10 3.27 a
R3 2.84 b,c	R4 3.16 a	R2 3.30 a	R8 2.90 a	R8 2.72 a	R4 3.05 a
R9 2.79 c	R3 3.11 a	R8 3.16 a	R4 2.90 a	R2 2.71 a	R8 2.91 a
Budget category					
#1	#2	#3	#4	#5	#6
B3 3.94 a	B3 3.76 a	B3 3.89 a	B3 3.46 a	B3 3.09 a	B3 3.88 a
B2 3.04 b	B1 3.39 a,b	B2 3.27 b	B1 3.07 a,b	B1 2.85 a	B1 3.31 b
B1 2.95 b	B2 3.23 b	B1 3.22 b	B2 2.95 b	B2 2.74 a	B2 3.08 b
Ranking category					
#1	#2	#3	#4	#5	#6
Rk3 3.37 a	Rk3 3.63 a	Rk3 3.49 a	Rk3 3.24 a	Rk2 2.90 a	Rk3 3.73 a
Rk2 3.28 a	Rk2 3.46 a,b	Rk2 3.49 a	Rk2 3.14 a	Rk1 2.84 a	Rk2 3.38 a,b
Rk1 3.21 a	Rk1 3.04 b	Rk1 3.16 a	Rk1 2.88 a	Rk3 2.71 a	Rk1 2.85 b

Figure 2. Average responses of Program Definition questions (1-6) by annual total forest fisheries budget category; Budget Category 1 = lowest quartile < \$117,000; Budget Category 2 = middle 50% > \$117,000 and < \$341,000; Budget Category 3 = highest quartile > \$341,000.

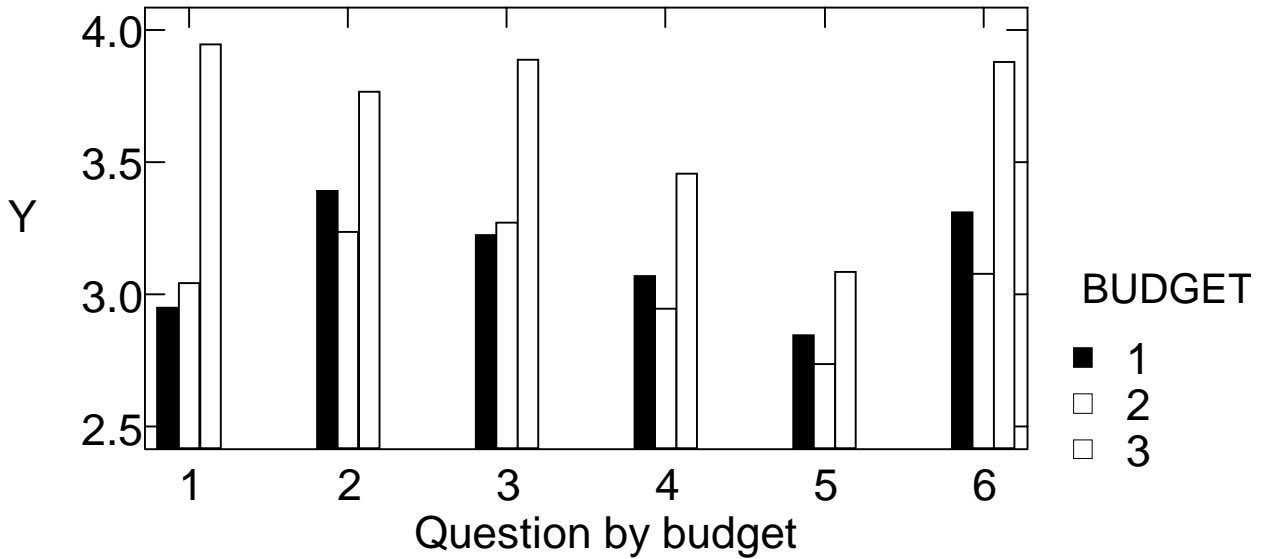


Figure 3. Average responses of Program Definition questions (1-6) by apriori ranking of forests by fisheries experts; Ranking 1 = forests with significant improvement potential, two most significant per region; Ranking 2 = forests not ranked; Ranking 3 = forests that represent “best” two forests of each region.

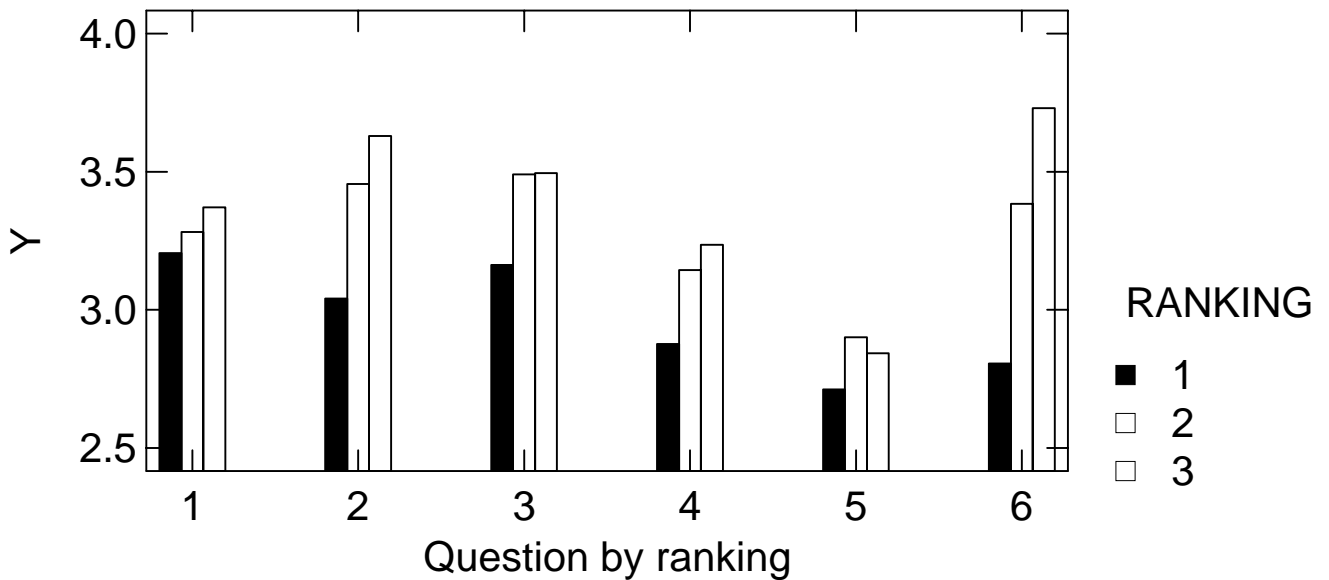


Table 4. Mean response to Workforce questions (7-10) by position (FS= forest supervisor; SO = staff officer; RP = regional program leader; FF = forest fish biologist; DB = district biologist) and region (1-6,8-10); budget category (1,2,3); and ranking category (1,2,3). Means with the same letter in each column are not significantly different, Duncan's Multiple Range Test, $p > 0.002$.

Position			
#7	#8	#9	#10
FS 4.00 a	FS 3.72 a	FS 3.90 a	FS 4.03 a
SO 3.79 a	SO 3.71 a	SO 3.87 a	SO 3.71 a
FF 3.66 a	FF 3.46 a,b	FF 3.64 a,b	FF 2.79 b
DB 3.64 a	DB 3.25 b,c	DB 3.56 a,b	DB 2.66 b
RP 3.57 a	RP 3.00 c	RP 3.26 b	RP 2.46 b

Region			
#7	#8	#9	#10
R1 4.30 a	R6 3.53 a	R2 4.04 a	R10 3.47 a
R2 4.04 a,b	R2 3.53 a	R1 4.02 a	R6 3.27 a
R6 3.92 a,b	R1 3.49 a	R3 3.73 a	R3 3.23 a
R10 3.87 a,b,c	R4 3.41 a	R6 3.61 a	R9 3.11 a
R4 3.71 a,b,c	R5 3.39 a	R4 3.60 a	R2 3.08 a
R9 3.70 a,b,c	R10 3.27 a	R8 3.56 a	R1 3.02 a
R5 3.69 a,b,c	R8 3.28 a	R9 3.39 a	R4 3.00 a
R8 3.22 b,c	R9 3.21 a	R10 3.33 a	R5 2.75 a
R3 2.95 c	R3 3.16 a	R5 3.22 a	R8 2.54 a

Budget category			
#7	#8	#9	#10
B3 4.09 a	B3 3.70 a	B3 3.73 a	B3 3.34 a
B2 3.65 a,b	B2 3.31 a,b	B2 3.69 a	B2 2.88 a,b
B1 3.26 b	B1 3.04 b	B1 3.20 a	B1 2.73 b

Ranking category			
#7	#8	#9	#10
Rk3 3.93 a	Rk3 3.62 a	Rk3 3.90 a	Rk3 3.11 a
Rk2 3.71 a	Rk2 3.40 a,b	Rk2 3.59 a	Rk2 3.02 a
Rk1 3.35 a	Rk1 2.93 b	Rk1 3.28 a	Rk1 2.69 a

Figure 4. Average responses of Workforce questions (7-10) by each region.

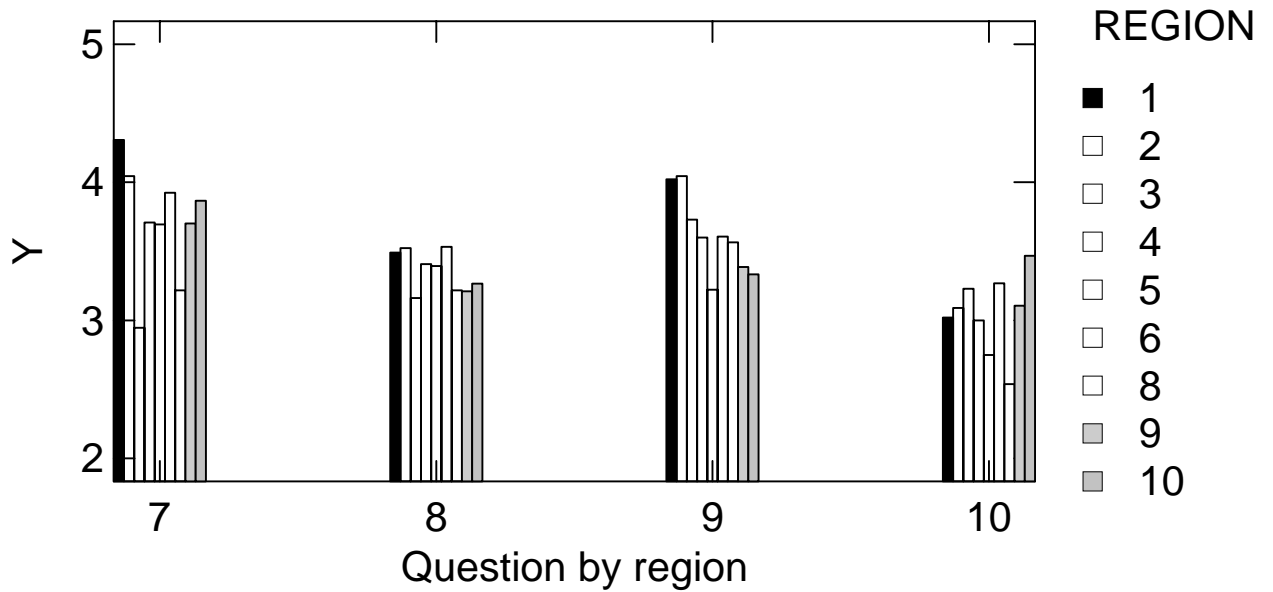


Figure 5. Average responses of Workforce questions (7-10) by annual total forest fisheries budget category; Budget Category 1 = lowest quartile < \$117,000; Budget Category 2 = middle 50% > \$117,000 and < \$341,000; Budget Category 3 = highest quartile > \$341,000.

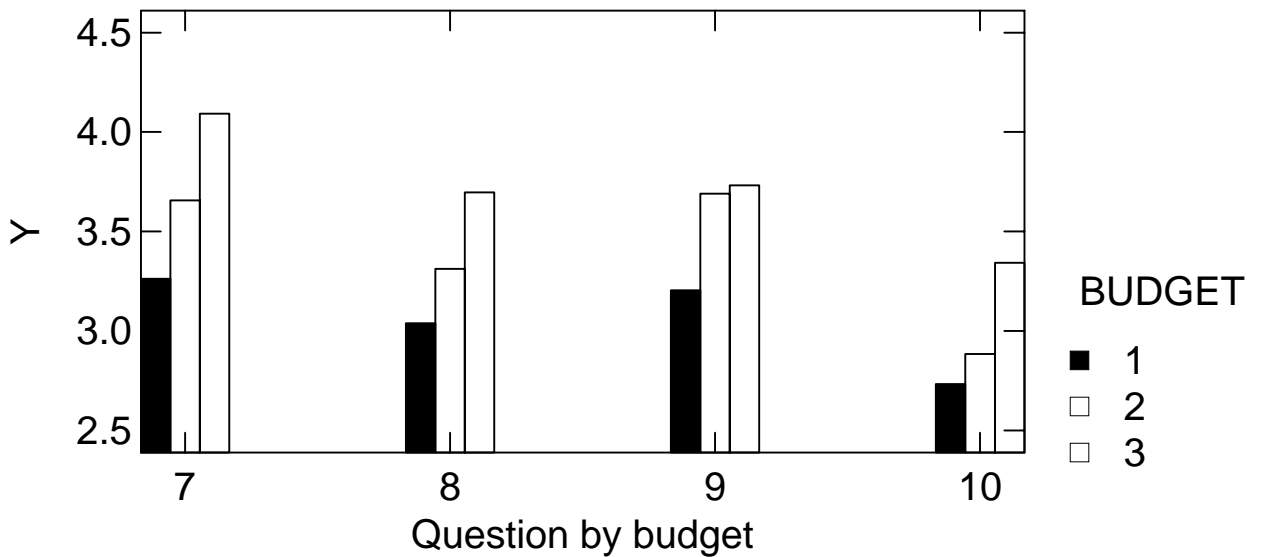


Figure 6. Average responses of Workforce questions (7-10) by apriori ranking of forests by fisheries experts; Ranking 1 = forests with significant improvement potential, two most significant per region; Ranking 2 = forests not ranked; Ranking 3 = forests that represent “best” two forests of each region.

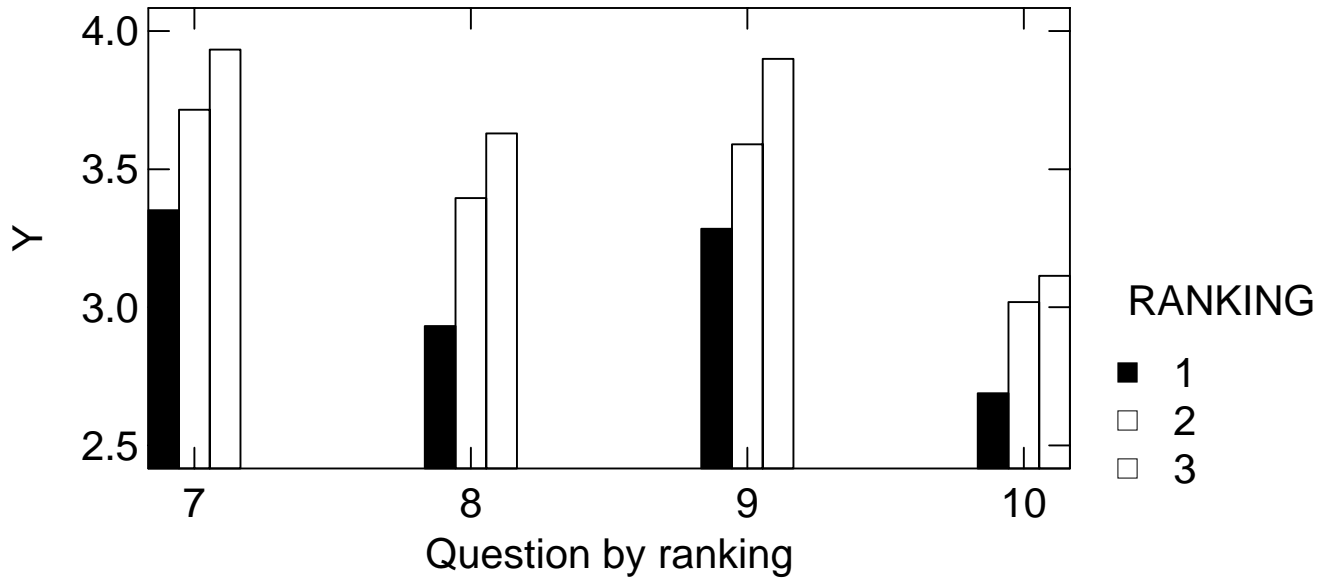


Figure 7. Average responses of Accomplishment questions (11-15) by each region.

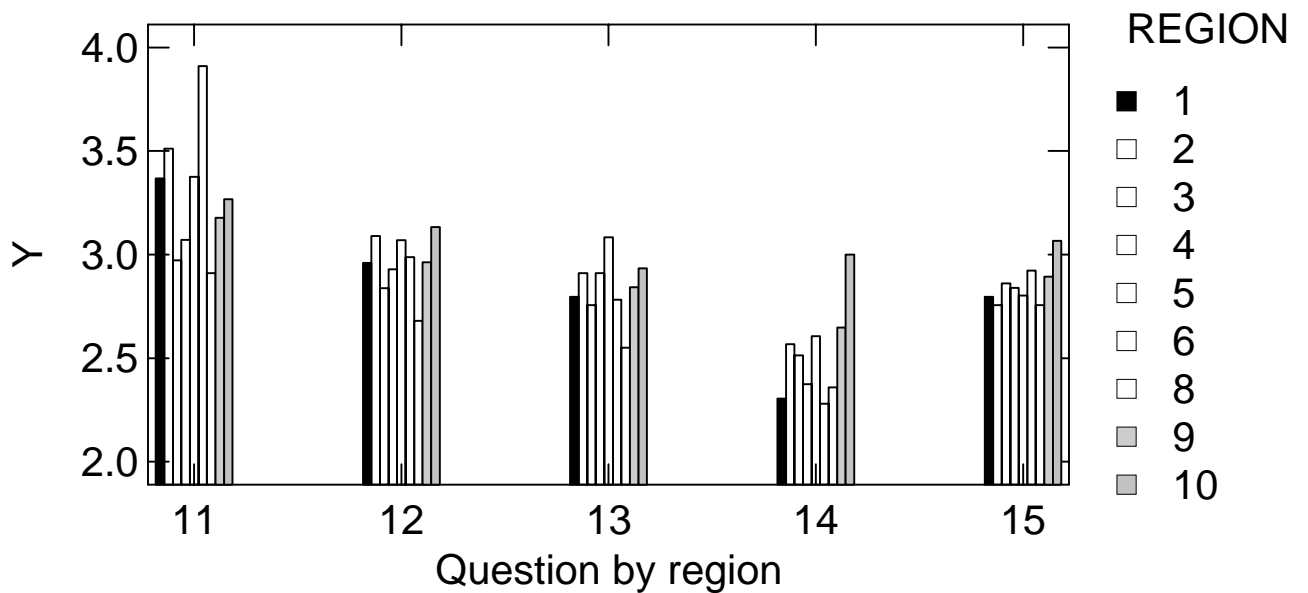


Table 5. Mean response to Accomplishment questions (11-15) by position (FS= forest supervisor; SO = staff officer; RP = regional program leader; FF = forest fish biologist; DB = district biologist) and region (1-6,8-10); budget category (1,2,3); and ranking category (1,2,3). Means with the same letter in each column are not significantly different, Duncan's Multiple Range Test, $p > 0.002$.

Position				
#11	#12	#13	#14	#15
SO 3.49 a	SO 3.30 a	SO 3.12 a	FS 2.85 a	FS 3.61 a
FS 3.45 a	FS 3.19 a,b	FS 3.10 a	SO 2.73 a,b	SO 3.14 b
FF 3.37 a	FF 2.89 b,c	FF 2.77 a,b	RP 2.51 a,b,c	FF 2.83 b,c
DB 3.21 a	RP 2.83 b,c	RP 2.73 a,b	DB 2.30 b,c	DB 2.65 c
RP 3.16 a	DB 2.75 c	DB 2.66 b	RP 2.25 c	RP 2.41 c
Region				
#11	#12	#13	#14	#15
R6 3.91 a	R10 3.13 a	R5 3.08 a	R10 3.00 a	R10 3.07 a
R2 3.51 a,b	R2 3.09 a	R10 2.93 a	R9 2.65 a	R6 2.92 a
R5 3.38 a,b	R5 3.07 a	R2 2.91 a	R5 2.61 a	R9 2.89 a
R1 3.36 a, b	R6 2.99 a	R4 2.91 a	R2 2.56 a	R3 2.86 a
R10 3.27 a,b	R9 2.96 a	R9 2.84 a	R3 2.51 a	R4 2.84 a
R9 3.17 a,b	R1 2.95 a	R1 2.80 a	R4 2.38 a	R5 2.80 a
R4 3.07 a,b	R4 2.92 a	R6 2.78 a	R8 2.36 a	R1 2.80 a
R3 2.97 a,b	R3 2.83 a	R3 2.76 a	R1 2.30 a	R8 2.76 a
R8 2.91 b	R8 2.68 a	R8 2.55 a	R6 2.28 a	R2 2.76 a
Budget category				
#11	#12	#13	#14	#15
B3 3.80 a	B3 3.56 a	B3 3.23 a	B3 2.88 a	B3 3.12 a
B2 3.12 b	B1 2.79 b	B1 2.70 b	B2 2.34 b	B1 2.75 a
B1 3.07 b	B2 2.75 b	B2 2.65 b	B1 2.26 b	B2 2.71 a
Ranking category				
#11	#12	#13	#14	#15
Rk3 3.63 a	Rk3 3.20 a	Rk3 3.12 a	Rk3 2.80 a	Rk2 2.89 a
Rk2 3.28 a	Rk2 2.93 a	R2 2.86 a	Rk2 2.43 a	Rk3 2.84 a
Rk1 3.03 a	Rk1 2.64 a	Rk1 2.55 a	Rk1 2.24 a	Rk1 2.59 a

Figure 8. Average responses of Accomplishment questions (11-15) by annual total forest fisheries budget category; Budget Category 1 = lowest quartile < \$117,000; Budget Category 2 = middle 50% > \$117,000 and < \$341,000; Budget Category 3 = highest quartile > \$341,000.

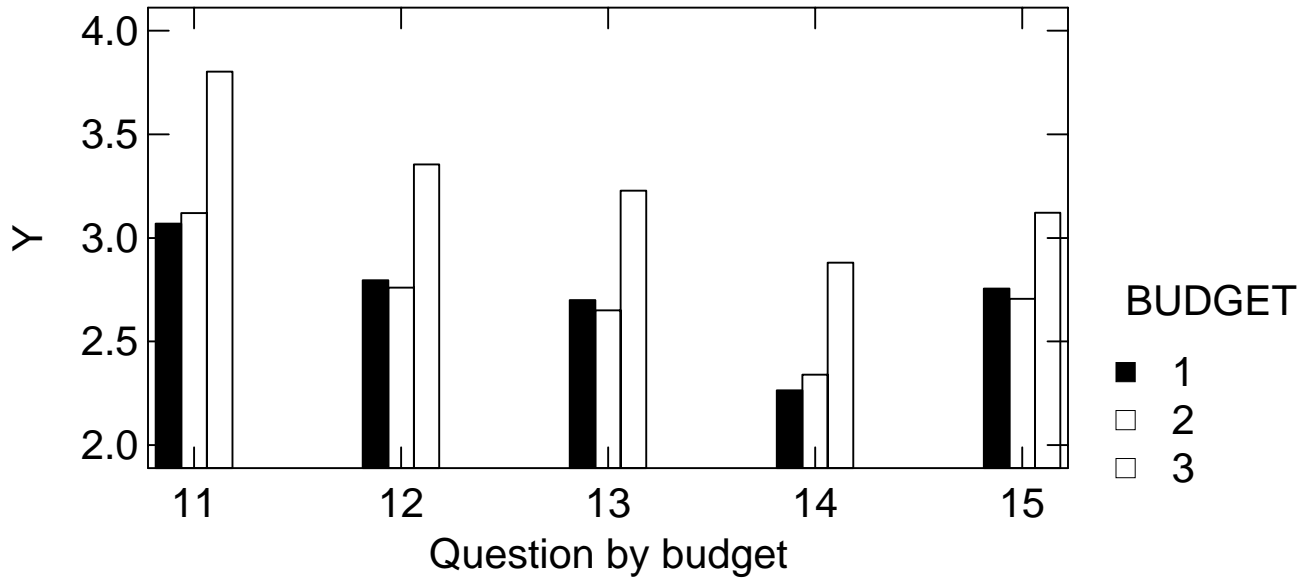


Figure 9. Average responses of Accomplishment questions (11-15) by apriori ranking of forests by fisheries experts; Ranking 1 = forests with significant improvement potential, two most significant per region; Ranking 2 = forests not ranked; Ranking 3 = forests that represent “best” two forests of each region.

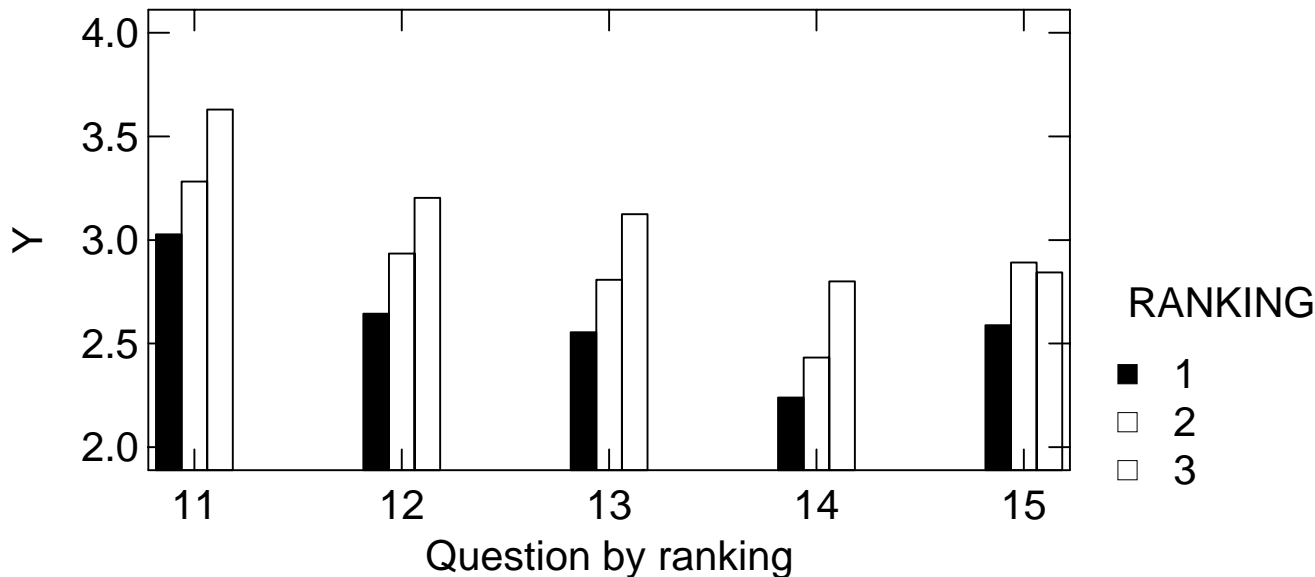


Table 6. Mean response to Fiscal Responsibility questions (16 -18) by position (FS= forest supervisor; SO = staff officer; RP = regional program leader; FF = forest fish biologist; DB = district biologist) and region (1-6,8-10); budget category (1,2,3); and ranking category (1,2,3). Means with the same letter in each column are not significantly different, Duncan's Multiple Range Test, $p > 0.002$.

Position		
#16	#17	#18
FS 4.17 a	RP 2.58 a	FS 4.12 a
SO 3.75 a	FF 2.48 a	SO 3.97 a
FF 3.20 b	DB 2.29 a,b	FF 3.11 b
DB 2.87 b	SO 2.24 a,b	DB 2.87 b
RP 2.81 b	FS 1.90 b	RP 2.69 b
Region		
#16	#17	#18
R2 3.71 a	R10 3.87 a	R10 3.60 a
R9 3.62 a	R2 2.67 b	R2 3.50 a
R6 3.48 a	R6 2.59 b	R6 3.48 a
R1 3.47 a	R9 2.43 b	R9 3.44 a
R3 3.19 a	R5 2.38 b	R5 3.26 a
R10 3.13 a	R4 2.09 b	R3 3.29 a
R5 3.09 a	R1 2.02 b	R1 3.14 a
R4 2.94 a	R8 1.97 b	R8 2.87 a
R8 2.88 a	R3 1.91 b	R4 2.79 a
Budget category		
#16	#17	#18
B3 3.51 a	B3 2.88 a	B3 3.63 a
B1 3.32 a	B2 2.12 b	B1 3.07 b
B2 3.10 a	B1 2.02 b	B2 3.03 b
Ranking category		
#16	#17	#18
Rk3 3.43 a	Rk3 2.59 a	Rk3 3.42 a
Rk1 3.24 a	Rk2 2.28 a	Rk1 3.19 a
Rk2 3.22 a	Rk1 2.20 a	Rk2 3.08 a

Figure 10. Average responses of Fiscal Responsibility questions (16-18) by each region.

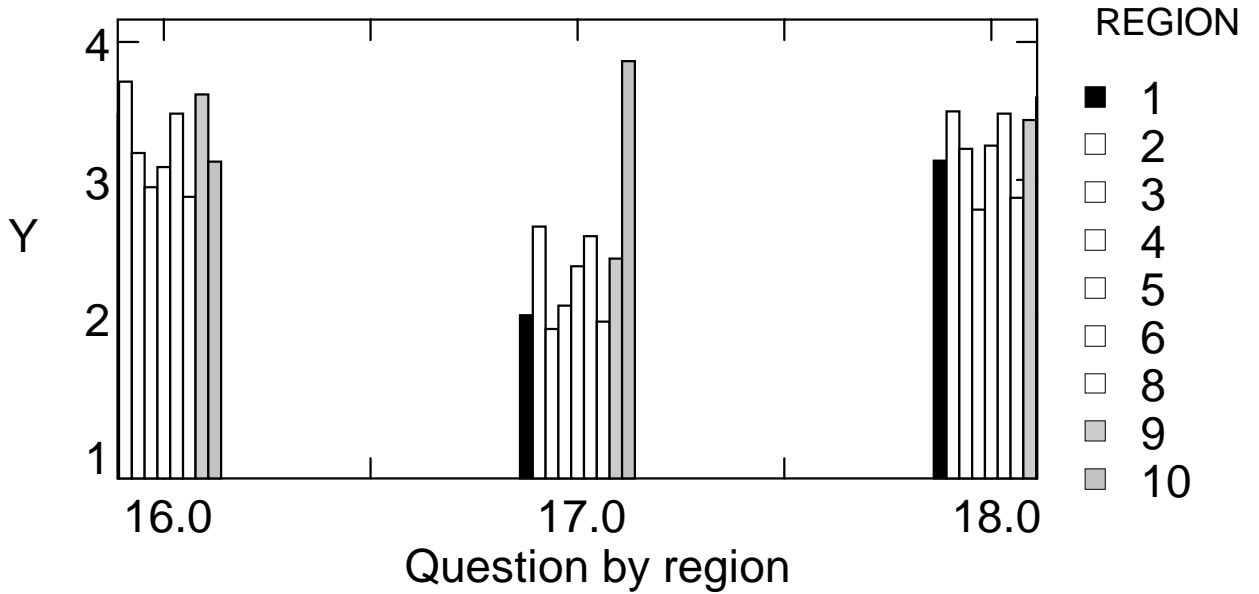


Figure 11. Average responses of Fiscal Responsibility questions (16-18) by annual total forest fisheries budget category; Budget Category 1 = lowest quartile < \$117,000; Budget Category 2 = middle 50% > \$117,000 and < \$341,000; Budget Category 3 = highest quartile > \$341,000.

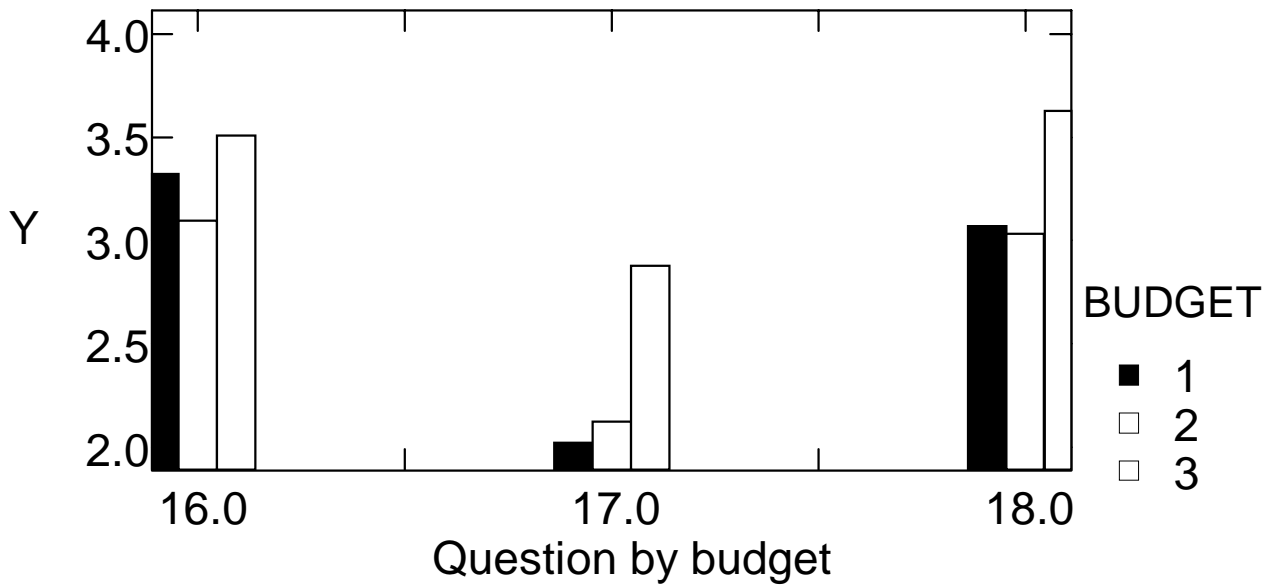


Figure 12. Average responses of Fiscal Responsibility questions (16-18) by apriori ranking of forests by fisheries experts; Ranking 1 = forests with significant improvement potential, two most significant per region; Ranking 2 = forests not ranked; Ranking 3 = forests that represent “best” two forests of each region.

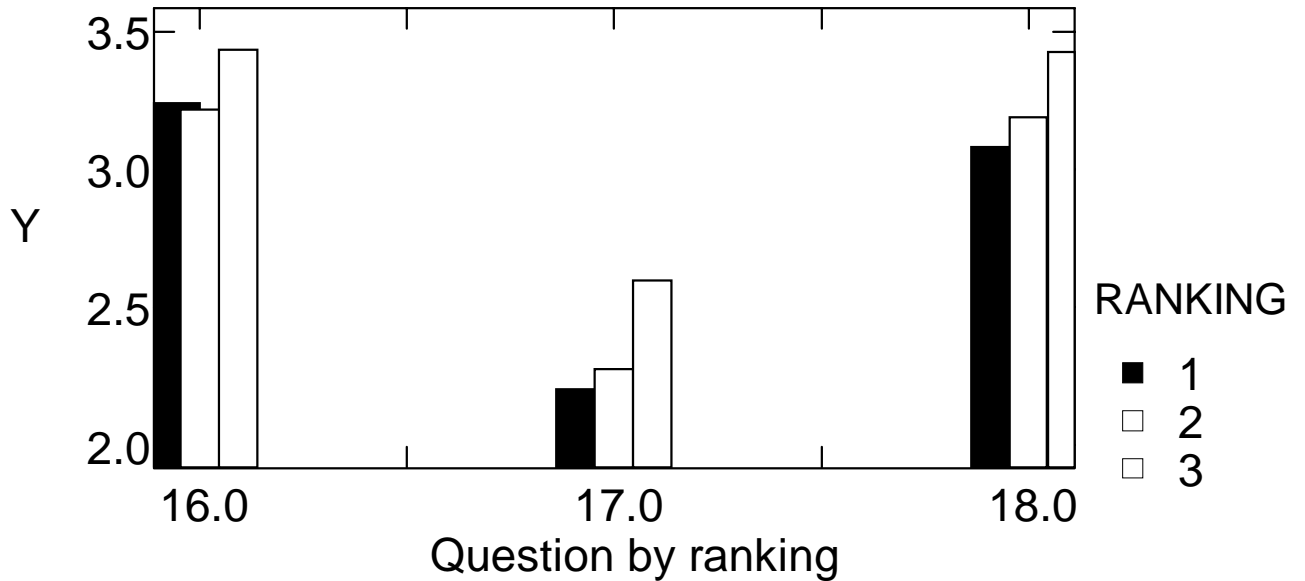


Figure 13. Average responses of Partnership questions (19-23) by each region.

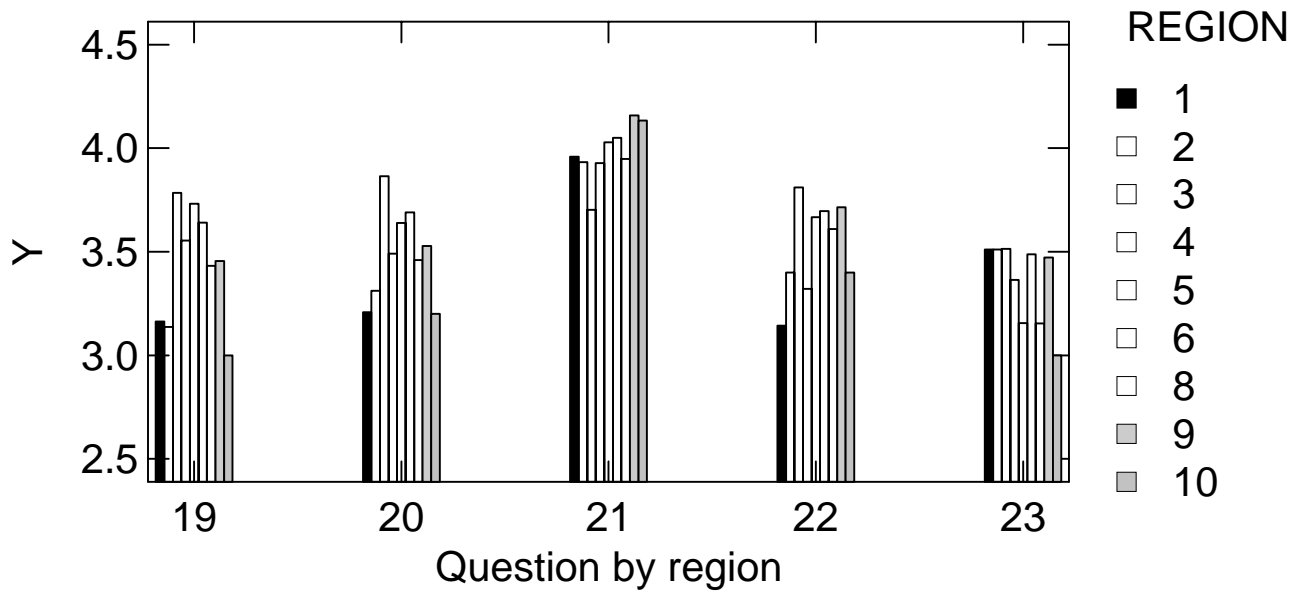


Table 7. Mean response to Partnership questions (19-23) by position (FS= forest supervisor; SO = staff officer; RP = regional program leader; FF = forest fish biologist; DB = district biologist) and region (1-6,8-10); budget category (1,2,3); and ranking category (1,2,3). Means with the same letter in each column are not significantly different, Duncan's Multiple Range Test, $p > 0.002$.

Position				
#19	#20	#21	#22	#23
FS 3.73 a	FS 3.88 a	SO 4.16 a	FS 3.75 a	FS 3.44 a
SO 3.59 a	SO 3.60 a,b	FS 4.13 a	RP 3.66 a	RP 3.42 a
FF 3.55 a	RP 3.46 a,b	FF 4.11 a	SO 3.64 a	FS 3.39 a
FF 3.39 a	FF 3.43 a,b	DB 3.88 a	FF 3.45 a	SO 3.38 a
RP 3.37 a	DB 3.38 b	RP 3.80 a	DB 3.39 a	DB 3.21 a
Region				
#19	#20	#21	#22	#23
R3 3.78 a	R3 3.86 a	R9 4.16 a	R3 3.81 a	R3 3.51 a
R5 3.73 a	R6 3.69 a	R10 4.13 a	R9 3.71 a	R2 3.51 a
R6 3.64 a	R5 3.64 a	R6 4.05 a	R6 3.70 a	R1 3.51 a
R4 3.55 a	R9 3.53 a	R5 4.03 a	R5 3.66 a	R6 3.49 a
R9 3.45 a	R4 3.49 a	R1 3.96 a	R8 3.61 a	R9 3.47 a
R8 3.43 a	R8 3.46 a	R8 3.95 a	R2 3.40 a	R4 3.36 a
R1 3.16 a	R2 3.31 a	R2 3.93 a	R10 3.40 a	R5 3.15 a
R2 3.13 a	R1 3.21 a	R4 3.93 a	R4 3.32 a	R8 3.15 a
R10 3.00 a	R10 3.20 a	R3 3.70 a	R1 3.14 a	R10 3.00 a
Budget category				
#19	#20	#21	#22	#23
B3 3.81 a	B3 3.67 a	B3 4.22 a	B3 3.76 a	B1 3.44 a
B1 3.54 a	B1 3.52 a	B1 3.94 a	B1 3.51 a	B3 3.34 a
B2 3.27 a	B2 3.41 a	B2 3.86 a	B2 3.46 a	B2 3.34 a
Ranking category				
#19	#20	#21	#22	#23
Rk3 3.69 a	Rk3 3.64 a	Rk3 4.12 a	Rk2 3.68 a	Rk1 3.45 a
Rk2 3.61 a	Rk2 3.61 a	Rk2 4.05 a	Rk3 3.54 a	Rk2 3.37 a
Rk1 2.71 b	Rk1 2.93 b	Rk1 3.52 b	Rk1 2.97 b	Rk3 3.22 a

Figure 14. Average responses of Partnership questions (19-23) by annual total forest fisheries budget category; Budget Category 1 = lowest quartile < \$117,000; Budget Category 2 = middle 50% > \$117,000 and < \$341,000; Budget Category 3 = highest quartile > \$341,000.

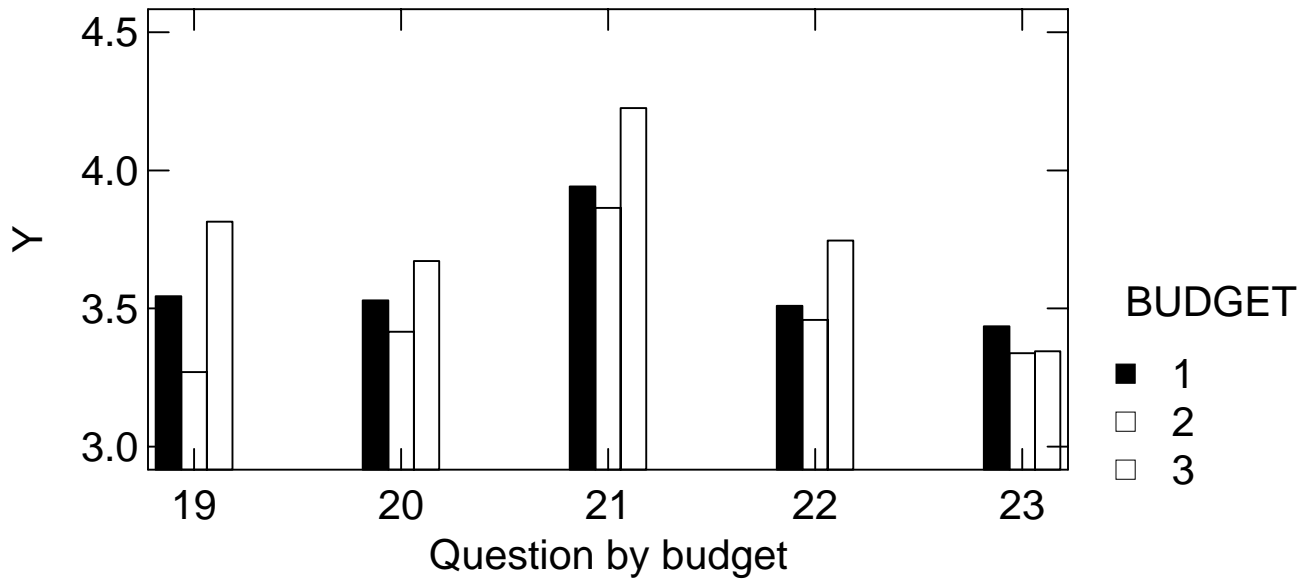
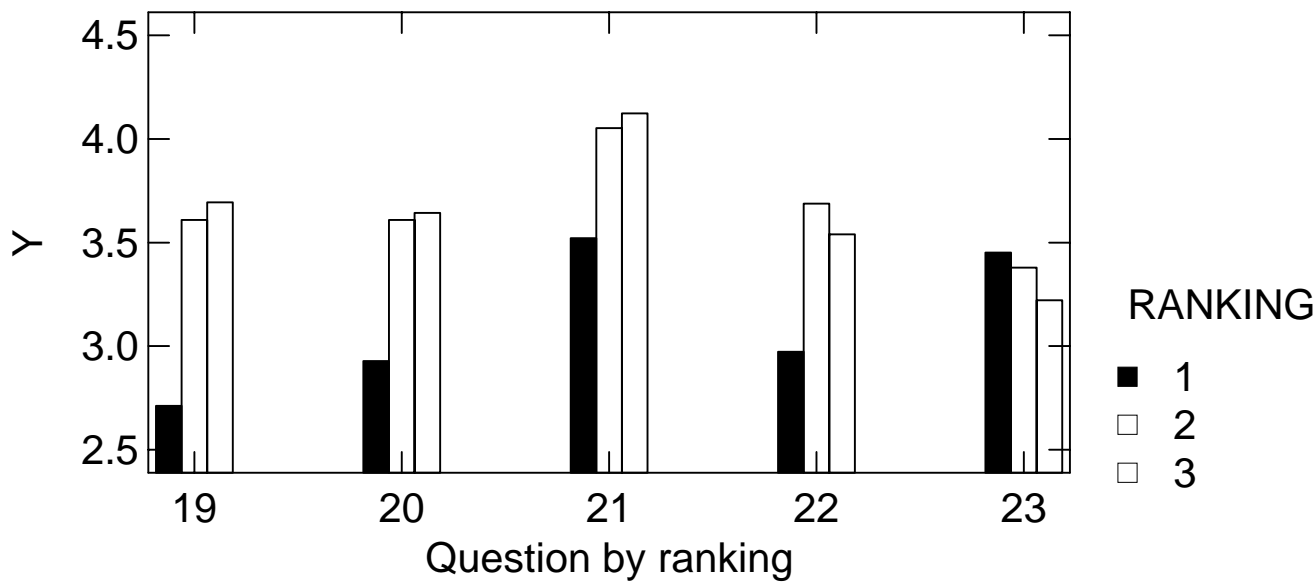


Figure 15. Average responses of Partnership questions (19-23) by apriori ranking of forests by fisheries experts; Ranking 1 = forests with significant improvement potential, two most significant per region; Ranking 2 = forests not ranked; Ranking 3 = forests that represent “best” two forests of each region.



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Appendix I: Survey Letter

File 2600
Code:
Route
To:

Date: December 1 , 2000

Subject: Benchmarking Evaluation of the Fisheries and Aquatic Ecology Programs

To: Participants (Forest Supervisors, Staff Officers, Forest Fisheries Biologists, District Fisheries Biologists, and Partners of selected Forests and Regional Fisheries Program Managers)

Please take 10 to 15 minutes to access our Website and complete the e-mail survey. This benchmarking survey of the Fisheries and Aquatic Ecology Program will be used to identify strengths and characteristics of outstanding programs so they can be used to standardize outstanding practices throughout the agency.

This survey asks a series of questions (23 total) in five areas (Program Definition, Work Force, Accomplishments, Fiscal, and Partnerships). The questions are directed to the Forest Supervisor, Staff Officer, Forest Fisheries Biologist, and District Biologist from each surveyed Forest as well as the Regional Fisheries Program Manager. This 360 degree evaluation of the program is further enhanced by asking the same questions to a partner familiar with the program.

It is important that **you personally** fill out the survey as soon as possible. Thank you for your cooperation and support. Results of the survey will be made available in February 2001.

You can access and submit the survey at: <http://www.fs.fed.us/biology/forestsurvey.htm>.

Any questions concerning the survey should be directed to Mark Hudy, National Fisheries Program Leader at mhudy@fs.fed.us or 540-568-2704.

/s/ Paul Brouha

JAMES R. FURNISH
Deputy Chief for
National Forest System

Appendix II: Follow Up Survey Letter

File 2600
Code:
Route
To:

Date: December 7, 2000

Subject: (URGENT REMINDER, First Follow Up) Benchmarking Evaluation of the Fisheries and Aquatic Ecology Programs

To: Participants (Forest Supervisors, Staff Officers, Forest Fisheries Biologists, District Fisheries Biologists, and Partners of selected Forests and Regional Fisheries Program Managers)

Last week a survey was sent to you by e-mail. If you have not already replied, Please take 10 to 15 minutes to access our Website and complete the e-mail survey.

This benchmarking survey of the Fisheries and Aquatic Ecology Program will be used to identify strengths and characteristics of outstanding programs so they can be used to standardize outstanding practices throughout the agency.

This survey asks a series of questions (23 total) in five areas (Program Definition, Work Force, Accomplishments, Fiscal, and Partnerships). The questions are directed to the Forest Supervisor, Staff Officer, Forest Fisheries Biologist, and District Biologist from each surveyed Forest as well as the Regional Fisheries Program Manager. This 360 degree evaluation of the program is further enhanced by asking the same questions to a partner familiar with the program.

It is important that **you personally** fill out the survey as soon as possible. Thank you for your cooperation and support. Results of the survey will be made available in February 2001.

You can access and submit the survey at: <http://www.fs.fed.us/biology/forestsurvey.htm>.

Any questions concerning the survey should be directed to Mark Hudy, National Fisheries Program Leader at mhudy@fs.fed.us or 540-568-2704.

/s/ Paul Brouha for

JAMES R. FURNISH
Deputy Chief for
National Forest System

Appendix III: Web Survey Form

**Fisheries and Aquatic Ecology Program
Benchmarking Study**

Please take approximately 10 to 15 minutes to complete the 23 questions for this Fisheries and Aquatic Ecology Program Benchmarking study. Your feedback is vitally important as we seek to improve the quality and efficiency of the management of aquatic resources on National Forest Lands. On a scale of 1(low) to 5(high) please mark the box that indicates how you rate each area.

Individual responses will remain confidential.

What forest are you rating for this questionnaire?

How would you best describe your position?

Forest Supervisor Staff Officer Regional Program Leader
Forest Fish Biologist District Biologist

A. Program Definition

1. Please rate your Forest Plan(s) (current) stated goals and objectives for guidance and direction to protect, restore and enhance forest aquatic resources.

1 (low) 2 3 4 5 (high) N/A

High Performance Indicators: Forest plan goals are clearly stated and objectives are articulated. The Forest Plan protects, restores and enhances the forest aquatic resources.

Low Performance Indicators: Forest plan goals and objectives are not clearly stated or articulated. The Forest Plan does not adequately protect, restore or enhance the forest aquatic resources.

2. Please rate the effectiveness of integration with other resource programs.

1 (low) 2 3 4 5 (high) N/A

High Performance Indicators: The Fisheries and Aquatic Ecology Program is effectively integrated with other resource programs. Common priorities are identified and jointly pursued.

Low Performance Indicators: The Fisheries and Aquatic Ecology Program has not been

integrated with other resource programs. Program activities are independently pursued.

3. Please rate the overall line (forest supervisor, rangers) and staff officer views of aquatic resources in priority setting.

1 (low) 2 3 4 5 (high) N/A

High Performance Indicators: Line and staff jointly view aquatic resources as a priority and a core responsibility.

Low Performance Indicators: Line and staff do not view aquatic resources as a priority or a core responsibility.

4. Please rate the overall line (forest supervisor, rangers) and staff officer involvement in program execution.

1 (low) 2 3 4 5 (high) N/A

High Performance Indicators: Line and staff emphasize the importance of aquatic resources and are actively involved in and aware of program execution.

Low Performance Indicators: Line and staff do not emphasize the importance of aquatic resources and are not aware of or involved in program execution.

5. Please rate the overall line (forest supervisor, rangers) and staff officer involvement in program evaluation.

1 (low) 2 3 4 5 (high) N/A

High Performance Indicators: Line and staff emphasize the importance of aquatic resources and are involved in program evaluations and performance reviews.

Low Performance Indicators: Line and staff do not emphasize the importance of aquatic resources and are not involved in program evaluations and performance reviews.

6. Please rate the consistency and integration among forest and district programs in management of aquatic resources.

1 (low) 2 3 4 5 (high) N/A

High Performance Indicators: There is good consistency in methods and approaches in implementing aquatic resource projects, inventory and monitoring among the Forest and Ranger Districts.

Low Performance Indicators: There is not good consistency in methods and approaches in implementing aquatic resource projects, inventory and monitoring among the Forest and Ranger Districts.

B. Workforce

7. Please rate your forest workforce for technical proficiency to protect, restore, and enhance the forest aquatic resources during watershed assessments.

1 (low) 2 3 4 5 (high) N/A

High Performance Indicators: The workforce possesses the highest degree of scientific and technical knowledge and skills to meet program goals.

Low Performance Indicators: The workforce does not possess the highest degree of scientific or technical knowledge required to meet program goals.

8. Please rate your forest workforce operational capability to protect, restore, and enhance the forest aquatic resources during watershed assessments.

1 (low) 2 3 4 5 (high) N/A

High Performance Indicators: Workforce demonstrates a high level of operational capability and makes the best use of the available scientific expertise and technology.

Low Performance Indicators: Workforce lacks operational capability to make the best use of the available scientific expertise and technology.

9. Please rate access to hydrology and soils specialists to compliment and implement watershed assessments.

1 (low) 2 3 4 5 (high) N/A

High Performance Indicators: Access is readily available for hydrology and soils specialists to successfully implement watershed assessments. The best scientific knowledge is applied in making recommendations and in selecting technologies to efficiently and effectively meet the mission.

Low Performance Indicators: Hydrology and soils specialists are not available or not easily accessible to implement watershed assessments. In most circumstances, the resulting recommendations do not make use of the best scientific knowledge.

10. Please rate the overall line (forest supervisor, rangers) and staff officer commitment to identify and fill necessary positions needed for watershed assessments.

1 (low) 2 3 4 5 (high) N/A

High Performance Indicators: Line and staff fully support watershed assessments by ensuring that specialists are made available to meet assessment requirements. Scientific and technical positions are quickly processed, advertised and filled.

Low Performance Indicators: Line and staff are not involved or provide minimal support for watershed assessments. Scientific and technical position are not processed, advertised or filled in a reasonable timeframe.

C. Accomplishments

11. Please rate the strength of your forest inventory program to characterize aquatic resource conditions.

1 (low) 2 3 4 5 (high) N/A

High Performance Indicators: Aquatic resource conditions are known and understood. Inventories are updated at least once every 10 years.

Low Performance Indicators: Minimal or no emphasis is placed on aquatic inventory. Aquatic resource conditions are not known or are infrequently updated (less than once every 10 years).

12. Please rate the level of compliance to implement the aquatic monitoring program.

High Performance Indicators: An implementation monitoring program is complete. The workforce uses the program plan as a roadmap to ensure compliance.

Low Performance Indicators: An implementation monitoring program does not exist, or is not followed.

1 (low)	2	3	4	5 (high)	N/A
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13. Please rate the effectiveness of your forest monitoring of aquatic resources.

1 (low)	2	3	4	5 (high)	N/A
---------	---	---	---	----------	-----

High Performance Indicators: An effectiveness monitoring program is fully functional. Information from the program is available and used by the workforce to adapt management practices.

Low Performance Indicators: Effectiveness monitoring does not take place or is not available and used by the workforce to adapt management practices.

14. Please rate the strength of your forest validation monitoring of aquatic resource.

1 (low)	2	3	4	5 (high)	N/A
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High Performance Indicators: Validation monitoring takes place and is coordinated with research.

Low Performance Indicators: Validation monitoring does not take place.

15. Please rate the overall priority line (forest supervisor, rangers) and staff have for inventorying and monitoring of aquatic resources.

1 (low)	2	3	4	5 (high)	N/A
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High Performance Indicators: Line and staff fully support and value inventory and monitoring of aquatic resources as a priority program within the Forest Plan by ensuring that the best mix of people and funds is provided to support the program.

Low Performance Indicators: Line and staff do not place emphasis or priority on inventorying and monitoring aquatic resources, as a result little or no accomplishments are made.

D. Fiscal Responsibility

16. Please rate overhead assessment levels on this program.

1 (low) 2 3 4 5 (high) N/A

High Performance Indicators: Overhead assessments against fisheries funds are "fair." Funding decisions are made on the basis of primary purpose.

Low Performance Indicators: Overhead assessments made against fisheries funds are disproportionately high. Primary purpose principles are seldom adhered to.

17. Please rate the adequacy of your budget to protect, restore, and enhance aquatic resources at forest plan levels.

1 (low) 2 3 4 5 (high) N/A

High Performance Indicators: Funding supports protection, restoration, and enhancement of aquatic resources at forest plan levels.

Low Performance Indicators: Funding does not support protection, restoration, and enhancement of aquatic resources at forest plan levels.

18. Please rate the overall line (forest supervisor, rangers) and staff officer involvement and support to equitably distribute funds required in protecting, restoring and enhancing aquatic resources.

1 (low) 2 3 4 5 (high) N/A

High Performance Indicators: Line and staff maintain oversight of funds provided to sustain aquatic resources.

Low Performance Indicators: Line and staff maintain minimal oversight of funds provided to sustain aquatic resources. Program funds are redirected to support other programs.

E. Partnerships

19. Please rate the effectiveness of your partnership program in leveraging funds to accomplish program objectives.

1 (low) 2 3 4 5 (high) N/A

High Performance Indicators: Funds needed to support program objectives are leveraged because of the mutually benefiting relationships established with partners.

Low Performance Indicators: Funds needed to support the program objectives are not leveraged because of the lack of establishing a mutually benefiting relationship with partners.

20. Please rate the effectiveness of your partnership program in involving stakeholders early in the planning process.

1 (low) 2 3 4 5 (high) N/A

High Performance Indicators: Stakeholders are valued as an integral part of the Forest. Their knowledge, skills and contributions to support the mission are actively recruited and desired.

Low Performance Indicators: Stakeholders are not considered as valuable and an integral part of the Forest. Their knowledge, skills and contributions to support projects are not actively recruited or desired.

21. Please rate the working relationship with other government agencies that are stakeholders in protecting, restoring and enhancing aquatic resources.

1 (low) 2 3 4 5 (high) N/A

High Performance Indicators: Contacts with other government agencies are common and information is shared freely.

Low Performance Indicators: Contacts with other government agencies are infrequent.

22. Please rate the working relationship with non-government agencies and individuals that are stakeholders in protecting, restoring and enhancing aquatic resources.

1 (low) 2 3 4 5 (high) N/A

High Performance Indicators: All members of the Forest promote grassroots participation to achieve goals. A mutual exchange of knowledge and information occurs on a regular basis.

Low Performance Indicators: A majority of the Forest does not promote grassroots participation to achieve goals. A mutual exchange of knowledge and information does not occur on a regular basis.

23. Please rate the working relationship of the line (forest supervisor, rangers) and staff with partners.

1 (low) 2 3 4 5 (high) N/A

High Performance Indicators: Line and staff openly express appreciation and regard for contributions made by partners. A high degree of professional respect is established. Line and staff maintain frequent and open lines of communications. The constant flow of information, knowledge and interaction results in effective decisions impacting aquatic resources.

Low Performance Indicators: Line and staff do not openly or regularly express appreciation and regard for contributions made by partners. Professional respect is lacking. Line and staff do not maintain frequent and open lines of communications. The lack of constant information exchange results in the loss of effective decisions impacting aquatic resources.

24. Additional Comments

Please tell us your e-mail address (E-mail address is needed for tracking participation, all individual responses will remain confidential.) **required*

Appendix IV: Individual Comments

Comment Review Analysis

Of the 525 respondents, we received a total of 261 individual comments. Respondents comments were assigned specifically to each of the 5 main question categories: Program Definition, Workforce, Accomplishments, Fiscal Responsibilities, and Partnerships. Additionally, a General Comment category was created in the survey to capture comments that did not feel fit well into the 5 main question areas. Number of comments received is as follows:

A. Program Definition	72
B. Workforce	53
C. Accomplishments	20
D. Fiscal Responsibility	53
E. Partnerships	26
F. <u>General Comments</u>	<u>37</u>
Total	261

Comments were then individually analyzed for content and clarity to capture specific responses that apply to the 5 main question areas. The vast majority of the 261 comments were generally broad and contained concerns or responses that overlapped into each of the 5 main question areas. Upon review, it was determined that comments were specific enough to further categorize them into 7 response categories. The 261 broad comments contained a total of 397 specific responses, separated into these 8 categories by number of response as follows:

1. Budgets/Funding	86
2. Personnel	70
3. Planning/Monitoring/Implementing	67
4. Leadership Support	55
5. National Direction	55
6. Partnering	37
7. <u>Communication/Coordination</u>	<u>27</u>
Total	397

Budget/Funding

- Successful in leveraging funding for watershed analysis and aquatic restoration implementations. (4)
- Described frustration with the lack of funding for this program. (82)
- Funding is needed for more positions, training and partnership development.(38)

- New budget process pools dollars resulting in less for fish program and make tracking difficult. (22)
- Need “earmarking” for fisheries or the money will get spent for other programs. (22)

Personnel

- Fish staff are excellent, competent and pro-active. (9)
- Fisheries personnel skills are over committed in many districts. (24)
- Fisheries staff do not feel valued. (1)
- Many fisheries positions remain unfilled for years. (23)
- Hire more staff. (1)
- Training is not supported or encouraged. (14)
- Some districts describe a lack of expertise to perform tasks required.

Planning/Monitoring/Implementing

- Amendments to the Forest Plan provided clearer direction to the field for fisheries and aquatics. (8)
- In some cases, aquatic programs are making changes to better meet the direction of national leadership. (8)
- Some districts reported having a strong inventory and monitoring program for fisheries and aquatic resources. (6)
- In some cases, national direction gets ignored by line officers. (18)
- Overall Forest Plan adequacy is low. (4)
- Lack of Strategic Planning. (19)
- Need prioritization. Better to do a good job on a few projects, than a mediocre job on many. (2)
- Aquatic program has the potential to be the best in the nation. Infrastructure has decayed and little effort is made in rebuilding foundation. (2)

Leadership Support

- Comments generally referred to at least one person in the line of supervision that was supportive and an advocate for the fisheries program. (22)
- Difficulties for good leadership tend to be frustration in providing quality work and service due to lack of dollars and personnel. (15)
- Forest Leadership Team is not an advocate for fisheries program and in many cases are complacent and lack follow-through on prioritizing and allocating budgets. (15)
- Field “culture” needs to be changes from “exclusion” to “inclusion.” (3)

National Direction

- Districts feel that the agency has come a long way over the last few years in saying conservation and sustainability are priorities. (20)

- Frustration with lack of support from management for this program. Often feeling like a “second thought” after larger programs are taken care of. (1)
- Some districts feel separated and isolated from other functional areas in the National Forest Service. (15)
- Bias towards forest restoration. Fisheries is a low priority. (18)
- National Office should work to remove or simplify non-discretionary policy and out-dated procedures. (1)

Partnering

- Partnerships are strong. (15)
- National Forest Aquatic personnel are some of the best. Technical capabilities are high. (1)
- Partnerships are invaluable in providing funding and manpower for specific projects. (1)
- Districts indicated a decline in “partnering” involvement. (22)
- Low effectiveness of partnering, unable to leverage funds for and from potential partners.(1)
- Partners responding to the study describe a good working relationship. (1)
- The amount of time it takes to maintain partnerships is underestimated. (1)

Communication/Coordination

- Fish/Aquatic Program feels respected, appreciated and an integral part of their district. (4)
- Communication/Coordination between programs and partners is good. (10)
- Competent personnel with a desire to work effectively and cooperatively with all Forest users and stakeholders is what makes a good integrated program. (1)
- Communication/Coordination between programs and staff need improvement. (12)

Appendix V: Mean Forest Results by Question (N = sample size).

Forest Survey Results, December 2000
 Number of respondents and mean response for each forest

	Forest																				
	Alleghe- NF	Angel es NF	Apache- NF	Si tgreaves NF	Arapaho- NF	Roosevel t NF	Ashl ey NF	Deerlodge NF	Beaverhead- NF	Bi ghorn NF	Bi tterroot NF	Black Hi lls NF	Boi se NF	Teton NF	Bridger- NF	Buffal o Gap, NG					
	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean					
q1	3, 3.33	4, 3.25	6, 3.33	4, 3.00	3, 3.00	4, 3.25	5, 3.00	5, 3.40	2, 2.50	6, 3.00	2, 2.50	1, 5.00									
q2	3, 4.00	4, 2.75	6, 2.67	4, 4.00	3, 3.67	4, 2.75	5, 4.20	5, 3.60	2, 3.00	6, 3.17	2, 2.00	1, 5.00									
q3	3, 3.33	4, 2.00	6, 3.50	4, 2.75	3, 3.67	4, 3.50	5, 4.20	5, 3.60	2, 2.50	6, 2.83	2, 2.00	1, 4.00									
q4	3, 3.00	4, 2.25	6, 3.00	4, 2.75	3, 3.67	4, 2.75	5, 3.80	5, 2.80	2, 3.00	6, 2.67	2, 2.00	1, 4.00									
q5	3, 3.00	4, 2.00	6, 2.50	4, 2.00	3, 4.00	4, 2.75	5, 3.40	5, 2.80	2, 2.50	6, 2.50	1, 2.00	1, 4.00									
q6	3, 3.67	4, 2.75	6, 2.67	4, 4.25	3, 3.67	4, 3.25	5, 3.60	5, 3.60	2, 3.00	6, 3.83	2, 1.50	1, 5.00									
q7	3, 3.33	4, 2.25	6, 2.83	4, 4.25	3, 4.00	4, 4.25	5, 4.60	5, 4.40	2, 3.50	6, 3.50	1, 4.00	1, 2.00									
q8	3, 2.67	4, 2.50	6, 2.50	4, 3.25	3, 4.00	4, 4.00	5, 4.00	5, 3.60	2, 3.00	6, 4.00	1, 4.00	1, 2.00									
q9	3, 3.00	4, 2.75	6, 4.17	4, 4.25	3, 4.00	4, 4.25	5, 4.00	5, 3.60	2, 4.00	6, 4.33	1, 1.00	1, 5.00									
q10	3, 3.33	4, 1.75	6, 3.67	4, 2.75	3, 4.00	4, 3.00	5, 4.40	5, 2.20	2, 3.00	6, 2.83	1, 1.00	1, 1.00									
q11	3, 2.67	4, 2.25	6, 2.67	4, 3.75	3, 3.33	4, 3.00	5, 4.20	5, 3.60	2, 3.50	6, 3.83	2, 3.00	1, 4.00									
q12	3, 3.00	4, 2.25	6, 2.33	4, 2.75	3, 3.00	4, 2.75	5, 4.00	5, 3.20	2, 3.00	6, 2.67	2, 2.50	1, 3.00									
q13	3, 3.33	4, 2.25	6, 2.17	4, 2.75	3, 3.67	4, 2.75	5, 3.60	5, 3.20	2, 3.00	6, 2.50	2, 2.00	1, 4.00									
q14	3, 2.67	4, 2.00	6, 2.00	4, 2.00	3, 2.67	3, 2.00	5, 2.60	5, 2.20	2, 2.00	6, 2.00	2, 1.50	1, 3.00									
q15	3, 2.67	4, 2.50	6, 2.83	4, 2.50	3, 3.33	4, 2.25	5, 3.80	5, 3.00	2, 2.50	6, 2.33	2, 1.00	1, 3.00									
q16	3, 3.33	4, 2.50	6, 3.00	3, 3.67	3, 3.67	4, 2.25	5, 4.00	4, 4.00	2, 4.00	5, 3.60	2, 1.00	1, 5.00									
q17	3, 2.00	4, 2.25	6, 1.83	4, 2.25	3, 2.00	4, 2.00	5, 3.60	5, 2.20	2, 2.00	6, 1.67	2, 1.50	1, 4.00									
q18	3, 3.33	4, 2.50	6, 3.17	3, 4.00	3, 3.67	4, 2.50	5, 4.20	5, 3.00	2, 4.00	6, 2.67	2, 1.00	1, 4.00									
q19	3, 3.67	4, 4.25	6, 4.33	3, 3.00	3, 5.00	4, 3.00	5, 3.20	5, 2.20	2, 3.00	6, 3.00	2, 3.50	1, 5.00									
q20	3, 2.67	4, 3.75	6, 4.17	4, 3.75	3, 4.00	4, 3.25	5, 3.40	5, 2.80	2, 3.00	5, 2.80	2, 3.50	1, 5.00									
q21	3, 4.33	4, 4.75	6, 4.00	4, 3.50	3, 4.33	4, 4.25	5, 3.80	5, 3.60	2, 4.50	6, 4.17	2, 3.50	1, 5.00									
q22	3, 4.00	4, 3.75	6, 4.00	4, 3.75	3, 4.00	4, 3.25	5, 3.80	5, 3.40	2, 3.00	6, 2.83	2, 3.00	1, 5.00									
q23	2, 4.00	4, 3.25	6, 3.67	4, 3.50	3, 3.67	4, 3.25	5, 3.60	5, 3.60	2, 4.00	5, 4.40	2, 2.50	1, 3.00									

(Continued)

Appendix V: Mean Forest Results by Question (N = sample size).

Forest Survey Results, December 2000
 Number of respondents and mean response for each forest

	Forest																							
	Cari bbean NF		Cari bou- Targee NF		Chattahooc- hee-Oconee NF		Chequamegon, Ni col et NF		Cherokee NF		Chi ppewa NF		Chugach NF		Ci bol a NF		Clearwater NF		Cl evel and Coconi no NF					
	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean				
q1	2	3.00	8	3.75	3	2.33	5	3.20	6	1.83	5	3.00	3	1.67	6	2.67	2	2.00	4	4.25	4	3.00	3	3.33
q2	2	3.00	8	3.38	3	3.33	5	3.20	6	3.83	5	3.60	3	2.33	6	3.17	2	2.50	4	4.00	4	4.00	3	3.67
q3	2	3.50	8	3.63	3	3.33	5	3.20	6	3.83	5	3.80	3	2.00	6	3.50	2	2.50	4	4.00	4	3.50	3	3.67
q4	2	3.00	8	2.88	3	3.67	5	2.80	6	3.33	5	3.00	3	1.67	6	3.33	2	3.50	4	3.75	4	2.75	3	3.67
q5	2	2.50	8	2.75	3	3.33	5	2.60	6	2.83	5	2.80	3	1.33	6	2.83	2	3.00	4	3.50	4	2.75	3	2.67
q6	0		8	3.00	3	3.33	5	2.40	6	3.33	5	3.60	3	2.67	6	2.33	2	3.00	4	4.50	4	3.75	3	3.67
q7	2	1.50	8	3.38	3	2.33	5	3.20	6	4.00	5	3.80	3	2.33	6	3.67	2	3.50	4	4.25	4	2.50	3	3.00
q8	2	2.00	8	3.63	3	3.33	5	3.40	6	3.33	5	3.80	3	2.67	6	3.00	2	3.00	4	3.75	4	3.00	3	3.33
q9	2	3.00	8	3.25	3	4.33	5	3.40	6	4.33	5	3.40	3	4.00	6	3.17	2	2.50	4	4.00	4	2.50	3	3.67
q10	2	3.50	8	2.88	3	3.00	5	2.40	6	3.50	5	2.40	3	2.33	6	3.00	2	2.50	4	3.50	4	2.75	3	3.33
q11	2	3.00	8	3.63	3	2.67	5	2.60	6	3.83	5	2.80	3	2.00	6	2.83	2	2.50	4	4.50	4	2.75	3	2.67
q12	2	3.50	8	3.25	3	3.00	5	2.60	6	3.50	5	2.00	3	2.00	6	2.50	2	2.50	4	4.25	4	2.25	3	3.00
q13	2	2.50	8	3.38	3	3.33	5	2.60	6	3.00	5	1.80	3	2.33	6	2.00	2	2.00	4	4.00	4	2.50	3	2.67
q14	2	2.50	8	2.38	3	3.00	5	2.40	5	3.00	5	2.60	3	1.33	5	2.20	2	2.00	4	3.75	4	2.25	3	2.33
q15	2	3.50	8	3.25	3	2.67	5	2.40	6	3.00	5	2.40	3	1.67	6	2.33	2	1.50	4	3.75	4	3.00	3	3.33
q16	2	2.00	8	2.63	3	3.67	5	3.00	5	3.80	5	3.20	3	3.67	6	2.33	2	4.00	4	3.75	4	4.00	3	3.00
q17	2	1.50	8	2.25	3	2.00	5	2.00	6	2.33	5	2.40	3	2.00	6	3.17	2	1.50	4	3.00	4	1.50	3	2.67
q18	2	2.50	8	2.50	3	4.00	5	3.00	6	3.67	5	3.60	3	2.33	6	3.50	2	3.00	4	3.75	4	3.75	3	3.67
q19	2	1.50	8	4.75	3	3.67	5	4.20	6	3.50	5	3.60	3	3.33	5	3.20	2	3.00	4	4.00	4	3.00	3	3.67
q20	2	2.00	8	4.25	3	4.00	5	3.80	6	3.33	5	4.00	3	3.00	6	3.00	2	3.00	4	4.00	4	3.25	3	4.00
q21	2	3.50	8	4.50	3	4.00	5	4.00	6	4.33	5	4.60	3	4.00	6	3.67	2	3.00	4	4.00	4	3.50	3	4.33
q22	2	3.00	8	4.00	3	3.33	5	4.00	6	3.17	5	3.80	3	3.67	6	3.00	2	3.00	4	3.50	4	3.25	3	4.00
q23	2	3.00	7	3.57	3	3.67	5	3.00	6	3.83	5	2.40	3	3.67	5	2.80	2	4.00	4	2.75	4	3.50	3	3.33

(Conti nued)

Appendix V: Mean Forest Results by Question (N = sample size).

Forest Survey Results, December 2000
 Number of respondents and mean response for each forest

	Forest																							
	Col umbi a				Dani el				Deschutes				Franci s				Ri ver Gorge,							
	NSA	Colville NF	Coronado NF	Custer NF	Boone NF	NF	Dixie NF	El dorado NF	Fishlake NF	Flathead NF	Sumter NF	Freemont NF	NSA	Colville NF	Coronado NF	Custer NF	Boone NF	NF	Dixie NF	El dorado NF	Fishlake NF	Flathead NF	Sumter NF	Freemont NF
	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean
q1	2, 5.00	4, 4.00	2, 2.00	3, 3.00	5, 1.60	3, 3.67	5, 2.60	5, 2.20	4, 2.00	3, 3.00	4, 2.00	4, 4.25	2, 5.00	4, 4.00	2, 2.00	3, 3.00	5, 1.60	3, 3.67	5, 2.60	5, 2.20	4, 2.00	3, 3.00	4, 2.00	4, 4.25
q2	3, 2.33	4, 2.50	1, 2.00	3, 3.33	5, 2.80	3, 4.00	5, 3.60	5, 3.80	4, 3.50	3, 3.33	4, 2.75	4, 4.75	3, 2.33	4, 2.50	1, 2.00	3, 3.33	5, 2.80	3, 4.00	5, 3.60	5, 3.80	4, 3.50	3, 3.33	4, 2.75	4, 4.75
q3	3, 2.33	4, 3.75	2, 2.50	3, 3.00	5, 2.00	3, 4.33	5, 3.20	5, 3.80	4, 3.75	3, 3.33	4, 3.00	4, 4.50	3, 2.33	4, 3.75	2, 2.50	3, 3.00	5, 2.00	3, 4.33	5, 3.20	5, 3.80	4, 3.75	3, 3.33	4, 3.00	4, 4.50
q4	3, 2.33	4, 2.50	2, 2.50	3, 3.67	5, 2.00	3, 4.00	5, 3.00	5, 3.20	4, 3.50	3, 3.33	4, 2.75	4, 4.25	3, 2.33	4, 2.50	2, 2.50	3, 3.67	5, 2.00	3, 4.00	5, 3.00	5, 3.20	4, 3.50	3, 3.33	4, 2.75	4, 4.25
q5	3, 2.00	4, 2.25	2, 2.50	3, 3.33	5, 1.80	3, 3.00	5, 2.80	5, 3.20	4, 3.50	3, 3.00	4, 2.50	4, 3.50	3, 2.00	4, 2.25	2, 2.50	3, 3.33	5, 1.80	3, 3.00	5, 2.80	5, 3.20	4, 3.50	3, 3.00	4, 2.50	4, 3.50
q6	0,	4, 3.00	2, 2.50	3, 3.67	5, 2.20	3, 3.67	5, 2.40	5, 3.40	4, 3.25	3, 3.67	4, 2.50	4, 4.00	0,	4, 3.00	2, 2.50	3, 3.67	5, 2.20	3, 3.67	5, 2.40	5, 3.40	4, 3.25	3, 3.67	4, 2.50	4, 4.00
q7	3, 3.33	4, 4.00	2, 1.50	3, 4.00	5, 2.40	3, 4.00	5, 4.00	5, 3.80	4, 4.25	3, 5.00	4, 3.25	4, 3.50	3, 3.33	4, 4.00	2, 1.50	3, 4.00	5, 2.40	3, 4.00	5, 4.00	5, 3.80	4, 4.25	3, 5.00	4, 3.25	4, 3.50
q8	3, 2.67	4, 3.25	2, 2.00	3, 2.33	5, 2.60	3, 4.33	5, 3.60	5, 3.00	4, 4.25	3, 3.33	4, 2.75	4, 4.50	3, 2.67	4, 3.25	2, 2.00	3, 2.33	5, 2.60	3, 4.33	5, 3.60	5, 3.00	4, 4.25	3, 3.33	4, 2.75	4, 4.50
q9	3, 3.33	4, 2.25	2, 2.00	3, 3.67	5, 3.80	3, 3.67	5, 4.80	5, 3.80	4, 4.25	3, 3.67	4, 4.25	4, 4.25	3, 3.33	4, 2.25	2, 2.00	3, 3.67	5, 3.80	3, 3.67	5, 4.80	5, 3.80	4, 4.25	3, 3.67	4, 4.25	4, 4.25
q10	3, 2.33	4, 2.75	2, 2.00	3, 2.67	5, 2.20	3, 4.67	5, 3.60	5, 3.60	4, 3.75	3, 2.67	4, 2.25	4, 4.00	3, 2.33	4, 2.75	2, 2.00	3, 2.67	5, 2.20	3, 4.67	5, 3.60	5, 3.60	4, 3.75	3, 2.67	4, 2.25	4, 4.00
q11	3, 4.00	4, 3.25	2, 2.50	3, 2.33	5, 2.20	3, 4.67	5, 2.60	5, 3.00	4, 3.25	3, 3.67	4, 2.00	4, 4.50	3, 4.00	4, 3.25	2, 2.50	3, 2.33	5, 2.20	3, 4.67	5, 2.60	5, 3.00	4, 3.25	3, 3.67	4, 2.00	4, 4.50
q12	3, 1.67	4, 1.75	2, 2.50	3, 2.67	5, 2.00	3, 3.00	5, 2.60	5, 2.40	4, 3.50	3, 3.67	4, 2.00	4, 4.25	3, 1.67	4, 1.75	2, 2.50	3, 2.67	5, 2.00	3, 3.00	5, 2.60	5, 2.40	4, 3.50	3, 3.67	4, 2.00	4, 4.25
q13	3, 1.33	4, 1.75	2, 2.50	3, 2.67	5, 2.00	3, 2.67	5, 2.20	5, 2.60	4, 3.00	3, 2.67	4, 2.00	4, 3.75	3, 1.33	4, 1.75	2, 2.50	3, 2.67	5, 2.00	3, 2.67	5, 2.20	5, 2.60	4, 3.00	3, 2.67	4, 2.00	4, 3.75
q14	2, 1.00	3, 1.33	2, 2.50	3, 2.33	5, 1.60	2, 2.00	5, 1.80	5, 2.80	4, 2.50	3, 2.00	4, 2.00	3, 3.00	2, 1.00	3, 1.33	2, 2.50	3, 2.33	5, 1.60	2, 2.00	5, 1.80	5, 2.80	4, 2.50	3, 2.00	4, 2.00	3, 3.00
q15	3, 2.00	4, 1.25	2, 3.00	3, 2.67	5, 1.60	3, 2.67	5, 2.40	5, 2.60	4, 4.00	3, 3.67	4, 2.00	4, 4.50	3, 2.00	4, 1.25	2, 3.00	3, 2.67	5, 1.60	3, 2.67	5, 2.40	5, 2.60	4, 4.00	3, 3.67	4, 2.00	4, 4.50
q16	2, 2.00	3, 3.33	2, 3.00	3, 4.00	5, 2.00	2, 3.50	5, 4.20	5, 3.00	4, 3.75	3, 3.00	4, 2.50	3, 4.00	2, 2.00	3, 3.33	2, 3.00	3, 4.00	5, 2.00	2, 3.50	5, 4.20	5, 3.00	4, 3.75	3, 3.00	4, 2.50	3, 4.00
q17	3, 2.33	4, 1.75	2, 1.50	3, 2.33	5, 1.40	3, 3.33	5, 2.00	5, 2.60	4, 2.25	3, 1.67	4, 1.75	4, 2.00	3, 2.33	4, 1.75	2, 1.50	3, 2.33	5, 1.40	3, 3.33	5, 2.00	5, 2.60	4, 2.25	3, 1.67	4, 1.75	4, 2.00
q18	3, 1.67	4, 3.75	2, 2.50	3, 3.33	5, 1.40	3, 3.67	5, 3.20	5, 3.00	4, 3.50	3, 2.33	4, 2.50	4, 4.00	3, 1.67	4, 3.75	2, 2.50	3, 3.33	5, 1.40	3, 3.67	5, 3.20	5, 3.00	4, 3.50	3, 2.33	4, 2.50	4, 4.00
q19	3, 1.67	4, 3.00	2, 3.00	3, 3.00	4, 3.00	3, 5.00	5, 3.60	5, 3.80	4, 4.00	3, 4.00	4, 2.75	4, 4.50	3, 1.67	4, 3.00	2, 3.00	3, 3.00	4, 3.00	3, 5.00	5, 3.60	5, 3.80	4, 4.00	3, 4.00	4, 2.75	4, 4.50
q20	2, 3.00	3, 4.00	2, 3.50	3, 3.00	5, 2.20	2, 4.50	5, 3.00	5, 3.60	4, 4.25	3, 4.00	4, 3.50	3, 4.67	2, 3.00	3, 4.00	2, 3.50	3, 3.00	5, 2.20	2, 4.50	5, 3.00	5, 3.60	4, 4.25	3, 4.00	4, 3.50	3, 4.67
q21	3, 4.33	4, 4.50	2, 3.50	3, 3.67	5, 3.00	3, 4.67	5, 4.20	5, 4.20	4, 4.75	3, 4.00	4, 4.25	4, 4.50	3, 4.33	4, 4.50	2, 3.50	3, 3.67	5, 3.00	3, 4.67	5, 4.20	5, 4.20	4, 4.75	3, 4.00	4, 4.25	4, 4.50
q22	3, 2.67	4, 4.00	2, 4.50	3, 3.00	5, 2.40	3, 4.67	5, 3.60	5, 3.40	4, 3.75	3, 3.33	4, 4.00	4, 4.50	3, 2.67	4, 4.00	2, 4.50	3, 3.00	5, 2.40	3, 4.67	5, 3.60	5, 3.40	4, 3.75	3, 3.33	4, 4.00	4, 4.50
q23	3, 3.67	4, 3.50	2, 3.00	3, 3.00	5, 3.00	3, 2.67	5, 3.60	5, 3.40	4, 3.00	3, 3.67	4, 3.00	4, 3.00	3, 3.67	4, 3.50	2, 3.00	3, 3.00	5, 3.00	3, 2.67	5, 3.60	5, 3.40	4, 3.00	3, 3.67	4, 3.00	4, 3.00

(Continued)

Appendix V: Mean Forest Results by Question (N = sample size).

Forest Survey Results, December 2000
 Number of respondents and mean response for each forest

	Forest																							
	George Washington- Jefferson		Gifford		Pinchot NF		Gila NF		Gunnison NF		Lakes NF		Helena NF		Hiawatha NF		Hoosier NF		Toiyabe NF		Manistee NF			
	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean		
q1	4	3.75	7	2.71	5	4.20	3	2.00	4	2.50	5	3.80	3	3.67	5	3.40	3	3.00	3	3.00	5	3.00	5	3.60
q2	4	4.25	7	3.14	5	3.20	3	3.67	4	3.25	5	4.40	3	4.00	5	3.80	3	4.33	3	2.00	5	3.60	5	3.80
q3	4	3.75	7	2.86	5	4.40	3	4.00	4	3.00	5	4.00	3	3.67	5	4.00	3	3.33	3	2.33	5	3.60	5	3.60
q4	4	3.75	7	3.14	5	3.60	3	4.00	4	2.50	5	3.40	3	3.33	5	3.20	3	4.00	3	1.67	5	3.40	5	2.80
q5	4	3.50	7	2.71	5	3.20	3	3.33	4	3.00	5	3.20	3	3.33	5	3.60	3	2.67	3	2.00	5	2.80	5	2.60
q6	4	5.00	7	3.00	5	4.00	3	3.00	4	3.25	5	4.20	3	3.33	5	4.60	3	3.67	3	2.00	5	3.80	5	3.40
q7	4	4.75	7	3.29	5	4.00	3	3.00	4	3.75	5	4.20	3	4.33	5	4.40	3	3.33	3	2.67	5	4.20	5	4.60
q8	4	3.75	7	3.43	5	3.40	3	3.67	4	3.75	5	3.60	3	4.00	5	4.00	3	3.00	3	2.00	5	3.60	5	4.00
q9	4	4.00	7	4.57	5	3.60	3	4.33	4	4.50	5	2.80	3	4.33	5	3.20	3	3.00	3	3.67	5	4.00	5	4.40
q10	4	3.00	7	2.29	5	3.60	3	3.33	4	3.50	5	3.20	3	2.67	5	3.40	3	3.67	3	1.33	5	3.20	5	2.80
q11	4	3.50	7	3.43	5	3.40	3	3.00	4	3.25	5	4.00	3	3.67	5	4.20	3	2.33	3	1.67	5	3.80	5	2.60
q12	4	3.50	7	3.00	5	3.40	3	2.67	4	3.00	5	3.80	3	2.33	5	4.00	3	2.67	3	1.67	5	3.40	5	2.60
q13	4	3.50	7	3.00	5	2.20	3	2.67	4	2.25	5	4.20	3	3.00	5	4.00	3	2.33	3	1.67	5	3.00	5	2.20
q14	4	2.75	7	2.71	4	2.00	3	2.67	4	2.25	5	3.60	3	3.00	5	3.80	3	2.00	3	1.67	5	3.40	5	1.60
q15	4	2.75	7	3.29	5	3.00	3	3.00	4	2.50	5	3.40	3	2.67	5	3.80	3	2.67	3	1.67	5	2.40	5	2.00
q16	4	3.50	7	2.86	4	4.00	3	4.00	4	2.75	5	3.80	3	3.33	5	3.80	3	4.00	3	2.67	4	4.25	5	3.40
q17	4	2.25	7	1.71	5	2.80	3	1.67	4	2.25	5	3.20	3	1.67	5	2.80	3	2.33	3	1.67	5	3.60	5	1.80
q18	4	3.50	7	2.86	5	4.20	3	4.00	4	2.50	5	3.60	3	3.00	5	3.60	3	4.33	3	1.67	5	4.00	5	3.00
q19	4	4.25	5	3.60	5	4.80	3	3.00	4	2.25	5	4.60	3	3.33	5	3.80	3	3.33	3	2.33	5	5.00	5	2.40
q20	4	3.75	6	3.67	4	4.00	3	4.00	4	2.75	5	4.20	3	3.33	5	3.60	3	3.67	3	2.67	5	4.40	5	2.80
q21	4	4.50	7	4.57	5	4.40	3	3.67	4	4.50	5	4.60	3	4.33	5	4.20	3	4.33	3	3.33	5	5.00	5	3.40
q22	4	3.50	7	3.86	5	4.00	3	3.33	4	3.00	5	4.00	3	3.67	5	4.40	3	3.67	3	2.33	5	4.20	5	3.00
q23	4	3.00	7	3.14	4	3.75	3	3.33	4	3.75	4	2.25	3	3.33	5	4.40	3	4.00	3	3.67	5	2.60	5	3.20

(Continued)

Appendix V: Mean Forest Results by Question (N = sample size).

Forest Survey Results, December 2000
 Number of respondents and mean response for each forest

	Forest																							
	Inyo NF		Kai bab NF		Kisatchie NF		Klamath NF		Kootenai NF		Land Between the Lakes NRA		Lassen NF		Lewi s and Clark NF		Lincol n NF		Lolo NF		Los Padres NF		Mal heur NF	
	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean
q1	3	3.33	3	2.67	5	4.20	6	3.83	3	2.33	2	2.50	8	4.25	2	3.00	5	2.80	6	3.00	2	4.00	5	3.20
q2	3	3.00	3	3.33	5	3.40	6	4.17	3	4.00	3	2.33	8	4.13	2	4.00	5	3.00	6	3.50	2	4.00	5	3.20
q3	3	4.00	3	3.00	5	3.60	6	3.50	3	4.00	3	3.00	8	4.38	2	4.00	5	3.00	6	3.17	2	4.50	5	3.40
q4	3	3.33	3	3.33	5	3.20	6	3.00	3	3.67	3	3.00	8	4.13	2	4.50	5	2.80	6	3.00	2	4.00	5	3.40
q5	3	3.00	3	2.67	5	3.00	6	3.33	3	3.33	3	2.33	8	3.38	2	4.00	5	2.80	6	3.00	2	3.50	5	2.40
q6	2	2.50	3	3.33	5	2.40	6	4.17	3	4.00	2	3.00	8	4.00	2	3.50	5	3.40	6	3.17	2	3.00	5	2.40
q7	3	2.67	3	2.67	5	3.40	6	4.00	3	4.33	3	2.67	8	4.75	2	5.00	5	3.20	6	4.33	2	3.50	5	3.60
q8	3	2.67	3	3.33	5	3.40	6	3.67	3	3.33	3	2.33	8	4.50	2	2.50	5	3.20	6	3.33	2	3.00	5	2.60
q9	3	2.67	3	2.67	5	3.80	6	4.00	3	4.00	3	1.33	8	3.13	2	3.00	5	3.60	6	4.17	2	1.50	5	2.80
q10	3	3.33	3	2.67	5	3.40	6	3.00	3	2.67	3	2.67	8	3.38	2	4.00	4	3.00	6	3.33	2	2.50	5	3.20
q11	3	2.00	3	2.67	5	3.20	6	3.67	3	3.67	3	2.00	8	4.25	2	3.50	5	3.80	6	3.00	2	3.50	5	2.60
q12	3	2.33	3	2.67	5	3.20	6	3.67	3	3.00	3	1.67	8	4.00	2	3.50	5	3.40	6	2.50	2	3.50	5	2.40
q13	3	3.00	3	2.67	5	2.60	6	3.50	3	3.00	3	1.67	8	4.00	2	3.00	5	3.40	6	2.50	2	3.50	5	2.20
q14	3	2.00	3	2.33	5	2.40	6	2.67	3	2.33	3	1.33	8	3.50	2	2.50	5	2.60	5	2.00	2	2.50	4	1.75
q15	3	2.33	3	2.33	5	3.40	6	3.00	3	3.00	3	2.33	8	3.63	2	3.00	5	3.00	6	2.83	2	3.50	5	2.40
q16	3	3.67	2	3.00	4	2.50	6	3.67	3	3.33	1	2.00	8	3.25	2	4.00	5	3.20	6	3.83	2	4.00	4	3.25
q17	3	3.00	2	2.50	5	2.20	6	3.00	3	1.33	2	1.50	8	2.75	2	1.50	5	2.00	6	2.00	2	2.50	5	1.60
q18	3	3.67	2	3.00	5	3.40	6	4.17	3	3.67	1	2.00	8	4.25	2	3.50	4	2.75	6	3.33	2	3.50	5	3.00
q19	3	2.33	3	3.67	5	3.80	6	4.33	3	4.00	2	2.50	8	4.63	2	3.50	5	4.40	6	3.17	2	3.50	5	2.40
q20	3	2.00	3	3.67	5	3.20	6	3.50	3	3.00	2	4.00	8	4.25	2	4.00	5	4.00	6	3.33	2	4.00	4	2.50
q21	3	3.33	3	3.33	5	4.20	6	4.00	3	3.67	3	3.33	8	4.50	2	4.00	5	3.40	6	3.67	2	4.00	5	3.00
q22	3	3.00	3	3.33	5	3.60	6	3.17	3	3.67	2	3.50	8	4.50	2	4.00	5	4.00	6	2.67	2	3.50	5	2.40
q23	3	2.33	3	3.67	5	1.80	6	1.83	3	3.67	3	3.00	8	3.75	2	2.00	5	4.20	5	3.80	2	4.50	5	4.00

(Continued)

Appendix V: Mean Forest Results by Question (N = sample size).

Forest Survey Results, December 2000
 Number of respondents and mean response for each forest

	Forest																			
	Medicine		Mt. Baker-		NF's and		NF's of		NF's of		NF's of		NF's of		NF's of		NF's of		NF's of	
	Manti-La	Mark Twain	Bow-Routt	Mendocino	Monongahela	Snowqualmie	NG's of	NF's of	NF's of	NF's of	NF's of	NF's of	NF's of	NF's of	NF's of	NF's of	NF's of	NF's of	NF's of	NF's of
	Sal NF	NF	NF	NF	Modoc NF	NF	NF	Mt. Hood NF	Texas	Alabama	Florida	Mississippi								
	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean
q1	3, 2.67	5, 3.20	6, 3.00	4, 3.50	5, 4.20	4, 3.00	3, 5.00	4, 4.50	7, 3.00	5, 2.40	4, 3.75	6, 2.17								
q2	3, 3.00	5, 2.80	6, 2.67	4, 3.75	5, 4.20	4, 4.00	3, 5.00	4, 4.25	7, 2.57	5, 2.80	4, 3.75	6, 2.50								
q3	3, 2.67	5, 2.20	5, 3.60	4, 4.00	5, 4.20	4, 3.50	3, 5.00	4, 4.75	7, 2.43	5, 3.20	4, 3.00	6, 2.33								
q4	3, 2.67	5, 2.60	6, 3.17	4, 3.50	5, 3.40	4, 3.25	3, 4.00	4, 3.75	7, 2.00	5, 2.80	4, 2.75	6, 2.67								
q5	3, 2.67	5, 2.40	6, 2.50	4, 3.00	5, 3.60	4, 2.75	3, 3.67	3, 3.67	7, 2.00	5, 2.80	4, 2.75	6, 2.67								
q6	3, 2.67	5, 2.80	5, 3.20	4, 3.50	5, 3.40	4, 3.50	3, 5.00	4, 4.00	7, 2.43	5, 2.40	4, 2.75	6, 2.50								
q7	3, 4.00	5, 2.80	5, 4.40	4, 3.50	5, 3.80	4, 4.00	3, 4.33	4, 4.25	7, 1.86	5, 3.60	4, 3.75	6, 3.50								
q8	2, 4.00	5, 2.40	5, 3.60	3, 3.67	5, 3.20	4, 3.25	3, 4.33	4, 3.75	7, 1.86	5, 3.40	4, 3.75	6, 3.33								
q9	3, 3.33	5, 1.80	6, 4.33	4, 3.75	5, 2.40	4, 3.50	3, 5.00	4, 3.25	7, 2.57	5, 4.20	4, 3.25	6, 3.83								
q10	2, 2.00	5, 3.40	6, 3.67	4, 3.25	5, 2.60	4, 2.75	3, 4.00	3, 3.00	7, 1.43	5, 2.40	4, 2.25	6, 2.83								
q11	3, 2.33	5, 2.60	6, 3.17	4, 3.25	5, 3.80	3, 3.67	3, 3.67	4, 4.50	7, 3.00	5, 2.60	4, 3.50	6, 2.17								
q12	3, 2.67	5, 2.20	6, 3.50	4, 3.00	5, 3.20	3, 2.67	3, 4.67	4, 3.50	7, 2.29	5, 2.60	4, 3.00	6, 2.17								
q13	3, 2.00	5, 2.00	6, 3.00	4, 2.75	5, 3.40	4, 3.00	3, 4.67	4, 4.00	7, 1.71	5, 2.60	4, 3.00	6, 2.50								
q14	3, 1.67	5, 1.60	6, 3.17	4, 2.00	4, 2.50	2, 3.50	2, 2.50	3, 2.67	7, 1.29	5, 2.00	4, 3.00	6, 2.17								
q15	3, 2.33	5, 2.40	6, 3.17	4, 2.50	4, 3.00	4, 3.25	3, 4.00	4, 3.00	7, 1.43	5, 2.60	4, 2.50	6, 3.33								
q16	3, 2.00	5, 4.00	5, 3.40	4, 3.00	4, 2.75	3, 3.00	2, 3.50	2, 3.00	7, 3.29	5, 2.00	4, 2.75	6, 2.83								
q17	3, 1.67	5, 1.00	6, 2.67	4, 2.75	5, 2.00	3, 3.00	3, 2.67	4, 4.25	7, 1.57	5, 1.40	4, 2.25	6, 2.00								
q18	3, 3.00	5, 3.40	6, 3.33	4, 3.00	4, 2.50	3, 3.33	3, 4.33	4, 4.00	7, 1.86	5, 2.20	4, 3.25	6, 2.83								
q19	3, 3.67	5, 3.00	6, 3.33	4, 2.75	4, 3.75	3, 3.00	3, 4.67	4, 4.00	7, 2.43	5, 3.20	4, 3.50	6, 3.33								
q20	3, 3.33	5, 3.20	6, 3.67	4, 3.50	5, 4.20	4, 3.75	2, 4.50	3, 4.00	7, 2.00	5, 3.20	4, 4.00	6, 3.33								
q21	3, 4.67	5, 4.40	6, 4.17	4, 4.00	5, 4.00	4, 3.75	2, 4.67	4, 4.25	6, 2.50	5, 3.60	4, 4.00	6, 3.83								
q22	3, 3.33	5, 2.60	6, 3.67	4, 3.75	5, 4.20	4, 4.50	3, 4.67	4, 4.25	7, 2.57	5, 4.00	4, 3.25	6, 3.67								
q23	3, 4.33	5, 3.80	6, 2.83	4, 3.25	5, 2.60	4, 3.00	3, 3.33	4, 3.75	7, 3.00	5, 4.00	4, 4.25	6, 4.17								

(Continued)

Appendix V: Mean Forest Results by Question (N = sample size).

Forest Survey Results, December 2000
 Number of respondents and mean response for each forest

	Forest																													
	NF's of North Carolina		Nebraska-McKelvie NF		Nez Perce NF		Ochoco NF		Okanogan NF		Olympic NF		Ottawa NF		Ouachita NF		Ozark NF		Payette NF		Pi ke-San Isabel NF		Plumas NF							
	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean				
q1	7	3.57	2	3.00	6	4.00	4	4.00	1	5.00	4	4.75	4	2.75	7	4.14	6	2.50	7	3.00	3	2.67	3	3.00						
q2	6	3.67	2	3.50	6	2.83	4	3.00	2	3.00	4	3.50	4	3.50	7	4.00	6	3.50	7	3.57	3	2.67	3	3.00						
q3	7	3.43	2	3.00	6	3.50	4	3.25	2	3.00	4	4.00	4	4.00	7	4.14	6	3.33	7	3.00	3	2.33	3	3.00						
q4	7	3.14	2	2.50	6	3.33	4	2.75	2	3.00	4	3.75	4	3.00	7	4.00	6	3.00	7	3.00	3	2.33	3	2.67						
q5	7	3.00	2	3.00	6	2.50	4	2.75	2	2.00	4	2.50	4	3.25	7	3.86	6	2.83	7	2.71	3	2.00	3	3.00						
q6	7	4.00	2	4.00	6	3.17	4	3.00	2	2.50	4	3.00	4	3.50	7	3.71	6	3.17	7	4.14	3	2.33	3	1.33						
q7	7	3.86	2	1.50	6	4.17	4	3.75	2	4.00	4	3.00	4	4.00	7	3.71	6	3.33	7	4.29	3	3.33	3	3.00						
q8	7	4.00	2	2.00	6	2.83	4	2.75	2	3.00	4	3.00	4	3.50	7	3.86	6	3.17	7	3.86	3	3.33	3	2.67						
q9	7	3.00	2	4.00	6	3.67	4	3.25	2	2.50	4	2.75	4	3.00	7	4.29	6	3.50	7	3.86	3	3.67	3	4.00						
q10	7	3.00	2	1.50	6	3.17	4	3.00	2	2.50	4	2.25	4	3.25	7	3.29	6	2.33	7	3.57	3	3.00	3	2.00						
q11	7	3.29	2	3.00	6	3.33	4	3.25	2	5.00	4	4.00	4	3.00	7	3.86	6	3.00	7	3.43	3	3.00	3	3.67						
q12	7	3.29	2	2.50	6	2.83	4	3.25	2	2.00	4	1.75	4	2.25	7	3.71	6	2.67	7	3.29	3	2.67	3	3.00						
q13	7	3.29	2	2.50	6	2.50	4	2.25	2	2.00	4	2.00	4	2.25	7	3.57	6	2.50	7	3.71	3	2.33	3	3.67						
q14	7	2.86	2	2.50	5	2.00	3	2.33	1	1.00	2	1.00	4	3.25	7	3.57	6	2.33	7	3.29	3	2.00	3	2.67						
q15	7	3.43	2	2.00	6	3.17	4	3.00	2	2.00	4	2.00	4	3.25	7	4.00	6	2.67	7	2.57	3	1.67	3	3.00						
q16	7	3.29	2	4.50	6	3.67	3	2.33	1	3.00	3	4.00	4	4.00	7	3.86	6	3.00	7	3.00	3	3.00	3	3.33						
q17	7	2.86	2	3.00	6	2.50	4	1.25	2	3.00	4	2.25	4	2.75	7	2.29	6	2.00	7	2.00	3	2.00	3	1.67						
q18	7	3.71	2	3.50	6	3.33	4	2.75	2	2.50	4	3.75	4	3.50	7	3.57	6	3.17	7	2.57	3	3.00	3	2.67						
q19	7	4.14	2	3.00	6	1.83	4	3.25	2	3.50	4	3.00	4	3.75	7	4.14	6	3.67	7	3.00	3	3.33	3	2.00						
q20	7	4.14	2	3.50	6	2.33	3	3.33	1	4.00	3	3.33	4	4.25	7	4.29	6	4.00	6	2.83	3	2.33	3	3.00						
q21	7	4.57	2	3.50	6	4.00	4	3.75	2	3.50	4	4.00	4	4.25	7	4.57	6	3.83	7	2.71	3	4.33	3	3.33						
q22	7	4.29	2	3.00	6	2.67	4	3.25	2	3.00	4	3.50	4	4.50	7	4.14	6	3.50	7	2.57	3	3.00	3	3.00						
q23	7	3.71	2	4.00	6	4.50	4	4.25	2	2.50	4	3.50	3	3.67	7	3.00	6	2.67	7	2.86	3	3.00	3	3.67						

(Continued)

Appendix V: Mean Forest Results by Question (N = sample size).

Forest Survey Results, December 2000
 Number of respondents and mean response for each forest

	Forest																	
	Rio Grande		Rogue River		Salmon-		Bernardi no		San Juan		Santa Fe		Sawtooth		Sequoi a		Shasta-	
	Prescott NF	NF	NF	Challis NF	NF	NF	NF	NF	NF	NF	NF	NF	NF	NF	NF	NF	NF	NF
	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean
q1	2, 3.50,	2, 3.00,	4, 4.25,	7, 2.57,	2, 2.50,	4, 3.00,	4, 2.75,	4, 3.75,	4, 2.75,	4, 4.75,	5, 3.00,							
q2	2, 3.50,	2, 4.00,	4, 3.75,	8, 2.38,	2, 4.00,	4, 4.00,	4, 3.00,	4, 3.00,	4, 3.50,	4, 3.50,	5, 3.60,							
q3	2, 5.00,	2, 3.00,	4, 3.50,	8, 2.88,	2, 3.00,	4, 4.00,	4, 3.75,	4, 3.50,	4, 2.75,	4, 3.75,	5, 3.40,							
q4	2, 5.00,	2, 3.00,	4, 3.00,	8, 2.00,	2, 3.00,	4, 3.25,	4, 3.50,	4, 3.00,	4, 2.50,	4, 3.25,	5, 3.20,							
q5	2, 5.00,	2, 2.50,	4, 2.75,	8, 2.13,	2, 3.00,	4, 2.75,	4, 3.50,	4, 3.00,	4, 2.50,	4, 2.75,	5, 3.20,							
q6	2, 5.00,	2, 3.50,	4, 4.25,	8, 2.38,	2, 3.50,	4, 3.75,	4, 3.00,	4, 2.50,	4, 2.75,	4, 4.00,	5, 3.40,							
q7	2, 3.00,	2, 4.50,	4, 3.75,	8, 3.88,	2, 4.00,	4, 4.25,	4, 2.75,	4, 2.75,	4, 3.00,	4, 4.25,	5, 4.00,							
q8	2, 4.00,	2, 4.00,	4, 4.00,	8, 2.75,	2, 2.50,	4, 3.50,	4, 3.00,	4, 2.75,	4, 2.75,	4, 4.00,	5, 4.00,							
q9	2, 4.50,	2, 4.00,	4, 4.00,	8, 3.75,	2, 1.50,	4, 4.00,	4, 3.00,	4, 2.50,	4, 2.75,	4, 3.50,	5, 4.20,							
q10	2, 3.50,	2, 2.50,	4, 2.75,	8, 2.50,	2, 1.50,	4, 3.00,	4, 3.25,	4, 2.25,	4, 2.00,	4, 3.25,	5, 3.20,							
q11	2, 3.50,	2, 4.00,	4, 4.75,	8, 2.88,	2, 3.00,	4, 3.75,	4, 3.00,	4, 2.75,	4, 3.00,	4, 3.50,	5, 3.60,							
q12	2, 3.50,	2, 3.00,	4, 3.00,	8, 2.63,	2, 3.50,	4, 3.00,	4, 2.25,	4, 2.75,	4, 2.75,	4, 3.25,	5, 3.20,							
q13	2, 3.50,	2, 3.50,	4, 3.00,	8, 2.63,	2, 3.50,	4, 3.00,	4, 2.25,	4, 2.50,	4, 3.00,	4, 3.50,	5, 3.40,							
q14	2, 3.00,	2, 3.50,	3, 2.67,	8, 2.00,	2, 3.00,	4, 3.25,	4, 2.25,	4, 2.50,	4, 3.00,	4, 2.50,	5, 2.80,							
q15	2, 3.50,	2, 3.00,	4, 3.25,	8, 2.63,	2, 3.00,	4, 2.25,	4, 2.50,	4, 2.75,	4, 2.50,	4, 3.00,	5, 3.20,							
q16	2, 3.50,	2, 4.00,	3, 2.00,	8, 1.75,	2, 3.50,	4, 4.25,	4, 2.75,	4, 3.50,	4, 2.75,	4, 3.00,	5, 4.20,							
q17	2, 1.50,	2, 3.00,	4, 2.50,	8, 2.13,	2, 2.50,	4, 2.75,	4, 1.75,	4, 1.75,	4, 2.00,	4, 3.25,	5, 3.20,							
q18	2, 4.00,	2, 4.00,	4, 3.25,	8, 2.13,	2, 3.00,	4, 3.50,	4, 3.00,	4, 3.25,	4, 2.75,	4, 3.25,	5, 3.80,							
q19	2, 4.00,	2, 3.50,	4, 4.00,	8, 2.88,	2, 4.00,	4, 4.00,	4, 4.00,	4, 2.50,	4, 3.50,	4, 4.25,	5, 4.20,							
q20	2, 4.00,	2, 3.50,	3, 3.33,	8, 2.63,	2, 3.50,	4, 4.00,	4, 3.25,	4, 3.00,	4, 3.25,	4, 3.50,	5, 3.40,							
q21	2, 3.50,	2, 4.00,	4, 4.00,	8, 3.50,	2, 4.00,	4, 4.50,	4, 3.50,	4, 3.50,	4, 4.00,	4, 4.25,	5, 4.20,							
q22	2, 3.50,	2, 4.00,	4, 4.00,	8, 2.88,	2, 4.00,	4, 3.75,	4, 3.75,	4, 3.00,	4, 3.50,	4, 4.00,	5, 3.20,							
q23	2, 3.50,	2, 4.00,	4, 3.00,	8, 2.75,	1, 1.00,	4, 3.25,	4, 2.75,	4, 4.00,	4, 3.25,	4, 2.75,	5, 3.80,							

(Continued)

Appendix V: Mean Forest Results by Question (N = sample size).

Forest Survey Results, December 2000
 Number of respondents and mean response for each forest

	Forest																							
	Sierra NF		Siskiyou NF		Siuslaw NF		NF		NF		Superior NF		Tahoe NF		Tongass NF		Tonto NF		Uinta NF		Umatilla NF		Umpqua NF	
	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean
q1	3	3.00	4	4.75	3	4.67	6	4.83	4	2.75	7	2.57	5	2.80	9	4.56	4	3.50	3	2.67	2	4.00	7	4.43
q2	3	3.33	4	4.25	3	3.67	6	4.33	4	3.25	7	2.86	5	3.00	9	3.78	4	3.25	3	2.67	2	4.00	7	3.14
q3	3	3.00	4	4.75	3	3.00	6	3.50	4	2.75	7	3.00	5	2.40	9	3.89	4	3.25	3	3.67	2	4.50	7	3.57
q4	3	2.67	4	3.50	3	2.67	6	3.33	4	2.75	6	2.33	5	2.00	9	3.67	4	3.25	3	3.33	2	3.50	7	3.29
q5	3	3.33	4	3.50	3	2.67	6	2.67	4	2.50	6	2.50	5	1.60	9	3.44	4	3.00	3	3.67	2	3.00	7	2.86
q6	3	4.00	4	3.50	3	3.00	6	4.67	4	3.75	6	2.33	5	3.20	9	3.89	4	4.00	3	4.00	2	4.00	7	3.86
q7	3	3.67	4	4.00	3	4.00	6	4.67	4	4.25	7	3.00	5	3.20	9	4.00	4	4.00	3	3.00	2	4.50	7	4.29
q8	3	3.33	4	3.75	3	3.00	6	4.67	4	3.25	7	3.00	5	2.80	9	3.44	4	3.75	3	3.00	2	3.50	7	3.86
q9	3	3.00	4	4.25	3	3.33	6	4.00	4	3.75	7	3.29	5	3.40	9	3.44	4	5.00	3	2.33	2	3.00	7	3.86
q10	3	2.33	4	3.25	3	2.33	6	3.50	4	2.00	7	2.29	5	2.00	9	3.78	3	4.33	3	3.00	2	3.50	7	3.00
q11	3	2.67	4	4.75	3	3.67	6	4.50	4	3.50	7	2.14	5	3.00	9	3.56	4	3.25	3	2.33	2	4.50	6	3.50
q12	3	2.33	4	3.25	3	2.67	6	4.50	4	2.50	6	2.33	5	2.20	9	3.56	4	3.50	3	2.33	2	3.00	6	2.83
q13	3	2.33	4	2.75	3	2.67	6	4.17	4	2.00	7	1.71	5	1.80	9	3.56	4	3.25	3	2.67	2	2.50	6	2.83
q14	3	2.33	3	2.33	2	2.50	6	3.67	4	1.75	7	1.57	5	1.80	9	3.44	4	3.25	3	2.33	1	1.00	5	2.60
q15	3	3.00	4	3.25	3	2.67	6	3.00	4	2.00	6	2.67	5	1.80	9	3.56	3	3.67	3	3.00	2	2.50	6	3.17
q16	3	3.00	3	3.33	2	3.00	6	2.67	4	3.25	6	2.83	5	2.20	9	3.67	4	2.75	3	3.67	1	2.00	6	3.67
q17	3	2.00	4	2.50	3	3.00	6	2.83	4	1.75	7	2.14	5	1.40	9	4.33	4	2.00	3	2.00	2	3.00	7	2.00
q18	3	3.00	4	3.50	3	2.33	6	3.50	4	3.25	6	3.00	5	2.20	9	3.67	4	2.75	3	3.33	2	3.00	7	3.57
q19	3	3.67	4	3.50	3	4.00	6	4.83	4	2.75	6	1.83	5	3.60	9	2.89	4	3.50	3	3.00	2	3.50	6	3.67
q20	3	3.33	3	3.33	2	4.00	6	4.83	4	3.00	5	2.20	5	3.60	9	3.33	4	4.25	3	4.00	1	3.00	5	3.40
q21	3	3.67	4	3.75	3	4.67	6	4.83	4	3.00	7	2.86	5	3.80	9	4.44	4	4.00	3	4.00	2	4.50	7	3.71
q22	3	3.33	4	3.50	3	4.33	6	4.17	4	3.25	6	2.33	5	3.40	9	3.67	4	4.50	3	3.33	2	3.50	7	3.57
q23	3	4.00	4	3.25	3	3.33	6	3.67	4	3.50	7	3.43	5	2.60	8	3.13	4	3.25	3	3.67	2	2.50	7	3.86

(Continued)

Appendix V: Mean Forest Results by Question (N = sample size).

Forest Survey Results, December 2000
 Number of respondents and mean response for each forest

	Forest															
	Wallowa-	Wasatch-	Whitman NF	Cache NF	Wayne NF	NF	NF	NF	NF	White Mtn.	White River	Willamette	Winema NF			
	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean
,q1	5	3.80	5	2.80	2	<u>2.00</u>	6	<u>4.67</u>	5	2.80	3	2.33	4	<u>4.50</u>	3	4.00
,q2	5	4.00	5	3.80	2	<u>4.50</u>	6	4.17	5	3.20	3	<u>2.00</u>	4	4.25	3	<u>1.67</u>
,q3	5	4.20	5	4.40	2	4.00	6	<u>4.83</u>	5	3.60	3	2.67	4	3.75	3	<u>1.67</u>
,q4	5	3.40	5	3.80	2	3.50	6	<u>4.50</u>	5	3.00	3	3.00	4	3.75	3	<u>1.33</u>
,q5	5	3.00	5	3.40	2	2.00	6	3.67	5	3.20	3	2.33	4	3.00	3	<u>1.33</u>
,q6	5	3.40	5	3.80	2	<u>4.50</u>	6	<u>4.50</u>	5	3.60	3	3.33	4	4.25	3	<u>1.33</u>
,q7	5	3.80	5	4.20	2	<u>5.00</u>	6	4.17	5	3.80	3	4.33	4	4.50	3	2.67
,q8	5	3.40	5	3.80	2	3.00	6	4.00	5	3.20	3	3.00	4	<u>4.50</u>	3	2.33
,q9	5	3.20	5	3.60	2	3.50	6	<u>4.83</u>	5	4.40	3	3.67	4	<u>4.75</u>	3	3.00
,q10	5	3.60	5	<u>4.20</u>	2	2.50	6	<u>4.50</u>	5	3.40	3	2.67	4	<u>4.25</u>	3	<u>1.67</u>
,q11	5	3.60	5	4.00	2	3.50	6	4.00	5	3.20	3	3.00	4	<u>4.50</u>	3	3.67
,q12	5	2.60	5	3.80	2	3.00	6	<u>4.00</u>	5	3.00	3	2.00	4	<u>4.00</u>	3	<u>1.67</u>
,q13	5	2.80	5	3.60	2	3.00	6	<u>4.00</u>	5	3.00	3	<u>1.67</u>	4	3.50	3	<u>1.67</u>
,q14	4	2.00	5	3.00	2	2.50	5	<u>3.80</u>	5	2.40	2	2.00	3	3.00	2	1.50
,q15	5	2.80	5	3.80	2	3.50	6	3.83	5	2.80	3	2.00	4	<u>4.00</u>	3	<u>1.67</u>
,q16	4	4.00	5	3.20	2	3.00	5	<u>4.40</u>	5	3.40	3	3.00	3	4.33	2	4.00
,q17	5	2.00	5	2.60	2	1.50	6	<u>3.83</u>	5	2.40	3	2.67	4	<u>3.75</u>	3	3.00
,q18	5	3.60	5	3.40	2	3.00	6	4.33	5	3.20	3	3.67	4	3.75	3	2.67
,q19	5	3.80	5	3.80	2	4.00	6	4.17	5	2.60	3	2.33	4	4.00	3	<u>1.67</u>
,q20	4	4.25	5	4.40	2	<u>5.00</u>	5	4.40	5	3.20	3	3.33	3	3.33	2	2.50
,q21	5	3.80	5	4.40	2	<u>5.00</u>	6	4.67	5	4.00	3	<u>2.33</u>	4	3.75	3	3.00
,q22	5	4.00	5	3.60	2	<u>5.00</u>	6	4.00	5	3.80	3	2.67	4	3.25	3	2.67
,q23	5	3.20	5	3.60	2	3.00	6	3.33	5	3.60	3	3.67	4	3.75	3	4.33

