

Chapter 9

The Annual Report

The Forest Service (and its predecessor) has been preparing reports on its activities almost every year since at least 1886. The Report of the Chief, originally a part of the Secretary of Agriculture's annual report on USDA programs, described forest management planning assistance to private landowners (the original purpose of the Bureau of Forestry) and provided a wealth of information on various forestry topics, such as lumber production and international trade in wood products. The focus of the report shifted when the forest reserves (later renamed the national forests) were transferred from the Department of the Interior to the Department of Agriculture in 1905. Discussions of Forest Service activities-national forest management, cooperative assistance, and forestry research-have been included in every Annual Report since 1905.

The initial legal requirements for the Report of the Chief are not clear. It presumably began as part of the Secretary's annual report, but has traditionally been printed as an independent volume. In 1974, RPA (sec. 8(c)) required the preparation of an Annual Report by the Secretary of Agriculture (who delegated the responsibility to the Forest Service), and the report was renamed the Report of the Forest Service.

The Annual Report, the fourth document required by RPA, is to provide information evaluating the component elements of the RPA Program to support congressional oversight and enhance agency accountability. In addition, the Annual Report is to appraise the progress in implementing the RPA Program, with objectives and accomplishments "in qualitative and quantitative terms and. . . [with] appropriate measures of pertinent costs and benefits." Thus, the Annual Report was intended to be the piece that closed the circle, making RPA a continuing and interactive process (83). However, most who have examined the Annual Report have concluded that it falls short of the mark. In the early 1980s, one congressional staffer observed that "thus far, the Annual Report has been the weakest of the three [sic] parts of RPA" (36). Subsequent analyses have suggested that it has not improved (58, 140).

The Annual Report typically contains a narrative section, describing Forest Service programs and

activities, and a statistical appendix, intended to provide sufficient details to assess agency performance. The narrative and the statistical appendix are surprisingly independent. Although they address the same topics, the narrative rarely refers to data in the statistical appendix, and the appendix rarely contributes to the narrative. Thus, the two halves of the Annual Report are examined separately, even though better coordination would contribute to a more complete picture of Forest Service programs and activities. Finally, RPA also imposed a number of specific requirements for the Annual Report, addressed at the end of this chapter.

NARRATIVE PORTION OF THE ANNUAL REPORT

The narrative portion of the 1989 Annual Report (126) describes agency programs and activities. There is a separate chapter on each branch of the Forest Service-National Forest System, State and Private Forestry, Research, and Administration. In addition, since 1988, the Annual Report has included a chapter specifically addressing RPA.

As an Overview of Agency Programs

The narrative portion of the Annual Report provides general information on Forest Service programs useful for congressional staff and interest groups who may be new to Forest Service issues or who deal with the agency only occasionally. Some observers note that the needs for general descriptive information and for reporting accomplishments probably requires separate reports, rather than a single document (94). Nonetheless, the Forest Service apparently tries to serve both needs in the Annual Report.

The narrative portion of the Annual Report does inform the public about Forest Service programs and activities. The descriptions are concise and generally readable, with coverage of virtually all agency programs and activities. The abundant tables, charts, and photographs in the 109 pages of text in the 1989 Annual Report provide an interesting overview of who and what the Forest Service is.

The narrative has also been criticized as a source of information about the Forest Service. Its tone has

been described as that of propaganda (38). The Report contains numerous broad generalizations that can be misleading. For example, the 1989 Report of the Forest Service states that "We have increased cooperation and communication with every segment of the society" (126), implying that all interest groups are being listened to. However, some groups would probably object to this characterization, and the large number of appeals and lawsuits over forest plans and activities tend to refute the assertion. The Forest Service *has* improved relations with groups in many areas, and such efforts should be recognized and rewarded, but when stated so broadly, the Forest Service loses credibility.

In addition, many controversial aspects of Forest Service activities are given short shrift. For example, Congress has had several acrimonious debates over appropriations for Forest Service road construction, with the final results being substantially above or below the requested level (139), but the controversy was described as a "misunderstanding about the number of miles of road constructed" in the 1989 Report. Other contentious issues, such as protecting old-growth forests and improving riparian areas, are described in bland terms, while a few major controversies, such as below-cost timber sales and efforts to reform the Tongass Timber Supply Fund, have been completely ignored.

As a Report of Forest Service Accomplishments

The problems of bias and the glossing of controversy become more serious when it comes to examining Forest Service accomplishments. The Annual Report was intended to assist congressional oversight and "improve the accountability of agency expenditures and activities." The inadequacies of the Annual Report in terms of measuring accomplishments have been noted (58, 140), and some of these weaknesses have been described (38). The following section analyzes these problems of the narrative portion of the 1989 Annual Report in more detail, examining each branch of the Forest Service in the order presented in that Report.

National Forest System

The Annual Report was clearly intended to address congressional and public interest in the quantity, quality, and annual outputs of the various renewable resources. One would expect the Annual

Report to focus on annual outputs, but relevant resource quantity and quality data should also be included at least periodically, if not annually. One would also expect a discussion of management accomplishments, with information on expenditures and results of the activities. Finally, one would expect the Annual Report to examine the current controversies over management of the national forests.

Output measures are presented in the narrative portion of the Annual Report for nearly all resources—timber harvested, livestock grazed, total recreation, and recreation associated with wildlife and with wilderness. However, no outputs are given for watershed or other forest protection activities, even though these were cited in 1897 as primary purposes for reserving forest lands. No regional differences are discussed. Geographic disaggregations are presented in the statistical appendix for the output measures for most resources, but the narrative rarely refers the reader to relevant information in the appendix.

Information on resource quality and quantity is much less complete. For example, the recreation section describes trail condition and facility maintenance, but the backlog of deferred facility maintenance has only been shown in the 1988 Report. Most of the information on resource conditions is a brief description of concerns about resource conditions, often describing what should be and what is intended, rather than what is. For example, the 1989 Annual Report notes that the Forest Service protects wilderness resources by educating users, enforcing regulations, rehabilitating damaged areas, inventorying uses and conditions, and preparing and implementing protection plans. However, no data are presented on education or enforcement, on wilderness resource conditions, on rehabilitation needs or efforts, or on the number of wilderness plans or the area protected under such plans.

The Annual Report contains substantial information on management activities, but virtually no information on what this means for the resources. For example, the 1989 Report displays acres of watershed improvements and discusses range improvements, but does not indicate what, if any, changes in resource quantity or quality will result from these efforts. Similarly, the 1989 Report trumpets the successes of the challenge cost-share programs for improved quality of recreation sites

and for wildlife and fish habitat improvements, but does not relate these efforts to the quantity or quality of the resources. Even for timber, activities and results are poorly related. Reforestation and timber stand improvement accomplishments are compared to targets, but not to needs. The volume of timber prepared and offered for sale is reported, together with the total volume under contract, but problems resulting from administrative appeals and from litigation are mentioned only briefly, despite, affecting 17 percent of the prepared volume.

The narrative portion of the Annual Report has generally not contained adequate expenditure information to oversee the agency's fiscal performance. The 1989 Report includes receipts and expenditures for recreation and range management, and funding for watershed improvements and for wildlife challenge cost-sharing. However, virtually no timber revenue or cost data are shown in this narrative, even though below-cost timber sales have been a controversy for most of the decade. The only unit cost information in the 1989 Report is on road construction, but these data are not very useful, because building new roads is combined with rebuilding existing roads and because construction is not distinguished by road function (arterial, collector, or local). Furthermore, the unit cost data are not consistent with the road construction and cost data in the statistical appendix.

Finally, some current concerns about national forest management are glossed over, while others are ignored entirely. For example, litigation to protect spotted owls halted half the Forest Service timber sale program in Washington and Oregon in 1988 and 1989, but was ignored in the 1988 Report and was only mentioned in the middle of the discussion of old-growth forests in the 1989 Report. Concerns about road construction were not mentioned in the Annual Report until 1989, and then only characterized as a misunderstanding. President Bush's announced wetlands policy—no net loss—is not mentioned, although 5 percent of the National Forest System is classified as wetlands. Concerns over administrative appeals and litigation have led Members of Congress to introduce legislation to modify the current system, but such attention is not acknowledged in the 1989 Report. These examples of poorly addressed issues demonstrate the inadequacies of the Annual Report.

State and Private Forestry

Relatively little attention is given to cooperative assistance in the narrative, probably because State and Private Forestry accounts for less than 4 percent of the total Forest Service budget, and because evaluating performance for cooperative assistance is much more difficult than for management activities. Most cooperative activities are discussed briefly, but the information on cooperative assistance is not very useful for evaluating Forest Service performance. The statistical appendix contains substantial information on cooperative activities, but the narrative portion of the 1989 Annual Report only displays fire protection and pesticide use information on National Forest System lands, and the narrative does not refer to the wealth of information in the appendix.

The severe 1987 and 1988 fire seasons, especially the fires around Yellowstone National Park, led to an expanded discussion of fire protection activities. Although fire protection on all lands (including the national forests) is coordinated through State and Private Forestry, fire protection usually accounts for more funds than any other activity in the national forests. Thus, discussing fire protection only under State and Private Forestry seems inappropriate.

Research

In many ways, Forest Service Research suffers from the same problems as State and Private Forestry—less focus because of a much smaller total budget (only 6 percent of the Forest Service budget) and more difficulty in assessing accomplishments. Measuring research performance is probably even more difficult than measuring cooperative assistance performance, because research efforts may require years to show any tangible results.

The discussion of research in the narrative portion of the 1989 Report is perhaps the most useful section of the narrative. It begins with a look at six priority research programs, and includes background on why these are important problems. Various interest groups might argue about whether these are the most important research topics, but all six relate directly or indirectly to issues identified in the Draft 1990 RPA Program. The discussion of research priorities is followed by a brief presentation of research highlights, describing several of the major findings in each of nine categories; one minor fault is that these categories do not match the categorization used in the statistical appendix or in the Draft 1990

RPA Program. This approach—describing research priorities and highlighting research findings—is reasonably effective at presenting Forest Service research accomplishments.

The research chapter of the 1989 Report also briefly describes the highlights of international activities. However, cooperative assistance is a major element of International Forestry. More comprehensive information on international cooperative assistance (types of programs, countries assisted, etc.) comparable to the information provided for domestic cooperative assistance programs, would help Congress and others to evaluate the Forest Service's international activities.

Administration

The Annual Report traditionally includes a separate chapter on Forest Service Administration. The 1989 Report contains sections on improving productivity; on managing the human, capital, and information resources; and on public involvement. Efforts to improve agency productivity are laudable, and need to be heralded. The 1989 Report describes one particular effort, the National Pilot Study, intended to increase flexibility for and creativity by agency employees. There are undoubtedly other efforts to increase performance or reduce costs that also deserve praise that are not discussed in the Annual Report. This failing probably results from the lack of direct Washington Office support (in contrast to the Pilot Study, which has been strongly endorsed by the Chief). Nonetheless, other efforts to improve productivity, large and small, should be highlighted in the Annual Report, both to reward such efforts and to spread the word about successes.

There are two important elements to managing human resources: work force management and human resource programs. The increasing diversity of the work force—more women and minority employees throughout the agency—is described, but the narrative contains no data to illustrate the diversity. An important trend is the rise of women and minorities to line management positions (particularly district rangers and forest supervisors), but there are no data by type of position or level within the agency. Another important trend is the mix of educational backgrounds. It seems likely that the number of biologists, ecologists, archeologists, landscape architects, and other specialists has been increasing, relative to the number of foresters and engineers, but this aspect of work force diversity has

been entirely ignored in the Annual Report. Finally, Congress was quite concerned about the huge numbers of Forest Service workers who were not full-time permanent employees (36), and the statistical appendix presents information showing the change in numbers of such employees over the past 10 years, but the importance of these changes is not noted in the text.

The human resource programs are more fully examined in the 1989 Report than is the work force. The narrative describes the five current human resource programs—Job Corps, Senior Community Service Employment, Youth Conservation Corps, Volunteers in the National Forests, and Hosted Programs. The narrative includes a little information on the use of these programs (e.g., the number of people served), but without referring to the more comprehensive information in the statistical appendix.

The section on Administration also discusses Forest Service interaction with the public in a variety of ways, including on a few controversial issues. This section, however, does not *evaluate* Forest Service interaction with the public. Although public interaction is difficult to present quantitatively, even the relatively easy measures to quantify, such as the number of various types of publications distributed and the number of school presentations made by Forest Service employees, are not presented. Furthermore, public interest in national forest management appears to be rising, and some sort of measure of this interest, such as numbers of comments on forest plans and on other agency decisions, might be a useful indication of the level of interest.

As a Report of RPA Program Implementation

The 1989 Annual Report contains a separate chapter on RPA, continuing the format begun in 1988. It contains a very brief summary of the major findings of the 1979 RPA Assessment and 1984 Assessment Supplement, followed by a description of the 1985 RPA Program, both high-bound and low-bound, for the resource elements of the National Forest System, for State and Private Forestry, and for Research. The narrative is accompanied by several figures showing some historical data, RPA Assessment projections, the 1985 RPA targets, and accomplishments through 1989 for selected outputs and activities. At least three of the measures—commercial salmon and steelhead harvests, deferred

recreation facility maintenance, and reforestation on nonindustry private lands—are not shown elsewhere in the Annual Report, and the source of the data is not identified. Other figures display funding for the three branches of the Forest Service, including some historical information, the high-bound and low-bound projections, and the actual funding. These measures are certainly not comprehensive, and some might argue that important measures are excluded, but it is a beginning (more than a decade late) at reporting on the implementation of the RPA Program.

INFORMATION CONTENT—THE STATISTICAL APPENDIX

The Annual Report has contained a statistical appendix since 1955. This appendix is organized in the same manner as the narrative, with separate sections addressing each branch (National Forest System, State and Private Forestry, Research, and Administration), but with virtually no statistics on RPA Program implementation. The National Forest System section of the statistical appendix focuses on resource and activity data, with the fiscal data included with human resource management under Administration. This pattern is followed in this report.

National Forest System

The Annual Report was clearly intended to support congressional oversight of Forest Service activities, displaying resource outputs and management accomplishments for the National Forest System in ways that would assist the Members and Committees of Congress. Therefore, one would expect the Annual Report: 1) to focus on the most costly and most controversial programs; 2) to provide sufficient geographic detail to serve congressional interests; and 3) to support the RPA planning process. However, the Annual Report has generally not met these expectations.

One problem is inconsistency in the level of detail provided: the statistical appendix does not reflect the importance of the various activities. For example, forest and watershed protection were two of the original authorized purposes of the forest reserves, but the statistical appendix contains no information on watershed management or fire protection in the national forests. Similarly, road construction is the

largest budget line item (accounting for nearly 10 percent of annual Forest Service appropriations) and perhaps the most controversial Forest Service program, but relatively little information is presented on the road program. In contrast, appropriations for range management are much lower (roughly comparable to watershed protection appropriations), but the statistical appendix presents more information on range management activities.

Data presentation is also geographically inconsistent. Some data, such as range improvements and watershed improvements, are only reported nationally. Other information, such as suitable rangeland acres and wildlife habitat improvements, is reported by Forest Service region, while reforestation and timber stand improvement needs and certifications are presented by national forest. Still other data on recreation use, livestock grazing, timber cut and sold, road construction, and wilderness acres are reported by State. These differences are important. While national forest data can be summed to regional data, they cannot be aggregated to State totals because 28 national forests have land in more than one State. Similarly, State data cannot be summed to regional totals, because only one region (Alaska) follows State boundaries.

This geographical inconsistency limits the Report's value to Congress. National and regional statistics mask the enormous diversity of the National Forest System. For example, the 1989 Annual Report shows a net gain of \$403 million on timber sales, but 72 of the 120 national forests (including several in nearly every region) reported a net loss, with the losses on these forests totaling \$61 million (127). Most Members of Congress are interested in a relatively small area, usually one or a few national forests or perhaps an entire State. Thus, national and regional data not only provide insufficient information to examine the relative efficiency of investments in various areas, they also fail to provide adequately detailed information for Congress.

Finally, the information reported annually often does not match that which appears in the RPA Assessment and Program, limiting the ability to use the Annual Report to evaluate the implementation of the RPA Program. The differences are discussed below for the various resources and for facilities in the National Forest System.

Recreation

Recreation use is reported in recreation visitor days (RVDs), a measure of the amount of time people spend recreating. The 1989 Annual Report shows total RVDs by State for nine use categories. These categories conform with those used in the Draft 1990 RPA Program for projecting future recreation values. However, they do not match the categories used in the Recreation Assessment, and they differ from the traditional recreation categories used in the Annual Report from 1969 through 1986. Furthermore, the new categories combine inappropriate mixes of activities; for example, all camping (from backpacking to house trailers) is reported with picnicking and swimming, while hiking and horseback-riding are combined with water travel (boating, canoeing, etc.).

The 1989 Annual Report also reports the existing miles of trails, the miles built, and the miles maintained, by State. This displays the management activity (miles built) and the resource quantity (miles) and quality (miles maintained), although one might expect different levels of maintenance for assessing quality, and trail use is an important output measure. The Recreation Assessment only identifies the total existing trail mileage, while the Draft 1990 RPA Program only includes trail construction mileage, and thus the Annual Report is more complete for this aspect of recreation.

The Recreation Assessment includes data on the area available for various types of recreation and on the quantity and nature of developed facilities on Federal lands, while the Draft 1990 RFA Program includes the recreation facility maintenance backlog and use of substandard sites as measures of recreation quality. From 1962 through 1976, the Annual Report contained information on use capacity and quality by type of facility, but this information has not been presented since. No data have been reported on the location or on the types of facilities in need of repair since 1976.

Range Forage

The 1989 Annual Report contains more information on livestock grazing than either the 1989 Range Assessment or the Draft 1990 RPA Program. Grazing use, measured in animal unit months (AUMs), is reported in the 1989 Report of the Forest Service by State for various types of livestock. This measure of forage output has been the standard measure for the

national forests for decades, and is used in both the 1989 RPA Assessment and in the Draft 1990 RPA Program. It indirectly measures the amount of forage consumed, but does not measure the amount produced.

The 1989 Annual Report displays the status of grazing allotment management, showing the number of allotments, the number where "improved management" was started, and the number where "improved management" was maintained; it does not show the number where "improved management" wasn't maintained, although the historic data clearly indicate that "improved management" was not maintained on some allotments. These tables also show total acres in the allotments and the acres that is "suitable" --deemed as that "which can be grazed on a sustained yield basis without damage to the resource" (126). This measure does not match either the ecological status used in the Range Assessment or the resource value rating used in the Assessment and in the Draft Program. Suitability might be a useful measure of rangeland quality, but no information is presented to assess its validity. The term can also be confusing, because RPA--as amended--directs the Forest Service to identify suitable timberlands, considering economic as well as physical and biological factors.

Finally, total structural and nonstructural range improvements are identified in the Annual Report. Structural improvements include water developments and other site facilities, and miles of range fence and pipelines. Nonstructural improvements include acres of cover manipulation, range plant control, forage improvement, and noxious weed control. This last category is used as a measure of management in the Draft 1990 RPA Program. All of these measures report on management performance, with cost data. Some geographic details could make these useful measures of management efficiency, although they are still unrelated to resource quantity or quality.

Timber

More data are provided on the timber program than on any other Forest Service activity, but the data still have limitations. Reforestation and timber stand improvement are reported by: 1) total acres treated by funding source for 1985 to 1989; 2) needs by national forest; and 3) certified performance by national forest. Reforestation is an important measure, both as annual performance and as an indicator

of future resource quantity, and was included in the Draft 1990 RPA Program. However, reforestation efforts are not always successful. One study showed that 16 percent of Forest Service reforestation efforts, averaging more than 60,000 acres per year, failed between 1976 and 1984 (133), although the 1989 Report claims that success rates have risen to 93 percent (only 7 percent failures). Therefore, second (or subsequent) efforts on the same site should be separated from initial efforts. The certification of performance indicates successful reforestation, but most observers are only aware of total reforestation efforts, without distinguishing successful from unsuccessful or repeat efforts.

Timber offered for sale, sold, and harvested is reported by Forest Service region. Volume offered and sold could be used to compare locations and conditions where offered timber is and is not being purchased, but the data are not sufficient for this task. For 4 of the 9 Forest Service regions in 1988 and 3 of the 9 in 1989, more timber was sold than was offered for sale, a peculiar condition that is not explained in the Annual Report. In addition, timber released for harvest under long-term contracts in Region 10 (Alaska) is included in timber offered and in timber harvested, but not in timber sold. The Draft Program uses timber offered as the output measure for the timber program, implicitly assuming that if timber is offered for sale, it will eventually be cut. This probably overstates the sale and harvest levels, because some offered sales are not purchased. Timber offered as the output measure also focuses Forest Service efforts on getting timber sales prepared, without regard to efficiency or salability.

The volume harvested differs from volume sold (or offered) in any one year, because timber sales have harvesting deadlines of 3 years or more. The volume of uncut timber under contract, shown in the Annual Report, is the link between timber sold and timber harvested. However, uncut timber under contract cannot be tracked with sale and harvest data (38). In practice, each region provides a new estimate of uncut timber under contract each year, without necessarily considering the previous estimate, even though such information could be generated from the agency's computerized timber contract database, and the causes of variation could be identified. Uncut volume under contract is an important short-term measure of available Federal timber, and thus is of interest to timber purchasers,

but it is not included in either the Timber Assessment or in the Draft 1990 Program.

There are several additional measures of timber resource quantity, quality, and output that are included in the Timber Assessment and/or the Draft Program, but not in the Annual Report. The Timber Assessment includes data on commercial timberland, timber productivity classes, and timber inventory; annual updates may not be necessary, but significant variations found in field inventories should be noted when uncovered. Annual growth and mortality estimates could be reported to indicate near-term salvage and reforestation needs, especially following drought, fires, hurricanes, and other natural disasters. The Draft 1990 Program also includes acres harvested, acres clearcut, and acres of old-growth forests as measures of importance to timber and other resources. The Annual Report has never included such data, although there is a brief discussion of old-growth forests in the narrative. However, all three of these measures are important to issues in national forest management, and some efforts to monitor trends are needed to show what is happening on the ground.

Water

The statistical appendix of the Annual Report contains no information on the water resources of the National Forest System. The only water resource data in the 1989 Report are in a table in the narrative showing total acres of watershed improvement. These data represent agency activities, but are not linked to the condition classes used to measure watershed quality in the 1989 Water Assessment and in the Draft 1990 Program. Linking management efforts to watershed condition class, with site-specific unit cost information, would be very useful for congressional oversight of agency performance and of RPA Program implementation.

Acres of wetlands are noted as important resource characteristics in both the 1989 Assessment and the Draft Program, although neither has good measures of wetland quantity or quality for the national forests. The 1989 Annual Report contains no data on the extent, location, or changes in wetlands.

Wildlife and Fish

The Annual Report contains little information on wildlife and fish in the National Forest System. The data presented are often unrelated to resource condition and have not been reported consistently in

other Annual Reports or RPA documents. Hunting and fishing are reported under recreation use, measured in recreation visitor days (RVDs), and total wildlife and fish use is shown in the summary tables, measured in wildlife and fish user days (WFUDs). Unfortunately, WFUDs cannot be directly converted to RVDs, because the number of WFUDs per RVD depends on the type and location of the activity; the 1989 Wildlife Assessment and the Draft 1990 Program use WFUDs. The recreational use of wildlife and fish is an important measure of the resource value, but it is at best indirectly related to resource quantity and quality or to Forest Service efforts.

The 1989 Annual Report shows habitat improvements in acres and numbers of structures by Forest Service region. The types of habitats being improved and the means of improving the habitats are not specified, so historical comparisons and efficiency measures are impossible. As with watershed improvements, habitat improvements measure agency activities, but are not particularly helpful in understanding wildlife and fish resource quantity, quality, or output, and are not included in either the Wildlife Assessment or the Draft Program.

Big game harvests from national forests were reported in early Annual Reports, but have not been included since 1977. The Annual Report includes none of the relevant measures of wildlife and fish resources found in the Draft 1990 Program, such as acres of old-growth forest, acres of big game winter range, and habitat maintenance backlog.

Wilderness

The wilderness resource may have the poorest statistical base of any of the renewable resources in the National Forest System. As noted earlier, the Recreation Assessment includes wilderness with remote back country (lands more than 3 miles from a road) in estimating recreation resources. The Draft 1990 RPA Program only mentions wilderness in passing, and includes no data or projections on wilderness designations. Despite concerns about degradation of wilderness areas (138), there are no measures of the quality of the wilderness resource in any of the RPA documents.

Designated national forest wilderness areas in each State and the past year's additions are reported in the 1989 Annual Report. Wilderness use nationally is shown in one of the summary tables of the

1989 Report, but is not a distinct recreation use category in any of the RPA documents. Wilderness use data are identified for special requests, such as studies of potential wilderness designations (see, for example, the Congressional Research Service analysis of Montana wilderness (143)), but are not reported consistently. This seems a serious gap, since declining use has been cited in recent arguments against additional wilderness designations.

Facilities

While facilities are not part of the renewable resources of the National Forest System, they are assets that are created and maintained and should be tracked. The major categories of facilities are lands, roads, and non-resource-related structures (e.g., ranger stations, in contrast to resource-related structures, such as campgrounds and livestock fences). Aside from the effects of road construction on soil and water resources, discussion of facilities is generally lacking in the 1989 Assessment and Draft 1990 Program. Neither these documents nor the Annual Report contain any information on non-resource-related structures.

The Annual Report always includes a table identifying total National Forest System lands by State. In addition, since 1978, the agency has identified the land purchases, exchanges, and donations by number of cases, acres, and value of the transactions. Finally, boundary surveying, known as landline location, is an ongoing activity. The 1989 Report identifies total miles of boundary, miles surveyed in 1989, and the total surveyed to date, by Forest Service region. This table presents: a) long-term goals (surveying all boundaries); b) current status (accomplishments to date); and c) current output (1989 accomplishments), and thus effectively summarizes boundary measurement for the national forest land resource, although it lacks cost data to evaluate efficiency and rationale for the goal.

Information on roads is less complete. One table shows the road mileage and number of bridges built from appropriations and purchaser road credits, by State. However, unit costs generated from these data are seriously misleading, because about half of appropriations are used to plan, engineer, and oversee roads built with purchaser credits (139). Appropriations to support purchaser credit roads are identified in the annual budget request, but comparable details are not included in the Annual Report. Construction and reconstruction (upgrading an ex-

isting road because of deterioration or because a better road than had originally been anticipated is now needed) are separated for the first time in the 1989 Report. This will help link the RPA documents, since only new construction is identified in the Draft 1990 Program, but the data flow is still inadequate.

In contrast to past efforts, the total road mileage in the National Forest System is not shown in any of the current RPA documents. Maintenance of the road network is mentioned in the narrative of the 1989 Annual Report, but no data are included in the statistical appendix. This lack of information is a serious flaw, because virtually all interest groups are concerned about roads—their cost, location, construction standards, maintenance and/or closure, etc.

State and Private Forestry

The statistical appendix to the Annual Report contains relatively little information on Forest Service cooperative assistance. However, in contrast to the information on the National Forest System, the few statistical tables on State and Private Forestry are relatively thorough, with most cooperative activities reported quantitatively, and the information has been presented in a consistent manner for more than a decade. It was noted earlier that using solely quantitative data misses important information about resource quality, and this limitation applies to the data on cooperative assistance. Nonetheless, with some additional information for the development and improvement of quality and effectiveness measures, the data for evaluating cooperative forestry could be quite useful.

The only information on pest management is the Pesticide Use Report, which identifies the quantity of each herbicide and pesticide used, along with the purpose or intended target and a measure of the units treated-acres, seedlings, pounds of seed, or whatever is relevant. The Pesticide Use Report has been included in the Annual Report since 1976, as required by RPA, and it has contained the same measures each year. The value of the data is limited by the lack of location information (e.g., geographical region) and the lack of effectiveness measures. Herbicide and pesticide use is not the only activity of pest management, but it is the only activity with any reported quantitative data with which to evaluate performance.

The statistical appendix contains some information on cooperative fire protection, showing area protected and area burned by State. No data on cooperative expenditures or fire damages are reported, so it is impossible to evaluate efficiency. Nonetheless, these data exceed the data on fire protection in the national forests.

Forest Service Research

Forest Service Research also receives little coverage in the statistical appendix of the Annual Report. Quantitative measurements for research are probably more difficult to develop than for other activities, because research results may require years to affect resources or management. Tables in the 1989 Annual Report show research funding and number of publications, by research category. Information about research efforts in scientist-years would also be useful. For many years, the categories used to report funding had differed substantially from those used to report publications. However, the funding categories in the 1989 Report are virtually identical to the major categories used to report publications for more than a decade, although insect and disease research is combined with fire and atmospheric sciences research. Since 1988, the budget requests have also conformed to the format now used for the Annual Report, and the Draft 1990 Program uses the same structure.

The Statistical appendix of the Annual Report contains no information on International Forestry.

Forest Service Administration

The Annual Report contains statistical information on managing human and capital resources in the section on Forest Service Administration. Human resource management involves both the work force and various human service programs, while capital management focuses substantially on expenditures, receipts, and social benefits. The Annual Report contains no statistics on productivity improvement, information management, or public involvement.

Human Resources

The work force, and its diversity and changing nature, are described in the narrative portion of the Annual Report. However, the tables in the statistical appendix provide no data to illustrate the diversity by type of position or level within the agency. There are no data on the rise of women and minorities to line management positions (particularly district

rangers and forest supervisors), and no data on the increasing diversity in the mix of educational backgrounds. The 1989 Annual Report does show a radical change in the mix of permanent full-time, other permanent, and temporary employees since 1980. Permanent full-time workers increased by 42 percent, while other permanent workers declined to only 13 percent of the 1980 level and temporaries declined to 60 percent of the 1980 level. This has important implications for the agency's work force, but is not even noted in the narrative.

The human resource programs are more fully evaluated in the 1989 Report of the Forest Service than is the work force. Only one table is presented on the human resource programs (Job Corps, Senior Community Service Employment, Youth Conservation Corps, Volunteers in the National Forests, and Hosted Programs), but this table is reasonably complete, identifying funding, numbers served (including the proportion of women and minorities), the work accomplished in person-years and in value, and a few other relevant measures. Furthermore, this table has been included in the Annual Report in the same format for more than a decade, thus providing a valuable historical perspective on human resource programs.

Fiscal Resources

Measuring financial and economic performance is also important for assessing accomplishments and evaluating performance. Expenditures and receipts are important fiscal measures, but because the Forest Service was not created as a profit-making venture, social benefits need to be reported as well.

Expenditures—One of the purposes of the Annual Report is to improve accountability for expenditures. One means of examining financial performance is to display unit costs for various activities, showing geographic variation and changes over time. However, the statistical appendix to the Annual Report contains virtually no unit cost data on any activity for any branch of the Forest Service, and contains insufficient detail to calculate unit cost data. Thus, the effectiveness or efficiency of management, research, and cooperative efforts cannot be evaluated.

Congress specified that the Annual Report accompany the budget request, suggesting that the Report was intended to provide supplemental information. However, some expenditure data in the 1989 Annual

Report is internally inconsistent (various tables have different data) and is inconsistent with the FY1991 budget request (125). The discrepancies are generally small, but Forest Service payments to counties (\$371 million in 1989) are consistently excluded from all tables in the Annual Report.

Data on timber sale funding have been included in the Annual Report for more than a decade, and illustrate how information reported has changed, making historical analyses extremely difficult. Timber funding has risen in 8 of the past 10 years, declining by 14 percent in 1986 and by 8 percent in 1988. Yet, total timber funding was reported as \$918 million in 1979 and only \$477 million in 1989. This misleading "decline" results from the removal of selected cost items from the timber funding table. General administration and purchaser road credits were eliminated in the 1982 Report, removing \$375 million of 1981 timber funding. In the 1984 Report, reforestation and timber stand improvement expenditures were dropped, reducing 1983 funding by \$249 million. In 1986, landline location and road maintenance were eliminated and purchaser roads built by the Forest Service were revised to show the lower actual expenditures rather than the authorized level, saving a total of \$115 million of 1985 timber funding. And finally, in 1988, reforestation and timber stand improvement funding from the Tongass Timber Supply Fund was deleted, reducing timber funding by about \$15 million. Thus, since 1981, timber funding as shown in the Annual Report has been revised four times, deleting about \$750 million from "timber funding" without changing anything on the ground. Interestingly, purchaser credit roads, landline location, and the Tongass Fund were still reported as timber funding expenditures in the 1991 budget request.

Receipts—The Annual Report shows National Forest System receipts by source-by resource, under various special deposits, and numerous other categories. (The other Forest Service branches do not generate receipts, except for a few minor cooperative deposits.) Although the data generally match the receipts shown for 1989 in the FY1991 budget request (with small discrepancies for two special deposits), the Forest Service inappropriately includes the value of purchaser road credits used (\$107 million in 1989), in total receipts. The credits are actually an exchange of timber for road construction, an in-kind receipt not a cash receipt, and the

FY1990 budget request shows them, but properly excludes them from total receipts. (See box 9-A.)

The 1989 Annual Report also shows timber sale values. The Report, and most other Forest Service documents, show the value of timber sold, implying that these are timber receipts. This is misleading, because receipts are not collected until timber is harvested, which may be several years after the contract is awarded. Thus, the value of timber sold is an estimate of future receipts, and can vary from actual receipts for several reasons. First, timber prices are adjusted periodically after the contract is signed, based on changes in lumber prices, under a standard Forest Service procedure (known as escalation) in use for many years. In addition, most Forest Service timber is paid for at the bid *rate*, so errors in volume estimates will lead to errors in receipt estimates. Volume estimates can vary widely from the actual volume removed, although no bias has been observed (63). The accuracy of the receipt estimates has never been evaluated, but several critics have noted that bids can be (and have been) intentionally skewed to lead to errors in receipt estimates (130, 146). Thus, it is possible that the Forest Service ultimately never collects all of the receipts estimated as the value of timber sold, although this possibility has never been evaluated.

Finally, the presentation of receipts implies that all this money is paid into the General Treasury. Such is not the case. Some are deposits made directly into individual trust funds or special accounts. In particular, deposits to the Knutson-Vandenberg Fund are reported as timber receipts, but are permanently appropriated for reforestation, timber stand improvement, or other sale-area related activities. Many national forest receipts are subsequently used to cover other special accounts and trust funds (141). The major accounts paid from receipts include payments to counties, the Roads and Trails Fund, the Tongass Timber Supply Fund, purchaser roads built by the Forest Service (the Purchaser Election Program), the Land and Water Conservation Fund, the Range Betterment Fund, and a few other minor accounts. (See box 7-B.) Because of the ways in which these transfers are calculated, the amount going to the General Treasury fluctuates. Over 60 percent of receipts were deposited in the General Treasury in the late 1970s, but this fell to less than 12 percent in 1982 before recovering to 47 percent in 1987 (142). Thus, indications of \$1.5 or \$1.6 billion in receipts mislead the casual observer into thinking this is entirely beneficial to the Federal Treasury, when half or more is already allocated to various Forest Service activities.

Other Benefits—The Forest Service generates benefits other than just cash receipts for the U.S.

Box 9-A—Timber Purchaser Road Credits

Under the 1964 National Forest Roads and Trails Act, the Forest Service is authorized to construct roads in the national forests "by requirements on purchasers of national forest timber and other products, including provisions for amortization of road costs in contracts." In practice, the Forest Service specifies the location and standards for roads to be built in each timber sale contract, estimates the construction costs, and grants the purchaser credits (equal to the estimated construction costs) which can then be used to pay for the timber.

There are situations where the purchaser cannot use the credits—the credits are "ineffective." The Forest Service establishes base rates as the minimum cash payments per thousand board feet of timber, ostensibly to recover the reforestation costs plus \$0.50 per thousand board feet. (In practice, the base rates are arbitrary.) When the timber is offered for sale, potential purchasers may bid on the timber, raising the price of the timber. However, if the bid price is at or near the base rates (the minimum required *cash* payment), all or some of the credits cannot be used to pay for timber. This situation is actually more complicated, because timber prices are often adjusted after contracts are signed, a standard procedure for most Forest Service contracts. These timber price changes can make more or fewer credits ineffective, depending on whether prices are falling or rising. Thus, when the contract is signed, the purchaser may not know how many of the credits can be used.

One further point needs to be made about purchaser road credits. After the downpayment on a timber sale is made, the purchaser can use all the credits to pay for timber before putting forth any cash. Thus, the credits amount to short-term, interest-free loans for timber purchasers. In addition, purchasers can transfer effective credits (but not ineffective credits) among timber sales within a national forest, although they cannot be shifted to another forest or to another purchaser. Thus, some purchasers with several timber sales on one forest maybe able to delay making cash payments for several years.

Treasury. The Draft 1990 RPA Program notes that the social benefits of research and of cooperative assistance are difficult to calculate, and makes no effort to do so. The Annual Report continues this approach, with no reporting of cooperative assistance or research benefits.

The Annual Report does show the value of benefits generated by the National Forest System. There are many ways to calculate the social benefits of nonpriced or underpriced resources. (See box 6-B.) The approach used in the Draft 1990 RPA Program, calculating both market-clearing price and consumer's surplus, is consistent with economic theory. Thus, one might expect that the nonpriced and underpriced resources would be valued similarly in the Annual Report, but this is not so. The 1988 Report used values substantially below the market-clearing price for recreation and wilderness, and below the social value (market-clearing price plus consumer's surplus) for all four resources. The 1989 Report used values for recreation and for wilderness that were above the social values identified in the Draft 1990 Program. (See table 9-1.) In addition, the reported timber value (\$103 per thousand board feet (MBF)) is noted as the "actual value at time of sale," but matches neither the value of timber sold in 1989 (\$128 per MBF) nor the value of timber harvested in 1989 (\$110 per MBF).

The Annual Report also overstates the outputs in calculating total benefits. Timber is reported at 11.5 billion board feet, the amount of timber offered for sale, not the amount sold or harvested (8.4 and 12.0 billion board feet, respectively). Timber offered may measure agency activity, but it does not measure value generated for society. Forage use is similarly reported at the permitted level of use, not the actual use that occurred, and thus overstates benefits generated by 18 percent. Recreation use in the table

matches total recreation use elsewhere in the Annual Report, which includes hunting, fishing, and recreation in wilderness areas; the benefits of recreation use is overstated because these three activities account for 17 percent of total recreation use. The accuracy of the wilderness use data cannot be evaluated, because wilderness use is not discussed elsewhere in the Annual Report, nor in the Recreation Assessment or the Draft 1990 Program. Finally, the wildlife and fish use data also cannot be compared, because of differences in the measures reported.

The Forest Service also includes tables on the financial performance of the timber sale program, apparently in place of reporting a representative sample of timber sales where the costs exceeded the benefits. The latter is required by RPA and a sample was included in the Annual Report from 1977 through 1982. A new table showing values, costs, and associated outputs first appeared in the 1984 Report. The Forest Service provided data in this new format in 1984 and 1985, but in 1986 replaced the data with a statement noting that the Timber Sale Program Information Reporting System (TSPIRS) was being developed to generate such information, and the data would become available after full implementation of TSPIRS. The 1989 Report is the first to show data from this new system.

The House Appropriations Committee initially requested the Forest Service to develop a timber sale cost accounting system. The Forest Service argued that tracking costs for every timber sale was far too cumbersome for the 500,000 sales made annually, although fewer than 1,500 sales annually actually account for more than 75 percent of the sale volume and more than 88 percent of estimated timber receipts (126). Nonetheless, the Forest Service developed TSPIRS to display costs, receipts, and

Table 9-1—Nonpriced Resource Values in the 1988 and 1989 Reports of the Forest Service and in the Draft 1990 RPA Program

	1988 Annual Report	1989 Annual Report	Draft 1990 RPA Program	
			Market price	Market price + consumer's surplus
Recreation-per RVD (recreation visitor day)	\$8.96	24.59	13.68	22.08
Wilderness-per RVD	\$10.74	32.75	15.68	30.42
Wildlife and fish-per WFUD (wildlife/fish user day)	\$24.36	24.36	20.42	37.13
Livestock forage—per AUM (animal unit month)	\$6.30	6.89	5.12	8.41

SOURCE: U.S. Department of Agriculture, Forest Service, *Draft 1990 RPA Program* (Washington, DC: U.S. Government Printing Office, 1989). U.S. Department of Agriculture, Forest Service, *Report of the Forest Service, Fiscal Year 1988* (Washington, DC: U.S. Government Printing Office, 1989). U.S. Department of Agriculture, Forest Service, *Report of the Forest Service, Fiscal Year 1989* (Washington, DC: U.S. Government Printing Office, 1990).

other benefits generated by the timber sale program. There are many problems with TSPIRS as a measure of timber sale economics. Revenues include deposits to the Knutson-Vandenberg Fund and timber purchaser road credits, although neither benefits the U.S. Treasury. The comparable expenses (plus other road construction, reforestation, and other stand investment costs) are "depreciated" over long time periods, often 100 years or more, so that most road construction and reforestation expenditures are reported in the short-term as net social benefits of timber sales. This approach is unlikely to assist congressional oversight of agency accountability for expenditures.

TSPIRS also reports employment and income generated by timber sales. Such social benefits may well be appropriate for reporting annually, and Congress has frequently expressed interest in such information. Employment, income, payments to counties, and other relevant measures of the economic and social impacts of Forest Service activities are important, as described earlier, but such information should only be reported when the complete picture can be shown. Presenting such data only for Forest Service timber sales seriously skews the information base. This can focus attention on increasing timber sales, at the expense of generating social benefits through management of, research on, and assistance for other renewable resource production and protection activities.

MEETING ANNUAL REPORTING REQUIREMENTS

In addition to assessing agency activities and RPA program implementation, the Annual Report is to meet certain specific reporting requirements. This section examines each of these requirements, and evaluates the performance of the 1989 Annual Report in meeting them.

The Forest Service has produced an Annual Report every year since RPA was enacted, as required by section 8(c). As described above, the evaluation of the elements of the RPA Program is now satisfactory in some areas, although few RPA Program targets are shown and the effort is rather weak in other areas.

The Annual Report is reasonably successful at meeting the requirement for "a description of the status of major research programs [and] significant

findings," and the statistical appendix presents a reasonably comprehensive summary of cooperative forestry accomplishments, as required in section 8(c). However, the discussion of research applications is weak, and the analysis of cooperative assistance needs and work backlogs is entirely lacking. The Report describes priority research programs, which is not required, but which should prove useful in helping to develop future RPA Assessments and Programs.

In general, the Annual Report does not fulfill the requirement that it provide "appropriate measures of pertinent costs and benefits. . . to assess the balance between economic factors and environmental quality factors" [sec. 8(d)]. One table provides a summary of benefits by resource category, but the measures used are inconsistent with quantities and values elsewhere in the Annual Report and in the RPA Program. Furthermore, some of the benefits specified, such as esthetics and public access, are excluded from that table, while others, such as cost savings and rate of return, are excluded from the Annual Report entirely. Assessing the balance between economic and environmental factors is admittedly a difficult task, but the Annual Report has made no attempt to meet this requirement.

The Annual Report is also to include "plans for implementing corrective actions and recommendations for new legislation where warranted" [sec. 8(e)]. If the Report truly assessed the implementation of the RPA Program, deviations from the targets and difficulties in meeting targets would have been identified. Then, corrective actions and legislative needs could be discussed. However, until it evaluates RPA Program implementation, the Annual Report probably cannot meet this requirement.

Section 3(d)(1) requires the Annual Report to include information on reforestation and timber stand improvement needs and on certification of successful reforestation and stand improvement efforts, by national forest and by State. The Report has included tables providing such information, with more details than specified, every year since 1978, although site productivity details for the certifications were eliminated in the 1989 Report. Nonetheless, the Annual Report has clearly met this requirement.

The Annual Report is required to identify "the amounts, types, and uses of herbicides and pesti-

cides used in the National Forest System, including the beneficial or adverse effects of such uses" [sec. 3(e)]. The Report of the Forest Service has included the Pesticide Use Report annually since 1978, but it contains no discussion of the beneficial or adverse effects of herbicide and pesticide use. Thus, the Annual Report has met only part of the requirements of this section of RPA.

Finally, section 6(l)(1) directs the Secretary to develop a process for estimating long-term benefits and costs, including information on the "estimated expenditures associated with the reforestation, timber stand improvement, and sale of timber from the National Forest System, and. . . a comparison of these expenditures to the return to the Government resulting from the sale of timber." Subsection (2) then requires a summary of these data in the Annual Report, "including an identification on a representative sample basis of those advertised timber sales made below the estimated expenditures for such timber as determined by the above cost process." From 1977 through 1982, the Annual Report included a table with a sample of timber sales, some with costs exceeding receipts, although it is impossible to determine if those sales were "representative." It is also unclear whether the costs included reforestation and stand improvement costs; one might expect that the timber funding table, described earlier in this chapter, might be the basis for these costs, and this table did include reforestation and stand improvement costs until 1984. However, since 1984, this requirement has been largely ignored.

The Timber Sale Program Information Reporting System (TSPIRS) identifies timber receipts, allocated expenses, and other economic consequences of the timber sale program, but critics charge that it presents an inaccurate picture, particularly of the costs. The Annual Report neither explains the system used, nor refers the reader to source material, so the validity of the data cannot be readily evaluated. It clearly does not meet the legal requirement for comparing the expenditures (including reforestation) and returns of a representative sample of below-cost timber sales.

CONCLUSIONS

The Annual Report provides an informative overview of Forest Service programs and activities for individuals and groups not familiar with the agency, although it presents an extremely favorable

picture of the agency and ignores or glosses over most controversies.

As a report of Forest Service accomplishments, the Annual Report is much less useful. The narrative portion of the Report presents output measures for most national forest resources, but information on resource conditions is generally lacking. The Annual Report contains information on national forest management activities without explaining the implications for resource conditions. For example, the 1989 Report displays acres of watershed improvement, but does not relate this effort to changes in watershed conditions. Furthermore, some activities, such as forest protection, are excluded entirely. The narrative also does not contain adequate expenditure information to oversee Forest Service fiscal performance. The description of cooperative assistance is even less useful, with virtually no assessment of results or of efficiency, and no reference to the relatively complete picture contained in the statistical appendix. In contrast, the discussion of research priorities and of major research findings is reasonably effective at presenting the agency's research accomplishments. Finally, the 1989 Report describes public interactions, human resource programs, and the increasing work force diversity, but without any supporting data.

As a report on the implementation of the RPA Program, the Annual Report has been nearly useless. The 1988 Report was the first to include a separate section addressing RPA implementation. Accomplishments are compared with several RPA output and budget targets, although the analysis is far from comprehensive and RPA targets are excluded from the other chapters of the Annual Report and from most of the tables in the statistical appendix. The recent efforts are a late and incomplete beginning for reporting on RPA Program implementation.

The Annual Report's statistical appendix presents the details of Forest Service activities and accomplishments. One problem is inconsistency in the level of detail; the Report contains relatively little information on some important resources or issues, such as watershed protection and road construction. Another problem is the inconsistent geographic base for reporting. Some measures are reported only nationally, while others have regional, State, or national forest information. In addition, the measures used often differ from those in the RPA Assessment and Program. For example, the 1989

Annual Report identifies trail maintenance, suitable rangeland, watershed and wildlife habitat improvements, and road reconstruction-not used in the other RPA documents-but excludes information on recreation facility maintenance, rangeland condition, old-growth forests, clearcutting, and wetlands.

Finally, the statistical appendix is generally treated as independent from the narrative. The information does not support the narrative, and the narrative rarely refers to the copious statistics that are presented.

Adequate statistical information on cooperative assistance and on research is difficult to develop, but the Forest Service has reasonably thorough data on these branches. The statistical base for human resource programs is similarly thorough, but the data on the work force is nearly useless. Finally, the Annual Report is inadequate for examining the financial and economic performance of the agency. While generally consistent with the budget requests, the fiscal data are inadequate to calculate and compare unit costs for activities and areas over time. One table, reporting timber sale funding, has been modified biannually to show declining costs while costs have actually been increasing. Information on the local and regional economic and social consequences of Forest Service activities are lacking.

RPA also imposed numerous specific reporting requirements on the Forest Service. Several of the

requirements, such as the pesticide use report and the needs and certifications for reforestation and timber stand improvement, have been met annually, although often the required reporting is incomplete. Other requirements, such as reporting long-term benefits and costs, have not been so effectively addressed. A few, such as identifying needed corrective actions and presenting representative below-cost timber sales, have been virtually ignored.

Overall, the Annual Report has been a mediocre tool for evaluating Forest Service performance, and its independence from the RPA process has rendered it ineffective for documenting implementation of the RPA Program. Furthermore, there have been few changes to improve the ability of the Report to meet these tasks, and some changes have actually reduced its value. In examining the potential of the Annual Report to serve as the final step in the RPA process, Stairs and Maurer (94) observed that the needed changes in the Annual Report "are not compatible with incremental revisions of the present process [T]he annual reporting process can no longer be perceived as an autonomous process. " Until the Annual Report displays Forest Service efforts toward achieving the resource quantity and quality goals established in the RPA Program, with sufficient geographic and unit cost details to oversee performance, the Report will continue to be the weak link in the RPA process.