

Research Needs and Priorities For Dispersed Recreation Management¹

Elwood L. Shafer, Jr., and Robert C. Lucas

ABSTRACT: *Research needs in dispersed forest-recreation are described and prioritized by probable worth of results to management. Results indicate where dollars and scientists can be used most effectively on high priority problems.*

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Perhaps no other forest oriented management activity involving so many people, and so basic a part of our life, has received less attention from qualified investigators and scientists than dispersed forest-recreation (DR). This is not to belittle past research efforts on DR—efforts that represent a good beginning on a large and complex task of major social importance. This communication outlines, and sets priorities for, research required in DR. The objective is to assist researchers, managers, and educators in the allocation of scarce money and personnel to find answers to important, relevant problems.

Dispersed recreation is defined as those forest, range, or desert oriented outdoor recreation activities that normally take place outside of sites or areas that are developed or managed to concentrate recreational use. DR activities may:

- Utilize highways, forest roads, trails, lakes, rivers, deserts, trailless areas, and wilderness environments.
- Require facilities for safeguarding visitors, protecting resources, and enhancing the quality of visitor experiences.

¹This analysis was developed by a Technical Planning Committee of USDA Forest Service, and members of the Recreation Working Group of the Society of American Foresters.

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- Occur where the primary resource use is the production of timber, water, range, or wildlife.
 - Be the dominant use of an area.
 - Involve the activities found in Table 1.

The need for research on dispersed recreation is highlighted by two factors: First, pressure on the Nation's natural resources will increase sharply over the next decades—both for dispersed forms of outdoor recreation, and for other requirements. Second, land is available for outdoor recreation, but often it is not being effectively used.

The Nation's outdoor recreation demands will be met only through wise decisions on resource allocation, sound planning, and effective development of facilities. These all require the support of thorough knowledge and extensive methodology—the product of research and development programs.

But why perform research on forest recreation activities when other important social problems exist? Although the outdoors is deeply rooted in the American heritage, and making outdoor recreation experiences available to all Americans has long been a concern of the Nation, in recent years the problems of managing outdoor recreation resources has taken on new dimensions. The growing population—having more leisure time and living largely in cities—has created management problems different from those perceived a decade ago by even the most farsighted recreation planners and managers. More Americans with prospects of more leisure face the challenges of using it for their own enrichment and development as individuals, and as citizens. These prospects and challenges are precisely the contribution that outdoor recreation makes to American society. Outdoor activities—whether undertaken lightly or with serious intent—are essentially “renewing” experiences that provide refreshing contrasts with the workaday world.

The American people are striving for recreational experiences which are compatible with the democratic way of life. Just as Americans have come to believe that poverty is not caused by providence, nor by natural law, nor even by economic law, so also have they come to recognize the anomaly of a leisure class. Slowly they have come to see that the worth of life in a technological society is likely to be determined by that variety of growth and expression that arises in leisure. Being an important component of the total leisure phenomena, dispersed recreation has become a pursuit, not for filling in idle hours, but a dynamic enterprise of fulfillment. Dispersed recreation is not necessarily any one specific event, a point in time, or a specific place in space—it is a dimension in life, a state of being.

Many authorities on the subject of leisure have stressed that internal and external tensions caused by today's technologically oriented society give added poignancy to the individual's need for recreational activity. If individual and societal problems are to be resolved intelligently, our adaptive capacities must be at their best, our energies must be available for prompt and effective action, and our inner sense of wholeness must be as complete as possible. Recreational activities foster these desirable qualities. The need for adequate recreational opportunities in fact are a human need that we ignore at our peril.

A superficial, simplistic view that ignores these facts must inevitably lead

TABLE 1. PROBABLE WORTH (P x W) OF RESEARCH ACTIVITIES FOR 28 KINDS OF DISPERSED RECREATION

| RESEARCH ACTIVITIES | DRIVING FOR PLEASURE | OFF ROAD VEHICLES (-SNOWMOBILES) | FISHING (BOAT) | FISHING (OTHER) | BOAT (POWER) | HUNTING (BIG GAME) | HORSEBACK RIDING | HUNTING (SMALL GAME) | WALKING (SHORT) (-2 MILES) | HIKING (+2 MILES) | BOAT (NONPOWER) | CAMPING (NONPEDESTRIAN) | CAMPING (PEDESTRIAN) | ROCK HOUND | CAVING | NATURE STUDY | SURVIVAL ORIENTED | SWIMMING | SNOWMOBILE | COLLECTING | SNOW CAMPING | SNOWSHOE - X-C SKIING | PICNICKING | MOUNTAIN CLIMBING | HANG GLIDING | PARACHUTING | CULTURAL EXPLORATION | BICYCLING | AVERAGE (P x W) | | |
|------------------------------|----------------------|----------------------------------|----------------|-----------------|--------------|--------------------|------------------|----------------------|----------------------------|-------------------|-----------------|-------------------------|----------------------|------------|--------|--------------|-------------------|----------|------------|------------|--------------|-----------------------|------------|-------------------|--------------|-------------|----------------------|-----------|-----------------|--|--|
| DEMAND ANALYSIS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.1 Use Measurements | .56 | .70 | .64 | .54 | .64 | .64 | .49 | .16 | .20 | .44 | .70 | .42 | .56 | .24 | .54 | .20 | .24 | .20 | .48 | .15 | .49 | .56 | .20 | .40 | .32 | .36 | .36 | .42 | .42 | | |
| 1.2 Characteristics of Users | .64 | .80 | .44 | .54 | .81 | .01 | .64 | .54 | .49 | .72 | .80 | .56 | .56 | .49 | .63 | .63 | .63 | .14 | .63 | .28 | .56 | .72 | .42 | .64 | .45 | .45 | .42 | .49 | .56 | | |
| 1.3 Individual Benefits | .48 | .60 | .42 | .42 | .48 | .54 | .48 | .42 | .48 | .48 | .60 | .42 | .42 | .24 | .42 | .54 | .42 | .24 | .36 | .24 | .42 | .54 | .42 | .42 | .30 | .30 | .48 | .36 | .42 | | |
| 1.4 Economic Benefits | .72 | .56 | .81 | .81 | .64 | .81 | .81 | .49 | .64 | .64 | .00 | .64 | .49 | .16 | .16 | .36 | .49 | .09 | .81 | .09 | .49 | .64 | .25 | .25 | .04 | .04 | .64 | .72 | .49 | | |
| 1.5 Predicting Demand | .36 | .50 | .60 | .60 | .50 | .70 | .40 | .54 | .27 | .54 | .60 | .45 | .60 | .21 | .54 | .24 | .42 | .24 | .45 | .21 | .45 | .50 | .24 | .48 | .14 | .28 | .27 | .56 | .45 | | |
| 1.6 Use Trend-Indicators | .56 | .70 | .64 | .56 | .64 | .64 | .49 | .36 | .28 | .49 | .70 | .42 | .56 | .24 | .54 | .20 | .24 | .20 | .48 | .15 | .49 | .56 | .20 | .40 | .32 | .36 | .35 | .54 | .42 | | |
| 1.7 Household Surveys | .64 | .80 | .45 | .56 | .81 | .81 | .64 | .54 | .49 | .72 | .80 | .56 | .56 | .49 | .63 | .63 | .63 | .14 | .63 | .28 | .56 | .72 | .42 | .64 | .45 | .45 | .42 | .56 | .56 | | |
| 1.8 Remote Sensing | .56 | .70 | .64 | .56 | .64 | .64 | .49 | .36 | .28 | .49 | .70 | .42 | .56 | .24 | .54 | .20 | .24 | .20 | .48 | .15 | .49 | .56 | .20 | .40 | .32 | .36 | .35 | .42 | .42 | | |
| SUPPLY ANALYSIS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.1 Inventory Methods | .14 | .63 | .24 | .24 | .24 | .42 | .21 | .21 | .18 | .35 | .56 | .24 | .21 | .48 | .81 | .12 | .30 | .24 | .28 | .12 | .24 | .28 | .12 | .36 | .40 | .40 | .27 | .30 | .35 | | |
| 2.2 Predicting Supply | .54 | .70 | .80 | .80 | .70 | .70 | .60 | .63 | .45 | .72 | .80 | .81 | .80 | .42 | .72 | .40 | .54 | .40 | .63 | .35 | .63 | .70 | .40 | .64 | .28 | .42 | .45 | .30 | .63 | | |

(Continued)

TABLE 1. PROBABLE WORTH (P x W) OF RESEARCH ACTIVITIES FOR 28 KINDS OF DISPERSED RECREATION

| RESEARCH ACTIVITIES | LEAVING FOR LEISURE | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------|----------------------------------|----------------|-----------------|--------------|--------------------|------------------|----------------------|----------------------------|-------------------|-----------------|-------------------------|----------------------|------------|--------|--------------|-------------------|--------|------------|------------|--------------|-----------------------|------------|-------------------|--------------|-------------|----------------------|-----------|-----------------|-----|
| | OFF ROAD VEHICLES (-SNOWMOBILES) | FISHING (BOAT) | FISHING (OTHER) | BOAT (POWER) | HUNTING (BIG GAME) | HORSEBACK RIDING | HUNTING (SMALL GAME) | WALKING (SHORT) (-2 MILES) | HIKING (+2 MILES) | BOAT (NONPOWER) | CAMPING (NONPEDESTRIAN) | CAMPING (PEDESTRIAN) | ROCK HOUND | CAVING | NATURE STUDY | SURVIVAL ORIENTED | SKIING | SNOWMOBILE | COLLECTING | SNOW CAMPING | SNOWSHOE - X-C SKIING | PICNICKING | MOUNTAIN CLIMBING | HANG GLIDING | PARACHUTING | CULTURAL EXPLORATION | BICYCLING | AVERAGE (P x W) | |
| 2.3 Public/Private Comp. | .36 | .01 | .25 | .25 | .64 | .81 | .81 | .49 | .49 | .64 | 1.0 | .64 | .49 | .16 | .16 | .36 | .49 | .09 | .81 | .09 | .49 | .64 | .25 | .25 | .04 | .04 | .64 | .64 | .36 |
| 2.4 Remote Sensing | .14 | .63 | .24 | .24 | .24 | .42 | .21 | .21 | .18 | .15 | .56 | .24 | .21 | .40 | .01 | .12 | .30 | .24 | .28 | .12 | .24 | .28 | .12 | .36 | .40 | .40 | .27 | .49 | .35 |
| <u>MANAGEMENT OF RESOURCES</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.1 Facility Designs | .81 | 1.0 | .0 | 1.0 | 1.0 | 1.0 | 1.0 | .81 | .81 | .81 | 1.0 | .81 | 1.0 | .49 | .09 | .64 | .36 | .64 | .81 | .49 | .81 | 1.0 | .64 | .64 | .49 | .49 | .81 | .48 | .72 |
| 3.2 Aesthetic Quality | .81 | .80 | .80 | .80 | .80 | .80 | .80 | .72 | .72 | .72 | .80 | .72 | .80 | .56 | .08 | .64 | .48 | .64 | .72 | .56 | .72 | .80 | .64 | .64 | .56 | .56 | .72 | .48 | .64 |
| 3.3 Vegetation/Soil Management | .16 | .72 | .72 | .72 | .48 | .56 | .56 | .40 | .40 | .64 | .56 | .56 | .32 | .08 | .16 | .32 | .32 | .32 | .16 | .40 | .32 | .48 | .40 | .16 | .16 | .16 | .40 | .16 | .40 |
| 3.4 Watershed Management | .16 | .72 | .72 | .72 | .48 | .56 | .56 | .40 | .40 | .64 | .56 | .56 | .32 | .08 | .16 | .16 | .16 | .08 | .56 | .16 | .64 | .56 | .40 | .08 | .08 | .24 | .16 | .40 | .40 |
| 3.5 Wildlife Management | .24 | .72 | .16 | .16 | .24 | .64 | .32 | .24 | .24 | .24 | .64 | .32 | .32 | .08 | .24 | .16 | .24 | .08 | .32 | .24 | .32 | .32 | .16 | .16 | .08 | .24 | .16 | .40 | .40 |
| 3.6 Timber Management | .32 | .80 | .24 | .32 | .32 | .72 | .40 | .40 | .32 | .32 | .72 | .40 | .48 | .16 | .32 | .32 | .32 | .16 | .40 | .32 | .40 | .40 | .16 | .16 | .16 | .40 | .16 | .40 | .40 |
| 3.7 Livestock Management | .24 | .48 | .06 | .06 | .06 | .36 | .12 | .12 | .06 | .06 | .36 | .12 | .12 | .06 | .06 | .06 | .06 | .06 | .12 | .06 | .12 | .12 | .06 | .06 | .12 | .12 | .06 | .12 | .12 |
| 3.8 Energy Management | .36 | .54 | .25 | .25 | .49 | .81 | .81 | .49 | .49 | .64 | .0 | .64 | .49 | .16 | .16 | .36 | .49 | .09 | .81 | .09 | .49 | .64 | .25 | .25 | .04 | .04 | .64 | .30 | .36 |

(Continued)

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|----------------------------------|---|----------------|-----------------|--------------|--------------------|------------------|----------------------|----------------------------|------------------------------------|-------------------------|----------------------|------------|--------|--------------|-------------------|----------|------------|------------|--------------|-----------------------|-----------|-------------------|--------------|-------------|----------------------|-----------|-----------------|-----|-----|
| 3.9 Space Technology | .14 | .61 | .24 | .24 | .48 | .21 | .21 | .21 | .30 | .50 | .21 | .24 | .21 | .40 | .45 | .12 | .30 | .24 | .28 | .12 | .24 | .28 | .12 | .36 | .40 | .40 | .27 | .42 | .28 |
| 3.10 Integrated Planning | .56 | .56 | .56 | .56 | .56 | .56 | .56 | .56 | .56 | .56 | .56 | .56 | .56 | .56 | .56 | .56 | .56 | .56 | .56 | .56 | .56 | .56 | .56 | .56 | .56 | .56 | .56 | .56 | .56 |
| 3.11 FRES System | .36 | .06 | .30 | .30 | .48 | .54 | .54 | .42 | .42 | .48 | .60 | .48 | .42 | .24 | .24 | .36 | .42 | .18 | .54 | .18 | .42 | .48 | .30 | .30 | .12 | .12 | .48 | .48 | .36 |
| <u>MANAGEMENT OF PEOPLE</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.1 Hazards | .06 | .36 | .30 | .30 | .30 | .30 | .30 | .30 | .30 | .30 | .30 | .30 | .30 | .30 | .30 | .12 | .12 | .06 | .30 | .30 | .06 | .06 | .06 | .42 | .42 | .06 | .12 | .24 | |
| 4.2 VIS and EE | .36 | .01 | .25 | .25 | .64 | .81 | .81 | .49 | .49 | .64 | 1.0 | .64 | .49 | .16 | .16 | .36 | .49 | .09 | .81 | .09 | .49 | .64 | .25 | .25 | .04 | .04 | .64 | .45 | .36 |
| 4.3 Handicapped | .56 | .40 | .72 | .72 | .72 | .25 | .42 | .48 | .24 | .15 | .30 | .40 | .40 | 1.0 | .04 | .72 | 1.0 | .56 | .24 | .80 | .08 | .04 | .80 | .01 | .01 | .01 | .30 | .40 | .30 |
| 4.4 Vandalism, Litter | .16 | 1.0 | .09 | .09 | .36 | .64 | .64 | .25 | .25 | .49 | 1.0 | .36 | .20 | .04 | .25 | .16 | .25 | .04 | .64 | .04 | .25 | .49 | .09 | .09 | .01 | .01 | .36 | .42 | .25 |
| 4.5 Social Conflicts | .36 | .07 | .25 | .25 | .56 | .45 | .63 | .49 | .36 | .64 | .80 | .64 | .56 | .02 | .04 | .24 | .28 | .03 | .72 | .09 | .35 | .48 | .15 | .05 | .02 | .02 | .24 | .36 | .30 |
| 4.6 Public Involvement | .32 | .64 | .32 | .32 | .64 | .40 | .24 | .24 | .32 | .64 | .64 | .64 | .64 | .32 | .16 | .32 | .32 | .32 | .72 | .24 | .64 | .64 | .24 | .24 | .08 | .08 | .40 | .48 | .40 |
| <u>MANAGEMENT OF INFORMATION</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.1 Annual Update | .36 | .50 | .60 | .60 | .50 | .70 | .40 | .54 | .27 | .54 | .60 | .45 | .60 | .21 | .54 | .24 | .42 | .24 | .45 | .21 | .45 | .50 | .24 | .48 | .14 | .28 | .27 | .56 | .45 |
| 5.2 Technology Transfer | .16 | .72 | .27 | .24 | .27 | .54 | .24 | .27 | .21 | .40 | .64 | .24 | .24 | .42 | .27 | .21 | .54 | .63 | .18 | .35 | .24 | .32 | .14 | .32 | .45 | .45 | .61 | .48 | .40 |

to a collection of difficulties, including: a marked diminution in the ability of the individual to enhance his social and psychological well-being; a secondary negative impact on worker productivity and job satisfaction; and a direct impact upon the annual multi-billion dollar tourism and recreation industry and its component facets.

A tremendous amount of the Nation's outdoor recreation now occurs as dispersed recreation. In 1974, for example, nearly two-thirds of the 193 million visitor days of recreation occurring on the National Forests were in dispersed-recreation environments. Similar situations prevail on other public and private lands. The Forest Service recently projected demand for dispersed camping by the year 2020 to increase from 55 to 108 percent, depending on assumptions about growth in population and economic activity.

Relating Research to Management Decisions

The first step in the process of relating research to management needs is to systematically flow-chart the steps required in any management decision involving one or more types of dispersed recreation. The steps converge at a decision point where a manager either decides to provide for and manage the activity or not. The blocks in the flow-chart identify the information required to help make the final decision. Research is required if new information is needed or old information needs to be improved (Fig. 1).

Required research can be assigned to one or more of the following four categories:

Lead Studies: Those considered most plausible and absolutely necessary for improving management information.

Optimizing Studies: Those that would optimize the value of results from lead studies.

Safeguard Studies: Those studies that are the most plausible as substitute technical approaches to the studies in the lead and optimizing categories. Safeguard studies constitute the essential protection of the program's outcome against the inherent research uncertainties in the outcome of the lead and optimizing studies.

Supplementary Studies: Those where the probability of a positive contribution is unknown. Some of these studies may be "high risk" or "far-out" applied research. Some may be long-range fundamental research.

Research Required

Demand

The following studies are needed to improve methods to assess and predict DR "demand" (consumption or participation).

Lead Studies:

- 1.1 Develop and test practical (cost effective) on-site methods for measuring DR use.
- 1.2 Determine characteristics of participants in various activities (including origins, preferences, socioeconomic characteristics, etc.); plus charac-

FIGURE 1

Flow-Chart of Major Questions and Information
Required in Management Decisions
About Dispersed Recreation (DR) Opportunities

For any DR activity or
group of activities . . .

1. What is the *Demand*?
 - Knowledge about current use and users.
 - Associated benefits and costs.
 - Predictions of future demands.
2. What is the *Supply*?
 - Inventory methods.
 - Public-private complementarity.
 - Predictions of future supply.
3. How do you manage the *Resource* to meet DR demand/supply relationships?
 - Facility design.
4. How do you manage the *User*?
 - Scenic quality considerations.
 - Integrating DR with other resource management activities.
 - User safety and education.
 - Vandalism and social conflict.
 - Public involvement.
5. How do you manage relevant *Information* to meet user and management needs?
 - Coordination between management and research.
 - Technology transfer.

Decision to provide or not
provide the DR activity

teristics of potential participants and their reasons for nonparticipation at this time.

1.3 Develop and apply methods for measuring individual benefits and values derived from DR activities.

1.4 Develop and apply methods for measuring economic benefits and values derived from DR activities.

1.5 Identify relations between DR use and: costs, user population characteristics, DR supply variables, and concentrated recreation supply variables.

Optimizing Studies:

1.6 Determine if trend indicators exist for updating DR use surveys (sales of equipment, traffic counts, sales of licenses, use of concentrated recreation areas, etc.).

Safeguard Studies:

1.7 Conduct surveys of general population (household type surveys) to determine DR participation and characteristics of users and potential users.

Supplementary Studies:

1.8 Examine possibilities of applying remote sensing and other photometric technology to monitor DR use patterns.

Supply

The following studies listed below are needed to improve methods to assess and predict supply.

Lead Studies:

- 2.1 Develop resource inventory methods for various DR activities.
- 2.2 Provide systems for predicting future supply of DR resources in public and private sectors.
- 2.3 Develop procedures for public-private complementarity in the supply of DR resources.

Supplementary Studies:

- 2.4 Apply remote sensing to supply-measurement problems.

The Resource

The following kinds of studies are necessary to improve methods to plan and manage the resource to meet DR demand/supply relationships.

Lead Studies:

- 3.1 Prepare and test facility designs that blend DR activities with one another and with natural environments.
- 3.2 Develop methods to assess the scenic quality of DR landscapes.
- 3.3 Determine how and to what degree DR can be integrated with vegetation and soil management.
- 3.4 Determine how and to what degree DR can be integrated with watershed management.
- 3.5 Determine how and to what degree DR can be integrated with wildlife management.
- 3.6 Determine how and to what degree DR can be integrated with timber management.

Optimizing Studies:

- 3.7 Determine how and to what degree DR can be integrated with livestock management on forest and rangelands.
- 3.8 Determine how and to what degree DR can be integrated with energy conservation.

Supplementary Studies:

- 3.9 Explore possibilities of using satellite imagery and computer mapping as aids in integrating DR with other natural resource management activities.
- 3.10 Develop an integrated planning system that incorporates DR with a variety of other resource management objectives.
- 3.11 Attempt to integrate DR systems with FRES (Forest Range Environment System).

People

Listed below are the research studies necessary to improve methods for managing people regarding DR environments.

Lead Studies:

- 4.1 Develop methods for identification and management of hazards in DR areas.
- 4.2 Devise ways to improve visitor information services (VIS), and enhance environmental education (EE) processes.
- 4.3 Improve DR opportunities for the handicapped.
- 4.4 Determine means to control vandalism, littering, and other inappropriate actions that deteriorate the natural beauty of DR environments.
- 4.5 Improve methods to reduce social conflicts among different types of DR users.
- 4.6 Develop methods that can be used quickly and inexpensively for obtaining public attitudes, suggestions, and alternatives regarding DR management issues.

Information

The following studies are needed to improve methods to manage DR information.

Lead Studies:

- 5.1 Hold annual workshops to transfer relevant technology to management; conduct program reviews of this document with DR managers; and plan for development and application tests related to new research technology.
- 5.2 Develop computer planning and management models, and develop procedures to diffuse DR technology to management by pilot tests; improve information systems for management decisions.

Probable Worth of Research Solutions

The probable worth (PW) to management of each of the 30 research activities listed in Table 1 varies among the 28 different kinds of DR studies just listed. PW values (Table 1) for this 30 x 28 dimensional matrix—30 research

activities x 28 kinds of DR—were determined by a technical planning committee of researchers and managers. The formula $PW = P \times W$ was used, where:

W = the expected worth of new research knowledge to management on a scale of .1 to 1.0:

- Worth to Management
- 1.0 - Extremely essential
 - 0.9 - Very essential
 - 0.7 - Essential
 - 0.5 - Desirable
 - 0.3 - Limited worth
 - 0.2 - Very limited worth
 - 0.1 - Extremely limited worth

P = the probability that productive research would yield results to resolve the associated problems within a 10-year period. This rating considered: difficulty of methods available for research, expected costs in relation to other research needs, and the likelihood that known or new approaches would yield meaningful, new information or methodology for management.

- Probability of Successful Completion
- 1.0 - Almost completely certain
 - 0.9 - Nearly certain
 - 0.7 - Reasonably probable, more likely than not
 - 0.5 - Fifty-fifty chance of total success
 - 0.3 - Questionable, doubtful
 - 0.2 - Very uncertain
 - 0.1 - Extremely remote, very faint chance

The criterion used to judge what constitutes productive research may appear to be found solely on the changes that a practical management-relevant product will be found. While this is an important measure, it does not always follow that research activities should be avoided if long-term time horizons seem evident before practical results will emerge. Those items with low PW scores (Table 1) should be examined carefully for their long term significance to both research and management before they are set aside.

References

- U. S. Department of Agriculture. 1975. A summary of the program and assessment for the Nation's renewable resources. 127 pp.