

MASTER PLAN FOR THE MANAGEMENT AND DEVELOPMENT OF THE WIND RIVER CANOPY RESEARCH FACILITY

May 10, 1995

TABLE OF CONTENTS

I. INTRODUCTION

- A. Goals of the Wind River Canopy Research Facility (WRCRF)
- B. Purposes of a Master Plan for the development of the WRCRF
- C. The Local Operations Committee and the Master Plan
- D. Development and Revision of the Master Plan
- E. Establishing Usage Limits for the WRCRF
- F. Resolution of Research Grievances

II. RESEARCH MANAGEMENT POLICY

- A. Goals of Research Management
- B. General Research Guidelines
- C. Proposal Review

III. RESEARCH REGULATIONS

- A. Collecting
- B. Location of Projects
- C. Marking Organisms and Plots
- D. Artificial Movement of Individuals or Genes within WRCRF
- E. Canopy Access
- F. Equipment

IV. ZONING OF WRCRF

- A. Low impact areas
- B. High impact areas
- C. Developed areas

V. HABITAT MANAGEMENT AT WRCRF

- A. Trails
- B. Buildings and Laboratories

VI. DATABASE MANAGEMENT

- A. Database management policy
- B. Collections at WRCRF
- C. WRCRF Library
- D. Aerial Photographs and Maps
- E. Lists and Keys of WRCRF Flora and Fauna
- F. Informing Researchers of Data Availability

G. Records of Research and Researchers at WRCRF

VII. POLICY FOR SUPPORT AND MANAGEMENT OF EDUCATIONAL USE OF WRCRF

- A. Courses (university and college level)
- B. Natural History Groups
- C. General Public

VIII. INTEGRATION OF WRCRF INTO SURROUNDINGS

- A. Relationship with the T.T. Munger Research Natural Area
- B. Relationships with Universities
- C. Relationships with Agencies
- D. Relationships with Local Communities

IX. LONG-TERM PLAN FOR FACILITIES DEVELOPMENT AT WRCRF

- A. General Policy
- B. Connection to Long-term Vision of Wind River
- C. Planned Facilities Development (1990-2000)
- D. Longer-term Facilities Development

X. TEN YEAR GOALS FOR WRCRF

Tables.

Glossary of abbreviations and definitions

MASTER PLAN FOR THE MANAGEMENT AND DEVELOPMENT OF THE WIND RIVER CANOPY RESEARCH FACILITY

I. INTRODUCTION

A. Goals and Objectives of the Wind River Canopy Research Facility (WRCRF)

The mission of the WRCRF, as defined by the National Scientific Advisory Committee (NSAC), is "to provide a facility, canopy access, and data/information for those wishing to better understand the forest canopy within the context of forest science and management in its broadest sense." This will be accomplished by expediting canopy research, fostering an environment for interaction and exchange of canopy information among scientists and to outside the scientific community, and providing a training area for those interested in canopy studies.

The management and development of WRCRF are directed by the organization's missions. In order of priority, the mission of WRCRF embraces the following objectives:

1. To promote and facilitate a productive mix of research and communication concerning forest canopies; emphasis will be on (but not restricted to) long-term research of old-growth forest ecology and application to management of stands of all ages;
2. To actively retain the natural organisms and processes of ecosystems, habitats, and indigenous genotypes for research, teaching, and posterity within the crane access site;
3. To the extent compatible with the foregoing objectives, to serve as a facility and facilitator for education of the general public on forest ecology and sustainable natural resource management.

B. Purposes of a Master Plan (MP) for the Development of WRCRF

The WRCRF has designed a comprehensive plan for the management and development of the field site. This plan is primarily needed to safeguard against deterioration of the natural resources due to researcher impacts and to preserve the long-term integrity of the site. We recognize, however, that to accomplish the objectives outlined above, inherent conflicts exist.

The goals of the MP are:

1. To provide an orderly and integrated plan for the development of station facilities to meet current and predicted needs;
2. To present research review and management policies, including zoning and land allocation criteria;
3. To fully acquaint partner institutions and other potential users with current and future research and education opportunities at WRCRF, while stimulating further suggestions for management and development.

C. The National Scientific Advisory Committee (NSAC), the Local Operations Committee (LOC), and the Master Plan (MP)

The NSAC and the LOC are appointed by and serve the WRCRF Project Leader. The charge of the NSAC is to establish and review the policy aspects of management and development of WRCRF. Within this mandate, a specific charge is to carry out on-going review and revision of the WRCRF MP. Members serve staggered 3-year terms.

The LOC is charged with interpreting and implementing the MP, reviewing specific proposals and granting approval for research activities, and bringing policy questions to the attention of the NSAC. Ex-officio members include the WRCRF site director, the Director, and the Chair of the NSAC.

D. Development and revision of the Master Plan

The first MP was adopted in April, 1995, and was the result of discussions and revisions by NSAC and LOC members, WRCRF staff, and outside reviewers. A basis of the MP was initially provided by the LOC, revised with input from the NSAC, and recommended for adoption by the NSAC.

Periodic revisions of the WRCRF MP will occur. The Site Manager and members of the LOC can present draft revisions to the NSAC for consideration and approval during their regular meetings. Copies of the most recent version of the MP will be distributed to all participating agencies and to researchers and others upon request.

E. Establishing Usage Limits for the WRCRF

It is our goal to support the maximum amount of research and education possible without damaging the resource base of the crane site. Because canopy studies are attracting more scientific and public attention, the intent is to provide for maximum use of WRCRF up to some usage limit. There are no data on how to set such a limit on a canopy-access site; the type and impact of researchers vary in unforeseeable ways. Natural variation in abundance and populations of canopy organisms are still too poorly understood to make biological impact assessment feasible. The natural long-term fluctuations of canopy biota are almost totally unstudied.

It is imperative that a provisional planning limit be established so that future growth will be controlled. The initial usage limit set by this MP is provisional and subject to regular review.

Although we will strive for "the greatest good for the greatest number of researchers", we recognize that there may be some extraordinary cases of proposed research which may have a negative impact on site integrity but which show strong promise of important research results. These cases must be reviewed by both the NSAC and the LOC to determine if the potential output warrants the deterioration of site integrity and quality. Permission for destructive sampling may be granted in certain cases.

An additional consideration is mitigation of user impact. For example, installation of boardwalks and sidewalks may decrease trail erosion and soil compaction. It may create, however, other

problems by altering microclimate and therefore influence processes of interest for researchers. It is crucial that the LOC review mitigation procedures before they are implemented.

Approved and scheduled research has top priority over any other use. Any other use (e.g., education, fund-raising) must be scheduled around research. Non-research visitors will be restricted to the road and improved trails in designated areas and accompanied by approved leaders. The limits for such visitors will be regularly reviewed by the LOC.

F. Resolution of Research Grievances

We recognize the best way to resolve grievances is to avoid them, but from time to time, disagreements will arise. Such problems can normally be resolved amicably or through informal mediation by the Site Director. On rare occasions, however, it may be of such a serious nature that a more formal procedure is needed to ensure due process and fairness. In such circumstances, the LOC (and, when necessary, the Project Leader) will review the case and recommend a resolution, using a procedure outlined in "Procedure for Resolution of Research Grievances" available upon request from the Site Director. This document will be posted on information bulletin boards at the site and visitors will be informed of its existence.

II. RESEARCH MANAGEMENT POLICY

A. Goals of Research Management

1. To provide research support and facilities for resident and visiting researchers in the WRCRF;
2. to provide for the orderly management of research projects such that the unintended lasting effects on the habitats are minimized and conflicts among projects are avoided;
3. to promote the integration and extension of research at WRCRF into interpretation, educational, and management activities of participating agencies and institutions;
4. to provide a communication network among canopy research and education projects at other institutions, including such research support efforts as maintaining a library, citations database, canopy organism collections, and repository for canopy datasets.

B. General Research Guidelines

A broad range of research projects is considered appropriate to WRCRF, and will be allowed under the following general guidelines:

1. Approval. Researchers must attain approval from the LOC of the WRCRF before submitting proposals (see section II.C).
2. Basis of evaluation. Proposals for work at WRCRF are evaluated primarily according to the quality, appropriateness, and impact of the proposed work on the forest and on existing research projects. Proposals for work which will require large-scale manipulation or long-term assignation

of land will also be reviewed for compatibility with the long-term development of WRCRF. Coordination and overlap of projects will also be considered.

3. Informing users of the on-site research regulations and facilities. Detailed research guidelines and regulations will be provided to researchers before they arrive (see Appendix). These are part of the MP, and are subject to regular review by the LOC. Researchers will also be informed of the facilities, equipment, available data, and supplies available from the WRCRF (Appendix).

4. Reporting. Researchers are required to file a brief project description before they leave WRCRF, and to comply with the WRCRF data management policy or else permission to renew facility use would be withheld (see section VII.A). Upon arrival, researchers will fill out a brief report form that describes the objectives and methods used. All researchers must submit an annual report (2-5 pages) containing information on the project objectives, methods, results, and conclusions. Investigators will send the WRCRF office two copies of all publications based on work at WRCRF, and to acknowledge WRCRF assistance in their publications. Researchers who use the WRCRF for a major research effort are expected attend the annual meeting at their expense and be prepared to offer an oral presentation on their research. This meeting will serve as an interactive forum to exchange results and plan future research.

5. Permits. No special permits are necessary for approved research, but location and amounts of approved destructive sampling must be reported to the Site Director. Researchers are responsible for obtaining any other required permits from agencies or institutions.

C. Proposal Review

Because of the small area at the crane access site and the long-term nature of the research facility, all research projects are subject to review for logistics and to determine if the research concept and design justify the proposed impact on WRCRF.

Proposals that involve any research activities that have potential impact on the stand will be sent to the LOC and the Site Director with a request for review and advice, any of whom may request outside reviews. Lower impact proposals will be reviewed by the Site Director of WRCRF. If he/she feels that some aspect requires outside review, that proposal will be sent to the LOC. If approval is granted, the written notification of approval will specify details regarding research activities (e.g., which habitat is approved for manipulation, area and duration of site assignment).

A. Collecting

The goal for the policy on collecting organisms is to maximize research opportunities while ensuring against damage to WRCRF populations. Any collecting at the site must satisfy the following general criteria: 1) the need for specimens is well-justified by a research proposal submitted to WRCRF; 2) the specimens cannot reasonably be obtained from outside WRCRF; and 3) evidence indicates that the level of proposed collecting would not damage the WRCRF populations.

The following specific policies also apply to requests for collecting at WRCRF:

1. General collecting is the collection of specimens which are not directly required for an approved research project. Such collecting is not permitted at WRCRF.

2. Deposition of specimens. Representative material from all collections will be deposited in a major public access collection (i.e., a facility with permanent curatorship and a loan policy). The collector must provide WRCRF with complete information on these specimens, including origin and deposition.

3. Seeds or seedlings: Collection of seeds or seedlings is destructive sampling with high potential impact for many plant species. The policy is as follows:

a. Fruits and seeds falling on the ground inside trail margins, in Developed Areas, and outside the T.T. Munger RNA border can be freely collected for approved research projects, as can seedlings growing in these sites. For collecting in other sites, specific permission must be obtained from the Site Director.

b. Species which are known to be rare, or have extremely limited reproductive output, may be declared off-limits for collecting. This decision will be made by the Site Director, with input from the LOC if appropriate.

c. Species that are currently under demographic study cannot be collected in or near the study area without the consent of the principal investigator (PI).

4. Other Plant Materials. Both small-scale, destructive sampling of plants (pieces of branches, a few inflorescences, etc.) and larger-scale destructive sampling (resulting in the death of individual plants) requires special approval from the LOC.

5. Invertebrates and microorganisms. Collecting that is part of an approved research project does not usually require special approval. Courses are allowed to collect representative specimens for teaching purposes, except of proscribed species, with live capture and release always preferred.

6. Vertebrates. Collection of vertebrates requires LOC review. Exceptions may be made by the Site Director, for proposals for limited collecting of species which appear to be very abundant. Collection of a single voucher specimen for species previously unknown from WRCRF can also be approved by the Site Director.

B. Location of Projects

Projects will be sited according to the zoning plan for WRCRF and compatibility with on-going projects. Long-term plots are those defined as: a) those lasting 6 months or more, or b) those still allocated to a project after the researcher has left the station. New long-term or exclusive use plots will be located 15 m from trails. Applications for long-term allocation of plots > 25 sq m will be sent to the LOC for review. Siting of long-term plots < 25 sq m. is done by the Site Manager in accordance with the zoning criteria. A file of long-term plot locations will be maintained to avoid overlap by different projects. Researchers are responsible for clearly marking boundaries of any

plots in the field. Protocols for establishing plots on the forest floor will be applied to the establishment of aerial and arboreal (3-D) plots.

Approval for long-term plots will include a specific time span for the plot allocation as well as any WRCRF-approved limitations on access by other researchers. Requests for such limitations will be carefully considered in the spirit of minimizing constraints on the research community. When other researchers request access to a long-term plot for activities not restricted by WRCRF-approved access limitations, WRCRF will forward the request to the PI managing the primary research in the plot to determine if compatibility usage arrangements can be worked out directly by the interested parties. If the PI finds the request incompatible with the primary research in the plot, he/she must submit an explanation in writing to WRCRF for the incompatibility. In this event, WRCRF will decide whether to approve or deny the additional use requested.

C. Marking Organisms and Plots

1. Plants and Plots. When a project design requires that plants or sites not be affected/tampered with by others, the researcher must clearly mark them. Visitors to WRCRF will be warned not to touch marked plants and to stay out of clearly demarcated plots. Researchers will be warned not to mark plots or plants which occur within trails, since trail maintenance takes precedence over such markers. Prior approval is needed for a researcher to leave markers in WRCRF. Such markers must show the researcher's name or must be clearly identifiable as belonging to a specific project. If the researcher fails to return to continue the study as planned, the markers will be removed, and the labor costs will be charged to the researcher.

2. Animals. Researchers should consult with the Site Director before marking animals. In all cases of permanent or long-lasting markers, a list of the marked individuals should be entered into the WRCRF database.

D. Artificial Movement of Individuals or Genes within WRCRF

Experimental plantings in forest sites must be removed at the end of an experiment. Such experimental plants should be removed before flowering, or all flowers and fruits must be bagged to prevent escape of pollen or seeds.

E. Canopy Access

Canopy access is allowed only for those researchers who have completed safety training. Individuals will be allowed to climb trees with other techniques (e.g., single-rope techniques) at the discretion of the Site Director (Safety and Operations Appendices).

F. Equipment

Use of WRCRF equipment will be regulated by the Site Director. In general, researchers will be expected to provide all of their own equipment and supplies. Safety equipment for routine work in the gondola (full body harness and hardhat) will be provided by the WRCRF. Researchers will be responsible for maintenance and responsibility of WRCRF equipment.

V. ZONING OF THE WRCRF

A. Low impact projects

These areas are available for all research except for major habitat alteration at a small scale (small long-term plots and small manipulations are approved and sited by the Site Director).

B. High impact projects

These areas may be allocated to projects that will have a potentially high or obvious impact on the site and subsequent recovery. Sites within this zoning category are ranked such that higher-ranking sites are allocated for manipulation only when lower-ranked sites are clearly demonstrated inappropriate for the project in question.

C. Developed areas (laboratory, crane shelter, trails)

These areas are the sites where buildings exist or are planned in the MP. In these areas, research is encouraged, but with the understanding by the researcher that site maintenance and development and human safety take precedence over research needs.

VI. HABITAT MANAGEMENT AT WRCRF

A. Trails

The WRCRF crew will maintain trails as needed. Researchers may not mark plants or plots that fall within 1.5 m of these trails. Trails should be used to reduce impact on the ground.

B. Buildings and Laboratories

The WRCRF will maintain all associated buildings and laboratories, and will assign space and assess fees as in Appendix.

VII. DATABASE MANAGEMENT

With a fast-growing base of information, a unified strategy is required for managing datasets and making them easily available to researchers.

A. Database management policy

1. General Policy: Data management and archiving will be overseen to maintain as complete, accurate, and accessible a set of information as possible for users.

2. Objectives:

- a) to create a secure archive of information about WRCRF;
- b) to promote the coordinated use of complementary data sets;
- c) to enhance the value of WRCRF as a research site.

3. Contents of the archive: The archive, which will be maintained at WRCRF, will contain information on all research projects carried out at WRCRF. Some of this information will be provided by staff scientists and technicians of the WRCRF; other data will be provided by individual researchers:

a) data deposited in the archive for all projects will include the PI's name, title, keywords, abstract of project.

b) for certain projects involving data sets of broad utility or special interest, more detailed information will be included, for example,

- information on temporal patterns (e.g., multi-year records and data on cyclic or seasonal phenomena, such as phenology),
- spatially referenced physical, chemical, and biological data;
- information on marked individuals of long-lived organisms;
- data on rare or endangered species.

4. Implementation: WRCRF recognizes the interest of researchers to control the use of data that they have collected. However, institutional and societal commitments of funds, facilities, and site protection require the eventual accessibility of the data to users and protection from unauthorized use.

a) A condition of working at WRCRF is to provide the following: a research proposal, a brief activity report at the end of each stay, and fully-documented data sets.

b) WRCRF will safeguard data from release to persons not specifically authorized by the PI, for a period of five years after the data are deposited. This protection can be renewed each five years on written request of the PI. The data will be made generally available in the absence of such a written request.

c) In the event of a PI's death, his/her data will be made generally available in the absence of contrary instructions.

d) In the case of projects already underway at the time this policy is implemented, the policy is retroactive.

B. Collections at WRCRF

Because of the lack of adequate facilities and staff needed for curating, animal, plant, and microbial collections will not be maintained at WRCRF until such support is obtained in the long term. Those working on taxonomic groups will be encouraged to donate vouchers to the appropriate public collection and to identify the location of those collections.

C. WRCRF Library

The purpose of the WRCRF library is to: 1) make published information about WRCRF available, and 2) to maintain a minimal collection of basic reference works on canopy science. A major goal is to minimize holdings at WRCRF by taking maximum advantages of existing regional and local libraries, and by efficient use of remote-access informational databases.

D. Aerial Photographs and Maps

A complete set of available aerial photographs and maps of the WRCRF area will be filed at the site headquarters.

E. Lists and Keys of WRCRF Flora and Fauna

A file is maintained of the lists and keys available for groups of WRCRF organisms. Copies for researchers are available upon request.

F. Informing Researchers of Data Availability

A listing of the extant reference data and other materials for WRCRF will be regularly updated and made available to researchers and course leaders on request.

G. Records of Research and Researchers at WRCRF

Incoming researchers will be asked to provide information on their project upon arrival: name, date, institution, title of project, source of funding, and duration. These data will be used to update a listing of current research activity at WRCRF. Project listings will be key-worded (by taxon and research field), for retrieval by subject. Before researchers leave WRCRF, they are requested to fill out a project report form for each research project they carried out during their stay.

VIII. POLICY FOR SUPPORT AND MANAGEMENT OF EDUCATIONAL USE OF WRCRF

A. Courses (university and college level)

Approved and scheduled scientific use of the WRCRF takes top priority. Educational and other uses will be allowed at the site as time and personnel allow.

B. Natural History Groups

Within the constraints of available space after research and educational demands have been filled, WRCRF may accommodate overnight natural history visitors as a means of supporting its mission of research, education, and the wise use of resources. Principal goals are to promote public education and awareness, generate good will, and encourage positive interactions with the biological station and its scientists. To minimize the impact of these groups at the crane access site, these visitors shall not leave the trails, respect the privacy of the residents, and give wide berth to resident housing.

C. General Public

Visits by school groups, members of neighboring communities, and tourists will be accommodated as time and resources permit. This must be accomplished without disrupting the primary mission of the station.

IX. INTEGRATION OF WRCRF INTO SURROUNDINGS

A. Relationship with the T.T. Munger Research Natural Area

The crane access site is located within the T.T. Munger Research Natural Area (RNA), which was established in 1934 to represent old-growth Douglas-fir/Western hemlock forest stands which originally covered many valleys in western Washington's Cascade Range. An RNA is defined as "a naturally occurring physical or biological unit where natural conditions are maintained insofar as possible." The objectives for establishing RNAs are: 1) preservation of examples of all significant natural ecosystems for comparison with those influenced by humans; 2) provision of educational research areas for ecological and environmental studies; and 3) preservation of gene pools for typical and rare and endangered species. The WRCRF will carry out activities in a manner consistent with the goals and spirit of the RNA.

B. Relationship with Universities

Close working relationships with associated and regional universities are important for a vibrant academic atmosphere at the WRCRF. Researchers will find a pool of technical and academic help in graduate students of the local universities and colleges. Schedules of seminar series at WRCRF will be exchanged with regional universities. Annual reports of the WRCRF's activities will be circulated to interested faculties and administrators. Representatives will be invited to the annual meeting.

C. Relationship with Agencies

Good working relationships with the U.S. Forest Service, the U.S. Park Service, the Bureau of Land Management, and other agencies will be fostered by having representatives serve on regulating committees, sharing databases as needed, participation at the annual meeting, and keeping representatives abreast of developments, problems, and progress through the Site Director.

D. Relationship with Local Communities

Local communities will be kept aware of WRCRF activities through regular meetings and written updates by the Site Director. An annual community "open house" is proposed with the intent of improving public awareness of the WRCRF's projects.

X. LONG-TERM PLAN FOR FACILITIES DEVELOPMENT AT WRCRF

A. General Policy

The long-range plan for physical plant development is to provide working and living space for the carrying capacity of the WRCRF. Housing should include single-person rooms (long-term residents); dorm space (short-term residents); and family housing. Laboratory and office space will be provided as available.

Facilities development will be step-wise, with the construction of new facilities timed to meet the demands of projected future use patterns. An important concern is to avoid over-building, adding maintenance costs which are not justified by station use. At the same time, new facilities can stimulate future increased use and make new lines of research possible.

As a standing policy, WRCRF will comply with regulations to make all facilities accessible to persons with physical disabilities.

B. Connection to Long-term Vision of Wind River

We view the WRCRF as a key element in the development of the Wind River Learning Center, a larger facility for science and education in the Wind River District of the Gifford Pinchot National Forest. WRCRF staff will cooperate with efforts to promote a sense of stewardship for the land and resources of the area by increasing our understanding of the ecosystem and disseminating research results to scientists, educators, and the general public.

C. Planned Facilities Development (1990-2000)

1. Trails and elevated walkways; 2. Equipment room; 3. Computer facility; 4. Laboratory facilities; 5. Library.

D. Longer-term Facilities Development

1. Interpretive Educational kiosk; 2. Herbarium, Vertebrate and Invertebrate Collections; 3. Family housing 4. Auditorium.

XI. TEN YEAR GOALS FOR WRCRF

Activities at the WRCRF should:

1. foster high-quality research, as evidenced by research publications in the primary scientific literature and synthetic works;
2. contribute to an active and collaborative network among researchers interested in forest canopy and ecosystem studies and management through its annual meetings and communications to the scientific community;

3. create knowledge that may enhance management of forests to supply societal needs;
4. direct research results to interpreters and communicators so that the general public can gain rapid access to new knowledge about this forest ecosystem.
5. serve as a catalyst for other activities on the district, particularly the Wind River Learning Center;
6. establish protocols for coordinated sampling, mapping, and monitoring the forest canopy;
7. increase our understanding of how to reduce or mitigate negative impacts of research activities in the canopy and on the forest floor;

Table 1. Glossary of Abbreviations and Definitions:

LOC: Local Operations Committee

MP: Master Plan of the Wind River Canopy Research Facility

NSAC: National Science Advisory Committee

PI: Principal Investigator

RNA: Research Natural Area

USFS: United States Forest Service

WRCRF: Wind River Canopy Research Facility