

NUMBER: WCC-21

TITLE: Revegetation and Stabilization of Deteriorated and Altered Lands

DURATION: October 1, 1999 through September 30, 2002.

DESCRIPTION AND JUSTIFICATION:

Natural and human-altered environments in the western United States are impacted by disturbances that result in the loss of topsoil, introduction of contaminants, reduction in productivity, and/or loss in structural and functional components of the affected and surrounding ecosystems. These disturbances may result from natural causes such as fire, floods, drought and wind storms, or from human-related causes associated with use or extraction of natural resources such as mineral extraction, cropping practices, timber harvesting, livestock grazing, pipeline development, roads, power corridors, and waste disposal. Disturbances occur on a wide range of ecosystems ranging from arid rangelands to mesic forests to alpine and arctic tundra. Severe disturbances have allowed the creation and expansion of many invasive non-indigenous species (weedy species) in many ecosystems leading to near monocultures of these species. Some ecosystems are capable of recovering after disturbance through natural successional processes, but some disturbances are so severe or have occurred on fragile ecosystems that require intervention to restore or rehabilitate them, retain quality soils and to reestablish natural ecological processes.

WCC-21 was conceived initially to focus on mined-land reclamation, but was expanded to include stabilization and reclamation of all types of land disturbances. The committee has emphasized the application of reclamation technology to the restoration and sustainability of ecosystems and biodiversity. The main goal of reclamation is to protect the soil resource by reducing wind and water erosion while simultaneously reducing air and water pollution. The current focus reflects three of the four Environment and Natural Resources research priorities identified by Western AES Directors in 1994. Currently, federal land management agencies are emphasizing the use of native plants in revegetation, however, this is hindered both by a lack of native seed availability and by technology on how to establish and maintain these native species. WCC-21 is participating in the development of a revegetation decision support system to assist land managers in selecting appropriate species for sites and in using the appropriate establishment methods.

The committee compiles information yearly regarding completed and current research efforts by agencies represented on the committee. Each member submits to the secretary an annual report of research and publications. These annual reports are compiled and distributed to the agencies. A poster depicting current research is maintained by the vice-chairperson and made available to members upon request for presentation at regional and national meetings of professionals involved in revegetation and stabilization of lands. Two subcommittees have been formed for the following purpose: (1) develop symposia for professionals regarding revegetation and reclamation technology with emphasis on new science and technology developments; and (2) develop and maintain a list of available reference material generated by its members and educational materials for stabilization and revegetation of deteriorated and altered lands. The committee has developed a home page (<http://140.218.193.135/wcc21>) on the Internet's World Wide Web to highlight the members, their areas of expertise, and their current research areas. Included on the home page is a listing of recent (1990-present) publications that were written by member institutions/ organizations on the subject of revegetation and reclamation.

OBJECTIVES: The objectives of WCC-21 are as follows:

- 1) Promote interdisciplinary approaches to the stabilization and revegetation, and where appropriate to the restoration of biodiversity and ecological function, of altered and disturbed lands using WCC-21 member expertise in the fields of soil science, hydrology, plant science, ecology, rangeland sciences, geomorphology, forest science, wildlife biology, and animal science.
- 2) Conduct field tours of altered/deteriorated and revegetated lands to review technology, make recommendations and broaden experience of WCC-21 participants and hosts.
- 3) Promote technology development and transfer on all aspects of revegetation and reclamation of lands in the western U.S.
- 4) Disseminate information about WCC-21 activities through a web site, poster presentation at meetings, and workshops of professional societies and related associations.
- 5) Discuss current issues, determine research needs, and coordinate future research activities relating to the area of revegetation and reclamation.
- 6) Identify resources available through the committee that can be used for instruction through the inclusion of materials on the WCC-21 home page.

EXPECTED OUTCOMES:

Activities proposed by the WCC-21 committee involve the following: prepare an annual report of project summaries and publications of participating institutions; coordinate and participate in annual field tours of innovative technologies; maintain a web site home page that lists WCC-21 past, present and future activities and contains links to sites of related interest; develop a list of research needs and priorities involving revegetation and land stabilization; sponsor or co-sponsor symposia or technical sessions on identified key issues/topics at regional, national and possibly international professional meetings (e.g., American Society for Surface Mining and Reclamation, Billings Reclamation Symposium, Society for Ecological Restoration, Society for Range Management, Soil Science Society of America); prepare guidelines on native species seed collection, processing and documentation; update and present a WCC-21 poster at professional meetings documenting the committee's activities and available information; provide a list of instructional materials available from the committee; produce a CD slide set for instruction use; maintain a mix of committee members that represent a wide variety of disciplines involved with revegetation and land stabilization.

EDUCATIONAL PLAN:

WCC-21 works closely with university extension and federal and state technology transfer offices to distribute results from work conducted by the contributing agencies. The committee publishes numerous journal articles, bulletins and other sources of information on the revegetation and stabilization of deteriorated and alter lands that will be compiled into source lists for distribution. These lists will be updated regularly and sent to state extension and federal land management regional and state offices for dissemination to their personnel. Participation of WCC-21 members at regional, national and international conferences and committees on technology transfer and strategic planning also results in educating both professionals and the public on our research and extension activities.

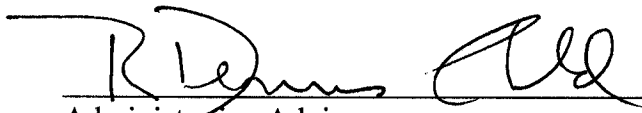
PARTICIPANTS:

Member's Name	Agency/Institution	Area of Expertise	Appointment %Res/%Ext/%Teach
Edith B. Allen	University of California, Riverside	Restoration & Mycorrhizal Ecology	30/70/0
Ray W. Brown	USDA-FS, Rocky Mountain Research Station, Logan, UT	Plant Physiological Ecologist	100/0/0
Jeanne C. Chambers	USDA-FS, Rocky Mountain Research Station, Reno, NV	Restoration Ecology & Riparian Ecology	100/0/0
R. Dennis Child	Colorado State University, Ft Collins	Administrative Advisor	100% Admin
James P. Dobrowolski	Utah State University, Logan	Surface Hydrology & Watershed Restor/Mngt	50/0/50
Stuart P. Hardegree	USDA-ARS, NW Watershed Research Center, Boise, ID	Plant Physiologist/Plant & Soil Water Relations	100/0/0
Dot J. Helm	Agricultural/Forestry Experiment Station, University of Alaska, Fairbanks	Revegetation Ecology & Succession	100/0/0
Larry K. Holzworth	USDA-NRCS, Plant Materials Center, Bozeman, MT	Plant Materials & Revegetation	10/90/0
Roy Jemison	USDA-FS, Rocky Mountain Research Station, Albuquerque, NM	Watershed Management & Wetland Restoration	100/0/0
W.C. Lindemann	New Mexico State University, Las Cruces	Soil Microbiology	65/0/35
Stephen Monsen	USDA-FS, Rocky Mountain Research Station, Provo, UT	Restoration & Plant Ecology	100/0/0
David A. Pyke	USGS Forest & Rangeland Ecosystem Science Center, Corvallis, OR	Plant Population Ecology & Rangeland Restoration	100/0/0
Edward F. Redente	Colorado State University, Fort Collins	Reclamation & Plant Ecology	60/0/40
Bruce A. Roundy	Brigham Young University, Provo, UT	Range Management	25/0/25 50% Admin
Berlie L. Schmidt	USDA-CSREES, Washington, DC	CSREES Representative	100% Admin
Gerald E. Schuman	USDA-ARS, High Plains Grasslands Research Station, Cheyenne, WY	Soil Chemistry/Biology & Land Reclamation	100/0/0
Terrence J. Toy	University of Denver, CO	Disturbed Land/ Geomorphology	50/0/50
George F. Vance	University of Wyoming, Laramie	Soil/Environ Chemistry	50/0/50
Steven D. Warren	Center for Ecological Management of Military Lands, Colorado State University	Watershed management	100/0/0
Steve Whisenant	Texas A&M University, College Station	Ecological Restoration	40/0/60
Dave Williams	University of Arizona, Tucson	Plant Physiological and Non-native Plant Ecology	40/0/60
Ben Zamora	Washington State University, Pullman	Synecology/Revegetation	25/0/75
		TOTAL	13.45/1.6/4.45

OPERATIONAL STRUCTURE:

The WCC-21 executive committee is comprised of a past-chair, chair, vice-chair and secretary. An election is held each year at the annual business meeting to select an incoming secretary whose responsibilities begin after the annual meeting. Each officer is promoted up a level from secretary to vice-chair to chair to past-chair. The responsibilities of the officers include: chair - organizing and presiding over the annual business meeting, preparing the renewal project; vice-chair - updating and distributing the WCC-21 poster, coordinating the activities of the WCC-21 subcommittees; secretary - compiling and distributing the annual report, recording and distributing the annual business meeting minutes, maintaining the WCC-21 membership list. Two WCC-21 subcommittees are: Technical Sessions for developing symposia for updating professionals regarding reclamation and revegetation technology and Educational Materials for developing a list of available educational materials for teaching revegetation techniques. The subcommittees are developed and terminated on an as-needed-basis.

SIGNATURES:



Administrative Advisor

11 March 99
Date

Chair, Western Director's Association

Date

ATTACHMENTS

I. ACCOMPLISHMENTS:

1. Compiled and distributed annual reports in 1996 through 1998.
2. Held annual meetings at Butte, Montana (1996), Cooke City, Montana (1997), and Bend, Oregon (1998).
3. Arranged and conducted field tours associated with each annual meeting.
4. Reviewed manuscripts, study plans and annual current research findings of committee members.
5. Organized publication records (1990-present) from member institutions/organizations for inclusion on home page.
6. Established and maintained a web site (<http://140.218.193.135/wcc21>).
7. Committee members presented the WCC-21 poster at: 1997 Society for Range Management meetings and 1998 AAAS/Western Society of Soil Science joint meeting at Utah State University.
8. WCC-21 committee member was an invited keynote speaker at the International Conference on the Remediation and Management of Degraded Lands, Hong Kong, Dec. 3-6, 1996.
9. WCC-21 committee member was one of six people from 4 countries that were invited to present a short course to scientists, industry, and government staff on the "Restoration and Management of Mined Lands: Principles and Practices in Guangzhou, PRC, December 8-13, 1996.
10. WCC-21 members co-sponsored, organized, and contributed presentations and papers to a symposium on use of native plants held at the Society for Range Management 50th annual meeting in Rapid City, South Dakota, Feb 16-21, 1997. The proceedings of this was published by the Forest Service: Shaw, Nancy L.; Roundy, Bruce A.. comps. 1997. Proceedings: Using seeds of native species on rangelands; 1997 February 16-21; Rapid City, SD. Gen. Tech. Rep. INT-GTR-372. Ogden, UT: U. S. Department of Agriculture, Forest Service, Intermountain Research Station.
11. WCC-21 committee member received the 1998 Reclamation Researcher of the Year award from the American Society of Surface Mining and Reclamation.
12. WCC-21 committee member was selected as a fellow in the Society for Range Management in 1998.
13. WCC-21 committee member invited to organize technical session at International Rangeland Congress on "Rehabilitation of Mined Rangelands" in Townsville, Australia in 1999.
14. WCC-21 committee members sponsored, organized, and contributed presentations and papers to a symposium entitled "Revegetation using native species" held on November 14, 1997 at the Society for Ecological Restoration International Conference in Fort Lauderdale, Florida. The proceedings of this symposium will be published by the Forest Service in early 1999.

II. MINUTES AND REPORTS:

Attached