

ERDP's **SEMP** Postings

Summer 2000
Number 1

Highlights of the SEMP Host Site: Fort Benning, GA



Fort Benning, the U.S. Army Infantry Center, is located in Southwestern Georgia and is approximately one hundred miles south of Atlanta. The installation also extends

westward across the Chattahoochee River into Alabama. Fort Benning is a 187,000-acre force projection platform that supports the largest hybrid mix of deployable and non-deployable units within the Army. Slightly over 50% of the installation's units must be combat-ready and deployable at a moment's notice. This places tremendous responsibilities on the installation to provide both facilities and military training to maintain combat readiness. The Fort Benning environmental organization, in turn, must support the military mission as well as ensure the protection of the installation's valuable natural resources.

The installation's natural resources are a result of three ecosystems that are along the Piedmont/Southeast Coastal Plain Fall and the sand hills region that extends from Alabama to North Carolina. At Fort Benning, one can find the southern most extent of many northern species and the northern extent of many southern species. Like the Benning military composition, the environmental office is managing a complex ecological hybrid that is comprised of several interfaces. We have been working for a number of years on developing an appropriate land management strategy that uses an ecosystem approach to support both our military and environmental objectives. The installation, military mission, environmental conditions and commitment to ecosystem management make it an ideal location to host the SERDP Ecosystem Management Project (SEMP).

As the SEMP host site, the day-to-day environmental operations continue throughout the year even as researchers visit the installation. They are coming from all parts of the country and bring a wealth of experience and knowledge to the installation. They are looking for the best sites to set up, sample and monitor their research initiatives. The cooperation and coordination from the research individuals and

groups has been exceptional. The researchers are competing for some of the same ground that the military units need for their training. To date we have had no conflicts between use requirements and do not expect any in the future.

During their stay at Benning, the researchers provide valuable information to the environmental staff that is very useful in meeting their day-to-day responsibilities. In order to support our long-term training requirements, it is imperative that the installation better understand the ecological processes and the relationships between the training activities and these processes. SEMP has the ability to not only understand these processes, but also to provide a unique opportunity to export this understanding outside the installation boundary. The SEMP effort can provide a model for combining science with ecosystem management for other land managers, public or private. There are high expectations for SEMP to provide valuable ecosystem information and tools. These will improve the management of the land that must be protected as well as ensure long-term sustenance of critical military training and land use.



John Brent

John Brent, Chief of the Environmental Division, is one of the SEMP POCs at Fort Benning. John received his undergraduate degree in Landscape Architecture from the Pennsylvania State University. After several years in private practice he returned to the University of Virginia for a Masters Degree in Landscape Architecture. This led him to a position at the Philadelphia Naval Engineering Command in the Natural Resources Branch and then to a position in the Civil Engineering Branch. After five years, he moved to Grafenwoehr, Germany, as the Natural Resources manager for the Seventh Army Training Command. Involvement with a wide variety of sensitive environmental issues led to the position as Chief of the Environmental Office, Combat Maneuver Training Center, Hohenfels, Germany. After attending the Army Management Staff College in 1993, he accepted a position as Chief of the Environmental Management Division, Fort Benning, Georgia.

Upcoming Events

Ecological Modeling Effectiveness Workshop

October 24-26, 2000
Oak Ridge, TN

This workshop, focused on improving management use of ecological modeling, is sponsored by SERDP, U.S. Forest Service, Army Research Office and U.S. Army Corps of Engineers. For more information, please contact Virginia Dale at (423) 576-8043 or via e-mail at Vhd@ornl.com.

American Society of Agronomy Meeting

November 5-9, 2000
Minneapolis, MN

The Military Land Management Division will feature a technical session devoted to SEMP on Monday, November 6th. Contact Hal Balbach at (217) 373-6785 or via e-mail at h-balbach@cecer.army.mil for more information on this session.

SEMP Researcher Coordination Meeting

November 14-16, 2000
Fort Benning, GA

On-site meeting of project leaders, PIs, and Army personnel to address research coordination, data sharing, and progress reports. Contact Hal Balbach at (217) 373-6785, h-balbach@cecer.army.mil; or Hugh Westbury at (706) 545-7882, WestburyH@benning.army.mil.

The Partners in Environmental Technology Technical Symposium and Workshop

November 28-30, 2000
Hyatt Regency Crystal City
Arlington, VA

This year's technical program will feature comprehensive sessions that will address the challenging and pervasive environmental issues that face the Department of Defense in the first decade of the new millennium. For more information on this symposium, check out the website at <http://www.serdp.org>. SEMP TAC Meeting will follow the workshop on Nov 30-Dec 1. POC is Bill Goran, (217) 373-6735 or w-goran@cecer.army.mil.

SEMP Roots



Bill Goran

In my first column, I thought it would be useful to describe some of the historic context for SEMP, and some of the key players - past and present.

First, there is the Strategic Environmental Research and Development Program (SERDP). The SERDP website is: <http://www.serdp.org>.

SERDP is a Defense-level program, established by Congress in 1991. As per the Congressional legislation, SERDP combines the talents of Department of Defense, Department of Energy and the Environmental Protection Agency to address military service requirements related to environmental research.

SEMP exists because SERDP responded to research requirements in each of the military services requirements lists relating to ecosystem management. Needing additional clarification to focus on the relevant DOD research issues in ecosystem management, the SERDP Program Office held a workshop (June 1997) involving DOD staff, other federal agencies and academia. That workshop was led by Dr. Daniel Botkin from the Center for the Environment and George Mason University. The workshop summary is posted on the SEMP website at: <http://www.denix.osd.mil/SEMP>.

After the workshop, Brad Smith, SERDP Executive Director, and Bob Holst, Conservation Program Manager, in consultation with the SERDP Conservation Technology Thrust Area Working Group (TTAWG), decided to create a new "program-level" project, which would develop a long-term, integrated plan for monitoring and research and technology transition efforts in ecosystem management. The SERDP Scientific Advisory Board (SAB), which had been encouraging SERDP to take a long-term approach on issues such as ecosystem management, concurred with this plan.

Brad then approached the Corps of Engineers (COE) Research Directorate which, according to service agreements, is the DOD lead for Military Conservation research. Soon Brad, Bob, Tom Hart (COE Associate Director for Installation Research) and I were meeting at the SERDP office, framing the steps necessary to initiate this new project.

First, I formed a working group to help evaluate the research issues and develop an

overall plan for SEMP. This group met first at the SERDP Symposium in December 1997, then at Eglin Air Force Base in Florida and Ft. Benning Army Base in Georgia. This group debated the differences between ecosystem research and ecosystem management research, and the "goals" of ecosystem management in terms of managed lands. After a few months, Ft. Benning was selected as the initial host site for SEMP, a concept was developed for a long-term monitoring effort at the host site, and an initial solicitation was developed for research on indicators of ecosystem change.

Members of this working group included Dr. Daniel Botkin; Dr. John Haufler of Boise-Cascade Corporation; Dr. Doug Ripley of Headquarters Air Force; Dr. Steven Getlein and Kim Michaels of the Conservation Branch of the Army Environmental Center; Peter Boice, Director of Conservation Program for the Deputy Under-Secretary of Defense, Environmental Security; Dr. Virginia Dale of Oak Ridge National Lab; Ann Marie (Trame) Shapiro of Construction Engineering Research Lab (ERDC); and Dr. John Barko and Dr. David Tazik of the Environmental Lab (ERDC).

After briefing the SEMP plan to the SERDP Conservation TTAWG in September 1998, the working group disbanded. The oversight and planning role of this working group was replaced by a standing Technical Advisory Committee (TAC). Doug Ripley, Peter Boice and Kim Michaels transitioned from the working group to the new SEMP TAC. Several others joined this TAC, including Dr. Roger Dahlman, a Dept of Energy representative to the SERDP Conservation TTAWG, Dr. James Spotila of Drexel University, Dr. Whitfield Gibbons of the University of Georgia, Richard McWhite of Eglin Air Force Base, and Dr. Penny Firth of the National Science Foundation. The TAC has since expanded to include Dr. Mary Barber of the Ecological Society of America (and the SERDP SAB), Dr. John Hall of The Nature Conservancy, and Dr. Mark Poth (alternating with Dr. Mark Fenn) of the U.S. Forest Service. This group reviews all ongoing research, advises on future plans and reviews proposals (after a peer review), suggests scientific linkages and affiliations, and provides general oversight for SEMP. John Brent and Theresa Davo serve as Ft. Benning points of contact and ex officio members of this TAC.

We're very grateful to the former working group members and the current TAC members. Their planning, review and hands-on involvement with SEMP have been invaluable.

SEMP Welcomes New Host Site Coordinator

Congratulations to Hugh Westbury, the new SEMP Host Site Coordinator. Hugh is an Engineer Research and Development Center (ERDC) employee, but his duty station is Fort Benning, GA. The host site coordinator is responsible for providing on-site coordination for the various teams and groups that will be conducting research, monitoring and technology transfer activities at Ft. Benning related to SEMP. Some of Hugh's specific duties include assisting SEMP research teams in planning and executing field research and monitoring activities, maintaining a calendar of all SEMP-related work efforts and events, coordinating all field work through Range Operations and DOT, and providing the SEMP Program Managers and team members (through the website) with a monthly report of SEMP activities at the host installation.

There are two other SEMP points of contact at Ft. Benning: John Brent, Chief of the Ft. Benning Environmental Division, and Theresa Davo, formerly the Land Condition Trend Analysis Coordinator for the Ft. Benning Integrated Training Area Management Program but now an ecologist in the Land Management Branch. The SEMP host site coordinator also provides support to these Ft. Benning SEMP POCs.

We also want to thank Patty Kosky who served from October to May as the first SEMP Host Site Coordinator. Patty established the working procedures for this position, helped numerous teams establish their research field sites, made on-site adjustments to finicky monitoring equipment, and kept information flowing between SEMP research teams and Ft. Benning staff.

Patty will be completing her Master of Science degree requirements at Columbus State University. Good luck, Patty, and THANKS!!!

Two Research Teams Selected to Support the FY00 Statement of Need (SON)

The objective of the FY00 Statement of Need (SON) entitled, "Ecological Disturbance in the Context of Military Landscapes," is to develop the knowledge required to implement adaptive ecosystem management approaches for military lands and waters, as well as other federal facility lands and waters. There were 9 proposals received under this SON. From the peer review process, 6 proposals were sent to the Technical Advisory Committee (TAC) for review. From this process, the following two research teams were selected to support the FY00 SON. The text of the SON solicitation is posted at: <http://www.denix/osd.mil/SEMP> under FY00 Research Projects.

Disturbance of Soil Organic Matter and Nitrogen Dynamics: Implications for Soil and Water Quality



Chuck Garten

The principal investigator for this project is Mr. Charles Garten, Jr., from Oak Ridge National Laboratory, Oak Ridge, TN. Charles is a Senior Research Staff Member in the Environmental Sciences Division

and has worked at ORNL for 24 years. He has a MS degree from the University of Georgia and a MSEH degree from East Tennessee State University. He has recently published papers on soil carbon and/or nitrogen dynamics in *Biogeochemistry*, *Journal of Environmental Quality*, *Ecology*, and *Water Air Soil Pollution*. More about his background and research interests can be found at the following address: <http://www.esd.ornl.gov/people/garten/garten.html>.

The overall objectives of this SEMP project include the following:

- Characterize the effect of disturbances and land use on key measures of soil quality

- Determine whether there are thresholds associated with natural and/or anthropogenic disturbance that establish the potential recovery of soil quality on disturbed lands
- Use existing GIS resources as a tool for analysis of spatial patterns of soil carbon and nitrogen and predict the effect of site disturbance and/or land use change on soil quality and nonpoint sources of nitrogen to surface water drainages
- Build dynamic models of soil organic matter for different land use categories to predict the recovery of soil quality and soil carbon sequestration on degraded soils
- Plan long-term field experiments to test landscape-based models used to predict the recovery of soil quality.

Expected payoffs of this research are an improved understanding of:

- Soil organic matter and soil nitrogen dynamics in different land use categories at Fort Benning and a mapping of the spatial distribution of these aspects of soil quality
- The effects of soil disturbance on soil organic matter and soil nitrogen dynamics including the potential for recovery of soil quality following disturbance
- How management decisions on land use change may impact soil quality and the potential for soil carbon sequestration on degraded lands.

Thresholds of Disturbance: Land Management Effects on Vegetation and Nitrogen Dynamics

The principal investigator for this project is Dr. Beverly S. Collins from Savannah River Ecology Laboratory, Aiken, SC. Dr. Collins is a plant community ecologist who studies mechanisms of vegetation organization and dynamics. Her work at SREL focuses on two projects. One project



Beverly Collins

examines ecology and management of the federally endangered smooth purple coneflower (*Echinacea laevigata*). The other project examines land use effects on

vegetation dynamics and nitrogen transformations in upland pine and slope hardwood forests.

The objective of this SEMP project is to evaluate the ecological effects of military training and forest management for loblolly pine, to determine if there are thresholds beyond which upland ecosystems cannot sustain the combined effects of thinning, burning and military traffic disturbances. The team hypothesizes that underlying soil type partly determines species diversity and vegetation dynamics on a site and influences the disturbance threshold for sustainability. This research will use an experimental approach in which it compares species diversity and vegetation dynamics of sites on clayey and sandy soils subjected to different forest management scenarios (burned on 2-yr and 4-yr cycles, thinned, unthinned) and with heavier or lighter military use. This research will address the following questions:

- Do natural vegetation, species diversity and vegetation dynamics differ between otherwise similar sites on clayey vs. sandy soils?
- Are within-site disturbance effects of military training greater on sites underlain by the more fertile clayey soils?
- Are landscape-level effects of forest management practices greater on sites with heavier (compared to lighter) military use or on clayey (compared to sandy) soils? Is the threshold of burning, thinning or military training disturbance effects on sustainability lower for sites on clayey soils?

Have You Checked Us Out?

A website was established for SEMP under the Defense Environmental Network Information eXchange (DENIX) working group area. This website gives an overview of the SEMP program; highlights the host site installation, Fort Benning, GA; provides a calendar of activities; provides linkages to other sites; and houses selected SEMP briefings and publications for review and for downloading. The URL for this website is <http://www.denix.osd.mil/SEMP>.

To easily find out about the current research projects and possible opportunities, the "research" link is the place to go. There are links to the FY99 Research and FY00 Research projects. In each respective area, the different research projects and teams are highlighted. Here you can find the research proposals, fact sheets, briefings and related links to the projects.

The website also highlights our first host site location: Fort Benning, GA. If you go to the "locations" link, you will find a U.S. map, with Fort Benning highlighted. As other installations are added, this map will be updated. The "Fort Benning" link can connect a user to



the Fort Benning Homepage, give access to the Host Site Coordinator Reports and will eventually provide a link to the data repository.

The SEMP website also contains an events calendar, which has upcoming events, related to SEMP, posted. This calendar lists the date, place, POC and a brief description of the event. The calendar listing also can be linked to provide an agenda or notes on the event.

There is also a password-protected DoD site that can be accessed, under DENIX, by selecting the DoD menu, then selecting Working Groups. The title of the website is SEMP Working Group. Passwords for DENIX can be obtained through on-line registration, by selecting "registration" on the DENIX main menu

(<http://www.denix.osd.mil>), or by contacting Kim Grein, commercial 217-373-6790, FAX 217-373-7270. This password-protected site contains all information posted on the public site, but also highlights a discussion forum for use by the different SEMP teams.

If you are interested in putting a link on our website or obtaining more information about the website, please contact Teresa Aden, SEMP Website Manager, at (217) 352-6511, ext. 7484 or t-aden@cecer.army.mil.

New Report Posted

An Executive Summary of Version 2.1 of the Ft. Benning, GA, long-term monitoring program design has been completed and distributed for review in draft form. The purpose of this summary report is to describe the long-term baseline ecosystem monitoring plan developed for Ft. Benning under the SERDP Ecosystem Management Project's (SEMP) Ecosystem Characterization and Monitoring Initiative (ECMI). The report documents the monitoring plan and provides the foundation needed for implementation activities to begin.



For more information, check out our website at

<http://www.denix.osd.mil/SEMP>



Host Installation SEMP POCs

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Editorial Note:

If you have any comments regarding this newsletter or suggestions for future articles, please contact Teresa Aden at (217) 352-6511, ext. 7484 or via email at t-aden@cecer.army.mil. We will be publishing the next newsletter in mid-November.