

Presentation to the Savannah River Site Citizens Advisory Board

The SRS as a National Environmental Research Park – What Does It Mean?

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Objectives

- ⦿ **What is a National Environmental Research Park?**
- ⦿ **SRS as a NERP Site**
- ⦿ **SREL's Role Past and Present**
- ⦿ **Proposed NERP Needs**

Consistent with the Facilities Disposition and Site Remediation Committee's 2018 Work Plan

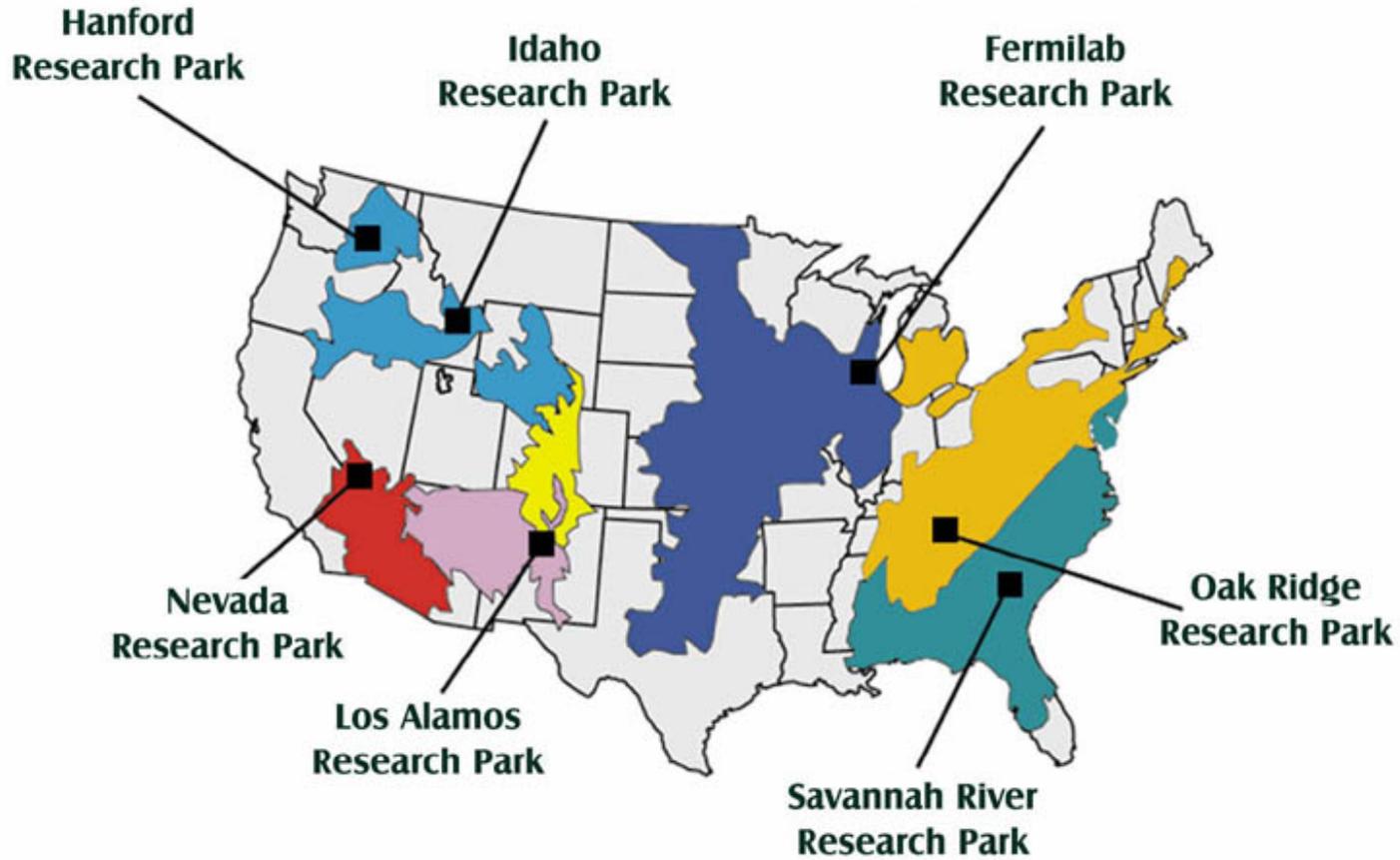
Acronyms

ACP	Area Closure Project
DOE	Department of Energy
DOE-HQ	Department of Energy – Headquarters
DOE-SR	Department of Energy – Savannah River
NERP	National Environmental Research Park
NNSA	National Nuclear Security Administration
SREL	Savannah River Ecology Laboratory
SRNL	Savannah River National Laboratory
SRR	Savannah River Remediation
SRS	Savannah River Site
UGA	University of Georgia
USDA	U.S. Department of Agriculture
USFS-SR	U.S. Forest Service – Savannah River

WHAT IS A NERP ?

- ⦿ *A National Environmental Research Park (NERP) is an outdoor laboratory where research may be carried out to achieve national environmental goals National Environmental Research Parks are actually field laboratories set aside for ecological research, for study of the environmental impacts of energy developments, and for informing the public of the environmental and land-use options open to them.*
- ⦿ **NERPs consist of several designated Department of Energy (DOE) facilities and their surrounding security buffers. There are currently seven NERPS: Idaho, Hanford, Los Alamos, Oak Ridge, Fermilab, Nevada and Savannah River.**
- ⦿ **The Savannah River Site became the first NERP in 1972.**

National Environmental Research Parks and Associated Ecoregions



- | | | | |
|--------------|------------------------------|--------------------------|---------------------------|
| Shrub-steppe | Juniper-Pinyon and Grassland | Tallgrass Prairie | Southeastern Mixed Forest |
| Desert Shrub | S. Rockies Conifers | Eastern Deciduous Forest | |

WHAT IS A NERP ?

Unlike National Parks, NERPs provide a combination of pristine and impacted areas in which to conduct research. This combination is at the core of the NERP concept. With impacted areas and reference sites in close proximity, and a group of resident scientists, NERPs offer unparalleled opportunities for understanding human impacts on the environment. NERPs also preserve large tracts of natural or semi-natural habitat, benefitting native species and providing ample opportunities for long-term basic ecological research in a protected environment. Closed to the general public for over 50 years, these areas now teem with wildlife and abound with native vegetation, making them important conservation sites in a matrix of increasing human development.

WHAT IS A NERP ?

The purpose of the NERPs, as defined by DOE in 1976, are:

- ❑ **Conduct research and education activities to assess and document environmental effects associated with energy and weapons use**
- ❑ **Explore methods for eliminating or minimizing adverse effects of energy development and nuclear materials on the environment**
- ❑ **Train people in ecological and environmental sciences**
- ❑ **Educate the public**

NERP Directives

The network of research parks was formally established with an insightful statement of objectives organized in three broad categories:

Assessment and Monitoring--develop methods to quantitatively and continuously assess and monitor the environmental impact of human activities.

Prediction--develop methods to estimate or predict environmental responses to these activities.

Demonstration--demonstrate the effects these activities have on the environment and evaluate methods to minimize any adverse effects.

SRS as a NERP Site

Three resident research organizations are present on the SRS: the **University of Georgia Savannah River Ecology Laboratory (SREL)**, **USDA Forest Service - Savannah River (USFS-SR)**, and **Savannah River National Laboratory (SRNL)**.

As a research unit of UGA, **SREL's** primary function is ecological research and education. SREL provides independent evaluation of the impacts of SRS operations, assistance with risk assessment and remediation, and baseline information on natural trends in unimpacted ecosystems. SREL also manages the DOE Research Set-Asides, which evolved largely from SREL long-term research sites.

USFS-SR manages ~140,000 acres of the SRS for forest products and wildlife, and conducts a variety of forest research. USFS-SR also conducts frequent prescribed burns throughout the SRS, essential for the health of many native species and the prevention of wildfires.

As a national laboratory **SRNL's** primary mission is technological research and development for DOE, but includes a significant environmental management component. SRNL is involved in remediation, hazardous waste storage and management, and other aspects of site cleanup. Collaborations among these three organizations have enhanced the value of the SRS NERP.

SRS as a NERP Site

Opportunities for environmental research on the SRS continued to grow with the passage of the **National Environmental Policy Act (NEPA)**, the **Endangered Species Act (ESA)**, and other important environmental legislation in the early 1970s. Both bills mandated stronger environmental responsibility on all federal lands, including the SRS. The USDA Forest Service, which has managed large tracts of the SRS for timber production since the 1950s, began to prioritize habitat management as well; SRNL, which had been primarily tasked with project support for nuclear activities, developed a much stronger environmental management component; and SREL's research program continued to expand. The site's designation as the first NERP in 1972 further established environmental research as a priority on the SRS.

SRS as a NERP Site

The SRS NERP is home to >1300 species of vascular plants, >100 species of reptiles and amphibians; 50 species of mammals; nearly 100 species of fish; and provides permanent habitat or migratory rest for >250 species of birds. Nearly 600 species of aquatic insects can be found in Upper Three Runs Creek alone, and in recent decades several new species have been described from SRS streams and wetlands. The SRS also provides habitat for a number of sensitive species, including wood storks, red-cockaded woodpeckers, and smooth purple coneflowers (all federally endangered), and at least 30 plant species of state or regional concern.

SRS as a NERP Site

The Savannah River NERP protects over **300 Carolina bays and other depression wetlands**, most of which have no other form of protection under current wetland law. Four major freshwater streams flow through the SRS, one of which contains the highest reported species richness of aquatic insects for any stream in the Western Hemisphere (**Upper Three Runs Creek**). Retired cooling reservoirs on the SRS also provide habitat for an abundance of alligators, turtles, and migratory waterfowl.

The SRS NERP also protects more than **1300 known archaeological sites**.

SRS Set Aside's

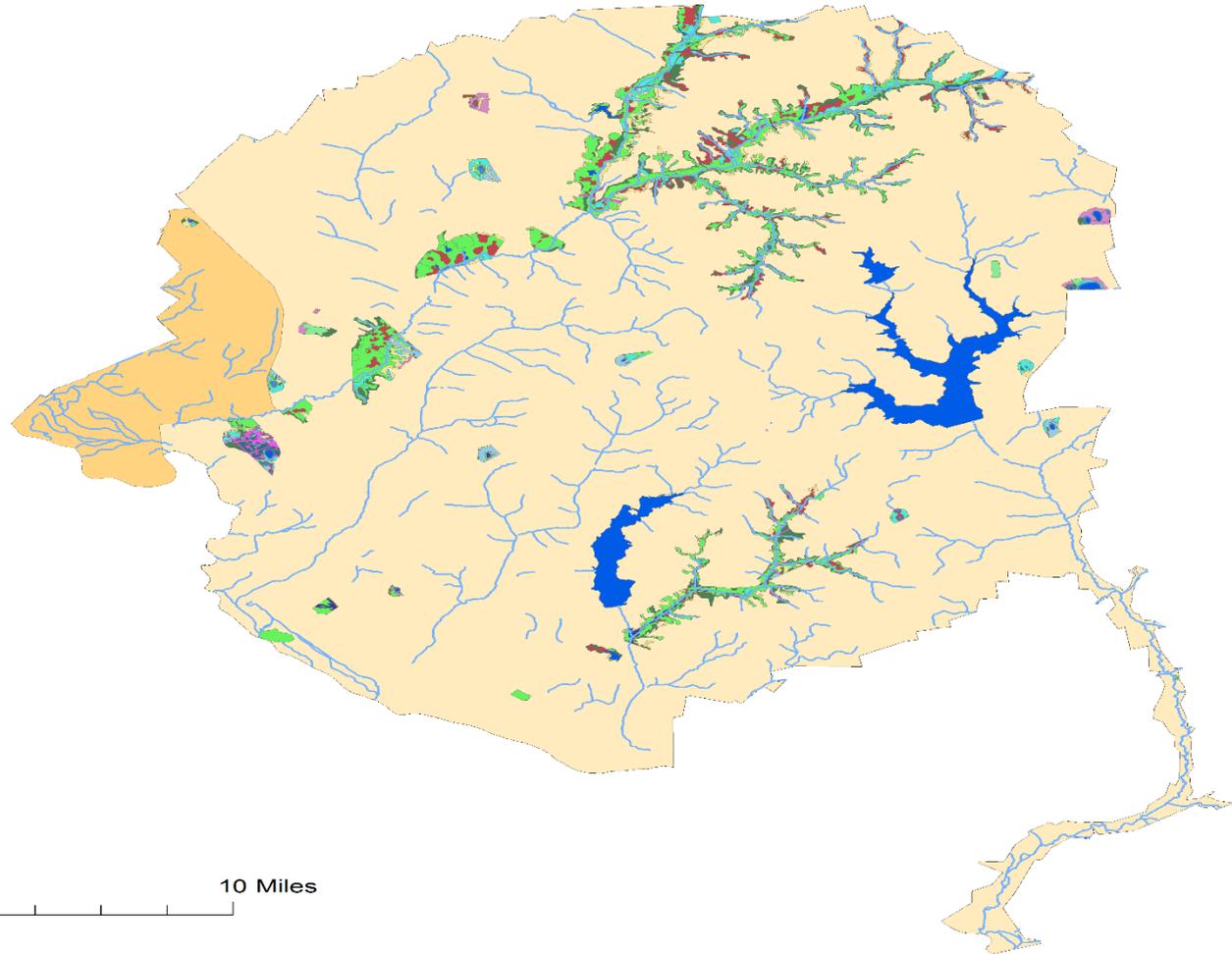
The Savannah River Ecology Laboratory (SREL) represents the Department of Energy for the Savannah River Site NERP. The SRS's Set-Aside Program began in the 1960s when the Atomic Energy Commission (AEC) established 10 relatively small SREL Reserve Areas to represent the various habitats on what was formerly known as the Savannah River Plant and to secure study sites for conducting long-term ecological research. The program was expanded in the 1980s to 30 DOE Research Set-Aside Areas to better protect sensitive species habitats, preserve the biological integrity of Upper Three Runs Creek, and to buffer SREL's long-term research sites from forest management activities.

DOE Research Set-Aside Areas of the SRS

Legend

Set-Aside Area Habitats

- Bottomland Hardwood / Pine Forest
- Bottomland Hardwood Forest
- Carolina Bay Wetland
- Forb / Grassland
- Hardwood Forest
- Loblolly Pine Forest
- Longleaf Pine Forest
- Mixed Pine / Hardwood Forest
- Mixed Pine Field
- Mixed Swamp Forest
- Old Field
- Other - Disturbed Area
- Sand Pine Forest
- Sandhill Pine / Scruboak Forest
- Sandhill Scruboak / Pine Forest
- Scrub / Shrub
- Slash Pine Forest
- Water Body



0 2.5 5 10 Miles

SRS Set Aside's

These areas are a significant component of the SRS landscape (7% of SRS, totaling 14,560 acres/5,892 ha) and are found in 43 of the site's 89 timber resource compartments. There are approximately 275 miles (443 km) of posted boundary line. Set-Asides provide sites for long-term research, habitat for sensitive species, and protection for several archaeological sites.

Area 1 - Field 3-412 / Ellenton Bay

[Description](#)

[Map](#)

Area 2 - UGA Old Laboratory Site

[Description](#)

[Map](#)

Area 3 - Sandhills

[Description](#)

[Map](#)

Area 4 - Loblolly Pine Stand

[Description](#)

[Map](#)

Area 5 - Oak-Hickory Forest 1

[Description](#)

[Map](#)

Area 6 - Beech-Hardwood Forest

[Description](#)

[Map](#)

Area 7 - Mixed Swamp Forest

[Description](#)

[Map](#)

Area 8 - Steel Creek Bay

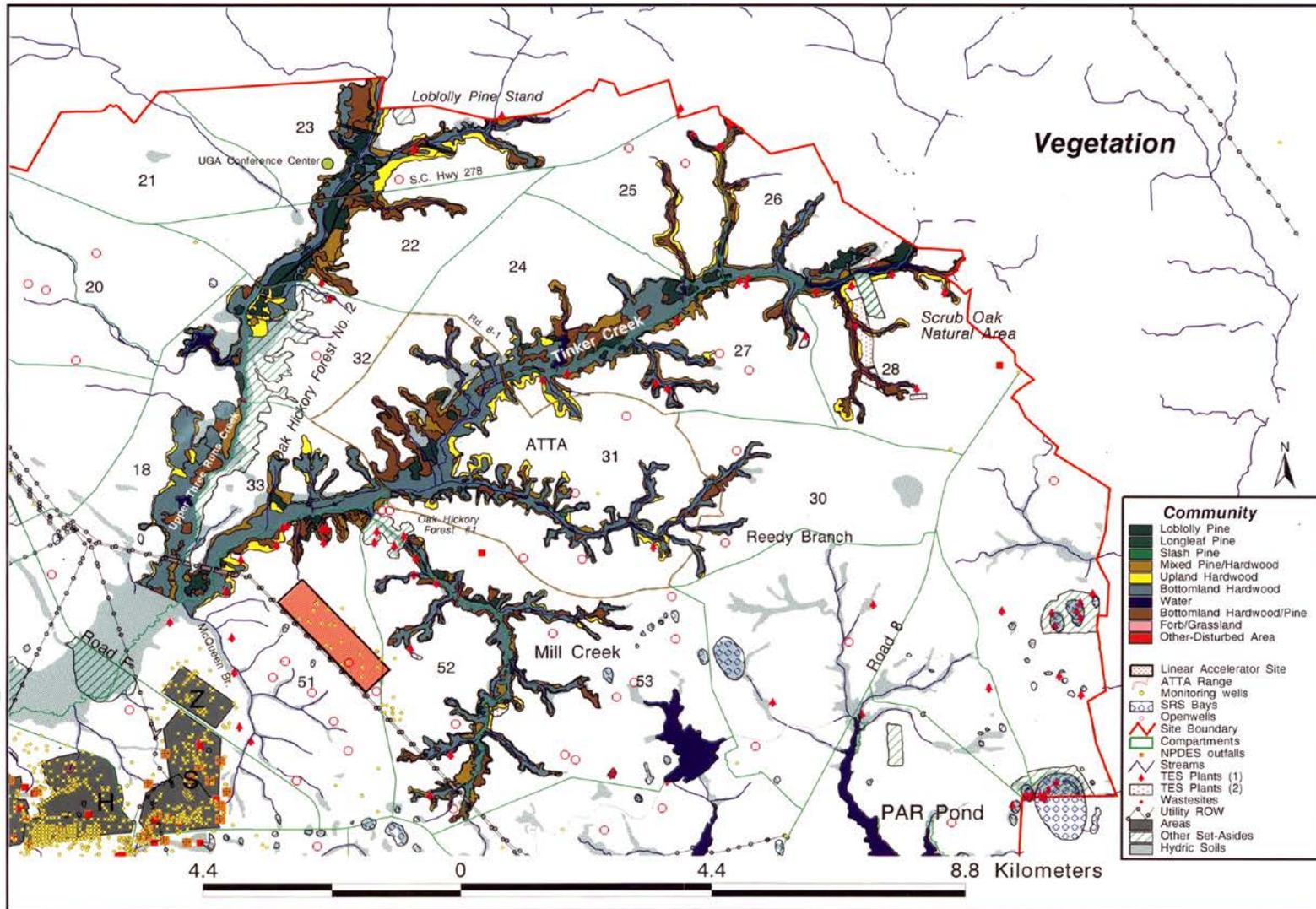
[Description](#)

[Map](#)

Area 9 - Cypress Grove / Stave Island / GA Power

[Description](#)

[Map](#)



Set-Aside 30: E. P. Odum Wetland Set-Aside

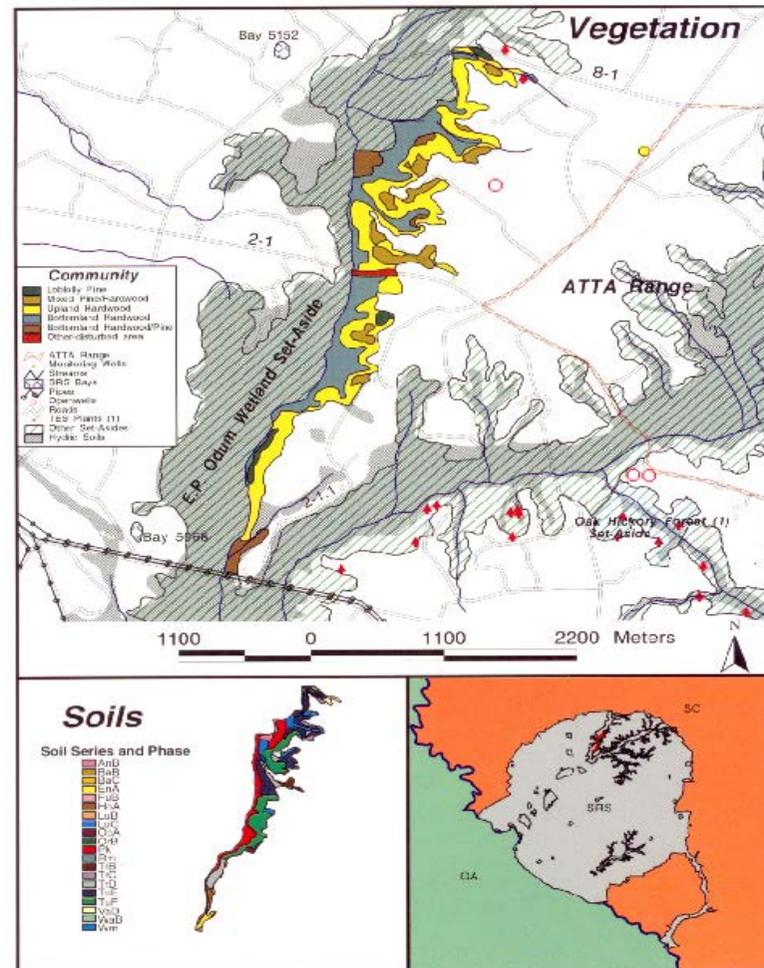


Figure 12-2. Plant communities and soils associated with the Oak-Hickory Forest #2 Set-Aside Area.

12-7

SREL's Roles Past and Present

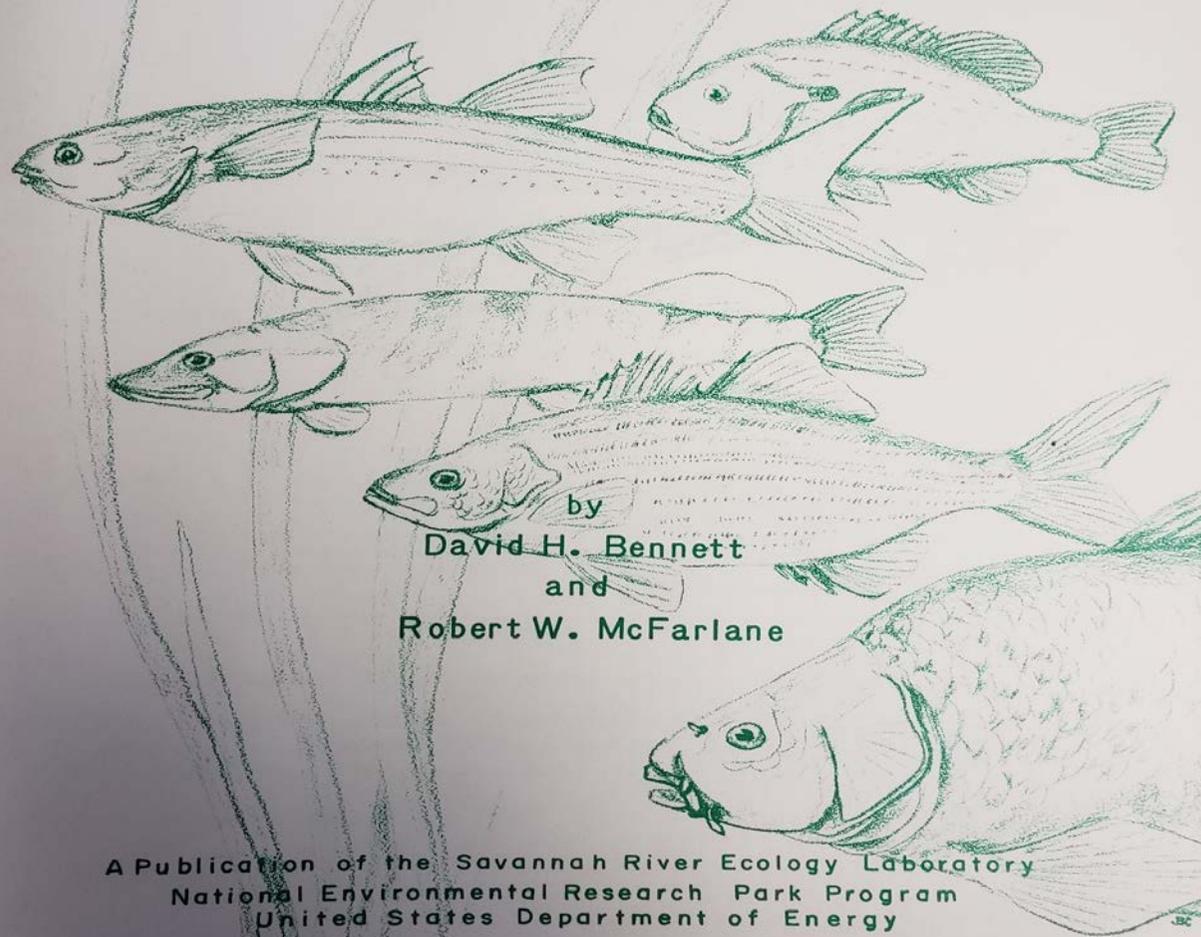
Environmental research on the SRS began with basic biological inventories and radiological controls, but soon developed into much more. Through the leadership of University of Georgia researcher Eugene Odum, UGA developed a long-term partnership with the AEC that led to a wide range of ecological research on the SRS and the establishment of the Savannah River Ecology Laboratory (SREL).

SREL's Roles Past and Present

SREL Published over 27 NERP Documents from 1977-2005

- **The Reptiles and Amphibians of the Savannah River Plant.** J. Whitfield Gibbons and Karen K. Patterson. 1978. SRO-NERP-2. 24p. [\[Download PDF\]](#)
- **The Freshwater Bivalve Mollusca (Unionidae, Sphaeriidae, Corbiculidae) of the Savannah River Plant, South Carolina.** Joseph C. Britton and Samuel L. H. Fuller. 1979. SRO-NERP-3. 37p. [\[Download PDF\]](#)
- **The Population Status of the American Alligator on the Savannah River Plant, South Carolina.** Thomas M. Murphy. 1981. SRO-NERP-4. 20p. [\[Download PDF\]](#)
- **The Freshwater Decapod Crustaceans (Palaemonidae, Cambaridae) of the Savannah River Plant, South Carolina.** Horton H. Hobbs III, James H. Thorp and Gilbert E. Anderson. 1981. SRO-NERP-5. 63p. [\[Download PDF\]](#)
- **A Classification of Hardwood and Swamp Forests of the Savannah River Plant, South Carolina.** Stephen A. Whipple, Lynn H. Wellman and Bill J. Good. 1981. SRO-NERP-6. 36p. [\[Download PDF\]](#)

The Fishes of the Savannah River Plant: National Environmental Research Park



by
David H. Bennett
and
Robert W. McFarlane

A Publication of the Savannah River Ecology Laboratory
National Environmental Research Park Program
United States Department of Energy

SREL's Roles Past and Present

- Current SREL Roles in the SRS NERP include:
 - Administration and Management of the Set-Aside Areas
 - SREL serves as the point of contact for the 30 Set-Asides and provides custodial oversight of the SRS Set-Aside Program. SREL chairs the DOE's Set-Aside Task Group, which approves management prescriptions, evaluates proposed ecological research, and ensures protection from onsite land use activities. SREL serves as the representative for the Set-Aside program in the SRS Site Use process and in the military training coordination meetings, reviewing activities in both venues for potential impacts.

SREL's Roles Past and Present

- **Current SREL Roles in the SRS NERP include:**
 - *Set-Aside Oversight* – In recent years SREL has taken a more active approach to managing Set-Asides, with wider application of prescribed fire, as well as some timber management. Management is conducted with an adaptive approach that gives the flexibility to address changing environmental conditions as well as research needs. SREL also maintains a record of active research occurring within Set-Asides and reports these activities in its Annual Report to DOE.

SREL's Roles Past and Present

- Current SREL Roles in the SRS NERP include:
 - National Environmental Research Park Support - SREL serves as the official SRS point of contact for the DOE National Environmental Research Park System. In its role as a point of contact, SREL conducts a variety of functions, one of which is the improvement and archiving of critical historical research data on the SRS.

Current Funding

- **Funding for NERP Activities:**

- At present, SREL uses a portion of its DOE funds to support one Research Professional to:
 - chair the Set-Aside Task Group
 - work with the US Forest Service-Savannah River to request timber harvest or burning prescriptions as needed for Set-Asides
 - coordinate the archiving of critical historical research data conducted by SREL on the SRS, and
 - coordinate any other management or research activities conducted by any entity on the SRS's 30 Set-Asides

Specific Needs

- ⦿ There are a variety of activities that need to be conducted, but which are not currently being conducted, in conjunction with the Set-Asides which serve as the heart of the SRS's status as a National Environmental Research Park. These specific needs include:

Specific Needs

- 1. Reassessment and marking of Set-Aside Boundaries for the purpose of delineating management activities in and around current Set-Asides.**
- 2. Reevaluation of near- and long-term management activities to sustain the biotic integrity of current Set-Asides and maintain their value as long-term research sites and control sites for ongoing research**

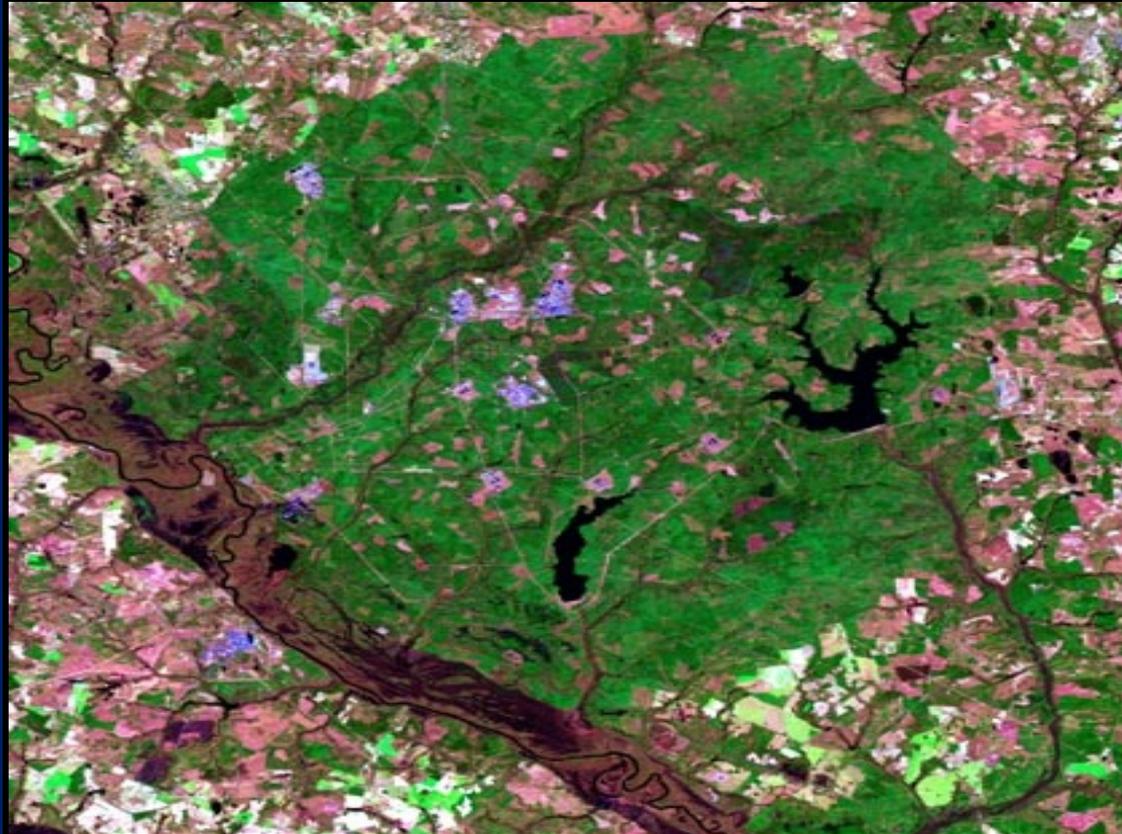
Specific Needs

- 3. Active monitoring of the biotic diversity within Set-Asides to maintain long-term data sets and contribute to the overall value of these sites to understanding response to other management activities on the surrounding SRS lands and abiotic processes such as climate change.**
- 4. Improvements in data archiving procedures for research activities conducted within Set-Asides and development of data management platforms that allow these data to be shared publicly with other DOE sites and researchers throughout the US and globally.**
- 5. Active recording and archiving of ecological data collected on SRS Set-Asides.**



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Contact us at SREL.UGA.EDU