

Presentation to the Savannah River Site Citizens Advisory Board

Savannah River Ecology Laboratory (SREL) FY17 Update

January 23, 2018

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Professor, University of Georgia (UGA)



The University of Georgia

Savannah River Ecology Laboratory

Objectives

- ◎ **Savannah River Ecology Lab (SREL) Mission**
- ◎ **Staffing**
- ◎ **Funding and Work Scope**
- ◎ **Significant Events**
- ◎ **Advances**
- ◎ **Opportunities For Fiscal Year 2018**
- ◎ **Emerging Missions For Fiscal Year 2018**
- ◎ **Challenges for Fiscal Year 2018**

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
ERDA	U.S. Energy Research and Development Administration
HVAC	Heating, Ventilation and Air Conditioning
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
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFS-SR	U.S. Forest Service – Savannah River

SREL History

1951 - Atomic Energy Commission (AEC) had concerns about environmental impacts resulting from Savannah River Site (SRS) construction and operations.

1951 to present – Funding from AEC, ERDA, and Department of Energy (DOE)

1954 – Established permanent lab on the SRS



Dr. Eugene Odum



1977 – Established current lab facilities

SREL's Mission:

“To enhance our understanding of the environment by acquiring and communicating knowledge that contributes to sound environmental stewardship.”

“To provide the public with an independent evaluation of the ecological effects of SRS operations on the environment”

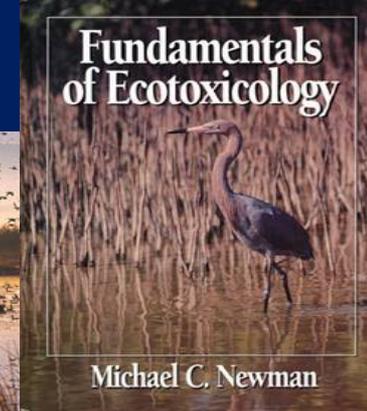
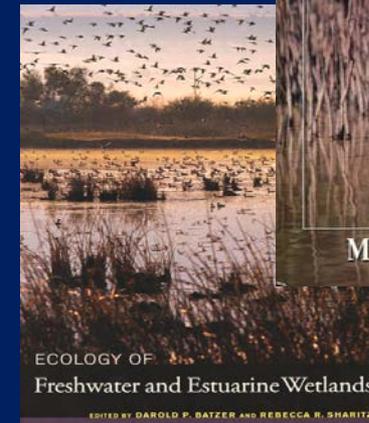
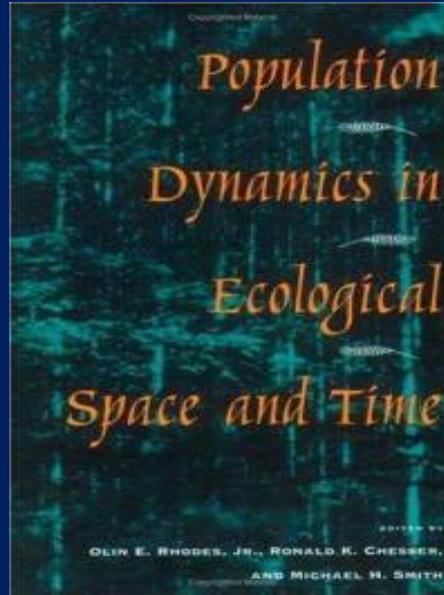
- An interdisciplinary program of field and laboratory **research** conducted largely on the SRS and published in the peer-reviewed scientific literature
- **Education** and research training for undergraduate and graduate students
- **Service** to the community through environmental outreach activities



SREL Research Program's

- >3422 peer-reviewed scientific publications to date
- 64 books

Conservation Biology



SREL Education Program

Education Programs

- >400 theses and dissertations
 - 198 M.S.
 - 223 Ph.D.
- SREL graduate students have received more than 125 awards
- Over 700 undergraduates representing all 50 states have participated in SREL-sponsored research to date

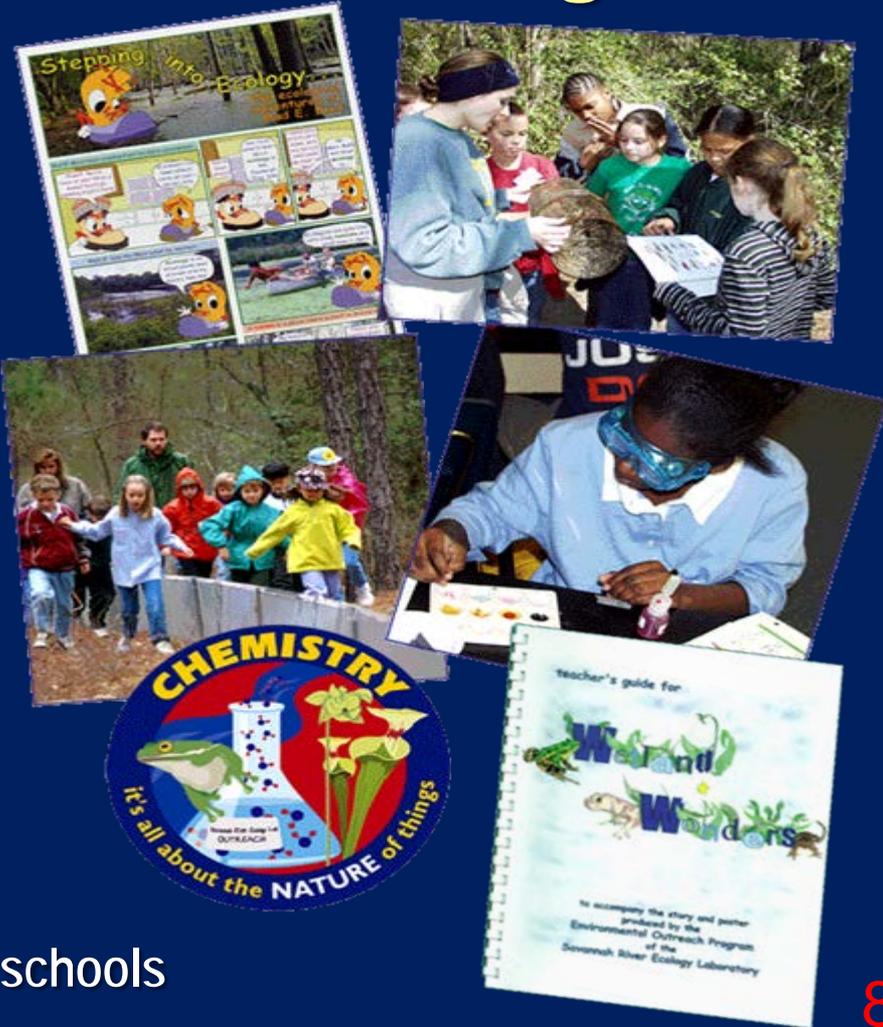


SREL Environmental Outreach Program

- Integrates SREL research into presentations for the general public
- Provides hands-on classroom and field experience for students
- Conducts educator workshops

In FY16, SREL reached ~ 45,000 people
by providing :

- 356 talks
- 28 public tours
- 22 exhibits at local or regional events, and
- 43 "Ecologist for a Day" programs for local schools



SREL in FY17

◎ UGA Employees

- Research Faculty – 6
- Tenure Track Faculty - 7
- Post Docs – 5
- Outreach - 7
- Res. Professional - 10
- Research Support - 29
- Graduate Students - 44
- Undergraduates - 13
- Admin & Support - 20

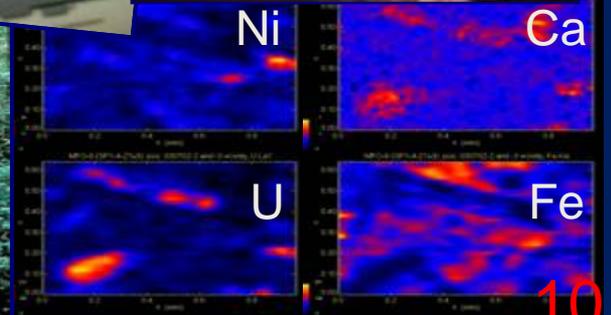
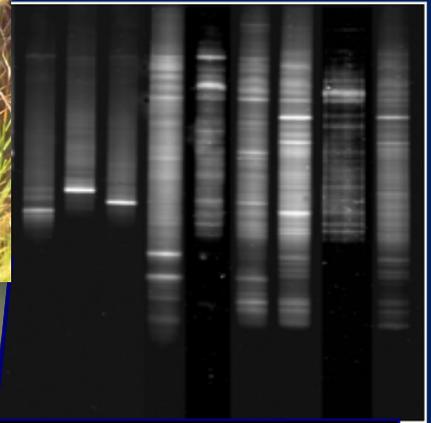
141 Staff & Students

◎ Facilities & Research Areas

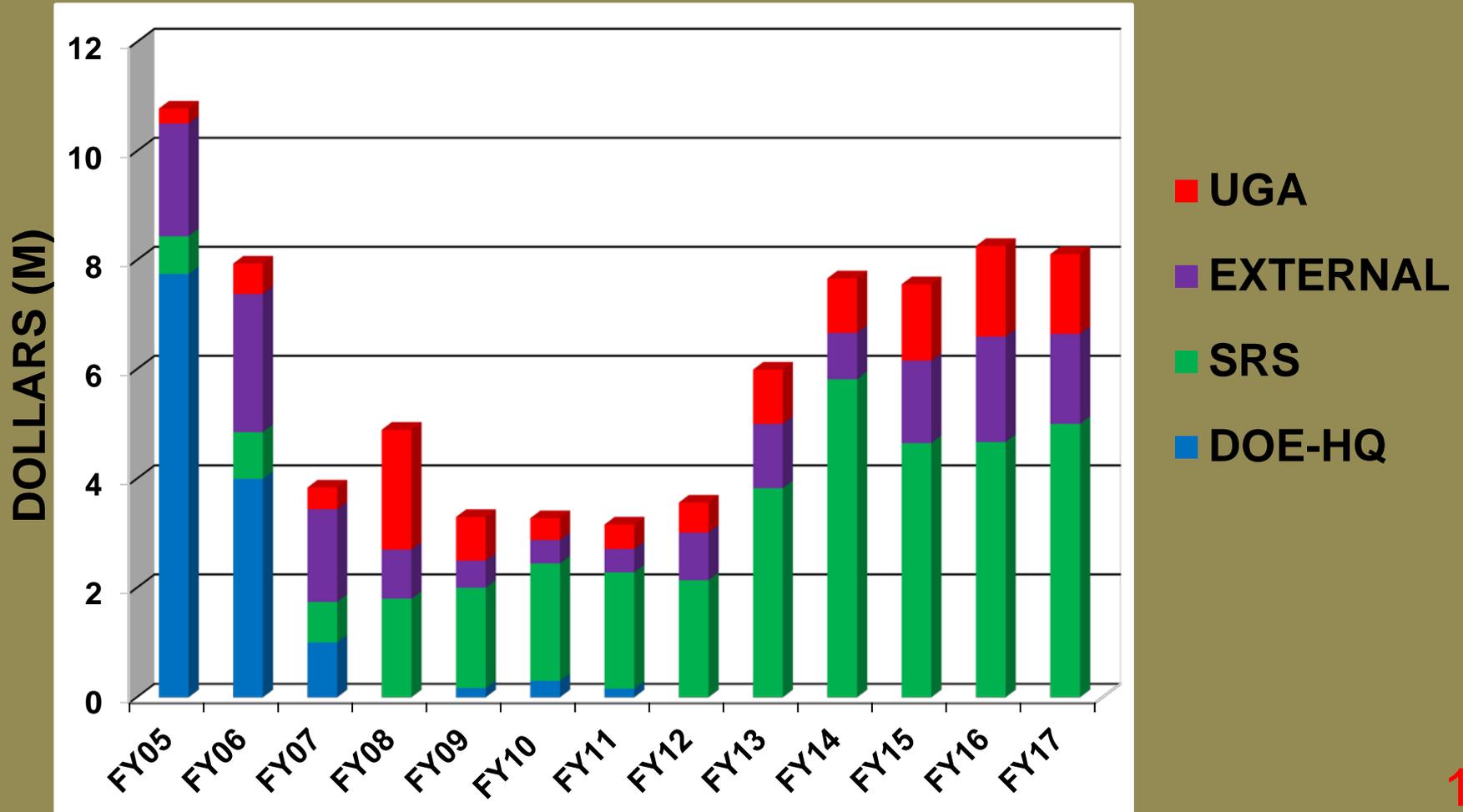
- A-Area (laboratories, equipment, offices, animal care, storage)
- Par Pond (low-dose facility)
- 30 DOE Set-Asides
- 75 field research sites

Disciplinary Expertise

- Aquatic and Terrestrial Ecology
- Geology / Soil Science
- Environmental Microbiology
- Epigenetics
- Molecular Genetics
- Environmental Chemistry
- Radioecology
- Ecotoxicology and Risk Assessment
- Wildlife Ecology
- Disease Ecology
- Plant Physiology
- Proteomics and Glycomics



Recent Funding History



Significant Events in FY17

◎ UGA

- Allowed majority (66%) of the 34% Indirect Costs to be retained by SREL
- Cost-Shared 6 faculty positions with SREL
- Provided funding for equipment and personnel
- Cost-shared graduate student and postdoctoral positions

◎ DOE / SRS / External

- Building, equipment, utilities, and site access
- Funding provided by Department of Energy – Savannah River (DOE-SR) under new 5-year Cooperative Agreement
- Funding provided by DOE – National Nuclear Security Administration (NNSA) for Mixed Oxide Fuel Fabrication Facility and Tritium related research
- Continued project funding from Area Closure Project (ACP) and Savannah River Remediation (SRR)
- 1.6 million in external funding from non-SRS sources leveraged

Advancements in FY17

1. Work scope:

Research Set-Asides, Site Use Permitting

Enacted significant land management activities for set asides

Graduate and Undergraduate Education Programs

Advised 44 graduate students and hosted 13 undergrads in Ongoing NSF funded Research

Experience for Undergraduates Program in Radioecology

Hosted a total of over 101 graduate students conducting research on SRS

Taught 1 course on main UGA campus and 3 at SREL

General Public Outreach and Education Programs

Conducted over 450 public outreach events reaching >45,000 people

Interdisciplinary Research

Continuing collaborative research programs with Savannah River National Laboratory (SRNL),

U.S. Forest Service–Savannah River (USFS-SR), UGA, U.S. Department of Agriculture (USDA),

U.S. Army Corps of Engineers (USACE) & other university, federal, state, and private partners

Involving research on radionuclide and metal remediation, feral swine control & radioecology

Advancements in FY17

1. Work scope: Continued

Site-wide Source of Ecological Expertise

Provided ecological research support to Area Closures Project, SRR, SRNL, etc.

Scientific Expertise

Submitted Renewal Grant for REU in Radioecology

Submitted 84 Proposals as PI or coPIs to External Granting Agencies

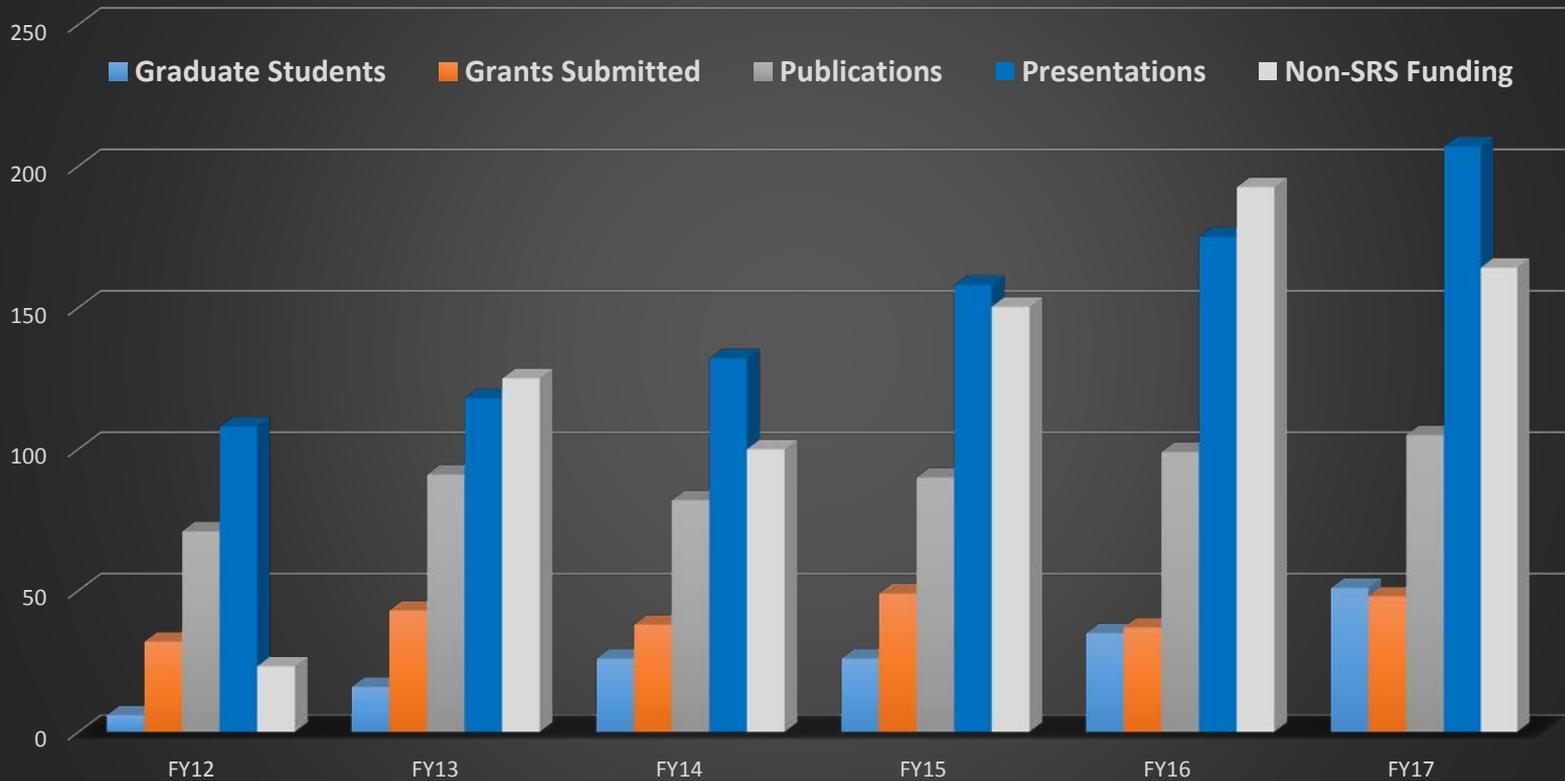
Hired New Radiation Safety Specialist

Scientific Productivity

SREL staff and students published over 100 scientific articles and gave over 207 scientific presentations in FY17

Scholarly Productivity

SREL TRENDS FY12-FY17



Advancements in FY17

2. Facilities:

Main SREL facilities

Major repairs, paint, carpet and lab renovations

Initiated plans for construction of ACL III facility at B Area

Remodeled 3 additional laboratories

3. Scientific Equipment:

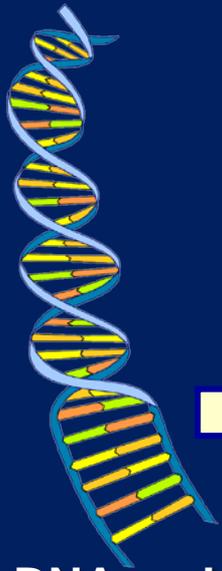
Analytical equipment purchases to enhance research on contaminants of soil, water, and biological materials

Significant upgrades to equipment related to radioecology and wildlife research

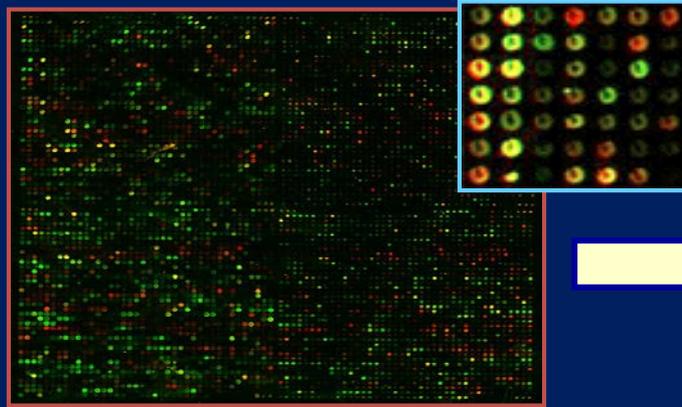
Opportunities for FY18

1. **Maintain graduate student enrollment**
2. **Continued growth in undergrad experiential learning**
3. **Continued growth in scholarly productivity**
4. **Continued investments in equipment & facilities**
5. **Continued Development of missions on the SRS:**
 - a) **Radioecology and Low Dose Radiation Effects**
 - b) **Metal and Radionuclide Ecotoxicology**
 - c) **Radionuclide Fate and Transport Studies**
 - d) **Radionuclide Outreach and Education Programs**

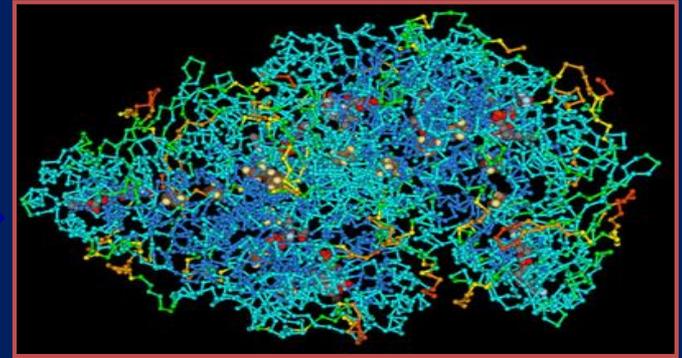
Low Dose Radiation Surveillance and Monitoring Research and Development



DNA molecule



DNA micro array



protein



organisms

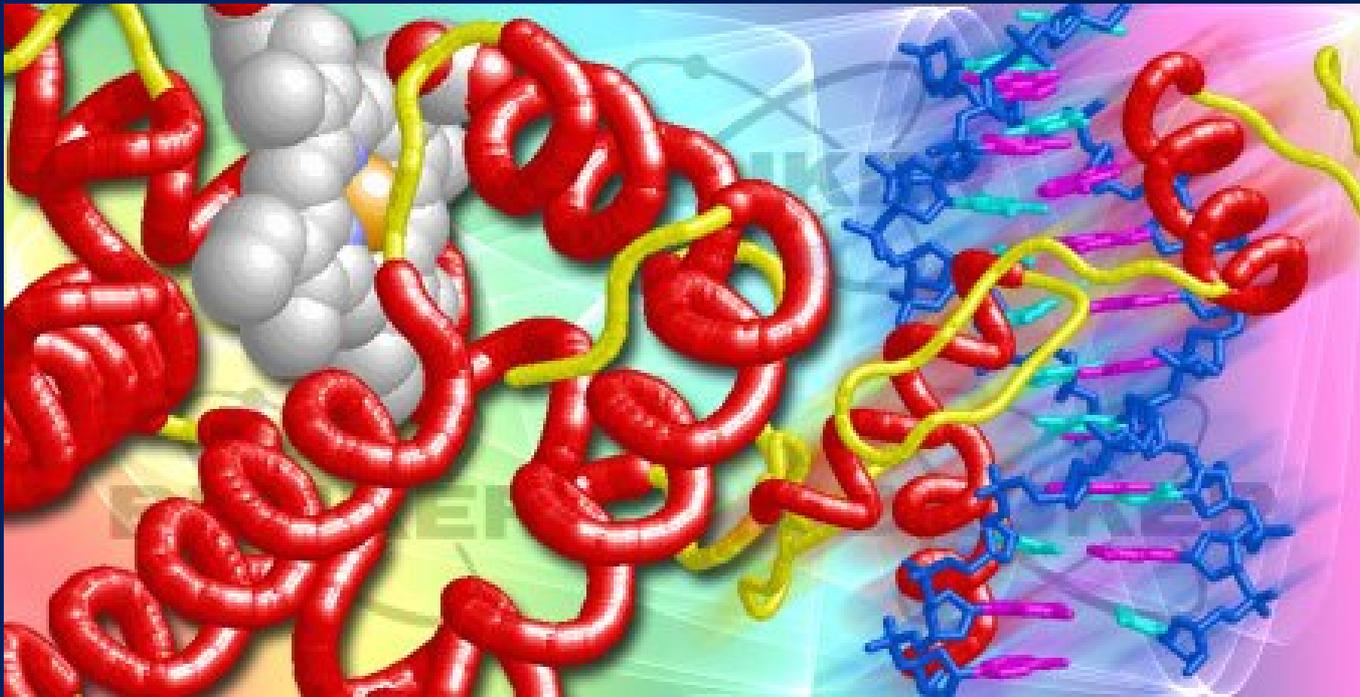


ecosystem

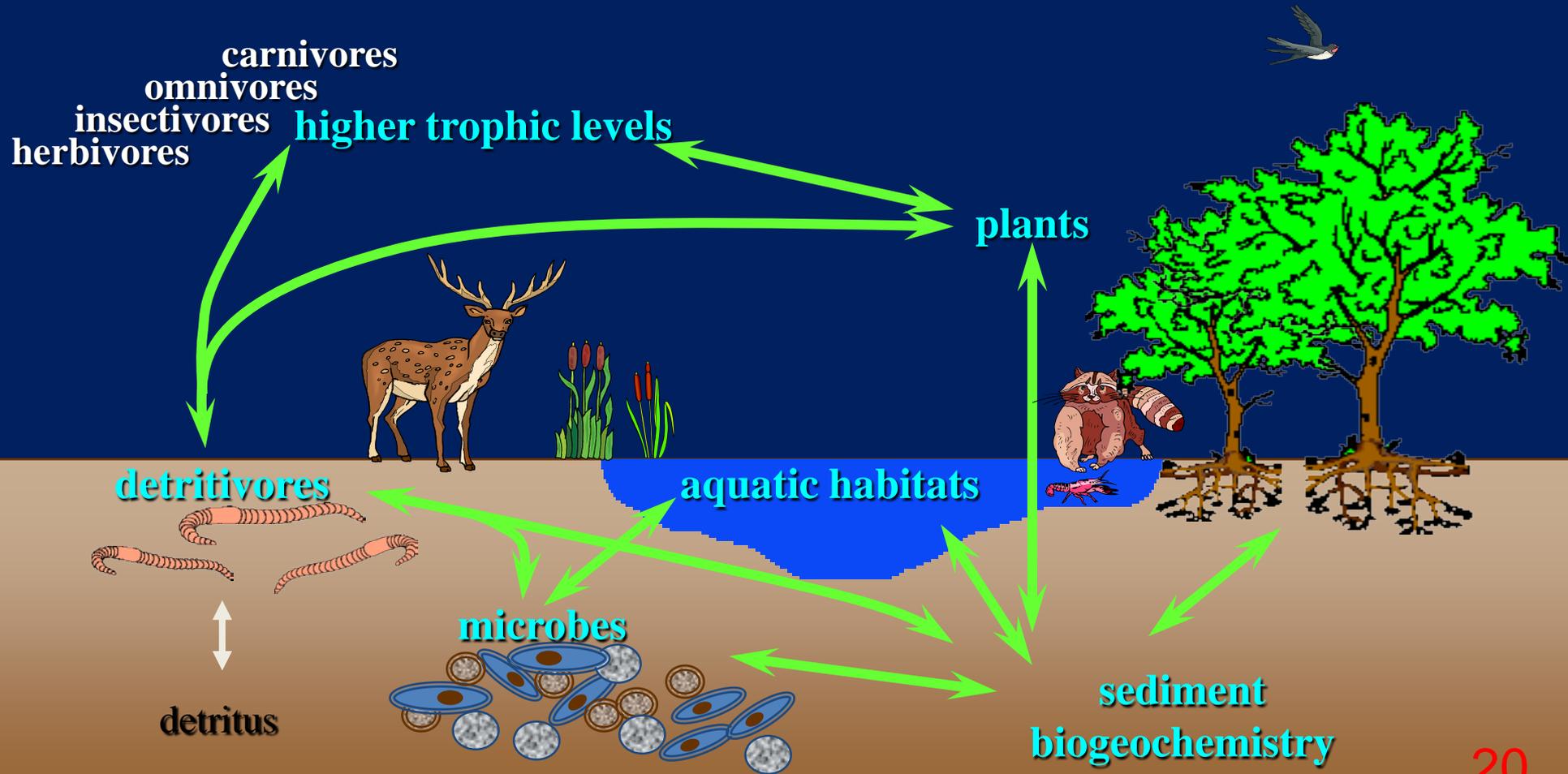
Next Generation Radioecology

Proteomics, Glycomics and Epigenetics

Oh My!



Ecosystems Approach to Radioecology



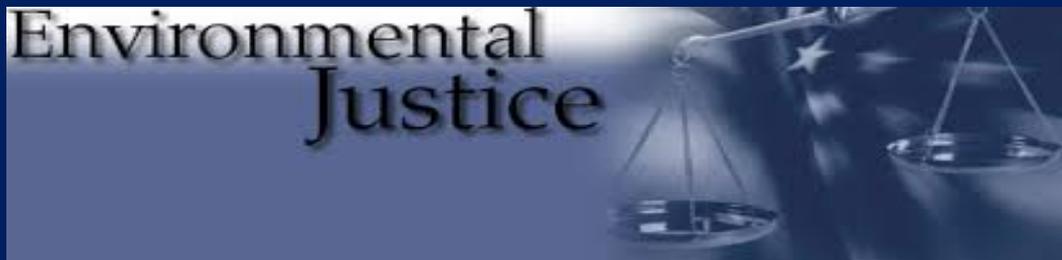
Research on Wildlife Movement, Behavior and Uptake



mstime.com



Outreach and Monitoring for Local Communities



SREL Radionuclide Education, Monitoring and Outreach Program (REMOP) - UPDATE

- **Currently Holding Monthly Programs on Specific Topics for Community Members as Well as Ad Hoc Presentations**
- **Have a 5 Member Community Advisory Council in Place**
- **Will be Conducting a Community-Wide Survey on Perceptions of Radionuclides and Radiation Risk this Winter**
- **Will be Conducting Sampling for Radionuclides This Spring**
- **Currently Evaluating Last Decade of Monitoring Data from SRS, Georgia Power, and SCDHEC for Comparative Purposes**
- **Constructing an Overview Presentation for Year Two of Project that will Incorporate Both New Data and Long-Term Monitoring Data for Educational and Comparative Purposes**
- **Building a Curriculum on Radiation Risks for Local Schools**

Challenges for FY18

1. Funding Environment for External Grants and Contracts
2. Graduate and Undergraduate Housing Needs
3. Administrative Burden at Current Staff Levels
4. Additional Staffing for Safety Programs
5. Turnover of Critical Scientific Staff Positions



THANK YOU