



U.S. DEPARTMENT OF  
**ENERGY**

**Nuclear Energy**

---

## **Wildlife Monitoring at the INL Site**

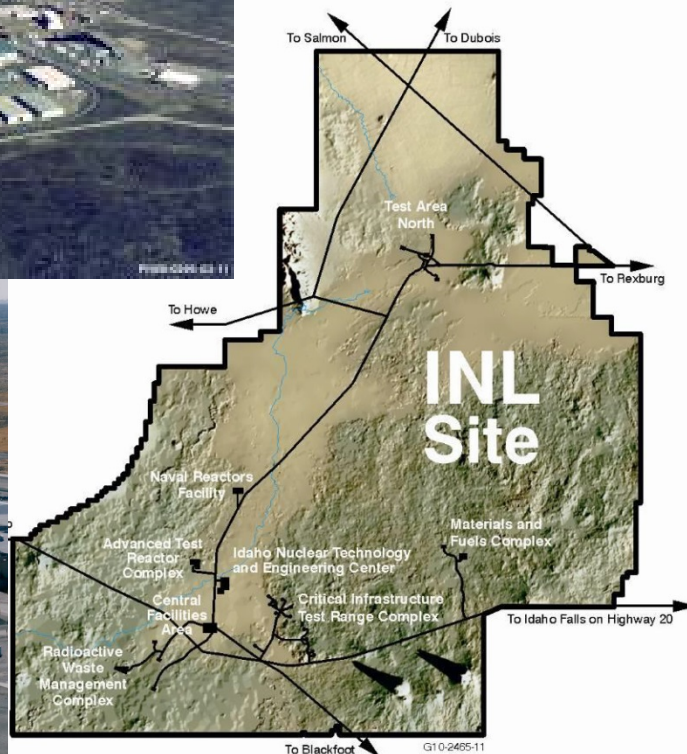
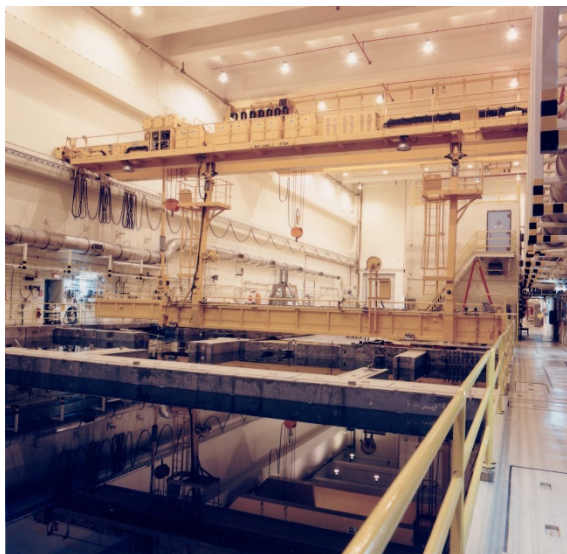
**Betsy Holmes  
Environmental Resources Team  
Office of Nuclear Energy  
U.S. Department of Energy  
June 23, 2015**



U.S. DEPARTMENT OF  
**ENERGY**

Nuclear Energy

# The INL Site...



**Idaho National Laboratory**





U.S. DEPARTMENT OF  
**ENERGY**

Nuclear Energy

# ...and the INL Site







U.S. DEPARTMENT OF  
**ENERGY**

Nuclear Energy

# INL Site Environment





U.S. DEPARTMENT OF  
**ENERGY**

Nuclear Energy

# Long History of Ecological Monitoring

- Studies and datasets date back to 1950's
- National Environmental Research Park (NERP) – 1975
- 80 MS theses; 22 PhD dissertations; 298 professional papers; 312 refereed journal papers; numerous INL Site reports





# Environmental Surveillance, Education, and Research Program - ESER

## ■ DOE-ID direct contract with Gonzales-Stoller Surveillance

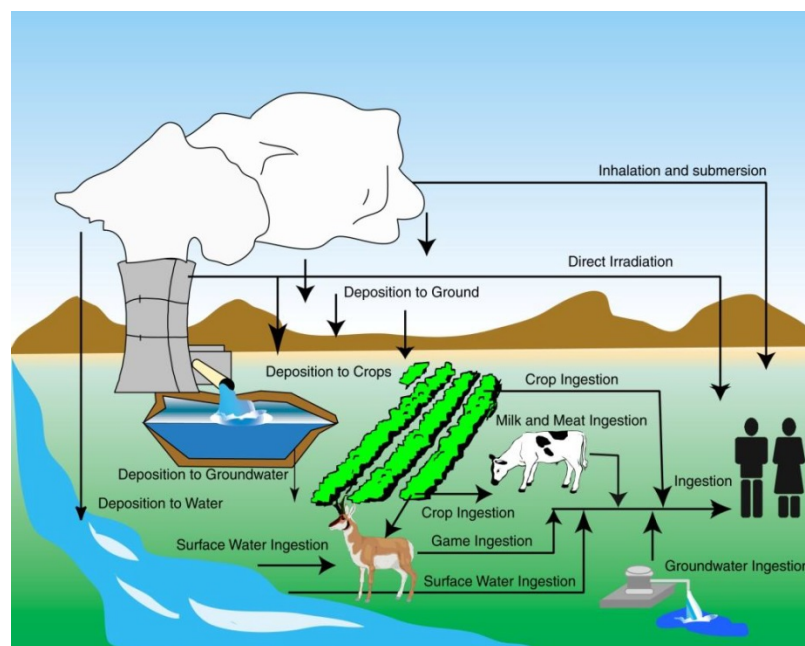
## ■ Offsite environmental surveillance

- Air
- Water
- Agricultural Products
- External Exposure
- Precipitation
- Atmospheric Moisture
- Soil

## ■ Onsite monitoring of uptake & transport radiological contaminants by biota (waterfowl, big game animals)

## ■ Dose assessments for humans and biota

## ■ Ecological and radioecological monitoring and research







U.S. DEPARTMENT OF  
**ENERGY**

Nuclear Energy

# Gonzales-Stoller Surveillance ESER Personnel



Bryan Bybee  
Field  
Technician



Doug Halford  
ESER Program  
Director



Kurt Edwards &  
Jeremy Shive  
GIS Analysts



Roger Blew, PhD  
Senior Certified  
Ecologist



Jackie Hafla  
Natural Resource  
Specialist



Quinn Shurtliff, PhD  
Conservation  
Scientist



Amy Forman  
Plant Ecologist



Jericho Whiting, PhD  
Wildlife Ecologist



# Purpose

- To conduct surveys that track and trend plant and animal populations and distribution to evaluate ecosystem health and impacts from INL Site operations and natural/man-made events (such as wildland fires, drought, etc.)
- Supports: national and state programs; regulatory compliance (NEPA, endangered species); address stakeholder concerns; supports land management decisions and planning for new projects; scientific research
- Different than CERCLA ecological monitoring





U.S. DEPARTMENT OF  
**ENERGY**

Nuclear Energy

# ESER Routine Wildlife Monitoring

- **Bald Eagles & Other Raptors**
- **Breeding Birds**
- **Bats**
- **Sage-grouse**
- **Raven Nests**

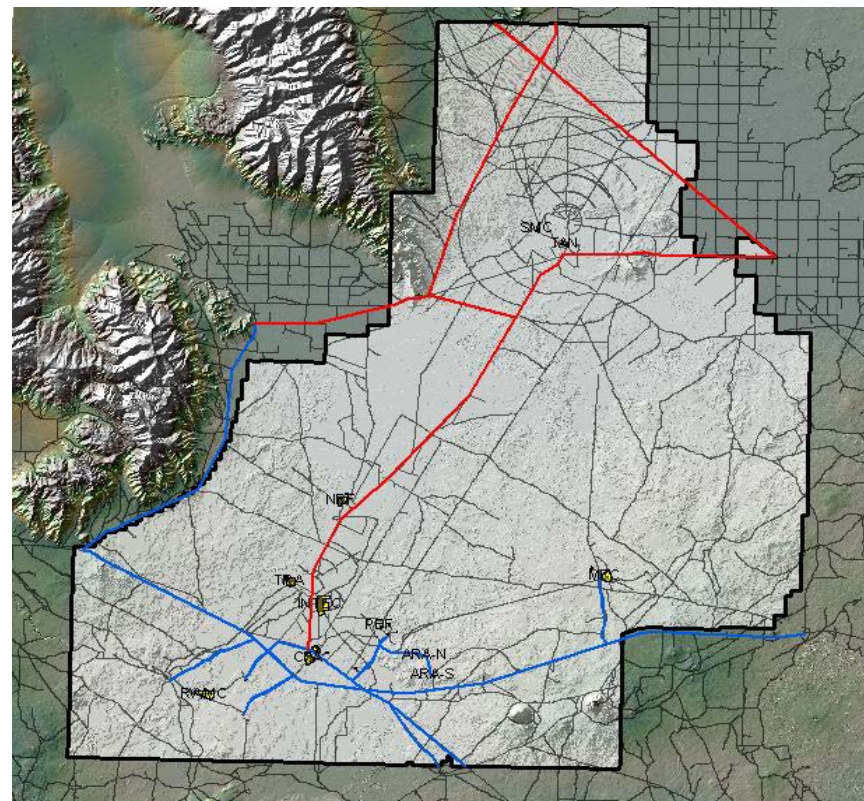




# Midwinter Bald Eagle and Raptor Surveys



- Conducted on the INL Site since 1983
- Bald eagle, former endangered species
- Part of the program managed by USGS and Army Corps of Engineers to determine bald eagle wintering distribution nationwide
- Surveys are conducted on two established routes on the INL Site (January)
- 109 birds counted in 2014
- 1 bald eagle, 7 golden eagles; raven and rough-legged hawk – most abundant species



raven



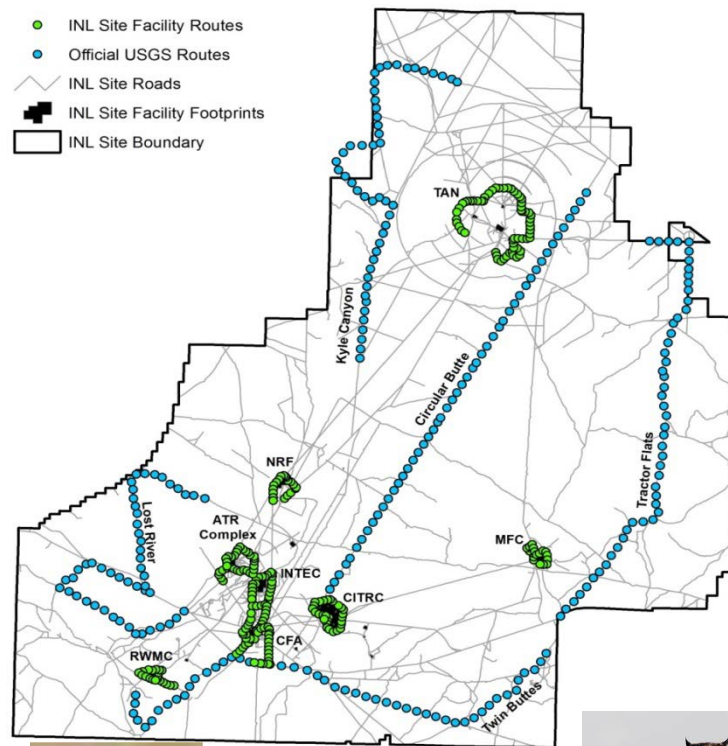
rough-  
legged  
hawk



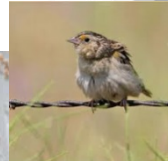
# Breeding Birds



- Established routes on the INL Site in 1985
- Part of a nationwide program managed by the USGS; tracks status and trends of North American bird populations
- Five official USGS routes and eight “facility” routes developed specifically for the INL are surveyed annually (June)
- 2,677 birds counted in 2014 representing 38 species



Brewer's  
sparrow



sage  
sparrow



sage  
thrasher



western  
meadowlark



horned  
meadowlark





U.S. DEPARTMENT OF  
**ENERGY**

Nuclear Energy

# Bat Monitoring Video

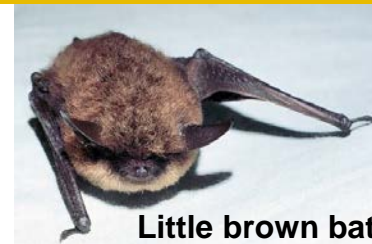




# Bats



- INL Site provides suitable habitat for bats
- Fourteen species occur in Idaho, 9 documented on the Site, 1 has been petitioned for ESA listing
- Recent increased importance due to white-nose syndrome (WNS)
- Routine bat monitoring and mitigating actions initiated since 2011 (DOE-ID & NR partnership):
  - Restricted cave access
  - Cave surveys (“hibernacula”) – Jan.- March
  - Passive & active acoustical monitoring – Apr. – Oct.
  - Cave biota & soil sampling
  - Bat protection plan



Little brown bat



Western small-footed  
myotis



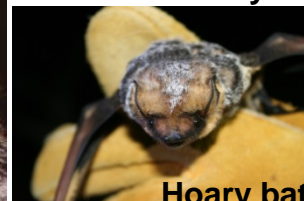
Big brown bat



Silver-haired bat



Western long-eared  
myotis



Hoary bat



Townsend's  
big-eared  
bat









U.S. DEPARTMENT OF  
**ENERGY**

Nuclear Energy

# Candidate Conservation Agreement (CCA) for Greater Sage-Grouse



- **Candidate species**
- **Voluntary Agreement with U.S. Fish & Wildlife Service, signed in 2014**
- **Protects Sage-grouse and their habitat**
- **Allows flexibility to meet mission needs**
- **DOE agrees to implement Conservation Measures**
- **Requires sage-grouse population, habitat, and threat monitoring**

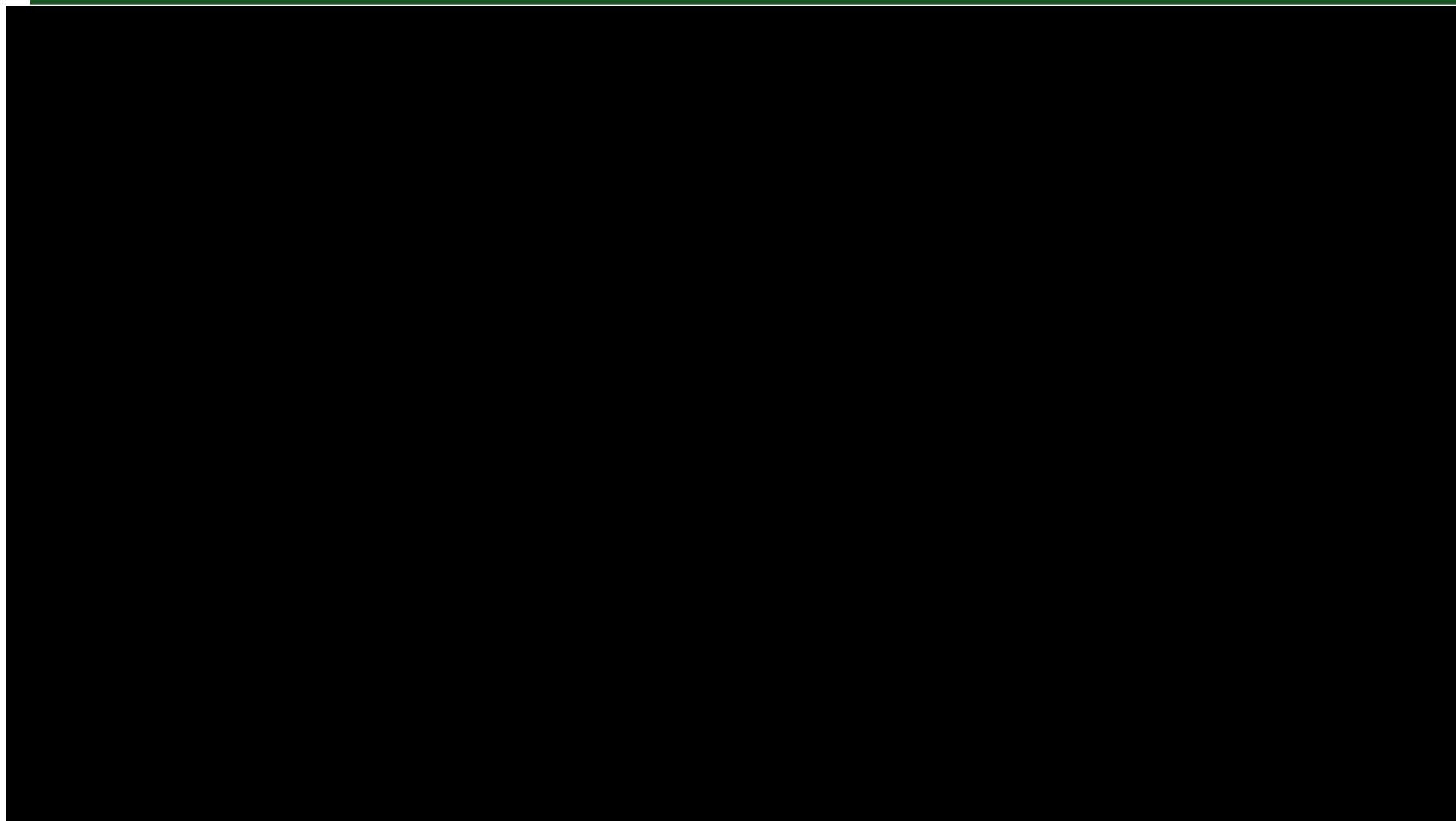




U.S. DEPARTMENT OF  
**ENERGY**

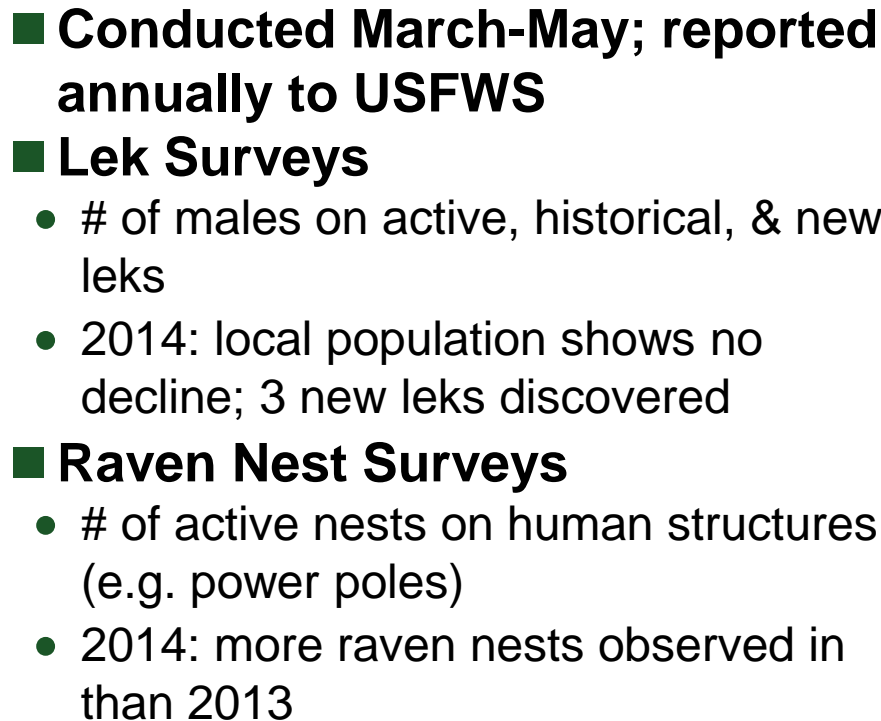
Nuclear Energy

# Sage-grouse video



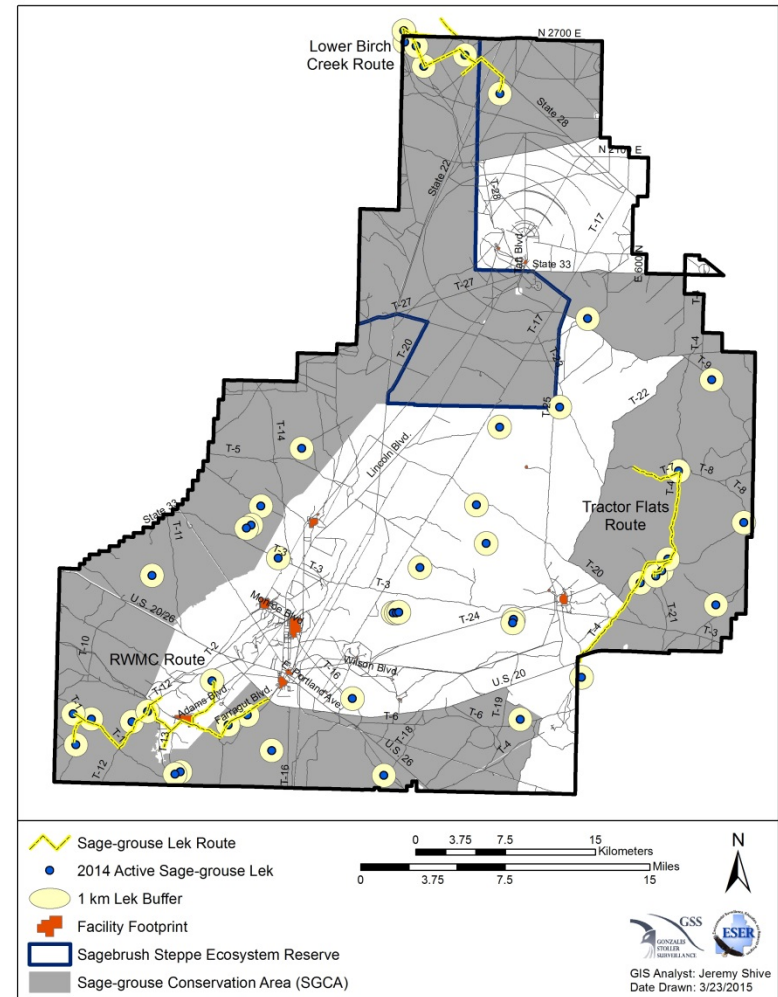


# CCA Annual Wildlife Monitoring



Active lek: 2 or more male sage-grouse have attended in 2 or more of the previous 5 years.

Active nest: At least 1 raven was present and exhibiting behaviors typical of a nest occupant (e.g. incubating, carrying sticks to the nest).







# Reporting

## ■ Data are shared with state and federal agencies

## ■ Major Reports

- Annual Site Environmental Report
- Long-Term Vegetation Transects Survey Report
- Candidate Conservation Agreement Monitoring Report

☀ ESER Reports: <http://www.gsseser.com/index.htm>

■ Midwinter Bald Eagle Counts: <http://gis.nacse.org/eagles/>

■ North American Breeding Bird Survey: <https://www.pwrc.usgs.gov/bbs/>

■ USFWS Endangered Species: <http://www.fws.gov/endangered/>

■ Sage-grouse: <http://fishandgame.idaho.gov/public/wildlife/sageGrouse/>

■ Bats: [http://www.nwhc.usgs.gov/disease\\_information/white-nose\\_syndrome](http://www.nwhc.usgs.gov/disease_information/white-nose_syndrome)





U.S. DEPARTMENT OF  
**ENERGY**

Nuclear Energy

---

QUESTIONS?



U.S. DEPARTMENT OF  
**ENERGY**

Nuclear Energy

---

# BACKUP SLIDES





## White-nose Syndrome in Bats



- Caused by a cold-loving fungus – *Pseudogymnoascus destructans* (formerly *Geomyces destructans*)
- 25 states from northeastern to central U.S. and 5 Canadian provinces
- Nearly 6 million bats killed, population declines of 80% in some regions
- Thought to have originated in Europe
- Huge impact to agricultural industry—bats save farmers about \$23 billion/year by eating crop pests
- Cave entry controls, including decontamination, to minimize human-related spread
- Nationwide state and federal multi-agency coordinated monitoring and research
- Common bacterium, *Rhodococcus rhodochrous*, may hold promise for treating the disease



# DOE National Environmental Research Parks (NERP)

**DOE's National Environmental Research Parks**  
**More than 2 million acres (3200 square miles)**

| Site           | Year Designated | Acres   | EcoRegion                    |
|----------------|-----------------|---------|------------------------------|
| Savannah River | 1972            | 198,000 | Southeastern Mixed Forest    |
| Idaho          | 1975            | 568,000 | Shrub-steppe                 |
| Los Alamos     | 1976            | 25,600  | Juniper-Pinyon and Grassland |
| Hanford        | 1976            | 366,000 | Shrub-steppe and riverine    |
| Oak Ridge      | 1980            | 21,500  | Eastern Deciduous Forest     |
| Fermi Lab      | 1989            | 6,800   | Tallgrass Prairie            |
| Nevada         | 1992            | 865,000 | Desert Shrub                 |

## More Info:

- <http://www.nerp.ornl.gov/>
- <http://www.gsseser.com/NERP.htm>





# Vegetation/Habitat Monitoring



## ■ Long-Term Vegetation Transects

- 90 plots established in 1950
- Conducted every five years
- 2011 survey shows: increases in crested wheatgrass; sagebrush cover has stabilized from 2006-2011

## ■ CCA Habitat Monitoring

- Sagebrush habitat condition trends
- Sagebrush amount and distribution
- Inventory and monitoring of non-native annual grasses
- 2014: no reduction in sagebrush habitat within the SGCA

