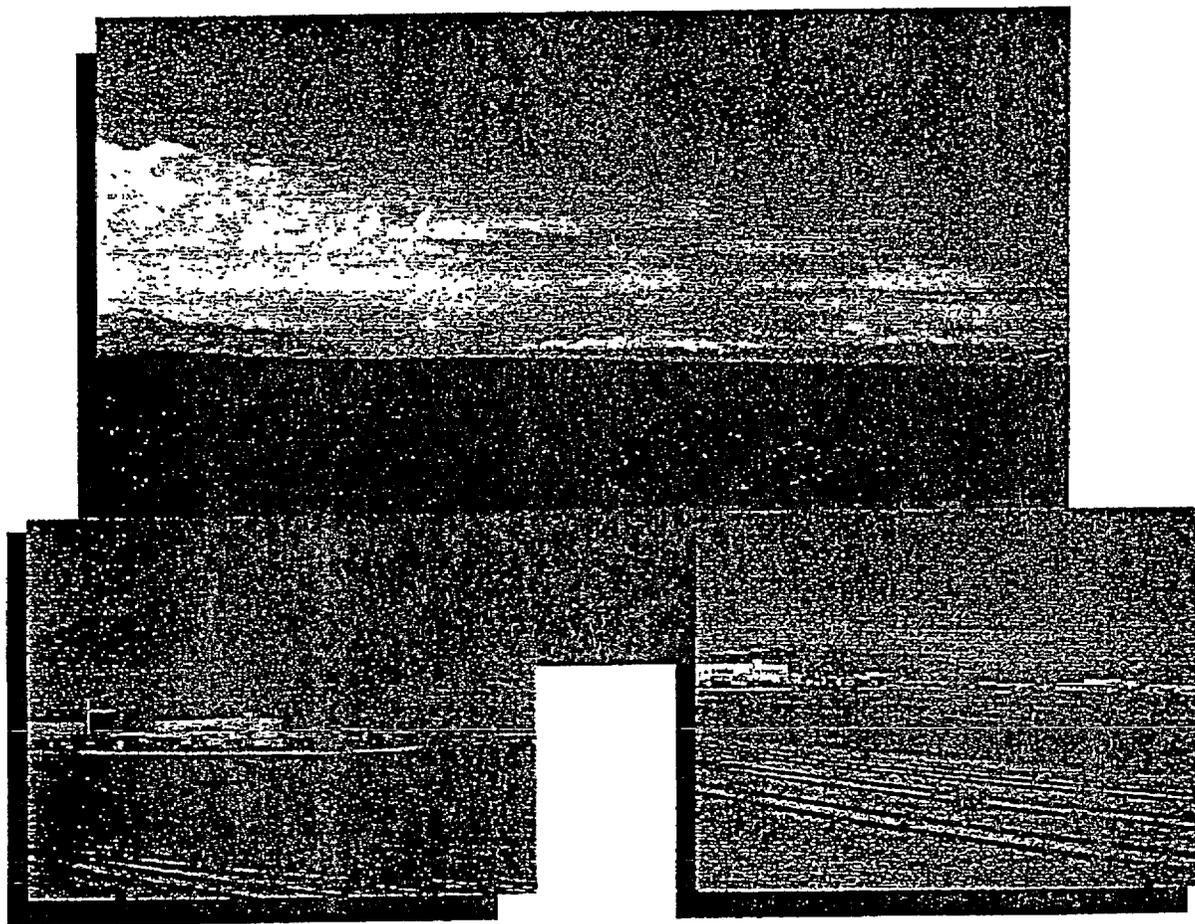


**Ecological Resources of the Idaho National Engineering  
and Environmental Laboratory and Potential Effects of  
the Independent Spent Fuel Facility  
Final**

*May 18, 2001*



*Stoller*  
established 1959

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Enclosure

# Ecological Resources of the Idaho National Engineering and Environmental Laboratory and Potential Effects of the Independent Spent Fuel Facility

Roger D. Blew, Ph.D.  
S.M. Stoller Corp.

May 17, 2001

## INTRODUCTION

The Independent Spent Fuel Facility (ISF) will be located on the Idaho National Engineering and Environmental Laboratory (INEEL) near the Idaho Nuclear Technology and Engineering Center (INTEC). The INEEL is located on the upper Snake River Plain of eastern Idaho. The INEEL occupies approximately 890 mi<sup>2</sup>. It is bounded on the north and west by the Bitterroot, Lemhi, and Lost River mountain ranges. The INEEL is relatively flat with some volcanic buttes and lava flows. Mean annual precipitation is approximately nine inches. About one third of the precipitation falls during the growing season.

## AREA OF POTENTIAL IMPACTS

This evaluation covers two sites; the ISF site itself and a nearby construction laydown area (Appendix A). The ISF site covers approximately seven acres and the construction laydown area covers approximately nine acres. Both of these areas are immediately east of INTEC. Any impacts will likely be due to soil disturbance on these two sites.

## METHODS OF INVESTIGATION

Surveys for ecological resources on the INEEL and near the ISF site were completed using two methods. First we searched records of previous surveys on

the INEEL and for surveys that may have been conducted near the proposed site of the ISF. We also conducted a field survey of the ISF site and the construction laydown area on May 7, 2001. That survey included a list of plant species present, approximate vegetative cover and suitable wildlife habitat.

## ECOLOGICAL RESOURCES OF THE INEEL

### Vegetation

The flora of the INEEL and adjacent foothills includes 472 species of vascular plants representing 59 families. The vegetation of the INEEL is primarily shrub-steppe having a shrub overstory and an understory of perennial grasses and forbs. A total of 15 vegetation community classes were recognized as a result of a vegetation mapping effort (Kramber et al. 1992). These classes can be grouped into six, structurally distinct habitat types. They are shrub-steppe, juniper woodland, grasslands, wetland, playas and exposed lava.

The most common vegetation community on the INEEL is sagebrush steppe (Figure 1). It is dominated by Wyoming big sagebrush (*Artemisia tridentata* subspecies *wyomingensis*) and basin big sagebrush (*Artemisia tridentata* subspecies *tridentata*). Green rabbitbrush (*Chrysothamnus viscidiflorus*) is also common. The most

common grasses are thickspike wheatgrass (*Elymus lanceolatus*), bluebunch wheatgrass, (*Pseudoreognaria spicata*), bottlebrush squirreltail (*Elymus elymoides*), Indian ricegrass (*Oryzopsis hymenoides*), and needle-and-thread (*Stipa comata*).

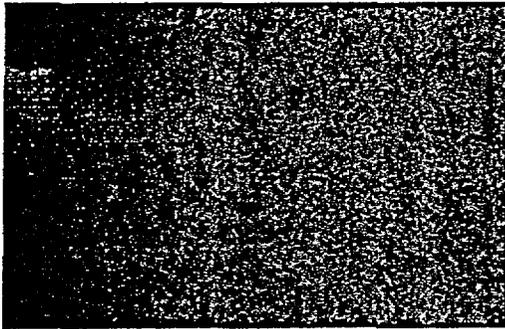


Figure 1. Sagebrush steppe typical of the INEEL.

Wetlands on the INEEL are primarily limited to the Big Lost River Sinks at the terminus of the Big Lost River (Anderson et al. 1996). These wetlands are periodically flooded during years of above normal precipitation. The dominant species in these wetlands is common spike rush (*Eleocharis palustris*). Anderson et al. (1996) also reported these wetlands have very low diversity. No wetlands occur within the vicinity of INTEC or the ISF.

A large portion of the interior of the INEEL is undeveloped and provides important habitat for native flora and fauna. About 60% of the INEEL is grazed by sheep and cattle (Figure 2). Grazing is administered by the Bureau of Land Management. The ISF is approximately four miles from the nearest grazing allotment border.

## Animals

A total of 219 species of vertebrates have been recorded on the INEEL (Reynolds et al. 1986). This includes 37 mammals, 164 birds, 1 amphibian, 10 reptiles, and six fish species. These include a number of sagebrush-obligate species including pygmy rabbits (*Sylvilagus nuttallii*), sage grouse (*Centrocercus urophasianus*), sage thrasher (*Oreoscoptes montanus*), sage sparrow (*Amphispiza bilineata*), and northern sagebrush lizard (*Sceloporus graciosus*). The most common predators are coyote (*Canis latrans*) and badger (*Taxidea taxus*). Common ungulates include pronghorn (*Antilocapra americana*), mule deer (*Odocoileus hemionus*), and elk (*Cervus elaphus*).

Aquatic communities on the INEEL are dependent on the flow of the Big Lost River. Drought and upstream irrigation diversions greatly limit the flow of water on to the INEEL. In years when water does flow, six species of fish have been observed on the INEEL. They include rainbow trout (*Oncorhynchus mykiss*), mountain whitefish (*Prosopium*

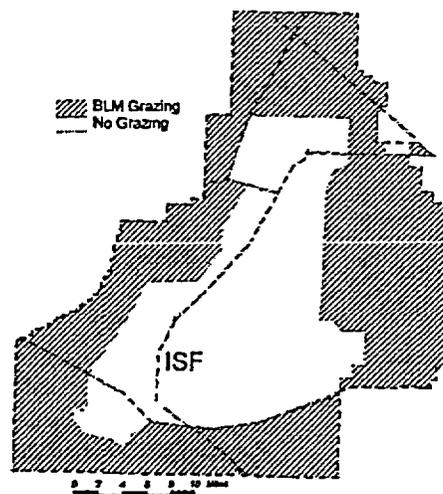


Figure 2. Areas grazed on the INEEL.

*williamsoni*), shorthead sculpin (*Cottus confuses*), kokanee salmon (*Oncorhynchus nerka*), brook trout (*Salvelinus fontinalis*) and speckled dace (*Rhinichthys osculus*) (Overton 1977, Arthur et al. 1984).

## ECOLOGICAL RESOURCES ON OR NEAR THE ISF

The area where the ISF will be constructed and the construction laydown area have been previously disturbed (Figures 3 and 4). Vegetative cover on these sites is less than five percent. Native plant species present include green rabbitbrush (*C. viscidiflorus*), gray rabbitbrush (*C. nauseosus*), desert parsley (*Lomatium foeniculaceum*), and long-leaved phlox (*Phlox longifolia*). Non-native plants on the site included cheatgrass, (*Bromus tectorum*), Russian thistle (*Salsola kali*), crested wheatgrass (*Agropyron cristatum*), tansy mustard (*Descurainia sophia*), and dandelion (*Taraxacum officinale*). The site likely provides little habitat value to wildlife.

The nearest native vegetation community is sagebrush steppe (Appendix A map) and likely supports a diverse complement of small mammals, reptiles, and breeding bird species common to the sagebrush steppe. These

nearby areas are also likely used by pronghorn and mule deer throughout the year.

## THREATENED AND ENDANGERED SPECIES ON THE INEEL

The U.S. Fish and Wildlife Service (USFWS) and the Idaho Department of Fish and Game Conservation Data Center were contacted for their lists of species of special status that might occur on the INEEL (see Appendix B for correspondence). Those species and their status are listed in Table 1.

The status categories of "Watch" and "Species of Concern" are categories designated by the USFWS Snake River Basin Field Office, Boise. Species in these categories have no protection under the Endangered Species Act, but should be considered for planning purposes because of potential future listings as threatened or endangered. The USFWS also advises an evaluation of potential effects on Candidate species that may occur in project areas. Species listed as threatened or endangered and occur on the INEEL include the Gray Wolf, Bald Eagle, and Ute ladies'-tresses.

In most of Idaho the Gray Wolf is listed as an experimental, non-essential



Figure 3. Proposed location for the ISF.

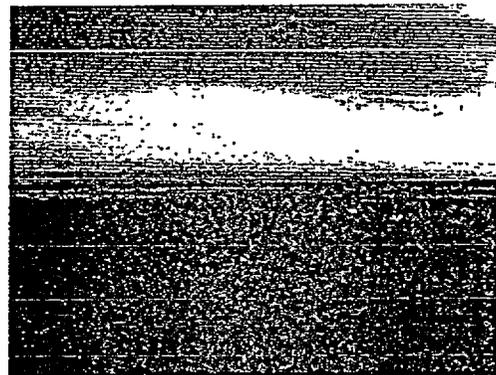


Figure 4. Construction laydown area for ISF.

Table 1. Special status species that may occur within the boundaries of the INEEL.

Scientific Name	Common Name	Federal Status <sup>1</sup>	Idaho Status <sup>2</sup>
<b>Animals</b>			
<i>Canis lupus</i>	Gray wolf	LT/XN	
<i>Haliaeetus leucocephalus</i>	Bald eagle	LT	LT
<i>Buteo regalis</i>	Ferruginous hawk	W	P
<i>Centrocercus urophasianus</i>	Sage grouse	SC	
<i>Athene cunicularia hypugaea</i>	Western burrowing owl		P
<i>Numenius americanus</i>	Long-billed curlew	SC	P
<i>Sorex merriami</i>	Merriam's shrew	SC	U
<i>Myotis evotis</i>	Long-eared myotis	W	U
<i>Myotis ciliolabrum</i>	Western small-footed myotis	W	U
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	SC	SC
<i>Brachylagus idahoensis</i>	Pygmy rabbit	W	G,SC
<i>Sceloporus graciosus graciosus</i>	Northern sagebrush lizard	SC	
<b>Plants</b>			
<i>Spiranthes diluvialis</i>	Ute ladies'-tresses	LT	
<i>Botrychium lineare</i>	Slender moonwort	SC	
<i>Astragalus ceramicus var. apus</i>	Painted milkvetch	SC	
<i>Astragalus aquilonius</i>	Lemhi milkvetch		GP3
<i>Camissonia pterosperma</i>	Winged-seed evening primrose		S
<i>Ipomopsis polycladon</i>	Spreading gilia		2

<sup>1</sup> LT = Listed Threatened, XN = Experimental/Nonessential Population, SC = Species of Concern, W = Watch.

<sup>2</sup> E = Endangered, SC = Species of Special Concern, P = Protected nongame, U = Unprotected nongame, G = Game, S = Sensitive, 2 = Priority 2, GP3 = Global Priority 3.

population. There have been several unconfirmed sightings of the gray wolf on the INEEL during the past decade. None of these sightings were near facility complexes or the Big Lost River. Critical habitat for the Gray Wolf does not exist on the INEEL. The USFWS does not designate Critical Habitat for experimental, non-essential populations. Gray wolves in Idaho west of Interstate 15 and south of Interstate 90 are in the area designated as experimental, non-essential population. This includes the INEEL.

Inventories for Bald Eagles on the INEEL are conducted annually as part of the USFWS Mid-winter Bald Eagle Count. Bald Eagles occur on the INEEL only during winter and primarily near the north end of the site near the towns of Howe and Mud Lake. On rare occasions bald eagles may congregate at the spreading areas near the Radioactive Waste Management Complex near the southern boundary of the INEEL.

The USFWS lists Ute ladies'-tresses (*Spiranthes diluvialis*) as a threatened species possibly occurring on the INEEL. Although specific surveys for it have not been conducted, it has never been recorded on the INEEL. Suitable habitat for this (moist soils in mesic or wet meadows near springs, lakes, and perennial streams) does not occur on the proposed ISF site.

#### **Potential Threats Due to Construction or Operation of ISF**

It is unlikely the proposed activities at this site will have any measurable impact on species of federal or state concern. There are no federally listed or proposed threatened or endangered species, species of special concern, or records thereof, or designated critical habitat in proximity to the project area.

#### **Ecological and Biological Research in Progress**

Ecologists and biologists from the Department of Energy's Environmental Surveillance, Education and Research program, the INEEL, and regional universities were contacted about research activities in the vicinity of the ISF. The result of that inquiry was that no ecological or biological research would likely be affected by activities at the ISF.

One long-term monitoring program that does collect data nearby is the Breeding Bird Survey. This survey on the INEEL includes 13 permanent routes established in 1985. Five of these routes are in remote locations and the data from these is reported to the U.S. Geological Survey, Biological Resources Division annually. There are also eight routes near INEEL facilities and complexes including INTEC and the ISF site

(Appendix A map). These facility routes are used to assess the impacts of INEEL activities on breeding bird use of areas near facilities. Because the purpose of this monitoring is to detect effects, the monitoring program itself will not be negatively affected by activities at ISF.

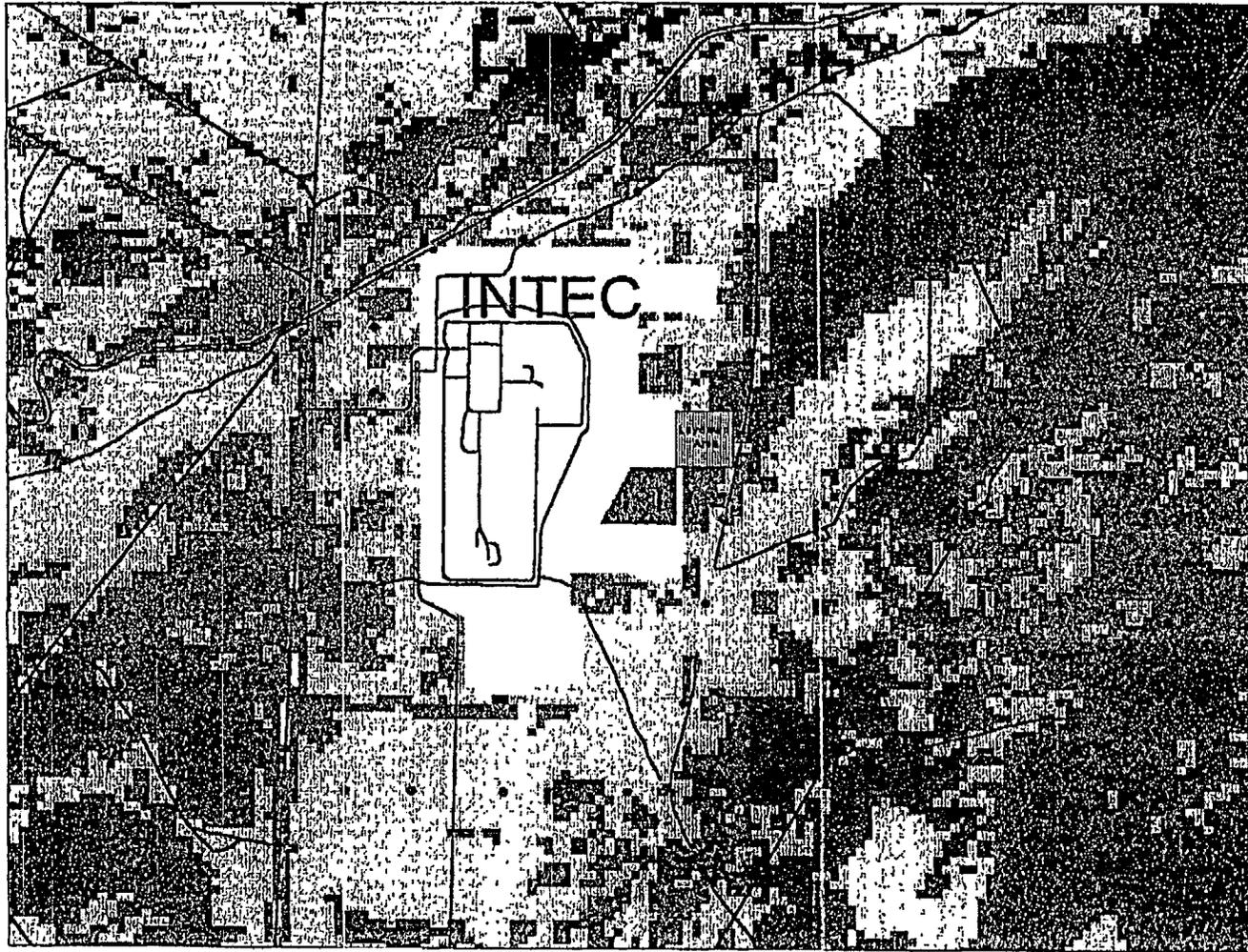
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National Environmental Research

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## APPENDIX A



# INTEC, ISF and Vicinity

- Breeding Bird Survey Route Stops
- Roads
- ~ Big Lost River

## Vegetation Classification

- Grassland
- ▨ Sagebrush Steppe Off-Lava
- ▩ Sagebrush Steppe On-Lava
- ▧ Sagebrush/Winterfat
- ▦ Sagebrush/Rabbitbrush
- ▥ Low Shrubs On-Lava
- ▤ Playa, Bare Ground, Disturbed Areas

Classifications based on Kramer et al 1992

0 600 1200 1800 2400 3000 Feet

*Stoller*

## APPENDIX B

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# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

Snake River Basin Office, Columbia River Basin Ecoregion  
1387 South Vinnell Way, Room 368  
Boise, Idaho 83709

MAR 01 2001

Roger D. Blew, Ph.D.  
Plant Ecologist  
The S. M. Stoller Corporation  
1780 First Street  
Idaho Falls, Idaho 83401

Subject: Department of Energy, Idaho National Engineering and Environmental Laboratory  
Species List Update  
1-4-01-SP-364/Updates #1-4-01-SP-75/506.0000

Dear Mr. Blew:

The U.S. Fish and Wildlife Service (Service) is writing to provide you with an updated list of endangered, threatened, proposed, and/or candidate species which may occur within the boundaries of the Department of Energy, Idaho National Engineering and Environmental Laboratory. We have enclosed the current list. This letter officially updates species list number 1-4-01-SP-75 of December 1, 2000, and provides you with a new number 1-4-01-SP-364. You should refer to the new number in subsequent correspondence and documentation.

Information concerning Federal agency obligations under the Endangered Species Act has been provided to you in the past. If you would like us to send you any of this information again or if you have questions, please contact Carol Wanstrom of this office at (208) 378-5388.

Thank you for your continued interest in endangered species conservation.

Sincerely,

*Peter J. Smith*  
Supervisor, Snake River Basin Office

Enclosure

cc: FWS-ES, Chubbuck

ENCLOSURE

LISTED AND PROPOSED ENDANGERED AND THREATENED  
SPECIES, AND CANDIDATE SPECIES, THAT MAY OCCUR  
WITHIN THE BOUNDARIES OF THE INEEL-DOE PROJECT  
1-4-01-SP-364

LISTED SPECIES	COMMENTS
Gray wolf (XN) ( <i>Canis lupus</i> )	Experimental/Non-essential population
Bald eagle (LT) ( <i>Haliaeetus leucocephalus</i> )	Occasionally winter on part of INEEL
Ute ladies'-tresses (LT) ( <i>Spiranthes diluvialis</i> )	

PROPOSED SPECIES

None

CANDIDATE SPECIES

None

The Fish and Wildlife Service has concerns about the following plants and animals. Although these species have no status under the Endangered Species Act, we are concerned about their population status and threats to their long-term viability. In context with ecosystem-level management, we suggest that you consider these species and their habitats in project planning and review.

Mammals

Long-eared myotis  
(*Myotis evotis*)

Small-footed myotis  
(*Myotis ciliolabrum*)

Townsend's big-eared bat  
(*Corynorhinus townsendii*)

Pygmy rabbit  
(*Brachylagus idahoensis*)

Merriam's shrew  
(*Sorex merriami*)

Birds

Greater sage-grouse  
(*Centrocercus urophasianus*)

Long-billed curlew  
(*Numenius americanus*)

Ferruginous hawk  
(*Buteo regalis*)

Amphibians and Reptiles

Northern sagebrush lizard  
(*Sceloporus graciosus graciosus*)

Plants

Slender moonwort  
(*Botrychium lineare*)

Painted milkvetch  
(*Astragalus ceramicus* var. *apus*)

## GENERAL COMMENTS

- LE - Listed endangered
- LT - Listed threatened
- XN - Experimental/non-essential population
- PT - Proposed threatened
- C - Candidate

GRAY WOLF (*Canis lupus*) -- The gray wolf is listed as endangered in the coterminous United States, except where it is listed (1) as threatened (Minnesota) or (2) as a nonessential experimental population including Wyoming, and portions of Idaho and Montana. Within the central Idaho area, the nonessential experimental population areas are those portions of Idaho that are south of Interstate Highway 90 and west of Interstate Highway 15, and those portions of Montana south of Interstate Highway 90, Highway 93 and 12 from Missoula, Montana west of Interstate Highway 15. Portions of the Yellowstone Management Area (YMA) in Idaho and Montana are designated as the nonessential experimental population area. The boundaries of the YMA include that portion of Idaho that is east of Interstate Highway 15; that portion of Montana that is east of Interstate Highway 15 and south of the Missouri River from Great Falls, Montana, to the eastern Montana border; and all of Wyoming.

Federal action agencies are required to confer with the Service if their actions are likely to jeopardize the continued existence of gray wolves; or you have the option of conferring with the Service regardless of the determination.

UTE LADIES'-TRESSES (*Spiranthes diluvialis*) has the potential to occur in wetland and riparian areas including springs, wet meadows, and river meanders. The plant is known to occur at sites ranging from 1,500 to 7,000 feet in elevation. This species generally flowers from mid-July through September, and can be identified definitively only at that time. The orchid can remain dormant for several years; therefore, we suggest surveys for the orchid be scheduled for sequential years. The species may be adversely affected by modification of riparian and wetland habitats associated with livestock grazing, vegetation removal, excavation, construction for residential or commercial purposes, stream channelization, hydroelectric development and operation, and actions that alter hydrology.



## IDAHO CONSERVATION DATA CENTER



Idaho Department of Fish and Game • 600 South Walnut • P.O. Box 25, Boise, Idaho 83707 • (208) 334-3402 • FAX 334-2114

21 February 2001

Dr. Roger D. Blew, Plant Ecologist  
S. M. Stoller Coporation  
1780 First Street  
Idaho Falls, ID 83401

Dear Dr. Blew:

I am responding to your request for a list of special status species associated with the Idaho National Engineering and Environmental Laboratory. The accompanying list has to be understood in the context of the lack of data made available to the CDC. Data transfers, over the years, have been one way--i.e., the CDC has provided data to INEEL and contractors but has received very little in the way of updated information or new occurrences. For example, we know from literature that western burrowing owl occurs at INEEL, but our database contains no site-specific data.

If you have questions regarding this response, please contact me.

Sincerely,

George Stephens  
Fish and Game Data Coordinator

Please note: The quantity and quality of data collected by the Idaho Conservation Data Center (CDC) are dependent on the research and observations of many individuals and organizations. In most cases, these data are not the result of comprehensive or site-specific field surveys; many natural areas in Idaho have never been thoroughly surveyed. For these reasons, the CDC cannot provide a definitive statement on the presence, absence, or condition of biological elements in any part of Idaho. CDC reports summarize the existing information known to the CDC at the time of the request regarding the biological elements or locations in question. They should never be regarded as final statements on the elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments.

SCIENTIFIC NAME.....	COMMON NAME.....	USFWS			BLM COMMENTS
		STATUS	STATE	BLM	
<u>ANIMALS</u>					
HALIAEETUS LEUCOCEPHALUS	BALD EAGLE	LT	E		PRESENCE IS TIED TO JACKRABBIT POPULATIONS
BUTEO REGALIS	FERRUGINOUS HAWK	W	P	S	NESTING TERRITORIES
ATHENE CUNICULARIA HYPUGAEA	WESTERN BURROWING OWL	SC	P	S	
NUMENIUS AMERICANUS	LONG-BILLED CURLEW	SC	P	S	NESTING AREA
SOREX MERRIAMII	MERRIAM'S SHREW		U		MUSEUM SPECIMENS
MYOTIS EVOTIS	LONG-EARED MYOTIS	W	U	S	MATERNITY ROOST CONFIRMED SPECIMENS
MYOTIS CILIOLABRUM	WESTERN SMALL-FOOTED MYOTIS	W	U	S	ROOSTS HIBERNACULA
CORYNORHINUS TOWNSENDII	TOWNSEND'S BIG-EARED BAT	SC	SC	S	HIBERNACULA ROOST
BRACHYLAGUS IDAHOENSIS	PYGMY RABBIT	W	GSC	S	
<u>PLANTS</u>					
ASTRAGALUS AQUILONIUS	LEMHI MILKVETCH		GP3	S	
CAMISSONIA PTEROSPERMA	WINGED-SEED EVENING PRIMROSE		S	S	
IPCOMOPSIS POLYCLADON	SPREADING GILIA		2	S	

USEFWS

LT = Listed Threatened  
 SC = Species of Concern  
 W = Watch

STATE (animals - Idaho Dept. of Fish and Game)

P = Protected nongame  
 E = Endangered  
 U = Unprotected nongame  
 SC = Species of Special Concern  
 G = Game

For definitions of the various categories of status, please refer to <http://www.state.id.us/fishgame/cdchome.htm>

STATE (plants - Idaho Native Plant Society)

S = Sensitive  
 2 = Priority 2  
 GP3 = Global Priority 3

BLM

S = Sensitive species