

Lieutenant M. R. Keller  
Department of the Navy  
Naval Security Group Activity  
1320 Northwest Boulevard, Suite 100  
Chesapeake, Virginia 23322-4094

Attn: Pam Couch

Re: Biological Opinion for Relocatable  
Over-the-Horizon Radar Receiver  
Clear Zone Maintenance, Chesapeake,  
Virginia

Dear Lieutenant Keller:

The U.S. Fish and Wildlife Service has reviewed the Naval Security Group Activity (NSGA) Northwest's proposal to conduct vegetation clearing to maintain the clear zone of an existing Relocatable Over-the-Horizon Radar (ROTHR) receiver antenna array in Chesapeake, Virginia. Your January 21, 1997 request for formal consultation was received on January 24, 1997. This document represents the Service's biological opinion on the effects of that action on the Dismal Swamp southeastern shrew (*Sorex longirostris fisheri*) in accordance with Section 7 of the Endangered Species Act of 1973, as amended, (16 U.S.C. 1531 et seq.). A complete administrative record of this consultation is on file in this office.

#### I. CONSULTATION HISTORY

- 01-06-97 The Service received the Navy's request to provide comments on endangered and threatened species regarding the proposed project.
- 01-24-97 The Service received the Navy's request to initiate formal consultation.
- 01-24-97 The Service received the Navy's request to receive a draft of the biological opinion.
- 02-04-97 The Service received a telephone call from the Navy indicating that all vegetation

clearing will be done by hand or with a bushhog.

- 02-10-97 The Service received a telephone call from the Navy providing additional information on prescribed burning and existing habitat in each area to be cleared.
- 02-11-97 The Service received a telephone call from the Navy revising the acres to be cleared.
- 02-24-97 The Service received a telephone call from the Navy stating that they have no changes to the draft biological opinion.

## II. BIOLOGICAL OPINION

### DESCRIPTION OF PROPOSED ACTION

NSGA Northwest has proposed to conduct vegetation clearing on four areas (A, B, C1, C2) totaling 123 acres to maintain the clear zone of an existing 1-mile long ROTHR antenna (Figure 1). The closer to the antenna, the shorter the vegetation must be maintained. Immediately adjacent to the antenna, the vegetation must remain at or near ground level; at 1,200 feet from the antenna, the height limit on vegetation is 18.85 feet; at 1,600 feet the limit is 25.13 feet; at 2,000 feet the limit is 31.41 feet; at 2,400 feet the limit is 37.70 feet; and at 2,400 feet the limit is 43.98 feet. During the initial clearing, all vegetation will be cut 2 - 3 feet above the soil surface. All vegetation clearing will be done by hand or with a bushhog. The vegetation will be cut and left on-site to decay. Within the next two years, the four areas will be burned during the winter under the prescribed burning program and will be scheduled to be burned every year, weather permitting, to maintain the clear zone. However, portions of the areas within the clear zone that are furthest away from the antenna may not need to be burned every year, as determined by the height of the vegetation. The project will not involve the construction of any access roads, drainage ditches, or landing areas for equipment. No permit from the U.S. Army Corps of Engineers is needed for this project, as proposed.

The original land clearing for the ROTHR antenna occurred in 1985 and the proposed vegetation clearing is within the clear zone established during the original construction. It was the Navy's original intent to maintain the clear zone by conducting prescribed burns in these areas on an annual basis. Prescribed burning is scheduled to be conducted every year during the winter months (December - March) to minimize impacts to ground nesting birds and small mammals. However, because of the weather patterns during the last two years, these areas have been too wet to accomplish prescribed burning of all areas every year. Area A was last burned in 1994, Area B in 1996, and Areas C1 and C2 in 1995. An inspection of the ROTHR antenna was conducted by the Navy in July 1996, and it was determined that the vegetation in the clear zone exceeded the height restrictions required for the antenna to operate effectively. The Service wrote a non-jeopardy biological opinion dated October 21, 1988 on NSGA Northwest's forest management plan, which included impacts to the shrew from prescribed burning. Therefore, the effects of prescribed burning on the shrew will not be covered in

this opinion.

In 1988, the presence of the Dismal Swamp southeastern shrew was confirmed at NSGA Northwest. In 1992, the Service issued its concurrence with a determination of areas of appropriate habitat for the shrew. Based on this determination, 20 acres (Areas B and C1) are outside the area of appropriate shrew habitat (Figure 1). Area A (83 acres) and C2 (20 acres) are within the area determined to contain appropriate shrew habitat (Figure 1). Therefore, this biological opinion will only consider Areas A and C2. The northern portion of Area A consists of switch cane; the southern portion of Area A and all of Area C2 consists of 5- to 6-year-old forested wetlands.

### RANGEWIDE STATUS OF THE SPECIES

#### **Life History**

The Dismal Swamp southeastern shrew is a small mammal that weighs less than 0.2 ounces and measures approximately four inches in length. Little is known about the life history of the shrew. However, the species' life history is likely similar to that of the more common southeastern shrew (*S. l. longirostris*). Based on a few studies, it appears that southeastern shrews average approximately four young per litter (U.S. Fish and Wildlife Service 1994). Pregnant southeastern shrews have been found in Indiana from 8 April to 25 September and in Alabama and Georgia from 31 March to 6 October (U.S. Fish and Wildlife Service 1994). Shrews of the genus *Sorex* usually have at least two litters per year (Churchfield 1990). It is likely that young shrews remain in the nest for their entire period of growth and development and are nearly adult size when they leave the nest (U.S. Fish and Wildlife Service 1994). Southeastern shrews feed mainly on small-sized invertebrates, but consume some vegetation (U.S. Fish and Wildlife Service 1994). Typically, shrews forage intermittently throughout the day and night in all seasons and seem to have highest levels of activity associated with rainfall and periods of high humidity. Much of their foraging occurs in leaf litter or in tunnels in the upper layers of the soil (U.S. Fish and Wildlife Service 1994). Predators include barred and barn owls, domestic cats, and occasionally snakes, domestic dogs, and opossums (French 1980).

The Dismal Swamp southeastern shrew is found in a range of habitats including recent clearcuts, regenerating forests, young pine plantations, grassy and brushy roadsides, young forests with shrubs and saplings, and mature pine and deciduous forests (U.S. Fish and Wildlife Service 1994). The shrew is likely to exist at highest densities in early successional wetland habitats, such as cane stands; shrub-dominated areas; and young, open forests that retain a fairly dense herbaceous understory. The shrew also occurs at high densities within cleared rights-of-way, such as those used for utility lines, as these areas often contain early successional habitats such as scrub-shrub wetlands. Mature wetland forests also provide habitat diversity important to the integrity and dynamic structure of shrew populations across their entire range. Rose (1983) found that the

shrew was most abundant in mid-successional, 12- to 15-year-old regenerating forests having a dense understory, moist organic soils, and moderate leaf litter.

### **Status of the Species Within its Range**

The distribution of the Dismal Swamp southeastern shrew is considered coincidental with the boundaries of the historic Dismal Swamp, an extensive contiguous wetland complex that once occupied most of the low-lying land between Norfolk, Virginia and the Albemarle Sound in North Carolina. Historically, this wetland complex was maintained in a variety of successional stages (such as marshes, canebrakes, pocosins, and forest) by natural fires. The original Dismal Swamp ecosystem has been greatly reduced in size because of urban development and the clearing and draining of land for agriculture and silviculture. Most of the remaining wetlands are forested. Approximately 197,680 acres of these wetlands remain, more than half of which are preserved by the Service as the Great Dismal Swamp National Wildlife Refuge, created in 1974, which is in Virginia and North Carolina. The Service is attempting to restore some of the vegetational and successional diversity to the portion of the Dismal Swamp ecosystem within the Refuge. The Great Dismal Swamp State Park in North Carolina provides an additional 22 square miles of shrew habitat. There are additional areas of protected shrew habitat such as the North Landing River Preserve and the Northwest River Park in Virginia and Elizabeth City State University's Dismal Swamp Wetland in North Carolina.

Outside the protected areas, remnants of the Dismal Swamp are rapidly disappearing in southeastern Virginia due to development associated with the Hampton Roads metropolitan area (U.S. Fish and Wildlife Service 1994). In North Carolina, agricultural and silvicultural conversion are the main causes of habitat loss. "In the vicinity of Elizabeth City, North Carolina, for example, two tracts totaling some 32,000 acres of swamp have been cleared and drained within the past 20 years. Besides these contiguous tracts, many smaller areas within the historic Dismal Swamp of North Carolina have been ditched and cleared in a piecemeal fashion. In Virginia, a comparison of U.S.G.S. 7.5-minute topographic maps to recent aerial photography revealed a collective loss of some 2,600 acres of forested land, scattered over four maps portraying the Dismal Swamp (S. Martin, U.S. Army Corps of Engineers, pers. comm. 1993)" (U.S. Fish and Wildlife Service 1994).

### **Threats to the Species**

The main reasons for the shrew's decline are habitat loss and modification and possible loss of genetic integrity through interbreeding with the more common upland subspecies (U.S. Fish and Wildlife Service 1994). "It is presumed that the Dismal Swamp southeastern shrew developed its distinctive size and coloration while geographically or ecologically isolated within the Great Dismal Swamp during the Holocene (Handley 1979). The recent human-induced progression toward homogenous mature hardwood forest, more representative of habitat conditions of the surrounding region, leads to the possibility that the more common and presumably more generally adapted...subspecies could invade the Dismal Swamp and genetically overwhelm the existing populations of *S. l. fisheri*, which are more

specifically adapted to historic swamp conditions" (U.S. Fish and Wildlife Service 1994).

## **Recovery Accomplishments**

Recently, new evidence suggests that the Dismal Swamp southeastern shrew may occur throughout the coastal plain of North Carolina, at least as far south as Wilmington (U.S. Fish and Wildlife Service 1994). However, until this can be substantiated through additional distribution and taxonomy studies, the shrew will remain on the Service's list of endangered and threatened wildlife and plants. As such, the shrew, and its habitat, will continue to receive protection pursuant to the ESA until it is removed from this list.

## ENVIRONMENTAL BASELINE

As defined in 50 CFR 402.02 "action" means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas. The "action area" is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action. The direct and indirect effects of the actions and activities resulting from the Federal action must be considered in conjunction with the effects of other past and present Federal, State, or private activities, as well as the cumulative effects of reasonably certain future State or private activities within the action area. The action area for this biological opinion has been determined by the Service to be Areas A (83 acres) and C2 (20 acres).

Status of the Species in the Action Area - Surveys for the Dismal Swamp southeastern shrew were conducted at NSGA Northwest in 1988, confirming the presence of this species. Prescribed burning occurred most recently in Area A in 1994 and in Area C2 in 1995. The 1988 biological opinion for those previous actions briefly discussed the impacts of burning on the shrew, and measures to minimize such impacts were provided. As a result, prescribed burning is scheduled to be conducted during the winter months (December - March) to minimize impacts to ground nesting birds and small mammals. Currently, the northern portion of Area A consists of switch cane; the southern portion of Area A and all of Area C2 consists of 5- to 6-year-old forested wetlands, all of which is appropriate habitat for the shrew.

Effects of the Action - Direct impacts to the shrew associated with this project include the potential to crush shrews with vehicles and heavy equipment, resulting in death or injury, while clearing vegetation. The vegetation clearing is likely to result in temporary habitat loss. However, no permanent habitat loss is anticipated. While there is likely to be a loss of individual shrews, because there will not be any permanent habitat loss and no habitat fragmentation is expected, this loss should not affect the genetic viability or range of the species.

Cumulative Effects - Cumulative effects include the effects of future State, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal

actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to Section 7 of the ESA. We are not aware of any future State, local, or private actions planned for this site.

### CONCLUSION

After reviewing the current status of the Dismal Swamp southeastern shrew throughout its range and in the action area, the environmental baseline for the action area, the effects of the proposed vegetation clearing, and the cumulative effects, it is the Service's biological opinion that the project, as proposed, is not likely to jeopardize the continued existence of the Dismal Swamp southeastern shrew. No critical habitat has been designated for this species, therefore, none will be affected.

### III. INCIDENTAL TAKE STATEMENT

Sections 4(d) and 9 of the ESA, as amended, prohibit taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns such as breeding, feeding, or sheltering. Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns, which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is any take of listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant. Under the terms of Section 7(b)(4) and Section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

### AMOUNT OR EXTENT OF TAKE

Densities of Dismal Swamp southeastern shrews in early to mid-successional stage habitats are approximately 12 shrews per acre (Rose 1983, 1994). Therefore, the estimated density of shrews on Area A and C2 is 1,236. The Service anticipates that no more than 75% (927 shrews) of Dismal Swamp southeastern shrews will be taken during vegetation clearing. The incidental take is expected to be in the form of direct killing, harassment, or harm.

### REASONABLE AND PRUDENT MEASURES

The measures described below are nondiscretionary, and must be implemented by the Navy so that they become binding conditions of any contract issued for this action for the exemption in Section 7(o)(2) to apply. The Navy has a continuing duty to regulate the activity covered by this incidental take statement. If the Navy (1) fails to require the contractor to adhere to the terms and conditions of the

incidental take statement through enforceable terms that are added to any contract, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of Section 7(o)(2) may lapse. The Service considers the following reasonable and prudent measures to be necessary and appropriate to minimize take of the Dismal Swamp southeastern shrew.

- o Impacts to wetlands should be minimized to reduce impacts to shrew habitat.
- o The use of pesticides and herbicides should be avoided.

### TERMS AND CONDITIONS

In order to be exempt from the prohibitions of Section 9 of the ESA, the Navy must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. Monitoring is not required for this project because only a small number of Dismal Swamp southeastern shrews are likely to be affected by the proposed project and the anticipated take is minimal. These terms and conditions are nondiscretionary.

1. Clearing of vegetation in wetlands will be done by hand where practicable.
2. All work in wetlands will be done on mats where practicable.
3. No use of broad scale or aerial herbicide or pesticide applications.
4. The applicant is required to notify the Service before initiation of construction and upon completion of the project at the address given below. All additional information to be sent to the Service should be sent to the following address:

Virginia Field Office  
U.S. Fish and Wildlife Service  
P.O. Box 480  
U.S. Route 17, Mid-County Centre  
White Marsh, VA 23183  
Phone: (804) 693-6694  
Fax: (804) 693-9032

5. Care must be taken in handling any dead specimens of the Dismal Swamp southeastern shrew that are found in the project area to preserve biological material in the best possible state. In conjunction with the preservation of any dead specimens, the finder has the responsibility to ensure that evidence intrinsic to determining the cause of death of the specimen is not unnecessarily disturbed. The finding of dead specimens does not imply enforcement proceedings pursuant to the ESA. The reporting of dead specimens is required to enable the

Service to determine if take is reached or exceeded and to ensure that the terms and conditions are appropriate and effective. Upon locating a dead specimen, initial notification must be made to the following Service Law Enforcement office:

Division of Law Enforcement  
U.S. Fish and Wildlife Service  
P.O. Box 187  
Yorktown, VA 23690  
(804) 890-0003

#### V. REINITIATION - CLOSING STATEMENT

This concludes formal consultation on the action outlined in the Navy's request. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Unless information in this biological opinion is protected by national security or contains confidential business information, the Service recommends that you forward a copy to the following agency:

Virginia Department of Game and Inland Fisheries  
Environmental Services  
P.O. Box 11104  
Richmond, VA 23230

If this opinion is not provided by the Navy and does not contain national security or confidential business information, the Service will provide a copy to this State agency ten business days after the date of this opinion.

Lieutenant M. R. Keller

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The Service appreciates this opportunity to work with the Navy in fulfilling our mutual responsibilities under the ESA. Please contact Cindy Schulz of this office at (804) 693-6694 if you require additional information.

Sincerely,

Karen L. Mayne  
Supervisor  
Virginia Field Office

Enclosure

## LITERATURE CITED

- Churchfield, S. 1990. The natural history of shrews. Cornell University Press; Ithaca, NY.
- French, T.W. 1980. Natural history of the southeastern shrew, *Sorex longirostris* Bachman. American Midland Naturalist 104:13-31.
- Handley, C.O., Jr. 1979. Mammals of the Dismal Swamp; a historical account. Pages 297-357 in P.W. Kirk, Jr., eds., The Great Dismal Swamp. University Press of Virginia; Charlottesville, VA.
- Rose, R.K. 1983. A study of two rare mammals endemic to the Virginia/North Carolina Dismal Swamp. Unpublished report prepared for U.S. Fish and Wildlife Service; Newton Corner, MA.
- Rose, R. K. 1994. Final report of the field study to determine the presence of the federally threatened Dismal Swamp southeastern shrew (*Sorex longirostris fisheri*) on the 69-acre Kirk property adjacent to the SPSA landfill in Suffolk, Virginia. 15 pp.
- U.S. Fish and Wildlife Service. 1994. Dismal Swamp southeastern shrew (*Sorex longirostris fisheri*) recovery plan. Technical/agency draft. Hadley, MA. 51pp.

(CSchulz:2/20/97)

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bcc: ARD-South, Region 5  
Endangered Species Coordinator, Region 5  
CBFO Reading File  
Endangered Species Biologist, Raleigh Field Office  
Law Enforcement, Yorktown  
(Attn: Dan Hurt)  
Law Enforcement, Richmond  
(Attn: Senior Resident Agent)

10 business days after the date of this letter, mail copies to:

DNH, Richmond

(Attn: Tom Smith)

VDGIF, Richmond

(Attn: Ray Fernald)