CONSERVATION AGREEMENT
FOR THE
COW KNOB SALAMANDER

The signatory parties to this agreement affirm the mutual goal of securing and protecting the Cow Knob (white-spotted) salamander (*Plethodon punctatus*) within its known and potential range in the states of Virginia and West Virginia. To attain this goal, these parties further agree to implement the actions delineated in the Cow Knob Salamander Habitat Conservation Assessment (Assessment) to conserve this species and its occupied and potential habitat on the George Washington National Forest (Forest). A Conservation Team (Team) with representatives from the Virginia Department of Game and Inland Fisheries, Virginia Division of Natural Heritage, West Virginia Department of Natural Resources, U.S. Fish and Wildlife Service, and U.S. Forest Service will advise the Forest on the implementation of the Assessment and management of the Cow Knob salamander's habitat. The Conservation Assessment, the standards delineated in the George Washington National Forest Land and Resource Management Plan, and the advice of the Team have as their goal ensuring the long-term viability of the salamander on the Forest. The U.S. Forest Service has designated nearly the entire area supporting the salamander as the Shenandoah Mountain Crest - Special Interest Area (SMC-SIA) and will develop an Individual Implementation Schedule for this area. Until the Individual Implementation Schedule is developed and implemented for this area, the management of the salamander will be governed by the management measures set forth in the Assessment (see attached Summary) and by the following:

1. In order to evaluate the effectiveness of this program and the stability of the Cow Knob salamander's populations, a long-term monitoring program will be designed with the input of the Team and initiated no later than FY '95.

2. The areas surrounding the SMC-SIA will be subject to activities that may be detrimental to salamanders or their habitat, and where appropriate, surveys will be conducted to determine the presence of salamanders. If salamanders are found in these areas, they will be subject to the same management measures as the SMC-SIA.

3. The Team will review proposed research and management activities that may affect the Cow Knob salamander or its habitat on the Forest, oversee implementation of actions delineated in the Assessment and otherwise aid in achieving the conservation of this species.

4. The U.S. Forest Service will provide project data, survey results, and biological information concerning proposed activities as early in the planning process as possible. In turn, the Team will review and provide recommendations and opinions as expeditiously as possible. The Team will evaluate all proposed activities that could be detrimental to the salamander or its habitat and render such opinions that will be considered and made part of the public record by the U.S. Forest Service in its decision-making process as to whether to proceed with a given activity.

5. Following the development of a draft Individual Implementation Schedule for the SMC-SIA by the U.S. Forest Service, it will be provided to the Team for review. The Team's recommendations will be utilized by the U.S. Forest Service in the development of the final document.

The U.S. Forest Service agrees to carry out these management measures to the best of its ability with the assistance of the Team and the U.S. Fish and Wildlife Service. Provided that this is done, it is expected that populations of this candidate salamander will be stabilized or enhanced so that listing this species as threatened or endangered under the Endangered Species Act will be unnecessary.

Supervisor, Chesapeake Bay Field Office
U.S. Fish and Wildlife Service

1/25/94
Date

Forest Supervisor
George Washington National Forest
U.S. Forest Service

1/25/94
Date

Conservation Assessment - Management Measures

1. Habitat Maintenance and Enhancement - Cow Knob salamander populations reach their highest population densities in older age hardwood forests above the 3,000 foot elevation. Forest stand structure and composition in this area should be allowed to develop into a condition of old growth through protection from timber management and other forms of habitat alteration that would affect the forest community by decreasing stand age. Removal of cover objects that retain moisture will not be permitted. Removal of non-native vegetation and species limiting growth of hardwoods may be appropriate management measures.

2. Protection from Take - The Cow Knob salamander must be actively protected against taking and killing by humans, except for specified scientific purposes. Such purposes include research on its ecology and systematics that will directly benefit the long-term protection of this species. Even for these purposes, specific permission from the U.S. Forest Service will be required. Collection of specimens for educational display and captive breeding should be discouraged.

3. Training for U.S. Forest Service and State Personnel - George Washington National Forest biologists and other appropriate personnel, especially those in the Dry River Ranger District, should be trained on the biology, habitat, threats, and management of the Cow Knob salamander by knowledgeable personnel. Workshops should be conducted as needed, especially as a result of changing personnel.

4. Education and Interpretation - The natural history of a secretive animal such as the Cow Knob salamander should be an important part of an educational package based on all aspects of the Shenandoah Mountain Crest Special Interest Area. Brochures, booklets, media reviews, etc., could provide much needed outlets for general information on management procedures and natural history of all the sensitive species in this area. This also offers an opportunity to educate the general public about the importance of conservation efforts on behalf of the forest's biodiversity and of the many uses of the forest itself. People should also be made aware of the rarity of the salamander, its habitat, and the fragility of the community so that they may be more aware of the impact of their activities.

   Revealing exact locations of Cow Knob salamander populations to anyone should be avoided, however, except to those persons who need to know for valid conservation or scientific purposes.

5. Fire Control and Prescribed Burns - The role of fire in maintaining some natural communities is recognized, as is the importance of fire control. Fire control efforts will use the least impact methods available to control the fire. The effect of fire on Cow Knob salamander populations is unknown and needs to be evaluated. However, it is apparent that fires have occurred across the SMC-SIA at various times and Cow Knob salamanders now occur in areas which have burned in the recent past. Potential effects of prescribed fire should be evaluated during the development of the necessary environmental documentation. Generally however, fires occur predominately on drier sites where the Cow Knob salamander is absent. Therefore, controlled burns on dry sites supporting rare plants and unique natural communities appear to be compatible with salamander conservation.

6. Integrated Pest Management - In general, forest insect and disease outbreaks should not be controlled within the SMC-SIA except where lack of control might adversely affect Cow Knob salamander populations. If control of pest insects and diseases in the SMC-SIA is warranted at all, it shall consist of the least deleterious methods available. Biological control measures are favored over chemical measures. Chemical pesticides are to be avoided. The secondary effects of any control method proposed for use should be evaluated for their impacts on the salamander and its microhabitat before its implementation. Caution should be taken when introducing natural enemies of the target pest species. The introduced control species must not affect any aspect of the natural prey base of the Cow Knob salamander or in some way affect other sensitive species. Studies of gypsy moth impacts and control measures appear to be one of the most immediate research needs for this salamander.

Land Ownership - The SMC-SIA is to be retained in Federal ownership, and it, or any parts thereof, are unavailable for exchange. Non-Federal inholdings that contain Cow Knob salamander populations should be identified and acquired, wherever possible.

8. Minerals - The area encompassing the range of the Cow Knob salamander is available for oil and gas leasing with controlled surface use stipulations, and for common variety minerals on a case-by-case basis. Availability depends on the nature and degree of disturbance planned. Significant disturbances of the surface are not compatible with the long-term survival of the Cow Knob salamander and will not be allowed. Special stipulations will be used to protect Cow Knob salamander habitat and populations. These stipulations are subject to approval by the Cow Knob salamander team. The area is not available for other leasable minerals, such as iron, coal, and tin.

9. Range - Grazing of domestic livestock in the SMC-SIA is not consistent with the maintenance of forested habitat appropriate for the Cow Knob salamander and will not be allowed.

10. Recreation - Low-impact (dispersed) recreational uses of the SMC-SIA are compatible with the long-term protection of the Cow Knob salamander. These include hiking, hunting, backpacking, picnicking, photography, wildlife study, and non-motorized biking. Existing trails and roads should be used for access to specified areas for these activities. New trails may be constructed if no adverse effect on Cow Knob salamander populations will occur, as determined by the Cow Knob salamander team.

    Motorized vehicular (OHV) access should be limited to existing areas designated for that purpose.

11. Roads - Existing roads may be maintained, and motorized travel should be limited to open road systems. Construction of new roads of any kind is not permitted in the SMC-SIA. Such new construction would directly destroy salamander habitat, create additional habitat fragmentation, and increase forest edge.

    Road maintenance actions should be reviewed for their impacts on natural habitat, and efforts coordinated between U.S. Forest Service maintenance crews and U.S. Forest Service biologists. Reconstruction, minor relocation, and parking facilities may be permitted provided these activities do not negatively impact Cow Knob salamander populations and habitats.

12. Timber - With the limited exception noted in measure 15, timbering operations in the SMC-SIA are inconsistent with the long-term goals of protection of the Cow Knob salamander. The SMC-SIA shall be classified as unsuitable for timber production. Cutting of insect damaged, wind thrown, and fire-killed trees which pose a safety or maintenance concern, may be conducted only within 100 feet of the center of existing open roads. Non-commercial firewood cutting may be permitted within this same corridor, but only following salamander surveys indicating that the area is not of significance to the Cow Knob salamander.

13. Vegetation - Management of vegetation in the SMC-SIA should be minimal, allowing natural processes to work wherever possible. Exceptions may be allowed when the forest in the SMC-SIA is adversely affected by introduced organisms (see Integrated Pest Management, above), in habitats maintained by periodic disturbances, such as fire, which no longer occur at natural frequencies, or for wildlife management in areas classified as unsuitable habitat for Cow Knob salamanders, based on salamander survey results (see below). Such exceptions shall be approved in writing by the U.S. Fish and Wildlife Service in coordination with the Conservation Team. Herbicides may be used to control or eliminate exotic and invasive plant species

whose presence is inconsistent with the long-term protection of Cow Knob salamander habitat. Aerial spraying over broad areas for vegetation control should be avoided if possible. Chemicals toxic to salamanders, their prey, or their habitat are to be avoided.

Where active vegetation management can occur, natural plant species are preferable to non-native species.

14. Utility and Transportation Corridors - Because corridors of any size will fragment Cow Knob salamander habitat and isolate populations on either side, new utility corridors must be sited around the SMC-SIA. When opportunities exist, utility corridors should be closed and allowed to revegetate naturally.

15. Wildlife - Wildlife management for selected species will be unaffected except for activities that require the alteration of Cow Knob salamander habitat. Removal of hardwood stands, such as in the creation of openings, is inconsistent with long-term management of salamander populations. Such openings directly impact salamanders and create additional edge effects. Existing and replacement wildlife improvements may be maintained only if their presence does not adversely affect Cow Knob salamander habitat.

Hunting is an acceptable practice in the SMC-SIA. The creation of new edge habitat for management of game species should be minimized, and is allowed as a wildlife management tool only in areas of habitat unsuitable for the Cow Knob salamander.