

RESEARCH NEEDS



A key element of adaptive management is monitoring. Another element is that of research. Ongoing monitoring will identify needs for further research as the plan is implemented. At its inception; however, the plan can identify areas of concern that can be the subject of "research needs."

RESEARCH
NEEDS

Recreation

Develop a link between recreation settings (described in Recreation Opportunity Spectrum categories) and recreation activities in order to assess supply and demand by ROS setting.

Soil and Water

Determine effectiveness of riparian corridor prescription on downstream water quality and aquatic species.

Determine effectiveness of riparian corridor prescription on terrestrial species dependent upon riparian resources.

Determine whether soil productivity is altered by acid deposition. If it is altered, where is this occurring, how does this affect management activities such as timber harvest and prescribed burning, does it affect mountaintop balds, and what are our options for mitigation or remediation.

Timber

Methods to enhance the regeneration of northern red oak, white oak and chestnut oak on more productive sites.

Develop better timber growth and yield projections for various silvicultural treatments, particularly uneven-aged treatments.

Forest Health

Identify understory vegetation and wildlife species composition and abundance changes resulting from gypsy moth defoliation.

Cultural practices necessary to successfully restore American chestnut once resistant planting stock becomes available.

Determine fire frequency (including seasonality, intensity, and spatial extent) based on dendrochronology (or other methods) to establish fire regimes in all forest types.

Determine effectiveness of prescribed burning to restore and maintain woodlands, savannahs, and grasslands.

Wildlife

Identify best methods to expand red spruce within its former range, northern hardwood stands, and open areas.

RESEARCH
NEEDS

Determine appropriate methods for managing populations of the small whorled pogonia.

Determine rate of spread of noxious or invasive non-native plant species relative to road density or proximity to travel corridors.

Indiana Bat

Identify roost trees, maternity sites, summer foraging areas, fall swarming areas and other areas of the Forest used by Indiana bats. Characterize and quantify habitat at these sites to help identify additional sites and develop management strategies for the protection, maintenance, and recovery of the Indiana bat.

Peaks of Otter Salamander

A study of temporary logging road recovery and utilization by Peaks of Otter salamanders is needed. Such a study would obtain information on salamander use of recovered roads of different ages and determine when roads recover sufficiently to allow permanent use.

A preliminary study of the genetics of this species to determine whether there is cause for concern about fragmentation and limitations on gene flow is needed.

More information on the movement ecology of *Plethodon hubiichti* is needed.

What are the effects of defoliation by gypsy moths on Peaks of Otter salamander populations?

What is the effect of treatment with Dimilin and BT on the salamander's prey base?

Do *Plethodon hubiichti* leave disturbed areas or die in place when habitat disturbance occurs?

A life table needs be generated for *Plethodon hubiichti* that provides data on population growth rates, survivorship, and generation time. Such life tables developed for populations inhabiting areas with different logging histories would provide useful management information.

What are the life history attributes of *Plethodon hubiichti*: Specifically, what is the age at first reproduction, how many times in the life of a female does she produce egg clutches,, does reproduction occur annually or are years skipped?

What is the role of the Peaks of Otter salamander in the hardwood forest ecosystem? How are terrestrial vertebrate communities organized in this area? What is the position and role of this species in the food web? In what ways does this salamander contribute to the flow of energy in this ecosystem? Describe the energy model for this species and relate it to the life history and population ecology of this species.

What is the social system utilized by this salamander? How does territoriality affect its use of the habitat? What role does it play in the population ecology of this salamander?

What role does the red-backed salamander play in restricting the Peaks of Otter salamander to its known range?

How do Peaks of Otter salamanders respond to habitat recovery and forest succession?