

# **Implications of Illegal Off-road Vehicle Activity on the Cherokee Wildlife Management Area, Unicoi County, Tennessee**

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*Abstract:* A difficult land management problem facing wildlife agencies today is the use of and demand for areas to utilize off-road vehicles (ORVs). Problems arising from conflicts between ORV users and other recreationists on the Cherokee National Forest/Wildlife Management Area are discussed. The impacts of ORV use on soil, water, wildlife, and fisheries resources are described. Difficulties faced by law enforcement officials relative to ORV use and ways to solve those problems are presented.

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The Cherokee Wildlife Management Area (CWMA) includes all the Cherokee National Forest (CNF), certain private lands, and lands owned by the Tennessee Wildlife Resources Agency (TWRA). The CWMA comprises 262,000 ha and is located in the Appalachian Mountain region of eastern Tennessee. Most of the land is owned by the U.S. Department of Agriculture and managed by the U.S. Forest Service (USFS) under the "multiple use" concept. The TWRA entered into a cooperative agreement with the USFS for wildlife management and wildlife law enforcement on the CNF.

Unicoi County is located in northeastern Tennessee surrounded by 3 North Carolina counties (Mitchell, Yancey, and Madison) and 3 Tennessee counties (Carter, Washington, and Greene). The USFS manages 22,326 ha, or 48%, of the total acreage in Unicoi County. TWRA owns 857 ha and leases 2,513 ha. The total acreage designated as the CWMA exceeds 55% of the land in Unicoi County.

Major population centers are located in adjacent Tennessee counties. Unicoi County has a population of 16,362 with the population of neighboring counties totaling 337,350 (Bureau of Census 1980). The rugged mountainous terrain, low density population, and the high percentage of public land provides a convenient area for local outdoor recreationists.

The use of ORVs on wildlife management areas presents problems to the environment and offers potential conflict with other recreationists. Wernex (1984) de-

fines ORVs as being motorcycles, 3- and 4-wheeled all-terrain vehicles, dune buggies, and 4-wheel drive vehicles (jeeps, trucks, etc.).

In the past, ORV operators found that areas of the CNF and CWMA were open to the use of their motorized vehicles unless a road or trail was posted closed. This open unless posted closed policy was very liberal and users became comfortable with the numerous roads and trails. With the increase of ORV machines and resulting chaos, certain areas were closed, signs posted, gates erected, and law enforcement effort intensified. Presently, the policy on the CNF for roads and trails is that they are closed unless posted open.

ORV use restrictions are regulated on the CNF under authority of 36 Code of Federal Regulations 261.50. Most violations on the CWMA are charged by TWRA officers under Tennessee Code Annotated 70-4-107 (f)(1) Rules and Regulations 1660-1-8-.04(b) which reads in part:

All motorized vehicles must be muffler equipped to suppress noise and spark arrestor equipped to prevent fires. Operation of motorized vehicles is confined to roads and trails not designated as closed. Driving off road into fields, or on foot trails, or on utility right-of-way is prohibited for all motorized vehicles. Motorized vehicles may be prohibited on all agency Wildlife Management Areas if deemed necessary to protect wildlife, vegetation, or properties.

During the years 1984, 1985, 1986, and 1987, more than 50 cases of illegal ORV activity were tried before the General Sessions Court of Unicoi County. Of those, 29 were arrested in a wildlife food plot (field), and 21 were caught on closed roads. Twelve additional cases were tried in Federal Court in Greenville, Tennessee. The defendants in the federal cases pleaded no contest. The cases in state court suffered a 30% dismissal rate, following the defendants' pleas of "I didn't see any signs." After these cases were dismissed, the judge was urged by several concerned landowners and sportsmen to view the sites and observe the damage personally.

A field trip was arranged to an area where ORVs were prohibited. The judge was convinced that there was, in fact, a serious ORV problem on the CWMA. The last 3 defendants arrested in a prohibited area were fined \$25.00 plus court costs of \$73.00 each and were lectured by the judge: "Any time you are on the Wildlife Management Area you take your life in your own hands. It is your responsibility to know where you are and the regulations concerning riding your vehicle there. Wildlife officers cannot be expected to nail a sign up every time some person tears one down."

An effort has been made to involve the media to help make the public aware of the current regulations and the areas that are open to ORVs. The media has made special efforts to cover the problem with interviews from both the managing agencies and operators of ORVs.

## Impact on Habitat

Habitat destruction occurs during legal and illegal ORV activity. In areas of high ORV use, there is soil disturbance causing compaction and erosion. Areas of the Southern Appalachians typically have shallow topsoils. Erosion that goes unchecked in these areas may cause serious siltation problems to a stream. Stream crossings where the substrate is not conducive to ORV disturbance also causes siltation. Miller (1970) found that major damage is done by ORVs in meadows and stream banks as compared to tree covered areas.

Shrubs and saplings along legitimate trails suffer root damage from ORVs. This damage causes the plants to die, adversely impacting wildlife food and cover aesthetics.

ORV operators spinning their wheels and "cutting doughnuts" in fields where food plots are maintained or climbing the slopes of a pond dam cause destruction of habitat and often resulting in erosion. The field must be replanted and the dam repaired. Who absorbs this cost? Where wildlife and fisheries improvements are damaged, the sportsman pays the cost; where damage to roads and trails is on USFS property, the taxpayer pays.

R. Saunders, Lands Management Biologist for TWRA (unpubl. data, 1987), estimates the cost for repairing ORV damage in some food plot areas to be about \$800.00 per acre. This cost includes fertilizer, seed, plants, equipment and operators, erection of gates, signing, and an increase in law enforcement.

## Impacts on Fish and Wildlife

When soil, water, and vegetation suffer adverse effects, fish and wildlife are impacted as well. The impacts of ORVs on fish and wildlife can be hypothesized and possibly measured by using several parameters.

Spawning requirements of several species of fish found in high elevation streams, including brook trout (*Salvelinus fontinalis*), black nose dace (*Rhinichthys atratulus*), central stoneroller (*Camptostoma anomalum*), and mottled sculpin (*Cottus bairdi*), require that their eggs remain free of sediment and siltation. Siltation caused by soil disturbance has an adverse effect on fish mortality (Bivens 1984).

Amphibians also face the problems of siltation in temporary breeding puddles as well as being killed directly under a knobby tire of an ORV. Examination of ORV-impacted areas on the CWMA revealed wood frogs (*Rana sylvatica*), American toads (*Bufo americanus*), and gray tree frogs (*Hyla versicolor*) have been killed directly by ORVs at or near breeding sites and numerous silt covered egg masses.

Reptiles suffer from ORV activity also. During the summer, box turtles (*Terrapene carolina*) loaf at "mud holes" along ORV roads. Carcasses of these reptiles frequently have been found where they had been crushed under the weight of ORVs. Five species of snakes, black rat (*Elaphe obsoleta*), black racer (*Coluber constrict-*

tor), garter (*Thamnophis sirtalis*), timber rattlesnake (*Crotalus horridus*), and northern copperhead (*Akistrodon contortrix*), have been found killed on roads by ORVs. Reptile nests have also been found disturbed by ORV activity. The buried eggs of snapping turtles (*Chelydra serpentina*) and the box turtle (*T. carolina*) were uncovered by dirt bikes climbing the steep side of a pond dam. Sunning snakes stretched across a mountain road are an easy target for operators of ORVs.

Avian species are not immune to the effects of ORVs. Hatcher (1984) compiled a list of more than 20 species of birds that use the ground for nests and more than 40 species of birds that nest in small shrubs from 0.5 to 6.0 m above the ground. Many of these nests are located in edge situations and are subject to disturbance from ORVs. Included in the list of ground nesting birds are 4 species of game birds: wild turkey (*Meleagris gallopavo*), ruffed grouse (*Bonasa umbellus*), bobwhite (*Colinus virginianus*), and the woodcock (*Philohela minor*). All of these birds have the potential to suffer from ORV activity either by crushing of the nests directly or from harassment that may cause incubating birds to leave their nests (Knudson 1980).

Three dead grouse chicks were found on the CWMA crushed by the tires of an ORV. The behavior of grouse chicks to "freeze" in the face of danger is useless in these instances. Poults and adult turkeys are vulnerable to harassment from activity related to ORVs. Observations of turkeys being chased by ORVs was reported by Wright and Speake (1975), as well as being illegally killed.

Tennessee has 25 species of small mammals (TWRA 1980) all of which use either tunnels or leaf and grass litter runways in which to forage for insects or plant foods. These small mammals are the prey base for larger predators. Bury et al. (1977) found that heavy use of ORVs, which disturbs the habitat, causes a decline in the prey base of small terrestrial vertebrates. This decline in prey produces a decline in predator populations.

Larger home range use by white-tailed deer (*Odocoileus virginianus*) during periods of ORV (snowmobile) activity has been reported by Dorrance et al. (1975). Harassment, either direct or indirect, of large mammals would put the animals under undue stress and reduce their energy reserves.

The black bear (*Ursus americanus*) is found throughout the CWMA in Unicoi County. Unicoi Bear Reserve (UBR) at Rocky Fork excludes all motorized vehicle use and, in the Bumpass Cove portion of the UBR, use of ORVs is restricted seasonally. Pelton (1979) stated that unrestricted use of roads by hunters may have negative impacts on the bear populations in National Forests of the Southern Appalachians. Seasonal use of roads, as found by Carr and Pelton (1984), by black bears foraging for soft mast such as blueberry (*Vaccinium* spp.) and huckleberry (*Gaylussacia* spp.), may result in encounters with ORVs. M. Masters (TWRA pers. commun.) has noted the absence of bears in areas with abundant food due likely to chronic disturbance from ORV activity.

The other game law violations related to ORV activity on the CWMA include: transporting loaded firearms, hunting from a vehicle, and possession of firearms during closed season. Reports of young animals being caught and transported from

the CWMA are received annually. Reports of illegal taking of turkey poults, deer fawns, and in 1 instance a bear cub, have been received and investigated.

### **Impact on Other Recreationists**

ORVs can be found on the CWMA 7 days a week, 12 months a year, including snowmobiles during winter. The activity tends to be heaviest during the spring, summer, and fall. The high use during the spring and fall sometimes causes real and perceived conflicts with hunters and fishermen, as well as other outdoor recreationists.

Badaracco (1976) termed the conflict between ORVs and other recreationists the Impairment, Suppression, and Displacement (ISD) Syndrome. ISD is a sequence of events that occurs when ORVs invade an area. Generalized illustrations can be best used to show how the ISD syndrome can ruin the outdoor experience of others. A spring turkey hunter that waits in silence in a concealed blind, calling the wary gobbler, heart thumping, who then hears the sound of 2-cycle engines and sees the bearded quarry disappear has a horrible experience. A trout fisherman who spends hours tying his own flies, walking for miles into a vehicle-excluded area to get to a tranquil brook trout stream only to find the area scarred with knobby tire tracks and muddy water is also upset. A grouse hunter, careful not to block a gate as he unloads his dogs and who walks several miles on a closed road, may be overtaken in minutes by illegal ORV users. The ensuing disruption of the hunt by the loud machines may result in a confrontation between the 2 resource users.

Is the dispersal of game by ORVs real or perceived? What's the choice: noise vs. tranquility, solitude or physical confrontation? In all the above illustrations, recreationists experience a negative impact related to ORVs.

A negative experience results initially because someone's experience was impaired. Impairment is followed by suppression, with the recreationist feeling that their outdoor experience has been virtually ruined by ORV activity. The final stage is displacement. The sportsmen may abandon the area, as stated by Badaracco (1976), "once the annoyed user has concluded that his satisfactions are no longer a match for his frustrations."

### **Future Demands and Management Direction**

In December 1986 the first ORV coordination meeting between TWRA and the USFS was held at the Unaka Ranger District in Erwin, Tennessee. Discussion was primarily concerned with how to satisfy the increased demands of the ORV public and still protect the natural resources and other users of the National Forest.

From this meeting a plan emerged to enlist the involvement of local ORV organizations to help maintain an existing designated ORV trail. Alteration of the trails when impact on the resource and other users are found to be adverse was planned. A monitoring program must be implemented to insure that a deteriorating situation will not occur.

The law enforcement effort will involve coordination between the 2 agencies to include passive and active measures aimed at lessening illegal ORV activities. The passive effort will continue a media campaign to educate and inform the public directed at ORVs and ecological awareness. Noise regulations are to be enforced in 1987 with warning citations from USFS officers. Hopefully these measures will help reverse the ISD syndrome.

## Conclusion

Current estimates by the USFS (1979) show that approximately 26% of the U.S. population participates in off the paved road ORV activity. By the year 2000, this projection may exceed 40%. ORV use, when not controlled, can have a destructive effect on natural resources and may lead to conflicts among competing groups of recreationists. We are a society that loves machines and wild places. The father of wildlife management, Aldo Leopold (1966), stated: "When we see the land as a community to which we belong, we may begin to use it with love and respect. There is no other way for land to survive the impact of mechanized man."

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