

Of Tanks and Birds

by Charles E. Pekins



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The limestone bedrock trembles as Abrams tanks rumble by seeking their targets. Overhead, an Apache attack helicopter provides surveillance. In the distance, the din of machine gun fire and artillery is heard. In nearby vegetation, a female bird sits snugly on her egg-filled nest while her mate seeks a juicy caterpillar for its meal amidst the short-lived mechanical clamor. Such a scene is commonly encountered on the Fort Hood Army base.

Fort Hood is a 217,175-acre (87,890-hectare) U.S. Army installation located on the forested juniper-oak (*Juniperus ashei-Quercus* spp.) mesas of central Texas. The Army's largest armored force, III Corps, uses this landscape to train for battle. Federally listed golden-cheeked warblers (*Dendroica chrysoparia*) and black-capped vireos (*Vireo atricapilla*) also use the woodlands for breeding and raising offspring. Fort Hood contains the largest breeding populations of both species under a single management authority, and it is the only land manager that has exceeded recovery goals for both of these species.

Heavily armored tracked vehicle maneuvering and large weapons firing seem contradictory to endangered songbird management, but we have discovered ways to dovetail the two so that both tanks and birds benefit. Using adaptive management, mixed with vigilance and careful monitoring, we manage thriving warbler and vireo populations amidst a working military landscape.

In 1990, basic warbler and vireo life history traits were known, but a paucity of local habitat distribution, population trend, and demographic data precluded us from making any informed management decisions. Soon, biologists from the

Army Corps of Engineers Construction Engineering Research Laboratory cast an unblinking eye on the warbler and vireo. Since 1995, they have been aided in this work by The Nature Conservancy of Texas. Biologists studied demographics, population trends, and identified threats to both birds. The greatest threat, nest parasitism by brown-headed cowbirds (*Molothrus ater*), was neutralized by aggressive trapping. By 2000, we were gaining reliable information on population and demographic trends, as well as an understanding of habitat distribution. Population viability analyses suggested that we greatly exceed the amount of habitat needed to maintain warbler and vireo populations at a low risk of local extirpation. Armed with this information, we prepared to take brisk management strides, but first we had to unravel a fascinating habitat relationship.

Vireo and warbler habitats are in a constant tug-of-war. Warblers prefer enduring, closed-canopy forests, while vireos prefer ephemeral, open shrublands. Fire and mechanical habitat disturbances convert warbler habitat to vireo habitat. On the other hand, without disturbance, vireo habitat converts back to warbler habitat. Consequently, vireos may be managed at the expense of warblers and vice versa. For over 40 years, military training established a balance through ordnance-ignited fires and tracked vehicle disturbance; some years favored warblers and others, vireos. Over time, counter-demographic forces, most notably increasing cowbird parasitism and too much disturbance, caused slow population declines to the point of low-to-no habitat occupancy. Once the forces were identified and remedied, warbler and vireo populations rebounded.

In 1993, we began stringent training restrictions in warbler and vireo habitat during the breeding season that affected over 29 percent of the installation. Trees and shrubs provide cover and concealment for armor units, so the habitat use restrictions hindered realistic battle training. But because multi-year demographic data suggested that we had burgeoning warbler and vireo populations, we were able to reduce training restrictions in highly prized maneuver training areas by one-third, so that only 20 percent of the installation was restricted. Soon, we were able to make management leaps-and-bounds.

Observations indicate that *moderate* amounts of training impacts (ordnance-ignited fires and small scale armor maneuvers) help maintain vireo habitat. An ordnance-ignited crown fire in 1996 converted 5,590 acres (2,313 ha) of warbler habitat to vireo habitat, enabling us to meet recovery goals for vireos with only mild impacts on warblers. Because open shrublands allow rapid vehicle movements, target identification, and concealment, quick-strike armor units prefer to assemble and maneuver in vireo habitat rather than warbler habitat. In turn, armor maneuvering at sustainable levels helps to manage vireo habitat by controlling vegetative growth. Thus, vireos benefit by habitat longevity and tanks benefit by mission readiness. In fact, training actually contributed to a 24 percent increase in vireo habitat. Vireo population and demographic trends remained stable or increased in areas where restrictions were lifted in 2000, while warbler habitat remained unaffected.

Based on our success in 2000, we were recently able to reduce training restrictions even more so that only 4 percent of the installation is now restricted, all of it in areas largely unused by armor units because of the terrain. Conflict with battle training has been virtually eliminated. At the same time, we estimate that the golden-cheeked warbler now numbers 5,374 males in 53,115 acres (21,495 ha) of habitat, and the black-capped



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Black-capped vireo at its nest.

vireo numbers 4,834 to 8,261 males within 17,215 acres (6,967 ha) of habitat. Although military training and ordnance-ignited fires can maintain and create vireo habitat, it is unwise to rely solely on this method for habitat management. For this reason, we combine passive management through military activities with active management through prescribed fire and mechanical manipulation.

Fort Hood has emerged as the leader in golden-cheeked warbler and black-capped vireo management and research. Cautious, watchful management and an uncanny dynamic between military training and bird habitat have allowed Fort Hood to exceed both its endangered songbird and mission readiness goals.

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