Monitoring and Management of Black-capped Vireos (*Vireo atricapillus*) and Golden-cheeked Warblers (*Dendroica chrysoparia*) On the Barton Creek Habitat Preserve FY2002

The Nature Conservancy of Texas

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Vireo Management

In 2002 The Nature Conservancy continued management of the Barton Creek Habitat Preserve. This year we continued our new monitoring protocol for golden-cheeked warblers as well as creating a new education partnership plan. The Nature Conservancy also continued our active habitat restoration program for black-capped vireo's. In fact this year we were successful in finding a pair of black-capped vireo's on Barton Creek Habitat Preserve. Although no nest was ever found, the birds gave every indication of nesting.

We worked on an area approximately 170 acres in size for vireo restoration. The area received no management other than prescribed fire. Past restoration efforts on other units in the preserve for vireo management include; cutting ½ of the ashe juniper followed by burning then by the cutting of the remaining juniper, cutting all of the juniper followed by burning, and using a Seppi to mechanically remove juniper and not burning. The 170 acres that was burned did not achieve the ecological goals we set, but it did help in determining the effort and type of treatment needed to accomplish the goal of restoring vireo habitat on Barton Creek Habitat Preserve.

Golden-Cheeked Warbler Monitoring

In 2001, a new protocol entitled "Protocol for Barton Creek Preserve Golden-cheeked Warbler Monitoring" was initiated at Barton Creek Preserve to monitor the population status and trends of the Golden-cheeked Warbler. This protocol will enable The Nature Conservancy to estimate pairing success, productivity, and numbers of breeding Golden-cheeked Warblers in the area. This information will enable us to quantify annual population trends based on point count surveys.

The protocol will also allow for comparisons with Golden-cheeked Warbler monitoring data collected at Balcones Canyonlands Preserve and at Fort Hood, Texas. Both Balcones Canyonlands Preserve and Fort Hood collect data on Golden-cheeked Warbler pairing success, productivity, survival, and territory densities on study sites thought to be representative of Golden-cheeked Warbler habitat on those respective lands (Anders 2000a; Travis County Transportation and Natural Resources Department 1999). Balcones Canyonlands collects demographic data at 17 100-acre sites located throughout the preserve, or a total of approximately 8.7% of the Golden-cheeked Warbler habitat on that preserve (Travis County Transportation and Natural Resources Department 1999).

The protocol designed for Barton Creek Preserve includes collecting data on pairing success, productivity, survival, and territory density at two approximately 100-acre sites, totaling approximately 15% of the Golden-cheeked Warbler habitat on this preserve (The Nature Conservancy unpubl. data). Although a single 100-acre site would represent a proportion of habitat equivalent to that monitored at Balcones Canyonlands, 2 sites will likely provide data that are more representative of the population at Barton Creek than would a single site. The 2 study sites established at Barton Creek Preserve were chosen randomly from the 13 sites that have been surveyed on the preserve since 1996 (The Nature Conservancy unpubl. data). The 2 randomly selected sites include a portion of the historic Highway 71 (HWY 71) site, and the entire historic Vireo Hill Hollow (VHH) site. The new HWY 71 site is 106.2 acres (43.0 ha) in size, and the VHH site is 115.0 acres (46.4 ha) in size (see attached Barton Creek Habitat Preserve map).

In addition to collecting demographic data on representative study sites, Fort Hood also collects data on population trends of Golden-cheeked Warblers throughout the military installation (Anders 2000b). These data are collected through point count surveys conducted annually at 428 permanent point count stations arranged along 31 routes. At Fort Hood stations are all located at least 300 m apart along existing roads or trails throughout oak-juniper woodland (Anders 2000b). Using this same protocol, we established 43 permanent stations throughout Golden-cheeked Warbler habitat at Barton Creek Preserve (see attached Barton Creek Habitat Preserve map).

2002 Data Collection

In 2002, we were able, with the volunteer assistance of 4 Fort Hood seasonal field biologists, to collect point count survey data at Barton Creek. No demographic data were collected due to time constraints.

Methods

Point Count Surveys

Forty-three permanent point count stations were mapped along existing roads and trails throughout oak-juniper woodland using ArcView. Universal Transverse Mercator (UTM) coordinates were obtained from ArcView and entered into Global Positioning System (GPS) units. Volunteers located the point count station coordinates in the field

and flagged these locations, tying red flagging to branches on each side of the road or trail at each of the 43 points.

As outlined in the Barton Creek monitoring protocol, the point count stations should be surveyed twice between 1 April and 31 May. Due to time constraints in 2002, all but 6 points were surveyed twice, and in 2001, each point was surveyed once. Point count surveys consisted of 6-minute unlimited-radius counts. Counts generally began within 20 minutes of sunrise and ended by 1100. Counts were not conducted during periods of wind or rain strong enough to interfere with detection of birds. At each point, observers recorded date, observer, route number, point number, start time, temperature, cloud cover category, wind speed category, wind direction, and precipitation. Observers recorded all Golden-cheeked Warblers, as well as all individuals of all other bird species detected. For each bird detected, the observer recorded: species, time interval in which bird was detected (first 3 minutes, next 2 minutes, or last minute of count), distance, sex, observation type (song, call, visual), and for Golden-cheeked Warblers, the direction, number of fledglings present, and song type (A or B).

We calculated the mean number of Golden-cheeked Warbler detections at each point surveyed in 2002 and 2001. We then summed these values. Next, we divided the sum of mean detections by the number of points surveyed during those years. This provides the mean number of detections per point. (Anders 2001)

Results and Discussion

Point Count Surveys

The average detection of Golden-cheeked Warblers per point for 2002 is 0.59 and for 2001 is 0.40. In future years, if point count stations are all surveyed twice during the breeding season, the mean number of detections should be calculated for each point. The data should then be plotted to check for a normal distribution. If the data have a Poisson distribution, the mean detection values should be transformed by taking the square root of (mean detections + 0.5) (Zar 1996), and these transformed mean detection values should then be totaled for all points within a year. The totaled values can then be compared from year to year using paired t-tests or linear regression analysis (Zar 1996), allowing us to analyze population trends for Golden-cheeked Warblers throughout Barton Creek Preserve over time.

Literature Cited

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