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NESTING ECOLOGY OF RIO GRANDE WILD TURKEY IN THE EDWARDS PLATEAU OF TEXAS

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Abstract: Rio Grande wild turkey (RGWT; *Meleagris gallopavo intermedia*) abundance in the southeastern portion of the Edwards Plateau (EP) of Texas has been declining for decades, whereas trends in abundance for the northwestern portion of the EP have remained stable. Our objective was to determine if nesting rates, nest success, and vegetation at nest sites differed between the 2 regions, and if differences existed, whether they could explain the decline of RGWT abundance in the southeastern EP. Vegetation variables, including height, percent coverage of bare ground, forbs, and grass as well as visual obstruction, litter depth, distance to nearest edge, tree and shrub density, and tree canopy area, were taken at nest sites and 10 m in each cardinal direction from the center of each nest to determine if these factors were associated with nest success and if they differed by region. There were no differences in nesting rates or nest success between stable and declining regions within a given year. Hens on both stable and declining regions selected nest sites with greater visual obstruction, litter depth, and litter cover than areas immediately surrounding nest sites. There were no differences detected when successful and unsuccessful nests were compared. Our results do not support the hypothesis that differences in nesting rates, nesting success, and nest-site vegetation account for the lower wild turkey abundance in the southeastern EP.

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Key words: broods, Edwards Plateau, *Meleagris gallopavo intermedia,* nests, nesting habitat, nest rate, nest success, Rio Grande wild turkey, Texas.

Predation is the primary cause of nest failure for many avian species. This does not necessarily mean, however, that nest predation ultimately influences population dynamics. In an extensive review of the effects of predation on avian populations, Newton (1993) found little evidence to suggest predation influenced

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number of individuals in the breeding population for most avian species. He did, however, find that ground-nesting game birds were the exception to this rule. Similar results were found by Tapper et al. (1996) and Grant et al. (1999). Thus, nest concealment and cryptic coloring of incubating birds are critical to the nesting success for ground-nesting birds (Ricklefs 1969, Mankin and Warner 1992).

Several studies have addressed the influence of nesting rates (hens attempting nest/total marked hens) and nest success (number of nests hatching 1 poult/number of total nests laid) on eastern wild turkey (EWT; *M. g. silvestris*) populations. Nesting success was an important factor accounting for differences in EWT recruitment among years (Everett et al. 1980, Vander Haegen et al. 1988). Miller et al. (1998) found that low rates of nest initiation coupled with average nest success translated into lower recruitment of turkeys in central Mississippi. Similarly, nesting rate was a better predictor of EWT production indices (poults alive 4 weeks post hatch/females alive 1 Apr) in Virginia and West Virginia than was poult survival (Norman et al. 2001).

Some researchers have speculated that nest-site location is important to nest success and brood survival (≥1 poult surviving to 14 days). After hatching, poults begin feeding on solid foods as the yolk sac is absorbed, and need a diet much higher in protein during this period of rapid growth than do adults (Hurst 1992). Poults spend up to 24 hours in areas adjacent to the nest before moving to brood-rearing areas (Cook 1972). Lazarus and Porter (1985) suggested that wild turkeys might select nest sites based on proximity to brood-rearing habitat, with distances from the nest to brood-rearing sites decreasing as the breeding season progresses. For these reasons, vegetative characteristics near wild turkey nests probably not only influence nesting success, but also brood survival.

Less effort has been expended to determine how nesting rates and success might influence RGWT populations. Cook (1972) studied RGWTs in the EP of Texas from 1968–1971. Because nests were located through random searches (e.g., walking pastures, located by roadside maintenance crews, etc.), nesting rates could not be determined; 48.7% of 121 nests were successful. Reagan and Morgan (1980) found that 52.8% of 53 hens radio-tracked in the EP from 1973–1978 attempted to nest. Of the 53, 35.7% (n = 19) were successful. Nest-site characteristics were not reported by either Cook (1972) or Reagan and Morgan (1980). Other studies of RGWTs (Day et al. 1991, Keegan and Crawford 1999, Lehman et al. 2000) reported vegetation characteristics at nest sites. However, these 3 studies were outside of the historic range (South Dakota and Oregon) of RGWT and most of the vegetation characteristics associated with nests were region-specific plants.

Numbers of RGWTs began declining in the southeastern portion of the EP sometime between the studies by Cook (1972) and Reagan and Morgan (1980), while abundance in the northwestern EP remained stable (Figure 1). While Texas Parks and Wildlife Department (TPWD) personnel conducted production and harvest surveys for RGWTs within the EP, there have been few research studies conducted in this area since 1980. Insufficient long-term data exist to determine whether nesting rate, nest success, and/or vegetation at nest sites can account for declining RGWT numbers in the southeastern portion of the EP.

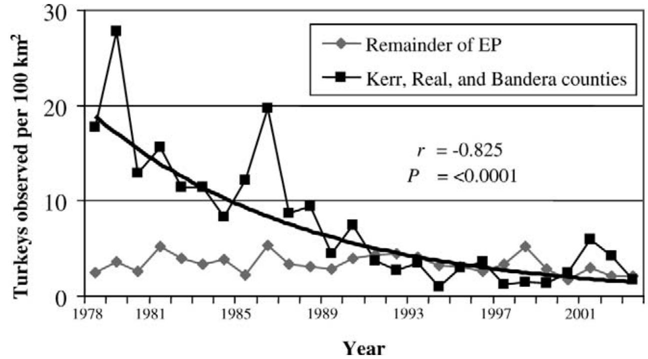

Fig. 1. Number of Rio Grande wild turkeys observed per 100 km² by Texas Parks and Wildlife Department biologists during summer production surveys for Bandera, Kerr, and Real counties, Texas, and the remainder of the Edwards Plateau (EP), 1975–2003 (excludes counties in the EP with a mean value of <1 turkey observed per 100 km² including Taylor, Val Verde, Coke, Pecos, Kinney, Medina, Comal, Travis, Coleman, Burnet, Runnels, and Brewster counties).

The objective of our study was to determine whether differences in vegetative characteristics at nest sites could account for differences in RGWT abundance trends between the northwestern (stable) and southeastern (declining) regions of the EP (Figure 1). Specifically, we determined if there were differences in: (1) nesting rates between regions of stable and declining RGWT abundances; (2) nest success between regions of stable and declining RGWT abundances; (3) vegetation characteristics at nest sites and areas surrounding the nest sites between regions of stable and declining RGWT abundances; and (4) vegetative characteristics at successful and unsuccessful nest-site locations.

STUDY AREA

Two study areas each were selected within both regions of declining and stable wild turkey abundance in the EP (Figure 2). Study areas within the stable region were located in Real and Kerr counties. The Kerr County study area (approximately 4,843 ha), was located northwest of Hunt and the Real County study area (approximately 984 ha) was north of Leakey, Texas. Both study areas within the declining region were located in Bandera County. One was northwest of Medina, and the other south of Bandera, Texas (approximately 8,858 and 2,910 ha, respectively). Livestock grazing occurred on all study areas except in Real County. The study areas near Bandera and Hunt were primarily calf-cow operations, with lease hunting as supplemental income. Turkey hunting did not occur on any study area, but surrounding ranches allowed tur-

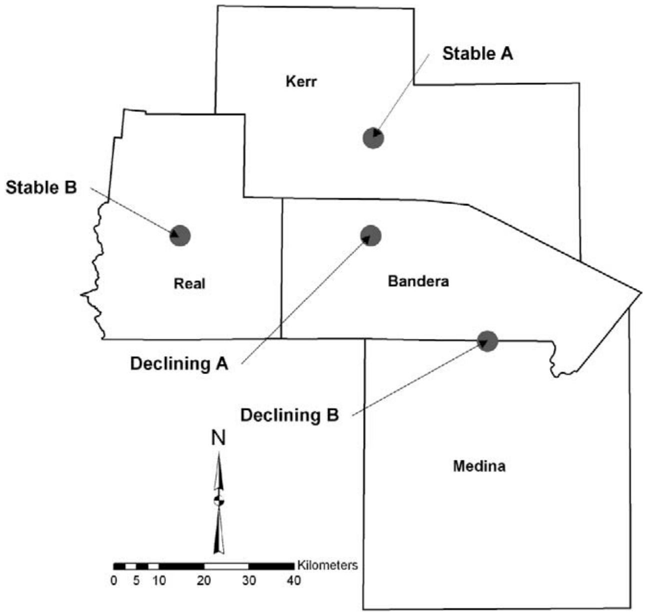

Fig. 2. Location of study sites for Rio Grande wild turkey project in the Edwards Plateau, Texas.

key hunting during both the fall and spring hunting seasons.

The EP had a precipitation range of 38.1–83.8 cm from west to east, respectively (Gould 1962). Typically, rainfall was most abundant in May, June, and September. Soils of the EP were generally shallow, ranging in textures from dark clayey and loamy to moderately alkaline silty-clay to non-calcareous clay and clay loams, on a limestone base (Natural Resources Conservation Service 1990*a,* 1990*b,* 1991*a,* 1991*b*).

Predominate climax grasses included switchgrass (*Panicum verigatum*), bluestems (*Andropogon* spp., *Bothriochloa* spp., and *Schizachyrium scoparium*), gramas (*Bouteloua* spp.), Indiangrass (*Sorghastrum natans*), wildrye (*Elymus* spp.), curly mesquite (*Hilaria belangeri*), and buffalograss (*Buchloe dacytloides*) (Gould 1962, Correll and Johnson 1970). Due to decreased fire frequency, there were dense stands of Ashe juniper (*Juniperus ashei*) interspaced with live oak (*Quercus fusiformis*) savanna (Fowler and Dunlap 1986, Miller et al. 1995).

METHODS

Trapping

We used pre-baited walk-in funnel traps (Davis 1994, Peterson et al. 2003) to capture RGWTs in the morning (0500–1100 hours) during winter, 2001–2003. We removed birds from traps using a golf club shaft modified with a shepherd's crook on the end before feeding activity decreased or intraspecific aggression occurred (typically within 30 min). After removal, we immediately placed each turkey into a darkened plywood box (1 × 1 × 0.5 m) constructed of marine grade (1.9-cm thick) plywood until it could be processed.

We physically inspected each turkey for external injuries and parasites. We collected specific information including body mass (kg), sex, and age (juvenile or adult). We fitted birds with a numbered aluminum leg band (supplied by TPWD with individual identification numbers and TPWD mailing address), and a mortality sensitive radio-transmitter (Advanced Telemetry Systems, Isanti, Minnesota, USA). We observed all released birds to determine if they ran or flew, and if individuals had to adjust to transmitters.

Monitoring

We monitored all RGWTs using standard radiotelemetric techniques (Samuel and Fuller 1996) until a transmitter failed, death, or study completion. We usually tracked each turkey 3 times per week from established georeferenced radio-telemetry receiving stations (referenced on topographical maps) on each of the 4 study areas. We determined daily locations by taking individual signals from ≥3 stations with signal directions (determined by compass) and plotting on a map to determine location polygons for each given bird.

When we located RGWT hens in the same area >3 times, we assumed nest initiation had occurred. If hens remained at the same location >6 times (2 weeks), we attempted to locate the nest. We located individual nest-site locations by walking in with a hand-held 3-element yagi antenna and tracking receiver (Advanced Telemetry Systems, Isanti, Minnesota, USA) and circling the hen. We monitored nesting hens >3 times per week with radio-telemetry to determine hatch date or cause of nest failure. We determined nest fate when hens were found off the nest >2 times in succession; we used this approach to decrease the chances of disturbing nesting hens that were feeding or watering at the time radio-telemetry locations were taken.

Nesting Rates and Success

We calculated nesting rates for juvenile females, adult females, and total females on both the stable and declining regions. We calculated nesting rate as the number of females reaching nest incubation divided by the number of females alive on 1 April of the given year (Cowardin et al. 1985). Nests were considered successful if 1 poult hatched from the nest and unsuccessful if predated or abandoned.

Vegetation Analyses

We used the point-center-quarter (PCQ) method (Cottam and Curtis 1956) to determine tree density, shrub density, and tree canopy coverage at nest locations. We took measurements distance to nearest tree (height >2 m), shrub (height <2 m), and edge (i.e., rivers, fences, and roads) in 4 quadrants centered at the nest site, and a we calculated a mean for each variable.

We used a 20 × 50 cm-quadrat frame (Daubenmire 1959), constructed of 1.3-cm diameter PVC pipe,

Table 1. Nesting rate of adult female (AF) and juvenile female (JF) Rio Grande wild turkeys on stable and declining regions in the Edwards Plateau of Texas, 2001–2003.

	Stable						Decline					
	AF		JF		Total		AF		JF		Total	
Year	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*
2001	39.4	37	33.3	3	37.2*	40	64.0	26	0.0	2	57.1*	28
2002	37.5	12	18.2	21	31.4	33	50.0	17	16.7	8	43.8	25
2003	6.0	30	5.5	16	5.8*	46	15.9	28	0.0	3	14.3*	31
Total	23.4	79	12.5	40	20.8*	119	42.4	71	7.7	13	37.8*	84

* Significant difference between regions at $P < 0.05$.

to determine percent bare ground, forbs, and grass at nest sites and 10 m from the nest site in the 4 cardinal directions. We determined percent cover using Daubenmire's (1959) 1–6 scale. Additional measurements taken within the quadrat frame were vegetation height and litter depth in the 4 corners of the quadrat frame. We averaged the measurements for data analysis.

We used a Robel range pole (Robel et al. 1970) to determine horizontal obstruction of vision (OV) at the center of the nest site and 10 m from this point in the 4 cardinal directions. We averaged measurements taken at the latter locations for data analysis.

Statistical Analysis

We analyzed vegetation characteristics by year, study region, and site (nest or 10 m away from nest) to determine if vegetation characteristics at nest sites differed from the immediate surrounding area. Because these data were non-normally distributed, we employed non-parametric approaches. We used chi-squared tests (Ott and Longnecker 2001) to determine differences between nesting rates and nesting success between study regions within and among years. We used a Kruskal-Wallis test (Ott and Longnecker 2001) to compare vegetation characteristics at nest sites within stable and declining regions among years (2001–2003). We used a Mann-Whitney U test (Ott and Longnecker 2001) to determine differences in vegetation characteristics at nest sites between stable and declining regions within years (i.e., stable 2001 vs. declining 2001), and between successful and unsuccessful nest sites. We used a Wilcoxson signed-rank test (Ott and Longnecker 2001) to determine if RGWT hens selected vegetation characteristics at nest sites that differed from those 10 m from the nest sites (surrounding area) of the same region. We used the Statistical Package for the Social Sciences statistical software (SPSS Version 11.0 2003) for all analyses.

RESULTS

We calculated nesting rates for each study region based on juvenile, adult, and all females for each of the 3 years (Table 1). Nesting rates were lower for juvenile than adult females in all years on both stable and declining regions. Overall nesting rates were highest in 2001 and lowest in 2003 (Table 1). The overall (all females; 2001–2003) nesting rate was 20.8% (n = 119) on stable regions and 37.8% (n = 84) on declining regions, with a nesting rate of 27.8% (n = 205) for all females (Table 1). Nesting rates were greater on the declining region in 2001 (P = 0.017), 2003 (P = 0.025), and combined (2001–2003; P = 0.006) than on the stable region. No statistical differences (P = 0.061) were detected in 2002 between stable and declining regions. The combined nesting rates for juvenile and adult females in both stable and declining regions during all years of the study were 20.8 (n = 119) and 37.8% (n = 84), respectively.

Table 2. Vegetation characteristics of successful (n = 23) and unsuccessful (n = 50) Rio Grande wild turkey nest sites in the Edwards Plateau of Texas, 2001–2003.

	Successful		Unsuccessful	
Characteristic	$\bar{x}$	SE	$\bar{x}$	SE
Percent cover	61.8	8.2	67.4	4.1
Cover height (m)	3.3	0.3	3.3	2.9
Robel pole (dm)	4.7	0.7	4.6	0.4
Vegetation height (cm)	13.1	5.7	9.4	2.0
Litter depth (cm)	4.4	0.7	4.3	0.3
Trees (trees/ha/100)	9.8	6.2	7.6	2.7
Canopy area (m^2/10)	1.6	2.6	1.7	2.0
Edge (m)	51.4	8.3	51.6	3.7
Shrubs (shrubs/ha/10,000)	34.9	31.1	10.2	0.5

Nest success for 2001 was 47.1 and 55.6% for study areas in the stable (n = 17) and declining regions (n = 18), respectively. Nest success for 2002 was 16.7% and 15.4% on the stable (n = 12) and declining regions (n = 13), respectively. During the 2003 season, nest success was 40.0% and 25% on the stable (n = 5) and declining regions (n = 8), respectively. For the 3-year period, combined stable region nests (n = 34) had a success rate of 35.3%, while nests on the declining regions (n = 39) had a success rate of 35.9%. There was no statistical (P = 0.355) difference between these values.

We were unable to detect differences ($P > 0.681$) among vegetation characteristics at successful and unsuccessful nest sites (Table 2). Individual vegetation characteristics were compared between years. There was no difference found for any of the vegetation characteristics at nest sites in the stable region between years. However, when comparing data between years, within the declining region, vegetation at nest sites was shorter in 2002 (P = 0.012), taller in areas surrounding nest sites in 2003 (P = 0.021), and litter depth at nest sites was deeper in 2002 (P = 0.022; Table 3).

Rio Grande wild turkey hens on both stable and declining regions (subscripts s and d denote samples collected at study areas within stable and declining regions, respectively) selected nest sites with similar vegetation characteristics. However, vegetation at nest sites differed from that present 10 m away. Vegetation at nest sites had greater visual obstruction ($P_s < 0.001$, $P_d < 0.001$), shorter height ($P_s = 0.004$, $P_d < 0.001$), greater litter depth ($P_s < 0.001$, $P_d = 0.002$), less forb cover ($P_s = 0.001$, $P_d = 0.002$), less grass cover ($P_s = 0.002$, $P_d = 0.003$), greater litter cover ($P_s < 0.001$, $P_d < 0.001$), and less bare ground cover ($P_s < 0.001$,

Table 3. Mean (± SE) vegetation characteristics at nest sites (N) and surrounding areas (S) in regions of stable and declining Rio Grande wild turkey abundance in the Edwards Plateau of Texas, 2001–2003.

	Stable						Declining					
	2001		2002		2003		2001		2002		2003	
Characteristic	$\bar{x}$	SE	$\bar{x}$	SE	$\bar{x}$	SE	$\bar{x}$	SE	$\bar{x}$	SE	$\bar{x}$	SE
Percent cover	71.7	6.2	74.5	7.5	38.8	13.2	71.3	7.6	63.3	9.7	14.4	
Cover height (m)	0.5	0.1	0.3	0.0	2.1	1.8	3.6	3.3	0.3	0.0	0.2	0.1
Robel pole (dm)(N)	5.1	0.7	4.6	1.1	3.9	0.9	4.6	0.8	5.2	0.8	3.5	1.4
Robel pople (dm)(S)	1.6	0.3	2.2	0.7	1.9	0.4	1.7	0.3	2.6	0.8	2.1	0.2
Vegetation height (cm)(N)	12.2	4.4	10.6	7.0	10.6	4.5	9.0	5.5	7.6[a]	1.9	15.5	2.5
Vegetation height (cm)(S)	12.6	1.5	20.6	3.8	20.4	5.8	12.2	2.1	19.5	3.2	24.4[a]	6.3
Litter depth (cm)(N)	4.5	0.7	5.6	1.0	3.1	0.7	3.6	0.4	4.9[a]	0.9	3.8	0.3
Litter depth (cm)(S)	1.4	0.3	2.2	0.4	4.1	1.9	1.7	0.4	3.9	0.9	1.9	0.5
Trees (trees/ha/100)	2.2	1.0	5.3	2.6	23.1	42.4	9.3	5.9	1.8	0.6	16.9	34.8
Canopy area (m²/10)	4.2	1.0	4.4	1.3	12.8	14.5	3.9	0.6	5.4	0.9	9.8	7.1
Edge (m)	62.1[b]	6.4	51.1	11.2	46.2	7.9	47.6[b]	5.6	44.1	8.2	81.3	15.3
Shrubs (shrubs/ha/10,00)	17.7	13.8	60.7	51.9	17.0	35.4	10.7	5.6	29.3	16.8	84.7	15.6

[a] Significant difference between years within the declining region at $P < 0.05$.
[b] Significant difference between regions at $P < 0.05$.

$P_d < 0.001$) than was found 10 m away from nest sites (Table 4).

In 2001, the average distance of a nest site (n = 35) to the nearest edge was greater on the stable region than on the declining region ($P = 0.034$; Table 3). Due to low sample sizes during 2002 (n = 25) and 2003 (n = 13), data from nest sites were pooled for analysis. No statistical differences were detected for pooled 2002 and 2003 vegetation characteristics at nest sites between stable and declining regions.

DISCUSSION

Nesting Rates and Success

Turkeys from the declining region had nesting rates higher than hens on the stable region in all years, which was counter to our hypothesis of greater nesting rates on the stable region. Nesting rates observed on both the stable and declining regions of the EP were lower than those found by Reagan and Morgan (1980), the only other study conducted on the EP to determine nesting rates. They found that 31.3% (n = 32) of juvenile and 85.7% (n = 21) of adult hens initiated a nest (1973–1978). Overall nesting rates from both Reagan and Morgan (1980) and our study were lower than those found by Vangilder et al. (2000) for EWTs in Missouri (1989–1998; 74.4±5.6%, n = 385). Because nesting rates were higher on the declining region compared to the stable region during all years of the study (Table 1), it is unlikely that nesting rates alone accounted for declining turkey abundance in the southeastern EP.

Although observed nesting success in the EP was highest in 2001, overall nesting success for the 3-year study (stable = 35.3%; declining = 35.9%) was similar to that reported by Cook (1972) and Reagan and Morgan (1980) for RGWT in the EP. The highest nest success rate for the EP (48.8%) was reported by Cook (1972). Reagan and Morgan (1980) reported an overall nest success rate of 37.5%. Our results were less than those reported by Keegan and Crawford (1999) for RGWT in Oregon (60.0%; n = 96), and Lehman et al. (2000) for RGWT in South Dakota (59.0%; n = 64), but were similar to results of Vangilder et al. (2000) for EWT in Missouri (36.2±6.1%; n = 385), and higher than values (combined initial and renesting) obtained by Miller et al. (1998) for EWTs in central Mississippi from 1984–1996 (27.9%; n = 219). Because nesting success in both stable and declining regions of the EP was similar to some previous reports from this region and for both RGWTs and EWTs elsewhere, it is unlikely that nesting success alone accounted for declining RGWT abundance in the southeastern EP.

Although Norman et al. (2001) reported that nesting rate was a better predictor of production in EWTs than nesting success, we found that neither nesting rate nor nesting success alone could account for declining RGWT abundance in the southeastern EP. For this reason, it appears that some other factor, such as differences in brood rearing success, might better explain lower recruitment into the reproductive population of the southeastern as opposed to the northwestern EP.

Table 4. Vegetation characteristics at all nest sites and surrounding areas in regions of declining and stable Rio Grande wild turkey abundance in the Edwards Plateau of Texas, 2001–2003.

	Stable (n = 34)				Declining (n = 39)			
	Nest		Surrounding		Nest		Surrounding	
Characteristic	$\bar{x}$	SE	$\bar{x}$	SE	$\bar{x}$	SE	$\bar{x}$	SE
Robel pole (dm)	4.7*	0.5	1.9*	0.3	4.7*	0.5	2.1*	0.3
Vegetation height (cm)	11.4*	3.1	16.9*	1.9	9.4*	2.9	15.5*	2.0
Litter depth (cm)	4.5*	0.5	2.4*	0.5	4.1*	0.4	2.5*	0.4
Forb cover (%)	1.0*	2.5	3.0*	0.5	1.0*	0.5	4.0*	1.0
Grass cover (%)	4.0*	1.0	21.0*	1.0	3.0*	1.0	11.0*	1.0
Litter cover (%)	67.5*	3.0	13.0*	1.0	67.5*	1.0	13.0*	1.0
Bare ground cover (%)	2.0*	1.0	11.0*	1.0	2.5*	0.5	11.0*	1.0

* Significant at $P < 0.05$.

Nest-Site Characteristics

Hens selected nest sites with greater visual obstruction, litter depth, and cover than areas immediately surrounding nest sites. Hens also appeared to avoid nesting in areas with a large percentage of grass, forbs, or bare ground as well as areas of tall vegetation on all study areas. This apparent avoidance might be related to selection of nest sites in areas with high OV, because these areas occurred within shrub dominated areas (e.g., shin oak [*Quercus havardii*] motts or dense Ashe juniper stands) having reduced amounts of grass, forbs, and bare ground. These data were similar for RGWT nests in both stable and declining regions. Our results are similar to those of other studies addressing nesting in western turkey populations. For example, nest plots of RGWT hens in northeastern Colorado were characterized by greater canopy cover, more shrubs, fewer grasses, and greater understory cover than random paired plots (Schmutz et al. 1989). Similarly, Lutz and Crawford (1987) found Merriam's wild turkey (*M. g. merriami*) hens in eastern Oregon selected nest sites with significantly higher shrub densities and OV. Thus, our findings are consistent with the notion that hens select nest sites with more dense vegetation than surrounding areas, apparently to increase concealment and to better see approaching predators (Day et al. 1991). Because hens selected nest sites with greater OV, future research should attempt to identify preferred substrates, other than ''knee high'' cedar (Ashe juniper; *Juniperus ashei*). With the dominance of cedar it would be helpful to understand if this is preferred or convenient nesting habitat. While cedar dominates much of the Texas Hill Country, the selection for immature ''knee high'' cedar by nesting RGWT provides inadequate camouflage for nest concealment from predators.

In summary, hens appeared to select certain vegetation characteristics for nest sites. Most authors studying vegetation at nests of western turkey populations have found that visual obstruction and litter depth at nest sites were correlated with nesting success (e.g., Lutz and Crawford 1987, Schmutz et al. 1989, Day et al. 1991). This was not the case in our study. We found that vegetation characteristics selected by hens appeared to remain consistent for both stable and declining regions, with the majority of differences found among years within the declining region. Because there were no differences in nest success between regions within years, but there were differences among years, it is likely that differences in nest success reflect the ''boom-bust'' reproductive success typical of many galliforms, rather than differences in vegetation at the nest site.

Although differences in vegetation at nest sites and the surrounding area were noted, few differences in the vegetation associated with nests were found between regions of stable and declining RGWT numbers in the EP. As reflected by similar nesting rates and nesting success for RGWT hens in both stable and declining regions of the EP, we cannot conclude that vegetative cover at nest sites was poorer in the declining region. Therefore, it is likely that the influence of other life-history stages of RGWTs, such as brood rearing, might account for the declining reproductive population in the southeastern EP.

MANAGEMENT IMPLICATIONS

Our results suggest there are reasons other than nesting vegetation, nesting rate, and nesting success that account for differing trends in RGWT numbers in the EP. Based on our results it appears the differing range management practices on each ranch were not a limiting factor to the survival and growth of turkey populations in the EP. Possible reasons for declining numbers such as brood survival, anthropogenic change/encroachment, and other potential limiting factors (i.e., invertebrate abundance and predator levels) are currently being investigated by Texas A&M University.

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