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Unusual Barn Swallow Nest Placement in Southeastern Oregon

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ABSTRACT.—Barn Swallows (*Hirundo rustica*) historically nested along cliffs, in caves, and in other natural situations. Currently, nearly all reported nests of this species are on walls and beams of bridges, buildings, and other human-derived structures. Both natural and man-made nest sites typically share one thing in common: a horizontal surface for nest attachment. We describe a Barn Swallow nest that was constructed on a branch overhanging a river in southeastern Oregon. This is the first documented occurrence of this behavior by Barn Swallows and we believe it to be the result of high competition for a limited number of suitable nest sites in the study area. *Received 23 February 2006. Accepted 1 August 2006.*

The Barn Swallow (*Hirundo rustica*) is perhaps the most well-studied species of swallow in the world. It breeds throughout the northern hemisphere, including much of North America. Historically this species nested in caves and on cliffs but now nests primarily on artificial structures (i.e., eaves, bridges, etc.). A search of the literature regarding nest placement of this species indicated that nests away from vertical structures (both natural and artificial) are rarely reported, if at all (Speich et al. 1986). Nest architecture is perceived to be a relatively fixed trait with an underlying genetic basis, as studies have shown its usefulness in phylogenetic analyses (Winkler and Sheldon 1993, Zyskowski and Prum 1999). We report on observations of two atypically constructed nests of Barn Swallows in southeastern Oregon.

OBSERVATIONS

On 17 June 2004, MTM found a Barn Swallow nest being built in a willow tree (*Salix* sp.) along the Donner und Blitzen River at Malheur National Wildlife Refuge near Frenchglen, Oregon. The Central Patrol Road (CPR) parallels the stretch of river where the nest was located. Trees line much of the narrow bank between the river and road, and the nest tree (42.91713° N, 118.87425° W) was approximately 3 m from the west shoulder of the road and 10.8 km north of the southern end of the CPR. Coordinates of the nest were documented with a Garmin GPS 72 receiver.

MTM's attention was drawn to the half-built nest because its position suggested that of an Eastern Kingbird (*Tyrannus tyrannus*) (the focus of another study). Recognition that it was constructed of mud prompted further attention, and within minutes a Barn Swallow alighted upon the nest and deposited mud along its rim. The nest was attached to the end of a dead limb hanging over the river. It was approximately 0.25 m above the water's surface and made entirely of small, individual "globules" of mud of a nearly perfectly circular shape attached to a single, downward projecting limb that measured 9.5 mm in diameter. The limb provided a narrow attachment site for the base and one side of the nest. LJR documented the finding with several photographs (Fig. 1).

We checked the nest every 3–4 days to ascertain its outcome. On 24 and 25 June there were five eggs in the nest and the female was incubating the clutch on all visits. On 28 June a storm accompanied by high winds moved through the area and on 29 June the entire nest was gone. We presume that it was blown from the tree.

On 9 July, LJR located another nest in the same tree in exactly the same position as the first nest. The nest appeared to be complete and contained no eggs, but otherwise appeared to be constructed identically to the first nest (i.e., round, made entirely of small mud globules). On 12 July, the nest held three eggs and, on 15 July, a Barn Swallow was on the nest incubating five eggs indicating that laying began on 10 July and concluded on 14 July. On 20 July, no eggs remained in the nest, but

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FIG. 1. Barn Swallow nest constructed in a willow tree over the Donner und Blitzen River, 17 June 2004, Malheur National Wildlife Refuge, Oregon.

it was intact, suggesting it was probably depredated by an avian predator. On 24 July, LJR removed the nest and the portion of branch to which it was attached. It has been deposited in the Museum of Vertebrate Zoology at Portland State University (Catalog #B1549).

DISCUSSION

The abundance of Barn Swallows most likely increased with arrival of European settlers due to increased availability of suitable nest sites. The nest we describe was in southeastern Oregon where densities of humans (<1 person/km^2) and buildings are extremely low. Thus, Barn Swallows may rely more heavily on natural nesting substrates. One of the few known colonies of naturally nesting Barn Swallows (Malheur Cave) occurs in the same county (Harney) (Speich et al. 1986). Artificial substrates are not completely lacking in the vicinity of the nests that we described; however, competition for these sites may be high. The nearest artificial nesting substrate (a small shed) was approximately 5.6 km north of the described nests. A bridge formerly crossing the Donner und Blitzen River (known locally as Five Mile Bridge) approximately 2 km upstream (south) of the nest was removed by refuge personnel in early spring 2004. A large culvert and bridge ~5.5 km south and ~6.7 km north of the site, respectively, of the tree-nesting Barn Swallows offered potential nest sites, but medium-sized (30–50 pairs) colonies of Cliff Swallows (*Petrochelidon pyrrhonota*) occupied both sites. Rocky buttes in the area also offer possible nest sites, but most are at considerable distances (≥3–4 km) from the river in dry, shrub-steppe habitat. One butte, within 100 m of the river, is ~8 km distant but is occupied by a Cliff Swallow colony.

Our research at this site (daily surveys along the same stretch of river between late May and late July in 2002 and 2003) yielded frequent observations of Barn Swallows, despite the apparent scarcity of suitable nest sites. The area also provides exceptional breeding opportunities for other swallow species and supports large breeding populations of Cliff Swallow, Northern Rough-winged

Swallow (*Stelgidopteryx serripennis*), Bank Swallow (*Riparia riparia*), and, where nest boxes are provided, Tree Swallows (*Tachycineta bicolor*). Violet-green Swallows (*T. thalassina*) are common at higher elevations on nearby Steens Mountain and during cold weather they descend to forage along the river. Hence, food must be abundant for aerial foragers and we suspect that availability of aerial insects attracted the Barn Swallows to the area, despite the shortage of nest sites.

Our observations demonstrate that Barn Swallows possess the behavioral flexibility to build nests in a manner that is entirely outside their expected repertoire. Mayr and Bond (1943) were the first to construct a phylogeny of swallows based mostly on nesting habits, which was later supported by a molecular phylogenetic analysis (Sheldon and Winkler 1993). However, the two Barn Swallow nests that we observed were outside that expected for this genus. Cliff Swallows also construct nests in atypical manners such as cavity excavation (Gaunt and Gaunt 1967) and in trees (Dawson 1923, Garrett 2002). Thus, there may be some amount of inherent plasticity in nest building behavior within the *Hirundo* clade (Winkler and Sheldon 1993). Researchers studying Barn Swallows should identify the extent to which non-traditional nest sites are used by this species.

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Mortality at a Night Roost of Great-tailed Grackles and European Starlings During a Spring Hail Storm

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ABSTRACT.—We report on mortality caused by an evening hailstorm to a night-time roost of Great-tailed Grackles (*Quiscalus mexicanus*) and European Starlings (*Sturnus vulgaris*) in Austin, Texas. The hailstorm was of short duration (6 min), and hail stones were not too large (most <20 mm in diameter). Approximately 7% of female grackles, 12% of male grackles, and 26% of starlings died. Greater mortality in male grackles suggests that preferred roost locations were more exposed to hail. *Received 28 November 2005. Accepted 3 September 2006.*

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Bird mortality due to hailstorms has been documented on only a few occasions (Smith and Webster 1955, Roth 1976, Beedy and Hamilton 1977, Higgins and Johnson 1978, Heflebower and Klett 1980, Martin et al. 1998, Schweitzer and Leslie 2000), even though mortality can be substantial (Smith and Webster 1955). In this note, we present the effects of a hail storm on a night-time roost of Great-tailed Grackles (*Quiscalus mexicanus*) and European Starlings (*Sturnus vulgaris*) in Austin, Texas.

METHODS

On 25 March 2005 between 2115 and 2130 hrs CST, a thunderstorm of short duration passed through Austin (Travis County), Texas. The storm was notable as it included a downfall of hail that lasted ~6 min. The storm passed directly over DWH's home (8505 Dorotha Ct., Austin) and he observed hail 5–20 mm in diameter, although hail up to 40 mm was reported in other areas. The hail knocked many small branches (<5 mm diameter) and leaves from trees and shrubs, damaged the fabric tops of some automobiles, and broke a few windows in residences and automobiles.

The following morning, 26 March 2005, between 0730 and 1000 hrs, we censused areas surrounding Highland Mall (6001 Airport Blvd., Austin) for dead and injured birds. Highland Mall is ~7 km from DWH's residence in the direction the storm was moving (southeast). Trees surrounding Highland Mall were known to have night-time roosts of Great-tailed Grackles and European Starlings (DWH, pers. obs.).

We estimated the number of birds killed or injured by the hailstorm by censusing seven vegetated areas, each of which contained at least two trees suitable for night-time roosts. These areas were chosen haphazardly and the only requirement was that they had well-defined borders so we could revisit them in the evening. The seven areas varied in length from 25 to 125 m, and contained up to 15 roost trees.

The census involved counting the number of dead and stunned individuals (by gender for grackles) present on the ground or in vegetation up to 2 m in height. Birds present in trees were not counted. Heavy ground cover (a dense hedge) in area 7 was surveyed without intrusion to reduce the likelihood that injured birds would flee onto the adjacent roadway.

We estimated flock density before the hailstorm by assuming that all uninjured birds would return to their usual roost in the evening. We censused roosting birds by counting individuals in trees during the last 45 min of daylight (1830–1915 hrs) the next day, 26 March 2005, following the hail storm. All birds were counted for areas 5–7. We had to estimate the number of roosting birds for areas 1–4 because light levels were rapidly decreasing, making counting difficult. We carefully counted the birds in three oak (*Quercus* spp.) trees in transect 1 and calculated an average. We used this average to estimate the total number of birds in areas 1–4. The trees in all four of these areas were oaks of similar size (presumably planted when Highland Mall was built in the early 1970s). The areas had similar ground vegetation (grass with a few flowerbeds).

RESULTS

Injured individuals varied greatly in their condition. Some (~50%) had sustained relatively minor injuries and were able to flee when approached, while others were more severely injured and could be approached closely. If we presume that most injured birds, regardless of severity of injury, were unlikely to recover, overall mortality was 12% in male Great-tailed Grackles, 7% in female Great-tailed Grackles, and 26% for European Starlings (Table 1). Male Great-tailed Grackles were more likely to be dead or injured than females (Fisher's exact test, $P < 0.001$). European Starlings were more likely to be dead or injured than Great-tailed Grackles (Fisher's exact test, $P < 0.001$).

DISCUSSION

The hailstorm of 25 March 2005, although relatively short in duration (~6 min) with relatively small hail stones (<20 mm in diameter), caused substantial mortality at the night-time roost of Great-tailed Grackles and European Starlings at Highland Mall. Starlings were particularly affected by the storm, perhaps due to their smaller body size. Male grackles survived more poorly than females, possibly due to the position in the tree crown they occupied. We observed that female

TABLE 1. Dead and injured birds at seven areas surrounding Highland Mall, Austin Texas, 26 March 2005. Areas 1, 3, 4, 5, and 6 each also contained one dead White-winged Dove (*Zenaida asiatica*). Area 5 contained one injured Purple Martin (*Progne subis*). Areas 6 and 7 each contained one injured White-winged Dove. Area 7 contained one dead Cedar Waxwing (*Bombicilla cedrorum*). Total abundances at the evening census were counted for areas 5–7 and were estimated for areas 1–4 by carefully counting birds present in three oak trees in area 1 and then extrapolating. GTG = Great-tailed Grackle. ES = European Starling.

	Dead			Stunned			Evening census		
Census area	GTG male	GTG female	ES	GTG male	GTG female	ES	GTG male	GTG female	ES
1	13	15	21	5	3	3	173[a]	510[a]	25[a]
2	14	13	18	7	12	6	173[a]	510[a]	25[a]
3	14	19	22	6	5	5	207[a]	612[a]	30[a]
4	8	8	2	1	2	1	69[a]	204[a]	10[a]
5	9	17	3	3	0	0	13	48	132
6	10	19	5	1	6	0	51	59	36
7	10	40	11	3	6	0	77	176	16
Totals	78	131	82	26	34	15	763	2,119	274

[a] Estimated.

grackles at the evening census roosted lower in the crown than males, which aggressively sought uppermost positions. Males placed themselves in a position that was more exposed and more susceptible to hail injury. Males sought a higher position, perhaps because it was more protected from predators and from fecal precipitation (Yom Tov 1979, Burger 1981, Weatherhead 1983). Our mortality data suggest this preferred position had a cost during the hail storm.

We may have underestimated hail mortality. First, during the morning census, birds perched in trees were not counted even though some birds may have been injured (one male Great-tailed Grackle flew from a tree and crashed into a sign, indicating it had sustained an injury). Second, to avoid stressing injured birds, heavy cover in area 7 was not searched thoroughly and some dead or injured birds may have been overlooked. Third, some injured birds may have moved from the census areas prior to the morning census.

We may also have overestimated hail mortality. First, some birds may not have returned to the Highland Mall roost on the evening following the hailstorm. Second, some birds may have arrived at the roost after it was too dark for us to count them. Third, some birds may have been overlooked in the evening census: starlings tended to aggregate towards the center of a roost tree and were more difficult to count than grackles.

The possible inaccuracies of our estimates underscore the difficulty of obtaining these data. Hail storms are unpredictable both spatially and temporally, and mortality surveys must be done soon thereafter. Our study was in an area where dead and injured birds could be easily found and population size could be relatively easily estimated. Obtaining estimates of the impact of hail storms on other species, especially those in rural areas, would be much more difficult. Many such areas are hard to access, population size is not easy to estimate, and the vast amount of plant material knocked down buries small birds, making them difficult or impossible to find.

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First Record of Bronzed Cowbird (*Molothrus aeneus*) Parasitism of the Common Bush-tanager (*Chlorospingus ophthalmicus*)

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ABSTRACT.—I report the first record of Bronzed Cowbird (*Molothrus aeneus*) parasitism of the Common Bush-tanager (*Chlorospingus ophthalmicus*). This represents the 97th known host for this cowbird species and the 10th known host from the Family Thraupidae. This record is based on feeding behavior observations and vocalizations recorded in Xalapa, Veracruz, Mexico. *Received 9 February 2006. Accepted 18 July 2006.*

Brood parasitic cowbirds (*Molothrus* spp.) differ greatly in the number of hosts. Bronzed (*M. aeneus*), Brown-headed (*M. ater*), Shiny (*M. bonariensis*), and Screaming (*M. rufoaxillaris*) cowbirds are reported to have parasitized between 10 and 200 hosts (Fraga 2005, Ortega et al. 2005, Peer et al. 2005). The Bronzed Cowbird is a generalist brood parasite known to have parasitized ~100 host species (Sealy et al. 1997, Peer et al. 2005), but this species has been little studied and new data on its host use are especially valuable (Carter 1986, Peer et al. 2005). The Common Bush-tanager (*Chlorospingus ophthalmicus*) has not been reported as a Bronzed Cowbird host (Lowther 2005). I report here observations indicating this species successfully reared a Bronzed Cowbird.

The Common Bush-tanager is a small tanager and a common resident of montane tropical forest, even in remnant strips of humid evergreen forest and edge. It ranges from Mexico to Bolivia and northwestern Argentina (Skutch 1967, Stiles and Skutch 1989, Howell and Webb 1995). The Common Bush-tanager in Mexico inhabits areas from 1,000 to 3,500 m elevation (Howell and Webb 1995). The female builds an open cup nest with rootlets, grass, moss, and epiphytes at mid-levels in trees, or hidden in undergrowth on banks. Clutch size is 2–3 white eggs flecked with reddish browns and grays that are incubated by the female alone (Skutch 1967, Stiles and Skutch 1989, Howell and Webb 1995). The Common Bush-tanager is a common resident in the study site and in other Mexican cloud forests, but there are no records of brood parasitism of this species by Bronzed Cowbirds (Peer et al. 2005).

STUDY AREA

The observation site was in a remnant of tropical montane cloud forest in Francisco X. Clavijero Park (18° 30′ 47.5″ N, 96° 56′ 33.3″ W; 1,310 m), near the Instituto de Ecología,

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A.C. This natural protected area is 2.5 km south of the city of Xalapa, Veracruz, Mexico encompassing an area of 55 ha. It receives 1,517 mm of rain per year and the mean annual temperature is 18° C. The topography of the area is irregular with steep slopes (40%). The mean canopy height is 24.6 ± 1.1 m (Williams-Linera 1993, 2002). Canopy and understory dominant trees included *Carpinus caroliniana*, *Liquidambar styraciflua*, *Quercus xalapensis*, *Q. leiophylla*, *Q. germana*, *Clethra mexicana*, *Turpinia insignis*, *Cinamomun effusum*, *Eugenia xalapensis*, *Lonchocarpus* sp., *Meliosma alba*, *Ilex tolucana*, and *Oreopanax xalapensis* (Williams-Linera 1993, 2002).

OBSERVATIONS

My observations of Bronzed Cowbirds and Common Bush-tanagers were on 14, 24, and 25 August 2001. I was attracted to the fledged juvenile Bronzed Cowbird accompanied by a single Common Bush-tanager by its loud vocalizations. On 14 August, I observed and tape recorded this pair for 15 min (recordings deposited in the Mexican Bird Sound Library, GOGF01-156-017, 018). The cowbird fledgling was attended by only one tanager and was fed four times, apparently with insects. Feedings were primarily in the middle part of an oak (*Quercus* sp.) tree. The tanager moved vigorously on the oak branches uttering calls and searching for food, and the cowbird called loudly and continuously. The cowbird's calls were louder when it was fed by the tanager. The cowbird perched in the oak, begging for food with its yellowish bill open, and moving and vibrating its wings while the tanager searched for food. The cowbird fledgling's size was similar to that of an adult cowbird, but with paler and browner plumage without sheen and with brown eyes. On 24 and 25 August, I saw the tanager and cowbird fledgling again in the same oak tree performing similar behaviors.

DISCUSSION

The Bronzed Cowbird breeds in Mexico from sea level to at least 3,000 m (Howell and Webb 1995). There are no census data on Bronzed Cowbirds for the study site but single individuals are seen infrequently at irregular intervals. The species is more frequent in open and semi-open areas although it does not form large flocks. I have also seen cowbird fledglings at 1,400 m using Rusty Sparrow (*Aimophila rufescens*) as hosts (a known host species; Lowther 2005). The Rusty Sparrow is probably a common host of *Molothrus aeneus* in Veracruz (Friedmann 1933, Lowther 2005) as it is a common resident species in Natura and Francisco X. Clavijero parks. The Common Bush-tanager is a common species in the cloud forest of this study site and is probably regularly parasitized.

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