

PREDATORY ATTACKS BY BLACK-BILLED MAGPIES
(*PICA HUDSONIA*) ON CASSIN'S FINCH (*HAEMORHOUS CASSINII*)
AND OTHER ADULT BIRDS

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ABSTRACT—On 12 April 2021, we observed a Black-billed Magpie (*Pica hudsonia*) kill an apparently-healthy adult female Cassin's Finch (*Haemorhous cassinii*) in an urban backyard near a feeding station in Missoula, Montana. The magpie landed on a chain-link fence above the finch before dropping to the ground 1–2 s later where it grabbed the finch with its bill and pinned it to the ground with a foot, then delivered several blows of the bill to the finch's neck, back, and breast. The entire attack, from arrival of the magpie to its departure with the apparently-dead finch held in its bill, lasted no more than 60 s. We found only 2 prior reports of Black-billed Magpies capturing adult birds, and none for the Yellow-billed Magpie (*Pica nuttalli*). There are several published cases of the closely-related Eurasian Magpie (*Pica pica*) attacking and killing adult birds, indicating that magpies are quite capable of subduing birds if so motivated when given the opportunity. Black-billed Magpies and Eurasian Magpies tended to attack adult birds during winter through spring (non-breeding season), and most often in urban environments where small birds aggregate near concentrations of food or potential roost and nest sites, resources also attractive to magpies. These circumstances may afford magpies more close encounters with potential adult avian prey than might occur in rural locations, and may encourage them to hunt adult birds more frequently.

Key words: Black-billed Magpie, Cassin's Finch, Eurasian Magpie, *Haemorhous cassinii*, Montana, *Pica hudsonia*, *Pica pica*, predation, urban habitat

Magpies (*Pica* spp.), like many corvids, are opportunistic foragers with catholic diets (Goodwin 1976; Birkhead 1991; Cramp and Perrins 1994). Foods of the Black-billed Magpie (*P. hudsonia*) include a wide variety of seeds, grains, and fruit consumed especially during autumn and winter when animal matter is less available (Kalmbach 1927; Linsdale 1937, 1946a; Trost 1999). Animal matter in Black-billed Magpie diets is mostly insects and other invertebrates acquired in spring, summer, and autumn, and carrion and small mammals during winter and early spring when insects are scarce (Kalmbach 1927; Linsdale 1937, 1946a; Trost 1999). Birds are

considered a very minor dietary component for Black-billed Magpies and other magpie species (Birkhead 1991). Only 2.6% of 313 adult Black-billed Magpie stomachs and 3.2% of 234 nestling stomachs examined by Kalmbach (1927) contained remains of wild birds (eggs, nestlings, possibly sick adults), which were consumed during the magpie breeding season. Kalmbach (1927) concluded that depredation of wild birds by magpies was motivated by the desire of adult magpies to feed their dependent offspring, a conclusion echoed by Fernández-Juricic and others (2004) for magpie attacks on adult birds.

Here we provide details of a successful magpie attack on an adult Cassin's Finch (*Haemorhous cassinii*) in an urban backyard. We also review the literature for prior reports of predatory attacks on adult birds by the Black-billed Magpie and its closely-related congeners by conducting an internet search in Google Scholar and the Searchable Ornithological Research Archive (SORA) web site (<http://sora.unm.edu/sora>), as well as reviewing citations in other accounts noting the behavior. It is probable that we missed some published accounts of magpies successfully attacking adult birds, as some of those we found appeared in state and regional ornithological and natural history journals that may fail to be indexed in electronic databases. Finally, we analyze the reports for general patterns of seasonality and habitat related to the attacks.

OBSERVATIONS

On 12 April 2021, at 16:55 MDT, we observed a Black-billed Magpie attack and kill an apparently-healthy adult female Cassin's Finch (*Haemorhous cassinii*) in our urban backyard in Missoula, Missoula County, Montana (46.87228°N, 113.97787°W; 985-m elevation), a city with an estimated population in 2019 of 75,500. The finch was attacked while it was on the ground near shrub cover about 4 m from a

bird feeder and an equal distance from a pen where domestic chickens are provided each morning with chicken mash, scratch, and dried mealworms. A pair of magpies visited our backyard several times each day for food and nest materials while they constructed a nest in a Ponderosa Pine (*Pinus ponderosa*) 40 m distant from the site of the attack, and several Cassin's Finches, House Finches (*Haemorhous mexicanus*), and House Sparrows (*Passer domesticus*) routinely fed at and under the bird feeders and in the chicken pen, and sought cover in nearby shrubs.

The magpie approached from the direction of the magpie nest. It landed first on a chain-link fence above the finch before dropping to the ground 1–2 s later, grabbed the finch around the head and neck with its bill, and then carried the finch about 1 m before pinning it to the ground on its belly with a foot. It then delivered several blows with its bill to the finch's neck and back, plucking a few feathers in the process. The magpie then repositioned the still-alive finch on its back and delivered 3–4 blows with its bill to the finch's breast during the next 10 s, never directing any of its blows at the finch's head. The magpie then carried the now limp and seemingly-dead finch in its bill as it flew first to a garage roof and then out of our view in the direction of the magpie nest, but not to it. The entire attack from arrival of the magpie to its departure with the finch lasted no more than 60 s.

DISCUSSION

Major life-history compilations for the Black-billed Magpie (Kalmbach 1927; Linsdale 1937, 1946a) fail to mention specific predatory attacks on adult birds, although Trost (1999), without citing examples, commented that they prey on other birds. This statement, if pertaining to adult birds, is apparently based on the European literature for Eurasian Magpie (*Pica pica*) before it and the Black-billed Magpie were split into separate species (AOU 2000). Attacks by the Yellow-billed Magpie (*Pica nuttalli*) on adult birds are not mentioned in major life-history reviews (Linsdale 1937, 1946b; Reynolds 1995), and we found no accounts reporting the behavior.

Attacks on adult birds by Black-billed Magpies are apparently rare or rarely seen and reported; we found only 2 published accounts of such interactions (Table 1). Leatherman (1991), in a lengthy compilation of food habits of Colorado

birds, included a report of a magpie jumping on, striking with its bill, and killing a female House Finch in December at a backyard feeder in the Denver metropolitan area. Butt and others (2005) reported an attack in Saskatoon, Saskatchewan, in February on a Bohemian Waxwing (*Bombycilla garrulus*) while it was a member of a flock feeding on berries. The magpie flew into the shrub where the waxwings were foraging and forced 1 to the ground, where it stood on the waxwing and struck it forcefully with its bill. The magpie departed before it killed the waxwing when flushed by the observer. In both cases, it is possible that the potential prey species failed to recognize the danger posed by magpies because so few attacks by magpies are directed at adult birds, and, in the absence of nests to protect, they more-or-less ignore the magpies (Fernández-Juricic and others 2004). The same logic could apply to Cassin's Finch, which breeds in conifer forests in the mountains but sometimes visits urban feeders in winter and spring (Marks and others 2016), bringing them into closer contact with magpies prior to the breeding season. Black-billed Magpie is not among the birds known to prey upon Cassin's Finch (Sampson 1977; Hahn 1996).

It is also possible that attacks on adult birds by Black-billed Magpies occur more frequently than so far suggested by published accounts. In the case we report, the entire attack happened in 60 s, and little evidence remained that the attack occurred. Magpies seen with remains of adult birds may have killed the birds rather than picking them up as carrion, which is the common assumption. Thus, a female House Sparrow head that was cached and retrieved by a magpie in the same Missoula backyard where the female Cassin's Finch was killed (Hendricks 2020) may have been obtained from an earlier predatory attack, a conclusion similar to that reached by Butt and others (2005) when they saw magpies carrying and caching remains of waxwings several times during fall and winter in Saskatoon, which they assumed, prior to the observed attack, had been obtained as window-kills. Similarly, Tatner (1983) found remains of adult House Sparrows in the pellets, gizzard contents, or fecal material of adult and nestling Eurasian Magpies in Manchester, England; he made no direct observations of captures, but the presence of adult sparrow remains raises the possibility that some of them may have been

TABLE 1. Reports of adult birds attacked by Black-billed Magpies (*Pica hudsonia*) or Eurasian Magpies (*Pica pica*). Only those cases where adult birds were captured are included, regardless of their fate. Summer = breeding season; winter = non-breeding season; R: rural; U: urban.

Species	Month	Habitat	Source
BLACK-BILLED MAGPIE			
Bohemian Waxwing (<i>Bombycilla garrulous</i>)	Feb	U	Butt and others 2005
House Finch (<i>Haemorhous mexicanus</i>)	Dec	U	Leatherman 1991
Cassin's Finch <i>Haemorhous cassinii</i>	Apr	U	This paper
EURASIAN MAGPIE			
Rock Pigeon (<i>Columba livia</i>)	Summer	U	Fernández-Juricic and others 2004
Common Wood-Pigeon (<i>Columba palumbus</i>)	Summer	U	Fernández-Juricic and others 2004
Common Swift (<i>Apus apus</i>)	Jun	U	Pulman 1978
	Jun	U	Lilley 2009
Water Rail (<i>Rallus aquaticus</i>)	Dec	R	Codd 1947
Eurasian Sparrowhawk (<i>Accipiter nisus</i>)	May	R	Cox 1991
Common House Martin (<i>Delichon urbicum</i>)	May	R	Attridge 1997
Song Thrush (<i>Turdus philomelos</i>)	Apr	U	Boog 1966
Eurasian Blackbird (<i>Turdus merula</i>)	May	U	Baden 1951
	Mar	U	Nein 1982
	—	—	Schroeter 1982
European Starling (<i>Sturnus vulgaris</i>)	May	U	Hume 1980
	—	—	Schroeter 1982
House Sparrow (<i>Passer domesticus</i>)	Winter	U	Schnell 1950
	Apr	U	Bub 1953
	—	—	Schroeter 1982
	May	U	Thomas 1982
	—	U	Birkhead 1991
	Summer (X2)	U	Fernández-Juricic and others 2004
Eurasian Tree Sparrow (<i>Passer montanus</i>)	Aug–Sep	R	Rolfe 1965
Common Chaffinch (<i>Fringilla coelebs</i>)	May	U	Kramer 1951
European Greenfinch (<i>Chloris chloris</i>)	Summer	U	Fernández-Juricic and others 2004

killed by the magpies during predatory attacks. Given the similarity in habits of Black-billed Magpies and Eurasian Magpies, and that the latter species appears to attack adult birds with some regularity (Birkhead 1991; Cramp and Perrins 1994; Fernández-Juricic and others 2004), including birds acting abnormally (Goodwin 1976), it is not altogether surprising that Black-billed Magpies would also attack adult birds under similar circumstances given an opportunity to do so, a suspicion expressed earlier by Kalmbach (1927) and now verified (Leatherman 1991; Butt and others 2005; this paper).

Attacks on adult birds by Black-billed Magpies and Eurasian Magpies for which we were able to obtain details, and where the magpie caught the intended victim whether or not the victim was killed (Table 1), tended to occur during December through May (14 of 22 reports), although the pattern wasn't statistically significant (one-sample proportions test: Z corrected = 1.07, $P = 0.286$). Most reported attacks

occurred in urban settings (19 of 23 reports; one-sample proportion test: Z corrected = 2.92, $P < 0.004$). Our analyses are probably biased, however, because a few of the reports (Rolfe 1965; Birkhead 1991) mentioned multiple attacks at the same locality on different days but did not specify the number of cases observed each day, so we treated these the same as single cases. Also, YouTube video records exist of successful attacks by Eurasian Magpies on adult birds of species not included in Table 1, such as Great Tit (*Parus major*) and Hawfinch (*Coccothraustes coccothraustes*). The details of these attacks (date, location, habitat) are not clearly stated, so they are not included in our analyses. Yet other observers report attacks on additional species of adult birds not listed in Table 1 (Fernández-Juricic and others 2004), but the target species were not captured. Still, the evidence suggests that attacks on adult birds by Eurasian Magpies are much more commonly seen and reported than those by Black-billed Magpies, and that most of the interactions occur in urban settings.

It still remains to be determined whether the habitat-related pattern of predatory attack we note is an artifact of a greater abundance of human observers in urban locations who witness and report the successful attacks, or a result of actual changes in the predatory behavior of magpies in urban settings (Lowry and others 2013). In urban habitats, magpies are attracted to concentrations of food and roost or nest sites, such as bird feeders and ornamental plantings, which likely bring them in close contact more often with small birds attracted to the same resources. This most likely affords magpies more opportunities to attack birds than they might have in rural settings, and such circumstances may encourage individual magpies to hunt adult birds more frequently. Regardless, many magpie attacks on adult birds, including all of those reported for Black-billed Magpies, occurred during winter and early spring (Table 1) prior to the appearance of most magpie nestlings in late April and May (Linsdale 1937, 1946a; Birkhead 1991; Trost 1999). This contradicts Kalmbach (1927) and Fernández-Juricic and others (2004) who concluded that predation by magpies on wild birds is linked to a parental need to feed nestlings. Their conclusions may be correct regarding magpie predation on eggs and nestling birds, but less so about predatory attacks on adult birds.

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LITERATURE CITED

- [AOU] AMERICAN ORNITHOLOGISTS' UNION. 2000. Forty-second supplement to the American Ornithologists' Union Check-list of North American Birds. *Auk* 117:847–858.
- ATTRIDGE W. 1997. Magpie catching House Martin. *British Birds* 90:191–192.
- BADEN D. 1951. Elstern auf Vogeljagd. *Vogelwelt* 72:166.
- BIRKHEAD TR. 1991. The magpies; The ecology and behaviour of Black-billed and Yellow-billed Magpies. London, UK: T & AD Poyser. 270 p.
- BOOG EJ. 1966. Magpie killing and eating Song Thrush. *British Birds* 59:309.
- BUB H. 1953. Elstern (*P. pica*) überfallen einen Haussperling (*P. domesticus*). *Ornithologische Mitteilungen* 5:6.
- BUTT UJ, BLAS J, POLLOCK MS. 2005. Novel foraging behaviours of Black-billed Magpies. *Blue Jay* 63:77–78.
- CODD RB. 1947. Magpie killing Water-rail. *British Birds* 40:210.
- COX AFJ. 1991. Magpie killing Sparrowhawk. *British Birds* 84:65.
- CRAMP S, PERRINS CM. 1994. Handbook of the birds of Europe, the Middle East and North Africa. Volume VIII, crows to finches. Oxford, UK: Oxford University Press. 899 p.
- FERNÁNDEZ-JURICIC E, JOKIMÄKI J, McDONALD JC, MELADO F, TOLEDANO A, MAYO C, MARTIN B, FRESNEDA I, MARTIN V. 2004. Effects of opportunistic predation on anti-predator behavioural responses in a guild of ground foragers. *Oecologia* 140:183–190.
- GOODWIN D. 1976. Crows of the world. Ithaca, NY: Cornell University Press. 354 p.
- HAHN TP. 1996. Cassin's Finch (*Carpodacus cassinii*). In: Poole A, Gill F, editors. The birds of North America, No. 240. Philadelphia, PA: The Academy of Natural Sciences; Washington, DC: The American Ornithologists' Union.
- HENDRICKS P. 2020. Black-billed Magpies (*Pica hudsonia*) caching food in snow. *Northwestern Naturalist* 101:125–129.
- HUME RA. 1980. Magpie attempting to kill starling, and resilience of starlings. *British Birds* 73:478–479.
- KALMBACH ER. 1927. The magpie in relation to agriculture. US Department of Agriculture Technical Bulletin 24.
- KRAMER V. 1951. Elstern auf Vogeljagd. *Vogelwelt* 72:89.
- LEATHERMAN DA. 1991. Food items of Colorado birds VI. *Colorado Field Ornithologists' Journal* 25:130–136.
- LILLEY HA. 2009. Magpie taking adult Common Swift. *British Birds* 102:469.
- LINSDALE JM. 1937. The natural history of magpies. Pacific Coast Avifauna Number 25.
- LINSDALE JM. 1946a. American Magpie (*Pica pica hudsonia*). In: Bent AC, editor. Life histories of North American jays, crows, and titmice. US National Museum Bulletin 191. Washington, DC: Smithsonian Institution. p 133–155.
- LINSDALE JM. 1946b. Yellow-billed Magpie (*Pica nuttalli*). In: Bent AC, editor. Life histories of North American jays, crows, and titmice. US National Museum Bulletin 191. Washington, DC: Smithsonian Institution. p 155–183.
- LOWRY H, LILL A, WONG BBM. 2013. Behavioural responses of wildlife to urban environments. *Biological Reviews* 88:537–549.
- MARKS JS, HENDRICKS P, CASEY D. 2016. Birds of Montana. Arrington, VA: Buteo Books. 659 p.
- NEIN R. 1982. Greifvogelartiges Verhalten einer Elster. *Beiträge zur Naturkunde der Wetterau Zeitschrift für Ornithologie und Naturschutz* 2:154.
- PULMAN CB. 1978. Magpie killing Swift. *British Birds* 71:363.
- REYNOLDS MD. 1995. Yellow-billed Magpie (*Pica nuttalli*). In: Poole A, Gill F, editors. The birds of North

- America, No. 180. Philadelphia, PA: The Academy of Natural Sciences; Washington, DC: The American Ornithologists' Union.
- ROLFE RL. 1965. Numbers of magpies preying on a roost of Tree Sparrows. *British Birds* 58:150–151.
- SAMPSON FB. 1977. Social dominance in winter flocks of Cassin's Finch. *Wilson Bulletin* 89:57–66.
- SCHNELL FH. 1950. Elstern auf der Sperlingsjagd. *Vogelwelt* 71:168.
- SCHROETER W. 1982. Zu: Töten Elstern (*Pica pica*) ihre Beute? *Ornithologische Mitteilungen* 34:127–128.
- TATNER P. 1983. The diet of urban magpies *Pica pica*. *Ibis* 125:90–107.
- THOMAS M. 1982. Magpie chasing and probably catching House Sparrow. *British Birds* 75:36–37.
- TROST CH. 1999. Black-billed Magpie (*Pica pica*). In: Poole A, Gill F, editors. *The birds of North America*, No. 389. Philadelphia, PA: The Birds of North America, Inc.
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