

## RECORDS OF ANTING BY BIRDS IN WASHINGTON AND OREGON

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Anting is a widespread but infrequently observed stereotypic behavior noted in more than 200 bird species, the vast majority of which are passerines (Chisholm 1959, Simmons 1966, 1985, Craig 1999). The behavior occurs in passive and active forms (Simmons 1985). In passive anting, birds spread themselves over an ant source and allow ants to crawl through their plumage. During active anting, ants are gathered and crushed in the bill and deliberately rubbed through the plumage using preening-like motions. In this form, other objects such as millipedes, other insects, snails, fruit, flowers, other plant materials, and mothballs are occasionally substituted for ants (Whitaker 1957, Simmons 1966, Clark et al. 1990, VanderWerf 2005). Anting involves the application of the defensive secretions (i.e., formic acid or repugnant anal fluid) of worker ants or other aromatic chemical compounds to the feathers or skin of a bird.

The purpose of anting remains unclear. Hypothesized functions include soothing irritated skin associated with feather emergence during molt, general feather maintenance, repelling ectoparasites, inhibiting fungal or bacterial growth, food preparation by removing distasteful substances from prey, and pleasurable sensory stimulation (Simmons 1966, 1985, Potter and Hauser 1974, Ehrlich et al. 1986). Experimental evidence from a few species supports that anting is conducted most often during molting (Lunt et al. 2004), rejects its role in controlling ectoparasites, bacteria, and fungi (Clayton and Wolfe 1993, Hart 1997, Revis and Waller 2004), and variously supports or rejects its use in food preparation (Judson and Bennett 1992, Lunt et al. 2004, Eisner and Aneshansley 2008).

Reviews of anting in North America (Potter 1970, Potter and Hauser 1974) noted a number of published anting observations for the eastern half of the continent, but few for the West and none for Washington and Oregon. Our search of ornithological literature published after this indicates a lack of anting accounts for the Pacific Northwest. Here we describe an observation of anting by European Starlings (*Sturnus vulgaris*) in Washington. To learn more about the occurrence of this behavior in Washington and Oregon, we posted queries on three electronic regional listserves (Tweeters, Inland Northwest Birders, and Oregon Birders Online) used by birdwatchers and asked readers to send us their personal observations of anting in these states. We also asked 14 ornithologists and birders



Figure 1. A European Starling standing on an active mound of western thatching ants (upper photo) and rubbing its left underwing and the underside of its tail with a bill-full of ants (lower photo) in the Nisqually River Valley, Thurston County, Washington, on 20 December 2009. Photographs by Kelly R. McAllister.

with extensive field experience about their own encounters with anting. Responses were critically evaluated and accepted if sufficient observer detail was provided, and are presented here.

Our anting observation involved a tightly aggregated flock of 60-90 starlings seen in a mostly hardwood woodlot in the Nisqually River Valley, Thurston County, on 20 December 2009. During a 2-3 minute period at about 14:30, the flock descended en masse several times to a site on the ground only to quickly fly back each time to perches in nearby trees. We investigated by slowly approaching the site in our car as the flock again descended to the ground and parked on the roadside about 6 m from the birds. Our presence caused most birds to immediately depart, but three remained standing on an ant mound, which we were able to view with 10x binoculars. An American Robin (*Turdus migratorius*) was also present on the lower back edge of the mound. Two of the starlings and the robin soon departed, but the third starling remained on top of the mound for about 30-60 seconds (Figure 1). It pecked several times at the surface of the mound, which was active with ants, then stood holding at least three ants in its bill. It then reached under each wing and the tail and rapidly wiped parts of the feathering with its bill and the contents (Figure 1). It did this several times before flying away. We did not determine whether the ants were eaten, dropped, or carried off. We did not notice anting behavior by the robin or observe ants in its bill.

We returned to the ant mound 11 times totaling 8.0 hours from 24 December 2009 to 21 February 2010, but never again saw birds of any species present. Ants were moderately to very active on the mound's surface on eight visits, when temperatures were  $\geq 10.5^{\circ}\text{C}$ , but were greatly reduced in number on three visits with temperatures  $\leq 9.9^{\circ}\text{C}$ . Our anting observation occurred on an unseasonably warm day (afternoon high =  $13.3^{\circ}\text{C}$  [ $6.1^{\circ}\text{C}$  above normal] at the Olympia airport 18 km away) that was mostly cloudy and was preceded by seven consecutive days having rain that totaled 6.9 cm and five days with temperatures averaging  $3.3^{\circ}\text{C}$  above normal per day. Anting in eastern North America usually takes place during periods of high humidity, especially soon after rainfall (Potter 1970, Hauser 1973, Potter and Hauser 1974). These conditions match those of our sighting. We suspect the day's unusually warm weather stimulated the surface activity of the ant colony, which likely attracted the attention of the starlings.

Ants collected later at the mound were identified as western thatching ants (*Formica obscuripes*; subfamily Formicinae). This species is the most common and most conspicuous mound-building ant in Washington (Smith 1939; J. Longino, pers. comm.). Colony members are inactive and remain below ground during cold weather, but workers commonly emerge onto the surface of mounds when temperatures exceed  $9.4^{\circ}\text{C}$  (Weber 1935). The mound measured 1.4 m in width, 1.6 m in length, and 51 cm in height.

Our queries of regional bird experts and readers of the three birding list-serves yielded reliable observations of anting from six people. We also obtained one anting report that was posted on the Tweeters list-serve

Table 1. Observations of anting and smoke bathing by birds in Washington and Oregon. Most records were obtained from queries to three birding list-serves for the Pacific Northwest and a small number of regional bird experts.

Species	Location	Comments	Source
Northern Flicker	Near Burbank, Walla Walla Co., WA	One adult conducted passive anting on an ant mound for 3 minutes in August 1998.	M. Denny <sup>a</sup>
Northern Flicker	Hockinson, Clark Co., WA	One female conducted active anting; date unknown.	L. Allinger <sup>a</sup>
Northern Flicker	Spokane Co., WA	Seen on multiple occasions, both active and passive anting were seen; dates unknown.	K. Krauss <sup>a</sup>
Western Scrub-Jay	Eugene, Lane Co., OR	One bird performed passive anting for about 10 minutes followed by active anting for several minutes; date unknown. Ants emerged from a crack in the ground.	D. Gleason <sup>a</sup>
Western Scrub-Jay	Ridgefield, Clark Co., WA	Single birds twice seen passive anting on an ant mound in June 2009, with each occasion lasting 15-30 minutes.	T. Hicks <sup>a</sup>
American Crow	Between Edmonds, Snohomish Co., and Northgate, King Co., WA	Groups of 1-6 birds seen passive anting on multiple occasions during summer; dates unknown. Birds lay on top of mounds of <i>Formica</i> sp.	T. Limbo <sup>a</sup>
American Crow <sup>b</sup>	Seattle, King Co., WA	Birds with extended wings seen smoke bathing on chimneys on multiple occasions; dates unknown.	A. Kirsh <sup>a</sup>
American Robin	Walla Walla, Walla Walla Co., WA	One adult conducted passive anting for about 1 minute in June 2002.	M. Denny <sup>a</sup>
American Robin	Kent, King Co., WA	One bird seen anting on a mound of <i>Formica obscuripes</i> for at least 4 minutes on 17 June 2010. Most of its time was spent active anting, but passive anting was also noted. Ants did not appear to be eaten. The mound was 91 cm wide, 99 cm long, and 28 cm tall; ant species identification was confirmed at a later date. Part of this observation can be viewed online at <a href="http://www.youtube.com/watch?v=b8ldq-V470">http://www.youtube.com/watch?v=b8ldq-V470</a>	L. Bartlett <sup>a</sup>
European Starling	Nisqually River Valley, Thurston Co., WA	See remarks in this paper.	This paper
European Starling	Hockinson, Clark Co., WA	Active anting seen 3 times at an ant hill, twice involving one bird and once involving two birds; dates unknown. Birds also seen rolling and dusting on the ant hill at other times.	L. Allinger <sup>a</sup>

<sup>a</sup> Personal communication <sup>b</sup> Smoke bathing

independent of our inquiry. Together, these sources provided nine reports of anting by five species of birds, with eight reports coming from Washington and one from Oregon (Table 1). Several reports involved multiple observations of anting by a species at a location. Both active and passive anting were seen. Northern Flickers (*Colaptes auratus*) were the species most commonly seen to ant. All reports for this species were confirmed as either active or passive anting, and did not involve foraging on ants. We also received a report of smoke bathing by American Crows (*Corvus brachyrhynchos*; Table 1). Some authorities consider smoke bathing and anting to be complementary comfort-motivated behaviors wherein heat or noxious substances are applied to ventral feather tracts, with similar behavioral postures sometimes performed in both (Chisholm 1948, Whitaker 1957, Potter and Hauser 1974).

These records suggest that anting is an infrequent avian behavior in Washington and Oregon and are notable because of the lack of previous anting reports from these states. European Starlings and American Robins are among the bird species most commonly reported to ant in North America, whereas relatively few reports exist for Northern Flickers and American Crows (Weber 1935, Whitaker 1957, Potter 1970, Potter and Hauser 1974, Hendricks 1980). Starlings in Europe and Australia also perform anting more often than most other species (Whitaker 1957, Chisholm 1959). Our queries produced the only reports that we are aware of involving Western Scrub Jays (*Aphelocoma californica*), but the occurrence of anting in this species is not surprising given its frequency in other corvids (Whitaker 1957, Potter and Hauser 1974). Ants of the genus *Formica* are often associated with anting, including instances involving starlings (Weber 1935, Whitaker 1957, Potter 1970, Hendricks 1980, Osborn 1998).

Our observation of anting by the starling flock differs in two ways from the general patterns of anting in North America, as reviewed by Potter (1970) and Potter and Hauser (1974). First, the timing of our observation was unusual. Most anting occurs from May to October, with a peak from July to September when the post-breeding and juvenal molts of most passerines occur, including starlings (Cabe 1993). Very few reports of anting exist from December to February (see Davis [1939] and Hauser [1973] for two records). Second, we presume that many other members of the flock would have also anted had our presence not disturbed them. Published reports indicate that birds typically ant alone or in small groups of a few individuals. Our search of the anting literature for North America located only two anting reports involving more than seven birds. These included flocks of up to 20-30 Common Grackles (*Quiscalus quiscula*) regularly seen anting with the juice of green walnuts (Groff and Brackbill 1946) and at least 19 Yellow-shouldered Blackbirds (*Agelaius phoeniceus*) actively anting in Puerto Rico (Post and Browne 1982). The winter flocking behavior of starlings (Cabe 1993) most likely explains the large number of birds involved in our observation.

## ACKNOWLEDGMENTS

Mike Denny, Linda Bartlett, Lorraine Allinger, Dan Gleason, Kathryn Krauss, Tyler Hicks, Tiffany Linbo, Andrew Kirsh, Rob Sandelin, Carole Louderback, Tina Wynecoop, Melissa McKenzie, Dennis Paulson, Wayne Weber, Bill Tweit, Randy Hill, Joe Buchanan, Gene Hunn, Richard Johnson, Sievert Rohwer, Bob Sundstrom, Kent Woodruff, Dana Visalli, Mark Huff, Steve Herman, and Alan Contreras kindly provided their personal observations of anting or assisted in other ways. Jack Longino of The Evergreen State College confirmed the identity of our ant specimens and provided information on the behavior of the species. Scott Pearson and Adrian J. F. K. Craig provided helpful comments on the manuscript.

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*Manuscript accepted December 2010*