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LETTER

Why did we collect anti-bird spike nests made by corvids? A reply to Ting (2023)

Auke-Florian Hiemstra [1,2], Cornelis W. Moeliker [3], Barbara Gravendeel [1,4] & Menno Schilthuizen [1,2]

[1] Naturalis Biodiversity Center, Darwinweg 2, 2333 CR Leiden, The Netherlands

[2] Institute of Biology, Leiden University, Sylviusweg 72, 2333 BE Leiden, The Netherlands

[3] Natural History Museum Rotterdam, Westzeedijk 345, 3015 AA Rotterdam, The Netherlands

[4] Radboud Institute for Biological and Environmental Sciences, Heyendaalseweg 135, 6525 AJ Nijmegen, The Netherlands

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Author for correspondence
Auke-Florian Hiemstra
aukeflorian.hiemstra@naturalis.nl

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In response to Ting (2023), we gladly shed some further light on our paper 'Bird nests made from anti-bird spikes' (Hiemstra *et al.* 2023) and our decision to collect some of these nests.

NO DISTURBANCE OF BREEDING BIRDS

First and paramount: as a team of urban ecologists, we never harm the animals we study and take great precaution not to disturb them. The magpie nests from Glasgow and Enschede were both photographed from great distance with telephoto lenses, as they were still in use and, by UK and Dutch law, disturbing breeding birds is not allowed. These nests were therefore never approached or disturbed. We fully agree with Ting's statement that: *"Birds have rights to privacy and to being left alone"*.

Ting's criticism, however, is specifically about the collecting of the corvid nests. We indeed secured a carrion crow nest in Rotterdam (The Netherlands) and a Eurasian magpie nest in Antwerp (Belgium) for our museum collections and further analysis.

COLLECTED AFTER THE BREEDING SEASON

The Rotterdam crow's nest was not actively collected by us. It was found and removed during tree maintenance work and then donated to the museum by municipal officials. There were no ethical or legal objections that prevented inclusion in the collection, so we gladly accepted the extraordinary construction. The nest was unused and abandoned and was removed, together with the branches on which it rested. This happened after the breeding season (on 31 August), as nests are protected by Dutch law between 15 March and 15 July. The tree had to be pruned because heavy branches had broken off and several other branches were on the verge of snapping, including the ones that anchored the abandoned crow's nest (pers. comm. J. Hagoort). These specific branches posed a danger to the public that had to be avoided. The remainder of the weeping willow tree could be saved.

The collecting of the Antwerp magpie nest happened more than 10 weeks after the end of the breeding season (on 25

Figure 1 Common parasites affecting magpies from the collection of Herman Cremers. **A** *Dermanyssus gallinae*, 1.2 mm, collected on a chicken, 1999. **B** *Myrsidea picae*, 2 mm, collected on a magpie. **C** *Corvonirmus biocellatus*, 1.8 mm, collected on a magpie, Utrecht, The Netherlands, 1974. **D** *Philopterus picae*, 1.8 mm, collected on a magpie, Bodegraven, The Netherlands, 2011. [Herman Cremers]

October), when it had already been abandoned for a long time. However, one could wonder (like Ting did) whether a magpie pair would have reused the nest in the next year if we had not taken it, and – if so – what impact the collecting may have had on the magpies' future breeding success? Here we will elaborate on that question.

A NEW NEST EACH YEAR

Magpies generally build a new nest each year (Goodwin 1976, Birkhead 1991, Jerzak 1995). They do so, even though these structures are strong, robust, and durable enough to survive the following season and even longer (Tatner 1982, Erpino 1968, Birkhead 1991). Nests made with artificial nesting material such as wires, plastic or metal (Nagy 1943, Tekke 1938, Khan *et al.* 2022, Elts & Lepikson 2020, Jerzak & Kavanagh 1991), may be especially strong constructions. We thus understand Ting's initial restraint and aversion against the collecting of these bird nests, but the fact is that most magpies build a new nest each new breeding season, even when their old nest is still available (Goodwin 1976), and regardless of the energetic costs of constructing a new one (Tatner 1982).

PREVENTION OF PREDATION AND PARASITES

So why would magpies build a new nest, rather than reuse an old one? Changing nest sites may reduce the probability of predation (Tatner 1982) as the advantage of reusing an old nest may be counteracted by a greater risk of predation. Only 39% of the failures in newly made nests were due to predation, while this accounted for 60% of failures in re-used nests. Older nests may also be avoided in response to the risk of ectoparasite infestations (deLope & Møller 1993, Stanback & Dervan 2001), which are common in the urban ecosystem (Møller 1987, Cafiero *et al.*, 2013). An overview of some parasitic mites and lice affecting magpies, partly collected on magpie feathers by Herman Cremers, is given in Figure 1. As the chances of encountering these parasites are high, and as some may even pose risk to the scientists involved, we made it protocol for all collected nests to be decontaminated first at -20ºC (Hiemstra *et al.* 2021a, Hiemstra *et al.* 2021b), but not before checking for other possible nidicole inhabitants (Van der Goot *et al.* 2022).

REUSE OF OLD NESTS IS RARE

Erpino (1968) gives three different magpie nesting strategies: (1) in most cases, an entirely new nest is built, (2) less frequently, a new bowl and superstructure are added to an existing superstructure, and (3) rarely, an old nest is reused with little or no apparent alteration. The Bulgarian study Ting (2023) refers to (Anatonov & Atanasova 2003) is one of several studies dedicated to this behavior in magpies. The percentage of magpies reusing nests that they found (16.8%) is low compared to similar magpie studies in Manchester, UK (36%; Tatner 1982), Denmark (23-27%; Henriksen 1989 in Birkhead 1991), Sheffield, UK (24%; Birkhead 1991), and Zielona Góra, Poland (22-28%; Jerzak 1995). In North America, magpies are less likely to reuse: in two years only 2 out of 40 and 5 out of 40 (5% and 12.5%, respectively) did so (Erpino 1968, Birkhead 1991). Eurasian magpies on farmlands may even never reuse a nest (Ferens 1950). Reuse of a magpie nest tends to be more often observed in urban environments (Tatner 1982). Our nest from the city of Antwerp had been used, as we state in our paper, for two years, but with heavy modifications (Erpino 1968; nesting strategy 2): a new bowl was added slightly above the one already present, and a new dome was constructed, as magpies do build on top of existing nests (Birkhead 1991: 144), this may have been a preferred location. There is much (artificial) material available for the construction of a new smaller nest. However, as nests become larger, particularly nests constructed with metal spikes, they may eventually pose a safety risk if they were to fall on people walking or sitting beneath the tree in which the nest is built.

Figure 2 A The magpie nest made out of anti-bird spikes on display in Naturalis Biodiversity Center (RMNH.AVES.259588), an object not only of scientific but also of great educational value. The museum hall Live Science, in which the nest is shown, has free access to the public. [Auke-Florian Hiemstra] **B** The Natural History Museum Rotterdam shows a wide range of urban nests, including the anti-bird spike crow nest (NMR998900189467) (encircled) in the exhibition 'National Park Rotterdam'. [Aad Hoogendoorn]

NO BENEFITS OF REUSING AN OLD NEST

It may be less common, but magpie pairs are capable of re-pairing and reusing an old nest, and, indeed, this may impact the timing of egg laying. In a reused nest, eggs may be laid earlier: 2, 7.5 or 7-9 days earlier (Tatner 1982, Anatonov & Atanasova 2003, Jerzak 1995). A potential advantage may be that early laying magpie pairs may have more time to re-nest when a nest fails, but this 'head start', may only be a few days (Anatonov & Atanasova 2003). However, as the authors explain in the study Ting (2023) refers to, reuse does not result in a greater breeding success (Anatonov & Atanasova 2003). Although earlier breeding is often associated with greater breeding success (Perrins 1970), this is not the case for magpies. Both hatchling success and fledging success as the proportion of successful breeding attempts were not significantly different between new and reused nests. These results apply to a wide geographical range. All studies on the reuse of old magpie nests report a similar lack of clear benefits: the same was found in the UK (Tatner 1982) and Poland (Jerzak 1995).

Thus, we state that the collecting of an abandoned magpie nest after the breeding season does not, as Ting (2023) fears, '*ruin their breeding success*'. This is also the conclusion of the very paper Ting refers to (viz. Anatonov & Atanasova 2003). The use of an old nest may even result in greater risks of nest predation and a higher parasite load. So, we believe to have acted judiciously in actively collecting the magpie nest, which subsequently proved to be an object of great scientific and educational value.

SCIENTIFIC AND EDUCATIONAL VALUE

Having both corvid anti-bird spike nests at hand in the collections of our museums was invaluable for the detailed descriptions and analysis in our paper. Being part of the scientific collections of Naturalis Biodiversity Center (magpie, RMNH.AVES.259588) and Natural History Museum Rotterdam (carrion crow, NMR998900189467), both anti-bird spikes nests are in a secure place and available for research. Besides, both nests are on display in our museums (Fig. 2) and serve an important educational purpose: inspiring the public to appreciate (the adaptability of) our urban wildlife.

ETHICAL AND LEGAL STANDARDS

As magpies nest in the tops of high trees, we do not expect other nest observers to disrupt the birds, as we had to use an aerial work platform to come sufficiently close to the structure. Nest observations are normally done with binoculars or telescope, and by birdwatchers who, like us, deeply care for wildlife. Nests should only be collected for research when abandoned, after the breeding season, and if it does not harm the birds – all of which we made sure of. We thus believe to have handled according to the ethical and legal standards, science in general, and the institutes that we work for, specifically.

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Natuurhistorisch Museum Rotterdam | Westzeedijk 345 (Museumpark) | 3015 AA Rotterdam | the Netherlands | www.hetnatuurhistorisch.nl