

Short note – Can Starlings imitate a Blackbird’s song upon seeing a silent Blackbird?

Kunnu starar herma eftir kvørkveggjusongi, tá teir síggja eina friðarlíga kvørkveggju?

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Abstract

Common Starlings (*Sturnus vulgaris*) have a complex song and imitate other species. However, it is unknown how a Starling ‘decides’ on which strophes to sing. I observed a preening Starling male on Skúvoy, Faroe Islands, which interrupted preening and sang a Blackbird imitation when a silent Blackbird male flew over. This observation may suggest that Starlings are able to use visual information, linked to memorized sounds, to choose their song. However, in that case, one would expect that similar observations would occur more often, and coincidence cannot be excluded. My observation gives a basis for experiments to solve this issue.

Úrtak

Látið hjá stara (*Sturnus vulgaris*) kann vera rættulíga fjølbroytt. Eisini kann hann herma eftir øðrum fuglasløgum. Vit vita ikki, hvat tað er, sum “avgerð”, hvat lát hann skal syngja. Í Skúgví legði eg merki til eina starabøgu, sum gavst at snáka sær fjaðrarnar, og í staðin fór at láta sum ein kvørkveggja, tá ein kvørkveggja friðarlíga fleyg framvið. Hetta kundi týtt upp á, at tá starin velur sær ein sang, so knýtir hann tað, sum hann sær, afturat ljóðum, sum hann fyrr hevur hoyrt. Men hetta er neyvan einasta orsøkin, tí so átti hendan “hermingin” verið meira vanligt. Hendan hendingin kann eisini bara hava verið av tilvild. Tað, sum eg legði merki til í Skúgví, kann vera grundarlag fyri at gera nakrar royndir, sum kunnu avdúka, um nakað vísindalígt hald er í tí, sum eg her vísi á.

Song of the Common Starlings

The song of the Common Starlings (*Sturnus vulgaris*) is complex. Starlings have a broad repertoire, which they acquire over multiple years, being so-called “open-ended” learners (Eens 1997). This learning involves copying sounds of the environment, for example “imitating” songs and calls of many other bird species (Hindmarsh 1986). The Starling's repertoire has been studied in detail, regarding for example its changes with age and hormone levels (Mountjoy & Lemon 1995, Van Hout *et al.* 2012) and its signalling function (Spencer *et al.* 2004). Although a Starling's song is often built up of fixed sequences, the beginning has been found to be more variable (Eens *et al.* 1989), and it is not exactly known how a Starling ‘decides’ on which strophes to sing. In summer 2013 I observed a singing Starling (*S. v. faroensis*) on Skúvoy, Faroe Islands, which may shed light on this question.

Starlings on Skúvoy

In the Faroes, Starlings are year-round residents (Hammer *et al.* 2014). There are roughly 50-100 breeding pairs of Starlings on the island of Skúvoy. In 2013, first clutches seemed to be initiated in the last days of April (based on 12 nests inspected during the chick stage) and 40-50 fledglings appeared in the village on 8-12 June. However, in late June, Starlings still sang frequently, possibly males advertising for second clutches. Their songs featured the usual purring and shrilling sounds, repetitive strophes and short loud whistles, but also themes that could be recognised as imitations of other species, i.e.

House Sparrow (*Passer domesticus*), Oystercatcher (*Haematopus ostralegus*) and Blackbird (*Turdus merula*) (for example, see Hindmarsh 1986 for data on imitations on Fair Isle, Shetland).

Presumed Blackbird song imitation

On 17th June 2013, I closely observed a preening Starling male in the village. It could be sexed as male, because its iris was dark and the base of its lower mandible was greyish-blue instead of pink (Svensson 1992, Blasco-Zumeta & Heinze 2020). At 9:51 a silent Blackbird male (one of the very few on the island, see Olsen 2011), flew past at approximately 10 m distance. The Starling turned its head in the direction of the passing Blackbird. Within two seconds, the Starling produced a low, melodious note, after a more chirruping note. The low melodious note clearly resembled the tone of a Blackbird. Such low-frequency notes are important for species recognition in Blackbirds and indicate low arousal in males (Dabelsteen & Pedersen 1990). After this, the Starling continued preening, while the Blackbird sang a strophe in the distance. Subsequently, the Starling produced another six notes that were similar, but quicker than before, and then switched to more “usual” Starling notes. During the singing, the Starling waved its wings mildly. A moment later, a second Starling in the background also performed such quick melodious notes. A video recording of the Starling during this event is available on https://youtu.be/IIIprqT9_I8. There, the Blackbird flies over at around 0:20 on the right (not

visible), the Starling sings a Blackbird note at 0:22, the Blackbird sings in the background at 0:24, and the Starling continues to sing from 0:30 and preen from 0:49.

Did the Blackbird's image induce the imitation of its song?

The coincidence of the Blackbird flying over and the Starling subsequently imitating a Blackbird's song was striking. Even more so, as I did not hear more of such melodious notes during 9:27-10:08, while observing 2-3 singing Starlings. Also, the Starling seemed to interrupt its preening for this brief singing. Why did the Starling imitate a Blackbird's song at this time?

Male Starlings with a larger repertoire, including imitations, have been shown to be more successful in attracting females (Hindmarsh 1986, Eens *et al.* 1991). It would therefore be beneficial for a Starling male if it can include as many different songs as possible during singing. This could be achieved by "song-matching", i.e. imitating songs of neighbouring birds (Eens 1997), which may have occurred for example in the Starling in the background, copying the sound of the focal Starling at 0:48 on the video). However, the observations of the focal Starling suggest that an elaborate song may also be achieved by being "inspired" by visual information (i.e. the Blackbird's appearance) and linking this to auditory information in the memory (i.e. memorized Blackbird sound). This would require advanced cognitive abilities in the Starling. However, it is not known if the Starling recognized the flying bird as a Blackbird.

An alternative explanation for my observations is that the Starling perceived the flying bird as a Starling female, although the flight silhouettes of Blackbirds and Starlings are quite distinct. In that case, it was a coincidence that the note was a Blackbird imitation, and the Starling could as well have sung any other note instead. During singing, the Starling waved its wings, a behaviour that relates to mate attraction and only occurs in presence of a female (Eens *et al.* 1990). Also when other Starlings flew over, the Starling waved its wings, but the only two individuals that landed together next to it were both males.

If the visual appearance of a Blackbird, or another bird species, can indeed motivate Starlings to imitate the (memorized) song of that species, one would expect that observations such as mine would occur more often. However, only experiments can solve this issue, for example by using manufactured models of certain birds, as was done by Hartley (1950) or by using video playbacks, as was done by Zoratto *et al.* (2014).

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