Ornis Norvegica

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SHORT NOTE

Documentation of bill clapping in Hooded Crow *Corvus cornix*

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Non-vocal sounds made by rapid closing of the bill are well known among many bird species, including several corvids. However, this is the first documentation of bill clapping by a Hooded Crow *Corvus cornix* during aggressive encounters with a conspecific. The aggression level was low, and the bill clapping was accompanied by a weak rolling 'r' sound.

Keywords: Aggressive behavior, bill clattering, bill clicking, bill rattling, bill snapping

Most birds communicate with visual cues and vocalizations generated primarily by the syringeal labia (del Hoyo et al. 2011), but some species of birds can also make a variety of non-vocal sounds. Non-vocal sounds in birds have been reviewed or comparatively investigated in recent publications (Bradbury & Vehrencamp 2011, Clark & Prum 2015). Despite growing recognition that many birds have non-vocal mechanical sounds produced by external body structures, the topic has received little attention (Jordan et al. 2021).

Rapid closing of the bill is one mechanism that might produce non-vocal sounds. The sounds can vary a lot and are described in many ways according to what they resemble, but I prefer to use the term bill clapping here. Bill clapping is well known among most stork species (Ciconiiformes, del Hoyo et al. 1992, Slikas 1998, Bradbury & Vehrencamp 2011), most owl species (Strigiformes, Johnsgard 1988, Sproat & Ritchison 1994, del Hoyo et al. 1999), in the three frogmouth species of genus *Podargus* (Rogers & Kaplan 2002), in Noisy Miners *Manorina melanocephala* (Rogers & Kaplan 2002, del Hoyo et al. 2008), in Australian Magpies *Cracticus tibicen* (Rogers & Kaplan 2002), and some tens of other species (del Hoyo et al. 1992–2011: Handbook of the birds of the world. Vol 1–16).

Bill clapping is also known in several crow species (Corvidae), including Australian Raven *Corvus coronoides* (Mo 2020), Common Raven *C. corax* (Coombs 1978) and Eurasian Jay *Garrulus glandarius* (Coombs 1978). It is also documented for the American Crow *C. brachyrhynchos* (Tingley 2024). It has been stated that the only mechanical sound reported in Carrion Crow *C. corone* is bill clapping which is sometimes uttered in aggressive interactions (Cramp & Perrins 1994), but the authors did not distinguish between Carrion Crow and Hooded Crow *C. cornix*. The two species of crows have quite similar sounds, but their sounds are not identical (Cramp & Perrins 1994). Therefore, this paper gives the first documentation of bill clapping in Hooded Crow.

I received a video from K. M. Sarre taken with a wildlife camera at Holmfjell in Tana (70° N, 29° E), in Finnmark county in Norway (online supplementary material). The video clearly documents one of the two observed crows repeatedly making sounds by bill clapping. The video was taken on 9 May 2021, with snow covering most of the ground, and carrot *Daucus* sp. was placed in front of the camera as a bait to attract Mountain Hare *Lepus timidus*. The bill clapping was made by the first arriving crow, while the bill was pointed down and the head and neck feathers were raised. The crow tried unsuccessfully to push the other crow away with the body and one leg. The bill clapping sound was accompanied with a weak rolling 'r', and the rolling 'r' sound was also made independent of bill clapping. The aggression level between the two crows was low.

Male Hooded Crows are on average larger than females (Coombs 1978), but there are also size differences within sexes. Therefore, the sexes of the two crows on the video cannot be determined with confidence. The posture during the bill clapping was like the bristle-head posture described in the literature (Coombs 1978, Cramp & Perrins 1994). The posture is used in aggressive encounters by neighbors at their common territorial boundary, or by territory holders

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in the presence of a persistent intruder (Coombs 1978). The posture is most often used by males in company with females or other subdominant conspecifics (Cramp & Perrins 1994). According to the literature, no sounds are especially associated with the bristle-head postures (Coombs 1978). Nevertheless, the new video footage confirms that at least bill clapping and the rolling 'r' sound are both used in combination with the behavioral posture.

As previously described for the Carrion Crow (Cramp & Perrins 1994), the Hooded Crow is hereby documented to use bill clapping in aggressive interactions. Often the meaning of different sounds is not clear, because different authors have interpreted the same sound differently. Therefore, there is a considerable scope for further investigations (del Hoyo et al. 1994). Study of the vocal repertoires for corvids might be complicated because the unique calls emitted by a species often become obscured owing to intergradation. Distinctions between one call and another are often rather arbitrary, and sometimes alternative descriptions given by different authors studying the same species are hard to reconcile. In addition, a specific call may be used in different behavioral contexts, have individual variation, and are combined with frequent vocal mimicry (Cramp & Perrins 1994). Despite these challenges, both behavior and postures indicate that bill clapping in Hooded Crow is used in an aggressive context.

The reason why no previous documentation of bill clapping in Hooded Crow exists might be that this specific sound is elicited very rarely, or that the sounds are weak and therefore not detected if the crows stop emitting these sounds when an observer is approaching. As this bill clapping and other weak sounds are less able to carry far, they are usually given when individuals are near each other. The sounds are frequently combined with a strong visual display (Cramp & Perrins 1994), as observed in the video (supplementary material).

Soft contact calls between individuals are particularly difficult to study in wild birds under field conditions. In fact, soft calls probably represent a large range of different vocalizations that are currently poorly understood outside captivity. For example, Manakins Pipridae produce a lot of mechanical sounds that are equivalent to vocal sounds, but it is often not obvious to the observer if a particular sound is vocal or mechanical. In addition, if the sound is mechanical, it might be impossible for the observer to determine how the sound is made. High speed cameras are therefore sometimes necessary to reveal the details in the sounds (del Hoyo et al. 2004). Many low intensity bird sounds registered in aviaries have never been registered in the field, for example in some species of Mousebirds Colidae (del Hoyo et al. 2001). With increasing use of video cameras, bill clapping might be detected in more species than we know today. More investigations are needed to understand the prevalence and context of non-vocal sounds in wild birds.

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Supplementary material

Online supplementary material is available at:
https://www.youtube.com/watch?v=2b8si9pqV44

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