

A case of cooperative hunting by a pair of northern goshawks

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Abstract. Cooperative hunting is a rare strategy in raptors, although it has been widely described in Falconidae and in some species of Accipitridae. Records about synchronous hunting in the member of the genus *Accipiter* are occasional. Here we describe a case of the cooperative hunting of two northern goshawks, *A. gentilis*, of a pigeon, *Columba* sp., observed in southern Poland in 2020. This exemplary behavior could be either exceptional, or cooperative hunting is an overlooked phenomenon in goshawk biology.

Key words: *Accipiter gentilis*, Accipitridae, *Columba*, tandem hunting, prey.

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I. INTRODUCTION

Cooperative hunting is a strategy that is not common in wild animals (PACKER & RUTTAN 1988). In some animal groups, cooperative hunting involves unrelated individuals or animals of unknown relation, but in many taxonomic units, siblings, families, or paired mates hunt together. Hunting in a group gives some benefit for predatory individuals as they are often able to chase and kill larger prey than a single hunter normally would. There are also disadvantages to group hunting as, even after successful attempt, predators need to share their food and rarely all hunters benefit equally (PACKER & RUTTAN 1988; CHOW et al. 2019).

Among diurnal raptors (Accipitriformes and Falconiformes), cooperative hunting is a relatively rare phenomenon, as these species are generally solitary predators (SCHOENER 1969). According to the reviews of HECTOR (1986) and ELLIS et al. (1993), such hunting (which involves real synchronous hunting) was observed in some species of larger falcons (genus *Falco* sp.), eagles (genera *Aquila* sp., *Haliaeetus* sp., *Hieraaetus* sp. and *Stephanoaetus* sp.), and some hawks and buzzards (genera *Parabuteo* sp., *Buteo* sp.

and *Melierax* sp.). Some other birds of prey hunt in groups, but each individual preys on its own e.g. ospreys (*Pandion haliaetus* L.) and kites (*Elanoides forficatus* L., *Ictinia mississippiensis* (Wilson, 1811), *Rostrhamus sociabilis* (Vieillot, 1817)). American hawks (living in family groups) and some small species of falcons (but only shortly after fledging) are known to hunt in small groups. Also, eagles sometimes are able to hunt in groups. On the other hand, large falcons, buzzards, and most often eagles are known to hunt in pairs (mates). In total, 39 species of falcons were reported to hunt cooperatively in pairs, but the same was noted for only three species of buzzards, and three of hawks (MADER 1976; BEDNARZ 1988; MALAN 1998). To our knowledge, reports about cooperative hunting in species of hawks from the genus *Accipiter* are exceptional. Pseudo-cooperative hunting was reported for *Accipiter striatus* Vieillot, 1808 with merlins *Falco columbarius* L., when one of these species use the other as a beater during hunting (CADE 1955). Similar behavior was observed in peregrine falcons *F. peregrinus* Tunstall, 1771, sparrowhawks *A. nisus* L., and goshawks *A. gentilis* L. hunting simultaneously on brambling *Fringilla montifringilla* L. wintering roosts

(ZUBEROGOITIA et al. 2012). Intensive studies on the behavior of northern goshawks indicate only solitary hunting (RUTZ 2006).

II. MATERIAL AND METHODS

On the 17th of March 2020, we had the opportunity to observe the cooperative hunting of two northern goshawks *Accipiter gentilis* (male and female). The observation happened during field inventory in the Carpathian Foothills in southern Poland near the village Siepraw – approx. 15 km south of the city of Kraków (49.923052°N 20.000162°E). The birds were hunting at the edge of a pine forest with surrounding meadows and dispersed buildings along the local road (100 m from the forest's edge).

III. RESULTS AND DISCUSSION

We noticed a pigeon (*Columba livia domestica* Gmelin, 1789) flying from an area with dispersed buildings. The pigeon was chased by two goshawks. Closest to the pigeon, the male goshawk (adult) was flying very quickly. The female (with brownish plumage suggesting she was immature) flew several meters after them. The male attempted either to catch the pigeon quilting to him from a higher height or he tried to prevent the pigeon from flying between the nearest branches of the trees (this could be just an observer's impression). Just after an unsuccessful attack by the male, the pigeon turned and flew toward the nearest buildings, chased by the female. The male returned over the trees and followed the female. After a few seconds of chasing, the female managed to catch the pigeon by forcing it to lower its altitude over the ground. Then the female, with the flapping pigeon, turned and flew toward the forest, followed by the male. Both birds were calling during the flight and after short time, they called again from somewhere in the forest. During the next visit there (a few days later) several places with pigeon feathers laying on the ground were found below the trees of the forest. Nearly a month later, most probably the same pair of goshawks (an immature female and an adult male), were observed in the vicinity of the nesting platform situated on a pine close to the observation place.

This is the first report of cooperative hunting of a pair (apparently) of northern goshawks. The lack of reports of cooperative hunting in northern goshawks could either reflect only solitary hunting in these birds, or just a lack of data (observations). Northern goshawks are usually a top predator due to their opportunism in prey selection, plasticity in hunting strategies, and their relative strength and aggressiveness (KENWARD 2006; REBOLLO et al. 2011), and these qualities contribute to individual adaptations. It is known that the foraging behavior of goshawks is shaped by territory quality (food abundance) and indi-

vidual features (age and morphology) (PENTERIANI et al. 2013; PÉREZ-CAMACHO et al. 2015).

The presented case of cooperative hunting in northern goshawks is an interesting observation, which contributes to the understanding of this species' behavior. It would be good to verify if it was only occasional hunting or that only this and some other pairs are able to hunt cooperatively. However, due to the secretive lifestyle of goshawks; foraging in dense woods and unpredictable hunting areas together with a very quick movements when chasing prey, such studies would be extremely difficult to execute.

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