

**Summary**

Grey Heron (*Ardea cinerea*) swallows a juvenile Great Crested Grebe (*Podiceps cristatus*)

In the special protected area „Kühkopf-Knoblochsau“ (Hesse) we observed a Grey Heron (*Ardea cinerea*) swallowing a juvenile Great Crested Grebe (*Podiceps cristatus*), probably being dead already before. Based on the literature it is one of the largest birds caught by a Grey Heron so far.

**Literatur**

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## Responses of the Crane (*Grus grus*) to potential predators in traditional wintering areas

References to the anti-predatory behaviour of Cranes are very scarce. CRAMP & SIMMONS (1980) have referred to a sudden grouping of birds on ground, with subdued alarm calls when standing birds are attacked by White-tailed Eagle (*Haliaeetus albicilla*) in breeding areas. Unlike MUÑOZ-PULIDO et al. (1993) pointed out that the normal response of Cranes when they discover Golden Eagles (*Aquila chrysaetos*) or Griffon Vultures (*Gyps fulvus*) is to fly high in closely-packed groups.

In the present paper we show the responses of Cranes to seven potential predators in the Serena region, SW of Spain. This is a traditional wintering area of the Western route of this species (SANCHEZ et al. 1993). During the winter periods of 1994–1995 and 1995–1996 a total of 20 encounters of Crane flocks with potential predators were recorded (Table 1). Taking into account that

Table 1: Antipredator behaviour in the Crane in the presence of different predator species. No response means that Cranes did not change their activities when the predator appeared.

Tab. 1: Feindabwehrverhalten von Kranichen gegenüber verschiedenen Beutegreiferarten. „No response“ bedeutet, daß die Vögel keine Aktivitätsänderungen bei Herannahen des jeweiligen Beutegreifers zeigten.

Species	Flight	Grouping	No response
Golden Eagle ( <i>Aquila chrysaetos</i> )	6	1	1
Bonelli's Eagle ( <i>Hieraaetus fasciatus</i> )	1	–	–
Griffon Vulture ( <i>Gyps fulvus</i> )	–	1	1
Buzzard ( <i>Buteo buteo</i> )	1	–	1
Red Kite ( <i>Milvus milvus</i> )	–	–	4
Raven ( <i>Corvus corax</i> )	–	1	1
Red fox ( <i>Vulpes vulpes</i> )	–	1	–

we detected a change in the behaviour of Cranes in the presence of the Raven (*Corvus corax*) and in the presence of the Buzzard (*Buteo buteo*), these species were included as potential predators. The inclusion of the Fox (*Vulpes vulpes*) was based on existing reports of this species hunting cranes in North America (DRIESLIN & BENNETT 1979).

The proportion of flight responses was higher when eagles (*Aquila chrysaetos* and *Hieraetus fasciatus*) hovered over the flocks of Cranes than when other predators appeared (Log-likelihood ratio Fisher test:  $G = 302.6$ ,  $p < 0.01$ ). Predation of Cranes by Golden Eagles has been described (THYOLLAY 1979, MUÑOZ-PULIDO et al. 1993, IVANOSKY 1995). Therefore the responses in the presence of this species and of Bonelli's Eagle could be the consequence of the Crane's recognition of potential predation by these species, and the response in this case would involve a greater expenditure of energy to decrease the chances of predation by increasing the confusion effect caused by the predator's difficulty in selecting its prey from a group in movement (PULLIAN & CARACO 1984).

The Griffon Vulture, contrary to the reported by MUÑOZ-PULIDO et al. (1993), the Red Fox and the Raven induced a grouping in Crane flocks. At the present only attacks on young chicks during the breeding period by *Vulpes* genus has been recorded (DRIESLIN & BENNETT 1979), while egg predation by *Corvus* genus seem to occur in the presence of adults without eliciting response (CRAMP & SIMMONS 1980). Probably the grouping creates the saturation of predator and prevents preying on individuals (TURCHIN & KAREIVA 1989) from species that are potential predators during the breeding period, when doesn't exit Crane aggregation (CRAMP & SIMMONS 1980). Unlike the Red Kite (*Milvus milvus*) do not seem to have any predatory capacity on the Crane.

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#### Zusammenfassung

Die Reaktionen in SW-Spanien (Region Serena) überwinternder Kraniche gegenüber sieben potentiellen Beutegreifern werden dargestellt. Drei verschiedene Verhaltensäußerungen beim Erscheinen von Prädatoren wurden festgestellt: Auffliegen, Bildung dichter Gruppen am Boden sowie unverändert fortgeführte Aktivitäten (keine Reaktion). Das Auffliegen wurde am ehesten von Stein- und Habichtsadlern, Gruppenbildung am Boden hingegen in einigen Fällen von Gänsegeier, Kolkrabe und Fuchs ausgelöst. Lediglich Rotmilane blieben völlig unbeachtet.

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