Observation of a Gopher Snake (Pituophis catenifer) Constricting a Red-tailed Hawk (Buteo jamaicensis)

Author: Wenner, Theodore J.

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LETTERS

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OBSERVATION OF A GOPHER SNAKE (*PITUOPHIS CATENIFER*) CONSTRICTING A RED-TAILED HAWK (*BUTEO JAMAICENSIS*)

KEY WORDS: *Red-tailed Hawk*; Buteo jamaicensis; *gopher snake*; *Pituophis catenifer*; *predation.*

On 5 September 2008 at 0928 H, I observed an approximately 1.6-m (total length) gopher snake (*Pituophis catenifer*) constricting an adult Red-tailed Hawk (*Buteo jamaicensis*) on the side of Forest Road 10 in the Cibola National Forest near Magdalena, New Mexico, U.S.A. (34°10.38′N, 107°25.05′W), at an elevation of 2265 m asl. After approaching the snake, I noticed that the hawk was still alive but struggling to breathe, as it was immobilized by the snake (Fig. 1). The snake had coils around the throat, chest, and wings of the hawk. The Red-tailed Hawk did not have the gopher snake grasped in its talons or in its bill, and the snake did not have any visible external injuries. When I approached, the snake exhibited typical defensive behavior, including hissing and striking toward me (Sweet 1985, Young et al. 1995). Approximately 12 min (0940 H) after I began my observation, the snake released the hawk, perhaps due to my close proximity. Now released, the hawk quickly stood up, spread its wings, and stood back about 2 m from the snake for approximately 30 sec. It then flew into a dead tree 10 m away, where it rested for 2 min, before it flew off the side of the hill and out of view. The snake moved off the road into a thicket of juniper trees (*Juniperus monosperma*) as soon as the hawk flew into the dead tree.

I do not believe that this observation represented an attempt by a gopher snake to prey on an adult Red-tailed Hawk. Instead, I believe that I observed a failed predation attempt on a gopher snake by a Red-tailed Hawk. Indeed, Red-tailed Hawks commonly prey on gopher snakes and other reptiles, including venomous snakes (Knight and Erickson 1976, Sherrod 1978). Presumably, the gopher snake was able to coil around the hawk during the predation attempt, creating a potentially fatal situation for the hawk. Adult Red-tailed Hawks (845–1400 g; Donohue and Dufty 2006) are outside the normal prey mass range of gopher snakes of a similar size to the one I observed (Rodríguez-Robles 2002). In addition, avian species are relatively bulky, and their consumption requires a larger gape by snakes than that required to ingest mammals and reptiles of similar mass (Greene 1983). This lends support to the interpretation that it was unlikely that this event represented a gopher snake attempting to predate on a Red-tailed Hawk, but instead represented an antipredator behavior by the snake.

To my knowledge, this is the first reported incidence of a gopher snake constricting a Red-tailed Hawk, and the first indication that gopher snakes may possibly represent an occasional source of mortality for healthy adult Red-tailed Hawks. Franson et al. (1996) examined necropsy results from 163 Red-tailed Hawk mortalities from 1975–92, and determined that the cause of death of 32 individuals could not be attributed to any of eight categories (diseases, electrocution, emaciation, gunshot, miscellaneous, toxicoses, trapped, or trauma). Mortality from constriction is unlikely to be attributed to any of these categories without other supporting evidence. For example, Hagen et al. (2007) considered feathers matted with saliva from the head to just above the furcula (indicating attempted but failed ingestion) as evidence of probable mortality of female Lesser Prairie-Chickens (*Tympanuchus pallidicinctus*; 610–855 g) caused by gopher snakes. There is a slight overlap in body mass of Red-tailed Hawks, particularly smaller males, with Lesser Prairie-Chickens. This suggests that it is possible for gopher snakes to be a cause of mortality in avian species the size of Red-tailed Hawks. However, it is unclear if a gopher snake would attempt to ingest a Red-tailed Hawk (and leave this type of supporting evidence) if it were to kill the hawk as an antipredator mechanism rather than as a predation attempt, as hypothesized.

Figure 1. Gopher snake constricting a Red-tailed Hawk on 5 September 2008 near Magdalena, New Mexico, U.S.A.

Under certain environmental conditions gopher snakes can represent the greatest proportion, by biomass, of prey eaten at active Red-tailed Hawk nest sites (Knight and Erickson 1976). This suggests that interactions between these two species may occur more frequently than previously suspected. When taken in conjunction with this

observation, it appears reasonable to suggest that gopher snakes may be a source of mortality in Red-tailed Hawks.

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