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A RECORD OF REVERSE MOUNTING IN THE RUFIOUS-TAILED HAWK (*BUTEO VENTRALIS*) IN SOUTHERN CHILE

KEY WORDS: *Rufous-tailed Hawk*; *Buteo ventralis*; behavior; breeding.

Reverse mounting, i.e., a female mounting a male, has been documented in more than 30 species of birds (James 1983, Nuechterlein and Storer 1989), mainly Pelecaniformes, Podicipediformes, and Piciformes, in which, given the high frequency of occurrence (>30%), it is considered a regular behavior, and part of courtship and pair formation (Glick 1954, Hauser 1959, James 1983, Nuechterlein and Storer 1989, Bowen et al. 1991, Ortega-Ruando and Graves 1991). Other nonexclusive explanations suggest that this behavior may be a strategy of pairs to stimulate the ovaries to prepare the female for laying (Bowman and Curley 1986, Nuechterlein and Storer 1989), a way to regulate sociosexual tension (Bertran and Margalida 2006), or a display of reverse sexual dominance (Nuechterlein and Storer 1989).

In raptors, reverse mounting has been reported in publications for a few species: American Kestrel (*Falco sparverius*; Bowman and Curley 1986), Egyptian Vulture (*Neophron percnopterus*; Donazar 1993) and Bearded Vulture (*Gypaetus barbatus*; Bertran and Margalida 2006). Here, we describe for the first time, observations of reverse mounting in the Rufous-tailed Hawk (*Buteo ventralis*), a species endemic to the southern temperate forest ecoregion.

During two breeding and nonbreeding seasons, from July 2008 to March 2010, we monitored a light-morph pair of Rufous-tailed Hawks (*Buteo ventralis*) for 440 hr at Cerro Nielol Natural Monument (CINM; 38°43'S, 72°35'W) in southern Chile (Norambuena et al. 2012). This locality represents the most consistent breeding site known for the species (Rivas-Fuenzalida et al. 2011). For more details of our study site see Norambuena et al. (2012). We were able to differentiate the male from the female by size (Ferguson-Lees and Christie 2001). Additionally, unlike the female, the male had a dark rufous band across its belly, a conspicuous white breast, and light rufous-colored leg feathers. The female had darker leg feathers and a striated breast very conspicuous from a distance of up to 400 m (Fig. 1). The marked difference in the breast plumages allowed us to differentiate the sexes of the hawks during mounting and to identify the birds when they used the same nest during both breeding seasons. When the pair was observed in normal mounting, the hawk we described as the male was always atop the one we classified as female.

The mountings and associated behavior were recorded during the courtship stage (119.6 hr of observations), between July and September. For each mount, we recorded

(1) the date, time and duration, (2) place and substrates, (3) behaviors displayed before and after, and (4) whether birds vocalized during the mount. All observations were made using binoculars and a scope, and duration was measured with a stopwatch. We could not determine whether cloacal contact between birds occurred during the mountings, so we herein use the term “mount” rather than “copulation.”

We recorded nine mounts, six of which were male-atop-female mounts, and three that were reverse mountings. The latter were observed only during the second breeding season (2009–2010). The alignment and positions of the birds during the reverse mounting were similar to those for male-atop-female mounts in *Buteo* (Fitch et al. 1946, Wiley and Wiley 1981, Preston and Beane 2009), and each lasted between 4 and 7 sec. All mounts we observed occurred on top of tall (~35 m) roble trees (*Nothofagus obliqua*) within 300 m of the nest.

We observed the first reverse mounting on 8 August 2009 (57 d before eggs were laid) at 1603 H. This was preceded and followed by 3 min of delivery of nesting materials to the nest by the female. The second record of reverse mounting occurred at 1434 H on 22 August 2009, only 14 d after the first recorded occurrence, and 42 d before laying. This mount was followed by the delivery of branches to the nest by the male for 110 min and then by a typical male-atop-female mount, 114 min later. On 20 September 2009 at 1438 H, we observed the third reverse mounting, which was preceded by 3 min of delivery of nesting material to the nest by the female. A male-atop-female mount occurred 33 min before the third reverse mounting. Vocalizations associated with mounting were performed by the male during three male-atop-female mounts.

Recent behavioral studies in Rufous-tailed Hawk based on this pair (Norambuena et al. 2012) and 11 others (Rivas-Fuenzalida et al. 2011) indicated that reverse mountings are not an integral part of the courtship behavior of the species. Thus, the occurrence of reverse mounting may represent an assertion of dominance by the female over the male (Nuechterlein and Storer 1989), or may be a strategy for strengthening the pair bond, in which reverse mounts indicate male cooperation in stimulating the females' ovaries to ensure successful laying (cf. James 1983, Bowman and Curley 1986). However, this cannot be confirmed with our observations, and thus, further intensive behavioral studies are needed to understand the adaptive value of reverse mounting and assess its frequency in the Rufous-tailed Hawk.

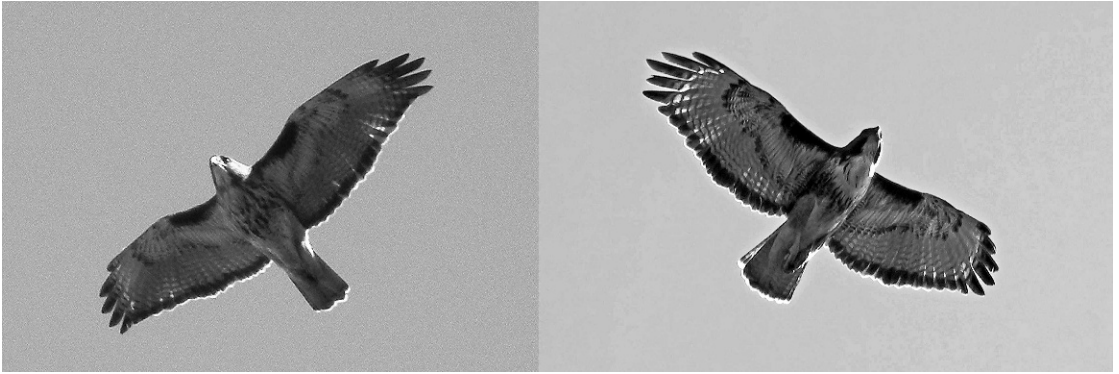


Figure 1. Female (left) and male (right) of the Rufous-tailed Hawk pair at Cerro Ñielol Natural Monument. There are differences in the dark band across the bellies and the male has more contrasting plumage. Photographs by H.V. Norambuena.

Although reverse mounting behavior is unusual in raptors, the scarcity of reports on this behavior may be due to (1) limited observation efforts during the mating period (Bowman and Curley 1986), (2) the use of mounting behavior to distinguish the sexes, and/or (3) the difficulty of distinguishing the sexes in species without sexual dimorphism (Nuechterlein and Storer 1989).

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