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GROUND NESTING BY BLACK-CHESTED BUZZARD-EAGLES (*GERANOÆTUS MELANOLEUCUS*)

KEY WORDS: *Black-chested Buzzard-Eagle*; *Geranoæetus melanoleucus*; *Argentina*; *breeding*; *ground nesting*; *nesting*; *Patagonia*.

Large diurnal raptors rarely nest on the ground, except for in areas lacking any elevated nesting substrates, or on islands where mammalian predators are absent (Newton 1979, Ellis et al. 2009). However, rare nesting events have been documented, and species that usually nest on elevated substrates can occasionally be found nesting on the ground. To date, such behavior has been described only for a few large diurnal raptors with long breeding cycles (Brigham 1939, Pčola 1991, Monson 2001, Gangoso and Palacios 2005, Martin 2005, Ellis et al. 2009).

The Black-chested Buzzard-Eagle (*Geranoæetus melanoleucus*) is one of the largest neotropical Buteonines (Jiménez and Jaksic 1990). It inhabits open areas in South America, from Venezuela to Tierra del Fuego (del Hoyo et al. 1994, Ferguson-Lees and Christie 2001). Several studies of the breeding biology of this species have been carried out in different locations (Travaini et al. 1994, Hiraldo et al. 1995, Souza 1999, Saggese and De Lucca 2001, Pavez 2001). It nests mainly on cliffs, but depending on local substrate availability, it can also nest on trees, cactus, or even power poles (Housse 1945, Travaini et al. 1994, Hiraldo et al. 1995). Although it has been suggested that Black-chested Buzzard-Eagles may occasionally nest on the ground (del Hoyo et al. 1994, Ferguson-Lees and Christie 2001), to my knowledge there are no published reports of this behavior. I here present the first description of two Black-Chested Buzzard-Eagle nests on the ground.

One nest (nest A; Fig. 1a) was located 30 km east of the city of Bariloche (41°08'S, 71°12'W) in northwestern Argentine Patagonia, in the forest-steppe ecotone, the transition region between the subantarctic forest and the Patagonian grass steppe. Vegetation near the nest site consisted of a mosaic of grasslands, dispersed low bushes, and scattered patches of trees. In December 2008, I found the nest 2 m from the base of a 25-m high basalt cliff, and 150 m from a stream, on a hillside with a slope of 30°. The architecture of the platform and the absence of basalt fragments around or

under the nest indicated that it was constructed on the ground, and that it had not fallen with a piece of the cliff, as occasionally happened in other territories of this species (G. Ignazi unpubl. data). The nest was oval-shaped and measured 162 × 202 cm, and 75 cm high. The main platform was formed of branches with a mean width of 158 mm ($n = 10$). These branches belonged to different plant species from the surrounding area, including *Berberis buxifolia*, *Schinus patagonicus*, *Austrocedrus chilensis*, and *Fabiana imbricata*. The cup of the nest was made of grass, primarily *Stipa* spp. Three alternate nests were located on the cliff at different heights (Fig. 1c).

I first saw an adult eagle in the area carrying nesting materials to the nest on 30 October 2008. On 6 December, I found a 3-wk-old nestling on the ground 2 m away from the nest. Because of the shape and location of the nest, the nestling could easily move in and out of it. Both adults flew and vocalized overhead, at a height of 30–100 m. On 12 December, the 4-wk-old nestling was on the nest (Fig. 1a), where many prey remains were found, primarily of European hares (*Lepus europæus*). On 26 December, the nestling was found dead 15 m from the nest. It had been killed by an unknown predator, possibly by a dog from a nearby farm, or by a culpeo fox (*Lycalopex culpæus*), one of the most abundant terrestrial carnivores in Patagonia (Novaro 1995, Novaro et al. 2000), and whose trails and feces were found in the nesting area. Despite the fact that the nestling was already dead, the adults reacted in the same way as when I first observed the nest.

A second nest (nest B; Fig. 1c) was located 50 km southeast of the city of Bariloche, in a steep environment dominated by cushion shrubs and grass. It was placed 3 m from the base of a 10-m high basalt cliff, in a level spot. Again, there were no basalt fragments near or under the nest suggesting that it had fallen with a piece of cliff. The platform measured 155 × 120 cm, and was 33 cm high. It was constructed of branches with a mean width of 111 mm (n

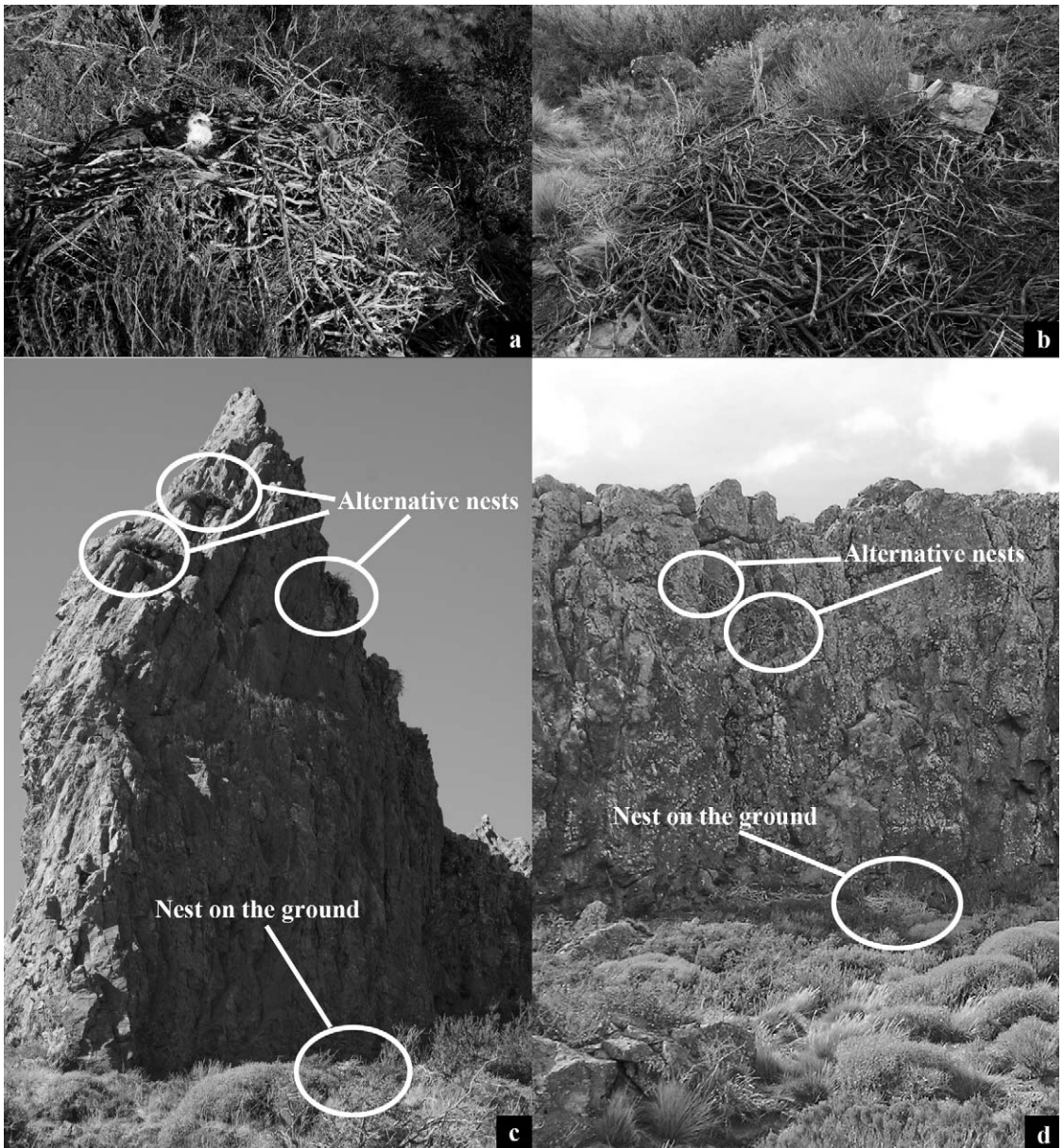


Figure 1. (a) Nest A with a 3-wk-old nestling, (b) nest B, found after the breeding season (c) location of nest A at the base of basalt cliffs with alternate nests from previous breeding seasons marked, (d) location of nest B at the base of basalt cliffs with alternate nests from previous breeding seasons marked.

= 11), mainly *Berberis buxifolia* and *Nassauvia* sp., which were also abundant in the surrounding area. The nest cup was made of grass, mainly *Stipa* spp., and measured 45×45 cm. As in nest A, there were alternate nests ($n = 2$) located on the cliff (Fig. 1d). In this case, I did not directly record breeding activity because the nest was found after the breeding season on 11 April 2012. How-

ever, prey remains, pellets, feathers, and the presence of adult eagles in the site were indicators of recent activity. The architecture of both nests was similar to that of previously described nests of this species (Travaini et al. 1994).

Of 42 Black-chested Buzzard-Eagle breeding territories that I surveyed in the study area from 2008 to 2013, only these two had nests constructed on the ground. Both

Black-chested Buzzard-Eagle pairs constructed their ground nests in places where they had elevated nesting substrates available nearby, in an area with potential terrestrial predators (Novaro et al. 2000). Similar cases have been documented for Golden Eagles (*Aquila chrysaetos*) in Mongolia (Ellis et al. 2009) and Ospreys (*Pandion haliaetus*) in Ohio (Monson 2001). Ground nests made by Golden Eagles, which are also mainly cliff-nesters, were located on both hillsides and level ground, like the ones described here for Black-chested Buzzard-Eagles.

It is difficult to ascribe causality for this and other abnormal nesting events among raptors. Perhaps the construction of the nest on the ground followed by failure due to predation in nest A was a consequence of breeding by an inexperienced pair; however, I was unable to age the breeding pair. Ground nesting among raptors continues to be a confounding nesting behavior, especially in areas where there are potential terrestrial predators and elevated substrates available.

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