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Received 13 September 2001; accepted 24 April 2002

*J. Raptor Res.* 36(3):206–212

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## RECENT RECORDS OF CROWNED EAGLES (*HARPYHALIAETUS CORONATUS*) FROM ARGENTINA, 1981–2000

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KEY WORDS: *Crowned Eagle*, *Harpyhaliaetus coronatus*; *new records*; *conservation*; *status*; *Argentina*.

The Crowned Eagle (*Harpyhaliaetus coronatus*) is a vulnerable species whose distribution is limited to south-central South America (Collar et al. 1992, García-Fernández et al. 1997). The species has been protected in Argentina since 1954 and is listed as a threatened species in Brazil and Paraguay. The ecology of this large eagle is poorly known. It feeds on a variety of vertebrates including snakes (e.g., *Waglerophis merremi*), birds, skunks (*Conepatus* spp.), armadillos (Dasypodidae), and weasels (Collar et al. 1992). The nest of the Crowned Eagle consists of a large platform placed in trees where one egg is laid (De la Peña 1992, Bellocq et al. 1998). Naturally low popu-

lation numbers and habitat fragmentation have been recognized as primary contributors to the eagle's current status (Collar et al. 1992). Previous studies on habitat use by this eagle identified the potential negative effects of continuing afforestation (Bellocq et al. 1998). Over 60% of the Crowned Eagle records are from Argentina, where it occurs primarily in shrublands, savannas, and semi-open woodlands (Collar et al. 1992, Bellocq et al. 1998, Gonnet and Blendinger 1998). Crowned Eagles were also reported recently in subtropical rainforests (Chébez et al. 1998, Gonnet and Blendinger 1998). Here, we report new records of Crowned Eagles and integrate them with the previous information on this species from Argentina for 1981–2000.

### METHODS

Road surveys for raptors were conducted in the northwest portion of Santa Fe province, north-central Argen-

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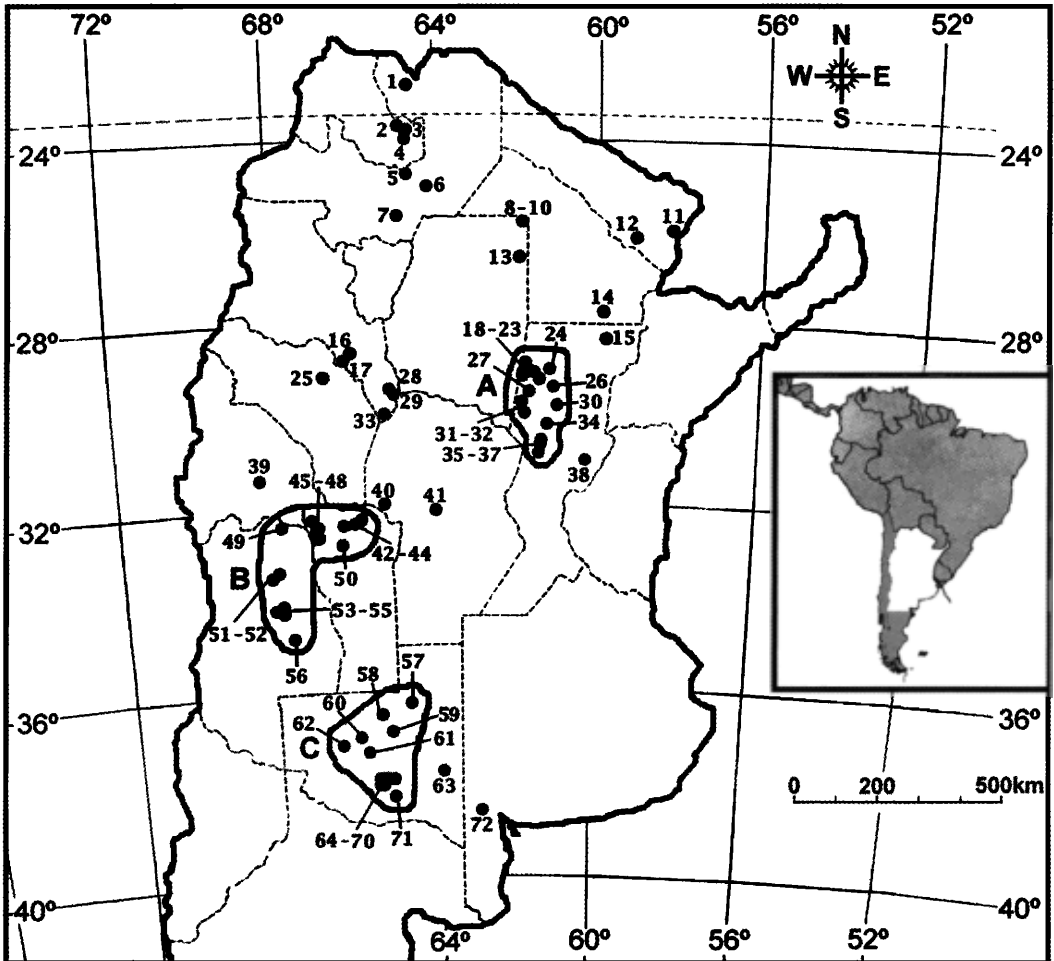


Figure 1. Observation records of Crowned Eagles (*Harpyhaliaetus coronatus*) from Argentina during 1981–2000 (see Appendix for details on records). Zones A (northwestern Santa Fe), B (northeastern Mendoza and northern San Luis), and C (central La Pampa) are areas with a high number of records.

tina (west of Zone A, Fig. 1). The survey was conducted along 210 km of road, driving north at a speed of 60–80 km/hr during 21 (from Nueva Italia to Tostado) and 22 November 2000 (north of Tostado). Raptor counts were made by one observer (who was not driving) while in transit, and occasional stops were made for identification and counting of individuals in groups.

We compiled information and identified locations for records of Crowned Eagles from Argentina for the period 1981–2000. Gonnet and Blendinger (1998) compiled most records from 1987–97. For each record, we obtained the following information (when available): location, geographic coordinates, province, date, number of individuals, and source. When not provided in the source, we obtained geographic coordinates at the Instituto Geográfico Militar (IGM) or contacted observers to

obtain complete information. Reference numbers were basically assigned for records from north to south.

RESULTS AND DISCUSSION

A total of 343 individual raptors was recorded during the road survey in 2000; these included 161 Swainson’s Hawks (*Buteo swainsoni*), 114 Crested Caracaras (*Polyborus planicus*), 56 Black Vultures (*Coragyps atratus*), four Crowned Eagles (*Harpyhaliaetus coronatus*), four Black-chested Buzzard-Eagles (*Geranoaetus melanoleucus*), two Chimango Caracaras (*Milvago chimango*), one Roadside Hawk (*Buteo magnirostris*), and one Snail Kite (*Rostrhamus sociabilis*).

We observed four Crowned Eagles during the raptor

survey and one additional individual while traveling around the area. We were able to identify distinguishing plumage features of each juvenile indicating that we observed different individuals. All individuals were seen between 29–30°S and 61–62°W, where the land is used primarily for ranching.

On 20 November 2000, an adult and a juvenile eagle were observed at Hwy 2, 20.5 km north of Nueva Italia (29°47'S, 61°32'W; record number 32 in Fig. 1). The adult was perched on an electric pole and the juvenile was on the ground holding a snake (*Philodryas patagonensis*) in its talons. The surrounding habitat had two vegetation strata, trees and grasses, where *Geoffroea decorticans* (height about 6 m) dominated the canopy covering 40–60% of the ground surface.

On 20 November 2000, a juvenile was seen perched on a power pole at Hwy 2, 37 km south of Tostado (29°26'S, 61°43'W; record number 27 in Fig. 1). We were able to approach the base of the pole without flushing this eagle. The habitat was a *Prosopis* savanna with sparse *G. decorticans*.

On 21 November 2000, we observed a juvenile perched on a *Prosopis* tree (height about 6 m), on Hwy 95, 21 km north of the intersection with Hwy 2 (29°07'S, 61°43'W; record number 21 in Fig. 1). The eagle was perched in a pasture with isolated *Prosopis* where cattle grazed. Surrounding fields were cultivated with sunflower.

On 21 November 2000, we recorded a juvenile eagle while traveling around the area. The eagle was perched on a fence pole on Hwy 13, 18.5 km south of the intersection between Hwys 13 and 98 (29°26'S, 61°03'W; record number 26 in Fig. 1). The habitat was a pasture where *Spartina* spp. was the most common grass (60–80% cover).

We compiled 72 records from Argentina for 1981–2000 (record numbers in Appendix correspond to location numbers in Fig. 1). The three zones with a high frequency of records (Fig. 1) have a semiarid climate, and each include a portion of two phytogeographic regions (following Cabrera 1971), and the ecotone between them. Zone A is located in the northwestern portion of Santa Fe province. In the northern part of this zone (Chaqueña region, de las Sabanas District), vegetation types include savannas of *Elionurus muticus* in the upper areas and *Spartina argentinensis* in the lower areas. In the southern part of zone A (El Espinal region, del Algarrobo District), close to open woodlands, *Prosopis* spp. and *G. decorticans* dominate the landscape. The area is affected by afforestation and the land is primarily used for ranching. *G. decorticans* forests occur in areas disturbed by ranching. Zone B comprises northeastern Mendoza and northern San Luis provinces. In northern San Luis (Chaqueña region, Serrano District), the original woodlands of *Schinopsis* spp. were replaced by shrublands with isolated woodlots of *Prosopis* spp. In eastern Mendoza (Monte region), the primary vegetation type is a shrubland dominated by *Larrea* spp. Other shrub species include *Monttea*

*aphylla*, *Bougainvillea spinosa*, *Prosopis alpataco*, and *Chusqueira erinacea*. Zone C is located in central La Pampa province. In the eastern part of this zone (El Espinal region, del Caldén District), the natural xerophic forest dominated by *Prosopis caldenia* has been modified as a result of afforestation followed by ranching. Currently, this zone consists of shrublands (mostly *Larrea* spp.) with isolated *P. caldenia* or small woodlots. Some common accompanying shrubs are *Lycium chilense*, *Prosopis flexuosa*, *Condalia microphylla*, *C. erinacea*, and *G. decorticans*. The western part of zone C is within the Monte phytogeographic region described above.

Of the 72 records found from Argentina for 1981–2000, approximately 23%, 21%, and 19% are from zones A, B, and C, respectively (Fig. 1). Gonnet and Blendinger (1998) suggested zones A and B as potential areas to intensify research and conservation efforts. Zone A, however, has some advantages over zones B and C. First, zone A is located near the central portion of the species' range compared to other zones. Second, many of the records from zones B (40%) and C (57%) are from or around natural reserves, whereas no record from zone A is from natural reserves. Eagles are more likely to be seen in natural reserves due to increased sampling efforts and reduced habitat alteration and hunting pressure (Gonnet and Blendinger 1998). The conservation of large-bodied, low-density, upper-trophic-level species often requires suitable habitat beyond the size of existing natural reserves (Meffe and Carroll 1997). Third, our results might indicate a relatively high density of eagles in zone A, considering both the naturally low population numbers and the results of previous surveys. The available information from previous surveys (Travaini et al. 1995, Bellocq et al. 1998, Contreras and Justo 1998, Gonnet and Blendinger 1998) suggests that sighting five Crowned Eagles in 2 days of observations is unusually high.

In summary, we reported four new records of Crowned Eagles (including five individuals), compiled and provided details of records in Argentina for 1981–2000, and identified three zones with high frequency of recent records. Based on this study, we suggest the following priorities for research and conservation of the Crowned Eagle: (1) complete surveys along the Espinal phytogeographic region, (2) identify variables associated with high frequencies of eagle sightings at larger geographical scales (e.g., landscape), and (3) conduct studies on reproductive success and mortality to identify viable populations.

RESUMEN.—El águila coronada (*Harpyhaliaetus coronatus*) es una especie vulnerable y rara de ver. Se observaron cuatro ejemplares durante un relevamiento de rapaces por carretera a lo largo de 210 km, y un individuo adicional cuando se recorría el área en el centro-norte de Argentina (Santa Fe). Se compilieron los registros de Argentina para el período 1981–2000 y se identificaron tres zonas de alta frecuencia de registros recientes. La zona ubicada en el noroeste de la provincia de Santa Fe parece

ser la más apropiada para intensificar investigación y acciones de conservación, debido a su posición relativamente central dentro de los límites de distribución de la especie y su alta frecuencia de registros recientes afuera de reservas naturales.

[Traducción de los autores]

#### ACKNOWLEDGMENTS

We thank Aves Argentinas for helping with literature search and G. Carrizo, from the Museo Argentino de Ciencias Naturales Bernardino Rivadavia, for identifying the snake. J.M. Gonnnet and two anonymous reviewers provided comments that improved the manuscript. The research was supported by the Consejo Nacional de Investigaciones Científicas y Técnicas of Argentina and the Lincoln Park Zoo.

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Received 5 March 2001; accepted 14 May 2002

Appendix The record number, number of sighted individuals, locality, geographic coordinates, and source of observation records of Crowned Eagles from Argentina for 1981–2000.

REC- ORD NO.	EA- GLES NO.	DATE	LOCALITY, PROVINCE <sup>1</sup>	GEOGRAPHIC COORDINATES	SOURCE
1	2	16–27 Jul 1989	P.N. Baritú, Salta	22°40'S, 64°37'W	Gonnet and Blending (1998)
2	2	30 Aug 1988	San Francisco, Jujuy	23°35'S, 64°54'W	Gonnet and Blending (1998)
3	1	17/18 Feb 1987	P.N. Calilehua, Jujuy	23°35'S, 64°50'W	Gonnet and Blending (1998)
4	1	Undated	P.N. Calilehua, Jujuy	23°40'S, 64°53'W <sup>2</sup>	Chébez et al. (1998)
5	1	Undated	P.N. El Rey, Salta	24°42'S, 64°38'W <sup>2</sup>	Chébez et al. (1998)
6	1	17 Nov 1989	Joaquín V. González, Salta	25°04'S, 64°38'W <sup>2</sup>	De Lucca (1993)
7	1	June 1985	Yatasto, Salta	25°35'S, 64°56'W <sup>2</sup>	Collar et al. (1992)
8	1	Feb 1989	R.P. Copo, Santiago del Estero	26°05'S, 62°00'W	Collar et al. (1992)
9	1	After Feb 1989	R.P. Copo, Santiago del Estero	26°05'S, 62°00'W	Collar et al. (1992)
10	1	Undated	R.P. Copo, Santiago del Estero	26°05'S, 62°00'W	Collar et al. (1992)
11	1	Dec 1987	North of Formosa City, Formosa	ca. 26°11'S, 58°11'W <sup>2</sup>	Collar et al. (1992)
12	1	ca. 1995	Reserva Ecológica El Bagual, Formosa	ca. 26°13'S, 59°50'W <sup>2</sup>	Di Giacomo (1996)
13	1	28 Feb 1992	Sachayoj, Santiago del Estero	26°41'S, 61°50'W <sup>2</sup>	Salvador and Eroles (1994)
14	1	Jul 1986	Charadai, Chaco	27°38'S, 59°53'W <sup>2</sup>	Collar et al. (1992)
15	1	Nov 1989	West of Los Amores, Santa Fe	28°03'S, 59°57'W <sup>2</sup>	Collar et al. (1992)
16	1	Feb 1984	Nat. Hwy 38, near Catamarca City, Catamarca	28°28'S, 65°47'W <sup>3</sup>	Collar et al. (1992)
17	1	1988	Nat. Hwy 38, 30 km southwest of Catamarca City, Catamarca	28°28'S, 65°47'W	De Lucca (1993)
18	1	Jul 1987	Pozo Borrado, Santa Fe	ca. 28°52'S, 61°37'W	Gonnet and Blending (1998)
19	1	Jul 1987	Antonio Pini, Santa Fe	ca. 29°07'S, 61°37'W	Collar et al. (1992)
20	1	Oct 1989	National Hwy 95, Santa Fe	ca. 29°07'S, 61°22'W	Collar et al. (1992)
21	1	21 Nov 2000	Hwy 95, Santa Fe	29°07'S, 61°43'W	This study
22	1	Sep 1988	ca. 10 km south of Antonio Pini, Santa Fe	ca. 29°07'S, 61°37'W	Collar et al. (1992)
23	1	Nov 1989	10 km east of Tostado, Santa Fe	ca. 29°14'S, 61°47'W <sup>2</sup>	Collar et al. (1992)
24	2	11 Feb 1988	Fortín Los Pozos, Santa Fe	ca. 29°07'S, 61°07'W	Collar et al. (1992)
25	1	Jul 1986	El Cantadero, La Rioja	29°11'S, 66°44'W	Collar et al. (1992)
26	1	21 Nov 2000	Hwy 13, Santa Fe	29°26'S, 61°06'W	Collar et al. (1992)
27	1	20 Nov 2000	Hwy 2, 37 m south of Tostado, Santa Fe	29°26'S, 61°43'W	This study
28	1	Aug 1982	Recreo, Catamarca	29°16'S, 65°04'W <sup>2</sup>	This study
29	1	Aug 1982	30 km southeast of Recreo, Catamarca	ca. 29°16'S, 65°04'W <sup>2</sup>	Collar et al. (1992)
30	1	Oct 1989	Vera Department, Santa Fe	ca. 29°28'S, 60°13'W <sup>2</sup>	Collar et al. (1992)
31	1	Nov 1989	NE of Montefiore, Nat. Hwy 95, Santa Fe	ca. 29°37'S, 61°52'W	Collar et al. (1992)
32	2	20 Nov 2000	Hwy 2, 20.5 km north of Tostado, Santa Fe	29°47'S, 61°32'W	This study
33	1	8 Mar 1981	Salinas Grandes, Catamarca	30°08'S, 65°25'W <sup>2</sup>	De la Peña (1999)

Appendix. Continued.

REC- ORD NO.	EA- GLES NO.	DATE	LOCALITY, PROVINCE <sup>1</sup>	GEOGRAPHIC COORDINATES	SOURCE
34	1	Jan 1988	Santurce, Santa Fe	ca. 30°07'S, 61°07'W	Collar et al. (1992)
35	1	Dec 1982	Constanza, Santa Fe	ca. 30°52'S, 61°22'W	Collar et al. (1992)
36	1	Aug 1989	Virginia, Santa Fe	ca. 30°52'S, 61°22'W	Collar et al. (1992)
37	1	Jul 1988	Ataliva, Santa Fe	30°59'S, 61°27'W	Collar et al. (1992)
38	1	May 1989	25 km west of Cayastá, Santa Fe	31°12'S, 60°10'W	Collar et al. (1992)
39	1	1984	Sierra de Villicum, Albarcón, San Juan	ca. 31°14'S, 68°31'W <sup>2</sup>	De Lucca (1992)
40	1	Jan 1982	Villa Dolores, Córdoba	31°57'S, 65°12'W <sup>2</sup>	De Lucca (1993)
41	1	Oct 1986	Río Tercero, Córdoba	32°11'S, 65°48'W	De Lucca (1993)
42	1	16 Jun 1997	Nat. Hwy 20, La Unión, San Luis	32°13'S, 65°48'W	Gonnet and Blendinger (1998)
43	2	22 Feb 1991	La Higuera, San Luis	ca. 32°25'S, 65°55'W <sup>2</sup>	De Lucca (1993)
44	1	14 Dec 1994	Nat. Hwy 20, 16 km east of Luján, San Luis	32°22'S, 65°57'W	Gonnet and Blendinger (1998)
45	2	3 Sep 1997	Nat. Hwy 20, km 430, La Tranca, San Luis	32°21'S, 67°17'W	Gonnet and Blendinger (1998)
46	1	27 Aug 1986	P.N. Sierra de las Quijadas, San Luis	ca. 32°25'S, 67°05'W <sup>2</sup>	Nellar Romanella (1993)
47	1	1-6 Sep 1990	P.N. Sierra de las Quijadas, San Luis	32°34'S, 67°10'W <sup>2</sup>	Gil et al. (1995)
48	1	1990	Nat. Hwy 147, 40 km northwest of San Luis city, San Luis	ca. 33°19'S, 66°21'W <sup>2</sup>	Gil et al. (1995)
49	1	3 Apr 1997	Reserva Florística y Faunística Telteca, Mendoza	32°21'S, 68°03'W	Gonnet and Blendinger (1998)
50	2	3 Aug 1996	Nat. Hwy 7, km 798, San Luis	33°16'S, 66°21'W	Gonnet and Blendinger (1998)
51	2	6 Dec 1995	Prov. Hwy 153, km 60 and 62, Mendoza	33°51'S, 68°00'W	Gonnet and Blendinger (1998)
52	2	14 Aug 1997	Provincial Hwy 153, km 67, Mendoza	33°51'S, 68°00'W	Gonnet and Blendinger (1998)
53	3	21 May 1996	Prov. Hwy 153, km 70, Nacuán, Mendoza	34°03'S, 67°58'W	Gonnet and Blendinger (1998)
54	2	1-8 Nov 1992	Reserva del Hombre y la Biosfera Nacuán, Mendoza	34°03'S, 67°58'W	Gonnet and Blendinger (1998)
55	1	28 Oct 1995	Reserva del Hombre y la Biosfera Nacuán, Mendoza	34°03'S, 67°58'W	Gonnet and Blendinger (1998)
56	1	20 Dec 1993	Nat. Hwy 143, km 170, Mendoza	35°43'S, 68°40'W	Gonnet and Blendinger (1998)
57-61		Undated	Five sites between Conchelo and El Odré, La Pampa; 1 eagle observed at each site	36°00'S, 64°35'W to 36°58'S, 66°42'W <sup>2</sup>	Collar et al. (1992)
62	2	2 Jan 1997	Nat. Hwy 143, surroundings of Limay Mahuida, La Pampa	37°12'S, 66°42'W <sup>2</sup>	Kaspar et al. (1999)
63	1	10 Jun 1988	Nat. Hwy 35, km 211, La Pampa	37°38'S, 64°09'W	Delhey (1992)
64	1	18 Nov 1996	20 km east of P.N. Lihué Calel, La Pampa	ca. 37°55'S, 65°32'W <sup>2</sup>	Belloccq et al. (1998)
65 <sup>4</sup>	3	Feb 1997	12 km east of P.N. Lihué Calel, La Pampa	ca. 37°55'S, 65°32'W <sup>2</sup>	Belloccq et al. (1998)
66	1	Oct 1988	P.N. Lihué Calel, La Pampa	37°55'S, 65°32'W <sup>2</sup>	Collar et al. (1992)
67	1	Jun 1986	P.N. Lihué Calel, La Pampa	37°55'S, 65°32'W <sup>2</sup>	De Lucca (1993)

## Appendix. Continued.

REC- ORD No.	EA- GLES No.	DATE	LOCALITY, PROVINCE <sup>1</sup>	GEOGRAPHIC COORDINATES	SOURCE
68	1	1 May 1991	P.N. Lihué Calel, La Pampa	37°55'S, 65°32'W <sup>2</sup>	De Lucca (1993)
69	1	Oct 1991	P.N. Lihué Calel, La Pampa	37°55'S, 65°32'W <sup>2</sup>	De Lucca (1993)
70	1	21 Sep 1997	P.N. Lihué Calel, La Pampa	37°55'S, 65°32'W <sup>2</sup>	Belloccq et al. (1998)
71	1	22 Nov 1996	40 km southeast of P.N. Lihué Calel	37°55'S, 65°32'W <sup>2</sup>	Belloccq et al. (1998)
72		19–26 Jul 1997	Chasicó stream mouth, Buenos Aires	ca. 38°38'S, 63°06'W <sup>2</sup>	Kaspar et al. (1999)

<sup>1</sup> P.N.: National Park, R.P.: Provincial Natural Reserve.<sup>2</sup> Geographic coordinates obtained by the authors.<sup>3</sup> Coordinates provided by Rodríguez Goñi (pers. comm.).<sup>4</sup> Nesting site.