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AUSTRAL SPRING MIGRATION COUNTS OF RAPTORS IN PUNTA RASA, ARGENTINA

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Resumen. – Conteo de rapaces migratorias durante la primavera Austral en Punta Rasa, Argentina. – Punta Rasa (este de la provincia de Buenos Aires, Argentina) fue identificada como un sitio potencial para llevar a cabo conteos de rapaces migratorias en la primavera Austral. En la primavera Austral del 2008 conduje el primer conteo sistemático de rapaces migratorias en Punta Rasa. El mirador esta ubicado en una torre de tanques de agua a 10 m de altura y tiene una visión de 360 grados. Conté 1092 rapaces de 14 especies en un periodo de 35 días (223,5 h), entre el 21 de Septiembre y 29 de Noviembre. El Milano Caracolero (*Rostrhamus sociabilis*) fue la especie más común, representado el 53% (N = 584) de los individuos contados, mientras que el Chimango (*Milvago chimango*) fue la segunda especie más abundante representado el 23% (N = 250) del conteo. El restante 24% (N = 258) incluyó otras 12 especies. Conté más rapaces migrando en el sitio cuando los vientos soplaban del oeste y sur. Estos vientos, aparentemente, empujarían a las rapaces a la costa de Buenos Aires, y podría ser el factor de concentrar algunas especies de rapaces cuando están migrando en el área. En este estudio, presento nueva información sobre las especies de rapaces que migran al este de las pampas argentinas, así como también, la edad, la abundancia y el periodo de migración.

Abstract. – Punta Rasa (eastern Buenos Aires province, Argentina) was identified as a potential site for conducting long-term migration studies of raptors in Austral spring. I conducted the first systematic raptor migration count in 2008. The lookout on a water tank 10 m off the ground has a view of 360 degrees. Between 21 September and 29 November I counted migrants for 35 days (223,5 h). I recorded 1092 migrating raptors representing 14 species. The Snail Kite (*Rostrhamus sociabilis*) made up 53% (N = 584) of the individuals counted, the Chimango Caracara (*Milvago chimango*) 23% (N = 250), and 12 additional species accounted for the remaining 24% (N = 258). The highest count at Tanques Watchsite occurred during westerly and southerly winds. Winds apparently push raptors to the Buenos Aires' coast, and could concentrate several species when they migrate in this area. I provide new information on the species of migrating raptors in eastern pampas of Argentina as well as the age structure, abundance, and migration timing. *Accepted 5 May 2010.*

Key words: Raptor migration, migration watchsite, Chimango Caracara, Snail Kite, Swainson's Hawk, Argentina, Punta Rasa.

INTRODUCTION

Punta Rasa (eastern Buenos Aires province, Argentina) was identified as a potential site for conducting long-term studies of migrating raptors during the Austral spring (Zalles & Bildstein 2000). However, there are only two reports on raptor migration in the area. During a study on marsh birds in Punta Rasa and surrounding areas, Weller (1966) noted that Snail Kites (*Rostrhamus sociabilis*) became very abundant in early October when groups of

8–12 were seen, whereas he did not record kites during Austral winter. During two successive Austral springs in early 1990s Alvaro Jaramillo watched and counted almost 10,000 raptors on migration there, of which almost 9000 were Swainson's Hawk (*Buteo swainsoni*), and almost 800 were Snail Kite (Jaramillo 1993, Jaramillo *in* Zalles & Bildstein 2000).

In this study I present the results of the first systematic raptor migration count in Austral spring at Tanques Watchsite, Punta Rasa. The purpose of the study is to document species composition, seasonal timing, and abundance of migrating raptors using standard migration monitoring techniques. Results presented here confirm Punta Rasa as a good site from which to perform season-long counts of migratory raptors.

METHODS

Study area. North-pointing Punta Rasa is 250 km southeast of the city of Buenos Aires, and 5 km north of San Clemente del Tuyú, in the eastern pampas of Buenos Aires province, Argentina. The point separates the brackish waters of the *Bahia Samborombón* of the Rio de la Plata Estuary from the Atlantic Ocean. The Tanques Watchsite (36º18'S, 56º45'W) is in the nautical club *Tapera de Lopez*, 2000 m south of the tip of the Punta Rasa, and on the San Clemente River. The lookout is on the water-tank tower of the club at a height of 10 m with a view of 360 degrees. The climate in the eastern pampas is temperate, with warm summers (average in January 24.5ºC) and cold winters (average in July 11ºC). Prevailing winds blow from east and northeast. The eastern pampas experience the highest rainfall between October and March with rainfall amounting over 1000 mm. Punta Rasa has a diverse set of habitats, including native pampas, grasslands, saltmarshes, and freshwater marshes, Tala woodlands largely composed of hackberry *Celtis tala*, tidal mudflats, sand-dunes, and human-altered habitats such as non-native forest (Jaramillo 2000).

Sampling. I counted raptors on migration at Tanques Watchsite during the spring of 2008. Sampling was distributed among three periods totaling 35 days (223,5 h). Successive count periods were 13 days (103h, Sep 21–30/Oct 1–3) counting 9 h a day (08:00–17:00 h); 9 days (64,5 h, Oct 29–31/Nov 1–6) counting 8 h per day (08:00–16:00 h), and 13 days (56 h, Nov 17–29) at 6 h per day (08:00–14:00 h). I identified migrating raptors at the count site using a pair of Swarovski 10X50 binoculars and a Swarovski 20-60X telescope. I scanned the sky 360 degrees to find raptors on migration, and they were considered as migrants when they past the lookout with direct powered or soaring flight, and if they approached from the west and north. Data were collected using the standardized daily report of the Hawk Migration Association of North America (HMANA) (see Dunne *et al.* 1986). Wind speed and ambient temperature were recorded using a Kestrel 2000 Pocket Weather Station (Nielsen Kellerman, Chester, PA). The data were sent to the HMANA and Hawk Mountain Sanctuary archives. A series of 41 photos of flocks of Swainson's Hawks were studied, and it was taken by Gabriel Battaglia at the lighthouse of Punta Rasa (1000 m north from Tanques Watchsite) at 16:30 h on 17 November 2007.

Raptor identification. To age Chimango Caracara (*Milvago chimango*) I used the following field marks. Adult: dark brown body and upperwing coverts, wing panel contrast with dark fingers, tail with black subterminal band. Juvenile: light brown body and upperwing coverts, wing panel no contrast with fingers, tail without black subterminal band. To identify the age of Southern Caracara (*Caracara plancus*) and Swainson's Hawk I followed

Clark & Wheeler (2001). I followed Ferguson-Lees & Christie (2001) to identify the color morphs of the Long-winged Harriers (*Circus bufoni*) and to age and sex of Cinereous Harriers (*C. cinereous*).

RESULTS

I counted 1092 migrating raptors of 14 species at the site, 12 of which were Austral migrants, one a Nearctic migrant, and one an Intratropical migrant (Table 1). Snail Kite was the most common species recorded, representing 53% (N = 584) of the total count, Chimango Caracara was the second most common, 23% (N = 250) of the count, while the remaining migrants, 24% of the count (N = 258), were Turkey Vulture (*Cathartes aura,* N = 34), Swallow-tailed Kite (*Elanoides forficatus,* N = 2), White-tailed Kite (*Elanus leucurus,* N = 1), Long-winged Harrier (N = 38), Cinereous Harrier (N = 23), Rufous-thighed Hawk (*Accipiter erytronemius,* N = 5), Harris's Hawk (*Parabuteo unicinctus,* N = 1), Roadside Hawk (*Buteo magnirostris,* N = 1), Swainson's Hawk (N = 35), White-tailed Hawk (*B. albicaudatus,* N = 1), Southern Caracara (N = 113), and American Kestrel (*Falco sparverius,* N = 1) (Table 1).

Raptors migrated in several directions. Most 57% (N = 619) passed on a west-east axis, 34% (N = 367) passed on a north-south axis, and 9% (N = 106) flew in other directions. On three days counts exceeded 50 raptors. On 29 September the count was 69 birds (southwest wind), on 5 November it was 415 birds (west wind), and on 6 November it was 186 birds (south wind). The passage rate was highest when wind was blowing from west and south (Fig. 1).

Turkey Vulture. (N = 34). Age was not identified except for a single immature. All vultures recorded appeared at the tip of Punta Rasa and then followed the coast to the northeast. The peak day was on 6 November with 16 vultures recorded. The largest flock recorded was 10 vultures. The migration time was between 2 and 6 November where 70% (N = 23) of individuals were counted. Most Turkey Vultures (82%, N = 28) passed between 09:00 and 12:00 h.

Snail Kite. (N = 584). The peak day was on 5 November with 69% (N = 403) kites recorded. The largest flock was 150 kites. Some kites were seen catching snails in the marshes. The peak migration was between 5 and 6 November when 90% (N = 524) of individuals were counted. Most Snail Kites (70%, N = 410) passed between 08:00 and 11:00 h (Fig. 2).

*Harrier*s. I counted 23 Cinereous Harriers, of which 14 were adult males, 3 adult females, 3 immature and 3 undetermined. Additionally, I saw three adult males (not included in the count) migrating in late November. I counted 38 Long-winged Harriers, out of which 15 were light morph, 7 were dark morph, and 17 undetermined. The peak day for harriers was on 2 October with 8 Cinereous Harrier recorded, while for Long-winged Harrier the peak occurred on 3 October with 10 birds. Most harriers were recorded in the first period (Sep 21–30/Oct 1–3) where 87% (N = 20) and 66% (N = 25) of Cinereous and Long-winged Harriers respectively were tallied. Cinereous Harrier showed a bi-modal distribution in time of passage with 39% (N = 9) flying by between 09:00 and 12:00 h and 35% (N = 8) between 15:00 and 17:00 h. Long-winged Harrier, on the other hand, concentrated in the morning with 62% (N = 23) passing between 08:00 and 11:00 h.

Swainson's Hawk. (N = 35). Age was not identified except for one immature. All hawks appeared at the tip of Punta Rasa and then followed the coast to the northeast. The peak

TABLE 1: Raptor counts by species during Austral spring 2008 at Tanques Watchsite in Punta Rasa, Argentina. [1]Austral migrants, [2]Intratropical migrant, and [3]Nearctic migrant. [a]First period (Sep 21–30/Oct 1–3); [b]second period (Oct 29–31/Nov 1–6); [c]third period (Nov 17–29).

Species	Sampling periods			Total	Peak migration	
	[a]First	[b]Second	[c]Third		Peak number	Date
Turkey Vulture (*Cathartes aura*)[1]	0	23	11	34	16	6 Nov
Snail Kite (*Rostrhamus sociabilis*)[1]	4	579	1	584	403	5 Nov
Swallow-tailed Kite (*Elanoides forficatus*)[2]	0	2	0	2	1	5 Nov
White-tailed Kite (*Elanus leucurus*)[1]	1	0	0	1	1	26 Sep
Long-winged Harrier (*Circus buffoni*)[1]	25	13	0	38	10	3 Oct
Cinereous Harrier (*C. cinereous*)[1]	20	3	0	23	8	2 Oct
Rufous-thighed Hawk (*Accipiter erytronemius*)[1]	1	4	0	5	2	6 Nov
Harris's Hawk (*Parabuteo unicinctus*)[1]	0	1	0	1	1	2 Nov
Roadside Hawk (*Buteo magnirostris*)[1]	1	0	0	1	1	1 Oct
Swainsons' Hawk (*B. swainsoni*)[3]	0	35	0	35	34	6 Nov
White-tailed Hawk (*B. albicaudatus*)[1]	1	0	0	1	1	26 Sep
Southern Caracara (*Caracara plancus*)[1]	93	17	3	113	37	29 Sep
Chimango Caracara (*Milvago chimango*)[1]	165	39	46	250	30	29 Sep
American Kestrel (*Falco sparverius*)[1]	1	0	0	1	1	25 Sep
Unidentified raptors	3	0	0	3		
Total of raptors	315	716	61	1092		

count was on 6 November with 34 hawks. The largest flock comprised 25 hawks.

Examining photographs of flocks of Swainson's Hawks I was able to age 900 hawks by field marks, showing that 890 were immature (first and second year) and 10 were adults. The highest numbers of hawks present in any one photograph were 1284; 864; 379; and 313 birds. That day, there were 5000 to 10,000 hawks moving westward through the Tanques Watchsite area, together with swarms of thousands of dragonflies (G. Battaglia pers. com.). Another episode was recorded at the same moment 5 km south from Tanques Watchsite, where a flock of approximately 5000 hawks was feeding on dragonflies in a 300 x 300 m area (L. Massolo pers. com.). Also, a surfer reported that there

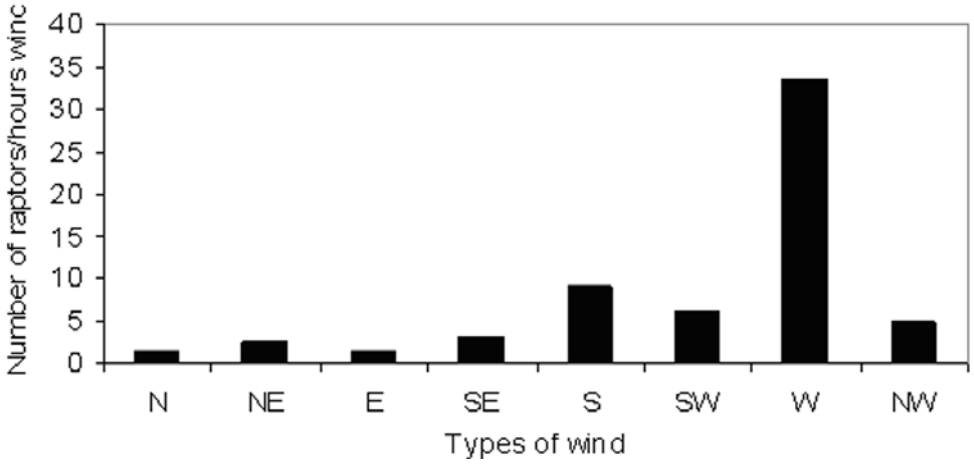

FIG. 1: Passage rates of all raptors counted in different types of winds in Austral spring 2008 at Tanques Watchsite, Argentina.

were more hawks in the *Vivero* of San Clemente (5 km south) at the same time. That afternoon the wind was blowing from the west.

Caracaras. I counted 250 Chimango Caracaras, of which 60% (N = 149) were adults, 14% (N = 36) immature, and 26% (N = 65) undetermined. Ninety three percent (N = 138) of adults counted passed in September and early October, and 100% (N = 36) of immature passed in late November. Roughly, one in every three Chimango Caracara recorded in November was adult. I counted 113 Southern Caracaras, out of which, 44% (N = 50) were adults, 38% (N = 43) immature and 18% (N = 20) undetermined. Eighty two percent (N = 41) of adults passed in September, and 49% (N = 21) of immature passed in early October. Both caracaras migrated alone using flapping flight. The peak count for both caracaras was on 29 September with 30 Chimango and 37 Southern Caracaras recorded. Most Chimango Caracaras (41%, N = 102) passed between 08:00 and 10:00 h, while most Southern Caracaras (74%, N=83) passed between 08:00 and 12:00 h (Fig. 2).

DISCUSSION

Although I did not count large numbers of hawks in this study I provided evidence about raptor migration during the Austral spring in the eastern Pampas of Buenos Aires province, including migration time, their age structure and morph proportion and abundance (Table 1). These results support previous suggestions that Punta Rasa is a good site to establish a long-term monitoring program for raptor migration in Argentina.

The Snail Kite made up 53% of the individuals counted. The data collected was consistent with previous studies where substantial flights of Snail Kite were recorded on migration in Punta Rasa (Weller 1966, Jaramillo *in* Zalles & Bildstein 2000). The peak migration of this species was in the first week of November where 90% of the individuals were counted. Within this time the kite could have its peak of migration in the area according to I. Roesler and M. Knapton (pers. com.) who recorded an estimated 10,000 kites on migration on 1 November 2007 at Punta Rasa. Snail Kite apparently is on migration in the area between late September and late November

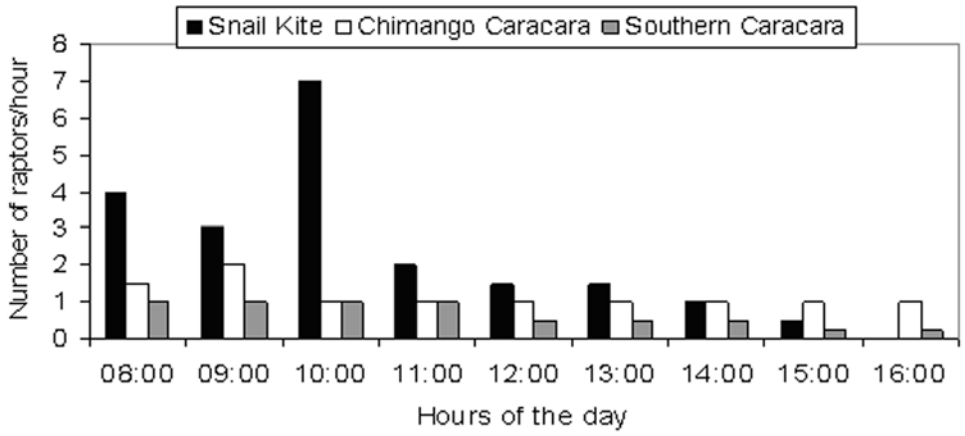

FIG. 2: Passage rates of Snail Kites (*Rostrhamus sociabilis*), Chimango Caracaras (*Milvago chimango*), and Southern Caracaras (*Caracara plancus*) in Austral spring 2008 at Tanques Watchsite, Argentina.

(Jaramillo *in* Zalles & Bildstein 2000, this study). Furthermore, Snail Kite has been recorded on migration in different latitudes during the Austral spring. In the Bolivian's lowland, the peak migration apparently could be in the second week of November (Olivo 2001, 2005, 2007), whereas in the Bajo Parana River, Paraguay (Hayes 1991), northern Argentina (Di Giacomo 2005), and in Rio Grande du Sul, and Pantanal area, Brazil (Albuquerque *et al.* 1986, Zuquim Antas 1994) it was in October. These different peaks of migration at different locations indicate that the species has several migration routes along its distribution.

The Chimango Caracara was suggested to be partially migratory in the southern part of its distribution (Ferguson-Lees & Christie 2001), whereas the Southern Caracara is not considered a migrant (Ferguson-Lees & Christie 2001). However, Southern Caracara has been recorded on migration in different watchsites of the Bolivian's lowlands (Olivo 2000, 2005), and also both Caracara have been counted in low number in northwestern Patagonia (Juhant & Seipke 2010). The migration of both is recorded for the first time in the Pampas region. I think that both species were on migration in this study because they were flying in the same flyway the other raptors used. Additionally, the proportion of age and abundance of both species changed during the sampling periods, and the flight throughout the day was nearly uniform (Fig. 2). Further research on these species is needed to confirm their migration through this region. The high number of adults counted in September and early October suggests that they arrived earlier than juveniles on the breeding ground, perhaps to compete for the best breeding territories (Kerlinger 1989, Bildstein 2006).

Both harriers are considered migrants in the southern part of their distribution (Ferguson-Lees & Christie 2001). But only Cinereous Harrier has been seen on migration at Punta Rasa (Jaramillo *in* Zalles & Bildstein 2000), and also it was not observed by Weller (1966) during the winter time in the area. However, both harriers have been recorded on migration in low number in different watchsites of the Bolivian's lowlands (Olivo 2000, 2005).

The different proportion of Cinereous Harrier adult males counted in relation to adult females and juveniles in this study may

suggest a differential migration route by sex and age along the Buenos Aires' coast. More research, especially season-long counts will be needed to clarify this possibility.

Swainson's Hawks have been recorded in big numbers at the site (Jaramillo 1993, G. Battaglia pers. com.), but only a few hawks were counted in this study. Jaramillo (1993) suggested there is segregation by age in Swainson's Hawks on wintering grounds. The identification of 890 immature out of 900 hawks from the photos I studied further supports this idea. Apparently, adult hawks are more common in the western Pampas (Woodbridge 1995, Fuller *et al.* 1998), while immature dominate in the eastern Pampas (Jaramillo 1993, this study).

The highest count at Tanques Watchsite occurred when winds were from west and south (Fig. 1). These winds may concentrate raptors to the Buenos Aires' coast. Other observations of raptor migration in Punta Rasa also support this idea. In two Austral spring seasons in the early 1990's, Jaramillo (1993, pers. com.) reported five events of thousands of Swainson's Hawks with winds blowing from the south or southwest. On 17 November 2007, G. Battaglia documented a large movement of Swainson's Hawks with wind blowing from the west. Moreover, I. Roesler and M. Knapton (pers. com.) recorded thousands of Snail Kites on migration on 1 November 2007 with wind blowing from the west.

Turkey Vulture and Rufous-thighed Hawk are not considered migrants in the southern part of their distribution (Ferguson-Lees & Christie 2001), but they have been reported on migration in Punta Rasa (Jaramillo *in* Zalles & Bildstein 2000), and also in different watchsites of the Bolivian's lowlands (Olivo 2001, 2005).

The Swallow-tailed Kite was the only vagrant recorded, even though it could be regular in the area where E. Bremer (pers. com.) observed it several times. In addition, Plumbeous Kites (*Ictinia plumbea*) were seen on 24 November 1991 (Jaramillo 2000), and a single Mississippi Kite (*I. mississippiensis*) was photographed on 18 November 2008 at Punta Rasa (G. Armistead pers. com.).

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