Autumn 2004 Raptor Migration at Talamanca, Costa Rica

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Abstract: A full-season count at the Talamanca watchsite in Caribbean slope Costa Rica, between 1 September and 30 November 2004, tallied a total of more than 2,864,000 migrants, including 1,025,289 Turkey Vultures, 262,129 Mississippi Kites, 1,117,733 Broad-winged Hawks, and 449,771 Swainson's Hawks. New raptor migrants to the site included Hook-billed Kites (65) and Snail Kites (2). The peak day of passage was 19 October when 254,502 migrants, including a new one-day record of 5 Red-tailed Hawks, were seen. The watchsite, which appears to be along the main branch of the Mesoamerican Land Corridor in the region, has been conducting full-season autumn and spring counts since autumn 2000, and is well on its way to becoming a locally-supported, self-sustaining, destination for ecotourists.

Introduction

Each autumn an estimated 5 to 10 million raptors migrate from breeding areas in North America to wintering areas in Central and South America. Although it has long been recognized that Central America is an important land-bridge for North American breeders migrating to and from South America (Heintzelman, 1975, 1986; Bildstein and Zalles, 2001), full-season, long-term counting in the region date only from the early 1990s (Sutton and Sutton, 1999). Most of the birds do so along the Mesoamerican Land Corridor, a series of inter-branching migration routes that are used by at least 32 species of raptor migrants, and that stretches for 4,000 kilometers from southern Texas to northwestern Colombia (Bildstein and Zalles, 2001). Recent counts in coastal Veracruz, Mexico, indicate flights of more than 1,000,000 Turkey Vultures (*Cathartes aura*) and Broad-winged Hawks (*Buteo platypterus*), as well as movements of close to 1,000,000 Swainson's Hawks (*Buteo swainsoni*) and 500,000 Mississippi Kites (*Ictinia mississippiensis*) (Bildstein and Zalles, 2001). The flight is less-well studied south of Mexico. Partial-season counts in central Panama in the 1970s and 1980s (Smith, 1985a, 1985b) suggest autumn flights in excess of 1,000,000 birds there, and a nine-watchsite transect count in the former Canal Zone in autumn 2004 reported movements of more than 3,000,000 birds (G. Angehr, personal communication). Here we report the results of a 2004 full-season count in Caribbean-slope Costa Rica, conducted at a watchsite that has been operating since autumn 2000 (Porras-Peñaranda, et al, 2004).

Study Area and Methods

Counts were made between 1 September and 30 November 2004 at Talamanca Hawkwatch in the Kéköldi Indigenous Reserve in southeast Costa Rica, approximately 2 kilometers inland from the Caribbean Sea, near the town of Puerto Viejo, Costa Rica. Birds were sighted from a 10-meter tower atop a 200 meter hill, with a view of migrants approaching from the northwest, either along or parallel to the Caribbean coast.

On average, observations lasted 9.4 hours per day, with most beginning at approximately 07:00 and concluding at 16:00 hours, for a total of 856.8 hours on 91 days of observation. On some days during the peak of migration (late September through early November), most observations began at sunrise and continued until dusk. At least two observers conducted the count each day with additional help from one to four volunteers.

Count protocols followed those of the Hawk Migration Association of North America (HMANA, 1982), and included recording weather data (temperature, wind speed and direction, cloud cover, visibility, precipitation) and flight characteristics (height of flight, direction of flight) hourly.

Counters used hand-held mechanical clickers to tally large flocks of birds. Identification was based on Stiles and Skutch (1989) and Wheeler and Clark (1995). See Porras-Peñaranda, et al (2004) for additional details regarding the watchsite and the count effort.

Results and Discussion

Fifteen species of migrants were seen in autumn 2004 (Table 1). Also recorded as migrants were 65 Hook-billed Kites (*Chondrohierax uncinatus*) and 2 Snail Kites (*Rostrhamus sociabilis*), all of the latter two species being seen after 26 October. The most abundant migrants at the site were Broad-winged Hawks (seasonal total 1,117,733), Turkey Vulture (1,023,289), Swainson's Hawks (449,771), and Mississippi Kites (262,129). Other numerically important migrants included Peregrine Falcons (*Falco peregrinus*) (3,219), Ospreys (*Pandion haliaetus*) (2,214), and Swallow-tailed Kites (*Elanoides forficatus*) (1,175). Counts of several non-raptors are presented in Table 2.

Table 1

Monthly and season migration totals for each species; peak flight total and peak flight dates for each species of raptor seen at the Talamanca, Costa Rica watchsite, autumn 2004.

		September	October	November	Season Total	*Peak Flight*	Peak Flight Dates
Turkey Vulture	*Cathartes aura*	236	541257	483796	1025289	173433	12 Nov
Osprey	*Pandion haliaetus*	792	1290	132	2214	104	3 Oct
Swallow-tailed Kite	*Elanoides forficatus*	1159	15	1	1175	230	5 Sep
Mississippi Kite	*Ictinia mississipiensis*	257333	4723	73	262129	55312	11 Sep
Plumbeous Kite	*Ictinia plumbea*	235	4	0	239	60	5 Sep
Northern Harrier	*Circus cyaneus*	3	1	0	4	2	11 Sep
Sharp-shinned Hawk	*Accipiter striatus*	2	7	8	17	3	1 Nov
Cooper's Hawk	*Accipiter cooperi*	0	3	2	5	1	8, 20, 23 Oct ; 3, 29 Nov
Zone-tailed Hawk	*Buteo albonutatus*	4	34	6	44	6	2 Oct
Broad-winged Hawk	*Buteo platypterus*	104896	1008585	4252	1117733	186544	5 Oct
Swainson's Hawk	*Buteo swainsoni*	1	412565	37205	449771	131582	19 Oct
Red-tailed Hawk	*Buteo jamaicensis*	0	2	12	14	5	19 Nov
American Kestrel	*Falco sparverius*	0	1	5	6	2	10 Nov
Merlin	*Falco columbarius*	7	179	21	207	51	18 Oct
Peregrine Falcon	*Falco peregrinus*	204	2951	64	3219	352	12 Oct
Unidentified raptors		967	370	1312	2649		
Other raptors		0	1	67	68		
TOTAL		365839	1971988	526956	2864783	254502	19 Oct

Table 2

Non-raptor species seen at the Talamanca, Costa Rica watchsite, autumn 2004.

		September	October	November	Season Total
Woodstork	*Mycteria americana*	10	189	1574	1773
Great Blue Heron	*Ardea herodias*	2	36	42	80
Great Egret	*Ardea alba*	0	159	17	176
Snowy Egret	*Egretta thula*	0	69	38	107

The peak flight occurred on 19 October, when 254,502 raptors were tallied. The count that day included 131,582 Swainson's Hawks, 92,472 Turkey Vultures, and 30,089 Broad-winged Hawks. Five Red-tailed Hawks (*Buteo jamaicensis*), a rare migrant in the region, were also included in that day's totals.

Peak flights of Broad-winged Hawks and Swainson's Hawks occurred in October, whereas the Turkey Vulture flight peaked in November (Table 3). More than 100,000 Broad-winged Hawks were counted on each of three consecutive days (3, 4, and 5 October). The majority of the season's flight (80 percent) passed between late September and mid-November, during a span of 42 days. Swallow-tailed, Mississippi, and Plumbeous (*Ictinia plumbea*) Kites passed in largest numbers in early to mid-September. Many Ospreys were also seen in September (Table 3).

Table 3
The 80 percent passage rates and dates for each species
of raptor seen at the Talamanca, Costa Rica watchsite, autumn 2004.

Species	80 % passage dates (total of days for 80% passage)	80% median passage date
Turkey Vulture	18 Oct - 13 Nov (25)	31-Oct
Osprey	13 Sep - 23 Oct (41)	3-Oct
Swallow-tailed Kite	1 Sep - 15 Sep (15)	8-Sep
Mississippi Kite	5 Sep - 20 Sep (16)	12-Sep
Plumbeous Kite	1 Sep - 13 Sep (13)	7-Sep
Northern Harrier	10 Sep - 18 Oct(39)	29-Sep
Sharp-shinned Hawk	29 Sep - 12 Nov (45)	21-Oct
Cooper's Hawk	7 Oct - 29 Nov (54)	2-Nov
Zone-tailed Hawk	1 Oct - 13 Nov (44)	22-Oct
Broad-winged Hawk	30 Sep - 15 Oct (16)	7-Oct
Swainson's Hawk	18 Oct - 30 Oct (13)	24-Oct
Red-tailed Hawk	30 Oct - 19 Nov (21)	9-Nov
American Kestrel	9 Oct - 25 Nov (48)	1-Nov
Merlin	9 Oct - 4 Nov (27)	22-Oct
Peregrine Falcon	2 Oct - 21 Oct (20)	11-Oct
Total raptors	22 Sep - 12 Nov (42)	17-Oct

Daily and Seasonal Flight Patterns and Weather

The average temperature at the watchsite was 78 F. degrees, varying between 73 degrees early in the day to 80 degrees around noon, and 78 degrees after 15:00 hours. On most days, numbers of migrants increased throughout the morning until about 11:00 hours when the numbers tended to stabilize before decreasing at about 14:00 hours. Winds were gusty on most days, with predominant speeds of 1 to 5 kilometers per hour from the northeast.

Conclusions

Five years of autumn raptor counts at the Talamanca watchsite lead us to conclude that the site is situated along the main migration corridor in Costa Rica, and that in autumn most outbound migrants enter Panama along the Caribbean rather than the Pacific slope. Increased use of local counters and interpreters at the site suggest that this watchsite may be able to sustain itself as a locally-supported, ecotourism destination. If this were to happen, monitoring at this important Central American watchsite could continue for the long-term.

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