ROADSIDE VULTURE COUNTS IN A CENTRAL PANAMA PROVINCE, PANAMÁ

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THE TECHNIQUE OF counting vultures along extensive automobile routes has been little used in Latin America (Ellis *et al.* 1983). Ellis *et al.* (1983) presented baseline data on the abundance of New World vultures, using this method in 1978–1979. However, no vulture survey has been published using roadside counts in Panamá. Here I report on vulture populations in Panamá as determined using roadside surveys.

My main objective in conducting roadside counts of vultures was to determine the relative abundance of vulture populations from a specific area of Veraguas province, central Panamá. I performed 15 roadside counts for vultures along 14 km of the Interamerican Road, between kms 249 and 263 west of Santiago City, during the early dry season of 1994–1995 and 1995–1996. Lesser Yellow-headed Vultures (*Cathartes burrovianus*), Greater Yellow-headed Vultures (*C. melambrotus*), and Turkey Vultures (*Cathartes aura*) have been reported in the zone (Ridgley and Gwynne 1993). I was not always able to positively identify observed birds to species, although Ellis *et al.* (1983) reported that they were surprisingly easy to separate in the field, at least in flight. Low hills, with clearings for agriculture and cattle, are typical in the region. All surveys were done in good weather conditions, mostly on clear days. The wind varied from strong to medium strong. In conducting the roadside counts, I rode on a bicycle or in a car, counting only those vultures seen while moving along the route. I stopped only on two occasions: I examined activity at a dead cow in a gutter of the road on 15 January 1995, when it was necessary to conduct a special count because of the large number of birds. Counts were made during peak flying activity periods, from 09:02–11:32 and 12:32–16:53 hr. A summary of the counts, chronology, and some transect data are presented in Table 1.

King Vultures (*Sarcoramphus papa*) were not seen in my surveys, nor were the two species of yellow-headed vultures. All *Cathartes* vultures were identified as Turkey Vultures when they were counted at low heights (less than 20 m). However, I present these as *Cathartes* spp. in my results. Black Vultures (*Coragyps atratus*) were the most common and conspicuous vulture species along my study route (2.48 birds/km). I estimated the mean ratio of *Coragyps* to *Cathartes* as 3.90:1 birds.

Wotzkow and Wiley (1988) obtained a numerical result for Turkey Vultures in Cuba of 3.5 birds/km. This value is similar to my total vulture counts (3.10 vultures/km), although my study area contained several species of vultures. Although the number of birds of *Cathartes* spp. was less than the Black Vulture in my study area, I estimated a mean figure of 9.4 birds per kilometer. My Turkey Vulture counts were substantially higher than those Hubbard (1983) obtained for that species (3.0 birds/100 km) in New Mexico

I observed high numbers of vultures feeding at a carcass by the side of the survey road. About 80 Black Vultures were counted at the carcass, whereas only one Turkey Vulture was waiting its chance to feed during the morning of 15 January 1995. When I returned along the route, the proportion was not much higher in the afternoon; i.e., 30 Black Vultures:1 Turkey Vulture.

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TABLE 1. Summary of vulture count data in the early dry season in Veraguas province, central Panamá, 1994–1995 and 1995–1996.

	Start		Finish		Number of vultures sighted		
Survey date	Time	Point	Time	Point	*Coragyps*	*Cathartes*	Birds/km
12/25/1994	09:18	249	10:11	263	52	11	4.50
12/31/1994	09:08	249	09:57	263	15	4	1.35
12/31/1994	16:05	263	16:53	249	16	4	1.42
01/02/1995	10:52	249	11:32	263	24	5	2.07
01/08/1995	09:21	249	10:00	263	40	10	3.57
01/08/1995	10:21	263	11:07	249	7	4	0.79
01/15/1995	09:02	249	09:46	263	96	19	8.21
01/15/1995	15:00	263	15:47	249	30	8	3.07
12/25/1995	09:40	249	10:26	263	20	3	1.64
01/28/1995	09:38	249	10:21	263	37	11	3.43
12/31/1995	09:42	249	10:02	263	40	13	3.79
01/07/1996	12:32	249	12:43	263	53	16	4.93
01/09/1996	09:33	249	09:52	263	59	13	5.14
01/20/1996	13:54	249	14:13	263	12	3	1.07
01/27/1996	12:47	249	13:06	263	19	8	1.93
Mean					34.7	8.8	3.10
Standard deviation					23.4	5.0	2.00

ORNITOFAUNA DE LA PORCIÓN ESPIRITAUNA DEL ECOSISTEMA SABANA–CAMAGÜEY, CUBA

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EL ECOSISTEMA SABANA-CAMAGUEY (ESC) es una región que alcanza un total de 75,000 Km^2 terrestres y marinos, localizados en la porción norte y central de Cuba, abarcando desde la Peninsula de Hicacos hasta la Banía de Nuevitas y de los cuales 1,446.8 pertenecen a la provincia de Sancti Spíritus.

A partir del gran desarrollo que han alcanzado los estudios onitológicos en Cuba, la avifauna de la porción espirituana del ESC ha sido relativamente poco prospectada hasta hoy día. En el presente trabajo se ofrece información sobre la composición, estatus y dstribución de la ornitofauna observada en el territorio del Ecosistema Sabana-Camaguey correspondiente a la provincia, como resultado de la revisión bibliográfica realizada y el trabajo de campo efectuado durante 9 años de investigación en dicha región. En el área de estudio se detectaron 163 especies pertenecientes a 19 órdenes, 47 familias y 107 géneros. Del total de especies 101 crian en Cuba. Los órdenes mejor representados fueron: *Passeriformes, Charadrilformes, Anseriformes, Ciconliformes, Columbiformes y Falconiformes*. La mayoria de las especies (49) son residentes permanentes comunes, 40 son residentes invernales comunes y 25 residentes permanentes bimodales. Se detectaron 19 especies amenazadas de extinción (2 de ellas en peligro y 17 vulnerables). La región fisiográfica más rica en especies fue la de humedales costeros y dentro de eila la formación vegetal de manglar, con 103. La porción espirituana del ESC es de gran importancia para la conservación de la biodiversidad de aves en el centronorte de Cuba.