# In search of *los azacuanes*: where to watch raptor migration in Middle America

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Visible raptor migration in the Neotropics is a spectacle that no birder should miss. In our first instalment on this topic, Joe Taylor introduces us to the what, why, where and when of this phenomenon in Middle America.





All photos were taken at or near Ancon Hill, Panama City, during autumn migration.

Turkey Vultures *Cathartes aura* entering the cloud base as they gain height on thermals. Over 2 million Turkey Vultures are thought to use the Mesoamerican Land Corridor (Daniel Hinckley).



Top: Breathtaking numbers of migrants can be seen at many watchsites in Middle America (Juan Pablo Ríos). Mississippi Kites *Ictinia mississippiensis*, Black Vultures Coragyps atratus and Broad-winged Hawks Buteo platypterus gliding forwards after gaining height (Daniel Hinckley).

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#### >> FEATURE RAPTOR MIGRATION IN MIDDLE AMERICA

n parts of Middle America migrant soaring birds are referred to as los azacuanesmeaning 'drought-bringers'—as their arrival heralds the changing of the seasons<sup>5,14</sup>. The spectacular sight of los azacuanes, their numbers dominated by thousands of Turkey Vultures Cathartes aura, Swainson's Hawks Buteo swainsoni and Broad-winged Hawks B. platypterus, as they make their way through Middle America, can be one of the most memorable experiences of a trip to this region, and seeking it out can help add some otherwise difficult Nearctic migrants to a trip list. A number of intratropical migrant raptors are also known to use the flyway, and observations at raptor watchsites can produce sightings of other soaring migrants using the same routes. Despite much work by dedicated researchers, a systematic monitoring network is still lacking, and there are only three full-season watchsites in the region<sup>2</sup>. In the absence of a more universal monitoring effort, visiting birdwatchers have the opportunity to make important contributions to our understanding of pan-American raptor migration. Here I present a number of both well-known and lesser-known sites where raptor migration can be observed at its best; I conclude with some thoughts on how observations of raptor migration can contribute to conservation efforts.

# The Mesoamerican Flyway

In terms of numbers, the 4000-km Mesoamerican Land Corridor, stretching from the south-western United States to the Chocó region of Colombia, is the most important raptor migration flyway in the world<sup>3,5</sup>, and is by far the most heavily used migration pathway in the Neotropics<sup>1</sup>. In autumn, more than 5 million birds of prey, representing 33 species, are thought to use the flyway<sup>1,5,6</sup>. Their numbers are dominated by over 2 million Turkey Vultures from breeding populations in North America, and by at least 1.5 million Broad-winged Hawks and 800,000 Swainson's Hawks<sup>1,2,15</sup>. The numbers of raptors recorded making the return journey in spring are far lower, partly due to mortality during the winter (K. L. Bildstein pers. comm.), as well as greater difficulty in surveying migration due to the effects of weather conditions on raptor flight and visibility<sup>15</sup>. Passage through the region spans from August to November in autumn, and February to May in spring<sup>5</sup>.

It has recently been discovered, through satellite-tracking, that some Turkey Vultures that breed on or near the Pacific coast of Canada and the USA pass into north-western Mexico, migrating along the Pacific coast until at least

the Isthmus of Tehuantepec (http://www.frg. org/hms/hms\_tv.htm). However, the majority of migrating raptors that enter the Mesoamerican Flyway in autumn amass over the Veracruz coastal plain, where mountains concentrate between 4 and 7 million raptors each autumn into a narrow front, including effective global populations of Mississippi Kites Ictinia mississippiensis, Broadwinged Hawks and Swainson's Hawks<sup>5,16,20</sup>. The flight line then splits west of the Isthmus of Tehuantepec; however, the migration routes taken through El Salvador, Honduras and Nicaragua are not as well understood as in other parts of the flyway<sup>1,2</sup>. Of these two flight lines, one is dominated by Turkey Vultures and Swainson's Hawks, and heads on to the Pacific slopes of Chiapas, Guatemala and El Salvador; the other, dominated by Broad-winged Hawks, heads along the Caribbean Slope through eastern Guatemala (Petén, Izabal), into north-western and central Honduras<sup>2,5,20</sup>. Reports suggest that the two flyways meet either in southern Honduras in the vicinity of the Gulf of Fonseca<sup>1,5</sup> or in north-western Nicaragua<sup>2</sup>. Most birds then proceed south along the Pacific slope of Nicaragua, the majority probably crossing the continental divide through the Gap of Nicaragua, around Lake Managua and Lake Nicaragua<sup>20</sup>. Some birds may switch slopes south of Lake Nicaragua<sup>20</sup>, and leave or join the Caribbean coastal plains of Costa Rica through the Sarapiquí lowlands (pers. obs.). Most birds enter Panama along the Caribbean lowlands and foothills and then switch to the Pacific slope east of Volcán Barú, before entering north-western Colombia via the Darién<sup>1</sup>.

The route taken through Middle America on the return journey differs somewhat from the autumn migration, in that most migrants favour the Caribbean slope of central Panama and Pacific slope of Costa Rica, probably owing to different weather patterns<sup>2</sup>.

### Weather conditions

In the tropics, raptors encounter better soaring conditions than in temperate regions, allowing them to reduce their use of powered flight<sup>17</sup>. As well as the small 'type-1 thermals'<sup>11</sup> they often use, migrating raptors travel along thermally stable cloud streets, which are formed by 'type-1 thermals' that are aligned with the wind in parallel rows<sup>11,18,19</sup> and can be identified by the presence of long, flat, dark clouds with concave bases<sup>18,19</sup>. In addition, they sometimes take part in slope- and wave-soaring<sup>11,18,19</sup>, and may also take advantage of wind shear<sup>11</sup>.



Map showing the suspected pattern of raptor migration through Middle America and the seven main sites covered in the text.

1-Veracruz coastal plain, 2-Chiquimulilla, 3-Suchitoto, 4-Choluteca. 5-Rivas area. 6-Kèköldi and 7-Southern Panama Canal Zone (Produced by JT courtesy of BirdLife

As in temperate zones, migratory raptors roosting in Middle America have been observed apparently postponing migration on mornings of inclement weather<sup>15,17</sup>. However, they generally seem more inclined to travel during poor flying conditions, such as storms and light rain<sup>2,3,17,19</sup>, compared to when they are passing through the USA. In general, birders should not limit their observations to periods of good weather. Indeed, during changeable weather conditions or the midday heat, when birding for many species is problematic or simply not worthwhile, a good option can be to sit back under shelter and watch the sky for migrants.

# **Time of day**

In temperate regions, thermals are well developed by mid-morning<sup>11</sup>; however, at tropical latitudes the early development of thermals allows raptors to begin migration within an hour of sunrise<sup>2</sup>. In fact, on the Caribbean coast of Costa Rica, Turkey Vultures have been observed thermal soaring over the sea, allowing them to commence migration early in the morning, and sometimes before dawn<sup>2</sup>. Overall, the best time of day to observe raptor migration in Middle America appears to be around 09h00, when large numbers of birds are still flying low after departing from their roost sites (pers. obs.). This, however, is particularly true at coastal areas, as migrating raptors gradually move

inland as the day progresses (E. Ruelas Inzunza pers. comm.). From then on the number of visible migrating raptors falls off as convective activity increases and birds gain height<sup>17</sup>.

### What to record

Important information to record with observations include the predominant flight direction. estimated altitude and horizontal distance of migrants, number of observers and total period of observation<sup>4</sup>. Aspects of weather should be measured or estimated hourly. In addition, observers should note that records of birds identified to genus are valuable<sup>4</sup>.

Recently it has become apparent that some raptor species once considered resident in Middle America may in fact be partial migrants<sup>7,9,12</sup>, so birders observing migration should keep an open mind and note apparent migratory behaviour in any species. Observations of feeding behaviour are also of value to researchers. Assertions have been made that the three principal species using the flyway do not feed during migration through Middle America<sup>18</sup>. Recently it was noted that, on the Veracruz coastal plain, foraging behaviour was only rarely witnessed in Swainson's Hawks, and not at all in Turkey Vultures and Broad-winged Hawks<sup>15</sup>. In contrast, Mississippi Kites, accipiters and falcons are commonly observed foraging during migration<sup>15</sup>.



#### Clockwise from top left:

It is thought that at least 800,000 migrating Swainson's Hawks *Buteo swainsoni*, like this adult, use the Mesoamerican Land Corridor every autumn (Daniel Hinckley).

Swainson's Hawks *Buteo swainsoni* are one of the species that dominate flocks passing along the Pacific slopes of Chiapas, Guatemala and El Salvador (Daniel Hinckley).

Close to the entire world population of Mississippi Kites *Ictinia mississippiensis* may pass over the Veracruz coastal plain each autumn (Daniel Hinckley).

Top: Turkey Vultures *Cathartes aura* generally dominate numbers, but flocks containing several species are commonly encountered (Daniel Hinckley).

Bottom: The Turkey Vultures *Cathartes aura* that pass through Middle America, principally from breeding grounds in North America, may not feed during migration through the region (Daniel Hinckley).

# **Migration watch sites**

In this section I provide details of a number of both well-established and lesser-known areas where substantial raptor migration is known to occur. Birders are encouraged to find new sites and submit their observations to online databases such as eBird (www.ebird.org) and HawkCount (www.hawkcount.org), bearing in mind that some amount of raptor migration can potentially be observed almost anywhere in the Middle American isthmus.

# Veracruz coastal plain, Mexico

Following mounting evidence of extraordinary numbers of migrants in this region, the Veracruz River of Raptors or Río de Rapaces project was launched in 1992 as a long-term initiative to monitor and conserve the migration corridor<sup>16</sup>. Two main watchsites are used, one in the village of Chichicaxtle and one in the town of Cardel, which is situated 6.5 km from the  $coast^{2,16}$ . The Sierra Madre mountains, situated just north of Cardel, funnel a large proportion of the migrating birds over the town<sup>2</sup>. The vantage point used by the project is the roof of the Hotel Bienvenido, which, at six stories, is the tallest building in town<sup>16</sup>. Surveys in Chichicaxtle take place from the Dr. Mario A. Ramos Bird Observatory, a twostorey building for hawkwatchers (J. van Dort pers. comm.).

The numbers of migrating raptors seen in this area are staggering; on average, about 5.2 million birds pass through in autumn, with around 625,000 recorded in spring<sup>2</sup>. Autumn passage takes place from August to November, with spring passage occurring from March to May<sup>20</sup>. Those wishing to visit or volunteer at one of the watchsites are advised to contact Pronatura Veracruz in advance (www.pronaturaveracruz.org). Since 2006, spring migration data have been collected at another watchsite in the town of Chavarrillo, near Xalapa (J. van Dort pers. comm.). This project is part of the Cafaselva ecotourism initiative (www.cafaselva. com), and accepted volunteers from overseas in 2010. Raptor migration can also be observed from Macuiltepetl Park in Xalapa. Other vantage points between Cardel and Xalapa are likely to produce good sightings.

In the state of Chiapas, the city of Tonalá, 90 km south-west of Tuxtla Gutiérrez, is another established watchsite which is known to be productive in spring, and is suspected to be good in autumn as well<sup>20</sup>.

### Chiquimulilla and Taxisco, Guatemala

These towns are located c.70 km by road southsouth-east of Guatemala City, on the southern edge of the Sierra Madre de Chiapas. The established watchsite of Chiquimulilla produced two one-day counts of over 40,000 Broad-winged Hawks in October 1998<sup>20</sup>. Counts undertaken at Chiquimulilla and Taxisco over 11 days in late October and early November 2005 tallied more than 239,000 raptors<sup>7</sup>, and observations suggest that spring migration over this area may also be substantial<sup>14</sup>. Peak months are September to November in autumn and March and April in spring<sup>14,20</sup>. Other towns on the Pacific slope could also produce good sightings; promising observations have been made at Palin and Escuintla (both in Escuintla department)<sup>14</sup>. The nearby towns of La Democracia and Montericco both have decent accommodation options. On the Caribbean slope flyway, Río Dulce and the area between the eastern end of Lake Izabal and Puerto Barrios, including El Bongo and Cerro San Gil, are good locations for observing migration<sup>5,14,20</sup>.

# Suchitoto, El Salvador

At the right time of year raptor migration can be observed almost anywhere in El Salvador, as this small country straddles the migration flyway adjacent to where birds pass over the Gulf of Fonseca en route to and from Nicaragua. A pleasant place to visit in search of migrant raptors is Suchitoto, 47 km by road north-east of San Salvador. This charming colonial town is understandably popular with Salvadoran tourists. It overlooks a dramatic reservoir, Lago Suchitlán (Embalse Cerrón Grande), and the brooding hills that border it. The numbers of raptors passing through are modest compared to some other watchsites, but still impressive; migration monitoring from 1 September to 15 November 2005 produced c.327,000 raptors9. Migrants can be observed from the town, with some passing directly overhead. Hotel La Villa Balanza is welcoming and good value; ask for a room in the house down the hill, where you can watch migration from the balcony. Migration has also been surveyed from the roof of Hotel Posada Alta Vista (R. Pérez in litt.). Peak months are September and October in autumn, and probably March and April in spring. The reservoir itself is of great ornithological interest and the area also seems to experience passage by some passerine species, such as orioles Icterus spp. (pers. obs.).

### **Choluteca**, Honduras

The exact pattern and magnitude of raptor migration around the Gulf of Fonseca is relatively unknown, but huge numbers of birds are assumed to pass through this area, thus visiting birders have the chance to make important observations. Monroe<sup>13</sup> reported raptor passage from the San Lorenzo-Choluteca area, and watched the peak flight of Broad-winged Hawks funnelling into the Choluteca Valley, east of the town. There are also records from the nearby settlements of El Corpus and San Francisco. At the latter, Swainson's and Broad-winged Hawks were observed apparently crossing the continental divide and heading on to the Caribbean slope of Nicaragua. The peak period in autumn is thought to be late September to mid-October<sup>13</sup>, with the peak in spring migration probably in March and April. A number of sound accommodation options are available in Choluteca; in addition, some amenities are available in San Lorenzo.

Birders visiting the Caribbean slope of Honduras should note that thousands of Swainson's Hawks are known to pass through in autumn, with one such flight being witnessed in early October between Amapa and Potrerillos, and that flocks of Mississippi Kites have been seen during April, in the vicinity of Lake Yojoa<sup>13</sup>. Notably, during the first week of April 2006, a passage of Cooper's Hawks *Accipiter cooperii*, Swainson's Hawks and Broad-winged Hawks was observed over Capiro Calentura National Park near Trujillo, Colón<sup>10</sup>.

#### Rivas area, Nicaragua

The main concentration of passage through Nicaragua appears to be along the Pacific slope, with large numbers possible the length of the country. Good numbers of birds can be seen passing through Rivas department in the southwest, where hydrophobic migrants become concentrated, as the distance between the Pacific Ocean and Lake Nicaragua limits their migration routes.

McCrary & Young<sup>12</sup> reported observations of raptor migration from late August to mid-November 2006, at two sites in the Rivas area, and at Banderas, east of Lake Managua. Peak passage occurred in October and November, and notably their observations include over 250 Cooper's Hawks and 240 Zone-tailed Hawks *B. albonotatus*, as well as the first documented records of Yellow-headed Caracara *Milvago chimachima* in Nicaragua. Large raptor flocks have also been noted in April passing over the coastal lowlands at Salinas de Nagualapa (pers. obs.), a site that is also good for passage waders. A number of accommodation options are available nearby at Playa Popoyo. Accommodation is also available in Rivas itself, particularly along the Panamerican Highway as it passes through town.

In addition to the Pacific slope, some raptors evidently use the Caribbean slope along at least part of the country's length and pass over the northern highlands, with small numbers noted in spring over Cerro Tisey near Estelí (pers. obs.).

### Kèköldi Indigenous Reserve, Costa Rica

It is now well known that large numbers of migrating raptors pass along the southern Caribbean slope of Costa Rica, in the vicinity of Puerto Viejo de Talamanca. Kéköldi Indigenous Reserve reports up to 3 million migrant raptors each autumn<sup>8</sup>, and on average about 800,000 each spring<sup>2</sup>. This watchsite was discovered by Charles Duncan and Pablo Porras in 1999, and their observations have inspired regular counts at the site since 2000. Counts are conducted from a 10-metre-high canopy tower less than 3 km from the beach, which allows close views of some of the raptors. Flights of raptors begin before 08h00 and most birds pass before 12h00. Autumn migration peaks during the last third of October, with spring migration peaking during March<sup>2</sup>. It is possible to enjoy the spectacle of migration here either as a volunteer or visitor (www.kekoldicr.com). Those wishing to visit are advised to contact the reserve in advance. Visiting birders can find low-cost accommodation in Puerto Viejo or Cahuita.

Smaller numbers of migrating raptors can be observed from many other sites in Costa Rica, including a number of inland sites such as Cerro de La Muerte<sup>3</sup>.

#### Southern Canal Zone, Panama

Raptor migration has been well studied in the Panama City area<sup>17-19</sup>, but consistent monitoring effort has been slow to develop<sup>20</sup>. However, in autumn 2004 extensive surveys of raptor migration along the canal were initiated. (www. hawkmountain.org). Over 40 international participants took part in the first Great Oceanto-Ocean Raptor Migration Count (*Rapaces de océano a océano*), surveying from nine watchpoints and tallying over 3 million raptors during six weeks.



At least 1.5 million Broad-winged Hawks *Buteo platypterus* pass through the Mesoamerican Land Corridor every autumn (Karl W. Kaufman).

The area around Panama City is best in autumn, particularly in October and November, with birds passing over or within 5 km of the city<sup>17</sup>. In spring, when passage is likely from February to April, birds pass north of the low continental divide; however, with the exception of *Ictinia* kites, they usually pass within 16 km of this point<sup>18,19</sup>. Within easy reach of many hotels and hostels is the tried and tested watchpoint of Ancon Hill (*Cerro Ancón*) in Panama City. Eleven kilometres north of the city, via the Transisthmian Highway, is Bahai Temple (at *Cerro Baha'i*). These two sites were used by Smith<sup>18</sup> and have been since the 2004 survey. Other sites used since 2004 include Canopy Tower Hotel and Gamboa Rainforest Resort.

# **Conservation implications**

As pressure on habitats continues in Middle America, migrant raptors may suffer the loss of roosting habitat. This is particularly important for species that form super-flocks, which typically use large expanses of relatively undisturbed forest for communal roosts of thousands of birds<sup>6</sup>. Thus, information on the location and size of roosts is valuable. As the rapidly developing nations of Middle America look to increase their use of renewable energy, data on raptor migration routes could also prove important for assessing the potential harm caused by wind turbine sites, as well as new power lines. Importantly, migration bottlenecks provide an opportunity to carry out conservation advocacy by introducing people to the incredible sight of visible migration<sup>3</sup>, and visiting birders make an important contribution to this.

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