Belize Orange-breasted Falcon Progress Report
2009
The Peregrine Fund/Fondo Peregrino-Panamá

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ORANGE-BREASTED FALCON
CONSERVATION PROGRAM
2009 REPORT

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![Adult Orange-breasted Falcon in Mountain Pine Ridge](image-url)
Part I - Monitoring of wild population in Central America


Thanks to the work carried out by The Peregrine Fund in the 90’s we know that the individuals found in Belize and Guatemala are most likely isolated from the rest of the South American population. We also understand more about its habits and habitat preferences. However, the size of the Belize/Guatemala population is still unknown and preliminary data indicate a significant decrease in productivity, which could put at risk a population important for the survival of this species.

In 2009 we continued to observe known eyries in Belize and Guatemala, which have been studied for the past eight years; and to search for new nests, to better understand the size of and trends of this population. Particularly, our attention is drawn to their apparently low productivity, the reasons for which are largely unknown.

In this report, we include the methods we use to study the OBF population, and also the achieved goals for this season and possible objectives for the upcoming season.
**Methods of study**

Nest observations were made with a 65mm telescope and 10x42 binoculars, primarily during the early morning and late afternoon hours, when the falcons are more active. In the case of nests that are difficult to access, we often left for the field at 0300 or 0400hrs to arrive early in the day, and stayed as long as possible during daylight hours, to allow us more time to observe activity in and around the nest site. On some occasions, it was necessary to camp at the most remote sites, so as to be present during the best observation times.

![Marta Curti conducting observations at the Rio On eyrie](image)

The time spent on observations, as well as the observation points themselves have influenced the quality of observations made and, therefore, the collection of data. In some cases, the nest is of difficult access or it takes a considerable amount of time to
reach, so it was visited less often. In other cases, the observation point is far from the cliff, or the cliff and/or nest is partially/or greatly blocked from view by vegetation or other obstacles. This limits our ability to observe food exchanges between the male and female; copulation; number of eggs laid, chicks hatched, and fledglings.

![Distant cliffs need to be observed with a spotting scope](image)

During the monitoring of the pairs, we also noted any significant details that would provide us with more information about the biology of this little known falcon, and possible clues to the problems that may be affecting this species.

To better understand the possible causes of low productivity, we began a census last year to estimate the number of vultures in the area, which may, through predation, have an effect on the number of chicks that survive to fledging age. We continued the census this year and conducted vulture counts every half hour during the time we spent observing each eyrie, noting the number of each vulture species seen. These results could provide more clues about how vulture abundance is interfering with the Orange-Breasted Falcon population.

Our work also included searching for previously unmonitored cliffs, sinkholes and other areas that are potential nesting sites for the Orange-breasted Falcon (OBF). To that end, we conducted two over flights in search of suitable habitat for this species, in order to later visit these areas by foot to confirm the presence or absence of OBFs at each location. We also conducted one helicopter survey, so we could take a closer look at the cliffs previously located by airplane, in order to try to find nesting pairs.
In Belize we visited 22 different locations, of which 18 are either currently occupied or were known to be occupied in the past. Most of them are easily accessible by road or a short walk, but there are a few remote places that require more sophisticated logistics to be reached. Easily accessible cliffs were better studied than those of difficult access.

Walking along the Roaring Creek, Belize

Of the eighteen sites visited, 11 had OBFs present. In all those cases, both the male and the female were observed at each location.
One of the falcons’ eyries next to the Macal River, Belize

Female Orange-breasted Falcon, Belize
GUATEMALA

In Guatemala we monitored six pairs of falcons this year, five of which are found along the same escarpment, which extends more than 100 Km from west to east, then shifts north. Included in this list of nests is a new pair that we found this year, that also shares the same chain of cliffs. The eyries in Guatemala, unlike many of the nests in Belize are not easily accessible. Due to the effort to reach these sites and the additional costs of lodging and transport in Guatemala we have visited these cliffs less often than their Belize counterparts. However, we did make an additional trip to visit all the nests after the breeding season, to learn more about the time frame in which the fledglings stay at the nest site before dispersing. After the start of rainy season, the roads are in very bad condition. To arrive to the nest sites we had to rent higher-clearance vehicles and a driver, and on some occasions, an additional person to help clear the road of fallen trees.

The situation in Guatemala, and in particular the Maya Biosphere Reserve, seems to be progressively getting worse. Deforestation and forest invasions are occurring with more and more frequency. Aggravating the situation is the invasion of small groups of squatters that move onto protected lands and who are very difficult to evacuate once settled. There are many circumstances which surround this complex situation: scarce resources from the administration for the conservation of national reserves, which lack security and proper protection by the park guards; pressure from poor indigenous communities on the land; poaching; logging; the influence of business magnates who clear more and more land for cattle pastures and agriculture and who seem to have no qualms about doing so illegally on protected lands; drug trafficking; and other illegal activities.

The effects of these problems are palpable, even for us year after year. The areas cleared using “slash and burn” techniques for ranching or agricultural purposes, are, each time, more numerous and extensive. The landscape is changing at an alarming rate, and is having tragic consequences for the biodiversity of the region and the country.

For the moment, the falcon pairs that were present in the 90s continue to survive in this area. They seem to have adapted to this enormous transformation of their territory and the subsequent changes in the biotic community and in the variety and abundance of prey and also of potential predators, such as the notable increase of Black Vultures.
Large areas of forest on the way to falcon nests that had recently been burnt

Adult OBF perched close to the nest, on the scaffolding used to access Temple IV for repairs
**Over Flights**

During this season, we were able to carry out three over flights: two in a small plane to look for suitable cliffs that could potentially be occupied by OBFs; and one in helicopter to re-check the previously located cliffs in order to confirm the presence of falcons and nests. The ultimate goal of these over flights was to obtain more information about the distribution of the species and to estimate its current population size.
March 18: Over flight in small plane

This over flight was made possible thanks to the collaboration of Eco-flight, who provided us with everything (plane, fuel, pilot) necessary to make the flight happen. During the first part of the flight, we looked for radio signals of some of the Harpy Eagles that had been released in Belize. During the second part, we conducted a search for more cliff sites that could be occupied by OBFs.

At 0830 we met the folks from Eco-Flight in Central Farm. One hour later, we were in the air. Unfortunately, there were some problems with the flight. First, we did not receive any signal for any Harpy Eagle, as there were some problems with the receivers. When we then went to fly to look for cliffs in the southern part of the country, we were forced to turn back because the military was conducting aerial exercises and we were denied permission to fly through.

5 April: Over flight in small plane

This over flight was made possible thanks to Lighthawk, who, just as Eco-flight provided everything we needed to conduct the flight. As with Eco-flight, we did not have success locating any Harpy Eagles.

For the second part of the flight we flew southeast and flew along the E side of the Maya Mountains and came back over the Chiquibul to look for suitable cliffs for OBFs. We found 28 new cliffs, although most of them are in really remote and inaccessible areas. The best looking cliffs were the ones we located last year: La Cumbre in the Maya Mountains, and Nohoch Ch’en in the Chiquibul Forest.

Aerial view of Nohoch Ch’en
4 May: Over flight in helicopter

During this over flight we visited the cliffs that we first located during our over flight in the Cessna on 5 April. We used a helicopter from the company, Astrum Helicopters. We were in the air for most of the daylight hours, stopping to re-fuel twice close to the Hummingbird Highway. In total we checked 38 walls, although many were small and several were very close together. If we measure the approximate distance between some of the cliffs, and assuming that two pairs will be separated by at least 4 km (conservative estimate), we have about 16 cliffs or groups of cliffs with potential as OBF eyries. We found three new pairs and we also re-checked two more pairs.
Results

This year, we monitored all active nests, obtaining good data in the majority of cases. Now that we have been able to better pinpoint the cliffs and nests on a map that are found around the Mountain Pine Ridge and the Macal River, it will be much easier to conduct good observations of the known nests and conduct searches of potential new nesting sites. In the case of Guatemala, we were not able to make as many visits as we wished due to security issues.

The visit to the nests in Guatemala after the end of breeding season shed more light on the dispersal behavior of young. We spent eleven days visiting the nests in Guatemala and trying to visit a new site on the Guatemala side of the Maya Mountains at the beginning of September. We did not see even one young falcon at any of the sites during this visit, suggesting that the fledglings begin dispersal no more than three months alter fledging.

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<th>Guatemala</th>
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* Eyries are considered successful when there is one or more fledgling

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<th>Nº of Fledglings</th>
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<th>’08 Productivity</th>
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<td>0.76</td>
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* Not including Panama Productivity for comparison with ’09 data

Objectives accomplished and Future Goals

Last year, we identified a list of objectives to complete for the 2009 breeding season and beyond. What follows is a review of some of these objectives and an analysis of our level of success for each one so far:

1. Banding of chicks and adults: This is a goal we are still working toward, although we made some progress with the banding of both chicks at Tikal.
2. Spend more time observing at sites with possible OBF presence, even though they have shown to be unproductive in the last years: in 2009 we spent more time in places that could potentially house falcons. As a result, we were able to confirm the presence of OBFs at one of these sites.
3. Spend more time observing later in the season, especially at those nests considered to be unproductive, initially: We continued to monitor all the easily-accessible nests until we were certain whether their nesting attempts were successful or not.

4. Look for more nests/pairs at some previously known cliffs: We were able to check all of these sites and located a new pair on one of them. In total we found five new pairs in 2009.

5. Continue with the vulture census: Just as last year, we conducted a count of the vultures seen at each nest site.

6. Conduct helicopter and on-the-ground surveys to re-check cliffs in Honduras that were checked 10 years ago, and to look for new cliffs. This will occur in 2010. Also we will be conducting two over flight surveys in Panama to check status of known nests and potentially look for new ones.

7. Place cameras in nests. In 2009, for the second year in a row, we placed a camera in the nest at Tikal. In 2010 we will work to improve recording quality.

Yeray Seminario banding one of the chicks from the Tikal eyrie
Part II – Orange-breasted Falcon Release Project

This field season marks the third consecutive year of captive-bred Orange-breasted Falcon releases in Belize, and the fourth overall for this species. Initial releases were considered experimental. We certainly know more now about the difficulties of this process, with predation by other raptors being the main problem we have to face. Monitoring of wild pairs has lead us to think that this population’s productivity (number of young per pair and year) is decreasing. One of the hypotheses is that isolation from southern populations has caused some level of inbreeding. Releasing new genes from our captive birds could reduce inbreeding and increase productivity numbers, hence, helping to increase the population numbers and range.

Work in the field was possible thanks to the invaluable assistance of Aldo Ortiz and Jennifer Sinasac. Volunteer biologists play a vital role in daily observations of the released falcons throughout the field season. Marta Curti, Yeray Seminario, Jennifer Sinasac and Aldo Ortiz Reyes were responsible for the care and monitoring of the young falcons during the entire release season. This included feeding the falcons, collecting data through daily observation, tracking the falcons with radio telemetry, predator deterrence and logistical changes.

Jenn Sinasac, Robert Berry, Marta Curti and Angel Muela moments before placing the chicks in the hack box

The field season started on July 7, 2009 with the arrival of the young falcons, and finished on October 10, after final falcon dispersal. As in previous years, the release was conducted in the Mountain Pine Ridge Reserve located in the Cayo District of Belize, Central America. Due to the problems with predation at the release site used in 2007 and 2008, the decision was made to change the location of the release for 2009. From September 1st – 14th, 2008, additional surveys in the Mountain Pine
Ridge of Belize were conducted to locate a new suitable location for the release in 2009. One of the sites was chosen based on an overall assessment of the present avifauna, habitat characteristics and logistical challenges.

The release site, inside the Bull Run Overseas property, is situated on an eastward peninsular ridge over-looking the Hidden Valley, through which Roaring Creek passes. By car, it is approximately fifty minutes away from the Hidden Valley Inn by car, which, as in previous years, kindly provided food, accommodations and logistical support to The Peregrine Fund staff.
The peninsula on which the hack site is located is characterized as pine savannah, and the dominant species are Honduras Pine (*Pinus caribaea hondurensis*) and less commonly, Oocarpa pine (*Pinus oocarpa*). In preparation for the use of the site, the tip of the peninsula was cleared of tall ground vegetation. Nine large pine trees remained on the peninsula, one of which was used to support the platform and hack box.

The old hack box was dismantled and reconstructed at the 2009 release site on May 28 by Angel Muela, Marta Curti, and Yeray Seminario, with the helpful assistance of José Gálvez, an employee of Bull Run Farms, Ltd. A new platform was built on a live pine, encircling the trunk, at a height of 25 feet. A ladder was placed against one side of the platform and used to access the platform and hack box. The hack box consisted of a latched access door on one side, two solid side panels and a barred and meshed panel on one side for ventilation and visibility of the falcons while they are in the box. Pea gravel was used as a substrate and two log perches were placed inside the box.
Release Details

Three falcons were released in 2009 and all were affixed with color and alphanumeric-coded leg bands as well as leg-mount VHF transmitters for identification and tracking after the release. Females were banded with red bands: C2 and C3; the male was fit a blue band: C1. The OBF Program Director maintains and propagates the OBF used in our experimental releases.

As with the previous releases in 2007 and 2008, this release was conducted as a “tame hack”. Since the birds were of varying ages, they would be fledging at different times, though they would be placed in the hack box together. It was, therefore, important that the falcons be comfortable with human presence as the biologists would be feeding younger birds in the box even after the older ones had fledged. It was imperative that the falcons feel comfortable returning to the platform to eat even if people were present. So, the birds were captive-reared, hand-fed and socialized from a young age. Since the falcons are housed and released together, they imprint on each other and, after release, gradually become wilder.

After release, the birds were observed from dawn (6:00 a.m.) until dusk (6:30 p.m.). They were observed from a distance of 50 m. The temperature and weather conditions were recorded on hourly intervals. During the 3-week period where the falcons were wearing transmitters, they were tracked every hour. Strength of the signal and direction were noted. Visual observations on feeding behaviour, roosting behaviour and hunting behaviour, as well as intraspecific and interspecific interactions were noted on a daily basis throughout the entire release period.
After all the birds had fledged, they returned frequently to eat, occasionally up to three times per day. As they began to disperse, they returned to the platform once daily to eat. They remained close to the hack site for the first 3-4 weeks after fledging.

![Female, C2, on the platform that overlooks the valley](image)

Since only three falcons were released this year, close attention could be paid to the behaviours of each bird. Overall, the mortality of raptors in their first year is high. Therefore, it is expected that not all the falcons released into a natural habitat will survive. During this year’s release of Orange-breasted Falcons into the Mountain Pine Ridge Reserve, all three chicks successfully fledged, and two falcons survived through their dispersal. Female C3 disappeared several weeks after release.

**Overall Conclusion**

With the successful dispersal of two of the three released falcons and the discovery of five new breeding pairs in Belize and Guatemala we consider this year’s efforts to be a success. Though with each year we are getting closer to better understanding this species, we still have a ways to go before many of our questions related to productivity, dispersal, survivorship, pair turn-over and other key issues can be answered. We look forward to next year’s field season and the opportunity to learn more about the OBF and to improve management decisions aimed at conserving this threatened species and its habitat.
Acknowledgements

Our work in Belize would not be possible without the collaboration from The Belize Forest Department and the Belize Agricultural Health Authority.

We would like to especially thank Trevor Roe and the Roe group; George and Melina Headley and Bull Run Farms, Ltd.; Flavien and Beverley Daguise, Peter Durgager and all the staff at Hidden Valley Inn for providing us with the support, guidance and logistics necessary to make the OBF monitoring and releases a success this year. Your contributions are greatly appreciated.

We also counted on the invaluable assistance of the following individuals and institutions: Mirtha Cano, Estuardo Aquiles, Oswaldo Chi, Eric Chávez and the rest of the people at Tikal National Park; Sharon Matola, Humberto Wohlers and everybody at The Belize Zoo and the Tropical Education Center; Eco-flight; Lighthawk; Dr. John Morris and the Institute of Archaeology of Belize; Mr. David Usher and Mollejon Hydro Dam staff; Caves Branch Barton Creek Farm and its Farm manager, Theodoro Hob; Jodi and Vance Bente and CASA Avian Support Alliance; Rafael Manzanero and Friends for Conservation and Development; José Manuel Palacios, Rudy Quesada and everyone at CONAP; Hotel Maya Internacional; Black Rock Lodge; Pedro Mai; Lenny Gentle; Carole Manganaro; Isabelle Paquet-Durant; Tracy Anderson; Autoridad Nacional del Ambiente, Panama.

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Youngest female, C2, preening near the hack site