The Rufford Small Grants Foundation

Final Report

Congratulations on the completion of your project that was supported by The Rufford Small Grants Foundation.

We ask all grant recipients to complete a Final Report Form that helps us to gauge the success of our grant giving. We understand that projects often do not follow the predicted course but knowledge of your experiences is valuable to us and others who may be undertaking similar work. Please be as honest as you can in answering the questions – remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

Please complete the form in English and be as clear and concise as you can. We will ask for further information if required. If you have any other materials produced by the project, particularly a few relevant photographs, please send these to us separately.

Please submit your final report to jane@rufford.org.

Thank you for your help.

Josh Cole

Grants Director

Grant Recipient Details	
Your name	Yarelys Ferrer Sánchez
Project title	Status and Conservation Strategy of Diurnal Raptors of a Wetland in Cuba. Phase II
RSG reference	13536-2
Reporting period	August 2013 - August 2014
Amount of grant	£6000
Your email address	yferrersanchez@gmail.com
Date of this report	August 15th, 2014

1. Please indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
To determine the distribution, status and productivity of diurnal raptors (monitoring programme)			X	This monitoring programme will have complete results in the long-term. We will maintain this objective in the next steps of the project.
To training the protected areas workers, people of communities, farmers, tourism employee and builders			X	We prepared and distributed a species guide to farms and hotels, with information about distribution, natural history and threatened category per raptor species.
To promote the values of raptors in local communities, farms and touristic hotels through the development of environmental campaigns			X	

2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).

Due to the bad weather conditions in May 2014, we made one more sampling to find Cuban Black-hawk nests in coastal areas of keys.

Also, we had some problems in order to get pictures of endemic captive raptors in Morón city, due to the people lack awareness. In around 30 houses we didn't receive a good acceptation when we were explained the project objectives and the importance of raptors in the ecosystem. We have to get inside the educative campaign in this city and to make a stronger and constant campaign dissuading the purchase of wildlife for use as pets.

3. Briefly describe the three most important outcomes of your project.

- ✓ **Raptor ecology and monitoring programme**

Before the First and Second Rufford Small Grants in the northern of Ciego de Avila, information about raptor ecology, distribution and abundance didn't exist. Nowadays, we can deliver baseline information to protected areas to implement management activities and to prioritize monitoring sites mainly to endemic species.

For instance, the Cuban black hawk confronts a strong threat like the touristic industry, which is covering its distribution range and is destroying and modifying its habitat. We characterise the nesting success, productivity, and nest-site selection of the Cuban black-hawks. Using data from 27

nests and landscape metrics, we modelled differences between nests and available non-used sites. Furthermore, the potential nesting area was modelled using maximum entropy. The predicted distribution of nesting areas was applied to protected areas and the human land-use data to identify priority study sites, and protected area extensions. The Cuban black-hawks selected nest-sites in open mangroves with larger forested and coastal vegetation areas, fewer soil-vegetation moisture and soil brightness, in a less diverse landscape than non-nests. The high probability area was 2% of the prediction with 33% of nests under protection and 27% close to or inside high-risk zones. Two protected area extensions and two regions of priority survey sites were identified and recommended.

Moreover, we generated binary geographic distribution maps of the endemic Gundlach's hawk and Cuban black hawk based on occurrence data. The relative contributions of the environmental variables to the Maxent models were analysed. Also, we used predicted distributions and the layer of protected areas network to make habitat characterisation and species conservation strategies. The spatial distribution of the Gundlach's hawk and the Cuban black hawk covered 828.4 km^2 and 649 km^2 respectively, accounting for 15 and 12% of the total area with suitable conditions. Gundlach's hawk distribution was fragmented, mainly depending on the forest distribution. Cuban black-hawk distribution was narrow, near the coastline, mainly concentrated in the cays. Forest compactness ratio and land use accounted for more than 50% of the relative contribution to the Gundlach's hawk model. Distance to coastline and urban zones accounted for more than 60% of the relative contribution in Cuban black-hawk model. Forests and mangrove represent the 62% and 49% of the Gundlach's hawk and Cuban black-hawk predictions respectively. The 71% of the forest area in the region is represented in the potential distribution of the Gundlach's hawk. Mangrove area (45%) occupies the 49% of the Cuban black hawk distribution. Six protected areas preserved 50% and 92% of the Gundlach's hawk and Cuban black-hawk distribution. Nevertheless, only one and three were effective in the protection of the Cuban black-hawk and Gundlach's hawk, covering 27% and 30% of its overall distribution respectively. The consistent habitat changes are of main concern if area of mangroves and forests decrease. If habitat changes continue and increase, affecting the remaining suitable habitat, these species will become rare and even face extinction.

- ✓ **Training programme**

According to the needs of conservation and human capacities in protected areas we trained four new technicians of two protected areas inside the wetland and four farmers of two new communities. With the project activities we achieved to incorporate three persons of two communities to the labours of one protected area (El Venero) as national park ranger. The training program must be permanent in the next steps of the project and must be incorporated in the schedule of protected areas. Also, we continue with the training to biologist and biology students of University of Havana with raptor monitoring techniques and sampling. In this period we trained 10 students searching raptor nests, making point counts and roadside surveys (Appendix 1)

- ✓ **Environmental campaigns**

Posters, informative pamphlets, annual festival and other activities made possible the sensitisation in the communities with the conservation problems, the increase of the knowledge about the values of raptors and the wetlands. On this stage we reached nine communities. We continued monitoring the population size of raptor with rural people and achieved the integration of many state entities like: Education Ministry, Forest State Service, Universities, Flora and Fauna Enterprise and Environmental Agency.

We carried out the captive bird census getting alarming results. We took a census in five communities (La Loma, El Yarual, Bolivia-microdistrito, Bolivia-Diepa, Malezal) and one city (Morón). Children between 6 and 12 years old (33) were working with the project staff. Nineteen species of birds were observed in captivity, standing out the present of endemic raptors like Gundlach's hawk (3) and Cuban Black-Hawk (4). Also, we observed other raptors like American kestrel (5), red-tailed hawk (3) and osprey (1). Other endemic species and subspecies were frequenting: Cuban parakeet (5), Cuban parrot (25), Cuban bulfinch (40), Cuban grassquit (5). More frequent species were: yellow-faced grassquit (84), indigo bunting (80), painted bunting (23), and Eurasian collared dove (23). This is only a sample of the number of captive birds, and we are concerned with this situation. Next priorities in our project work will be focused on dissuading the wildlife use as pets.

As a project initiative we extend the census to Júcaro community, south of the province. We are processing these results.

4. Briefly describe the involvement of local communities and how they have benefitted from the project (if relevant).

Like the first stage of the project several local people collaborated with us preparing the activities for the community festival. Each school per local community has didactical pamphlets showing raptors characteristics and its ecological importance. These materials support educative activities in schools. We lecture teachers and environmental specialists in rural schools, local people in communities and tourism workers in two hotels in relation with wetland, biodiversity, raptors and its role in the ecosystem. We continue with the raptor campaign expanding our conservation efforts in space and time.

The main benefit of the communities has been the increasing of awareness and knowledge about the conservation of wetland in general and raptors in particular. We achieved the incorporation of three new young persons of the communities in the protected area activities as salaried workers, strengthening the relationship among communities and protected areas and contributing to a better lifestyle.

5. Are there any plans to continue this work?

Yes, we will continue with the objectives of this project in the long-term. We achieved fruitful experiences with the project team, with the raptor monitoring programme, together with the environmental activities in the first two stages of the project. We consider evaluating the long-term effects of human activities in the productivity and distribution of specialised and endemic raptors will be very important for the species conservation, as well as to study and monitoring its demographic parameters. Also, we are surprised with the number of captive birds like endemic and migratory species people have. For this reason, we want to get inside in the environmental campaign if a Rufford Booster Grant it is approved. In addition, I will study other regions of Cuba with a similar protocol in order to have a comparative baseline and to increase the knowledge and protection in the country.

6. How do you plan to share the results of your work with others?

Our results (joining information of the first and second RSG) have been presented to the staff of protected areas to contribute to the design of management plans and recovery strategy per

threatened species. Also, the national level of the Flora and Fauna Enterprise has these results to discuss with CICA (Centro de Regulación y Control Ambiental) the alarming situation has been observed with captive birds in local communities and cities.

In the other hand, results have been presented in:

- I Worldwide Raptor Conference, Bariloche, Argentina, October 21-24 (**Spatio-temporal variation in abundance, density and species richness of diurnal raptors in Cuba: The effects of man-made environments**) (Appendix 2)
- 14th Semana del Posgrado en Baja California Sur, México, April 2014 (**Variación espaciotemporal de la abundancia, densidad y riqueza de especies de rapaces diurnas en la isla de Cuba: Efectos de los ambientes modificados por el hombre**) (Appendix 3).

Also, we will present results in the next congress of this year:

- XVIII Congreso Sociedad Mesoamericana para la Biología y la Conservación, 13-17 October 2014, Copán Ruinas, Honduras (**Hábitat de anidación de *Buteogallus gundlachii* en Cuba: implicaciones para su conservación**). http://www.smbchn.com/index.php. (Appendix 4)
- The 38th Annual Meeting of the Waterbird Society and The XIII Conference for the Study and Conservation of Mexican Birds organized by CIPAMEX, 4-7 November 2014 in La Paz, BCS, Mexico: **1. Use of ecological niche modelling for habitat characterization and conservation strategies of endemic raptors in Cuba: case of Gundlach's hawk and Cuban black hawk; 2. Hábitat de anidación de *Buteogallus gundlachii* en Cuba: implicaciones para su conservación**. (Appendix 5). http://www.cibnor.mx/en/inicio-eventos http://intranet.cibnor.mx/eplant1.php?pagID=anuncios/waterbirds2014/index http://www.waterbirds.org/abstract-submission
- Cuarto Simposio Nacional de Administración, Manejo y Uso Sostenible de los Recursos Naturales, November 18-22, Ciego de Ávila, Cuba.

One scientific note was submitted to Ornitología Neotropical the last June (**Notas sobre anidación del Gavilán Colilargo (*Accipiter gundlachi*) en Cuba**). Two papers will be submitted to peer-review journals of conservation: **1. Use of ecological niche modelling for habitat characterization and conservation strategies of endemic raptors in Cuba: case of Gundlach's hawk and Cuban black-hawk; 2. Breeding biology and nest-site selection of The Cuban Black-Hawk in a touristic archipelago of Cuba: conservation implications.**

Two papers have been accepted in Biodiversity and Conservation journal (**Man-made environments relationships with island raptors. Endemics do not cope with habitat changes, the case of the island of Cuba**) and Ornitología Neotropical (**Partial Albino Turkey Vultures (*Cathartes aura*) in the Island of Cuba**) (Appendix 6).

We are preparing a news article about the conservation of diurnal raptors in Cuba to publish in *Flora y Fauna* magazine.

7. Timescale: Over what period was the RSG used? How does this compare to the anticipated or actual length of the project?

The SRSG was used over 12 months from August 2013 to August 2014 as was scheduled.

8. Budget: Please provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used.
The SRSG was used over 12 months from August 2013 to August 2014.
1£ ~ 1.5 Convertible Cuban pesos (CUC)

Item	Budgeted Amount	Actual Amount	Difference	Comments
Desktop computer	500	500		
Digital projector	450	400	+50	We found a cheaper digital projector
Printer toners	100	100		
Environmental education materials	400	350	+50	
Theatre materials	250	200	+50	
Raptor informative materials	200	200		
Transport to field areas	100	130	-30	We made one more sampling. These funds come from the ones we saved in environmental education materials and digital projector
Car rent for the road surveys	1500	1580	-80	We made one more sampling. These funds come from the ones we saved in environmental education materials and digital projector
Fuel	400	450	-50	We made one more sampling. These funds come from the ones we saved in environmental education materials and digital projector
Food for 4 workers (in field camps)	1300	1300		
Snack for children	800	800	0	
TOTAL	6000	6010		

9. Looking ahead, what do you feel are the important next steps?

- ✓ To continue developing an intensive and sustained environmental campaign dissuading the purchase of wildlife for use as pets.
- ✓ To conduct an on-going training programme of protected area workers in other regions of Cuba, in order to initiate studies of raptors and a monitoring programme.
- ✓ To develop a national programme for the study and conservation of diurnal raptors in Cuba.
- ✓ To increase activities related with training and environmental education in other communities inside the wetland, applying the methodology that has proved to work well in the previous stages.

- ✓ To divulge the project results in all centres of environmental regulation and the National System of Protected Areas in order to implicate more institutions in our campaign.
- ✓ To publish our results in scientific and news journals.
- ✓ To implement ecology information about raptors in management plans of protected areas inside the wetland, using an adaptable management approach in a long-term.
- ✓ To looking for Rufford Booster Grant support to expand our conservation activities in the Gran Humedal del Norte de Ciego de Avila and other regions of Cuba, giving priority to environmental campaigns and education activities in cities.

10. Did you use the RSGF logo in any materials produced in relation to this project? Did the RSGF receive any publicity during the course of your work?

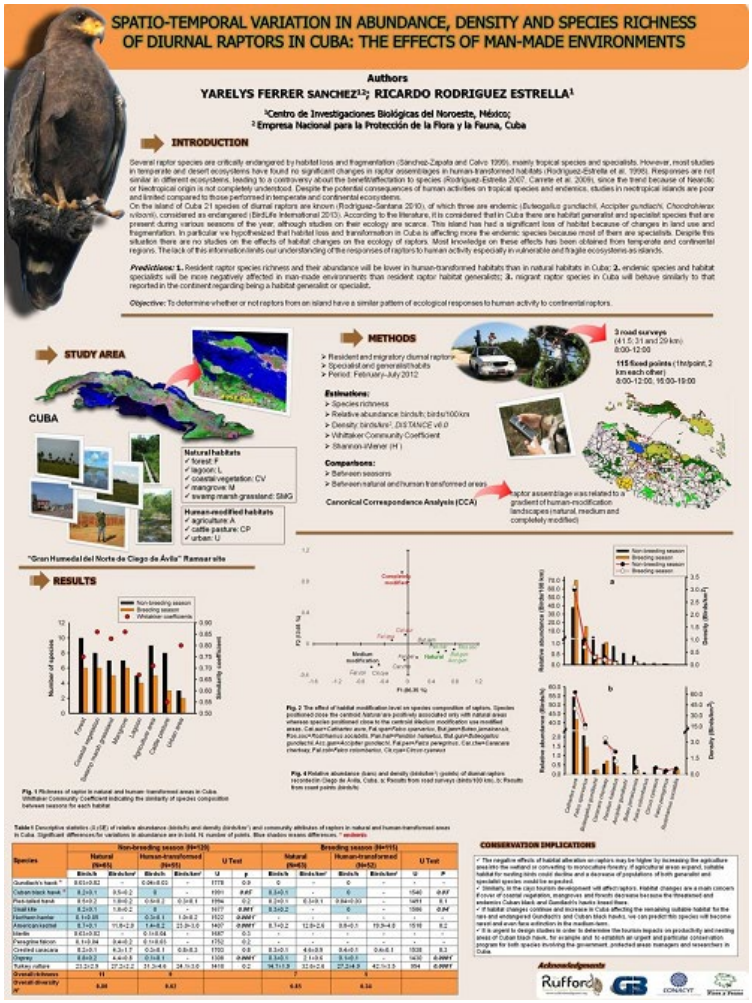
Yes, logo was included in all our local and scientific presentations (e.g. meetings, workshops, congress, poster), as well as in lectures and talks in schools, communities, farm, inside the wetland and reports to protected areas.

11. Any other comments?

We are very thankful to Rufford Foundation for all the support, allowing us to contribute to the raptor conservation in Cuba.

Appendix 1. Training to protected area staff.

Appendix 2. Poster presented in the I Worldwide Raptor Conference.



SPATIO-TEMPORAL VARIATION IN ABUNDANCE, DENSITY AND SPECIES RICHNESS OF DIURNAL RAPTORS IN CUBA: THE EFFECTS OF MAN-MADE ENVIRONMENTS

Authors

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INTRODUCTION

Several raptor species are critically endangered by habitat loss and fragmentation (Sánchez-Zapata and Calvo 1999), mainly tropical species and specialists. However, most studies in temperate and desert ecosystems have found no significant changes in raptor assemblages in human-transformed habitats (Rodriguez-Estrella et al. 1998). Responses are not similar in different ecosystems, leading to a controversy about the benefit/affectation to species (Rodriguez-Estrella 2007, Carrete et al. 2009), since the trend because of Nearctic or Neotropical origin is not completely understood. Despite the potential consequences of human activities on tropical species and endemics, studies in neotropical islands are poor and limited compared to those performed in temperate and continental ecosystems.
On the island of Cuba 21 species of diurnal raptors are known (Rodríguez-Santana 2010), of which three are endemic (Buteogallus gundlachii, Accipiter gundlachi, Chondrohierax wilsonii), considered as endangered (BirdLife International 2013). According to the literature, it is considered that in Cuba there are habitat generalist and specialist species that are present during various seasons of the year, although studies on their ecology are scarce. This island has had a significant loss of habitat because of changes in land use and fragmentation. In particular we hypothesized that habitat loss and transformation in Cuba is affecting more the endemic species because most of them are specialists. Despite this situation there are no studies on the effects of habitat changes on the ecology of raptors. Most knowledge on these effects has been obtained from temperate and continental regions. The lack of this information limits our understanding of the responses of raptors to human activity especially in vulnerable and fragile ecosystems as islands.

Predictions: **1.** Resident raptor species richness and their abundance will be lower in human-transformed habitats than in natural habitats in Cuba; **2.** endemic species and habitat specialists will be more negatively affected in man-made environments than resident raptor habitat generalists; **3.** migrant raptor species in Cuba will behave similarly to that reported in the continent regarding being a habitat generalist or specialist.

Objective: To determine whether or not raptors from an island have a similar pattern of ecological responses to human activity to continental raptors.

STUDY AREA

CUBA

Natural habitats
✓ forest: F
✓ lagoon: L
✓ coastal vegetation: CV
✓ mangrove: M
✓ swamp marsh grassland: SMG

Human-modified habitats
✓ agriculture: A
✓ cattle pasture: CP
✓ urban: U

"Gran Humedal del Norte de Ciego de Ávila" Ramsar site

METHODS

➢ Resident and migratory diurnal raptors
➢ Specialist and generalist habits
➢ Period: February–July 2012

3 road surveys (41.5; 31 and 29 km) 8:00-12:00

115 fixed points (1ht/point, 2 km each other) 8:00-12:00, 16:00-19:00

Estimates:
➢ Species richness
➢ Relative abundance: birds/h; birds/100 km
➢ Density: birds/km². DISTANCE v6.0
➢ Whittaker Community Coefficient
➢ Shannon-Wiener (H')

Comparisons:
➢ Between seasons
➢ Between natural and human transformed areas

Canonical Correspondence Analysis (CCA)

Raptor assemblage was related to a gradient of human-modification landscapes (natural, medium and completely modified)

RESULTS

Fig. 1 Richness of raptor in natural and human transformed areas in Cuba. Whittaker Community Coefficient indicating the similarity of species composition between seasons for each habitat.

Fig. 2 The effect of habitat modification level on species composition of raptors. Species positioned close to the centroid: Natural are positively associated only with natural areas whereas species positioned close to the centroid: Medium modification use modified areas. Cat.aur=Cathartes aura; Pal.spa=Falco sparverius; But.jam=Buteo jamaicensis; Ros.soc=Rostrhamus sociabilis; Par.hah=Parabuteo haemilis; But.gun=Buteogallus gundlachii; Acc.gen=Accipiter gundlachi; Fal.per=Falco peregrinus; Cat.che=Caracara cheriway; Pal.col=Falco columbarius; Cit.cya=Circus cyaneus

Fig. 4 Relative abundance (bars) and density (birds/km²) (points) of diurnal raptors recorded in Ciego de Ávila, Cuba. a: Results from road surveys (birds/100 km). b: Results from count points (birds/h).

Table I Descriptive statistics (X ± SE) of relative abundance (birds/h) and density (birds/km²) and community attributes of raptors in natural and human-transformed areas in Cuba. Significant differences for variations in abundance are in bold. N: number of points. Blue shades means differences. * endemic

Species	Non-breeding season (N=120)						Breeding season (N=111)					
	Natural (N=63)		Human-transformed (N=57)		U Test		Natural (N=63)		Human-transformed (N=52)		U Test	
	Birds/h	Birds/km²	Birds/h	Birds/km²	U	p	Birds/h	Birds/km²	Birds/h	Birds/km²	U	P
Gundlach's hawk *	0.03±0.02	-	0.04±0.03	-	1779	0.9	0	-	0	-	-	-
Cuban black hawk	0.2±0.1	0.5±0.2	0	0	1551	**0.01**	0.3±0.1	0	0	-	1540	**0.01**
Red-tailed hawk	0.1±0.1	1.8±0.2	0.1±0.1	0.3±0.1	1994	0.2	0.1±0.1	0.3±0.1	0.6±0.30	-	1491	0.1
Sharp-shinned hawk	0.2±0.1	1.8±0.2	0	0	1677	**0.001**	0.3±0.2	-	0	-	1586	**0.04**
Northern harrier	0.1±0.05	-	0.3±0.1	1.3±0.2	1522	**0.0001**	-	-	-	-	-	-
American kestrel	0.7±0.1	11.8±2.8	1.4±0.2	23.9±3.0	1407	**0.0001**	0.7±0.2	12.9±2.6	0.8±0.1	19.9±4.8	1516	0.2
Merlin	0.02±0.02	-	0.1±0.04	-	1697	0.3	-	-	-	-	-	-
Peregrine falcon	0.1±0.04	0.4±0.2	0.1±0.05	-	1752	0.2	-	-	-	-	-	-
Crested caracara	0.2±0.1	4.3±1.7	0.3±0.1	6.0±0.3	1703	0.8	0.3±0.1	4.6±0.9	0.4±0.1	0.4±0.1	1538	0.3
Osprey	0.4±0.2	4.4±0.9	0.1±0.1	-	1326	**0.0001**	0.3±0.1	3.1±0.4	0.1±0.1	-	1430	**0.0001**
Turkey vulture	21.2±2.8	27.2±2.2	31.3±4.6	34.1±3.0	1418	0.2	14.1±1.9	32.6±2.6	27.2±4.9	42.1±3.5	994	**0.0001**
Diurnal richness	11		9				7		6			
Diurnal diversity (H')	0.88		0.62				0.85		0.56			

CONSERVATION IMPLICATIONS

✓ The negative effects of habitat alteration on raptors may be higher by increasing the agriculture area into the wetland or converting to monoculture forestry. If agricultural areas expand, suitable habitat for nesting birds could decline and a decrease of populations of both generalist and specialist species could be expected.
✓ Similarly, in the cays tourism development will affect raptors. Habitat changes are a main concern if cover of coastal vegetation, mangroves and forests decrease because the threatened and endemics Cuban black and Gundlach's hawks breed there.
✓ If habitat changes continue and increase in Cuba affecting the remaining suitable habitat for the rare and endangered Gundlach's and Cuban black hawks, we can predict this species will become rarest and even face extinction in the medium-term.
✓ It is urgent to design studies in order to determine the tourism impacts on productivity and nesting areas of Cuban black hawk, for example and to establish an urgent and particular conservation program for both species involving the government, protected areas managers and researchers in Cuba.

Acknowledgements

Appendix 3. Oral presentation in the 14th Semana del Posgrado en Baja California Sur, México.

Appendix 4. Abstract for the XVIII Congreso Sociedad Mesoamericana para la Biología y la Conservación.

Title: Hábitat de anidación de *Buteogallus gundlachii* en Cuba: implicaciones para su conservación.

Aunque Cuba tiene regulaciones estrictas sobre la cacería de fauna silvestre y un sistema de áreas protegidas, especies endémicas como *Buteogallus gundlachii* enfrentan fuertes amenazas por actividades como el turismo que destruye y modifica gran parte del hábitat de las especies. Por otro lado, la información sobre la ecología de esta especie rapaz limita el alcance de los planes de conservación. En este estudio se caracterizan parámetros reproductivos y el patrón de selección del sitio de anidación de *B. gundlachii* en el archipiélago Jardines del Rey, Cuba, durante 2012-13. Con la información de 27 nidos y la métrica del paisaje alrededor de ellos se modelaron las diferencias entre nidos y puntos aleatorios. Además, se modeló el área de anidación potencial de la especie con el algoritmo de máxima entropía. La distribución predicha fue superpuesta con los límites de áreas protegidas (AP) y datos de uso de suelo para identificar sitios prioritarios para el monitoreo y posibles extensiones de AP. De los 33 territorios, se tuvo un éxito de eclosión de 0.6 y en promedio 1 volantón/pareja. Las parejas seleccionaron sitios de anidación en manglares abiertos con grandes áreas de bosques y vegetación costera en los alrededores y menor humedad en paisajes menos diversos con respecto a puntos aleatorios. Las áreas con alta probabilidad de presencia de nidos correspondieron al 2% de la predicción y el mayor porcentaje correspondió a áreas con baja probabilidad o ausencia (86%), con 33% de los nidos bajo protección y 27% cercanos/dentro de zonas de alto riesgo. Se identificaron y recomendaron dos extensiones de AP y sitios prioritarios en función del área con alta probabilidad de presencia. El desarrollo turístico y el consistente cambio de hábitat es la principal preocupación para la permanencia de la especie si la cobertura de vegetación costera, bosques y manglares decrece.

Appendix 5. Abstract submitted to the 38th Annual Meeting of the Waterbird Society and The XIII Conference for the Study and Conservation of Mexican Birds.

Title: Use of ecological niche modelling for habitat characterization and conservation strategies of endemic raptors in Cuba: case of Gundlach's hawk and Cuban black hawk.

Forty-six percent of all tropical raptors are threatened by habitat loss and fragmentation. Tropical raptors are of main concern because of the scarce and unevenly distributed information, limiting the scope of the conservation plans. We used an ecological niche model to generate binary geographic distribution maps of the endemic Gundlach's hawk and Cuban black hawk in the central region of Cuba based on occurrence data. The relative contributions of the environmental variables to the Maxent models were analyzed. Also, we used predicted distributions and the layer of protected areas network to make habitat characterization and species conservation strategies. The spatial distribution of the Gundlach's hawk and the Cuban black hawk covered 828.4 km^2 and 649 km^2 respectively, accounting for 15 and 12% of the total area with suitable conditions. Gundlach's hawk distribution was fragmented, mainly depending on the forest distribution. Cuban black-hawk distribution was narrow, near the coastline, mainly concentrated in the cays. Forest compactness ratio and land use accounted for more than 50% of the relative contribution to the Gundlach's hawk model. Distance to coastline and urban zones accounted for more than 60% of the relative contribution in Cuban black-hawk model. Forests and mangrove represent the 62% and 49% of the Gundlach's hawk and Cuban black-hawk predictions respectively. The 71% of the forest area in the region is represented in the potential distribution of the Gundlach's hawk. Mangrove area (45%) occupies the 49% of the Cuban black hawk distribution. Urban zones were the best represented modified area in both potential distributions. However, 4% of the Gundlach's hawk modelled distribution was occupied by farming lands. Six protected areas preserved 50% and 92% of the Gundlach's hawk and Cuban black-hawk distribution. Nevertheless, only one and three were effective in the protection of the Cuban black-hawk and Gundlach's hawk, covering 27% and 30% of its overall distribution respectively. The consistent habitat changes are of main concern if area of mangroves and forests decrease. If habitat changes continue and increase, affecting the remaining suitable habitat, these species will become rare and even face extinction.

Appendix 6. Accepted articles

Abstract
Man-made environments relationships with island raptors. Endemics do not cope with habitat changes, the case of the island of Cuba. *Biodiversity and Conservation*

A few studies conducted in neotropical islands have found that the intensity of human activity has altered the original structure and richness of bird communities, strongly affecting endemic species. Despite these effects, studies are scarce and limited and those focusing on raptors are missing, by contrast to temperate and continental regions. During breeding and non-breeding seasons of 2012, roadside surveys and point counts were conducted in natural and human-transformed areas of the island of Cuba to determine whether or not raptors from an island show a pattern of ecological responses to human activity similar to those observed in continental studies. Raptors showed strong variation in relation to habitat transformations, with lower richness, abundance, and density in the more extensively transformed areas. A total of 11 species were recorded, mostly in natural areas. Similar numbers of species were observed in coastal vegetation and cattle pasture habitat types within each zone. Nine species were detected in agriculture, while ten were found in forest habitat. A gradient of species-habitat was identified: Specialists/endemics tend to occur in natural areas, "intermediate species" in moderately modified areas and generalists in heavily modified areas. Generalists had higher abundances in anthropogenic areas, whereas specialists were found only in natural areas. Under insular conditions, land use changes can pose major threats for endemic and specialist raptors, seriously compromising their conservation. Endemic raptors do not cope well with habitat changes on the island; thus a rapid process of species impoverishment might be expected. Establishing a conservation program in Cuba is urgently needed.

Ornitología Neotropical
Ferrer-Sánchez, Y. and R. Rodríguez-Estrella (2014): Partial Albino Turkey Vultures (*Cathartes aura*) in the Island of Cuba. Ornitologia Neotropical 25: 119–122.