

WILDLIFE STRIKE PREVENTION STARTS AT AIRPORT PLANNING: AN EXAMPLE FROM COSTA RICA

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Environmental, economic and social impact evaluation for the project of the new International Airport at Brunca Region



Aviary study, including the Fauna Risk Management Plan



Main goals of the aviary study

- To define measures to reduce wildlife strike, for:
 - BIODIVERSITY CONSERVATION: To reduce the mortality of animals.
 - AVIATION SAFETY: To reduce damages and injuries.

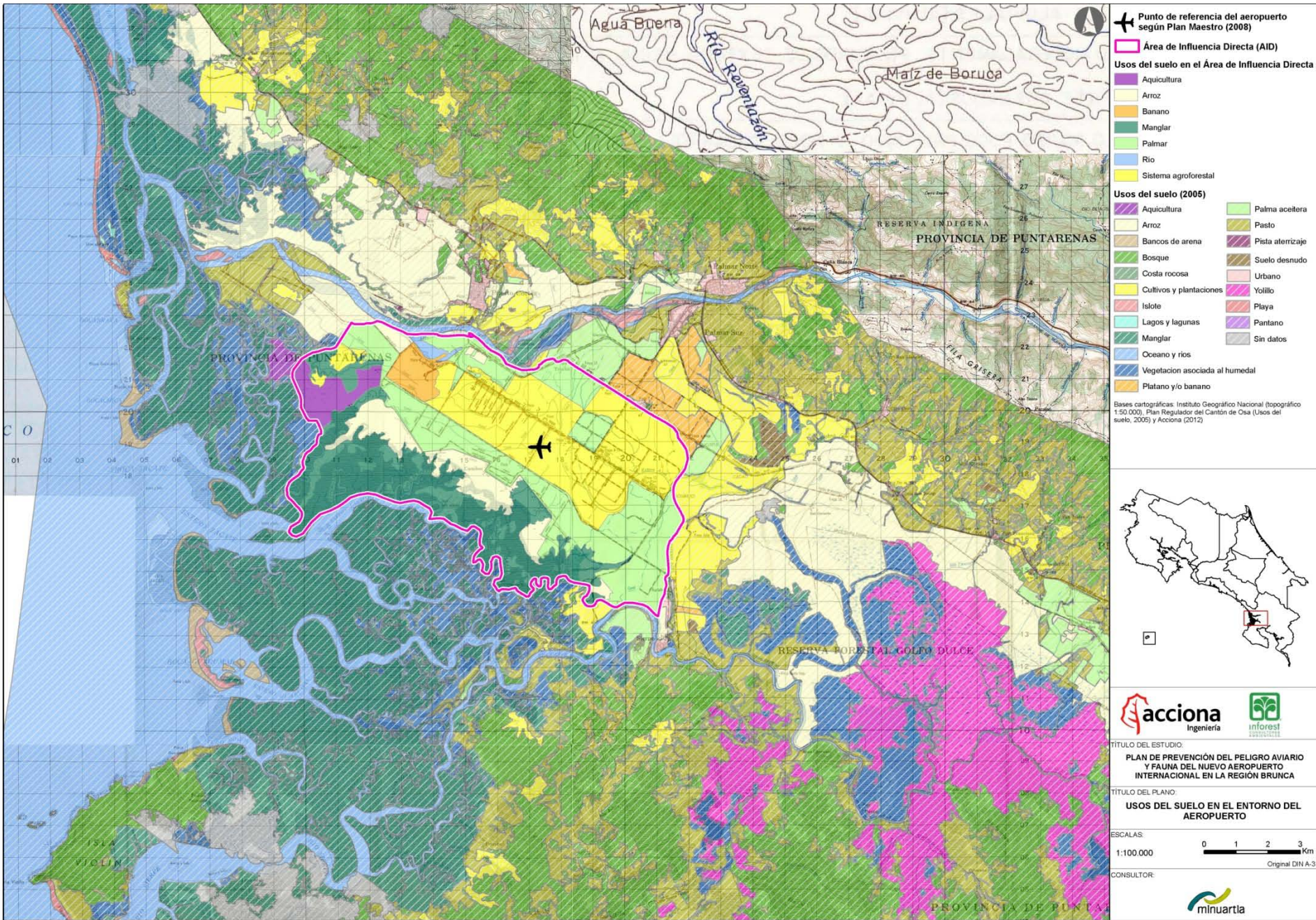


Specific goals

- To characterize the avian community all along the year in the project area and the influence zone ($r=13$ km).
- To identify the main habitats and landscape elements attracting birds.
- To evaluate the bird strike hazards for the observed species.
- To propose a set of measures to include in the Environmental study.
- To write the Fauna Risk Management Plan.



Project and influence areas



Aviary study methodology

- Duration: 14 months (June 2012 to August 2013).
- Identification of the main habitats and sites that attract birds:
 - Project area: mostly abandoned crops



- Influence area: crops and conservation interest areas



Birds' survey

- **Monitoring** of the birds' presence and abundance **during a hole year**, including dry and wet season.
 - To describe phenology of the detected species.
 - To identify species with highest possibility to be struck by airplanes.
 - **Project area: 519 bird counts** in 9 fixed points, including all daylight hours.
 - **Influence area: 187 bird counts** in 9 fixed points at main habitats **and 14 surveys** in attraction sites.



Attracting sites and habitats -1

- Humedal Nacional de Térraba-Sierpe Mangrove



- Térraba, Sierpe and Blue rivers



Attracting sites and habitats -2

- Rice crops



- Shrimp farm



Attracting sites and habitats -3

- Palmar Norte waste dump

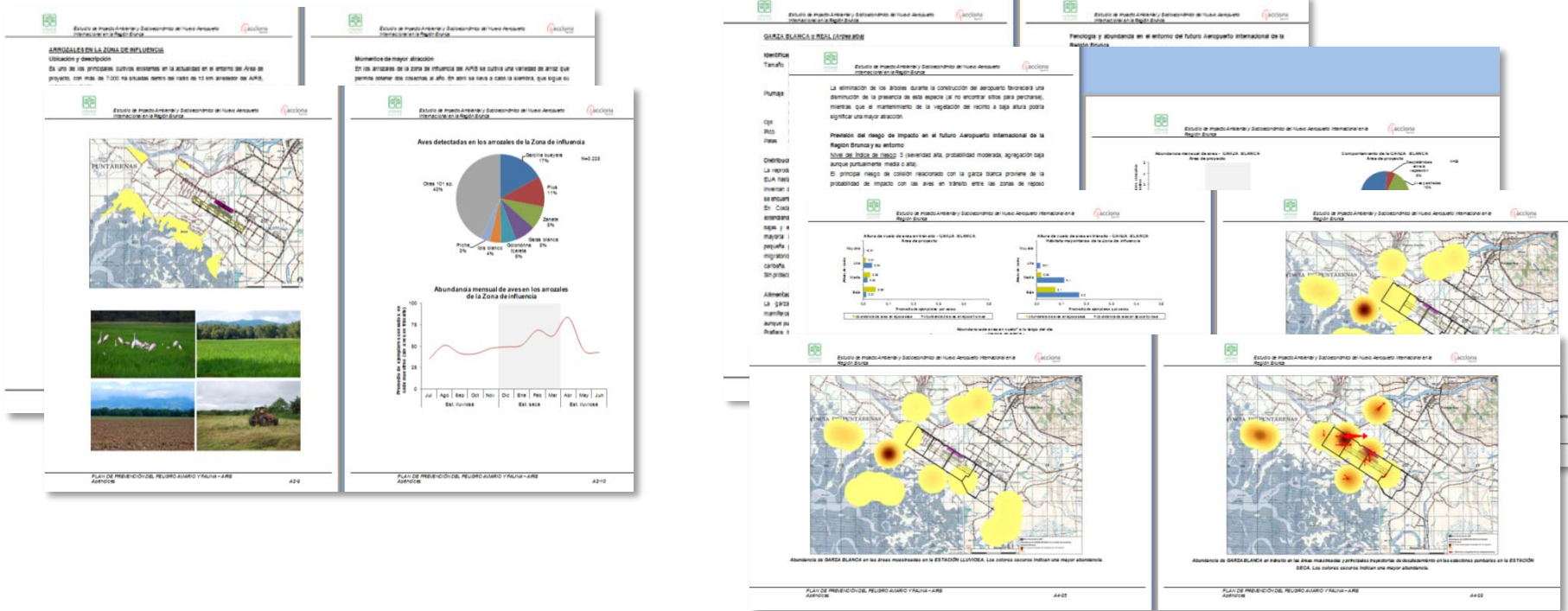


Censed species and potentially most conflictive ones

- 46197 individuals from 199 species.
- Most frequent species:
 - *Aratinga finschi* (150 g)
(47% of individuals overflying project area)
 - *Volatinia jacarina* (10 g)
 - *Coragyps atratus* (2000 g)
 - *Amazona autumnalis* (420 g)
 - *Quiscalus mexicanus* (230 g)
 - *Dendrocygna autumnalis* (800 g)
 - *Hirundo rustica* (19 g)



Information about eavery attracting site and species



Sites

+

Species



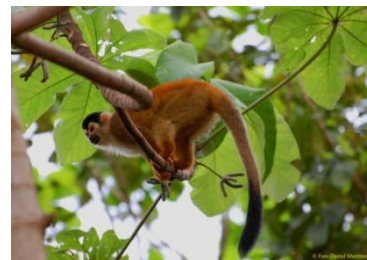
Measures for the Fauna Risk Management Plan

Index risk matrix for birds (Allan 2006, adapted)

Groups considered:

- Protected birds
- Birds hazardous for aviation safety
- Mammals and reptiles

		Probabilidad de choque				
		Muy alta	Alta	Moderada	Baja	Muy Baja
Gravedad de los daños	Muy alta		- ZONCHO	- ZOPLOTE CABECIRROJO	- CIGUENÓN*	- Ag. pescadora - Garzón - Pelicano pardo - Zopilote rey
	Alta		- PICHE	- GARZA BLANCA	- IBIS BLANCO*	- GAVILÁN DE SWAINSON* - LAPA ROJA*
	Modera rriba					- Caracara - Cormorán - Espátula rosada - Garza tigre - Gavilán cangrejero - Gavilán colifajeado - Gongolona - Halcón peregrino - Pato aguja - Pato real - Rabihorcado - Tucán - Zopilote cabeceigualdo
	Baja	- PERICO - FRENTERROJO	- Lora copete rojo - Zanate	- 4 especies	- Cerceta alazul*	- Caracara cabeceigualdo* - Chorlito gris*
	Muy baja		- 1 especie	- 3 especies	- 3 especies	- 28 especies
					- 6 especies	
					- 15 especies	
					- 101 especies	



Fauna Risk Management Plan

15 measures, from planning to operational phases.

Divided into four categories:

I. Preventive measures, to reduce fauna abundance

I.a Airfield habitat management

I.b Fauna exclusion measures

I.c Fauna removal measures

I.d. Measures off the airfield

II. Fauna dispersal measures

III. Communication and cooperation measures

IV. Monitoring program



Messages to take home

- Bird (fauna) community has to be evaluated **before selecting the place** to build an airport.
- Gathering data before construction is a **key point to correctly define measures** (including building and airfield design).
- Measures have to consider the project area and its surroundings.
A wildlife strike committee with **external stakeholders** is needed.



Acknowledgements

To Óscar Juárez, neighbor from Palmar Sur, and Diego Ocampo, ornithologist, for their collaboration in field work.

To all the Dirección General de Aviación Civil staff involved in this work and specially to D^a. Vilma López, D^a. Hilda Valverde, D. Frank Gutiérrez and the rest of participants of the monitoring commission for the Environmental, economic and social impact study, who attended the meetings for the writing of the present study.

To all the people who give us some information that have contributed to improve the work, specially to D. Jorge Alberto Cole y D. Mario Álvares, from the Osa Municipality, to D. Gerardo Solano y D. Manuel, from the shrimp farm, and to D. Emmanuel Cordero, foreman of some rice fields.



Thank you very much

Contributions are welcome

(All photos taken by the staff during the study; bird photos by Daniel Martínez Araya)