

ARGOS TRACKING TO UNDERSTAND THE ECOLOGY AND BEHAVIOUR OF AGAMI HERONS

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Abstract

The agami heron is ranked 13th among the world's conservation priority heron species, and 2nd for the Americas. To date, nothing is known about the feeding grounds of this species during the breeding season, or about areas used during the nonbreeding season. In French Guiana, which holds the world's largest agami heron colony (representing over 95% of the known population), the location and characterization of these habitats as well as the identification of the geographic location and routes travelled by breeding and non-breeding individuals is crucial in order to evaluate the threats on the species and develop an effective conservation action plan both in French Guiana and throughout its distribution in South and Central America. To achieve this objective, GEPOG (Group for the Study and Protection of Birds in French Guiana) is tracking 8 agami herons since 2012 via the European LIFE+ Cap DOM program. Data from 4 individuals show that this species can migrate in different directions along the coast (Brazil, Suriname and Venezuela) and is able to cover up to 1300 km within two months, including several stop-overs. Sizes and habitats of the breeding season home ranges are determined.

Introduction

The Agami heron is:

- one of the **most cryptic and unknown** heron species of the Americas
- **scarce** throughout its distribution in North-Eastern South America and Southern part of Central America
- just **uplisted** to "**Vulnerable**" by the IUCN Red List because it is suspected to lose 19-26% of suitable habitat within its distribution over the next three generations
- one of the **French Guiana flagship bird species** thanks to the colony of over 2000 couples found in the Natural Reserve of the Kaw marshes

→ **Objective: enhance the understanding of the ecology and behaviour of this species through Argos Tracking**



Distribution of the species
© BirdLife International

Materials and Methods

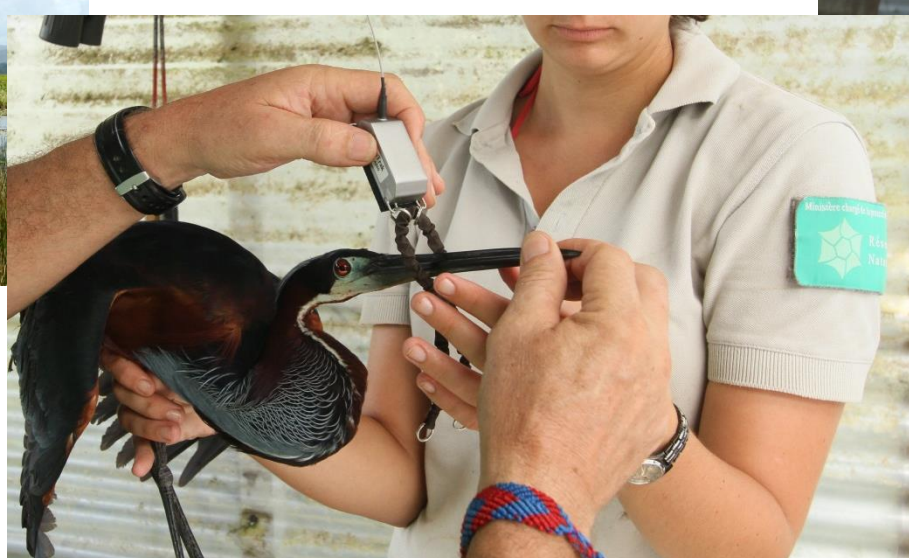
Study conducted between 2012 and 2015 → april 2012: 2 males +1 female; april 2013: 3 males +2 females

Material: NorthStar 20g battery and 12g solar PTTs (USA); Bureau Waardenburg harnesses (Netherlands)

Procedure:

Step 1: Capture with two 12m nets near to the colony

Step 2: Biometry measures, selection of birds to be equipped



Step 3: Equipment, choice of PTT and harness

Step 4: Argos follow up, sex confirmation with genetic analysis, home range analysis of areas frequented during breeding season (Kernel method)

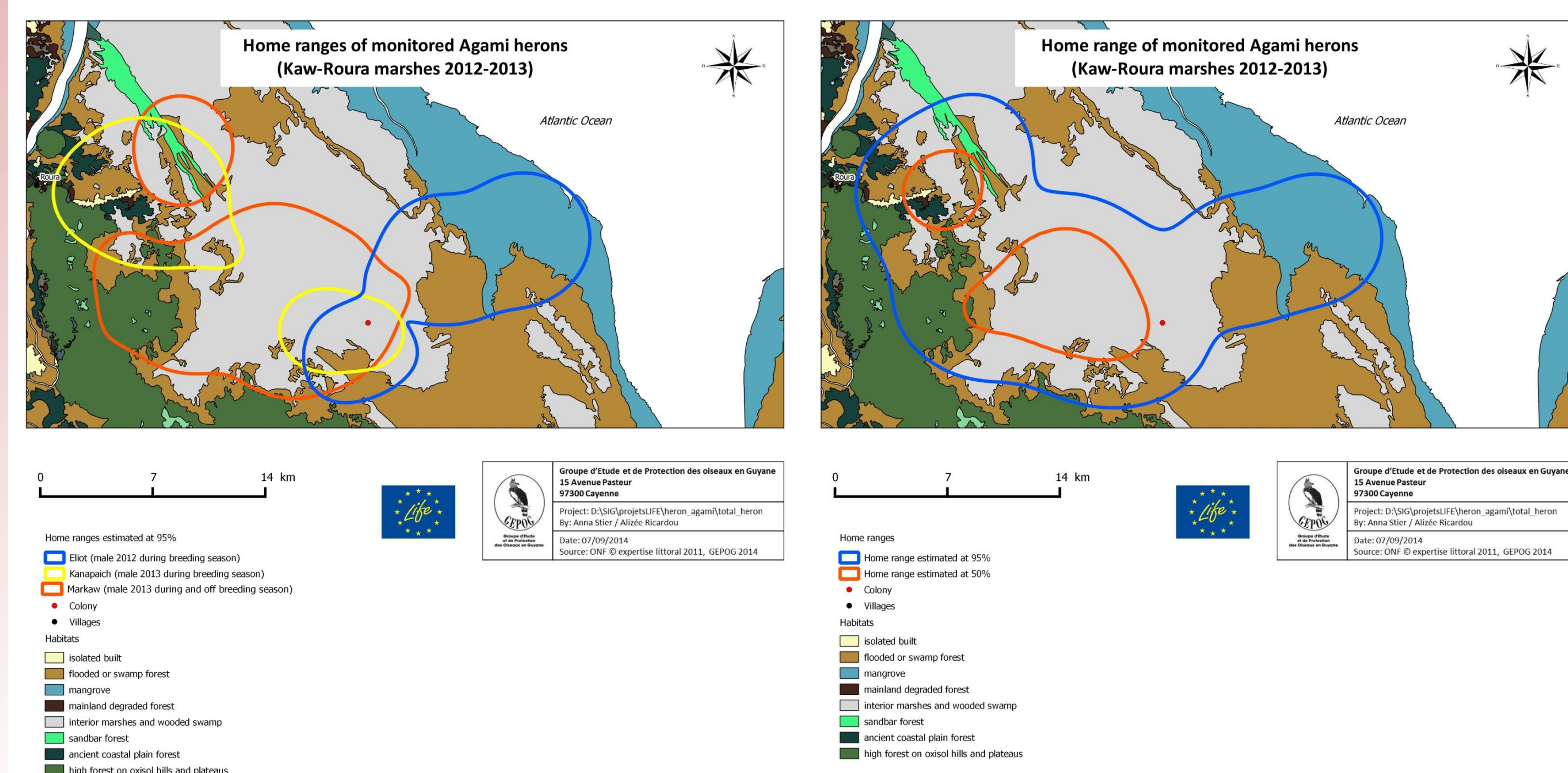
Step 5: Habitat verification from helicopter to check the habitat mapping accuracy

First home range Results

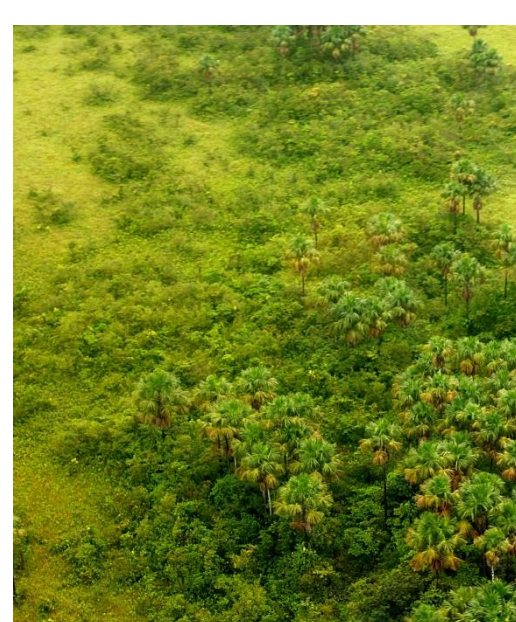
The home ranges in the Kaw-Roura marshes were analyzed for 3 male herons : Eliot and Kanapaich (before migration) and Markaw (who never migrated), all equipped with 20g battery PTTs

Home range	Eliot	Kanapaich	Markaw
95% size (km ²)	131	115	199
50% size (km ²)	26	16	31

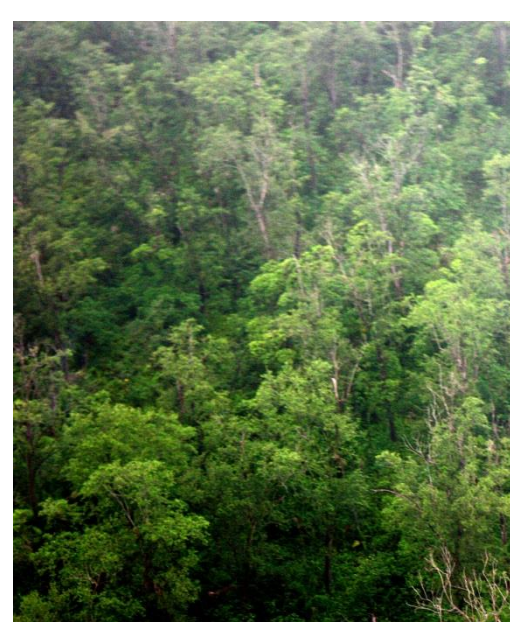
The global home range for all herons is of 360km² at 95% and 82km² at 50%



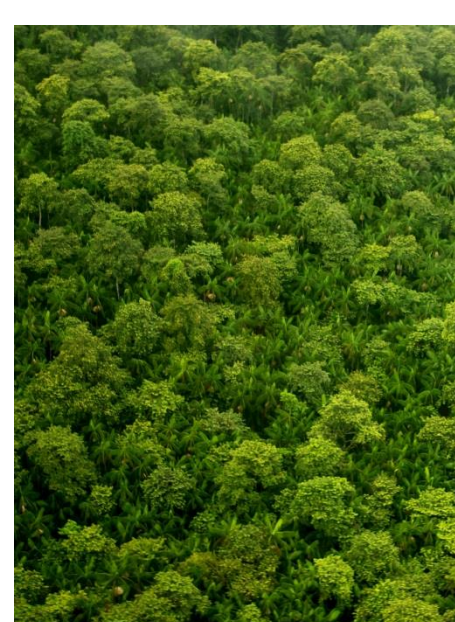
Home range mapping for each bird and for all birds



Swamps and palm groves



Senescent mangrove



Swamp forest

Habitat pictures taken from helicopter in April 2013 for each home range spot from Eliot (confirms the mapping)

Project web page: www.lifecapdom.org
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Picture ©: Anna Stier, Mathilde Segers, Vincent Rufay, Thomas Luglia

Acknowledgments



Bibliography

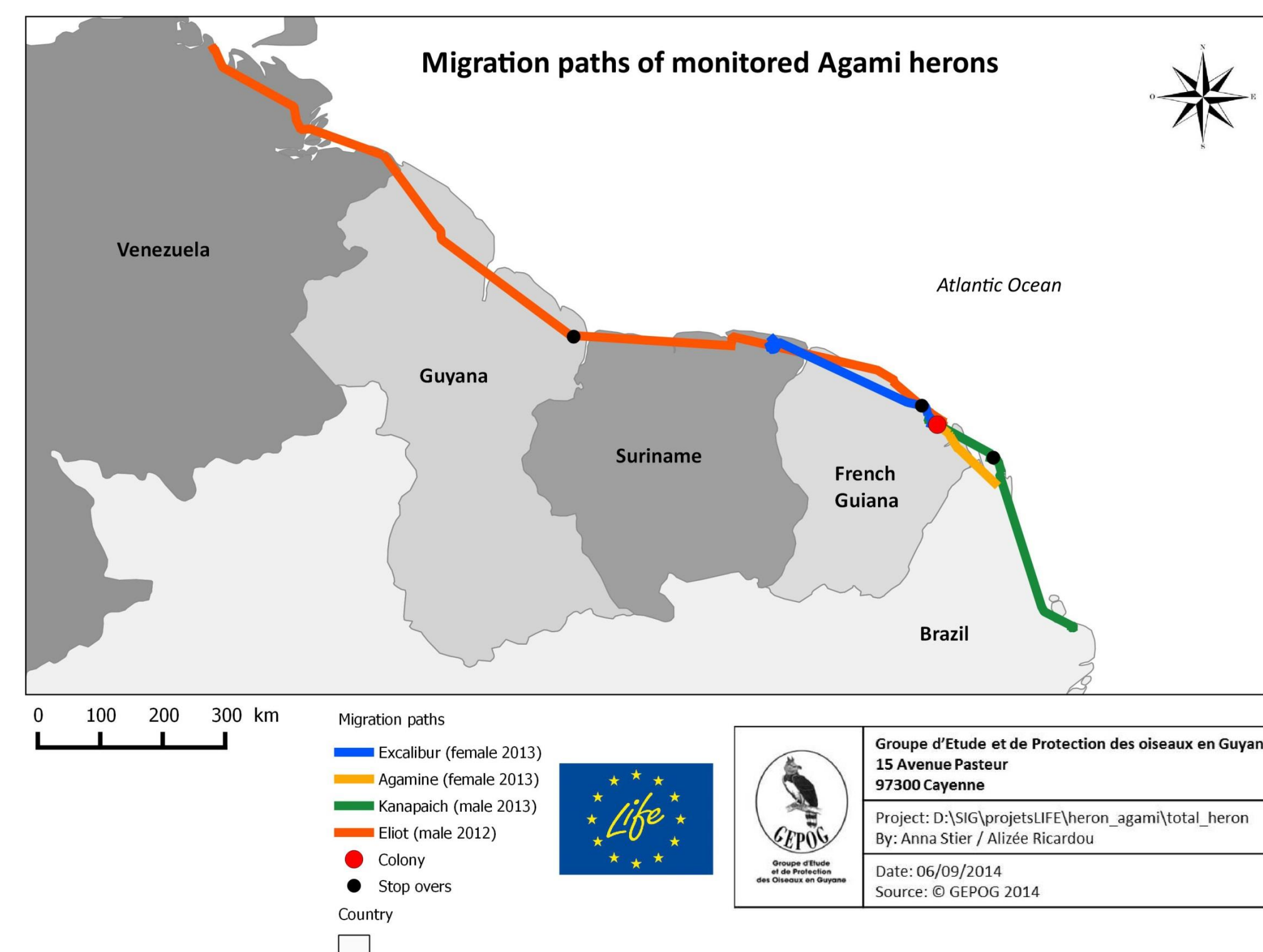
Reynaud, P. A., & Kushlan, J. A. (2004). Nesting of the Agami Heron. *Waterbirds*, 27(3), 308-311.

First migration Results

Out of 8 birds equipped, 5 could be monitored and 4 migrated

3 birds out of the 4 migrating could be analyzed, and show that they:

- have various migration behaviors with different migration distances and destinations, dates of departure and arrival
- always migrate along the Atlantic coast, and rest during one substantial stop-over (stop-overs of less than 8 days of duration can not be detected with these PTTs)



Post-breeding migration routes along the Atlantic coast (Agamina's PTT stopped working before reaching the destination)

Name	PTT equipment date	Sex	PTT type	PTT-lifetime (days)	Number of locations	Migration (yes/no)	Migration distance (Km)	Leave	Arrival	Migration length (days)	Number of stop-overs	Stop-over length (days)	Migration length off stop-overs (days)	Global speed off stop-overs (Km/day)
Excalibur	26/04/2013	F	Battery	202	208	yes	280	29/04/2013	04/06/2013	36	1	24	12	23
Markaw	25/04/2013	M	Battery	209	236	no	-	-	-	-	-	-	-	-
Kanapaich	25/04/2013	M	Battery	225	174	yes	411	28/06/2013	01/10/2013	95	1	61	34	12
Agamina	25/04/2013	F	Solar	4	42	yes	?	28/04/2013	?	?	?	?	?	?
Eliot	24/04/2012	M	Battery	198	187	yes	1250	08/07/2012	06/09/2012	60	1	24	36	35
Origami	22/04/2012	F	Solar	5	28	?	-	-	-	-	-	-	-	-
Blue sparrow	26/04/2013	M	Battery	0	-	?	-	-	-	-	-	-	-	-
Patapon	24/04/2012	M	Battery	1	4	?	-	-	-	-	-	-	-	-

Post-breeding migration results

Agamina's migration was proved by a single location in Brazil on October 5th

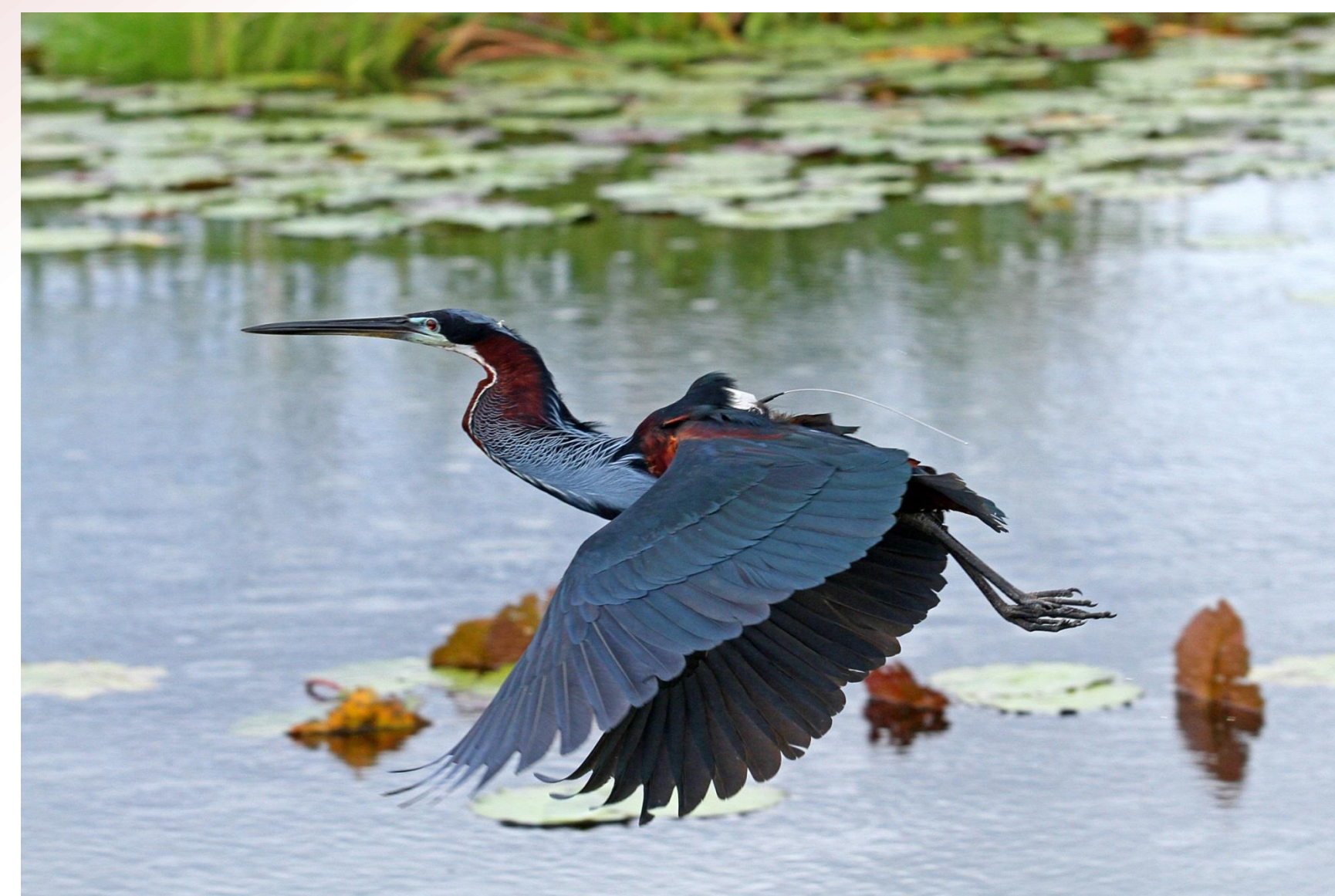
Discussion/Conclusions

Conclusions:

- Agami herons migrate long distances! → Need of international cooperation at the continent level for conservation efforts
- Not all herons migrate, some stay in French Guiana
- The Kaw-Roura marsh colony receives individuals from the whole Atlantic coast of the species' distribution area. This confirms the importance of keeping the place protected and regular monitoring of the colony.

Perspectives:

Solar PTTs are not working fine on this species → need of new technology on battery PTTs to be able to go further into the analysis (get at least an entire year of locations and more regular/numerous locations)



Excalibur flying with her PTT in the Kaw-Roura marsh, French Guiana, April 2013

