

0121810: Assessment and conservation of Grey-necked *Picathartes* *Picathartes oreas* in south-east Nigeria



Host Country: Nigeria

Site Location: Cross River State

Project Duration: August 2010 – March 2011

Project goal: To improve the conservation status of the Grey-necked Picathartes in Nigeria

Authors: ATUO Fidelis Akunke; IVANDE Samuel Tertese and WALA Zingfa Jantur

Permanent contact address: 173 Etta Agbor Layout, Calabar, Cross River State

Email:fidelatuo@yahoo.com



Table of Contents

Cover page	1
Table of Content	2
Section 1	
Acknowledgement	3
Project Summary	4
Background and justification	5-6
Project Team members	6-7
Project Objectives	7
Description of project site	8- 9
Section 2:	
Methodology	11-12
Conservation Education	12-13
Team Training	14-15
Results	16-21
Section 3:	
3.1 Achievements and Impacts	22-25
3.2 Problems encountered and potential solutions	26
3.3 Lessons learnt	26-27
3.4 In the future (Recommendations)	27-28
References	29-30
Appendix	31-33

Acknowledgement

We are grateful to the following for their immense contributions in the course of this project:

CLP for providing the funds needed for completion of this project:

-WCS-Nigeria for mentoring this project and for assisting with logistics, media publicity, map production (GIS analysis) and providing some of the equipments used for the survey.

-Phil Hall of the Leventis Conservation Foundation provided the funds for team training in Nigeria.

-APLORI for providing technical support especially in the areas of team training and project methodology.

-Cross River State Forestry Commission and Nigeria National Park Service who granted us permission to carry out this project in Cross River.

We also wish to acknowledge all local guides, rangers, eco-guards, village chiefs and community leaders for their supports.

Section 1

Project summary

The Grey-necked Picathartes (GNP) *Picathartes oreas* is an African endemic bird species currently considered to be globally threatened with a wild population of less than 10, 000 individuals. It is currently classified as Vulnerable under the IUCN/BirdLife threat criteria. The Nigerian population is not very well studied but is currently estimated between 500-1000 individuals and restricted to the forest of Cross River in South-east Nigeria. This project revisited the 91 breeding sites identified during the first and only survey of the species in Nigeria in 1987. Extensive searches were carried out between August 2010 and February 2011 to assess current population size, human impact and also locate possible new breeding sites. A breeding population of 170 individuals was estimated from 84 breeding colonies. Only 72 breeding sites were found in the localities where 91 had been recorded in 1987, 13 (18%) of which were no longer active also showing evidence of anthropogenic disturbance. Anthropogenic disturbances included farming, wire snares, gun hunting, egg and juvenile removal, bush burning and hunters' camps. Hunters' camps were observed at 31% of the colonies found and are probably the most disturbing threat to GNP. Grey-necked Picathartes conservation awareness meetings were held and 2000 conservation posters distributed in all 28 communities visited to increase awareness about the species. Capacity of Forestry/National Park staff and local people involved in the project was enhanced with new skills, which will be relevant for the protection of this species and its fast disappearing habitat.

Background and Justification

The Grey-necked Picathartes is currently classified as Vulnerable under the IUCN/BirdLife threat criteria and listed in appendix I of CITES. It is endemic to the tropical lower-guinea forest of Nigeria, Equatorial Guinea, Gabon and Cameroon, with a highly fragmented and declining global population estimated at 2500-10000 individuals (Bian *et al.* 2006; BirdLife International, 2011; Thompson and Fotso, 2000).

In Nigeria the Grey-necked Picathartes is found only in Cross River State, mainly associated with caves and hilly areas. Faced with an array of threats including habitat loss, predation and hunting the species is likely to be in decline from the population estimate of 500 – 1,000 individuals in the hitherto only survey of the species in Nigeria in 1987 (Ash, 1991). The decline in population of the species has raised international concerns resulting in the development of a species action plan in 2006 (Bian *et al.* 2006). New surveys to ascertain the current population status, distribution and threats facing the species as well as an urgent need for reinforcement of local capacity for the study of the species were recommended in the action plan compiled by Birdlife International in 2006.

The range of the Grey-necked Picathartes in Nigeria corresponds to a region of biodiversity hotspot of global significance, hosting other range restricted species e.g. African grey parrot, Bannerman's weavers and some endangered primates such as Cross River Gorilla *Gorilla gorilla dielhi*. Nigeria-Cameroon Chimpanzee *Pan troglodytes ellioti*, Drill monkey *Mandrillus leucophaeus*, Preuss's monkey *Allochrocebus preussi* and Preuss's red colobus *Procolobus preussi*.

The project was funded by the Conservation Leadership Programme (CLP). We also received in-kind support from the Wildlife Conservation Society in Nigeria (WCS-Nigeria) – the foremost conservation NGO working in the Nigerian rainforests, the A.P. Leventis Ornithological

Research Institute (APLORI) – West Africa’s foremost institute for ornithological research; the Cross River State Forestry Commission, and the National Parks Service of Nigeria. With this funding, support and collaborations, the project sought to provide information on current status of Picathartes to be used as an indicator of the current health of the forests of Cross River State. The project also provided an opportunity to build and nurture the survey team and thus allow a positive long-term impact on the conservation of the region.

Project members

1. Fidelis Atuo (Project team leader)

Fidelis completed his masters in Conservation Biology from the A. P.Leventis Ornithological Research Institute in 2009. Shortly after leaving APLORI and prior to the CLP funded project, Fidelis worked as a research assistant to Imong Inaoyom of WCS Nigeria. He helped Imong, in collecting data for his PhD on the threatened Cross River Gorilla. As team leader of the Grey-necked Picathartes Project, he was responsible for the overall coordination of the project, organising and supervising research trips, liaising with all stake holders to ensure smooth running of the project. He also was in charge of logistics and overall welfare of team members. On completion of the CLP funded project in March 2011, Fidelis worked with WCS Nigeria as a Research Biologist based in Okwangwo Division of Cross River National Park. He is currently in Hawk Mountain Sanctuary, Pennsylvania, U.S.A as a Conservation Science intern.

2. Samuel Ivande

Samuel completed his masters in conservation Biology at the A. P. Leventis Ornithological Research Institute, Jos in 2009. He was subsequently employed as a research associate at the same institute. Prior to the CLP funded project, Sam was developing proposals and applying for funding for a couple biodiversity conservation projects as part of his responsibilities at APLORI.

One of the successfully funded proposals includes a project to understand the ecology of the Abdim's Stork as a potential indicator species for climate influences on bird phenology in Nigeria. He led the preliminary survey for this project which was completed just before the commencement of the CLP funded project. Sam was responsible for organizing and analyzing data during the CLP project. On completion of fieldwork for this project, Sam has taken up a PhD position at the University of St Andrews, UK where his research will try to understand factors influencing densities and distribution of Palearctic migrants in West Africa.

3. Zingfa Wala

Zingfa obtained an MSc in Conservation Biology at the A.P.Leventis Ornithological Research Institute Jos in 2009. After completing his Masters, Zingfa participated in the tropical ecology and conservation field techniques course organized by the Tropical Biology Association in Kirindy, Madagascar. Since then, through his engagement with APLORI, he has taken part in research projects including a preliminary survey on the ecology (population size, breeding biology and migratory movements) of Abdim's Storks *Ciconia abdimii* in Nigeria. Zingfa is currently registered as a PhD student at the Fitz Patrick Institute. University of Cape Town, South Africa.



Project team members (L-R: Zingfa, Samuel and Fidelis)

Section 2:

Project objectives

Our project set out to achieve the following objectives

- Assessment of human impact on the species and its habitat since 1987
- Revisiting the 91 breeding sites recorded in the 1987 survey and to survey other areas suspected to have GNP
- Improvement in levels of conservation awareness among local communities
- Identify at least one site that may be further developed for eco-tourism
- Develop capacity of team members, national park rangers, forestry commission staff and the local people involved in the project.

Description of project site

The project site is located in Cross River State, south-eastern Nigeria part of the Cross-Sanaga-Bioko Coastal Forest eco-region. The forests of Cross River are contiguous with those of south-west Cameroon and represent the western extension of the Cameroon Highlands into

south-east Nigeria. The habitat is lowland rainforest and forms part of the hygrophylous coastal evergreen rainforest which occurs along the Gulf of Biafra. The survey covered an area of approximately 4,000 km² including but not limited to Afi Mountain Wildlife Sanctuary, Afi River Forest Reserve, Cross River National Park, the Mbe Mountains and the Obudu Plateau (Figure 1).

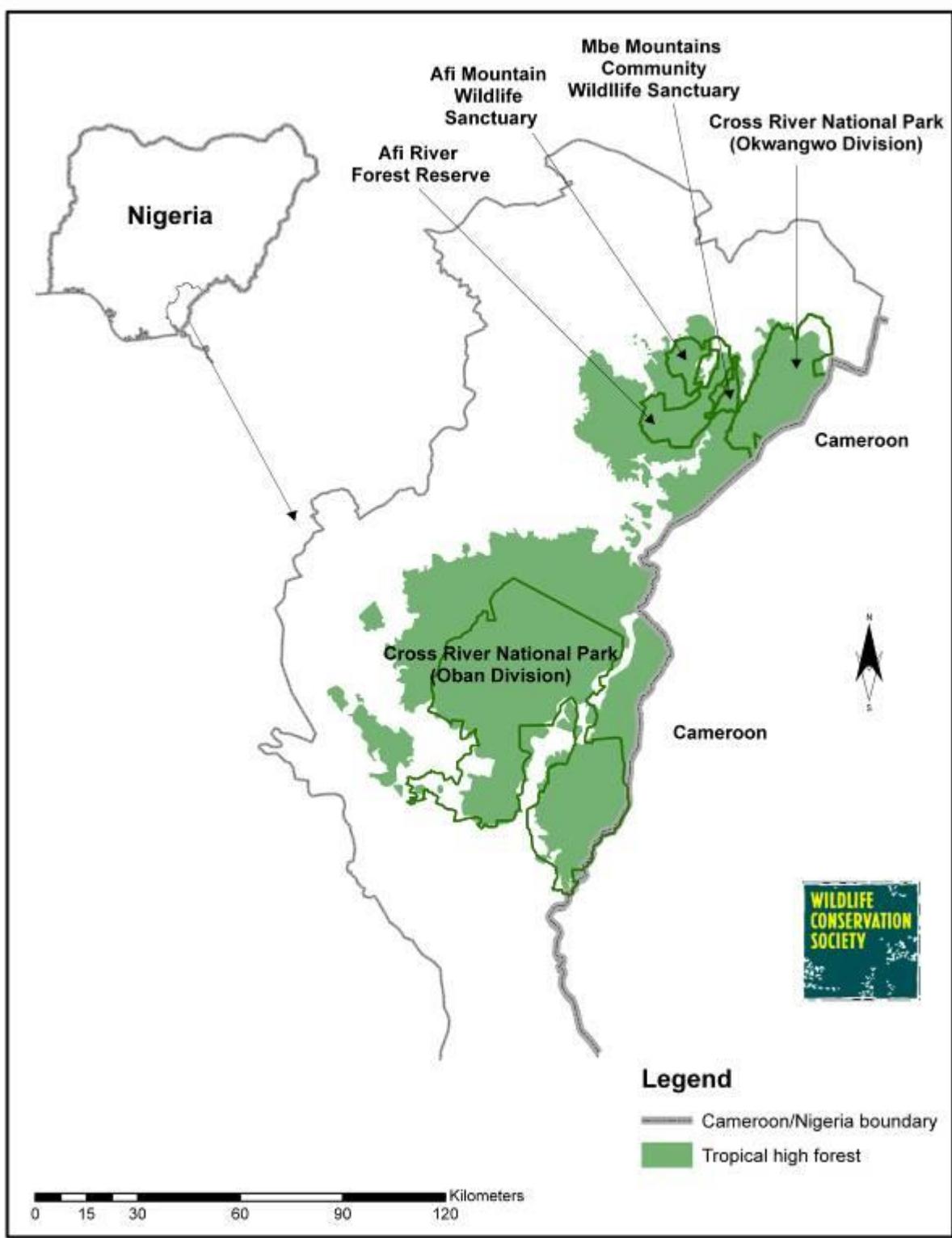


Figure 1. Map of the project area

Methodology

Extensive searches to identify GNP colonies in Nigeria were carried out between the 17th of August, 2010 and the 25th of February, 2011. Within this period, our team re-visited 20 of 22 localities where 91 breeding colonies were recorded in 1987. Two localities could not be re-located hence were not visited. Other areas in Nigeria suspected to have GNP were also visited. Within each community, permission to enter the forest was obtained from community leaders while villagers with good knowledge of the forest were interviewed for information on existing GNP colonies. The conservation awareness poster which had the picture of the GNP was used in the interview to ensure the interviewers can actually identify the GNP and its colony. While in the forest, extensive searches of all potential colony sites including overhanging rocks mainly around streams, valleys and slopes were also carried out for possible GNP nest sites (Awa 2010, Butynski, T. M and Thompson 1993). In localities where the GNP was previously surveyed as reported in Ash 1991, names of recorded colonies were asked of the villagers and where the location of the colonies could be remembered, we were taken there. These sites were then searched for presence of colonies with assistance from field guides recruited from the host communities who had excellent knowledge of the forest. In protected areas, information on existing and possible colony sites was gotten from park rangers who were also employed as guides.

Within each colony, all nests seen were counted and categorized as active (nests showing evidence of on-going or potential breeding with eggs, chicks, fresh mud-caps and nest linings); Inactive (nest without any sign of ongoing or potential breeding activity), Under construction (incomplete nests with fresh mud-caps) or Dilapidated (when part of or all the nest has fallen off). A thorough inspection of all nests was carried out and their content counted and recorded. Nest inspection was done by directly looking into the nest (for nests that were less than 1.5m

high). Nests that are higher were inspected with the aid of a mirror attached to the end of a long enough pole. GPS coordinates of each colony was taken using a Gamin 60 GPS unit.

A threat assessment of each colony was done by recording all signs of human disturbances within 20 meters of all the breeding colonies.



Nest inspection in the field

Conservation Education

Our education programme was targeted primarily at communities living around identified habitats with GNP colonies. This was achieved through community meetings, distribution of GNP posters with conservation messages and a radio awareness programme. Community meetings were held in each of the 28 communities visited. Meetings were held in community squares and palaces of community chiefs with a cross section of the various interest groups within the community. During each meeting, our team discussed the various threats facing GNP with emphasis on those that were peculiar to the host community. House to house meetings with

some community leaders absent from our meetings was done with assistance of community youth.

Posters with conservation messages on the GNP were distributed during community meetings and during house to house conservation visits. To ensure complete awareness, some posters were posted in centralized public areas where most of the villagers can access them. A radio programme on the conservation status of the GNP was produced and broadcasted on local FM radio (Cross River Radio, Ikom) as part of WCS's current radio series on conservation.



Community meeting at Okwa village



House-to-house conservation visit in Okwabang village



A cross section of community members in Bakum



GNP Poster in a centralized public area in Okwangwo Village

Team Training

Five days team training on avian survey techniques with emphasis on GNP survey was completed prior to the project by a senior scientist from A.P. Leventis Ornithological Research Institute. Training of other team members on knowledge gained from CLP training course by team representative at the CLP course was also completed during this period. Hands-on training of local guides, rangers/eco-guards on basic Picathartes survey techniques was done as they worked with team members during fieldwork.

Results and Output

Objective 1: Assessment of human impact on the species and its habitat since 1987

Documented evidence of anthropogenic disturbance were recorded at 36 (50%) of the re-visited sites. Thirteen (68.4%) of the 19 abandoned sites were also evidently disturbed (Fig 2). These disturbances were also present within 20 meters of 23 (39%) of the 59 still active breeding sites. Anthropogenic disturbances included farming, wire snares, gun hunting (indirectly measured by presence of spent cartridges), egg and juvenile removal, bush burning and hunting camps. Hunting camps were observed at 64 % of the disturbed colonies found and are probably the most disturbing threat to GNP. Most overhanging rocks that provides a good rock face for nesting GNP are used as hunting camps by hunters. The nesting birds are either forced to leave due to constant human presence or as a result of heat from fire stands set by the camping hunters. Some of the hunters interviewed testified of having removed eggs and chicks from such nests. Chicks spent about 4 weeks and will grow almost the size of the adult bird before fledging (Thompson, 2004); therefore will offer almost the same amount of meat the adult will offer.



Hunter's Camps in overhanging rock



Destroyed nests in a hunting camp

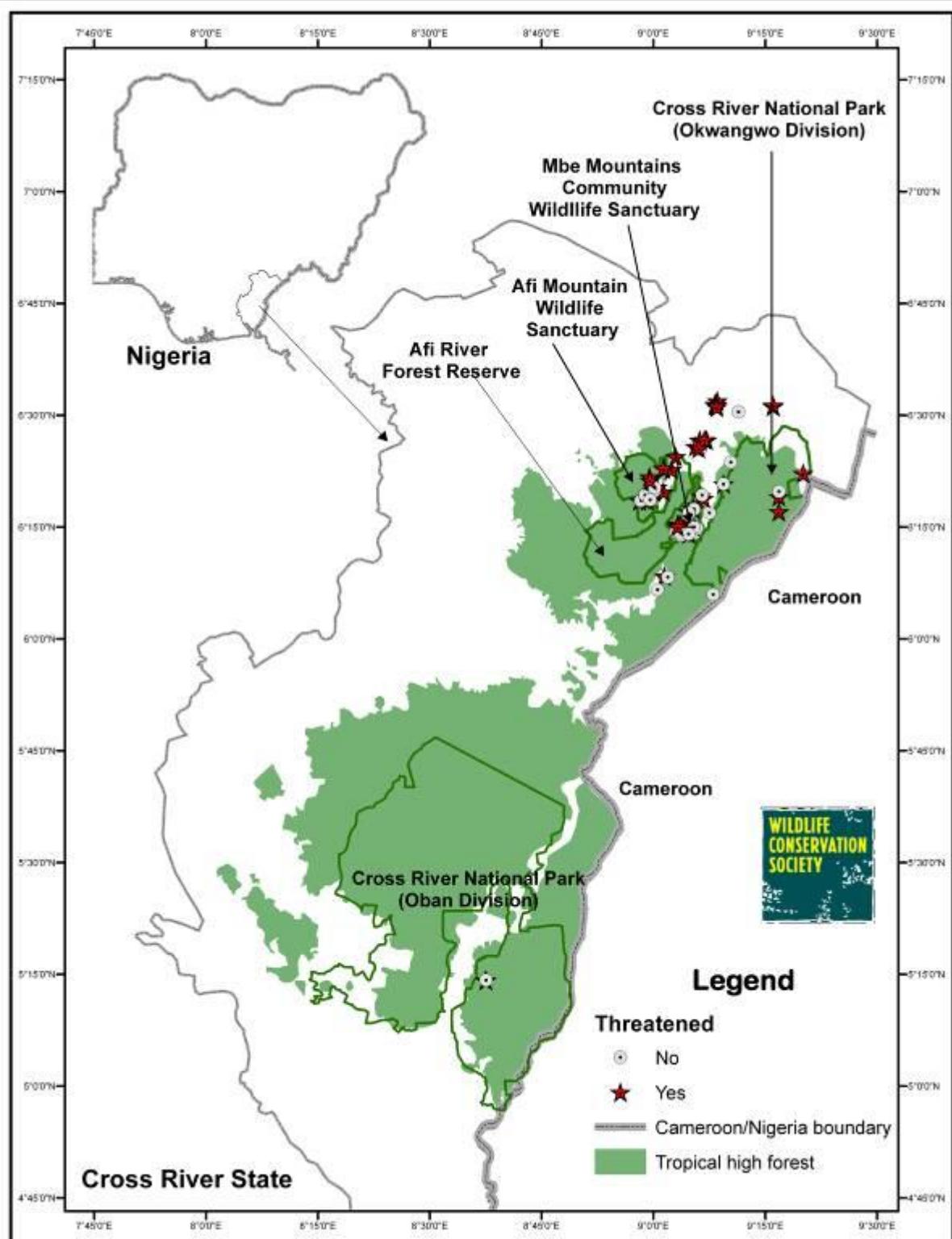


Figure 2: Distribution colonies showing human disturbance.

Objective 2: Revisiting the 91 breeding sites recorded in the 1987 survey and to survey other areas suspected to have GNP

Seventy-two breeding sites were recorded in the 20 re-visited localities. GNP breeding evidence was found in 53 of these sites whereas 19 had no evidence of GNP breeding and may have been abandoned. Eight suggested new localities (localities not recorded in Ash's 1987 report) were identified and visited; evidence of GNP were found in six of these localities, with 12 breeding sites recorded consisting of 38 GNP nests (Table 1).

Table 1: New localities and colonies recorded

	Village	Colony name	No. of nests	No. of active nests	GPS location	
1	Abu Obisu	Kakuabuobisu	1	1	6.14071587	9.02480177
2	Butatong	Okwunakwo 1	2	1	6.34673000	9.15694000
		Okwunakwo 2	2	1	6.34599000	9.15656000
		Okwunakwo 3a	9	4	6.39487370	9.17340092
		Okwunakwo 3b	6	3	6.39487370	9.17340092
		Okwunakwo 3c	5	3	6.39487370	9.17340092
3	Begiagbah	Kata	1	1	6.50723000	9.19020000
4	Okwa 1	Etalivee	1	1	6.28436000	9.28044000
		No Name	2	1	6.31831482	9.28069825
5	Okwa 2	Ntane	4	2	6.32935219	9.28084242
6	Belegette	Nyamanye	1	1	6.36668000	9.33395000
		Evanzepishi	4	2	6.37010000	9.33489000
TOTAL			38	21		

A total of 185 nests were recorded during the survey. We estimated a breeding population of 170 individuals from 84 active nests as recommended by Awa 2010 and Thompson 2004. Ten of the active nests contained eggs (mean clutch size of 1.9) while six had chicks (Table 2).

Table 2: Locations of nest with chicks or eggs

Village	Site	Nests with egg	Nests with chick	No. of eggs	No. of chicks
Abu Ebam	Boki bird site	1	0	2	0
Kayang 1	Kalum Ashow	1	0	1	0
Kayang 2	No name	0	1	0	2
Kayang 2	Uka Utu	1	0	2	0
Bakum	Kagio	0	1	0	2
Bakum	Utsor	1	0	2	0
Butatong	Okwunakza 3a	2	0	4	0
Butatong	Okwunakza 3c	0	2	0	4
Okwabang	No name	1	0	3	0
Bukalum	Uka Taa	1	0	1	0
Olum	Etempi	1	0	2	0
Boje	Upper cave1	1	0	2	0
Boje	David cave1	0	1	0	2
Baunchor	no name	0	1	0	2
Total		10	6	19	12



Newly hatched chicks seen in Butatong colony



The only nest with 3 eggs during the survey recorded in Okwabang

Objective 3: Improvement in levels of conservation awareness among local communities

Two-thousand posters with conservation education messages were produced and distributed to 1820 people in all 28 communities visited. Some bills were strategically posted and were targeted to reach an even wider audience of over 35,000 people living in these communities.

The radio programme is expected to reach the over 100, 000 people within coverage of the local media house (Cross River Broadcasting Commission, Ikom).



Meeting with a community leader

GNP education poster

Objective 4: Identify at least one site that may be further developed for eco-tourism

A site with 21 nests including 10 active ones has been identified at Butatong-Bokalum-Wula triangle. The colony is located only about 5 km from the head office of the Okwangwo Division of Cross River National Park and is accessible from Butatong village. Given its size and location, this site holds great potentials and we consider it a good candidate to be developed for eco-tourism.

Objective 5: Develop capacity of team members, national park rangers, forestry commission staff and local people involved

Team training by the senior scientist from the A.P. Leventis Ornithological Research Institute added greatly to team experience. The training also produced a finalized methodology and work-plan which was used throughout fieldwork. Experience on log-framing and media outreach transferred to team by the team representative in the CLP training course was beneficial for project especially during production of log-frame and media recording of conservation awareness programme.

The 52 rangers, eco-guards and local guides involved with fieldwork all gained skills and demonstrate capability to carry-on with GNP surveying and monitoring.



Team leader sharing knowledge gained from CLP training course



Team members receiving instructions from Dr. S. Manu of the A. P. Leventis Ornithological Research Institute

Section 3:

3.1 Project Achievements and Impacts

Information on population size, distribution and threats is crucial for developing conservation strategies especially for threatened species. This project has most importantly contributed in providing updated and crucial information in this regard for the GNP as proposed in objective1. From our survey, we place the estimate of the breeding population of GNP at 170 individuals. This estimate is from active nests, suggesting a decline in the population from the projected 500-1000 individuals in the 1987 survey. While we agree that the population is declining, it is worthy to note here that a population of 500 - 1000 individuals reported by Ash 1987 was certainly an over estimation as it was largely based on estimate from hunters. Our experience in the field revealed that hunters are often most likely to overestimate by a wide margin the number of nests in a colony especially when the nests exceed five. We recorded GNP in six new localities thus improving information on its distribution in Nigeria (Figure 3). We report anthropogenic activities including farming, hunting and trapping as threats to the species in 49% of the 72 re-visited breeding sites.

Thompson, 2004 identified predation as the main known course of nest failure in breeding picathartes. Our team encountered a brutally injured chick that was evidently dropped by an unidentified raptor as we approached the colony.



Evidence of predation

The forest of Cross River State is globally reorganized as one of Africa's biodiversity hotspots having the largest remaining area of relatively undisturbed tropical high forest in Nigeria and is home to several endemic and highly threatened species of fauna and flora. Most parts of the forest including protected areas are surrounded by poor communities that depend heavily on the forest for survival. The impact of these locals leaves an extensive array of threats including illegal hunting, deforestation, logging and uncontrolled NTFP collection which threaten the health and integrity of the entire forest ecosystem. This trend we think if left unchecked portends a bleak future for the rich diversity of the Cross River forest. The threats faced by GNP in this area are shared by other highly threatened species such as the Cross River Gorilla, Nigeria-Cameroon Chimpanzee, Drill monkey, Preuss's monkey, etc; most of which utilized the same habitat as GNP. For example, hunting camps which posed the most significant threat and was recorded in 64 % of all disturbed colonies is not directly targeted at GNP but other games. Our interview with hunters revealed that they do not directly hunt the GNP for food (though the bird often become victim of traps set for other

preferred game animals) but will go for other bigger game such as the duikers, hyrax, monkeys, porcupines, elephants, including the critically endangered species.

Habitat degradation, loss and fragmentation resulting from logging, aggressive deforestation and subsequent conversion of the forest areas into cocoa farms poses another major concern as even protected areas are not spared. Large hectares of farms majorly cocoa and banana farms were encountered within major forest areas including protected area.

The landscape species approach as favoured by the Wildlife Conservation Society (WCS) identified the GNP as a landscape species for the forest of Cross River State. Therefore efforts targeted at mitigating threats faced by GNP will play important role in enhancing the health of the forest thus providing a healthier habitat for other species.

However, in line with objective 3 we addressed these challenges through our awareness raising activities in all 28 communities visited including community meetings with over 700 individuals and distribution of 2000 GNP conservation education posters. Our media programme (Radio and print) is expected to have reached a wider audience of over 100, 000 people in GNP range areas.

The involvement and hands-on training in basic GNP monitoring techniques as well as conservation status and awareness of locals in fieldwork for this project arises from our objective to build local capacity for GNP conservation and by so doing we have contributed in reinforcing capacity for sustained conservation action for GNP and indeed other biodiversity in Nigeria.

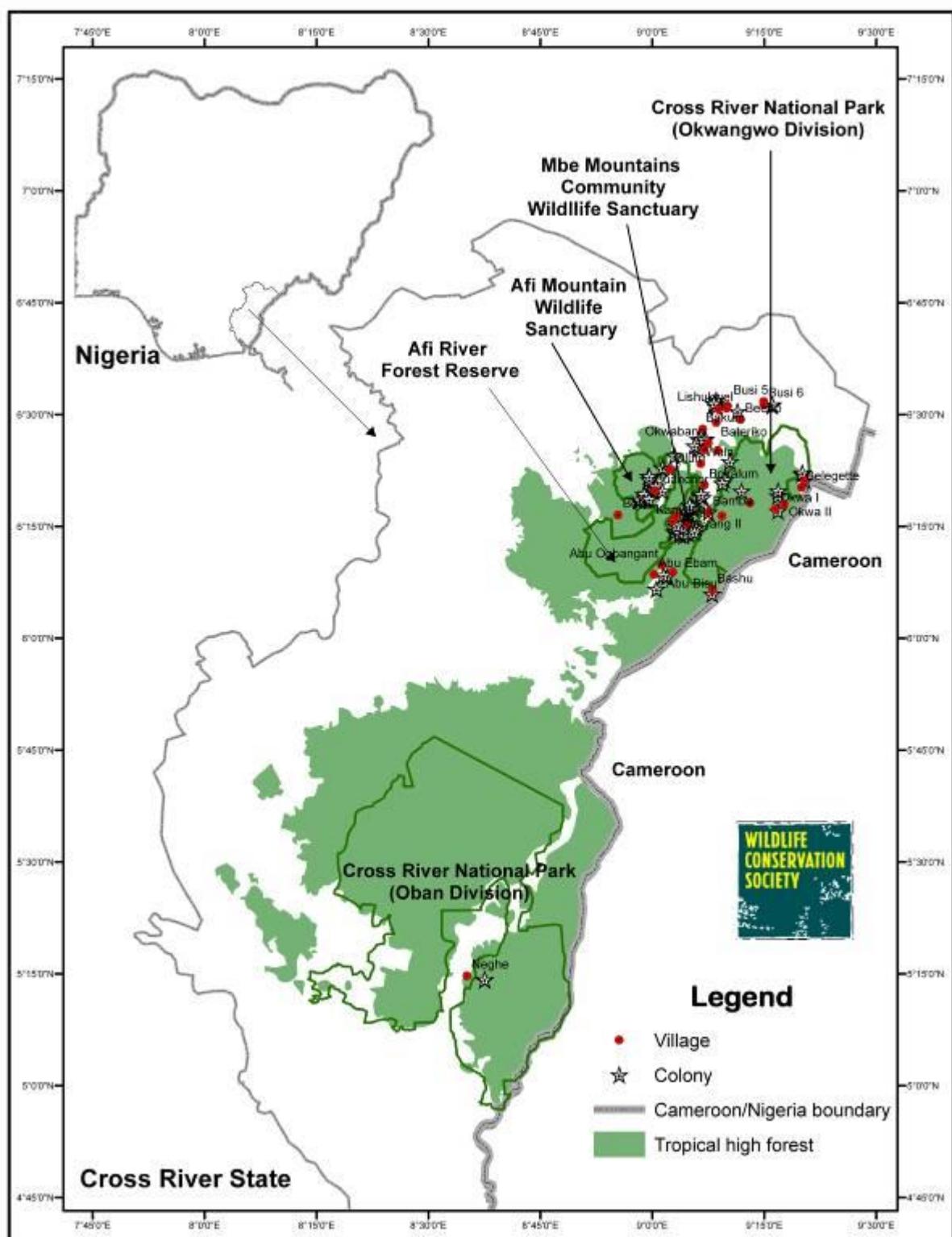


Figure 3: Distribution of colonies in Nigeria

3.2 Problems encountered and potential solutions

- Difficulty in locating all the 91 sites that were hitherto recorded in the previous survey of Ash, 1987. This was mostly due to the inability of the villagers to recognize some of the names given to these sites in the Ash's report. We overcame this problem by visiting all known GNP sites within such villages.
- There were generally high expectations in terms of immediate economic rewards from most local communities. Some communities expected the project to provide monetary rewards or basic social amenities such as potable water, roads and electricity in return for their support and cooperation for GNP conservation. Community meetings with chiefs and other community leaders were used as avenue to clarify such misunderstandings.
- Although speedy permission was given by the National Park Service to survey areas within the National Park, directives such as the use of five park rangers on each day of the survey was a challenge, given our limited budget. Negotiation with the Park authority reduced the number to four which we were able to support with a slight readjustment of our budget.

3.3 Lessons learnt

We learnt that:

- Involvement of local communities in the project planning and implementation is critical for its success.
- Incorporating community development and livelihood options in conservation projects will go a long way in ensuring local support vital for projects' success and sustainability.

- In developing conservation projects in areas with difficult and challenging terrains, it is important for teams to plan their projects taking into consideration time and resources available.
- Relying on local hunters and farmers for important information such as colony size is inapt as our experience shows that such estimates are always inaccurate especially when the colony has more than five nests.
- Gaining the support of the traditional institutions is very important in winning the confidence and support of other community members.

3.4 In the future

In the future, there will be need to build on the achievements recorded during this phase of the project by initiating a monitoring programme for all recorded colonies as well as continuous search for new colonies especially within southern Cross River area.

Currently, GNP is not protected by federal wildlife laws in Nigeria. The involvement of all stake holders in developing a national action plan for GNP conservation is crucial for the bird's protection in Nigeria.

In the future, it will be important to increase conservation education programme to include television shows, school enlightenment, and articles in the print media.

Collaboration with community chiefs, village elders, youths and women groups is crucial to ensure protection of colonies found outside of protected areas.

Little is known about the biology and ecology of the Grey-necked Picathartes throughout its range. There is therefore a need to initiate in-depth behavioral and life history studies of the species, so as to contribute significantly to the scanty literature currently available.

Having identified a key site suitable for eco-tourism, there is a need to liaise with the Cross River State Government through the State's Tourism Bureau to further develop this site as a community based eco-tourism site.

A reconnaissance to measure levels of knowledge, attitude and behaviour of people living around GNP areas toward GNP and other biodiversity is crucial in measuring the impact of this preliminary phase of our project.

References

- Ash, J. S. (1991) The Grey-necked Picathartes *Picathartes oreas* and Ibadan Malimbe *Malimbus ibadenensis* in Nigeria. *Bird Conservation International* 1:71-82.
- Awa II, T.; Burgess, M and Norris K (2009) Investigating the practicality of using radio tracking to determine home range and movements of Picathartidae. *Ostrich* 80(3):145-151.
- Awa II, T.; Dzikouk, G and Norris, K. (2009) Breeding distribution and population decline of globally threatened Grey-necked Picathartes *Picathartes oreas* in Mbam Minkom Mountain Forest, southern Cameroon. *Bird Conservation International* 19:254–264.
- Bian, R.M., Awa, T., Ndang'ang'a, P.K., Fotso, R., Hoffmann, D., and Sande, E. (2006) (eds). *International Species Action Plan for the Grey-necked Picathartes Picathartes oreas*. Nairobi, Kenya and Sandy, Bedfordshire, UK: BirdLife International and Royal Society for the Protection of Birds.
- BirdLife International (2011) Species factsheet: *Picathartes oreas*. Downloaded from <http://www.birdlife.org> on 06/06/2011.
- Butynski, T. M., Schaaf, C. D. and Hearn, G. W. (1996) The grey-necked picathartes *Picathartes oreas* on Bioko Island, Equatorial Guinea. *Ostrich* 90: 90–93.
- Didier, K. A.; Glennon, M. J.; Novaro, A.; Sanderson, E. W.; Strindberg, S.; Walker, S and Martino, S. (2009) The Landscape Species Approach: spatially-explicit conservation planning applied in the Adirondacks, USA, and San Guillermo-Laguna Brava, Argentina, landscapes. *Oryx* 43(4) 476 – 487.
- Harter, B and Shirley, M. H. (2007) Notes on breeding and conservation of the Grey necked Picathartes *Picathartes oreas* in mainland Equatorial Guinea. *Ostrich* 78(1):97-100.

- Oates, J., Groves, J. S., Bergl, R., Dunn, A., Nicholas, A., Takang, E., Imong, I., Fotso, R., Nkembi, L., and Williamson L. (2007). Regional Action Plan for the conservation of the Cross River Gorilla (*Gorilla gorilla diehli*). IUCN /SSC Primate Specialist Group and Conservation International, Arlington, VA, USA.
- Thompson, H. S. (1993) Status of whitenecked picathartes - another reason for the conservation of the Peninsula Forest, Sierra Leone. *Oryx* 27(3): 155–158.
- Thompson, H.S and Fotso R. (2000) Conservation of two threatened species: *Picathartes*, *Ostrich*, 71:(1&2):154-15.
- Thompson, H.S. (2004) The reproductive biology of the White-necked Picathartes *Picathartes gymnocephalus*. *Ibis* 146:4: 615-622.

Appendix 1: Locations of breeding colonies

Village	Colony	Colony size	Active nests	GPS location	
Abu					
Ogbante	Kuku Abu	10	5	6.14071587	9.02480177
Abu Ebam	Boki birds	11	3	6.10976695	9.00931947
Kayang 1	Kibibi (ifa ozuocha)	8	2	6.25141000	9.05377000
Kayang 1	Kalum Ashow I	1	1	6.23788878	9.04857829
Kayang 1	Kalum Ashow II	1	0	6.23905915	9.05127550
Kayang 1	Cachi Nsha	0	0	6.23094086	9.06172086
Kayang 1	Kampie Awang	3	0	6.23539508	9.06161617
Kayang 1	Uka Ejokwa	1	1	6.23444248	9.07877125
Kayang 1	Uka Ocha	2	1	6.23442396	9.07876278
Kayang 1	Ashikochie	0	0	6.25608187	9.05438125
Kayang 2	No Name	3	2	6.29176000	9.08876000
Kayang 2	Cachi Ake	3	1	6.28993000	9.08941000
Kayang 2	No Name	3	1	6.28986000	9.09098000
Kayang 2	Ashikochie2	0	0	6.25698854	9.05961206
Kayang 2	Uka pele	3	3	6.27635000	9.07908000
Kayang 2	No Name	4	1	6.27933000	9.08029000
Kayang 2	Uka Utu	1	1	6.28062000	9.07891000
Kayang 2	Buka Kinchua	1	1	6.28373000	9.07988000
Bakum	Kagio1	1	1	6.44474000	9.10364000
Bakum	Kagio2	1	1	6.43010000	9.09394000
Butatong	Okwunakwo 1	2	1	6.34673000	9.15694000
Butatong	Okwunakwo 2	2	1	6.34599000	9.15656000
Butatong	Okwunakwo 3a	9	4	6.39487370	9.17340092
Butatong	Okwunakwo 3b	6	3	6.39487370	9.17340092
Butatong	Okwunakwo 3c	5	3	6.39487370	9.17340092
Bakum	Utsor	1	1	6.44396000	9.10366000
Bakum	Utsor 2	3	0	6.42978000	9.09573000
Bakum	Uka Ankukie	3	0	6.42611708	9.10132729
Kubong	No Name	0	0	6.52345000	9.13873000
Kubong	Kubong Alam 1	0	0	6.52362000	9.13879000
Kubong	Kubong Alam 2	0	0	6.52495000	9.13769000
Kubong	Kubong Uka Didede	0	0	6.52393000	9.13868000
Kubong	Uka kwel 1	0	0	6.52302000	9.14119000
Kubong	Uka kwel 2	0	0	6.51808000	9.14180000
Kubong	Kubong Udia	0	0	6.53216491	9.14265007
Okwabang	Ritsa	3	0	6.44475000	9.11933000
Okwabang	No Name	1	1	6.44555000	9.11451000
Ashishie	No Name	2	1	6.42385000	9.10458000
Begiaghah	Kata	5	1	6.50723000	9.19020000
Olum	Kinduo-nsatre	0	0	6.38090000	9.02275000
Olum	No Name	0	0	6.38078000	9.02269000
Olum	No Name	0	0	6.40723000	9.04974000
Bukalum	Uka Taa	5	1	6.31439000	9.11256000

Bukalum	Ukia Achi	2	1	6.32118000	9.10868000
Bamba	Ukia Obue (Mbe)	2	1	6.23698924	9.09437827
Bamba	Ukia Benkie (Armageddon)	4	4	6.24961616	9.09104579
Bamba	Ukia Ntei	1	1	6.24719094	9.09720540
Olum	Uka Nsatre	2	1	6.37985702	9.02364666
Olum	Etempi hill (Oshuchi)	1	1	6.37858456	9.04016429
Abu Obisu	Kaku Abu-bisu	2	0	6.13792000	9.03219000
Bashu	kache bakut	11	8	6.09907000	9.13367000
Buanchor	Kakuki Kajie	2	0	6.33083000	9.00252000
Buanchor	No Name	2	1	6.33055000	9.00222000
Buanchor	No Name	4	1	6.31063000	8.99281000
Buanchor	Uka kasi	0	0	6.33768000	9.00336000
Buanchor	Uka akung	0	0	6.35455000	8.99250000
Buanchor	No Name	3	2	6.36232000	8.99123000
Buanchor	Kaka ukpe	0	0	6.33051000	9.00100000
Buanchor	Intufuow	0	0	6.30871000	8.98676000
Buanchor	Ekuwubong	0	0	6.31389000	8.98507000
Boje	Afi (Buje upper cave area 1)	1	1	6.30914343	8.96885759
Boje	Afi (Buje upper cave area 2)	2	1	6.32190370	8.98211718
Boje	Afi (Buje upper cave area 3)	5	3	6.32222774	8.98108419
Boje	Afi (Buje upper cave area 4)	1	0	6.30916949	8.96908944
Boje	Afi (Buje upper cave area 5)	2	1	6.30886448	8.96931960
Boje	Afi (Buje upper cave area 6)	3	0	6.30879365	8.97033239
Boje	Afi (Buje upper cave area 7)	2	2	6.30917704	8.97007087
Boje	Afi (David's cave 1)	1	1	6.30822192	8.97057035
Boje	Afi (David's cave 2)	1	1	6.30910529	8.97217968
Boje	Afi (David's cave 3)	1	1	6.32177780	8.98092418
Boje	Afi (David's cave 4)	1	1	6.32159625	8.98151561
Buanchor	Uka Ushi-uke	1	0		
Buanchor	Kaku Abrebi	0	0	6.36232000	8.99123000
Buanchor	Bechi ubong	2	1	6.35455000	8.99250000
Belegette	Nyamanye	1	1	6.36668000	9.33395000
Belegette	Evanzepishi	4	2	6.37010000	9.33489000
Okwa 1	Etalivee	1	1	6.28436000	9.28044000
Okwa 1	No Name	2	1	6.31831482	9.28069825
Okwa 2	Ntane	4	2	6.32935219	9.28084242
Busi 5	Bute Ubong	1	0	6.52221526	9.26783295
Busi 6	Katang	2	0	6.51967957	9.26761880
Neghe	Etae Otan (Etae aipcha) 1	2	0	5.23694000	8.62560000
Neghe	Etae Otan (Etae aipcha) 2	2	1	5.23620000	8.62519000
Neghe	Etae Otan (Etae aipcha) 3	3	1	5.23664000	8.62586000
Abija Beebo	no colony	0	0	0.00000000	0.00000000
Okwangwu	no colony	0	0	0.00000000	0.00000000
		185	85		

Appendix 2

Distribution list

1. Conservation Leadership Programme
2. Nigeria Conservation Foundation (NCF)
3. Wildlife Conservation Society (WCS) Nigeria programme
4. Nigeria National Park Service (NNP)
5. Cross River National Park
6. Cross River State Forestry Commission
7. A. P. Leventis Ornithological Research Institute (APLORI)
8. A. P. Leventis Conservation Foundation
9. Cross River State Tourism Bureau

Appendix 3

Our project has so far been accepted for a speed presentation in the 25th International Congress for Conservation Biology (ICCB), New Zealand 2011.

Title: **Saving the last population of the globally threatened Grey-necked Picathartes *Picathartes oreas* in West Africa**

A manuscript for publication is in progress and will be submitted for publication.