

Pawi Species Recovery Strategy

Edited by H. P. Nelson, C. Devenish, N. Bobb-Prescott,
Alesha Naranjit, Kerrie Naranjit and P.J.K. McGowan

2011



The Pawi Study Group,
World Pheasant Association & Bird Life International

CONTENTS

1.0 EXECUTIVE SUMMARY	3
2.0 INTRODUCTION	4
3.0 SPECIES DESCRIPTION	4
3.1 The species' functions and values	5
4.0 STATUS REVIEW	6
4.1 Historical account	6
4.2 Current distribution and demography	7
4.3 Habitat and resource assessment	8
4.4 Threat analysis	9
5.0 VISION AND GOALS	11
5.1 Vision	11
5.2 Goals	11
6.0 OBJECTIVES	12
6.1 Goal A: The Pawi lives throughout its natural habitat	12
6.2 Goal B: Greater involvement by Trinidadians in conservation of the species	13
7.0 ACTIONS	14
7.1 Goal A - Objective 1. To provide the necessary scientific knowledge	14
7.2 Goal A - Objective 2. To promote management that will increase Pawi numbers	15
7.3 Goal A - Objective 3. To review legislation on the Pawi and land-use planning	16
7.4 Goal B - Objective 1. Improve networking and co-ordination of stakeholders	16
7.5 Goal B - Objective 2. To increase awareness within the private sector	17
7.6 Goal B - Objective 3. Promote rural livelihoods that will meet local needs and not damage the survival prospects of the Pawi and its habitat.	18
7.7 Goal B - Objective 4. Conduct awareness-raising programmes	18
8.0 WORKS CITED	20

List of Acronyms

CBO	community based organization
EMA	Environmental Management Authority
ESA	Environmentally Sensitive Area
ESS	Environmentally Sensitive Species
IUCN	International Union for the Conservation of Nature
NGO	non-governmental organization
PSG	Pawi Study Group
SPAW	Specially Protected Areas and Wildlife Protocol of the Cartagena Convention
UNDP	United Nations Development Programme
WPA	World Pheasant Association

1.0 EXECUTIVE SUMMARY

The Trinidad Piping-guan, *Pipile pipile*, known locally as Pawi, is endemic to Trinidad, having been elevated to full species by Strahl and Schmitz in 1997. The Pawi is the only representative of the cracid family in Trinidad, and is considered the second most threatened cracid worldwide by Birdlife International. It has been listed as Critically Endangered since 1994. This indicates that there is a very high probability that the species will become extinct in the wild in a short time unless conservation action is taken to prevent this extinction. Because of the small population numbers and its current global status, the IUCN/BirdLife/WPA Cracid Specialist Group considers the species an “immediate conservation priority”.

This Recovery plan is the outcome of a Stakeholder Conference held between 8-9 July 2010, at the Caroni Swamp Visitor Centre, Trinidad. This stakeholder conference included participation of sixty-three individuals from six State agencies, nineteen NGOs and CBOs and three business organisations. It outlines a strategic approach to the recovery of the Pawi which provides a consensus-based threat analysis and establishes a long term vision for the re-establishment of Pawi in all its native habitats in a 30-year time frame. Four key objectives are identified in the strategy that emphasize securing and expanding the species populations through increased national pride in the species, strengthening habitat management and research, and development of sustainable livelihoods for local peoples that live next to Pawi habitat. Eighteen key actions for recovery of the species are identified in the strategy.

2.0 INTRODUCTION

The Trinidad piping-guan is considered to be Critically Endangered (BirdLife International, 2010). Broadly speaking, this indicates that there is a very high probability that the species will become extinct in the wild in a short time: there is no higher category of threat. It has been listed as Critically Endangered since 1994, the first time that this threat categorisation system was applied to birds.

In Trinidad, this species is known locally as the Pawi and it will be referred to as the Pawi throughout this strategy. The species is only confirmed in the Northern Range in Trinidad. It has recently been reported still persist in the Trinity Hills Wildlife Sanctuary in the south-eastern forests of the island, however, it is known historically to have been found throughout much of Trinidad's forest (Chapman, 1894), and so has experienced a significant decline in less than two centuries. Workshop participants reported recent sightings in Grande Riviere; Morn Bleu-Blanchisseuse Road; Rio Seco, Matura; Santa Cruz, Blue Basin; Matelot; Brasso Seco, Blanchisseuse and Guayaguayare, Moruga; and at the "Canari flats" in the Trinity Hills Wildlife Sanctuary.

3.0 SPECIES DESCRIPTION

The Trinidad Piping-guan belongs to the Cracid family. They are medium sized, turkey-like birds with characteristic long slender necks and long tails. Adults can weigh up to 3.3kg and are approximately 70cm in length from beak tip to tail tip (James and Hislop 1988, French 1991). Both male and females are identical, with mainly glossy black feathers, bright red legs, a light blue face, a deep blue dewlap and a greyish crest. Some wing covert feathers are white at the tips causing a mottled pattern on the wing. They are named for their characteristic piping vocalisations of their close relatives (Piping-guans) which are found in South America.

The IUCN Red List of Threatened Species currently recognizes the Taxonomy of the Pawi as follows:

Kingdom: Animals

Phylum: Vertebrata

Class: Aves

Order: Galliformes (pheasants, cracids, partridges, turkey etc)

Family: Cracidae (guans, chachalacas, currasows)

Genus: *Pipile* (Piping-guans)

Species: *Pipile pipile* (Trinidad Piping-guan)



Figure 1: Adult Trinidad Piping-guan

3.1 The species' functions and values

The Trinidad Piping-guan is one of two endemic species of bird found in to Trinidad. It is the largest fruit-eating bird on the island and therefore is the only bird which provides

the unique ecological service of large-seed dispersal, an important role in natural forest maintenance.

The Pawi is also economically important to the growing local ecotourism market which provides jobs and income for many rural communities and the tourism sector as a whole. Over recent years the Pawi has become one of the main attractions for birders visiting Trinidad and Tobago. Because of its uniqueness, the Pawi may also act as a flagship species for the protection and maintenance of Trinidad's forests.

4.0 STATUS REVIEW

The Pawi is endemic to Trinidad, with no close relatives on the island. It is thought to be restricted to a small area have a declining population. Because of this the species is listed as Critically Endangered on the IUCN Red List.

In Trinidad and Tobago this guan is considered a protected species under the Conservation of Wildlife Act (Chapter: 67:01), and in 2004 it was also designated as an Environmentally Sensitive Species under the Environmentally Sensitive Species (ESS) Rules of the Environmental Management Act. Regionally, the Pawi is also subject to protection under the protocol on specially protected areas and wildlife (SPAW Protocol) in the wider Caribbean region, which was adopted under the framework of the Cartagena Convention and adopted in 1991. A large area of its known habitat is protected under the Environmentally Sensitive Area Rules of the Environmental Management Act.

4.1 Historical account

The Pawi, *Pipile pipile*, was once common throughout the forested areas in Trinidad (Delacour and Amadon 2004). Historical accounts of the species occurrence on the island suggest that it was found throughout the forests of the island (Leotaud, 1866) at all elevations except perhaps along the west coast.

Although the species has been legally protected since 1963 (Delcaour and Amadon 2004) there has been a significant decline in population numbers with some populations believed to have been eradicated completely due to hunting and habitat degradation. The Central Range population

4.2 Current distribution and demography

The known Pawi populations are restricted to the eastern half of the Northern Range, where considerable forest habitat remains, yet it remains rare and local (Hayes, 2009). Only 250km² of suitable habitat remains, of which only 150km² is located within the core area of the eastern Northern Range (BirdLife International 2000, Delacour and Amadon 2004). Some reports suggest that the Pawi Population might still be existent in the Southern Watershed with the last sighting recorded in 2000. Pawi presence has not been confirmed in the Central Range since 1983 and it is likely that the population in this area has been eradicated.

Brooks & Strahl, (2000) had suggested that there may be about 200 birds in the wild, with the number more than 70 but less than 1000. BirdLife International (2000) had suggested that it at lower than 200 birds existing in about 150 km² of suitable habitat in the northeast. A population estimate was conducted from 1999 to 2001 using variable-radius point counts in known and likely habitats. The study indicated an estimated density of 0.22 birds km⁻² for an adjusted estimated population of 70-200 individuals (Hayes 2009).

Workshop participants reported that Pawi are found in primary and disturbed forest, on small scale agricultural and garden plots, recovering and coffee and cocoa estates and, at Grande Riviere only, in vegetation along forest roads.

4.3 Habitat and resource assessment

A member of the PSG (Kerrie T. Naranjit) has undertaken a 2-year study of the Pawi as the basis for an M.Phil. degree at the University of the West Indies – St. Augustine. This study is being funded by the Environmental Management Authority (EMA) and to date she has collected information on diet, habitat use, predation, behaviour, and reproduction. This study also attempted tracking and radio-tagging through mist-netting.

During the workshop, participants reported that the Pawi mostly feed in the canopy, although it had also been seen occasionally feeding on the ground. It was also reported at the workshop that the bird was observed feeding at night, especially during a full moon.

Food consumed by the Pawi appears to comprise of fruit, seeds, leaves and flowers of both native and introduced species as indicated in Table 1. (Alexander 2002, Delacour and Amadon 2004, Hayes 2002, Hayes et al. 2009). It also eats insects and other invertebrates. Most of its water intake is from epiphytes and small forest rivers.

The species is gregarious, traditionally living in small family groups. However with the decrease in population numbers, most recent sightings are of individuals or pairs, with only occasional larger flock sizes being observed.

Both sexes have identical markings and similar size. Although it is suggested that females are slightly smaller than males, this has not yet been scientifically confirmed. The species displays an extended breeding season that stretches from December to August. After a courtship display, the Pawi lays 2-3 eggs in a simple nest and both sexes care for the young. During the workshop it was acknowledged that there is much traditional knowledge from hunting, local-community and cultural involvement.

Table 1: Components of Pawi Diet (prepared by Kerrie T. Naranjit)

Plant	Scientific Name	Leaves	Flowers	Fruit
Cocoa	<i>Theobroma cacao</i>	X	X	
Pomerac	<i>Spyzgium malaccense</i>			X
Mango	<i>Magnifera indica</i>	X		
Nutmeg	<i>Myristica fragransis</i> (Myristiceae)			X
Teak	<i>Tectona grandis</i> (Verbenaceae)			X
Cajuca	<i>Virola surinamensis</i> (Myristiceae)			X
Bois canot	<i>Cecropia peltata</i> Miq. (Cecropiaceae)			X
Fiddlewood	<i>Vitex divaricata</i> ; Verbenaceae		X	X
Ironwood	<i>Diospyros ierensis</i>		X	X
Red gommier	<i>Dacryodeae</i>	X		X
Serrete	<i>Byrsonima spicata</i>			X
Blacksage	<i>Cordia curassavica</i>	X		
Mapoo	Awaiting Further identification			X
<i>Melastoma</i>	<i>Melastoma sp.</i>		X	X
Wild Tobacco	<i>Acnistus arborescens</i> (Solanaceae)			X
Laylay	<i>Cordia sp.</i>			X
Wild Kaimit	<i>Chrysophyllum argenteum</i>	X		
Pois doux	<i>Inga sp.</i>			X
Matchwood	<i>Schefflera morototoni</i>			X
Rubber (local)	Awaiting Further identification			X
Red wood	<i>Guarea trichilioides</i> (Meliaceae)		X	
Obie	<i>Trichilia trinitensis</i> (Meliaceae)			X
"Grass"	(Poaceae)			X
Gua/gra lele	Awaiting Further identification			X
Lapine'	Awaiting Further identification			X
Honeywood	<i>Alchornea triplinervia</i>			X
Jamoon	Awaiting Further identification			X
Bird Vine	<i>Calopogonium coeruleum</i>			X
Wild Potato Vine	<i>Ipomoea titiacea</i> (Convolvulaceae)	X		

4.4 Threat analysis

A variety of threats were identified and their causes were examined by asking 'why' of each of the stakeholders present at the Workshop. In this way, at each stage, the

threats were constructed from the bottom up. This approach entailed examination of the core concern – the Pawi’s small population size, and asking why this was the case (Figure 1). Slowly this built up a picture of immediate (proximate) threats, underlying causes (ultimate threats) and constraints. Constraints were considered as factors that, whilst not threatening the Pawi directly, are cause for concern as they enable the threats to operate. Overcoming these will often be critical to the success of any recovery efforts on this species. These seem to derive from Trinidad culture being generally detached from nature because wealth is not primarily dependent upon nature tourism or nature based activities.

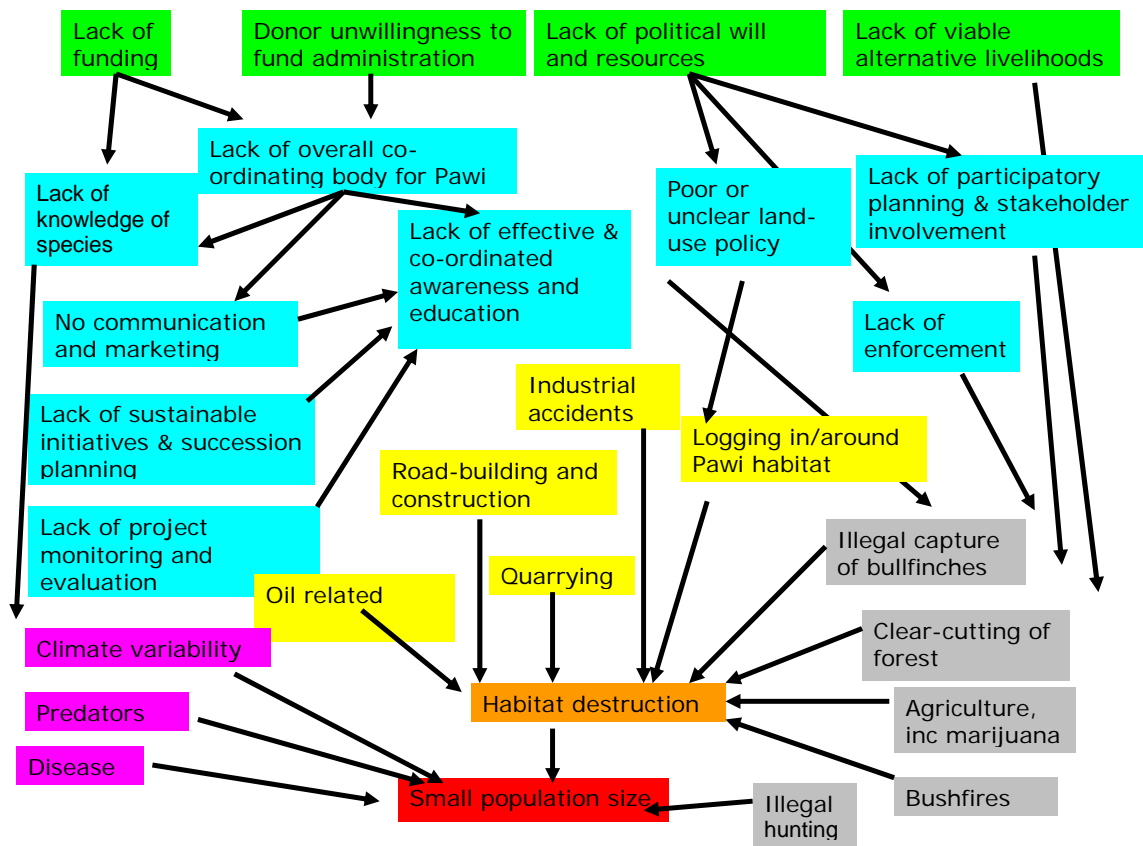


Figure 1 Threats and constraints. Some lines just go to the general category of threats – e.g. *poor land-use policy* results in all the industrial threats and *lack of viable alternative livelihoods* contributes to all threats from communities.

Key to colour coding:

- = Ultimate problem; ■ = Constraints; ■ = Threats from industry; ■ = Threats from people (e.g. communities); ■ = Natural pressures that could wipe out the species; and
- = The immediate reason for concern

5.0 VISION AND GOALS

5.1 Vision

The Workshop participants proposed the following vision for the Pawi species recovery strategy:

Over the next three decades, the people of Trinidad and Tobago feel a great sense of pride in our Pawi, which will be non-threatened and will flourish in sustainable populations throughout its original range involving and benefiting local, national and international communities.

5.2 Goals

To achieve this vision for Pawi conservation the Workshop participants proposed the following goals as priorities for the species conservation efforts:

1. Increasing the species' population and its removal from the IUCN Red List;
2. Restoring populations that are viable and self-sustaining throughout its historic range;
3. Deeper symbolic meaning and increased national pride in the species; and
4. Community livelihoods benefits grounded in the communities where the Pawi lives.

These requirements fall into two thematic areas:

- **Goal A:** The Pawi lives throughout its natural habitat in North, Central and South Trinidad
- **Goal B:** There is greater involvement by Trinidadians at all levels in the conservation of the species and its habitat by emphasising the link between conservation of the species and sustainable livelihoods.

Meeting the first of these goals requires establishing and maintaining Pawi populations in natural habitat in the remaining parts of its historic range. The second is bringing humans and Pawi closer together, whether through a sense of pride at the national level (the heartbeat of Trinidad and Tobago and giving the same sense of pride as when the National Anthem is played) or through working to ensure that conservation initiatives are developed with, and implemented, through rural communities.

6.0 OBJECTIVES

Using these 2 main thematic areas identified above as a means to categorize the four goals identified by the stakeholders, the workshop attendees also identified specific objectives within these thematic goals. These were as follows:

6.1 Goal A: The Pawi lives throughout its natural habitat in North, Central and South Trinidad

In order to achieve this Goal it is necessary to carry out research so that the status is much more reliably known than at present and management can be guided by the best possible information, such as on the range of habitats it lives in and the extent to which it tolerates habitat alteration. In addition, it is necessary to review policies and legislation to assess whether the Pawi and its habitat are adequately protected, which necessary is given the seriousness of its conservation status. Also, ensuring the species recovery takes place with greater levels of public support, requires that policies and legislation that encourage non-State actors to undertake activities that will facilitate the recovery efforts. Identifying potentially enabling policies or legislation is also a key outcome of a policy and legislative review.

Such a review would include species and protected area legislation, as well as policies, laws and acts that specify more general land-use policies. The idea would be to

harmonise all legislation that impacts on the Pawi and its habitat so that they enjoy the maximum protection, and facilitate consistency of actions to recover the species.

In this context, the Stakeholders agreed that to achieve Goal A the following objectives should be met:

1. To provide the scientific knowledge necessary to both inform management of the Pawi and monitor changes in the population and habitat as a result of management
2. To promote management that will lead to an increase in Pawi numbers and distribution
3. To review existing legislation on the Pawi species and land-use planning and recommend amendments.

6.2 Goal B: There is greater involvement by Trinidadians at all levels in the conservation of the species and its habitat

In order to achieve this Goal, objectives must be set that are targeted carefully at the various sectors of Trinidad society so that they all have the opportunity to both contribute to Pawi conservation and benefit from it. For example, many private sector companies in the natural resources field could make a huge contribution by ensuring that their activities do not adversely affect the remaining habitat and could obtain a lot of positive media coverage as a result. Rural communities, who live next to, or even in, Pawi areas can influence local land-use and, with appropriate incentives, benefit directly from the species' presence. To achieve these outcomes, the Stakeholder conference agreed to the following objectives:

1. Improve networking and co-ordination of all key stakeholders involved in the Pawi recovery efforts
2. To increase awareness within the private sector about the status of the Pawi and enhance its engagement in ensuring the species' survival
3. Promote rural livelihoods that will meet local needs, but will not damage the survival prospects of the Pawi and its habitat.
4. Conduct awareness-raising programmes targeted at the general public, school children and tourists.

7.0 ACTIONS

To achieve the priority objectives identified by the stakeholders, the workshop participants identified the following eighteen (18) actions as important in achieving species recovery.

7.1 Goal A - Objective 1. To provide the scientific knowledge necessary to both inform management of the Pawi and monitor changes in the population and habitat as a result of management

Although it is clear that the Pawi has declined significantly in both geographic range and numbers, our knowledge of the species is very poor. There is only anecdotal information on its distribution and no reliable population estimate. Therefore, there is a need to gather information on its status, distribution and population numbers. This will provide both a baseline against which the success of this strategy can be measured, and an understanding of the ecological conditions that are necessary for the Pawi to survive and expand. Furthermore, it provides an opportunity to develop a method that will allow individuals from rural communities to gather data on the species. If an appropriate method can be developed, this could provide the most realistic way of monitoring

distribution and status in the long-term, once the initial fieldwork has laid a baseline. The specific actions that the stakeholders will adopt to achieve this objective are:

Action 1.1: Conduct a distribution and population survey throughout all known and potential existing habitats for the species;

Action 1.2: Conduct ecological studies of the species, especially targeted at understanding its habitat use, breeding and seasonal movements;

Action 1.3: Develop a participatory monitoring programme that both engages the communities in Pawi areas and provides meaningful data that can be used to assess abundance and distribution; and

Action 1.4: Assess how likely it is that natural factors (e.g. disease, predators, climate) may impact (sudden or undetected) the Pawi's population, given its current extremely small size.

7.2 Goal A - Objective 2. To promote management that will lead to an increase in Pawi numbers and distribution

Whilst detailed knowledge of the species is clearly necessary in the long-term as a basis to develop specific management actions, it is still possible to determine some broad management actions that could be taken immediately to prevent the species' further decline. These would stop either further reduction in species' numbers or habitat extent, through hunting or habitat loss and degradation.

As the Pawi's population is so small, it is urgent that an assessment be conducted on the feasibility of establishing a captive population. This is partly because such a small population may be at risk of disease, increased impact from predators and climate variability, such as prolonged and severe dry seasons. In this context, the specific actions that the stakeholders will adopt to achieve this objective are:

Action 2.1: Identify areas and approaches that will see an improvement in the quality and extent of Pawi habitat;

Action 2.2: Visible demarcation/boundaries of National Parks;

Action 2.3: Devise and implement a strategy for engaging hunters so that the killing of Pawi can be stopped completely [or minimised/reduced?] and hunters can be a source of information about the species; and

Action 2.4: Examine whether a captive breeding programme is feasible;

7.3 Goal A - Objective 3. To review existing legislation on the Pawi species and land-use planning and recommend amendments.

Under current legislation, the Pawi receives protection through the Conservation of Wildlife Act (Chapter 67:01) and under the Environmentally Sensitive Species Rules of the Environmental Management Act. However, the stakeholders felt that the protection afforded to the species through these regulations remained insufficient to ensure the protection of the species and its habitats. Specifically, the stakeholders voiced a concern that current fines were an insufficient deterrent to hunting of the species, and did not go far enough to ensure that the species habitats were protected on both State and private lands. Given this concern, the stakeholders proposed the following actions:

Action 3.1: Review all national and international legislation that affects the Pawi and identify any gaps in protection; and

Action 3.2: Review national land-use policies and legislation and identify any conflicts with Pawi conservation

7.4 Goal B - Objective 1. Improve networking and co-ordination of all key stakeholders involved in the Pawi recovery efforts

There have been several projects on the Pawi in the last 25 Years (see Section XXX above), but none have led to a sustained interest in the species or a reduction in its

threat status. A key factor in this is the lack of any means of co-ordinating interest and activities and ensuring that projects are not just 'one-offs'. There is a considerable amount of expertise on the Pawi and it is now critical that this is harnessed as effectively as possible. This means providing a single focus for implementing this strategy so that all those who would like to become involved know who to contact. This will allow much greater interaction between all sectors of Trinidad society and thus greater impact. To facilitate such coordinated action between the stakeholders in the recovery efforts, the following actions were agreed:

Action 1.1: Establish a co-ordination body to provide oversight and management;

Action 1.2: Analyse the most realistic and effective way of working (e.g. paid staff), secure resources and sign necessary Terms of Reference/Memoranda of Understanding as appropriate;

Action 1.3: Establish a central repository for all information relating to the Pawi, including scientific data; and

Action 1.4: Set up an accessible internet-based stakeholder site/location for submission of data;

7.5 Goal B - Objective 2. To increase awareness within the private sector about the status of the Pawi and enhance its engagement in ensuring the species' survival

There are opportunities to develop partnerships with private sector companies that could make a significant long-term difference to the status of the Pawi and its habitat. For example, companies involved with natural resources could find ways of minimising their impact on Pawi habitat and many companies could support projects identified in this strategy through funds, human resources or other in-kind resources. To develop these partnerships, the stakeholders agreed to:

Action 2.1: Analyse corporate and social responsibility trends within the private sector and develop an appropriate marketing and communications strategy.

7.6 Goal B - Objective 3. Promote rural livelihoods that will meet local needs, but will not damage the survival prospects of the Pawi and its habitat.

There is a strong desire to involve the rural communities that share a habitat with the Pawi in all aspects of its management and conservation. However, these communities also have to earn income so that families can be supported. Therefore, management should include an element of benefits for the communities, to compensate them for foregoing income-generating activities that may harm the Pawi, such as clearing patches of forest for agriculture. How the needs of the Pawi and the local communities can be balanced so that both benefit from each other is not completely clear. It would seem advisable, therefore, to develop an approach to community management of Pawi in Grande Riviere, a community that is more well-known than others for Pawi tour guiding and as having a desire to be involved in conservation. The stakeholders agreed that to achieve this objective the following action should be taken:

Action 3.1: Develop a model approach to community management of the Pawi and its habitat so that both benefit as fully as possible

7.7 Goal B - Objective 4. Conduct awareness-raising programmes

The objectives above consider those who are involved with the Pawi already, private sector companies and the communities that share the Pawi's habitat. This leaves out a very large part of society: children (both formal school education and informal awareness-raising), university students and adults. Clearly targeting all of these groups would be a huge task and so there is a need to be strategic. It is proposed that a pilot primary school education programme be developed in the north-east, given that this location is the Pawi's known stronghold. At the same time, it is important to engage with

education and awareness-raising professionals to determine how best to spread the message of the Pawi's plight and the fact that it is only found in Trinidad, to the larger national audience. In this regard, the stakeholders agreed to:

Action 4.1: Develop an education programme for primary school children in north east Trinidad, the Pawi's current known stronghold.

Action 4.2: Devise a nation-wide education/awareness-raising programme and identify target audiences

8.0 WORKS CITED

- Alexander G.D. 2002. Observations of the endangered Trinidad piping-guan (*Pipile pipile*), or Pawi, in Northern Trinidad. In: Hayes FE, Temple SA (eds) *Studies in Trinidad and Tobago Ornithology honouring Richard ffrench*. Occ Pap 11, Department of Life Sciences, University of the West Indies, St. Augustine, p 119–130.
- BirdLife International. (2009). *IUCN 2010. IUCN Red List of Threatened Species. Version 2010.2*. Retrieved August 09, 2010, from www.iucnredlist.org.
- Brooks, D. M, and Strahl, S. D, 2000, Curassows, Guans and Chachalacas, Status Survey and Conservation Action Plan for Cracids 2000-2004, IUCN/SSC, Cracid Specialist Group, Gland, Switzerland and Cambridge, UK.
- Chapman, F. M. (1894). On the birds of the island of Trinidad. *Bulletin of the American Museum of Natural History* , 6 (1), 1-86.
- Delacour, J., And D. Amadon. 2004. Curassows and related birds. American Museum of Natural History, NY.
- ffrench R.P. 1991. A guide to the birds of Trinidad & Tobago, 2nd edn. Cornell University Press, Ithaca, NY
- Hayes F.E., Samad I., and B. Sanasie. 2009a. Status and conservation of the Trinidad piping-guan (*Pipile pipile*). *Endangered Species Research*7: 77–84.
- Hayes FE, Shameerudeen CL, Sanasie B, Hayes BD, Ramjohn CL, Lucas F.B. 2009b. Ecology and behaviour of the critically endangered Trinidad piping-guan *Aburria pipile*. *Endangered Species Reserch* 6: 223–229.
- James C, Hislop G. 1988. Status and conservation of two cracid species, the pawi or Trinidad piping-guan (*Pipile pipile*) and the cocrico (*Ortalis ruficauda*) in Trinidad and Tobago. Forestry Division, Ministry of Food Production, Forestry and Environment, Trinidad.
- Leotaud, A. (1866). *Oiseaux de l'ile de la Trinidad, (Antilles)*. Port of Spain: Chronicle Publishing Office.

Appendix I – Summary table of Goals, Objectives and Actions of the Pawi Species Recovery Strategy

Vision	Over the next three decades, the people of Trinidad and Tobago feel a great sense of pride in our Pawi, which will be non-threatened and flourishing in sustainable populations throughout its original range, and its conservation and management will directly [involve and] benefit local, national and international communities.	
Goals	A. The Pawi is found in thriving populations throughout its natural habitat in North, Central and South Trinidad	B. There is greater involvement by Trinidadians at all levels in the conservation of the Pawi and its habitats, and a strong link between conservation of the species and sustainable livelihoods.
Objectives	<p>1. to provide the scientific knowledge necessary to both inform management of the Pawi and monitor changes in the population and habitat as a result of management;</p> <p>2. to promote management that will lead to an increase in Pawi numbers and distribution;</p> <p>3. To review existing legislation on the Pawi species and land-use planning and recommend amendments.</p>	<p>1. Improve networking and co-ordination of all key stakeholders involved in the Pawi recovery;</p> <p>2. To increase the awareness of the private sector about the significance of the Pawi and enhance this sector's engagement in ensuring the species' survival;</p> <p>3. Promote rural livelihoods that meet local needs, but will not harm the Pawi and its habitat;</p> <p>4. Conduct awareness-raising programmes targeted at the general public, school children and tourists.</p>
Actions	<p><i>Action 1.1:</i> Conduct a distribution and population survey throughout all known and potential sites;</p> <p><i>Action 1.2:</i> Conduct ecological studies of the species, particularly on its habitat use, breeding and seasonal movements;</p> <p><i>Action 1.3:</i> Develop a participatory monitoring programme that both engages the communities in Pawi areas and provides</p>	<p><i>Action 1.1:</i> To establish a co-ordination body to provide oversight and management;</p> <p><i>Action 1.2:</i> Analyse the most realistic and effective way of working (e.g. paid staff) and secure resources and necessary Terms of Reference/Memoranda of Understanding;</p> <p><i>Action 1.3:</i> establish a repository for all information relating to the Pawi, including scientific data;</p>

<p>meaningful data that can be used to assess abundance and distribution;</p> <p><i>Action 1.4:</i> Assess how likely it is that natural factors (e.g. disease, predators, climate) may have an impact (sudden or undetected) on the Pawi population, given its current small size;</p> <p><i>Action 2.1:</i> Identify areas and approaches that will see an improvement in the quality and extent of Pawi habitat;</p> <p><i>Action 2.2:</i> Visible demarcation/boundaries of National Parks;</p> <p><i>Action 2.3:</i> Devise and implement a strategy for engaging hunters so that killing of Pawi can be stopped completely [or minimised/reduced?] and hunters become a valuable source of information about the species;</p> <p><i>Action 2.4:</i> Examine whether a captive breeding programme is feasible and, if so, develop a detailed proposal and implement it;</p> <p><i>Action 3.1:</i> All national legislation and international rules that affects the Pawi is reviewed and any gaps in protection identified;</p> <p><i>Action 3.2:</i> National land-use policies and legislation reviewed and any conflicts with Pawi conservation identified and recommendations made to eliminate such conflicts.</p>	<p><i>Action 1.4:</i> set up an accessible group site/location for submission of data;</p> <p><i>Action 2.1:</i> to analyse corporate and social responsibility trends within the private sector and develop appropriate marketing and communications strategy;</p> <p><i>Action 3.1:</i> develop a model approach to community management of the Pawi and its habitat so that both benefit as fully as possible;</p> <p><i>Action 4.1:</i> develop and implement an education programme for primary school children in north east Trinidad, the Pawi's current known stronghold;</p> <p><i>Action 4.2:</i> devise and implement a national wide education/awareness-raising programme and identify target audiences;</p>
--	---