



THE *AMAZONA GUILDINGII*:
CONSERVATION STATUS AND
FUTURE SURVIVAL

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ABSTRACT

The *Amazona guildingii* is a species that generates much interest and intrigue among pet traders, bird breeders, conservationists and environmentalist alike. This endemic species also happens to be one of the least studied of the genus *Amazona*.

In this paper the authors have attempted to provide a summary of information on the local population over the past decade or so; as well to examine various environmental, ecological, socioeconomic and legal/policy factors that impact on the species. Several recommendations on the way forward in the conservation of the *A. guildingii* are also included.

Review of past census data suggest that the population is stable. However, significant gaps exist on several aspects of the wild population dynamics and ecology, with urgent need for field research. Deforestation continues to be the greatest direct factor affecting the species conservation and to a lesser extent there is uncertainty as to the extent of the illegal pet trade as a conservation concern.

There are also land use pressures on some parrot habitats where local socio-economic circumstances, particularly in an era of globalization, contribute to compromising the conservation status of the bird. There is a clear need for improved legal measures and enhanced capabilities to manage the wild population.

This paper advances the position that future conservation of the bird requires a holistic environmental, ecological, socio-economic and legal thrust involving several stakeholders. The paper is also a clarion call for all concerned parties to discuss the various issues candidly within a spirit of goodwill, commonsense and renewed commitment to save the *A. guildingii*.



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1.0

1.1 Description and declared status

The St. Vincent Parrot *A. guildingii*, is one of four of the genus *Amazona* remaining in the Lesser Antilles; with the others being *A. arausiaca* and *A. imperialis* (Dominica) and *A. versicolor* (St. Lucia).

Measuring 41-46 cm in length, *A. guildingii* is a rather colorful bird: creamy white in forehead, blue cheek, orange-yellow nape, greenish or golden brown upperparts with a mixture of yellow-orange and blue wings, back and tail.

Amazona guildingii is endemic to the Caribbean island state of St. Vincent and the Grenadines.

On October 27, 1979, *A. guildingii* was declared the national bird of St. Vincent and the Grenadines as part of our country's first independence celebration. Since then, *A. guildingii* has been the flagship species that represents the nation's vulnerable and threatened ecosystem. By virtue of the Wildlife Protection Act no 16 of 1987, *A. guildingii* was declared a totally protected species in St. Vincent and the Grenadines.

Internationally, *A. guildingii* has attracted the attention of several wildlife conservation organizations. The species is listed under Appendix 1 of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and in the Red Data List of the International Conservation Union (IUCN). Such listings are geared towards conservation of this endangered species.

1.2 Occurrence in the wild

Amazona guildingii is found only in the central rain forest areas on mainland St. Vincent in the East Caribbean States of St. Vincent and the Grenadines. Traditionally, the species was confined mainly to the Buccament, Colonaire, Cumberland and Wallibou Valleys. The St. Vincent Parrot, *A. guildingii* has a very limited range with its natural range being the primary and secondary rainforests of St. Vincent – a small volcanic island measuring 150 square miles.

Though signs of its presence are evident in areas where it has not recently existed, it is unsure of these sightings are due to increases in population size or shifts as a result of habitat loss and disturbance. Rapid habitat loss in recent times has resulted in new sightings of *A. guildingii* in nontraditional areas such as the upper slopes of the La Soufriere Volcano and the Yambou Watershed. In the mid 1970s the wild population of *A. guildingii* was estimated at 500-550 individuals. The eruption of La Soufriere Volcano in 1979 together with Hurricane David that same year, and Allen in 1980, saw the population decline to approximately 400 birds. Between the mid 1980s and the late 1990s, the population was approximately 500-550 birds and considered stable. The current population is estimated to be 519 birds.



2.0 CONSERVATION STATUS OF BIRD

Introduction

In discussing the conservation status of the *A. guildingii*, AvianEyes examines the ecological, socioeconomic and legal issues. This approach is taken since conservation of the bird cannot be limited to the scientific aspects concerned with population ecology.

2.1.0 ECOLOGICAL FACTORS

2.1.1 Species vulnerability

A. guildingii is vulnerable by its mere range and its endemism within an island ecosystem. According to Reed and Miller (1989) and Primack (1998), endemism is extremely important in the process of extinction and, by its very nature, leads to the highest species extinction rates occurring on islands. Therefore, loss of this species from SVG would mean a global loss of its biodiversity contribution.

Given its limited range, threats to its rainforest habitat, the presence of an active volcano and the occurrence of St. Vincent within the hurricane belt, *A. guildingii* is vulnerable to depletion and possibly extinction. The vulnerability of this species is exacerbated by the lack of data on the species ecology (e.g. reliable population data, food and nest site requirements and social structure) and behavior.

As a consequence of this vulnerability and global rarity, the bird has been listed as an endangered species under Appendix 1 of the Convention on the International Trade in Endangered Species of Flora and Fauna. It is possible that this species might always be considered endangered because of its endemism and the size of its island home. But perhaps the greatest factor governing the conservation of the species is that there is so little available information on the bird.

2.1.2 Behavior and ecology

Given the limited field research that has been conducted, very little is known about the behavior and ecology of *A. guildingii* in the wild. The behavior and food habits are believed to be similar to those of the other Amazons and much of what is believed about the bird has been determined from research conducted on the Puerto Rican parrot *A. vittata* and the other three Caribbean Amazons. Some local knowledge and incidental observation has also augmented the available data.



Amazona guildingii is known to feed on vegetables, nuts and fruits and seeds of several species including the *Dacryodes excelsa*, *Pouteria multiflora*, *Inga laurina*, *Licania ternatensis* and *Calophyllum calaba*.

Numerous gaps exist in information on behavior and ecology of *A. guildingii*. Detailed information on food habits is poor. The little that is known is not regularly updated and mostly based on incidental observations. It would be desirable to obtain such data and to determine whether or not *A. guildingii* is dependent on any plant and/or animal species for their fertility and breeding, as observed in some other parrot species. Age and sex related observations, and information on fecundity, vocalization and migrations will also be necessary to inform management efforts to conserve the bird.

2.1.3 Mortality

Little information exists for estimating the current or historical levels of mortality of the *A. guildingii* but factors such as losses due to impacts of hurricanes and volcanic activity directly on the species and its habitat is known. These birds and their forest habitats are particularly susceptible to these environmental factors. For example, *A. guildingii* was sited in the rainforests around the La Soufriere volcano prior to its eruption in 1979. However, it is only within the past five years that signs of its presence has again begun to be observed in this locality.

Additionally, despite legislation for the total protection of the bird, it is still in danger due to the illegal pet trade. According to Primack (1998), utility of species has often been a prelude to extinction and thus reduction in utilization is a means of species conservation. Though some poaching of juveniles for the illegal pet trade is believed to be still occurring, the effect of non utility is evident as seen in the gradual increase and present stabilization of the population which has occurred with the enactment of legislation.

Assumptions are that harvesting for the pet trade is relatively small-scaled but no data exists as to the magnitude of the harvest; and based on historical data, many of these juveniles do not survive very long after being removed from the nest especially due to the conditions under which these birds are smuggled out of St. Vincent and the Grenadines (Springer, pers. Comm.).

Adult and juvenile mortality rates due to predation are unknown. However, there are few very large predators of the *A. guildingii*. Juvenile predation mainly occurs during the nesting phase with the prime predator being the Opossum *Didelphis marsupialis*. The Broad-winged or Chicken Hawk *Buteo platypterus* may also be a predator of young parrots. In some species of



Amazons, rats and possibly snakes are also a threat and this may be true for the *A. guildingii*. Impacts of deforestation may likely affect juvenile birds still in the nest cavities that are not mobile.

It is possible that mortality rates within the species are age-specific. This, no doubt, is an area that can benefit from field research.

The effects of disease and pests on wild population are unknown but wild birds may be less susceptible to disease to varying degrees than captive birds, due to the natural medicines and diets which occur in the wild and which are unknown to captive breeders. Feather mites and obesity are common in captive birds. Wild birds that must search for food are often leaner and fitter than captive specimens.

Though competition with species such as honeybees may not directly impact mortality rates, it can affect overall population growth because fertile pairs may be unable to nest.

2.1.4 Population distribution and size

Although distributions of *A. guildingii* was restricted to secondary and primary rainforests, the species feeding range appears to be increasing and observations have been made in lower elevations along rainforest edges and in established forest plantations. In the Cumberland, Vermont and Perseverance areas, birds have been observed feeding on fruiting species of citrus and mangoes (*Mangifera indica*). This type of feeding is still small-scale and seasonal. It is uncertain whether the population of this adaptable species is increasing or if birds are moving from inner forest regions, due to habitat destruction and fragmentation. The range of the bird has now extended to Overland and La Soufriere, although it is not confirmed that they are now resident.

A current population estimate of 519 individuals has been obtained from the 2002 biennial parrot census conducted by the Forestry Department. Though uncertainties exist with the degree of precision of the method being used, lack of manpower and other resources limit the improvement of the census technique. The rugged forested terrain and poor equipment used limit observations, and threats associated with illegal marijuana *Cannabis sativa* cultivation hampers the distances observers are willing to go to obtain census data. A more intensive survey would be required for more accurate population estimate. This can also determine the extent of movement between sectors, particularly between the Leeward and Windward sectors, and nontraditional areas.

2,1,5 Population growth rates



Without data on areas such as age specific estimates of reproduction and mortality, it is impossible to calculate population growth rates, an essential element in determining the status of the species in the wild. Some information is available on the reproduction of *A. guildingii* based on data collected from captive individuals. Because maturity and sex ratio information is lacking, it is not possible to estimate reproductive parameters from the population.

Interestingly, although the recent census has shown some stability in the wild population, this is questionable due to the amount of habitat disturbance caused by deforestation and the open nature of the country's coastline that facilitates smuggling of birds.

2.1.6 Habitat modification

Given the high dependence of *A. guildingii* on rainforest and based on research conducted with other Amazons, habitat quality must play a major role in the survival of the species (Snyder et al., 1987; Rare Species Conservatory Foundation, 2002). Habitat degradation takes the form of deforestation by natural factors such as volcanic eruptions and hurricanes, but perhaps more so due to the activities of man. Though the forested areas of St. Vincent is estimated at 30%, only 4.8% of this is rainforest. Rainforest is removed at an annual rate of 1% and much of this is for agriculture, and within more recent times, for the illegal practice of marijuana cultivation. Koester (2001) estimates that there are 1500 marijuana farmers occupying 3000 ac/ 1200 ha of land. Marijuana is cultivated within patches of prime forest, destroying old growth trees on which the birds are dependent for food and nest sites. Human activity within these previously undisturbed areas also affects the behaviour of the species and exposes the birds to predators and poachers.

The reproductive potential of parrots is dependent on the availability of nest sites and food, as seen in *A. vittata* whose annual breeding coincides with the fruiting of the sierra palm, *Prestoea Montana*, and which may also be their trigger to breed (Snyder et al., 1987). Thus, the true nature of impact of habitat loss and disturbance on reproduction of the bird is a vital area in need of research.

2.1.7 Captive breeding

The Nicholl's Wildlife Complex (NWC) was established to complement in-situ conservation efforts for the *A. guildingii*; providing opportunities for captive breeding and education. However, the levels of success of this venture have been variable, and dwindling over the past 10 years. Although it provides opportunities for education, this can still be improved and nesting, hatching and fledging successes are quite small.

Some 30 birds are kept in captivity at the NWC and 40 with local custodians. Other *A.*



guildingii occur in captivity throughout the Caribbean, Europe and USA but their populations are unknown since many of these birds were obtained before 1985 when there was still an active, unmonitored trade in the species.

Like many other captive breeding attempts, the NWC is faced with different problems which are hindering the achievement of the goals for which the facility was established. Firstly, the only captive population established to supplement wild population exists at the NWC and the population of breeding pairs (4) is quite small. In fact, too small to provide parent stock for future progeny if the wild population became severely at risk.

Secondly, the NWC facility is used as an education tool where local and visitors can view the birds in captivity. This confined site is shared with other wildlife, including other parrot species and a monkey. These place the birds at a high risks of stress, disease and other factors such as fires. Thus, these *A. guildingii* are perhaps at a greater continuous risk than wild counterparts.

Thirdly, the individuals in ex-situ populations have much adapted to humans. Social patterns have been altered and there may have even been genetic transformations or adaptations in these environments. Though some of these adaptations may be minimal, they can still affect the bird's survival if they or their offspring are released into the wild. Additionally, many of these birds are ignorant of their natural environment. For example, juveniles must learn survival skills and location of critical resources from adults who may not have this knowledge.

Fourthly, genetic drifts and limited-gene representation occurs in domesticated birds. It is quite possible that much of the species' gene pool is not represented in the captive population.

Fifthly, most captive birds do not obtain the required food and exercise to keep them fit and many are malnourished or obese.

Research too is quite limited in the captive population of *A. guildingii*, both at the NWC and with local custodians. Most of this research occurs extra-regionally and internationally, and there is no proper networking for the dissemination of research findings to local managers and owners.

Finally, there is need to provide proper educational facilities which do not place undue stress on the birds.

2.2.0 SOCIOECONOMIC FACTORS

2.2.1 Economic livelihood/marijuana cultivation



The forest has always been the hope of rural people. From earliest of times humans lived and depended on the forest to take care of their families, both for food and to provide an income. This dependence decreased as development began to take place. Farming, the traditional way of life was no longer exciting to successive generations as they were being exposed to a different way of life in the city through school, work and cultural penetration. These rural people became urbanized. Development however was taking its toll on rural communities as economic activity was centralized in the city. Rural populations were neglected and their only means of existence was the land and the sea. They did not only continue to eke out a living from the forest in a way they have known for generations, but quickly grabbed on to Marijuana cultivation as their ticket to economic prosperity when the opportunity presented itself.

Marijuana cultivation is one of the greatest threats to the Parrot. It takes place high in the mountainous interior of Climax Secondary forests and in some cases the Primary forest. The trees removed are primary food sources and nest sites for the Parrot and other wildlife. These include *Gommier Dacryodes excelsa*, *Penny piece Pouteria multiflora*, *Bois jaub Licania ternatensis*, *Santinay* (Slonea spp), and *Burnlime Sapium caribeum* trees among others. As a result, the Parrot and other wildlife that escape have had to find new habitat and food sources. It could be argued that eggs and fledglings are destroyed during deforestation. Census data show a strong correlation between areas deforested and parrot observations. As a matter of fact, in 2002 sightings of the bird were lower than previous. In the Richmond sector where there is a lot of deforestation activity, all Watch Point sightings were reduced and at watch point #19 the area was totally cleared for Marijuana production.

Although some people become involved in marijuana cultivation because of the get-rich-quick syndrome, poverty in many cases is the underlying cause of deforestation. Marijuana cultivation/deforestation began by poor rural peoples without any skills or hope of survival. However, within recent times more affluent persons are becoming key players. Here the community of Petit Bordel, a small fishing village in North Leeward, must be mentioned. In the 1997 Poverty Assessment Survey it was termed an "escapee community" (Ashton, 2002), a classification that was possible because of Marijuana cultivation in the Larikai and Morne Ronde mountains and on the slopes of La Soufriere. This village was transformed from shanty to modern homes from mid 1970s to present. The impact on biodiversity might never be known, so much vegetation was cut and burnt while the wildlife was hunted for food and possibly the pet trade.

2.2.2 Hunting and charcoal burning

Hunting for wild meat is also an economic activity that takes place in our forest. Although there is an open and close season, it is reported that there are persons who hunt all year round.



This is a major source of income for them as there is always a demand for wild meat among locals and Vincentians in the Diaspora. Although the Parrot is no longer known to be hunted for food, the activities of hunters in the forest is likely to cause disturbance and displacement.

Charcoal is still widely used despite the fact that most households have gas cookers. It is also used as an income earner for rural peoples mostly farmers and labourers who may not be permanently employed. The 1991 Wood Economy census revealed that the number of households that used charcoal or wood for meal preparation declined from 9,638 in 1980 to 5,469 in 1991 (Dunkley, 1991). For the same period, households using gas cookers increased by 75%, from 5681 to 20,273. Although less households now use charcoal for cooking, the product is still very much in demand. Charcoal use has shifted from traditional meal preparation to use for Barbeque, roasting of breadfruit, cooking of hams and boiling of Corn (*Zea mays*) and Breadnut (*Artocarpus altilis*) which are sold on a daily basis. Charcoal is sold locally and also distributed to the Grenadines and other Caribbean Islands.

2.2.3 Impact of nature tourism

With the new trust toward Eco-tourism more stress is added to the forest as tour operators and some untrained tour guides seek to deliver a service about a resource of which their knowledge is limited. Some of these guides may be poachers whose only objective is money. As a result, parrot hatchlings are removed from nest cavities and sold. In some cases eggs too may be removed.

Moreover, there are usually a host of other direct impacts of tourism on wildlife. The La Soufriere and Vermont (Becoming sector) habitats are the two areas where nature tourism may impact on wild parrot populations due to the use of such areas for nature tourism. Studies from other countries highlights a range of wildlife impacts that include interruption of breeding and roosting behaviour, displacement of species from recreational areas (a negative correlation between bird density and recreational intensity), productivity and survival, and population growth rate. Fortunately most of the local wild parrots habitats so far are not visited for nature tourism activities. One of the main areas visited, Vermont Nature Trails (Buccament Sector), in a visitor impact study conducted has shown wildlife impact to be negligible (Wilson, 2001). This study showed that for three wildlife impact parameters assessed two had no discernible impacts and the other only slight signs of wildlife impact with early signs. However, caution is still required as this form of tourism in St. Vincent and the Grenadines is still highly unregulated to date and visitation is likely to increase in upcoming years.

2.2.4 Non-timber forest produce

There are opportunities for subsistence living and income generation from the forests on St. Vincent. Raw materials such as liana, Chainey, Whisk, seeds and flowers for craft, bamboo for



construction, herbs, seeds, tree bark and roots for medicinal purposes are removed without any thought of sustainability and the threat to biodiversity. While these vegetation provide a livelihood for man they also provide a habitat and food for the forest creatures. What are they, the animals, to do when their homes are taken over by foreigners (humans). It logically follows, what are the impacts of such unregulated harvesting on the ecosystem, food web, biodiversity and ultimately the habitat on which the Parrot depends.

2.2.5 Lack of strong environmental NGO's

In St. Vincent and the Grenadines there are no strong national environmental organizations that challenge environmental degradation. Therefore, environmental consciousness is not at the level where it can influence policy decisions and the general populace in the interest of the environment. However, some community-based organizations do exist: the Layout Environmental Group that focuses on community clean up and beautification, the Mayreau Environmental Development Organisation (MEDO) that promotes Marine Conservation and nature friendly tourism in Mayreau Gardens and Tobago Cays Marine Park. The GEMS Progressive Organisation of Stubbs for the last decade showed concerns for the Kings Hill Reserve but has since faltered. The dormant National Trust was more concerned with things of Historical and Cultural significance. Avian Eyes, just about seven years old, has been documenting issues concerning birds and their habitat. Our mission statement is "Supporting Nature Conservation through Birding". A number of studies were conducted from which the reports were compiled. A number of presentations were made to schools and the general public. These efforts however, are just scratching the surface. Greater effort is needed to spread environmental awareness on a national level.

2.3.0 LEGAL FACTORS

2.3.1 Policy Issues

There has never been a local wildlife or wildlife management policy, and even the existing forest policy is limited in scope to address the many issues related to the conservation of the *A. guildingii*. In particular, policy development in this area is necessary to address the following issues related to the conservation of the parrot:

- a) The role and function of the St. Vincent Amazon Consortium in the conservation of the parrot.
- b) Legal and illegal international trade and its implication on the conservation status of the bird.
- c) Cloning of the bird with the advancement of scientific work in this area, recognizing the extent of the captive population in aviaries throughout the world.



- d) Policy framework to enable the maintenance of a healthy minimum viable captive population in and out of St. Vincent and the Grenadines.
- e) Contractual conditions and terms governing captive held population outside St. Vincent and the Grenadines.
- f) Ensuring an effective management framework is in place that is responsive to the modern local and external challenges impacting on the conservation of the bird, bearing in mind the social and environmental factors.

2.3.2 Wildlife legislation

The St. Vincent and the Grenadines Wildlife Protection Act No. 16 of 1987 is the principal legal instrument used to protect and determine matters as it relates to the conservation of the St. Vincent Parrot.

Over the years, the legislation has played a meaningful role in stemming drastic reductions in the wild population and comprised of a main pillar of the parrot conservation programme that was initiated in the late 1980s. The Act is now over 14 years old and has never been subject to any amendments. Local and external factors with many legal implications has changed with the passage of time and the Act needs to respond to these circumstances to remain relevant to the legal conservation needs of the parrot.

The present Act does not specifically address issues such as international trade of the bird and is limited in addressing captive population issues. In particular, fines for offenses in the Act as stipulated in Sections 27, 30 and 34 range from \$750.00 to 2,000 EC. These fines can now be considered inadequate to deter potential poachers.

Although the Act makes provision for enacting regulations (Section 35), none so far has been developed. There is a definite need for regulations that can address such issues as the illegal pet trade, research on wild populations, conditions and terms governing local and foreign captive held birds and standards governing husbandry of captive birds.

The Act makes provision for the establishment of a conservation fund (Part VII, Section 31). However, there has been no regulatory mechanisms established to derive financial contributions for birds legally held in captivity in zoos and other aviary facilities where such arrangements are in order. Furthermore, there needs to be a licensing system and register maintained of captive populations with the necessary checks that will require funding to effectively sustain operations. Thus, contributions to the conservation fund can be useful in this regard.

2.3.3 International convention --- CITES



The Convention on International Trade in Endangered Species of wild fauna and flora (CITES) is perhaps the most pertinent and effective international convention regarding the conservation of the St. Vincent parrot. This has to be seen in the context of illegal international trade of the parrot which is still highly regarded as a factor impacting negatively on the conservation of the bird. Therefore, the continued listing of the species under Appendix 1 of CITES is very critical, as is the support of member states, particularly in developed countries, who must fulfill their obligations through the diligence that is consistent with the requirements of the Convention.

In terms of the local situation it is necessary that the Scientific and Management Authorities as stipulated in Article IX of the Convention are constituted and fully functional, recognizing their regulatory and administrative roles as outlined in Article III. Fully functional authorities will serve to eliminate past problems governing issuance of export permits allowing for transparency and confidence among the populace. This is also critical in maintaining local support for the conservation of the bird.



3.0 SVG PARROT – FUTURE CONSERVATION

The future conservation of the bird owner requires a renewed holistic approach that will span a spectrum of environmental, ecological, socio-economic and legal parameters. This multifaceted approach warrants the cooperation of government, NGOs, private sector interests and communities involved in genuine efforts both locally and externally. To this end, the following are recommended:

3.0.1 Improved population census

Regular censuses to determine location and extent of parrot populations are essential in providing valuable data for informed management of the bird. The current biennial parrot census has several acknowledged weaknesses highlighting the need for improvement in the census method. This requires:

- Additional funding,
- The ability to conduct watches at all sectors simultaneously over the census period,
- Training of census personnel,
- Review of sector watch points to determine the most strategic positions, and
- Provision of GIS equipment as well as other communication devices for use by observers,
- Change technique to transect sampling.

These suggestions should significantly reduce bias and increase accuracy of the relative population estimates.

3.0.2 Legal concerns

Relevant legal measures will always be an essential component in the continued conservation thrust of the bird. A review, leading to the amendment, of the Wildlife Protection Act No. 16



of 1987 is critical at this juncture. This should address the following among others:

- increased fines and penalties for parrot related offenses
- development of regulation for the management of captive stock, and
- improved provisions to obtain funding for conservation from licensing and other measures.

A suggested first step in this regard would be to engage stakeholders and resource persons in the review process.

3.0.3 Networking

As stated earlier, the St. Vincent Parrot is one of the least studied of the genus *Amazona*. Mention was made too of the need for several areas of research as it pertains to the conservation of the species. Undoubtedly, various organizations and individuals are involved in research activities of one kind or another. However if the data and/or findings therefrom are not shared with as many stakeholders as possible, then talk of conserving the *A. guildingii* would be nothing but mere rhetoric.

Similarly, AvianEyes recognizes the need for and recommends networking and experience sharing among Puerto Rico and the Windward Island territories of Dominica St. Lucia and St. Vincent and the Grenadines. Puerto Rico boasts a relatively good success rate as far as their recovery programme of the *A. vitata* is concerned. Thanks in part to a favorable human, financial and technological resource base of the International Institute of Tropical Forestry IITF, and the U.S. Fish and Wildlife Service. The IITF is a virtual repository of information on various aspects of forestry and wildlife in the Caribbean region. Moreover, the IITF continues to be a driving force in hosting and conducting seminars, workshops, conferences, attachments, internships and in-service training sessions for the region's environmentalists, ecologists, foresters and wildlife management personnel. The onus then is on the forestry departments in the Windward Islands to request and share information with the IITF and for them to participate in IITF sponsored programmes that may prove beneficial to the sub-region's endemic, threatened and endangered parrots. By virtue of similarities in their geomorphology, history, culture and other socio-economic factors that have a bearing on the conservation of their individual species of parrots, it is imperative that the Windward Islands broaden their scope of operation to share experience and network more in the interest of their birds. Incidentally, Dominican Forester Bertrand Jno Baptiste participated in the 1992 biennial census of the wild population of *A. guildingii*. Jno Baptiste's attachment was aimed at technology transfer between Kingstown and Roseau. Unfortunately, there has been no reciprocal or follow up attachment between the two islands to date. For example, Dominica has made significant



advances in nest box monitoring using intra-cavity video probe technology, an area of current research need for SVG. Meaningful action should be taken to avoid such gaps occurring in the future.

3.0.4 Strengthening of local wildlife management capability

Traditionally, wildlife management in St. Vincent and the Grenadines has been limited mainly to the biennial census of the wild population, and the monitoring of the captive stock of *A. guildingii*. Mainland St. Vincent is blessed with several endemic species of wildlife: two (2) birds, one (1) amphibian, one (1) reptile and a dozen (12) plants (CCA, 1990); all of which share an ever dwindling rainforest ecosystem and habitat. Hence, whatever impacts any one species is likely to affect the others. Another point to be borne in mind relates to the island's geomorphology. Forests occupy about 30% of St. Vincent which is 133 square miles in area. In the absence of any clearly defined buffer zones, the transition from rainforest to agricultural lands is quite rapid. This factor, coupled with inadequate manpower and technical resources needed to effectively patrol and monitor the forest estate, often leads to encroachment. Any wildlife management programme should be wide ranging enough to take these, as well as other habitat management issues, on board. In short, a holistic and focused wildlife management programme under the auspices of the Forestry Department is required to more efficaciously manage the wildlife resource and address the many pitfalls enumerated.

3.0.5 Role of an effective St. Vincent Amazon Parrot Consortium (SVAPC)

The role of the St. Vincent Amazon Parrot Consortium SVAPC in the conservation of the species cannot be over emphasized. Should any natural or manmade catastrophe befall the wild population of *A. guildingii*, inevitably, the beacon will focus on the consortium to spearhead remedial work to replenish the wild stock of the bird. However, this can only become a reality when each member of the consortium adapts the virtues of honesty, openness, cooperation and a willingness to share information, expertise, skills and other resources in the spirit of genuine commitment to conserve the species. Fundamentally, the consortium should post a website which should serve as a repository of information. The SVAPC should be a watchdog against illegal trade in the species internationally. It should also be juxtaposed to advise and assist the government of St. Vincent and the Grenadines on/in the latter's conservation efforts for the *A. guildingii*.

3.0.6 Need to highlight ecological impact of deforestation

On a national level, deforestation and its effects are not issues that are widely debated. Hence



the majority of Vincentians may not be aware of the negative impact it has on the environment. Deforestation is quite likely to be the single most detrimental influence on the conservation of the St. Vincent Parrot. There is need for more heightened debate among all sectors of the society to include the environmental and biodiversity costs associated with deforestation. These debates should include the many unanswered questions that leave us still groping in the dark. What was there before the area was cleared? What type of species inhabit that space? What kind of insects? How many endemic? How many rare? Were there any endangered? Are these found anywhere else? How old were some of these trees? How many living creatures perished in the destruction? We may never know the answers to some of these questions. What we do know is that further research and analysis are urgently needed to confirm assumptions, answer some of these and other questions and then be presented to the public in a systematic and sustained manner.

3.0.7 Field research in specific areas

It is quite evident that the most important way forward for the conservation of *A. guildingii* is research into the different factors affecting population survival and growth. These include research into the:

- Breeding, feeding and behavioural ecology
- Population dynamics: size, fecundity, demography, rates of survival and mortality
- Genetics (variability)
- Habitat requirements and availability
- Factors affecting survival (e.g. ecological, socioeconomic, cultural, historical)

3.0.8 Strategic and co-ordinated minimum viable populations/stock

Habitat establishment and conservation are not enough to prevent declines in *A. guildingii* populations since factors such as population size, genetics and demographic variability also play a vital role in a species survival. Habitat conservation must therefore occur in tandem with measures to improve population(s). It is thus necessary that as many individuals as possible be protected within the greatest possible area and, at all cost, a minimum viable population (MVP) be maintained. Simply stated, a MVP is the smallest population size that can be predicted to have a very high chance of persisting for the foreseeable future (Shaffer, 1981).



Research by Jones and Diamond (1976) on an island ecosystem showed that populations of birds had decreased extinction rates as the numbers of breeding pairs increased. At a population of 10 breeding pairs, there was an overall 39% probability of extinction over 80 years, populations of between 10-100 pairs had a probability of 10% extinction while populations over 100 pairs had a very low probability of extinction.

In order to secure the population of *A. guildingii*, it is important that a concerted national effort be made to ensure the continued existence of a MVP for this bird. Therefore, with the noted stable to increasing wild population, the ability of *A. guildingii* populations over the years to withstand environmental variations, and because the ultimate goal is to have the majority of *A. guildingii* existing in the wild, the following recommendations are being made:

- A minimum 25 breeding pairs be established within 2 local captive breeding facilities. Another facility must therefore be established. This second facility should be located close to a forested area, with less human interaction, and birds should be kept as “wild” as possible (e.g. being fed wild foods).
- Another 25 to 50 breeding pairs be spread throughout local, regional and international custodians and captive facilities within a regulatory framework.
- These numbers should be established using already existing captive birds, supplemented by genetically varied wild individuals (offspring) where absolutely necessary. This should be an interim figure to be established within the next 3-7 years and increased only if there are indications of declines in wild populations.

3.0.9 Renewed conservation education programme to capture successive generations

During the Decade of the Environment (1990s), the intensity and strategic environmental education programme initiated under the Rare-sponsored project was reduced. Ironically, it was during that decade that there was an upsurge of environmental degradation and when the rate of parrot habitat destruction was at its peak. It is believed that younger generations may not appropriately identify with the bird as a national, endemic and flagship species, and that significant portions of older generations are far removed from the need for its continued conservation.

Within recent times, there have been other educational efforts such as posters and school programmes which, in part, focus on the bird. But lack of sustained efforts, evaluations and adjustments to fashion new environmental education drives are lacking.

In light of the foregoing, there is need for:



- a new and improved public education drive within schools, communities and with policy makers that includes the use of posters, the creative arts, media and community groups.
- A national day for the observance of a St. Vincent Parrot festival; highlighting its importance, need for protection of its habitats, and other animals that benefit from its protection.
- Enhancement of the educational component of the NWC which could also involve selected custodians.
- A booklet on the St. Vincent Parrot and its requirements for survival should be developed for different levels of the community e.g. a coloring book and videos, jingles, cd roms etc.
- A national policy concerning protection of the bird through education.