

Species Conservation Assessment and Action Plan

Species

Seychelles Cave Swiflet

Zirondel

Aerodramus elaphrus

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| SUMMARY CONSERVATION ASSESSMENT & ACTION PLAN GOAL AND OBJECTIVE | |
|--|---|
| IUCN Threat Status | Vulnerable |
| Range | Mahe, Praslin, La Digue |
| Population estimate | 2500-3000 individuals |
| Population trend | Unknown |
| Altitude | Nests above 150m. Forages from sea level to upland forest |
| Habitats | Nests in caves amongst granite boulders. Feeds in a wide range of habitat |
| Threats | Vandalism, Development, pollution, predators |
| Goal | To maintain and enhance the conservation status of the species |
| Objective | Reduce data deficiencies, define conservation actions and implement by 2006. |

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Authorship: Selby Remie and Flavien Joubert, with assistance from Dave Currie and Nirmal Jivan Shah

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1. INTRODUCTION.

The Seychelles Cave Swiftlet, *Erodramus elaphrus* the only resident swift of the Seychelles is endemic, and is restricted to Mahe, Praslin and La Digue. The population trend is not well known but may be stable. The most recent population estimate is 2,500-3,000 individuals¹. The bird nests in caves and currently there are three known nesting sites, one on each of the aforementioned islands. The largest colony is found on Mahe, followed by Praslin and then La Digue.

The range of the species has decreased. A population previously known on Felicite is now extinct, and at least four nesting sites, one each on La Digue and Mahe and two on Praslin, are reported to have been abandoned or destroyed.

Biological data on the species varies in quality, with some aspects well researched while other basic information such as length of incubation, or pair fidelity remains unknown.

Monitoring of all nesting caves is currently being done by the Ministry of Environment. The most adequate set of data currently comes from Mont Cabris Praslin. Useful information can already be deduced from this, but proper data analysis is necessary.

Table A

| Status and Level of Biological Knowledge (Not known, 1-poor, 2-adequate, 3-good) | | |
|---|---------------------------|---|
| Population | Size | 1 |
| | Trend numbers | 1 |
| | Trend range | 1 |
| Knowledge | Status | 2 |
| | Trends | 1 |
| | Conservation Requirements | 2 |

2. FAMILY AND GENUS

The Seychelles Cave Swiftlet was considered as a subspecies of the Mascarenes swiftlet, *Collocalia francica*^{2,3}. Although previous texts cite insufficient data to establish definite classification it was commonly referred to as *Collocalia francica elaphra*. The swiftlet was given full species status, *Collocalia elaphra* in 1987⁴. The latest attempt to classify the Seychelles cave swiftlet using recent field and DNA data⁵ places it as a species of the echolocating *Aerodramus* group: *Aerodramus elaphrus*.

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3. IDENTIFICATION

A small fast flying bird that appears black in flight, and often seen feeding in small groups. The bird is dark grey-brown on the back, slightly paler on the crown of the head and rump. A slight gloss may be noticed on the head and upper wings. The underside is paler (more greyish). The tail is slightly forked and as the upper wings blackish-brown. The underwing is slightly paler. Bills and legs are black. There are no significant differences between adults and sub-adults.

The bird has an average length of 11 cm and wing span of 28cm, and a mass of ~ 11-12 grams (MoE, unpublished data). The different body measurements are tabulated below (2 & MoE unpublished data).

Table B. Body measurements

| | Mean (mm) | Standard Deviation | Sample Size |
|-------------------------------------|-----------|--------------------|-------------|
| Wing | 120.86 | 2.54 | 63 |
| Tail Length (Inner feathers) | 48.16 | 1.25 | 57 |
| Tail Length (Outer feathers) | 52.82 | 1.59 | 57 |
| Bill Length | 4.16 | 0.10 | 57 |
| Bill Depth | 2.26 | 0.14 | 57 |
| Tarsus | 7.63 | 0.51 | 25 |

The swiftlet is rarely heard whilst outside their caves, except for a soft twitter. Inside the caves they use echolocation to navigate in the darkness. This is a rattling call made up of sharp and rapid clicks "Click-click-click".

4. RANGE AND POPULATION

The swiftlet is now restricted to the islands of Mahe, Praslin and La Digue. The range has contracted, with one known case of population extinction on Felicite. It appears that distribution is influenced by availability of suitable nest-caves. There are currently three known nesting caves, one on each island. On Mahe the cave located at La Gogue was first documented in 1992 (Joubert and Remie unpublished data). This area is close to Glacis where a cave was suspected. There is a disused cave at le Niolle and caves are suspected in the Morne Seychellois and Cap Ternay area. On Praslin the cave is located at Mt Cabris, one other cave is reported to have been destroyed whilst the location of a third one was previously recorded documented but is currently not known. On La Digue

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the cave is found at Nid D'Aigle. Another cave is reported to have been deserted whilst a cave is suspected in the Grand Anse area.

Population The bird may seem commoner than it actually is because of its behavior⁶. The population on all islands is believed to be between 2500-3000 (1). On La Digue there were 45 nest in 1977², 80 in 1984⁴ and the most recent census done in April 2001 giving a total of 56 nests (Ministry of Environment). On Praslin a maximum of 56 nests were reported in 1977, 107 nests was counted in 1998 and in April 2001 59 nests were counted. On Mahe it is difficult for the nests to be counted. The estimate of a population size of 2263 +/- 371 birds¹ may not be accurate. It is unclear if apparent fluctuations in the population are due to seasonal effects, movements between colonies, observer bias, or represent genuine changes in the population.

The population may appear to be stable but the data may not be robust enough to make definite predictions. In addition, demonstrated range contractions have occurred in the past. Given that the undiscovered colonies are suspected, it would be unsafe to assume population stability without more intensive censuses and long term monitoring.

Table C

| SIZE AND LOCATION OF POPULATIONS | | |
|----------------------------------|---------------------------|------------------------------|
| Location | Estimated population size | Year of most recent estimate |
| Mahe | 2263 ± 371 birds | 1997 |
| Praslin | 118 (59 nests) | 2001 |
| La Digue | 112 (56 nests) | 2001 |

5. ECOLOGY

The swiftlet nests at an altitude of 150 metres or above (La Digue 240m, Mahe 300m, Praslin 150) in caves among granite boulders. The bracket-shaped nests are most often built with mosses, or Casuarina needles cemented with saliva². Analysis at Mt. Cabris in May 2001 revealed that the majority of the nest were built with palm fronds most likely from endemic palms or 'latanye', mixed with a smaller percentage of epiphytes (S.Remie, pers obs). Analysis of old nest collected at La Gogue in 1997 also revealed the presence of the epiphyte though the majority of the nests were built with lichen. The nest building material of the swiftlet is therefore more diverse than previously reported.

The nest usually share common brackets and are usually on horizontal ceiling or reverse sloping wall. Monitoring of the Mt.Cabris site over 4 consecutive years confirm that breeding occurs throughout the year (MoE, unpublished data). There is a peak from November to March⁶. This is likely to be the main breeding period. However the August-October peak is less marked and fluctuates between years. It is presumed that this peak coincides with periods of rainfall although more robust data is needed for confirmation.

Incubating success seems to be low². Based on recent data it is very rare that this exceeds 50 % . This may be related to eggs being accidentally stuck to the nest by adults. Clutch

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size is one, although two eggs have been recorded. Incubation time is not accurately known but may last between 25-30 days. Replacement clutch appears after 14 days⁷.

Chick mortality is low, and the fledging period is 42 days. Both adults feed the young and roost on the nest at night. Once the fledgling leaves the nest a new clutch may appear after approximately 14 days; it is not known whether it is the same pair laying again.

It has been suggested that the birds leave the caves in early evening for courtship display and return with their mates or prospective mates, and that mating and mate selection may take place at the nest site or nearby in the air².

The swiftlet is seen in habitats ranging from coast to mountain. They seem to prefer swampy grounds and pools, and on Mahe and Praslin they also tend to concentrate over boulder-filled valleys or rocky slopes. They usually feed in groups, at a height of 5-20 m above ground, flying higher during the middle of the day and lower early morning or late afternoon and when there is heavy cloud or rain. The activities appear to be linked to prey availability.

Examination of food boluses has shown the diet to compose mainly of hymenoptera (over 90%), the vast majority being flying ants. Other orders preyed upon are Diptera, Hemiptera and Coleoptera (F. Joubert, unpublished data).

Nest dislodgement has been noted in all colonies but at a high rate at Mont Cabris. In 1997 only 4 nests remained from an initial 73, and in 2001 six nests remained from 56. Several other incidences of mass nest dislodgement have been noted between 1997 to 2001, ranging from 1-48 nest falling. It is likely that heavy rainfall is responsible for this, especially if the water runs along the cave roof. Nest reconstruction seems to start soon after, and the nests are completed in approximately 2-3 months.

There have been past collections of ectoparasites, but details are not available.

6. SOCIO-ECONOMIC CONTEXT

The fate of the swiftlet is intimately linked with socio-economic activities. There has been rapid development in Seychelles; land was initially cleared for agriculture especially for coconut plantations and more recently for urban and tourism development. Negative impacts resulting from these may have affected some populations. Widespread use of pesticides and other chemicals in the past may have affected prey species⁸.

It does not seem that the swiftlet has been directly exploited. The nests of related species of swiftlets are prized for their use in soups in Asia and may thus be overexploited; people of Chinese origin in Seychelles may have used the nests in the past but not in recent history (K.J. Shah, pers. com.).

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|------------------|---------------------------|-----------------------------------|
| | | <u>Low/Immediate or Potential</u> |
| Direct threats | Disturbance of nest sites | High/ <u>Immediate</u> |
| | Development | High/ <u>Potential</u> |
| | Predators | <u>Medium/Immediate</u> |
| | Tourism | High/ <u>Potential</u> |
| Indirect threats | Pollution | <u>H</u> igh/ <u>I</u> mmEDIATE |

8. CONSERVATION ACTION TO DATE.

Policy and legislation

The Seychelles Cave Swiftlet is protected under the Wild Animals and Birds Protection Act (1966) as are other endemic birds. This Act protects the bird, its eggs and nest but not the nesting site. The legislation is dated, although recent amendments have been made to increase penalties.

The Sensitive Area map of the Seychelles allows the nesting sites of Swiftlet to be protected under the Environment Protection Act (1994). However this map is not accurate and the use of the GIS system is necessary for its update. This is being currently undertaken by the Ministry of Land Use and Habitat The nesting sites can also benefit from being protected under the Environment Impact Assessment regulations.

Site safeguard.

The protection of nesting site is detailed above, However the legislation as stated above is not adequate.

Species Management & Protection

The current monitoring programme of the swiftlet is part of the Rare, and Threatened Species, Sites and Habitat Monitoring project, originally designed and implemented by BirdLife International and the Ministry of Environment.

Advocacy

Fencing of nesting cave entrances has been proposed in the past^{2 3} but this has not been implemented. There have also been recommendations for a sustained and continuing effort to locate new caves. In 1992 the then Conservation and National Park Division made an effort in this direction with the assistance of students and members of the public, leading to the cave at La Gogue being found. Ministry of Environment staff in sections such as conservation and forestry, have been instructed to be the lookout for new caves whilst in the field.

Research and Monitoring

Research on the Swiftlet has been patchy, the first nesting site being located as late as 1970³. Some work on the ecology of the species has been undertaken² but more targeted research is necessary to remove data deficiencies. Prior to 1997, monitoring consisted of

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occasional visits to the caves to assess numbers. Since 1997 a new monitoring system under the Rare, and Threatened Species, Sites and Habitat Monitoring project has been implemented. This involves monthly visits to the caves of Praslin and La Digue and an annual visit to the cave on Mahe. The monitoring scheme is adequate, but occasionally suffers from lack of staff. There may also be a need to modify the monitoring system to allow the collection of supplementary data for example on behaviour and nest structure.

Education & Awareness

A targeted education and awareness program is needed to make people more aware of the sensitivity of nesting sites. The public should also be encouraged to look out for "new" nesting sites.

Resources

The Ministry of Environment has committed resources for the conservation of the swiftlet. Some of the actions proposed in this document can be undertaken by the Ministry. Other actions, particularly those pertaining to research, need assistance for implementation.

9. ACTION PLAN REVIEW

Review after 5 years.

10. REFERENCES

- ¹ G. Rocamora (1997) Rare and threatened species, sites and habitats monitoring programme in Seychelles. Project G1 EMPS. Ministry of Environment/ BirdLife International/ EU. (Unpublished)
- ² MacDonald R.A (1978). The biology of the Seychelles Cave Swiftlet *Aerodromus(francicus) elaphrus*. In P.A Racey, ed. 1977 Aberdeen University Expedition to the Seychelles. (Unpublished).
- ³ Procter, J (1972). The nest and identity of the Seychelles Swiftlet Collocalia. Ibis, 114: 272-273
- ⁴ Cheke, A.S. (1987). The ecology of the smaller land birds of Mauritius. In Diamond, A.W. (Ed.). Studies of Mascarene Island Birds. Cambridge University Press.
- ⁵ Johnson, K.P and Clayton, D.H. (1999). Swiftlets on islands: genetics and phylogeny of the Seychelles and Mascarene swiftlets. Phelsuma 7: 9-13.
- ⁶ Watson, J (1984). Land birds: Endangered species on the granitic Seychelles. In Stoddart D. (Ed.). Biogeography and Ecology of Seychelles Islands
- ⁷ Watson, J. (1979) Clutch size of Seychelles' endemic land birds. Bull. Brit. Orn. Club. 99.

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⁸ Shah, N.J. (Ed.) 1997. National Biodiversity Assessment. Republic of Seychelles, UNEP, IUCN.

11. ACKNOWLEDGEMENTS

Sincere thanks goes to the Conservation Section, particularly Victorin Laboudallon who made information available for this review.

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| Overall Goal | | | | |
| To maintain and enhance the conservation status of the species | | | | |
| Objective | | | | |
| <u>The Goal will be achieved by reducing data deficiencies, defining conservation actions and implementing</u> accordingly by 2006 | | | | |
| Activity | Timetable | Indicators | Lead Resp. | Priority |
| Policy & Legislative | | | | |
| Legislation to protect nesting sites | 2003 | Gazetted | MoE _v | High |
| Site safeguard | | | | |
| Identify and implement appropriate methods to protect nest sites | 2001-2006 | Sites protected | MoE _v | High |
| Limit development close to nesting areas using EIAs and other mechanisms | 2001-2006 _v | Decrease rate of encroachment | MoE _v | Critical |
| Protect key feeding habitat | Ongoing | Decrease rate of habitat loss | MoE _v | High |
| Species Management and protection | | | | |
| Design protection | 2006 | Report | MoE | High |

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| programmes based on research results | | produced | | |
| Advocacy | | | | |
| Work with public to locate new nesting sites | Ongoing | New sites documented | MoE, other partners | High/Medium |
| Resources | | | | |
| Designate staff, funds equipment and transport | Ongoing | Recommendations implemented | MoE, other partners | High |
| Research and Monitoring | | | | |
| Continue monitoring program | 2001-2006 | Data base updated | MoE | High |
| Research in basic biology/ecology | 2005 | Paper published | MoE, other partners | |
| Identify key threats | 2006 | Paper published | MoE, other partners | |
| Identify important feeding habitats | 2006 | Paper published | MoE, other partners | |
| Education and Awareness | | | | |
| Increase public awareness of swiflet | 2001-2006 | Media programmes etc. | MoE | Medium |
| Cooperation & Participation | | | | |
| Establish relationship with land owners who have nesting sites on their property | 2001-6 | MOUs established | MoE | high |
| Identify new partners | 2001-6 | | MoE, Nature Seychelles | high |

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| (NUMBER REF.Rocamora et al 1997) | | |
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| , the depth of the cave and light penetration follows the same pattern with the cave on Mahe being deeper and darker. | | |
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| the current state of knowledge on the status of the species. | | |
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(NUMBERED REF Johnson and Clayton 1999)

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the measurements match those collected by Conservation Section.

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eak Culmen to skull or feathers

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The population estimate has changed over time as new nesting sites were documented.

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was in 1997 (NUMBERED REF by Rocamora)

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The population size (number of nest) fluctuate over time

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provided a

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provided a population size of 2263 +/- 371 birds

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| <i>other methods of population estimate are required for example Capture- recapture. This method causes much disturbance to the birds and it is thus recommended that it only be done every 3-5 years. The first estimate by Rocamora et al (1997) gave a population size of 2263 ± 371 birds.</i> | | |
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| <i>Based on the above observations that breeding population fluctuates and that nest may become dislodged (refer to Ecology below) it is wise to assume that only very long term monitoring would notice any significant change in population. The current data tend to suggest t</i> | | |
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| <i>as being stable</i> | | |
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| <i>further censuses and long term monitoring.</i> | | |
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| <i>population estimate will also increase as new nesting sites are discovered</i> | | |
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| of broken nests (| | |
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| ,(if breeding occurs throughout the year then annual nest counts have distinct limitations in determining pop. Size ## I think you are mistaken nests counts are montly at the end of the year it will remain the best method to determine population size) | | |
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| and as Watson and Rocamora mentioned there | | |
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| perching on the side of the | | |
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| . He also suggested | | |
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| This remains to be properly investigated, since in May 2001, a suspected mating incidence was noted. Two birds were noted in mating posture with the bottom bird perched on the cave wall, the birds separated after about one minute but remained alongside each other. | | |
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| A phenomenon that is yet to be properly documented is n | | |
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| after all the rest had fallen (| | |
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| nest were noticed the | | |
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| Water will increase the weight of the nest considerable causing it to be detached. | | |
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| direct impact of man on the distribution of | | |
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| (urbanisation) | | |

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| for example on Felicite | | |
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| No explanation has yet been proposed | | |
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| caves on Mahe and Praslin are still not known. A site at Amitie is thought to have been destroyed by quarrying (V. Laboudallon pers com.) | | |
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| are still not known | | |
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| nest in certain parts of the world | | |
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| The only known direct economic activity relating to this species | | |
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| activity relating to this species | | |
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| has been by a small group of people on | | |
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| taking tourists to the cave. Since 1992 | | |
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| Since 1992 | | |
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| instructed to monitor and manage | | |
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It seems that this uncontrolled tourism has now stopped. It has not been proven that visitors affect the birds but a precautionary approach

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uncontrolled tourism

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precautionary approach

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is needed when dealing with a vulnerable species.

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Introduced predators may have an impact on the population. Swiflet feathers have been noticed at one point or another in all the known caves, it is presumed that predation may be due to Barn Owls. This observation has never been continuous however and it is therefor difficult to properly assess the impact or confirm the identity of the predator.

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such as the Turtle Dove or Blue pigeon have been.

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it has been observed (S.Remie) that the

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as described previously.

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| building high also allows for a better view, which is the current trend | | |
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| but it seems that the swiftlets adapt, as they can be seen foraging over | | |
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| built up areas. | | |
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| there is a negative trend | | |
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| on the population. Swiftlet feathers have been noticed in all the known caves and | | |
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| on the population. Swiftlet feathers have been noticed in all the known caves and it is presumed that predation may be due to Barn Owls. | | |
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| As these observations have been ad-hoc | | |
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| Introduced predators, especially Barn owl, may be having an impact on the specie. This has however never been confirmed and further monitoring is required. (Refer also to socio-economic section) | | |
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| (NUMBERED REF: Shah, 1997) | | |
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| but may even be more so since its been noticed that the birds were accumulating around the | | |

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| t | | |
| Page 6: [90] Inserted | Wildlife Clubs of Seychelles | 12/1/2001 11:11 PM |
| may cause | | |
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| problems for the species especially on La Digue where the cave | | |
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| s for the species | | |
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| where the cave | | |
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| and residents are aware of the financial benefits of taking visitors to the caves., | | |
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| i | | |
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| allows | | |
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| to be protected | | |
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| old | | |
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| and currently only a fine of Rs 1000 or 1 year imprisonment is the | | |
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| y for an offence | | |
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, it is probably necessary to amend the National Parks and Nature Conservancy Act to create a new category for Cave Swiftlets nesting sites.

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| The Conservation section reviewed t | | |
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| as | | |
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| Division of Environment | | |
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| This project produced a monitoring system for cave Swiftlet which is currently being followed | | |
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| (NUMBERED REFs MacDonald 1978, Procter 1972) | | |
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| never | | |
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| were | | |
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| for | | |
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| to be located | | |
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| Conservation staff are always on | | |
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| , there is a suspected site at Cap Ternay. | | |
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| in | | |
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| only | | |
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| MacDonald and Watson worked on the | | |
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| E | | |
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| find out missing biological data, such as incubating time, mating etc | | |
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| Before | | |
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there was no real structure to