



# SPECIES CONSERVATION ASSESSMENT & ACTION PLAN

## SEYCHELLES WARBLER TIMERL DEZIL *Acrocephalus sechellensis*

SUMMARY CONSERVATION ASSESSMENT & ACTION PLAN GOAL AND OBJECTIVE	
IUCN Threat Status	Vulnerable D2
Range	2km <sup>2</sup> Cousin, Cousine and Aride islands
Population estimate	2100
Population trend	Stable
Altitude	0-135 metres. Lowland
Habitats	Shrubland and woodland
Threats	Habitat destruction, introduced predators
<b>GOAL</b>	Reclassifying the species from vulnerable d2 to vulnerable
<b>OBJECTIVE</b>	Increase range to five populations and numbers to >3000

### Authorship

David Richardson prepared this Action Plan

First Draft

: [22/04/01]

Peer Review Committee

: [Date]

Final draft

: [Date]

Approved (workshop)

: [Date]

## 1. INTRODUCTION

The Seychelles warbler has been the focus of intense effort since 1968 when, with only 26 birds on Cousin Island<sup>1</sup>, it was on the verge of extinction. Cousin was purchased for the International Council for Bird Preservation (now Birdlife International) and managed as a nature reserve. The cause of the warblers decline was identified as loss of habitat and the introduction of rats. Management has been directed towards regenerating the indigenous vegetation and keeping Cousin rat free. The island is now predominantly *Pisonia* forest and this has led to a spectacular recovery of the warbler's numbers. In 1982 Cousin reached carrying capacity and new populations have since been established on Aride and Cousine<sup>2</sup>. The continuous monitoring and research, covering many aspects of this species biology<sup>3,4</sup>, make this one of the most extensive, productive and high profile studies ever to be undertaken on an avian island endemic. The present status of the Seychelles warbler is "out of danger" but 'vulnerable'. With the three island populations all at, or close to, saturation it is now time to think about the next step in the conservation of the Seychelles warbler.

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

## 2. FAMILY & GENUS

The Seychelles warbler (*Acrocephalus sechellensis*) is a member of the Reed warbler group (Genera; *Acrocephalus*, *Hippolais*, *Chloropeta*) within the Old World family *Sylviidae*. This large but morphologically poorly differentiated group of drab-coloured insectivorous birds is distributed in Eurasia, Africa and Australasia<sup>5</sup>. A recent investigation of the molecular Phylogeny of Palearctic-african *Acrocephalus* and *Hippolais* warblers<sup>6</sup> placed the Seychelles warbler alongside the Madagascar reed warbler (*A. newtoni*) in the Afro-tropical subclade 'Calamocichla' of the *Acrocephalus* warblers. This phylogeny confirms that the Seychelles warbler, along with its' close relative the Rodrigues warbler (*A. rodericanus*), should not, as previously suggested<sup>7</sup>, be placed in a separate (sub) genus 'Bebronis'. Both the Madagascar reed warbler and the Rodrigues warbler are also rare island endemics<sup>8</sup>.

## 3. IDENTIFICATION

A medium sized warbler with a long tail and long horn-coloured bill with yellowish fleshy base. It is a dull olive-brown on top with pale yellowish, faintly streaked, underparts, grey-blue legs and an obscure buff eyebrow stripe.

### Morphometrics:

Mass = 15.8 ± 1.6 g; Tarsus = 25.3 ± 1.0 mm; Wing = 68.4 ± 1.9 mm; Bill length = 15.4 ± 0.6 mm; Bill height = 3.2 ± 0.2 mm.

### Voice:

Song: A considerable repertoire of relatively short, rich melodious songs of simple whistled phrases, generally of 1-3 s in duration concentrated between 1.95-2.75kHz frequency<sup>9</sup>. Alarm call: Brisk chatter. Contact call: sharp cheep.

## 4. RANGE AND POPULATION

The original distribution of the Seychelles warbler is debatable. It was reported to exist on Marianne and Cousine but probably also occurred on Cousin and Praslin and there were even odd reports from Mahe and Félicité<sup>10</sup>. Between 1959 and 1968 there was only 26-29 individuals surviving on Cousin Island (29 ha)<sup>1,11</sup>. The island was bought in 1968 and managed as a nature reserve, with the natural habitat being allowed to regenerate. Consequently the warbler population expanded rapidly until levelling out in 1982 at 320 individuals<sup>2</sup>. Since then the Cousin Island population has remained relatively stable with between 300-350 birds. In September 1988, 29 adult warblers were transferred to Aride Island (72 ha), and in July 1990 a further 29 adult warblers were transferred from Cousin to Cousine (26 ha)<sup>2</sup>.

Deleted: ation

Both of these populations have shown exponential growth. By 1997 the population on Aride was estimated at approximately 1600 covering the entire island (although the highest density remained on the plateau area)<sup>12</sup>. On Cousine the population reached 137 in 1997<sup>13</sup>. Both these islands are probably close to their carrying capacity but a further census would be required to confirm this. The overall population of Seychelles warblers is presently approximately 2100. No migration of warblers from the established populations to new, nearby islands has been observed. Consequently further translocations will be required to increase warbler numbers substantially.

SIZE AND LOCATION OF POPULATIONS		
Location	Estimated population size	Year of most recent estimate
Cousin	353	2000
Cousine	137	1997
Aride	1600	1997

## 5. ECOLOGY

The Seychelles warbler prefers thick scrub habitat and dense tall woodland dominated by *Pisonia grandis*. It gleans the majority of its insectivorous prey from the underside of the leaves of *Pisonia*, *Morinda* and *Ficus* trees, but can also catch aerial insects on the wing. Males and females form long term pair bonds and defend a territory year round. Breeding success is highly dependent on territory quality that can be measured as the number of insects that are available in that territory<sup>14</sup>. The main breeding season occurs in the Southeast monsoon between June and August with another smaller peak of breeding attempts occurring between December to February in the Northwest monsoon<sup>2</sup>. The exact timing of breeding appears to be dependent on rainfall patterns however breeding may continue year round if insects are superabundant<sup>3</sup>. The warbler has a complex cooperative breeding system that includes helpers at the nest, communal breeding and high levels of extra-pair paternity<sup>10,15</sup>. Furthermore it appears able to adaptively modify the sex ratio of its offspring<sup>16</sup>. There is one clutch per season which normally consists of one egg, though more may be laid, especially in multi-female territories<sup>15</sup>. The chick hatches after 15 days and leaves the nest after another 14 days but continues to solicit food from group birds for months afterwards, often up until the next breeding season.

## 6. SOCIO-ECONOMIC CONTEXT

Human colonisation of the Seychelles led to the extensive modification of the native habitats with coconut plantations replacing the indigenous vegetation. This combined with the introduction of predators (i.e. rats and cats) reduced the Seychelles warbler population to a maximum of 29 remaining on Cousin. Subsequent human intervention has conserved the warbler population on Cousin and established new, translocated populations, on Aride and Cousine.

## 7. THREATS

Habitat clearance on any of the populated islands would threaten the existence of the Seychelles warbler. However, Cousin and Aride are probably safe, as both are nature reserves protected under Seychelles law. The habitat on Cousine is presently managed in a manner sympathetic to conservation, however the island is privately owned and hence the future of this island as a reserve remains uncertain. On all three islands there is the potential threat of accidentally introduced predators including rats and cats and also the threat from the spread of other, already present, nest predators such as Indian Mynah (*Acridotheres tristis*) and Cattle Egrets (*Bulbulcus ibis sechellarum*). [Multi-species mixing through translocation.....](#)

The Seychelles warbler underwent a severe genetic bottleneck of unknown length and the present population is derived from the maximum of 29 birds existing in 1968. Consequently genetic variability within the population is probably severely limited<sup>17</sup> and the deleterious effects of inbreeding could pose a further potential long-term threat<sup>18,19</sup>. The separation of the warbler population into three isolated populations with no migration, and therefore no gene flow, between the islands means that the gene pool of each island population will face the potential threats of the future separately. Admixing of the gene pool by the artificial movement of birds between the populations may be beneficial for the long-term genetic health of this species<sup>20</sup>.

**Comment:** Get ref from we paper.

If predictions about global warming are correct sea levels may rise substantially over the next 100 years. This may result in the loss of a large percentage of the Warblers present habitat, which exists on the sea level plateaux of all three populated islands.

THREAT TYPE	DESCRIPTION	IMPORTANCE (Critical, High, Medium Low/Immediate or Potential)
Direct threats	Introduced predators Habitat loss	Medium/Potential High/Potential
Indirect threats	Genetic inbreeding Land loss <u>Potential Competitors (?)</u>	Medium/immediate High/Potential <u>(?)</u>

## 8. CONSERVATION ACTION TO DATE

### Policy & Legislative

The warbler and the nature reserves on which it exists are protected under the wild animals and birds protection act, Chapter 247, 1966. Revised 1991.

### Site Safeguard

Cousin was purchased by BirdLife International (then ICBP) through a worldwide appeal in 1968. It was declared a Nature Reserve by the Seychelles Government in 1969 and became a Seychelles Special Reserve in 1975. Christopher Cadbury purchased Aride for the RSNC in 1973. It is now run by the RSNC/Wildlife Trusts' and has also been designated a Seychelles Special Reserve. Cousine Island is a privately owned island with an owner sympathetic to conservation. The Seychelles Rodent Invasion Contingency policy has been established to minimise the risk and subsequent impact of an introduction of rodent to any of the three islands<sup>21</sup>.

**Deleted:** bought by Christopher Cadbury and given to the International Council for Bird Preservation (ICBP)

### SPECIES MANAGEMENT & PROTECTION

The protection and enhancement of indigenous habitat (suitable for the Seychelles warbler) has been, and still is, the main focus of the management of both Cousin<sup>22</sup> and Aride<sup>23</sup>. Habitat management on Cousine has improved in the last seven years and the population may have benefited from this. Opportunities for the establishment of new populations will be assessed under the Avian Ecosystem Project run by Birdlife Seychelles.

### Advocacy

**1968:** Cousin was bought and turned into a nature reserve to conserve the Seychelles warbler. Management was directed towards increasing suitable habitat for the warbler. i.e. removing Coconut palms and allowing indigenous vegetation to regenerate.

**1988:** Establishment through translocation of a new population on the nature reserve of Aride

**1990:** Establishment through translocation of a third population on Cousin's sister island of Cousine

### Research & Monitoring

Micheal Rands (Birdlife International) set up the Seychelles warbler research programme. Between 1985 and 1997 Jan Komdeur, in conjunction with Birdlife International, organised all the research and monitoring of the Seychelles warbler. All populations have been monitored but Cousin has been the focus of the most intense studies<sup>10,12,15</sup>. In 1997 Birdlife Seychelles took over the management of Cousin. David Richardson now co-ordinates the Seychelles Warbler Research Group (SWRG) a joint project between Sheffield University (UK) and Groningen University (Netherlands). This includes a MPhil student (Janet Hunter) working on "Habitat development and use by the Seychelles Warbler on the plateau of Aride Island, Seychelles".

### Education & Awareness

The Seychelles warbler is an integrated part of the 'education and awareness' policy developed by Birdlife Seychelles that includes the establishment of an independent Bird Conservation Forum,

the Wildlife Clubs of Seychelles, a series of public lectures and the production of posters and leaflets on the conservation of the warbler. The Wardens of both Cousin and Aride run nature interpretation visits for tourists. The Seychelles warbler research group has given scientific and public talks and presentations throughout the world and has published papers in leading journals on many aspects of the warblers' biology.

#### **Co-operation & Participation**

Continued co-operation with the owners of Cousine and the wardens and management committee of Cousin and Aride to maintain and enhance the conservation strategies already in place (i.e. habitat management, safeguards against introducing predators). Continued research and monitoring by the Seychelles Warbler research Group. Cooperation with boat owners to assist in maintaining the rat-free status of the islands.

#### **Resources**

Both Cousin and Aride were bought by Christopher Cadbury and placed in trust with the ICBP and the RSNC respectively. Birdlife Seychelles is the national arm of Birdlife international and is supported by the Royal Society for the Protection of Birds (RSPB). Tourist revenues fund Cousin. Tourist revenue and contributions from the RSNC fund Aride. Mr Keely personally funds the work on Cousine. A World Bank mid-size Global Environment Facility (GEF) funds the avian ecosystem project. The ICBP and Birdlife international employed Jan Komdeur and funded the translocation programme. Between 1997-2001 the Natural Environment Research council funded David Richardson as a research associate.

### **9. ACTION PLAN REVIEW**

Reviewed every five years

### **10. REFERENCES**

1. Crook, J. (1960) The present status of certain rare land-birds of the Seychelles Islands. Unnumbered Seychelles Government Bulletin. .
2. Komdeur, J. (1994) Conserving the Seychelles warbler *Acrocephalus sechellensis* by the translocation from Cousin island to the Islands of Aride and Cousine. *Biological Conservation* **67**, 143-152.
3. Komdeur, J. (1996) Seasonal timing of reproduction in a tropical bird, the Seychelles warbler: A field experiment using translocation. *Journal of Biological Rhythms* **11**, 333-346.
4. Veen, T., Richardson, D.S., Blaakmeer, K. & Komdeur, K. (2000) Experimental evidence for innate predator recognition in the Seychelles warbler. *Proceedings of the Royal Society of London. B*.
5. Sibley, C. & Monroe, B. (1990) *Distribution and Taxonomy of Birds of the World* (Yale University Press, New Haven and London).
6. Helbig, A. J. & Seibold, I. (1999) Molecular phylogeny of Palearctic-African *Acrocephalus* and *Hippolais* warblers (Aves: Sylviidae). *Molecular Phylogenetics and Evolution* **11**, 246-260.
7. Sibley, C. G. & Ahlquist, J. E. (1990) *Phylogeny and Classification of Birds: A Study in Molecular Evolution*. (Yale University Press, New Haven)
8. Birdlife International (2000) *Threatened birds of the world* (Lynx Edicions and Birdlife, Barcelona and Cambridge).
9. Catchpole, C. K. & Komdeur, J. (1993) The song of the Seychelles Warbler *Acrocephalus sechellensis*, an island endemic. *IBIS* **135**, 190-195.
10. Komdeur, J. Ph.D, Zoology Department, Cambridge University, Cambridge, 1991.
11. Lousteau-Lalanne, P. (International Council for Bird preservation, 1968).
12. Komdeur, J., Blaakmeer, K. & Richardson, D.S. (1997) Monitoring and studying the Seychelles warbler *Acrocephalus sechellensis* (Ministry of Environment/ BirdLife International/EU, Mahe).
13. Kraaijeveld, K. Unpublished report, (Free University of Amsterdam, 1997).
14. Komdeur, J. (1992) Importance of habitat saturation and territory quality for evolution of cooperative breeding in the Seychelles warbler. *Nature* **358**, 493-495.
15. Richardson, D.S, Jury, F., Blaakmeer, K., Komdeur, J. & Burke, T. (2001) Parentage assignment and extra-group paternity in a cooperative breeder: the Seychelles warbler (*Acrocephalus sechellensis*). *Molecular Ecology*. In Press
16. Komdeur, J., Daan, S., Tinbergen, J. & Mateman, C. (1997) Extreme adaptive modification in the sex ratio of Seychelles warbler's eggs. *Nature* **385**, 522-525.

17. Richardson, D.S. *et al.* (2000) Fifty Seychelles warbler (*Acrocephalus sechellensis*) microsatellite loci polymorphic in Sylviidae species and their cross-species amplification in other passerine birds. *Molecular Ecology* **9**, 2226-2231.
18. Frankham, R. (1998) Inbreeding and extinction: Island populations. *Conservation Biology* **12**, 665-675.
19. Lande, R. (1999) in *Genetics and the extinction of species* (eds. Landweber, L. & Dobson, A.) 1-22 (Princeton University Press, Princeton).
20. Vrijenhoek, R. C. (1994) in *Conservation Genetics* (eds. Loeschcke, V., Tomiuk, J. & Jain, S. K.) 37-53 (Birkhäuser Verlag, Basel).
21. Shah, N., Parr, S. & Hitchins, P. Seychelles Rodent Invasion Contingency Policy (Seychelles Bird Forum, Mahe, 1999).
22. Shah, N et al. (1999) Unpublished management plan. (Birdlife Seychelles, Mahe).
23. Bowler, J. (2000) The Aride Island Nature Reserve conservation management plan: prescriptions and operations. (Royal Society for Nature Conservation).

## **11. ACKNOWLEDGEMENTS**

The format of this Action Plan is influenced by the Species Action Plans produced by the RSPB (BirdLife International's UK Partner), the Environmental Management Plan for Seychelles 2000-2010 and BirdLife International's 'Threatened Birds of the World 2000'.



## SEYCHELLES WARBLER ACTION PLAN

### OVERALL GOAL

TO REDUCE THE THREAT OF EXTINCTION OF BY RECLASSIFYING THE SPECIES FROM VULNERABLE D2 TO NEAR THREATENED

Deleted: VULNERABLE

### OBJECTIVE

THE GOAL will be achieved by 2005 by increasing the range from three to five islands within the inner Seychelles and increasing the population from 2100 to above 3000

Deleted: granitic

ACTIVITY	TIMETABLE	INDICATORS	LEAD RESP.	PRIORITY (CHML)
<b>POLICY &amp; LEGISLATIVE</b>				
<i>Rat contingency protocol agreed</i>	2002	<i>Approved by Cabinet</i>	<i>BirdLife</i>	<i>High</i>
<i>Rat-free and high biodiversity island status legally recognised</i>	2003	<i>Gazetted</i>	<i>MoET</i>	<i>High</i>
<b>SITE SAFEGUARD</b>				
<i>Creation of one new <u>protected status island</u></i>	2005	<i>Gazetted</i>	<i>MoET</i>	<i>Medium</i>
<b>SPECIES MANAGEMENT &amp; PROTECTION</b>				
<i>Continued <u>suitable habitat</u> management on all three islands</i> <i>New islands to be prepared for establishment of new populations (translocations of larger numbers)</i> <i>(mixing of other species: white-eyes an issue)</i>	2000-5	<u>2 new islands</u>	<i>Island management</i>	<i>high</i>
<b>ADVOCACY</b>				
<i>Develop new partnerships for establishment of new populations</i>	2005		<i>BirdLife/je</i>	<i>high</i>
<b>RESOURCES</b>				
<i>Ongoing habitat restoration</i> <i>New Restoration project c\$150,000</i>	2002-4	<i>Reports/Papers</i>	<i>BirdLife</i> <i>Island owners</i> <i>MoET</i>	<i>Critical</i> <i>High</i>
<b>RESEARCH &amp; MONITORING</b>				
<i>New census on Aride and Cousine</i> <i>Short pre-emptive research of new species interactions</i> <i>Research and monitoring of new species interactions (White-eye-warbler)</i>	2001-2 2002 2005	<i>Report</i>	<i>Island owners, SWRG</i> <i>BirdLife/MoET</i>	<i>Medium</i> <i>High</i> <i>High</i>
<i>Continued scientific research into genetic variability, inbreeding and pathogen resistance</i>	<i>Annual</i>	<i>Report/papers</i>	<i>SWRG</i>	<i>medium</i>

Deleted: Special Reserve Island

Deleted: H

Deleted: E

Deleted: two

Deleted: dl

Deleted: 0

Deleted: C

Deleted: required

EDUCATION & AWARENESS					
News of Activities for General Public	Annual	Newsletters <u>Media coverage</u>	BirdLife, MoET	Medium	
News of scientific findings	Annual	Seminars <u>Publications</u>	SWRG	Medium	
COOPERATION & PARTICIPATION					
Boat owners <u>and island management</u> assisting in maintaining rat-free status	2004	<u>Rat free status</u>	<u>BirdLife/</u> <u>MoET</u>	<u>Critical</u>	Deleted: Forum outputs
					Deleted: .