

Seychelles songbird off danger list

The combined efforts of conservation and scientific research take a songbird from 26 individuals to one of the world's safest—and best understood—species

Surveys of the forest have found 330 bird species, 600 butterflies and 44 large mammals (D Monticelli and RSPB)

Among the various birds that have seen their status on the IUCN Red List worsen in the recent 2015 update (see article, p. XXX), one species, in particular, stands out as a much needed good news story: the Seychelles Warbler *Acrocephalus sechellensis*.

However, as well as a conservation triumph, the warbler's story is also one of pioneering science. During its 30 year study history, the species has become famous within the scientific community because of the insights it has afforded into the ecology and evolution of animals within their natural environment.

In 1959, the Seychelles Warbler population was thought to number just 26 individuals, all restricted to the 27 ha (0.3 km²) Cousin Island. The imperilled plight of this plain, but charming little songbird led the International Council of Bird Preservation (ICBP, the forerunner to BirdLife International) to purchase Cousin in 1968 for £17,300 (the then cost of the coconut crop on the island), in a last ditch effort to save the species.

"In 1969, the Red List said the Seychelles Warbler could well become extinct in our time. Now we can say the Seychelles Warbler was saved in our time," says Nirmal Shah, Chief Executive of Nature Seychelles (BirdLife Partner). "As far as I know it's the first time that a species once classified as on the brink of extinction has been downlisted to Near Threatened solely due to conservation action."

Paradise regained

When ICBP took ownership of Cousin Island, most of the native habitat had been largely converted to a coconut and cinnamon plantation. The remnant population of Seychelles Warbler was clinging on in a mangrove swamp, providing less than ideal habitat for the species.

A programme of intensive conservation measures was soon

underway: the island's coconuts were cut back, allowing the native *Pisonia grandis* forest (a species of flowering tree in the Bougainvillea family)—the preferred habitat of the warbler—to flourish once again. By 1982, the warbler population had reached around 320 adult birds, the maximum population level of the species that Cousin can support.

"Transformation from a coconut plantation to an ecologically restored island was achieved through careful habitat management and by preventing alien predators, such as rats, from arriving", says the former Chief Executive of BirdLife International, Dr Mike Rands, who ran BirdLife's Seychelles Conservation Programme for more than 10 years in the 1980s and '90s.

Spreading the risk

In spite of this remarkable recovery, the species' long-term future was far from certain. "The Seychelles Warbler

population was so small that a single severe climate, disease, or man-made event could have caused their extinction", comments Dr Rands.

In 1988 and 1990, Jan Komdeur, then a PhD student at Cambridge University and working with BirdLife International and the RSPB (BirdLife in the UK), carried out two translocations to the nearby islands of Aride and Cousine, with birds taken from the original Cousin population. By 1997, these two new populations were doing so well that both islands had almost reached their carrying capacity.

From 1997, the newly established Nature Seychelles took over responsibility for the Seychelles Warbler's conservation. In 2001, a Species Action Plan was drawn up, with the further target of establishing a warbler population of over 3,000 individuals across at least four islands.

Nature Seychelles works closely with the Seychelles

Warbler Research Project, a group of research scientists lead by Professors Jan Komdeur (University of Groningen, The Netherlands), David Richardson (University of East Anglia, UK), and Terry Burke (Sheffield University, UK), who have been studying the Seychelles Warbler since the 1980s. Their expertise ensures that each translocation is perfectly planned to move those individual birds with the highest chance of successfully reproducing on the new island: this has led to further warbler translocations in 2004 and 2011.

Denis Island, a luxury private holiday resort, was cleared of invasive cats and rats between 2000 and 2002. Subsequently, 58 Seychelles Warblers were brought to Denis from Cousin in 2004. The first pairs started nest building within three days of release; by August 2005, their numbers had increased to 75. Back on Cousin, more than 90% of the breeding territory vacancies

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created by the translocation were occupied within days by subordinate birds from other territories; after a year, the original population on Cousin had fully recovered to its pre-translocation level.

In December 2011, a population of Seychelles Warbler was established on a fifth island, when 59 adults were translocated from Cousin to Frégate, another private resort island, in the south-east of the archipelago. Although not in the recently known historic range of the species, Frégate was deemed a suitable site due to its remaining Pisonia woodland and lack of non-native predators.

Internationally important science

During the long history of the Seychelles Warbler Research Project, various intriguing insights have been gained into the behaviour and genetics of the species. This

insight translates into better understanding of its ecology and evolution and importantly, also informs its conservation.

“The Seychelles Warbler Research Project has built one of the longest running, ongoing monitoring and research projects carried out on a single species”, says Professor David Richardson of the University of East Anglia. “The Seychelles Warbler is now seen as an outstanding model system in the area of evolutionary ecology and conservation and is one of the world’s best studied island passerines.”

Seychelles Warblers are particularly interesting because they have a complex system of cooperative breeding. Adult birds (mainly females) that are the offspring or close relatives of a breeding pair assist the parent birds in providing care and feeding the young. These helpers may also aid the breeding pair by partaking in activities including mobbing

predators, defending the territory and nest building.

Breeding pairs with helpers generally tend to have increased reproductive success and produce more surviving offspring than those pairs without helpers. Amazingly, the parent female appears to be able adaptively to determine the sex of her own offspring: she produces female offspring when she needs new helpers to assist her in the coming years.

“Many facets of the warbler’s life history, ecology and evolution are now understood”, says David Richardson. “For example, how the species’ cooperative breeding allows them to maximise their productivity in limited habitat, and how they respond when translocated.”

The science has insights that go beyond the warbler itself. David Richardson explains: “It has also provided a natural laboratory in which we can investigate the

importance of genetic variation within a wild living bird and how this is maintained by mate choice and natural selection. This knowledge is key to understanding the benefits of genetic variation in terms of disease resistance and survival. The species is now being used as a model to understand variation in the ageing process in individuals within natural populations.”

“The most amazing conservation success story...”

The success of the translocations has resulted from careful planning and rapid delivery of the warblers to their new island home. Take the last translocation to Frégate. The warblers were captured in mist-nets on Cousin, with the trapping timed to allow the birds to feed before capture, to ensure they were in optimum condition for the move. They were placed in individual

cardboard boxes, each with a perch and lined with Pisonia leaves, and then transported to Frégate via a 15 minute helicopter flight. The birds were immediately released on arrival at the chosen release site, with all of them unharmed and readily flying up into the canopy just hours after first being caught on Cousin.

Encouragingly, the new population on Frégate is doing just as well as the previous translocations. By June 2013, the Frégate population had reached 80 individuals, which included 38 of the original translocated birds and 42 Frégate-born birds. There was also evidence that multiple generations had already hatched on the island, demonstrating that the species responded well to the translocation.

The researchers team estimate Frégate can currently support over 500 Seychelles Warblers, with the potential for over 2,000 after further

native habitat regeneration. Moreover, as with previous translocations, the population on Cousin also recovered to its carrying capacity within a single breeding season.

“The successful translocation to Frégate means there are now five separate, viable populations of Seychelles Warbler”, says David Richardson. “The monitoring and translocation work is carried out on the back of our research grants, meaning we’re not taking any conservation funding that could be used by NGOs. The species proves that research and conservation can work very effectively hand in hand.”

The work on Frégate benefited from a US\$18,000 Disney Worldwide Conservation Fund grant to Nature Seychelles through the RSPB. But supporting the species hasn’t stopped there with the owners and managers of all the islands to which the warblers have been translocated being

instrumental in making the conservation efforts possible. Cousine, Frégate and Denis, which are all private resort islands, have provided food and accommodation to researchers, as well as playing the key role in restoring their islands’ native vegetation. Aride, the most northerly of the granitic Seychelles, is managed as a nature reserve by the Island Conservation Society.

“The partnerships with private islands have been vital in preserving a future not just for the Seychelles Warbler, but other endemics such as the Seychelles Magpie-robin—which survived only on Frégate until a successful translocation programme began in the 1990s—that would now more than likely be extinct, without their contributions”, says Nirmal Shah.

With five well established, genetically maximised populations numbering around 3,000 birds (a figure that is

still rising), the Seychelles Warbler has reached a crucial threshold allowing its threat status on the IUCN Red List to be downgraded to **Near Threatened**, an unthinkable achievement back in 1968 when Cousin Island was purchased. Nirmal Shah is unequivocal in his assessment of the species’ recovery: “The warbler is definitely the most amazing conservation success story in the history of Seychelles.”

Perhaps, it could be argued, it is also one of the world’s great conservation stories of recent times.



Further reading online

Nature Seychelles
www.natureseychelles.org

Seychelles Warbler Project
<http://seychelles-warbler-project.group.shef.ac.uk>

Cousin Island
www.cousinidland.net



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