

A helping hand from the grandparents

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A team of scientists led by the University of East Anglia has discovered the existence of 'grandparent' helpers in the Seychelles warbler – the first time this behaviour, which rarely occurs except in humans, has been observed in birds.

Research carried out over more than 20 years on a population on Cousin Island in the Seychelles has revealed that, as in humans, older adults that no longer breed themselves often help their children to raise grandchildren.

The concept is of evolutionary importance as it provides another route to co-operative breeding - where adult individuals appear to act altruistically by helping the dominant pair in the group to rear offspring.

Co-operative breeding is known to take place in birds, mammals and in some fish. But the 'helpers' are usually offspring from previous years who, because of a lack of breeding opportunities elsewhere, stay within the territory and become subordinates who help their parents rear more young.

In the case of the Seychelles warbler, co-operative breeding occurs because the island is full and many birds cannot find suitable habitat in which to breed, so they instead become helpers.

For more than 10 years Dr David Richardson from UEA's School of Biological Sciences has been studying the Seychelles warbler, once one of the world's rarest birds. He explained that the existence of what he terms 'grandparent' helpers has, until now, been largely overlooked outside humans. The results of the research are published in the journal *Evolution* (Vol 61, issue 12, December 2007).

Older, often postreproductive adults have occasionally been found to engage in similar behaviour in a very small number of mammal species, such as pilot whales and some monkeys, but there is little documented evidence.

The study found that dominant females can be deposed from their breeding position by younger relatives. While some deposed females may then leave to live out a solitary life, a large proportion will stay to help these related females (often daughters) to reproduce.

"Because the subordinate females are helping to raise offspring they are related to, they are helping to produce more birds and increasing the spread of their genes," said Dr Richardson.

"For those birds prevented from breeding because of a lack of suitable habitat, this is an effective strategy. They are helping their daughters to raise their grandchildren by helping to protect and provision these offspring. This has never been seen in birds."

Dr Richardson added: "It is important because it provides a case that may reflect what happens in humans and gives us a way of looking at what pressures are creating these 'grandparent' helpers.

"This gives us a model to look at how this might have evolved. It's a way to compare and contrast what has been observed in humans."

The team, which includes Terry Burke from the University of Sheffield and Jan Komdeur of the University of Groningen, in the Netherlands, will continue their research on the species, for example looking at why dominant females are deposed in the first place.

"In the long term we want to look at why certain females carry on breeding and why others seem to get deposed and become grandparent helpers," said Dr Richardson. "Are they being pushed out or are they moving out to allow their daughters to breed? We don't know whether they are getting pushed out by their male partner or their daughter."

The work completed so far has been combined with efforts to conserve the species in conjunction with

Nature Seychelles, an independent environmental organisation. In the 1960s the number of Seychelles warblers was down to just 26 on Cousin Island, a result of the human colonisation of the Seychelles, which brought with it loss of habitat for coconut plantations and the introduction of rats. Today there are roughly 350 birds on Cousin Island alone, with more than 2000 birds now inhabiting three other islands to which the Seychelles warbler has been successfully translocated.

Source: University of East Anglia

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