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Black BEAUTY

The small population of black harriers in the West Coast National Park is under close scrutiny by avian researcher Marie-Sophie Garcia-Heras.

To watch a runt chick being killed by its mother and subsequently fed to its siblings, is to witness infanticide at its most graphic. Equally upsetting is observing a barn owl killing a 10-day old chick in the nest, or seeing almost-fledged siblings fighting for food. The flip side of the coin, pure joy, is when you witness the hatching of chicks.

For Marie-Sophie Garcia-Heras, a day at the office often means traipsing around the West Coast National Park looking for black harriers. With its impressive turquoise lagoon, strandveld, fynbos and marshland, the park is an ideal breeding ground for a variety of species. Notable among these is the black harrier *Circus maurus*, a scarce raptor endemic to southwestern Africa and considered endangered by the International Union for Conservation of Nature.

ON A WING AND
A PRAYER What
future awaits
the endangered
black harrier?

JOHANN GROBBELAR



Doctoral student Marie-Sophie Garcia-Heras is studying black harriers in the West Coast National Park. This one is fitted with a GPS tag to track its movements.

With an estimated population of less than a thousand breeding birds, a critical study of their breeding habits is being conducted by a research team from the University of Cape Town's Percy FitzPatrick Institute of African Ornithology. A great deal has been learned since the black harrier research project was launched by Dr Rob Simmons in 2000. The project is funded by Golden Fleece Merino, Natural Research Foundation, BirdLife South Africa, Centre of Excellence, and several other bird clubs and private individuals. Marie-Sophie joined the team in 2013 and for her PhD she aims to figure out which factors influence the breeding success of these slender raptors, such as habitat use, diet, body condition, parasite abundance and pollutant levels in the blood.

"When I see a chick make it through the 40 days of nesting and become capable of flying and protecting itself against predators, it's really uplifting. I tend to get attached to the chicks I see growing before me and when I come across a dead chick, it can really get to me. The ups and downs of the work can be tough to balance."

For the first time, access has

been gained into the private lives and nesting habits of the black harrier through a system of carefully deployed cameras. Not only have these cameras provided valuable data on the behaviour and interactions between mother and nestlings, but the team has also been able to capture spectacular footage of nature at work. These recorded events were a great reward for the team's many months of fieldwork.

"It's not easy work trekking out into the bush under the relentless sun or at times soaking in the rain, dragging along all of the supplies needed to set up the cameras or for tagging the birds. But it really does pay off in the end, when you see the dramatic footage come through on the cameras or when you find data you weren't expecting!"

The cameras that were set at the nests use a 32GB memory card, with 12 rechargeable batteries connected to a small solar panel so that they could be recharging continuously. With this, Marie-Sophie was able to record for six full days, taking pictures every five seconds from sunrise to sunset.

"One day I set up the camera at a nest where the female was pretty aggressive. There was lots of alarm calling and she kept circling above



STILL UP IN THE AIR

There remains a great deal to learn about the black harrier, and the reasons for its small range and numbers are still poorly understood.

- Is it so scarce because of the rare habitats in which it breeds? It is the most range-restricted raptor in the world. Its core breeding range is centred in the Cape Floral Kingdom of South Africa, although smaller numbers breed in the southern Karoo and Grassland biomes.
- Do birds remain with the same mates in consecutive breeding seasons?
- What are the implications of a low genetic diversity on breeding success or individual survival?



Marie-Sophie recorded this black harrier female sacrificing her smallest and weakest chick to feed to her brood in Nieuwoudtville.



A female black harrier brings a bush rat to feed her chicks in the West Coast National Park.



The post-breeding migration routes of five adult black harriers fitted with GPS transmitters in 2013 and 2014.

my head until I left. When I came back to collect the camera, I had visions of downloading fabulous pictures on my computer, but I discovered I wouldn't be able to use any of it. The female had used the camera as a post, moving the angle of the camera and recording the ground instead of the nest and chicks itself. So six days of no data! That was definitely a setback."

Black harriers lay eggs during an extended period, which is unusual for harrier species. Breeding onset varies from June to November depending on location, environmental conditions and food availability. A successful black harrier breeding pair usually raises three to four nestlings. However, as black harriers nest on the ground, they are more vulnerable to predators than raptors breeding on trees or cliffs.

"One day when I was following two adults with my binoculars, I was so determined to find the nest that I started wandering into the bush," Marie-Sophie recounted. "When I finally looked down, I realised I was only a few centimetres from a puff adder. My heart was pounding no end and I decided I better look down every now and then in future."

The most important questions relate to the species' demography and its long-term future in a rapidly changing landscape. To assess adult movements, 14 harriers have been equipped with small (9–12 g) satellite tracking devices. These are revealing valuable information about the harriers' habitat use both during and outside the breeding seasons. One female, caught next to the West Coast National Park,

frequently hunted in the Darling/Yzerfontein area around South Africa's first operational wind farm. Further wind generators are planned for this area in the near future. If construction goes ahead, it may well have a negative impact on the harriers foraging and breeding in this area.

The satellite tracking has confirmed that most black harriers in the southwestern Cape migrate east after breeding, and has identified Lesotho and surrounding areas as a key non-breeding area. Breeding pairs do not migrate together, nor do they always go to the same non-breeding areas. Tagged individuals typically revisit the same breeding area year after year, but may move to other sites up to 500 kilometres away if conditions at their usual site are unsuitable. This is unusual because most African raptors return to the same nests in successive years. Some birds apparently do not breed at all in poor years. For example, none of the six birds tagged as breeders in the Northern Cape in 2013 bred in 2014, which was an exceptionally dry year.

Scarce species with small populations usually have a diminished capacity to respond to environmental changes. This is why they are considered more vulnerable and of concern. To conserve endangered species, it is essential to have a thorough understanding of their biology and ecology and to identify the areas used during their annual cycles. The ultimate goal is to identify efficient conservation management measures to ensure the persistence of black harriers. 🐾


ON THE MENU
Nest cameras revealed that breeding black harriers mainly eat small mammals, birds and lizards. Insects were commonly found in regurgitated pellets of indigestible prey remains, but since they were never delivered to the chicks directly, they probably come from the stomach contents of birds and lizards.



GARETH TATE

FIND OUT MORE Read regular updates on blackharrierspace.blogspot.com. Email Marie-Sophie Garcia-Heras at ms.garciaheras@gmail.com or Dr Rob Simmons at rob.simmons@uct.ac.za.



WATCH YOUR FEET! Because they nest on the ground, young are vulnerable.