BLACK HARRIER RESEARCH

Newsletter #1: April 2017

Louis Groenewald

Welcome to our 1st newsletter in which we bring you the latest in Black Harrier conservation.

2016 was a very interesting year - with partners and sponsors making it possible for us to undertake ground-breaking research in chemical contaminants affecting the health of Black Harriers.

As we begin to understand the conservation needs of this declining species, 2017 promises to be even more exciting, as further research, new, and existing, collaborations bring positive change for the Black Harrier's future.

Why the Black Harrier, you may ask?

With only 1,000 mature individuals left, it is one of Africa's rarest raptors.

Not only is it an endemic and endangered species found only in southern Africa, but the Black Harrier is also an 'indicator species'.

For Black Harriers to breed, or hunt, successfully they need to find a perfectly balanced eco-system: water; pristine vegetation; rodents and songbirds.

Rob Simmons

With habitat fragmentation being the single-largest contributor to the decline of the Black Harrier, it is imperative that we turn our attention to providing safe spaces and corridors for these birds.

How do we do this?

Since Black Harriers require at least 100ha of pristine *renosterveld* and *fynbos* habitat to breed successfully, we need to avoid destroying intact vegetation.

In preserving these we provide safe corridors for them to migrate east, from the western Cape, to Lesotho, north to Namibia, and south through the southern Drakensberg grasslands before returning to the western Cape for the summer.

A few birds have managed to make a living by utilising agricultural areas where they skim over newly-exposed fields for rodents feeding on the grain.

Louis Groenewald

This is adaptive behaviour by this species, but with the high content of organochlorines it is becoming evident that these birds are being exposed to, and compromised by, these chemicals.

In addition, recent studies have shown that Black Harriers living in areas close to Eskom electrical transformers are also exposed to PCBs (polychlorinated biphenyls).

A study by PhD student, Sophie Garcia-Heras, suggests that the toxic PCB oils found in electrical transformers are making their way into the environment and being taken up by the harriers.

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Garcia-Heras tested blood from over 100 Black Harrier adults and chicks and confirmed that they have high levels of PCBs.

The greater the density of transformers found within 5km of harrier nests, the higher the pollutant levels in their blood - especially the nestlings - showing that PCBs are being acquired locally.

The question arises: could PCBs be contaminating ground-water, too?

More worrying was that DDT - banned in the Western Cape - was found in adult and nestling harriers of the Western Cape.

Those pairs with most wetlands within 5km of their nests had the highest levels of DDE. This means that DDT bio-accumulates and breaks down in local wetlands, and pollutes prey taken by the local harriers.

Most affected, are those pairs that feed on songbirds and deliver them to their brood.

So, small-bird-prey and wetlands are dangerous for harriers as a source of DDT and, particularly, DDE.

Studies show that nestling Black Harriers have the highest levels of DDT in their systems.
Are they acquiring it locally or are the females "dumping" it into their eggs and chicks?

Of concern: *nestling* Black Harriers have the highest of all concentrations.

Sophie Garcia-Heras

This suggests that DDT is being picked up directly by young birds, despite the ban on DDT in non-malarial areas of South Africa. So, this is a real-life 'chicken or egg' situation: how are Black Harrier chicks acquiring the high levels of DDT in their system?

One thought is that the female 'dumps' a substantial load of DDT into her eggs during breeding season.

We now ask: did the DDT pass through the egg into the developing chick, or are the high levels caused by the contaminated prey-items the chick was fed by its parents? If DDT came from prey, where are they getting it!?

Unhatched eggs and their contents will be tested for concentrations of DDT and should answer this question.

What do high-levels of DDT or PCBs mean for Black Harriers?

One of the consequences of high levels of PCBs is that the harrier's immune system is compromised (gauged from white blood cell counts). This suppressed immunity could have a negative impact if harriers are exposed to natural diseases, and could affect survival or breeding success.

High levels of PCB are also shown to reduce the brightness of the rich-yellow legs and cere of adults and nestlings. 'Duller' birds may be rejected as poor-quality mates or poor-quality nestlings.

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What can <u>we</u> do about it:

If Black Harriers, and their prey-populations, are being affected by leaking transformer oil, is it possible that we, too, may be affected?

A surprising result is that protected areas do not ensure that harriers are protected from these chemicals. The highest levels of PCBs in nestlings were found in reserves north of Koeberg Power Station.

It is our understanding that contaminated oils are no longer being used in new transformers - but there may still be many old transformers out there that hold, and spill, PCB-laden oils into the environment.

In an effort to address this we ask that you contact Marlei with GPS co-ords of transformer boxes you are concerned about, or Constant Hoogstad of the EWT/Eskom Strategic Partnership on 011 372 3600.

Working with the EWT/Eskom Strategic Partnership we will endeavour to bring about the replacement of contaminated transformer oils in all areas, especially neighbouring farmlands, where many species converge.

With the Black Harrier's future in the balance we believe we need to take a many-pronged approach:

- ✓ Avoid the fragmentation of breeding and hunting habitat;
- ✓ Conserve *renosterveld* and *fynbos* habitats that are intact to ensure good breeding success; and
- ✓ Lobby Eskom to replace PCB oils in transformers around southern Africa, especially those on farmlands.

Not only will this help the Black Harrier but every other species, including humans, who live near electrical transformers.

The future may look bleak but this is, really, good news for many species.

The future may look bleak for Black Harriers but this is - really - good news for many species... Why??

If these birds had not been tested for PCBs and DDT, we may never have been alerted to these dangers. We can now act…

In a giant leap for conservation, Dr Odette Curtis of the Overberg Renosterveld Conservation Trust has been making ground-breaking strides.

Working across the entire Overberg wheat-belt, an Important Bird Area (IBA), the Trust secures land for conservation through partnerships with landowners.

Jessie Walton

In a pro-active partnership with WWF and landowners, the Overberg Renosterveld Conservation Trust is securing Important Bird Areas to preserve for all species. This will have a positive impact on the breeding success of the Black Harrier.

Odette Curtis

In some cases, these become high-level commitments in the form of Conservation Easements.

With your help, we can ensure that these pristine *renosterveld* and *fynbos* habitats are free from chemical pollutants that compromise all species, not just Black Harriers.

For information or assistance, please contact:
Marlei on marlei.bushbaby@gmail.com

As always, our thanks go out to our Partners, students, collaborators and citizen scientists - your assistance, on all levels, is invaluable.

Special thanks to: Sophie Garcia-Heras; Bea Arroyo; Francois Mougeot; Odette Curtis; Brian Vanderwalt; Tygerberg Bird Club; Inkwazi Bird Club; Niall Perrins; Hanneline Smit-Robinson; Andy Featherstone; Wits Bird Club; Chris Cory; Steyn Marais (Jakkalsfontein); Two Oceans Slope Soarers; Golden Fleece Merino; James Smith; Gisela Ortner.

Black Harrier Research is driven by Dr Rob Simmons of University of Cape Town. Rob has been studying Harriers for over 30 years in Canada, Papua New Guinea, Namibia and South Africa, and was nominated Guardian of the Species by BirdLife South Africa.
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