going the distance

FOCUS ON MIGRATION

YELLOW WAGTAIL TREVOR HARDAKER

Decline of migratory birds wintering in Africa

The migration of millions of birds across the face of the planet is one of nature's greatest annual events. Every spring some species move in one direction, while every autumn those same species move in the opposite one, very often linking continents.

Although these migration patterns are as regular as the seasons, monitoring is revealing that, for some species, fewer birds are making the journey each season as their populations are declining rapidly.

The latest report in the annual series of *State of the UK's Birds* includes a migratory birds section, covering trends for 29 migrant species which nest in the UK in summer and spend the winter around the Mediterranean or sub-Saharan Africa. For the first time, the recent population trends for these migratory species have been combined into an indicator, revealing some marked differences between species that winter in different areas.

Species such as Whinchat, Common Nightingale, Tree Pipit and Spotted Flycatcher, which winter in the humid zone of Africa (stretching across the continent from southern Senegal to Nigeria and beyond) show the most dramatic declines: the indicator for this group of species has dropped by just over 70 per cent since the late 1980s. This contrasts with species, such as Sand Martin, Common Whitethroat and Sedge Warbler, wintering in the arid zone (just south of the Sahara Desert). These species have fluctuated considerably since 1970, but show a less than 20 per cent decline overall.

One of the most dramatic declines is that of the European Turtle Dove, with a drop of 88 per cent since 1995. The following species have also declined over the same period: Wood Warbler, 66 per cent; European Pied Flycatcher, 53 per cent; Spotted Flycatcher, 49 per cent; Common Cuckoo, 49 per cent; Common Nightingale, 43 per cent; and Yellow Wagtail, 43 per cent.

Concern about migratory bird species is growing and future editions of the *State of the UK's Birds* report will contain a regular update to the migratory bird indicator. To understand the changing status of the UK's migratory birds, researchers need to learn more about what's driving these declines. Evidence is currently being gathered from a variety of sources, including tracking studies and on-the-ground surveys.

Martin Harper, RSPB Conservation Director, said: 'West Africa is the winter home for many bird species that breed in the UK. But many of these birds that cross continents are in rapid decline. Their nomadic lifestyle, requiring sites and resources spread over vast distances across the globe, makes identifying and understanding the causes of decline extremely complex. The problems may be in the UK or in West Africa, or indeed on migration in between the two.'

David Noble, Principal Ecologist at the British Trust for Ornithology, said: 'We can accurately monitor the patterns of decline in these once-familiar summer breeders thanks to several decades of careful observations by an army of volunteer birdwatchers. More recently, tracking devices have shed light on migratory routes and key wintering areas.

'To take appropriate action, further study is needed to determine the pressures faced in sub-Saharan Africa, as well as breeding here in the UK.'

Colette Hall, Wildfowl & Wetlands Trust Species Monitoring Officer, said: 'The more information we can get all along the migration routes – on land-use changes, new infrastructure, etc. – the better we can target protection measures. It's important that we help build up the capacity of local bird organisations and volunteers across the world to provide vital information through their own long-term monitoring.'

David Stroud, Senior Ornithologist with the Joint Nature Conservation Committee, said: 'Migratory birds depend on conservation actions in all the countries they move through in the course of their annual cycle. The UK is working with these countries to help improve the condition of their critical habitats through its participation in multilateral environmental agreements such as the Biodiversity Convention and the Ramsar Convention on wetlands.'

BIRDLIFE INTERNATIONAL

Migration fuel management

Any long journey along a route with limited opportunities to replenish requires planning and careful fuel management. This statement applies to long-distance avian migrants as much as it does to human travellers. With a few spectacular exceptions, such as Bar-tailed Godwits' incredible 11 000-kilometre non-stop flights between Alaska and New Zealand, intercontinental migratory flights are relatively protracted affairs, with time on the wing interspersed with periods spent refuelling at stopover sites.

EURASIAN BLACKCAP ANDY ROBINSON

The metabolic fuel migrants use while flying consists predominantly of fat. However, a small fraction (between five and 15 per cent) consists of protein. This is obtained from the partial breakdown of organs that are inactive during flight, including the digestive tract. The fact that the digestive tract acts as a protein source is consequential: when a bird arrives at a stopover site at the end of a long flight, it needs a few days to regain digestive function before beginning the refuelling process.

Migrating birds thus face a dilemma. The longer they spend rebuilding their digestive tract and refuelling at stopover sites, the better their body condition and chances of survival when they depart on the next leg. This consideration is particularly pertinent when birds refuel before crossing vast tracts of inhospitable terrain, such as the Sahara Desert. The flip side of the coin is that the more time birds spend at stopovers, the more protracted their migration is and the longer it takes them to reach their destination. Individuals arriving late at the breeding grounds can be seriously disadvantaged, because their chances of staking out high-quality territories and attracting superior mates are greatly reduced compared to individuals arriving earlier.

The refuelling decisions made by migrating Eurasian Blackcaps *Sylvia atricapilla* were recently examined at Eilat in southern Israel. A team of ornithologists used a sophisticated analyser harnessing a technique called dual energy X-ray absorptiometry to non-invasively measure the fat and lean masses of 200 Blackcaps on migration. Each bird was briefly anaesthetised after it was captured, its body composition analysed, and then released once it had recovered from anaesthesia. Using these data, the researchers were able to infer the fat and lean masses of more than 20 000 Blackcaps ringed at Eilat over the preceding two decades.

The pattern that emerged was that Blackcaps on their northwards migration towards the Eurasian breeding grounds departed from Eilat as soon as their digestive systems had regained functionality, but before much fat was laid down. The average mass of these northbound birds was 15 grams, most of which represented lean mass. During the southwards migration towards the African wintering grounds, in contrast, 22 grams was a more typical body mass for the Blackcaps, and fat mass was correspondingly higher.

These differences in refuelling strategy make good sense: birds flying northwards to the breeding grounds want to get there as quickly as possible, and do not face a lengthy desert crossing after they depart Eilat. During the southwards migration, on the other hand, there is less pressure to reach the wintering grounds rapidly, plus the daunting barrier of the Sahara awaits the migrating birds, so they spend longer at Eilat and take on board much more fuel before departing.

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Reference: *Wojciechowski, M.S., Yosef, R., and Pinshow, B. 2014. 'Body composition of north and southbound migratory blackcaps is influenced by the lay-of-the-land ahead.'* Journal of Avian Biology, *45: 264–272.*