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Variability of the impact of the Sahel environment on a stork population

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Cresswell, Will¹

How are Palearctic migrant populations limited on their wintering grounds in the Sahel?

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More than one-quarter of all European bird species winter in the Sahel region of Africa and it is a crucial staging ground for all trans-Saharan migrants. Recently the Sahel has been subject to major changes through desertification due to decreased rainfall exacerbated by overgrazing and increasing human exploitation, so that Sahelian savanna woodlands are likely to be severely decreasing in both area and quality. Current climate and human population growth models predict that environmental degradation within the region will get much worse over the coming decades. Despite the clear link between habitat degradation and populations of some Palearctic migrants, there has been almost no research to date based in the Sahel to identify the specific factors that determine the density, distribution and staging of Palearctic migrants. What limited research that has been carried out demonstrates that density and diversity of Palearctic migrants depends on the availability of lightly wooded vegetation with a few species of shrub and tree being particularly important, particularly during premigration periods. These important woody species are being removed by grazing and for fuelwood at a high rate, and although Palearctic migrants appear to have some considerable resilience to deforestation, decreases in density have occurred. There have also been recent shifts southward of species more associated with arid regions into the Sahel. There is a clear need for more research within Africa to understand the factors determining the population changes and resilience of Palearctic migrants and resident Afrotropical species within the Sahel: at present we can do little more than simply document the decline of many of the bird species that breed within Europe.

Trierweiler, Christiane¹, Koks, Ben²

Ecology and conservation of wintering Montagu's Harriers in the Sahel zone

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In January 2006 and 2007, fieldwork in Niger revealed the preference of wintering Montagu's Harriers *Circus pygargus* for shrubland vegetations over agricultural land. The largest part of the diet consisted of resident grasshoppers, but alternative prey like birds and mantids were also present. Alternative prey abundance in the diet was larger in 2007, when generally less grasshoppers were available than in 2006. The preference for food-rich natural habitats as well as the preference for less-degraded over heavily-degraded habitats indicates the potential threat to the raptors as a result of the disappearance and degradation of shrubland vegetation. Increasing pressure by the growing human population is the most important reason for this threat. There is a clear necessity to expand conservation measures for Montagu's Harriers (a red-listed species in the Netherlands and other European countries) from the breeding to the wintering grounds.

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Variability of the impact of Sahel environment on a stork population

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There is growing evidence that global climate change has a huge influence on a large variety of organisms and ecosystems. However, within the general heading of "global change", there is considerable spatio-temporal heterogeneity. So, how do populations respond to such heterogeneity? This question is of importance in improving our understanding of how the environment and long-term climatic change impact on population dynamics. In Africa, the Sahel represents a key ecosystem for a huge number of Eurasian migrant species. It is also thought to show long-term climatic oscillations which impact human and animal populations. A recent regime shift occurred in 1969, leading to a 30y period of drought in the Sahel. During this period, many studies have reported an impact of the dry climatic regime on migrant species wintering in the sub-Sahara. Since the late 1990s, records indicated that rainfall may have increased, suggesting a change towards less severe conditions. We can therefore ask whether the impact of the environment on

migrants has changed. Using a long-term dataset on a white stork population breeding in western France, we estimated the demographic parameters of the population and the ability of environmental conditions to explain the interannual variability of these vital rates. The main result is that the influence of climate in the Sahel on survival has decreased over the last decade, and is now undetectable. The disappearance of an impact of Sahel rainfall conditions may reflect a progressive shift for the storks from extremely severe towards more favorable conditions for the storks. In terms of population dynamics, we would predict that the consequences may include an increase in the population.

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Whitethroats complete — strategies, phenology and energetics, from the winter quarters to breeding areas and back

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We will give an overview of the life cycle of the Common Whitethroat *Sylvia communis*. Starting with their arrival in an agricultural landscape in Nigeria, we follow the birds over the course of the winter, through Mediterranean stopover sites during spring migration to breeding areas in Scandinavia and back again in autumn. Long-term population changes in the Scandinavian population will be presented, based on ringing data from Ottenby Bird Observatory and data from the Swedish breeding bird census. The main focus will be on studies that we have carried out in Nigeria during several winter seasons. We used a range of methods, including a Constant Effort Site ringing program, radio-tracking of birds, and characterization of preferred habitat parameters. Colour-ringed birds and birds equipped with radio transmitters allowed us to make behavioural observations of individual Common Whitethroats. Many Common Whitethroats were stationary during the winter period, often constricting their movements to a small patch (most often less than 1 ha) of favourable habitat, rich in fruiting bushes. However, hardly any intraspecific and interspecific interactions were recorded. We discuss these findings in relation to issues from migration stopover sites and the long-term changes in population size.