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The conservation of migratory birds: a global challenge

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Migratory birds cross borders. Many of these migrants do not only face fascinating long-distance migrations, they also spend considerable parts of their annual life cycle outside the breeding areas in various environments. It has been shown in a number of migratory species that not only annual survival but even breeding success of such species depend on the ecological conditions at the non-breeding grounds. Consequently, effective conservation of migratory species does not only have an international dimension it also requires to know which migratory routes are taken and where the species of concern winters.

Ringling of birds unveiled many mysteries of avian migrations, notably routes and destinations. However, there is still much to be explored by the use of ringling and other marks. Satellite tracking, geolocation and global positioning systems may enable much more detailed insights in migration patterns of individual birds and populations. But also a more elaborated colour marking approach is recommended. Moreover, particular chemical and molecular markers appear to be very useful in the study of bird migration by delineating origin of birds and connectivity between breeding and non-breeding grounds. Co-ordinated, collaborative, standardized and large-scale migration networks provide another elaborated tool to study differential migration and patterns of migratory timing and fuelling. We still lack knowledge about external factors controlling migration, such as food availability, weather, competitors, parasites or diseases. Such data are required to develop effective conservation means. Future migration research must aim much more comparative research and a more integrative approach at various spatial and temporal scales, and linking various sub-disciplines. It must also consider that migration is only one part of the life-style of a migrating species. Thus, linking migration and breeding is another future challenge, both for basic science and for effective protection of migratory birds.