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Flyway of Birds

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Abstract

Fly way is the path taken by the migratory birds. Majorly shoe birds have the main skill to migrate from one place to another by using an imaginary flight path which is being referred to as flyway. Many of the organization have initiatives to evaluate the birds migrating and recording their results. This paper deals with the different path taken by flying birds.

Keyword: - *Flyway, Birds, Migratory, Routes, Paths*

INTRODUCTION

Migratory Birds and Flyways 2,000 species of bird, about 22% of all known species, make regular seasonal movements. Many travel thousands of miles between their breeding places and their wintering grounds. But more than 43% of these migratory species are declining, and nearly 200 are now classified as globally threatened. They face many dangers: destruction and degradation of habitats, loss of typically critical stopover sites such as coastal wetlands, illegal hunting, poisoning and pollution, and collisions with badly-sited infrastructure like power lines and wind turbines. Analyses of the information that Bird Life compiles for the IUCN Red List show that migratory birds have become more threatened since 1989, with 33 species moving to more serious threat categories, and just six improving in status Many of these declining species were once common, and their arrivals and departures are significant cultural events throughout much of the world (McClure, 1974). Their disappearance from the landscape was unthinkable 32 years ago, but is now a real prospect without concerted action from BirdLife's Migratory Flyways Programme.

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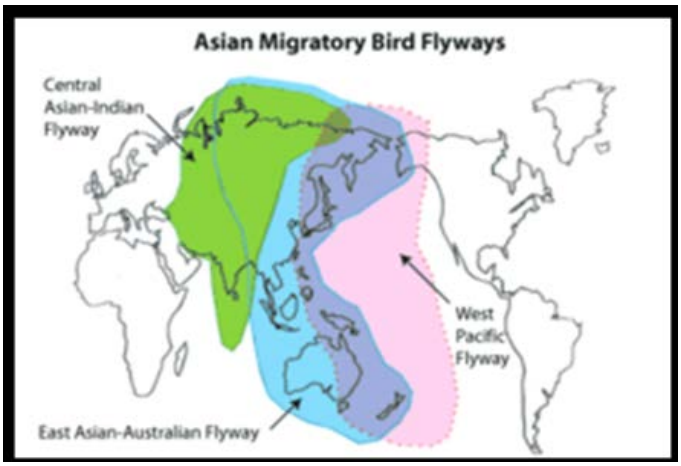

Figure:1

Figure: 2

Migration remains one of the most compelling aspects of the avian world **(Fig1, 2)**. Twice a year, billions of birds migrate vast and wide distances across the globe. Typically, these journeys follow a majorly north-south axis, linking breeding grounds in arctic and temperate regions with non-breeding sites in temperate and tropical areas. Many species migrate along broadly similar, well-established routes known as flyways. Recent research has identified eight such pathways: the East Atlantic, the Mediterranean/Black Sea, the East Asia/East Africa, the Central Asia, the East Asia/Australasia, and three flyways in the Americas and the Neotropics (McClure, 1974).

The Mediterranean/Black Sea Flywayis one of three Palaearctic-African flyways connecting Europe with Africa

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These encompass the world's largest bird migration system. The scale of the avian movement is truly awesome with over 2 billion passerines and near-passerines, 2.6 million ducks and two million raptors migrating from their breeding grounds in Europe and central and western Asia to winter in tropical Africa. The major percent of those coming from Western Siberia and Central and Eastern Europe do so along the Mediterranean/Black Sea Flyway which stretches south from the Russian arctic. Birds travelling from these breeding grounds must negotiate the Ural Mountains before continuing south through western Russia towards Eastern Europe and the Black Sea. For birds crossing into Africa, the Mediterranean constitutes aimportant obstacle. This is especially true for large species such as raptors, storks and cranes which rely on updrafts and thermals to maintain their soaring flight Mediterranean basin is concentrated at a number of narrow straits and 'land bridges'. Many migrants also cross from southern Italy, over the Messina Strait to Sicily and on into North Africa, some via Malta. Other birds circumvent the Mediterranean to the east, passing into Anatolia via the Turkish Straits of Bosphorus and Dardanelles (McClure, 1974). From here, they cross into the Middle East at the Belen Pass before heading down the Jordan Rift Valley to Egypt and the Red Sea. The major percent of these birds enter into Africa through the Sinai Peninsula before heading south along the Nile valley. The Sahel, a belt of arid Acaciasavannah spanning the continent from west to east, is particularly pivotal for migrants. Directly south of the Sahara, it majorly offers autumn migrants their first opportunity to feed after crossing the desert. For about one-quarter of all migrant species, including the Blue throat Lusciniasvecica, Rueppell's Warbler Sylvia rueppelliand Short-toed Snake-eagle Circaetusgallicus, the Sahel represents the terminus of their journeys. Others, moreover, are trans-equatorial migrants that continue on to the southern tropics; these include the Collared Flycatcher Ficedulaalbicollis, Red-footed Falcon Falco vespertinus and Icterine Warbler Hippolaisicterina. The Afrotropics are also home to a number of intra-African migrants,such as mainly the Pennant-winged Nightjar Macro dipteryx vexillarius and South African Swallow Hirundos pilodera. These breed mainly during the austral summer (October to March) towards the south of the continent before moving north to equatorial latitudes for the non-breeding season. The Convention on Migratory Species (CMS),

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together with its daughter agreements, garners the international legal framework to promote the conservation of migratory birds. The text of the CMS defines 'migratory species' as: "the entire population or any geographically separate part of the population typically of any species or lower tax on of wild animals, a significant proportion of whose members cyclically and predictably cross oneor more national jurisdictional boundaries". A flyway is a geographical region within which a single migratory species, mainly a group of migratory species – or a distinct population of a given migratory species – completes all components of its annual cycle (breeding, moulting, staging, non-breeding etc.)(Mc Clure, 1974). For some species and groups of species these flyways are mainly distinct 'pathways' linking a network of key sites whereas for other species/groups, flyways are more dispersed. In 2009, the Ninth Conference of the Parties to CMS (COP 9) adopted Resolution 9.2 , which called for the establishment of an open-ended working group on global bird flyways within the typical framework of the Scientific Council to act as a think tank on flyways and frameworks, and tasked with reviewing and assessing scientific and technical issues for conservation of migratory birds and their habitats and relevant international instruments, initiatives and processes, as the basis for future CMS policy on flyways and contributing to the work on the future shaping of CMS. The open-ended Flyways Working Group (FWG) was established inter-seasonally in late 2010 under the purview and evaluation of the Scientific Council, a call was made to key partners, conventions and initiatives to ensure vast coverage both in terms of expertise on bird flyway issues and geographical representation to the Working Group to enhance its work. The FWG is coordinated by representatives of the Scientific Council, with Dr. Taej Mundkur serving as Chair and Mr. John O'Sullivan as Vice Chair. At the end of 2010Mr. John O'Sullivan retired and vacated the Vice Chairmanship (Schaub et al., 2005).

FLYWAYS WORKING

Group had mainly 3 main objectives:

To review existing administrative /management instruments for migratory bird flyways global;

To review scientific/technical information of migratory bird flyways and conservation priorities, and identify major gaps; and

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To propose policy options for fly way conservation and mainly management to feed into the Intercessional PROCESSRE GARDING

THE FUTURE SHAPE OF CMS

The FWG has successfully managed to tap into flyway management expertise beyond the Scientific Council, particularly in North America, where the CMS has no Parties, and to gather the views of other independent experts and government agencies. It has been recognized that the FWG offers a new strategic mechanism for the CMS to maintain a global overview of flyway articulated conservation priorities and major initiatives. Such a group can, due to its open-ended nature, continue to provide the CMS with a broader range of advice in the roll-out of the Convention's priority flyway activities into the future.

The Resolution established a clear road map for the future and extended the man-date of the Flyways Working Group until 2015(Scott et al., 1996). In this issue of the CMS Technical Series, the three reviews are published together as three Parts of a single monograph with the aim of serving as a key reference to all those dedicated to the research and conservation of migratory birds. Retention of the original content of the three reviews enables these sections to be read as standalone chapters, and although there is some overlap and repetition among them it was decided to respect their individual integrity. It is hoped that this publication will be an important tool and deciding criteria for conservation of migratory birds and their habitats, and it will help to demonstrate the need for international cooperation and continuous and increased collaboration amongst all stakeholders at the global phases. An increasing number of flyway-scale initiatives for migratory bird conservation have been established around the globe, with varied approaches and status, and with considerable and valuable experience to share. The experiences of these initiatives, while often well publicized within their own flyway, are often poorly known elsewhere. This has led to independent evolution of approaches in different flyways and relatively little exchange of experience between flyways, or between flyway initiatives for different groups of birds e.g. water birds, land birds, soaring birds and seabirds. While many of the challenges majorly faced are similar, different approaches have been taken to tackle them. The workshop was the first to bring together these flyway initiatives so as to share lessons learned from these different approaches, assess their strengths and weaknesses, and so to garner a more

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global view of our flyway conservation efforts thus far (Schaub et al., 2005).

Contracting Parties to both the Ramsar Convention and the Convention on Migratory Species have recognized and mainly indicated the need for this inter-flyway approach, and have called for such a workshop process, focusing largely, in this first instance, on water birds, the tax a for which the flyway approach is most vastly developed. The workshop also included representatives from raptor, land bird and seabird flyway initiatives to typically maximize the breadth of experience-sharing and with a view to subsequent meetings potentially covering initiatives relating to those tax a in greater depth (Sanderson, 2006).

BARRIERS TO MIGRATION, SERGEYDERELIEV, AEWA SECRETARIAT

The routes availed by migratory birds have evolved over thousands of years, following broad flyways across and between the continents. Within each flyway, there are ramified migration systems consisting of the routes followed by individual species (Newton, 2008). Species have evolved a variety of migration strategies, some making relatively short hops between staging areas, while others such as the Bar-tailed Godwit Limosa lapponica under take almost unimaginably long flights between Arctic breeding grounds and typically the southern hemisphere non-breeding areas, with a range of intermediate strategies. In undertaking these long journeys between breeding and non-breeding grounds, migratory birds cross major obstacles such as large water bodies, deserts and high altitude mountain ranges. Barriers to migration are mainly described as: factors which can cause physical or functional disruption of the migration of species along their flyways. Aside from the above-mentioned natural barriers, birds must also negotiate a range of human-induced barriers (Kirby et al., 2008). These barriers arise from human activities, including construction (urban areas and physical infrastructure), habitat destruction and degradation, environmental "modification", overexploitation of the natural resources, and climate change (due to natural and human factors). Physical barriers such as wind farms and overhead power lines can pose crucial hazards to migrating birds, depending on location. Habitat destruction has had adverse impacts on migratory shorebird populations in East Asia through loss of staging areas due to land claim of intertidal habitats (Hahn et al., 2009). Habitat deterioration and decreased food

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availability through overharvesting of food resources for migratory birds, such as horseshoe crabs in Delaware Bay (USA), can also seriously impact their ability to regain enough weight to continue their journeys and breed successfully. Environmental modification may also result in changes in migratory habits, as recorded for White Storks Ciconiaciconia along the western European/ western African flyway, which are shortstopping in Spain and not reaching Africa any longer. Over-exploitation of migratory birds through excessive hunting and trapping can also result in population declines, for example in the case of the Lesser White-fronted Goose Anserery thropus, a globally threatened species whose decline has been largely associated with hunting practices in staging and over wintering areas. Observed changes and predicted trends for habitat conditions as a result of climate change majorly indicate that barriers are likely to be exacerbated, especially in relation to water availability for wetland habitats across various parts of migration cycles. Wetland or marshy land is one among the conserved bio resources (Sreeremya,2016)Impacts of barriers can be mitigated to some extent through measures such as establishing protected areas at core sites along flyways, maintenance and restoration of habitats, siting wind farms, power lines and other infrastructure away from predominate sites and migration corridors, installing insulating and other devices on power lines. Surveys, monitoring and information sharing making use of the Critical Site Network tool for water birds within the African-Eurasian and other mechanisms can inform planning and development processes in order to mainly prevent and mitigate human-induced barriers, thereby helping persistence of bird populations(Delany et al.,2006).

FLYWAYS—SKY PATHS

The migratory routes of birds, referred to as flyways, are not specific, narrow “highways.”

Instead, they are general routes that most migrants tend to follow. Scientists have proposed that birds use the stars, the sun, and even the Earth’s magnetic field for guidance. Many shorebirds following coastlines (Normile, 2006). Two flyways, the American Pacific and the American Atlantic, follow the coasts of the North American continent. They extend from the Alaskan and Canadian Arctic, along Pacific and Atlantic coasts to the southern tip of South America (Collar, 2008). In North America, shorebirds mainly migrate inland along the American Central

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Flyway. Other shorebird migration routes that use the North American Arctic include the Central Pacific and the East Asian-Australasian Flyways. The Central Pacific Flywayextendsacross ocean from New Zealand to Pacific islands like Hawaii and up through the Alaskan Arctic. The East Asian-Australasian Flyway runs from Australia, along the east of the Asian continent, throughthe countries such as Japan, China, and Korea, to the Russian and Alaskan Arctic. Migrating Shorebirds -Stop to Rest and Feed, Most migrating birds require the presence of wet lands in their breeding habitat and on their wintering grounds. These two regions are the often thousands of miles apart. Shorebirds depend mainly on wetlands in between for food and rest to reach their final destinations.

Large numbers of migrating shorebirds will return to the same stopover site year after year (Nelson et al., 1990). Termed staging, these large flocks of shorebirds will feed for several days or weeks in order to build up their energy reserves to continue their flight. Wetland estuaries, rich habitats where a source of freshwater meets the ocean, provide some of the most pivotal shorebird staging areas in the world. Arctic-nesting shorebirds are also famous for the huge numbers of birds that concentrate at stopover sites along the flyway. Since most Arctic-nesting shorebirds tend to use the same relatively few stopover sites, a bottle neck results at these few vital wetlands. These critically significant staging areas can host tens of thousands, even hundreds of thousands, of shorebirds at one time (Miyabayashi et al., 19990. In fact, five sites in North America support more than a million shorebirds each sp. A migration flyway is an invisible “highway in the sky,” a general route birds follow as they fly typically from their breeding grounds in the north to more southern areas where they spend their winters(McClure,1974).

HOW DID SCIENTISTS DETERMINE WHERE THE FLYWAYS ARE?

Biologists have mainly determined migration routes through the use of radio telemetry and observation of banded and flagged birds (Linduska, 1964). For some species, they can even tell where the birds are from by bill length and coloration. Many shorebirds that have been banded have also been flagged. This is a band that sticks out from side of the bird’s leg. Each country has an assigned color so biologists can determine where the birds have come from (Lincoln, 1950).

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WHERE ARE THESE FLYWAYS LOCATED?

Scientists have grouped the flight paths into generalized flyways. When talking about migration flyways, biologists have mainly referred the routes of waterfowl that follow four fairly narrow migration paths through North America: the Pacific Flyway, the Central Flyway, the Mississippi Flyway, and the Atlantic Flyway. Shorebird flyways are more general and mostly tend to overlap (Isakov, 1981). For this reason, shorebird biologists have identified three broader shorebird flyways within North America: the American Pacific Flyway, the American Central Flyway (which merges the Central and Mississippi flyways of songbirds and waterfowl), and the American Atlantic Flyway. Other shorebird migration routes that use the North American Arctic include the Central Pacific and the East Asian-Australasian Flyways. The Central Pacific Flyway extends typically across the ocean from New Zealand to Pacific islands like Hawaii, and up through the Alaskan Arctic. The East Asian-Australasian Flyway runs from Australia, along east of the Asian continent through countries such as Japan, China, and Korea, to the Russian and Alaskan Arctic (Isakov, 1970).

Flyway Names

One will notice that the flyways are named with “American” at the beginning. This is to clarify that these flyways are located in the Western Hemisphere. Without that clarification, people from other countries may look at this information and confuse these flyways with other regions of the globe. For example, if one takes into account the entire globe, the American Atlantic Flyway is really on the western side of the Atlantic Ocean and should be called the Western Atlantic Flyway. Observers felt that would confuse our primary audience which is in the United States. By adding “American” to Atlantic Flyway, people will understand that we are speaking of the Atlantic flyway in the Americas (Noordwijk, 1966).

HOW DO BIRDS FIND THEIR WAY?

Birds probably use avast variety of methods to navigate. Though scientists are not exactly sure how birds navigate along these routes, The Shorebird Flyways in Backyard there are various theories. Some think birds find their way using the stars as a guide. There is evidence that some large flocks of migrating birds have seemed to “lose their way” over large metropolitan areas where city lights brighten the sky and make the stars harder to see. Other scientists believe that birds

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migrate availing an internal magnetic compass. This system guides the birds along the earth's magnetic routes (Isakov, 1967).

Shorebirds have specific and accurate physical adaptations for long distance flight, including long, pointed wings and the ability to gain and store highly concentrated fat to fuel their journey (Hochbaum, 1955).

Some shorebirds can mainly fly nonstop for thousands of miles to reach their migratory destinations. Most shorebird species stop along the way to rest and feed. Stopover sites with abundant food sources have become traditional areas where hundreds of thousands of birds congregate during the migration season. Here they gorge themselves on nutrient-rich invertebrates to replenish the body fat that fuels the rest of their journey. These sites are profoundly important to shorebird survival and breeding success (Hawkins et al., 1984).

WHERE ARE IMPORTANT SHOREBIRD STOPOVER SITES LOCATED?

Important stopover areas are located along each flyway. Some are famous, like the Copper River Delta in Alaska, for the hundreds of thousands of birds that stop each year; other sites Arethe smaller but just as important (Fransson et al., 2001). Today the pollution, development, and agriculture expansion threaten to wipe out many shorebird stopover sites. The Western Reserve Network (WHSRN) is a multinational coalition of scientists and conservationistsare working together to identify important sites for protection.

Fig: 3 Shobirds: flyway

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CONCLUSION

Form the term fly-way, it can be understood about bird's way for flying. Flyways usually have a span over continents and often oceans. "The concept of flyway is profoundly an operational concept articulated to waterfowl whose populations one wishes to manage over their entire migration space.

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