



Ecosystem Services of Birds: Birds' Conservation Insight

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INTRODUCTION

Ehrlich and Mooney coined the term “ecosystem services”. Ecosystem services are those features of the earth which provide direct or indirect benefits to humans through various ways of resources and processes. The Millennium Ecosystem Assessment (MEA) recognized that birds contribute the four types of ecosystem services namely: (i) provisioning services, (ii) regulation services, (iii) supporting services and (iv) Cultural services.

Ecological Services of Birds

Birds are found almost in every habitat across the globe from tropics to Polar Regions. The ability of flight makes them able to respond immediately to extreme environmental condition which is normally impossible for organisms belonging to other classes of phylum chordata. This special feature of flight is responsible for providing various ecosystem services by them. The mobile nature of aves help them in locating abundant resources, migrate from the areas with less resources to areas with sufficient resources. Millennium Ecosystem Assessment's categories of ecosystem services considering the concept of monetization, the four categories of ecosystem services are further classified as marketable and non-marketable services as follow.

Marketable Services

Provisioning services: Meat, Feathers, Integument, Skin (Medicinal values), Blood (Medicinal values), Nests (food), Nutrient /fertilizers (Guano).

Cultural services: Customs/Religious/cultural/ Ethnic value, Entertainment, Photography, Aesthetics /Recreation, Bird Watching.

Regulating services: Scavenging, Insect pest control, Nutrient transfer.

Non-Marketable Services

Supporting Services: Seed dispersal, Pollination, Disease control, Energy Transfer, Nutrient Transfer, Bioturbation, Reforestations, Maintenance of vegetation profile in water bodies, Animal dispersal (endozoochory, epizoochory), Cavity Excavators and Drillers (for microhabitats), Leaf litter gleaners, Soil regeneration and enrichment, Feeding opportunities, Mixed flock foragers, Ship following birds, Tractor following birds in Agricultural fields, Knowledge value (ecological, genetic diversity and taxonomic).

Role of Birds in Soil Formation and Nutrient Cycling

Birds' because of their ability to flight and move through different habitats, birds can carry nutrients from one place to another, which is mainly important in areas where plants growth is limited by nutrient availability. Aves contribute to nutrient cycling almost in every habitat, but most effectively on islands where the aquatic birds nest colonially.

Birds as Pest Controller

A significant economic benefit can come from using birds to manage insects and other pests that harm precious plants. Birds that feed on insects have been found to lessen insect pest damage in a variety of agricultural systems, including those that grow apples, broccoli, cacao, coffee, maize, kale, grapes, and oil palm. In Dutch apple farms, for instance, birds' decreased insect pest damage resulted in a 66 percent boost in domestic apple yield.

Birds are efficient arthropod predators in farmland, where 50% are predominantly feeding on insects, and 75% consume invertebrates at least occasionally. This predation not only lowers herbivorous abundance but also significantly reduces leaf damage and plant mortality, potentially leading to up to 60% increase in crop yield or fruit production.

Birds as Seed Dispersers

Birds spread the seeds of many woody plant species that are directly useful to people for food, medicine, building materials, and other

purposes. Compared to wind or other forms of dissemination, birds carry the seeds a considerably greater distance. It is noteworthy that up to 80,000 species of angiosperms, of which roughly 25,000 are trees, woody shrubs, lianas, vines, and herbaceous plants, are dispersed by birds alone. Birds also aid in reforestation by germination of disseminated seeds, which lowers the cost of replanting of deforested areas.

Birds as Pollinators

In several plants, both cultivated and wild, the exclusion of pollinators like bees, birds, and bats plays a different function in fruit setting. More than 920 bird species, including hummingbirds (North America), sunbirds (Africa and Asia), false-sunbirds (Madagascar), flower peckers and white-eyes (Southern Asia), honeyeaters and lories (Australasia), and Hawaiian honeycreepers, are known to participate in pollination (Hawaii). More than 290 bird species are thought to be involved in seed dissemination and pollination, with Oriental White-eye, Myna, Starlings, and Sunbirds being the most frequent flower visitors and likely the main avian pollinators.

Birds as Scavengers and Sanitary Agents

Many ecosystems consider birds to be crucial scavengers that clear away deceased animals' carcasses. Vultures and other carnivorous vertebrates that scavenge aid in the elimination of waste, control of disease, and cycling of nutrients. Vultures quickly and effectively remove carcasses from the environment, sanitising it while safeguarding people, livestock, and wildlife from infections and other diseases.

Birds in Ecotourism

Bird watching is an activity enjoyed by most people as source of refreshment after a long strenuous work hours. Many conservation agencies and other similar organizations generate income by taking tourists on bird watching expeditions. In 2008, 81 million people in the United States enjoy bird

watching, and it is estimated to rise to 108 million people by 2030.

Sacred Value of Birds

Birds often represent symbolic values and significant roles in tradition and religion in many cultures across the globe, from ancient

times to today. Particular bird species, due to their magnificent appearance, power of flight or absolute beauty pertaining to both visual and vocal, were considered symbols of deities.