

Aliens Among Birds: A Concise Review on Invasive Bird Species of The World and Their Impacts on The Environment



Sanjukta Chakravorty
Student, M.Sc., 2nd Year
Department of Environmental Science
Asutosh College
sanjuktachakravorty1@gmail.com

Introduction

'Alien' or 'invasive' species are generally those that do not occur in their natural habitat, instead, they are introduced into it. All of us have heard about invasive alien species to some extent, which can be plants or various other organisms such as insects, amphibians, molluscs, etc. But, it is even more strange when we talk about invasive bird species, roaming the world (see Fig. 1, an image of Common Starling or *Sturnus vulgaris*, one of the most well-known invasive birds), as they are such beautiful creatures that can compel any observer.

Global scenario of invader birds

Now, for a species to be invasive, they must meet some conditions: firstly, they must acclimatize to a new environment with ease and grow in numbers rapidly. Secondly, they must outcompete the native populations successfully for general resources like food, shelter, etc. and thirdly, they must sabotage the socioeconomic conditions along with the indigenous plants and animals of that place. According to the current situation, Invasive bird species are thriving with man-made urbanization, emanating in a way so that they could adapt to ever-changing situations.

Humankind plays a huge part in invasive species' growth (Chapin et al., 2000). Birds that are designated as invasive, are intentionally or sometimes, accidentally have been introduced in

a place, but over time, they grow up in large numbers without human intervention (Brochier et al., 2010). Mobile ubiquitous creatures such as birds disperse themselves quickly, sometimes causing insurmountable predicaments to be solved. Introduced Birds of the World (Long, 1981) enlisted an amount of 426 species that have been popularized by humans within or between 89 regions around the globe and recorded thousands of avian introduction occurrences. In the past, people moved birds to provide food from domestic and wild stock, for recreational hunting and aesthetics. During the mid-1800s and from then on, birds like House Sparrow (*Passer domesticus*) were brought into the agricultural lands to control



Fig. 1: Breeding Adult of *Sturnus vulgaris* or Common Starling or European Starling. [© Matt Davis eBird S55226182 Macaulay Library ML 152576581].

the insect pests and save the harvests (Long, 1981).

Distribution and invasion pathways of some notable invasive birds

Common Starling (*Sturnus vulgaris*): Birds like these successfully spread worldwide; once native to the Palearctic, this bird has been deliberately introduced to North and South America, South Africa, Australia, and the Pacific Islands (Stuart et al., 2023).

Rose-ringed parakeet (*Psittacula krameri*): Globally, Rose-ringed Parakeet is one of the most successfully invading birds, distributed over 35 countries in the world. This bird presumably were first transported by Alexander the Great and his army from the Punjab region of India at 356–323 BC (Verdi, 2007).

Red-vented Bulbul (*Pycnonotus cafer*): This bird, native to the Indian subcontinent was most likely to be introduced in 1903 (Parham, 1955; Watling, 1978) when Indian workers who travelled from India to Fiji (Ali and Ripley, 1996; Watling, 1978). Nowadays, this species has been spreading to North America, Kuwait, New Caledonia, Bahrain, French Polynesia etc. and making other native birds of those area vulnerable.

Eurasian-collared Dove (*Streptopelia decaocto*): Originally confined to the Asian countries, east to the Levant: India, Sri Lanka and Myanmar (Fisher, 1953) and probably Afghanistan (Lever, 2005), this bird has been spreading in other regions of the world ever since 16th century. Earliest mention was in 16th

century, at the southern edge of Europe. As mentioned by Stresemann (1950, cited in Fisher, 1953), by 1547, this species had already been present in Constantinople, Istanbul.

Cattle Egret (*Bubulcus ibis*): Considering their origin in Africa, these birds managed to invade through North America (Congrains et al., 2016), Galapagos Islands (Phillips et al., 2012; Moralez-Silva and Del Lama, 2014) and also in Hawaii (Stone and Anderson, 1988; Moralez-Silva and Del Lama, 2014). By the 1940s they started to expand territories from the Malay Archipelago to New Guinea and Australia (Ahmed, 2011).

Conclusion

Invasive birds hamper native bird population by acquiring their nests, consequently, competition rises to an extent where native birds lose and invasive ones adapt quickly. In fact, sometimes, severe diseases can spread across native populations, creating substantial loss of biodiversity of an area. It is even more horrific if any endemic species is affected through disease transmission. According to Wilcove et al. (1998), 'second to habitat loss, alien species pose the biggest risk to biodiversity' was being cited by many scientists (According to Google Scholar, February 2020, minimum 3580 times) and has since superficially become the foundation in a battle of convictive opinions. As of today's world, citizen science might be able to provide better solutions in observing and identifying invader birds as well as their behavioural status worldwide. Further studies and experiments are hoped to provide a better viewpoint along the territorial success of invader birds in the future.

Table 1. Impacts and control/ management of invader birds:

Image of birds:	Impact(s) of invasion:	Control /management
 <p>Common Starling</p> <p>©Ryan Schain, Macaulay Library</p>	<ol style="list-style-type: none"> 1. Despite of their size, a flock of Common Starlings was the cause of a major crash in 1960 in Boston (Linz et al., 2018). 2. Common Starlings created huge damage to the agricultural lands (Weber W.J., 1979). 3. Extremely aggressive omnivorous birds, compete with native fauna for food (Weber W.J., 1979). 	<p>Exclusion netting for Common Starlings is considered costly, but very effective, for high-value grape and cherry varieties in Australia (Bomford and Sinclair, 2002).</p>
 <p>Red-vented Bulbul</p> <p>©Ramesh Desai, Macaulay Library</p>	<ol style="list-style-type: none"> 1. It was suggested through an open-field experiment that, these birds were causing near about 18% loss of tomato crops (Thibault et al., 2019). 2. According to report, Red-vented Bulbuls caused recurrent damage to cultivated crops in both native & non-native locations (Thibault et al., 2018). 	<p>Control campaigns were implemented twice in Tahiti, in 2012 and 2013 against the Red vented Bulbul (Saavedra, 2012, 2013) which valiantly lead to breeding success in Tahiti Monarch birds.</p>
 <p>Rose-ringed Parakeet</p> <p>©Todd Pepper, Macaulay Library</p>	<p>In Seville, Spain, presumably the most evident impact had been recorded when 'near-threatened' ('NT', IUCN) bat species, the Greater Noctule (<i>Nyctalus lasiopterus</i>), preferably a cavity-nester had lost 81% tree-occupancy to Rose-ringed Parakeets. These birds occupied cavities already inhabited by noctules, acted aggressively in such an extent that noctules avoided being closer to them and when unwary, resulted to death of noctules (Hernández-Brito et al., 2018).</p>	<p>In Kauai, Hawaii, shooting was implemented to reduce these birds' population to lessen crop damage in cornfields, but patrolling for shooting did not show noteworthy decline upto now (Gaudioso et al., 2012).</p>



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1. In Bermuda, Rock Dove jeopardizes breeding success of White-tailed Tropicbirds by competition of nest acquirement.
2. Rock Doves have association with several ectoparasites like, fleas (e.g. *Ceratophyllus gallinae*), bugs (e.g. *Cimex lectularius*), mites (e.g. *Dermanyssus gallinae*), flies (e.g. *Fannia canicularis*), and ticks (e.g. *Argas reflexus*) which are renowned for infiltrating humans (Haag- Wackernagel, 2005).

1. Artificial burrows were made in Bermuda to save tropicbirds and strategically, doves were culled (Outerbridge, 2016).
2. To control Rock Doves, hawks and falcons are trained and have been deployed in cities like New York (Felder et al., 2007).



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Cattle Egrets are very aggressive and for nesting, they outcompete others (Burger, 1978; Dami et al., 2006).

The areas in which they were introduced, trees for their roosting, were removed to dissuade them. Sometimes they are shot or trapped (Cele, J., Downs, T.C., 2020).