



Analysis of human and avian interaction and conflict-a review

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SUMMARY

Avian species are very good bioindicators of changes in environment. Avian studies give proof that the birds' diversity and density are declining due to habitat loss, impacts of agriculture, urban, and industry. The degree of predation increase in deforested and agriculture landscape i.e. avian species having more chances of predation by raptor birds. Habitat change increases the number of predators. Ethnoornithology are the studies of human knowledge about avian species, this field of research can boost conservation efforts. Knowledge of the local people and the avian cultural and folklore medicinal study must be analyzed for avian conservation, while traditional avian researches are ignored and very few ornithologists focused on this feature during research in Pakistan.

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INTRODUCTION

Animals are excellent indicators of environmental changes (Ali *et al.*, 2018; Sidra *et al.*, 2019; Khan *et al.*, 2021). Avian studies give proof that the birds diversity and density are declining due to habitat loss, agriculture, urban and industrial land use (Chamberlain *et al.*, 2000; Vickery *et al.*, 2004; Donald *et al.*, 2006; Umair, 2018; Ali *et al.*, 2020) while other causes of decline is egg and chick losses (Newton, 2004). The degree of predation increase in deforested and agriculture landscape i.e. avian species having more chances of predation by raptor birds (Donald, 2004). Habitat change increases the predators population (Whittingham and Evans, 2004; Griffiths *et al.*, 2008).

LOSS OF HABITAT

Much of the decline in richness of birds is due to the loss of plantation (McKinney, 2002). The number of species of birds and insects are increased with diversity and density of flora in specific habitats (Faeth *et al.*, 2005; Gunnarsson *et al.*, 2009; Fernandez-Canero and Gonzalez-Redondo, 2010; Sattler *et al.*, 2010; Bryson, 2011; Fontana *et al.*, 2011; Aziz and Rasidi, 2014); landscape with plantation is a better for species numbers of avian species (Fuller *et al.*, 2007; Pautasso, 2007; Fernandez-Canero and Gonzalez-Redondo, 2010; Fontana *et al.*, 2011; MacGregor-Fors and

Schondube, 2011; Dallimer *et al.*, 2012; McCaffrey and Mannan, 2012; Luck *et al.*, 2013; Nielsen *et al.*, 2014) and insects (Knapp *et al.*, 2008; Van Rossum, 2010; Dallimer *et al.*, 2012).

AGRICULTURAL INTENSIFICATION IMPACTS

Natural habitats and Forests are changed into the agriculture land during the last 10,000 years, many generalist birds species adopted new habitat. In first decade of twentieth century, intense farming created impacts on land (Newton, 2004; Purtauf *et al.*, 2005; Stoate *et al.*, 2009; Guerrero *et al.*, 2012). There is present a conflict between the wildlife conservation and agriculture intensification among the people (Henle *et al.*, 2008). Both are important, wildlife conservation is very important to conserve nature and agriculture intensification is also important for the supply of the food to people. A wide diversity and range of avifauna and ecosystems is present, change in ecosystem due to modification of the environment (e.g. agriculture intensification), some species adjust with the new environment while others may extinct, decline or become uncommon (Attwood *et al.*, 2009; Storkey *et al.*, 2011; Tschardtke *et al.*, 2012).

Avian species are badly impacted by the agriculture intensification in large scale (Stoate *et al.*, 2001; Tschardtke *et al.*, 2005; Stoate *et al.*, 2009; Phalan *et al.*, 2011; Kurukulasuriya and Rosenthal, 2013), agriculture intensification has both direct (i.e. deforestation) and indirect impacts i.e. chemicals, noise pollution (Geiger *et al.*, 2010), disturbed roosting and nesting site (Newton, 2004), avian species mortality by farming as well as birds have no place for shelter during cropping (Josefsson *et al.*, 2013). But tree numbers and area directly proportion to no number of number of avian species and population; because birds have shelter and trees (Carroll *et al.*, 2004; Munro *et al.*, 2007); also observed that diversity and density increase in the ecotone region (Fahrig *et al.*, 2011; Whittingham, 2011), ditches (Herzon and Helenius, 2008; Marja and Herzon, 2012), farm (Gillings *et al.*, 2008) and buildings (Ambrosini *et al.*, 2002; Bruun and Smith, 2003; Evans and Green, 2007; Ahnström *et al.*, 2009; Kasprzykowski and Gołowski, 2012).

The species of birds are declined due to agriculture operation; due to this operation eggs are destroyed and reduced the population size. Many species of birds are decline while some species responds positively (Kragten *et al.*, 2008). Plantation may impact the effectiveness of foraging both; i) indirectly through vigilance for predators and ii) directly, through its impacts on accessibility of food. It is observed that reduced accessibility of food in dense swards (Butler and Gillings, 2004).

Some time birds trust on the plantation cover as well as hidden to avoid recognition. In others, some avian species may forage on land close trees or shrubs for cover themselves (Vickery *et al.*, 2002). The previous results explain that feeding birds on agricultural habitat with either heterogeneously vegetated or sparsely vegetated, in agricultural habitat swards, i.e. waders, geese and some passerines on grassland habitats (Bradbury and Bradter, 2004).

URBANIZATION IMPACT

Most of urban areas are covered by buildings (Kowarik, 2011; Perring *et al.*, 2013), few remains as green landscape or vegetation. It is also noted that very low vegetation

area or small patches vegetation landscape has less density and diversity of plants cause of environmental pollution, cultivation or invasion of some invasive flora and fauna, and many anthropogenic impact and disturbances (Şekercioglu *et al.*, 2012; Ferenc *et al.*, 2014a; Ferenc *et al.*, 2014b; Margalida *et al.*, 2014; Singh *et al.*, 2014).

Urbanization provides better feed for birds, e.g. granivores, insectivores (Allen and O'Connor, 2000; Bellocq *et al.*, 2011; Davey *et al.*, 2012; Møller *et al.*, 2012; Ferenc *et al.*, 2014a; Ferenc *et al.*, 2014b; Mimet *et al.*, 2014) and nectivores (hummingbirds, jays, chickadees, nuthatches, woodpeckers, juncos, finches, sparrow and grosbeaks) get food from the vegetation, residents dominant over migrants (Allen and O'Connor, 2000; Valiela and Martinetto, 2007; Rodewald and Shustack, 2008; Njoroge *et al.*, 2014). Previous research indicated that specialist's species of birds were more negatively affected by urbanization (Davey *et al.*, 2012; Ferenc *et al.*, 2014b; Mimet *et al.*, 2014). Indeed, generalist species of birds have better colonizing abilities and to better manage with urban and agricultural disturbance (Devictor *et al.*, 2008; Davey *et al.*, 2012; Ferenc *et al.*, 2014a; Ashraf *et al.*, 2018; Jadoon *et al.*, 2019).

POLLUTION IMPACT

Though, awareness is increasing in the human being about pollution and its impacts; but there is very few material or literature on the impacts of pollutant and pollution on each landscape (Furness and Greenwood, 1993). Air pollution increase the risk of avian diseases (Mix, 1986). Radioactive material and mining work (Møller and Mousseau, 2011), DDT (Henny *et al.*, 2009) and oil spills (Golet *et al.*, 2002) negatively impact on avian species; due to this many species extinct and threatened. Avian species are used in the landscape study because the birds are environmental indicators for all landscapes (Becker, 1989; Becker *et al.*, 1993; Furness, 1993); (Lemly, 1997; Pain *et al.*, 1998; Eens *et al.*, 1999; Tanabe, 2002).

HUMAN INTERACTION WITH BIRDS

Ethnoornithology are the studies of human knowledge about avian species (Altaf, 2016); this field of research can boost conservation work (Alves and Souto, 2015). Knowledge of the local people and the avian cultural and folklore medicinal study must be analyzed for avian conservation (Haider *et al.*, 2017; Hakeem *et al.*, 2017; Bashir *et al.*, 2018; Mughal *et al.*, 2020; Tariq, 2020), while traditional avian researches are ignored (Grimmett, 1998; Mirza and Wasiq, 2007) and very few ornithologist focused on this feature during research in Pakistan (Roberts, 1991, 1992; Haider *et al.*, 2017; Hakeem *et al.*, 2017; Bashir *et al.*, 2018; Mughal *et al.*, 2020; Tariq, 2020).

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