

Research Article

Free-Living Wild Birds and Factors Influencing Their Survival in Captivity: A Synopsis

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Abstract

Free-living wild birds are adapted to the natural unrestricted existence but their roles in the epidemiology of avian diseases and zoonosis have necessitated using them in experimental studies. Some of these free-living wild birds include Laughing doves, Speckled pigeons, Cattle egrets, Village weavers and African silver bills. The use of these birds in experimental studies therefore requires capture and transportation of the birds followed by creation of an artificial environment to mimic their natural habitat. This new created habitat no matter how conducive it seems to be would have impact on the survival of these birds ranging from psychological to physical. The outcome of these impacts on the other hand could be falsely interpreted to result from the experimental study and this could be misleading. Survival of several wild birds in captivity ranged from 4% for captive-bred birds to 41% for captured wild birds over a 2-month period with annual post-release survival of 89%. Also, due to the survival mechanisms developed by wild birds in terms of feeding diversity, reproduction and disease tolerance in the wild, captivity would have effects on these instincts leading to lethal consequences. Hence in this article, some free-living wild birds and the factors affecting their survival in captivity, though not limited to these, are being discussed.

Keywords: Wild birds, Habitat, Impact, Captivity, Survival

Introduction

Free-living wild birds are birds with unrestricted migratory potentials and move independently. These birds have over time developed abilities to survive in their natural habitat which involves moving from one location to the other in search for food as well as suitable environment for reproduction. Due to their free-living nature, these wilds tend to play significant roles in the spread of diseases. This can be evident from studies where antigens of and antibodies against disease causing agents have been detected in some free-living wild birds. The mode of infection of these birds could only be speculated from their migration to locations where the infectious agents are present. Some of these infectious agents could cause clinical signs in other domestic animals but not in the free-living wild birds [1]; Fagbohun et al. [2-4]. The significant roles that these wild birds play in the epidemiology of diseases would only be better understood from using them in experimental studies, thus requiring putting them in captivity. Outcome of such experimental studies might be affected by alteration in the natural instincts of the birds and could lead to severe consequences. Hence, this article is focused on some free-living wild birds and factors influencing their survival in captivity.

Some Free-Living Wild Birds

Laughing Dove

The laughing dove (*Spilopelia senegalensis*) is a slim pigeon belonging to the order *Columbiforme* and family *Columbidae* [5]. It

is distinguished from other doves by its call which sounds like human laughter [6], and a rufous and black chequered necklace gives it a distinctive pattern [5]. It is a resident breeder in Africa, the Middle East and the Indian Subcontinent [7]. This small long-tailed dove is found in dry scrub and semi-desert habitats [8].

The laughing dove is primarily an inhabitant of woodland and savanna, but is also found around human habitations, in farmland, villages and towns [5]. It feeds primarily on seeds, but it also eats other vegetable matter, such as fruit, as well as small insects, particularly termites [8,9]. The laughing dove typically occurs individually or in pairs but might also gather in flocks [10] at watering points, roosting spots, or in area of food abundance [11].

Laughing doves are mostly sedentary but some populations may however exhibit migratory potentials [5]. This is evidenced by recovery of the birds, originally ringed in Gujarat 200 km north in Pakistan and landing of exhausted birds on ships in the Arabian Sea [12]. Birds that landed on ships might have been introduced to new regions [5,13].

Speckled Pigeon

The Speckled pigeon (*Columba guinea*) or (African) rock pigeon is a large pigeon belonging to the order *columbiforme* and family *columbidae* [14]. It has rufous on the back and wings with white spots heavily spotted on the wings. It is a resident breeder in most parts of Africa south of the Sahara [15].

The speckled pigeon lives mainly in open country, farmland, savannahs, grasslands, with nearby trees such as palms or baobabs [12]. It is also found in urban areas where it is often seen on roof tops [16]. It feeds mainly on seeds and cultivated grains [16]. It gathers in large numbers where grains or groundnuts are abundant. It is very gregarious and flocks may reach several hundreds of birds, mixed with other pigeon's species and doves [14]. It walks and runs easily on the ground. It has a strong and fast flight, and flies very high in the sky with regular wing beats [15]. Like laughing doves, the speckled pigeons are sedentary and may exhibit migratory potentials [15].

Cattle Egret

The cattle egret (*Bulbucus ibis*) is a cosmopolitan species of heron (family Ardeidae) found in the tropics, subtropics and warm temperate zone [17,18]. It is a white bird adorned with buff plumes in the breeding season [19] and is the only member of the monotypic genus *Bulbucus* [18]. It is originally native to parts of Asia, Africa and Europe [20], but has undergone a rapid expansion in its distribution due to wider human farming [18]. This bird maintains a special relationship with cattle where it removes ticks and flies from cattle and consumes them, thus implicated in the spread of tick-borne animal diseases [21].

The cattle egret feeds on insects, such as grasshoppers, crickets, flies (adults and maggots) [21], and moths, as well as spiders, frogs, and earthworms [22]. They usually nest in colonies and forage in fields with grazing livestock [20]. They are both sedentary and migratory [20], and migration is from cooler areas to warmer areas triggered by rainfall [19]. Due to their migratory potentials, cattle egrets have been implicated in the spread of poultry infections such as infectious bursal disease [3,23], Newcastle disease [24] and chicken infectious anaemia [4].

Village Weaver

Village weaver (*Ploceus cucullatus*), also known as the spotted-backed weaver or black-headed weaver, belongs to the order *Passeriforme* and family *Ploceidae* [25]. It is a species of bird widely distributed in the sub-Saharan Africa and occurs in a wide range of open or semi-open habitats, including woodlands and human habitation [26]. It frequently forms large noisy colonies in towns, villages and hotel grounds where it builds a large coarsely woven nest made of grass and leaf strips with a downward facing entrance suspended from a tree branch [27]. It has a strong conical bill, dark reddish eyes and yellow nape and crown [25].

Village weavers feed principally on seeds and grain, can be crop pests, and also readily feed on insects [27]. They have very strong migratory potentials with dearth of information on their role in the spread of diseases (Craig and de Juana 2017).

African Silver Bill

The African silver bill (*Euodice cantans*) belongs to the order *Passeriformes* and family *Estrildidae* [28]. It is a common resident breeding bird in dry savanna habitat, south of the Sahara Desert but has also been introduced to other countries such as Portugal, Qatar and United States [29]. It has a long black pointed tail, stubby

silver-blue bill, finely vermiculated light-brown upper parts, whitish underparts, black rump and black wings (BirdLife International 2012c). However, both sexes are similar and the immature birds lack the vermiculations. It is an inactive bird that stays in flocks all year round and usually breeds in loose colony [30].

The African silver bill feeds mainly on grass seeds [28] but has been reported to take aphids from water mint [31]. There is paucity of information on the migratory role of this bird in the spread of diseases but their presence around poultry houses is not uncommon [28].

Influencing Factors on Survival of Free-living Wild Birds in Captivity

Stressors

Stressors in captured wild birds could be in the form of capture, shipping/transportation, acclimatization and/or a new environment for birds already in captivity. These have the potential to reduce immunity, thus making the birds susceptible to new infections or could result in subclinical infections that may become life threatening [32-34]. In breeding and non-breeding house sparrows, trapping has been reported to initiate stress response [35].

Diseases

The introduction of new wild birds to a facility is posed with the risk of disease transmission [34,36]. Hence, the observation of all newly captured birds for clinical signs of disease, injury, or abnormal behavior must be carried out [33]. These include faecal examinations for intestinal parasites as well as visual examination for external parasites [36].

Social Factors

The studies of social behavior of group-living species may require housing of different bird species in groups in the same enclosure [37]. Due to the diversity of housing needs, mix species housing is unsuitable to avoid disease transmission between species [36]. Also, several species of wild birds may be routinely held in a single facility, provided that inter-species dominance over food or nervous responses of one species to another's calls does not result in additional stress [38]. However, mixed-species housing has been adopted in certain experimental conditions such as in the study of brood parasitism by *viduine* finches on estrildids, and a study of interspecific song acquisition [38].

Feed

There is greater diversity of feeds in the wild [39], hence, natural diet, including micronutrients, such as carotenoids involved in immune function should be considered for each species [40]. Wild birds in captivity require palatable, uncontaminated, and nutritionally balanced food daily or according to their particular requirements for survival [41]. However, feeding *ad libitum* could be problematic in species such as psittacines due to development of obesity resulting from the constant feed supply and the relative lack of activity in confinement [42]. Also, the reduction of total nutritional breadth has been associated with the consumption of minimal variety of seeds

in seed eaters (Pruitt et al. 2008). Also, the unwillingness to feed on the floor has been reported in vigilant, predator-phobic birds newly placed in a large cage thus, requiring feeding on the floor or other location that enhances flight and increases energetic expenditure to maintain fitness [43].

It has been reported that feeding wild birds with varied diet early in life may enhance them to accept broad healthy diets as adults [44-46].

Lighting

Since many species of birds see into the ultraviolet range [47,48], their survival in captivity is dependent on the availability of light [49]. These bird species use ultraviolet cues in various visual behaviors such as mate choice and foraging [50]. Also, full spectrum light has been reported to be beneficial in young birds in diseases such as rickets [51]. Therefore, in captivity, wild birds normally should be maintained on photoperiods natural to the species. Furthermore, behavioral problems such as aggression resulting from increasing hormone levels may also be managed by increasing the duration of the periods of darkness [50].

Temperature

The maintenance of a temperature range appropriate to the species is essential for their survivals in captivity [52]. However, daily temperature fluctuations should be minimized to avoid repeated large demands on the birds' metabolic and behavioral processes to compensate for changes in the thermal environment [52]. Extreme temperature changes may be stressful to the immune system or even lethal, and birds should be kept away from areas with appreciable fluctuations in temperature [53]. The time of year, ambient temperature and breeding activities have been reported to alter the optimal diet even within species [54].

Space

The concept of space is important for birds in captivity [55]. This allows for natural behaviors such as exercise, foraging, social interaction, relieves "boredom" and offset the development of abnormal repetitive behaviors [56].

Conclusion

Free-living wild birds are important source of companion to several individuals as well as being used for tourist attraction globally. Their ability to serve these purposes effectively is largely dependent on their welfare and survival in this new environment. These birds should be provided comfortable environment that mimics their natural habitat to ensure maximum survival. Hence, further studies on the optimum requirement for each species of wild bird in captivity should be conducted to promote ethical experimental studies involving them.

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