CAPTIVE BREEDING OF BIRDS

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Summary

Captive breeding of birds has ancient origins, involving their use as food, game birds, pets, and only recently as a tool in conservation programs. Interest on birds is widespread also for their ecological rule in natural ecosystems. Both genetic and eco-ethological aspects are to be considered in captive-breeding projects, because of the complexity both of behavioral traits and population dynamics in birds. The principal problems arising and typologies of planning are shown through the discussion of some case studies.

1. Introduction

Birds are probably the animals most frequently come to mind when we think about wildlife diversity or simply about nature. Interest in birds is widespread, rather than limited only to people working in ecological research and conservation, in part because wild birds can be observed with relative facility in almost all habitats. Factors of ecological interest, furthermore, include the following: worldwide distribution, higher

position in community food webs, and relevance of the large-scale movements of biomass operated by migrant species.

At the dawn of the twenty-first century, at least 1100 of the world's 9000 bird species all are considered threatened. Thus, an assessment of guidelines is needed to maximize conservation efforts, including the use of different strategies; among such strategies, captive breeding of birds is on the upswing.

2. Typologies and Aims of Captive Breeding in Birds

2.1. Historical Trends

Captive breeding of birds originally took place as a food resource in the first human settlements, although not as widespread and relevant in biomass as the rearing of mammals. Another common context in which birds have been kept and bred in captivity since the advent of ancient kingdoms is related to ornamental functions (especially gallinaceans galliformes, wildfowl) and/or as a status symbol (i.e., eagles, hawks).

During the Renaissance in Europe this was particularly evident with the regular presence of both autochthonous and exotic species in the parks of nobles. Later, with the increasing number of specimens coming from other countries and the increase of the scientific interest, places with captive assemblages of wild species evolved in the zoological gardens. In the same period, were also the first examples of captive breeding of birds for hunting purposes, although this use was still restricted to a narrow social class.

Captive breeding for hunting is now a common practice in occidental countries; although it involves only a few species, this use can affect the conservation status of indigenous taxa (see Section 4.6). It must be emphasized here that there is also an ancient kind of hunting—hawking—where reared raptors are used. This practice requires strong regulation in all countries because of the impact on the size of free-living populations of these species, which are naturally present at densities lower than other bird species.

Another context of captive breeding in birds is their value as pets. In the twentieth century, the diffusion of exotic species in many houses of the Old World provided widespread facilities for natural sexual reproduction in captivity of many birds (i.e., parrots and finches), with an increased incidence of allochthonous species in regional faunistic check lists (see Section 2.2).

Following the sensitization of public opinion to problems of nature conservation, many centers have appeared since the 1960s that are devoted to the rehabilitation and reintroduction into the wild of birds that have been injured or shot by hunters. Initially this activity has been carried out by private nonprofit organizations and/or foundations

interested in conservation. With the establishment of public offices and specific international laws devoted to this aim, many of these facilities have focused their interests on captive breeding, while maintaining responsibility for specific programs for locally threatened species.

The application of the accumulated body of knowledge regarding captive breeding in birds for the purpose of conservation is a recent and fast-growing field of research.

2.2. Introduction of Species and Hybridization

The commonest typologies of captive breeding (apart those related to conservation projects) have also contributed to the introduction of allochthonous species. As stated above, these are primarily species used for hunting and/or ornamental purposes. Many examples can be found among pheasants: the common pheasant (*Phasianus colchicus*) is a mainly Chinese species introduced in Europe as game bird at least since the Middle Ages and perhaps as early as in the Roman times, which now commonly lives and breeds in farmlands; the related golden pheasant (*Chrysolophus pictus*) and Lady Amherst's pheasant (*Chrysolophus amherstiae*), indigenous of Asiatic countries, were introduced in Britain since late 1800s and in 1900s, respectively, and are now present with several self-sustaining populations. Among parrots, the rose-ringed parakeet (*Psittacula krameri*), whose natural range includes south Asia and central Africa, is now present in open woods, parks, and gardens of some European countries, with scattered colonies of specimens escaped from captivity.

A further aspect related to birds' maintenance in captivity concerns hybridization. Wild birds do not normally mate with birds other than their own species, although exceptions do occur; generally a cross between two different species is most likely to occur in areas where one of the two is much less common than the other. Hybrids appear to be more common among wildfowl (swans, geese, or ducks) and game birds than in other groups. Particularly in the former group, the frequency is higher among geese and pochards (*Aythya* spp.). Wildfowl are widespread and kept in artificial conditions such as parks, where often some species are singles or less abundant than those that are congeneric. Moreover, normal courtship behavior is often prevented by lack of space or by pinioned wings. Birds hatched in parks can often move freely, and can therefore move later to natural sites. Although the higher frequency of hybridization seems due to genetic reasons, it should be noticed that this could be also explained both by the higher numbers of captive individuals in this group and by the relative facility of observation. Only a few data are in fact available on the incidence of hybridization in species escaped from captivity that are less abundant and with lower detectability; these studies involve finches.

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Biographical Sketch

Marco Lebboroni, a biologist with a doctorate in animal biology, has worked as a consultant for the University of Florence in projects concerning birds as biological indicators and in population studies on feral pigeons. He is also involved in an EU project about the loss of biodiversity in agricultural environments.