

SURVEY OF THE BIRD PESTS OF AGRICULTURAL CROPS IN GOA

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Goa is bestowed with agroclimatic conditions congenial for the cultivation of many tropical agricultural crops. It also hosts diverse avifauna. Although majority of bird species are the friends of farmers, a few may act as serious pests of agricultural crops and cause serious economic losses. Fifty genera of birds representing 132 species and 234 subspecies are reported to depredate on various agricultural crops in India (CSIR 1990).

Recent studies in India have revealed that Roseringed Parakeet *Psittacula krameri*, House Crow *Corvus splendens*, House Sparrow *Passer domesticus*, Indian Myna *Acridotheres tristis*, Baya Weaverbird *Ploceus philippinus*, munias *Lonchura* spp., etc. are the common depredateors of agricultural crops (Anonymous 1992). Rice *Oryza sativa*, cashew *Anacardium occidentale*, oil palm *Elaeis guineensis* and maize *Zea mays* are some of the major agricultural crops of Goa. Chandrappa and Krishnappa (1993) have reported that Jungle Crows *Corvus macrorhyncos* remove the seedlings of paddy immediately after transplanting and suggested certain pest-management programmes to overcome this problem. Dhileepan (1989) has reported that birds act as major pests of oil-palm in India and it is estimated that around 2.8 tonnes of fresh fruits/ha/yr, equivalent to 240 kg of palm oil, are lost due to bird damage. A detailed survey of the birds visiting cashew plantations was conducted by Thirumurthy and Balashanmugam (1987) who listed 14 species of bird-pests feeding on the cashew apple. Jacob (1988) has reported the Redbreasted Parakeet *Psittacula alexandri abbotti* as a serious bird-pest of cashew in Andamans feeding on the immature green nuts and resulting in a loss of about 87.86% of the total yield. Recently, Sundararaju (1993) has compiled a list of pests of cashew in India which includes 12 bird species of a total of 70 species of cashew pests. Pigeons, doves, crows, parakeets and mynas are pests of maize in India (Anonymous 1992).

No information is available on the role of avifauna in the productivity of agricultural crops in Goa. The present survey was therefore conducted in Goa to know the nature and extent of bird damage to agricultural crops in the state. The birds were identified following Ali and Ripley (1983, 1987).

The survey revealed that some of the major agricultural crops of Goa such as rice and cashew were severely damaged by birds. Oil-palm, which is going to be another important cash crop of Goa in the near future, is also prone to bird damage to a considerable extent. Maize, grown as a side crop in the vegetable gardens, is also badly damaged by birds.

Rice: Baya Weaverbirds and House Sparrows were observed to be the major bird

pests of rice in Goa. They fed on rice at the nursery stage and from the grain formation to harvest as also reported in Anonymous (1992). They were seen to attack the rice fields in flocks of around 20 to 100. Paddy husks and intact grains were seen scattered on the ground at the places of their attack.

Cashew: House Crows and Jungle Crows were the major bird pests of cashew. They not only eat ripe fruits, but also drop and/or carry away the fruits with the nuts. This incurs a considerable loss of both the apples and nuts to the farmers. Koels were the minor pests, feeding on the cashew apple. Other birds seen feeding on the ripe cashew apple were Indian Tree-pie *Dendrocitta vegabunda*, Redvented Bulbul *Pycnonotus cafer*, Spotted Dove *Streptopelia chinensis* and Roseringed Parakeets *Psittacula krameri*. These findings are similar to those of Thirumurthy and Balashanmugam (1987) in Tamilnadu. Cashew is Goa's largest single crop and the only one with an exportable surplus production. Hence, any damage to the cashew apple or nut is a matter of concern.

Oil Palm: House Crows and Jungle Crows caused a considerable damage to the fruits of red oil palm in Goa. These birds fed on the mesocarp of the ripe fruits, reducing the oil yield considerably. Rarely, even the unripe fruits were eaten and damaged. The extent varied from partial damage in unripe fruits to complete damage in ripe fruits. Bird damage was more in palms present in the border area of the plantation. Crows fed exclusively on the mesocarp, while the fibres of the mesocarp were left attached to the seeds. The seeds of the completely damaged fruits were seen scattered on the ground. All partially damaged unripe fruits and majority of the partially damaged ripe fruits usually remained attached to the bunch. A few of the partially damaged ripe fruits were also seen scattered on the ground. This may be due to the mechanical disturbance by the birds during their feeding activity. The distal ends of the fruits were usually eaten first, may be because they remained exposed in the bunches and are easily approachable. The ripe fruits have soft and fleshy mesocarp with plenty of oil in it. This facilitates easy removal of the fruits from the bunches and of the mesocarp from the seeds. In the unripe bunches, partial fruit damage was more frequent since the fruits could not be easily removed from the bunches. My observations agree with the findings of Dhileepan (1989) in Kerala.

Maize: Roseringed Parakeets were the major bird pests of maize in Goa. They fed on maize grains during the cob emergence to maturity stage, causing a considerable loss. House Crows and Jungle Crows were also seen feeding on maize grains during the sowing and germination stage, as well as from the cob emergence to maturation stage.

The present observations are just preliminary. There is a need of quantitative studies and analyses of the extent of damage to these crops by bird pests in Goa. This will help in knowing the quantum of crop losses and in formulating bird pest management programmes in the state.

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