# Depredatory birds and their damage in agricultural crops of Punjab

**ALL INDIA NETWORK PROJECT ON VERTEBRATE PEST MANAGEMENT**

**(AGRICULTURAL ORNITHOLOGY)**

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# MESSAGE

In agricultural habitats, a total of 244 species of birds belonging to 136 genera under 18 orders and 53 families have been reported in agro ecosystems of India. Punjab is mainly an agrarian state having gross cropped area of 98.50% and cropping intensity of 190%. Punjab has a rich avian diversity consisting of which is reflected in its abundance and richness. Observations of the avian diversity in relation to agricultural habitat and aquatic habitat (ponds/canal/river/wetland) have revealed 139 and 84 species respectively. Agriculture provides the chief source of food to the birds. Most of the birds play helpful roles in agriculture, but some species may be problematic in different situations. There have been noted 12 depredatory bird species (as discussed in the bulletin) causing varying levels of location specific as well as stage specific bird damage which requires implementation of management methods to protect crops. Agricultural ornithology aims at obtaining scientific information on birds in relation to agriculture, and using this information for their management, which involves both the conservation of useful species and control of pests.

It is appreciable to know that scientists at Punjab Agricultural University, Ludhiana are publishing a bulletin entitled "Depredatory birds and their damage in agricultural crops of Punjab". The purpose of this bulletin is to help a wide group of readers including farmers, agricultural scientists, horticulture scientists, extension workers, students, and researchers to understand about depredatory birds and their management strategies. Information about depredatory birds including their eco-biology and status in agriculture is documented along with different bird pest management methods.

I am of the opinion that this bulletin will help not only the practitioners of bird pest management but also the researchers and farmers alike. It will provide an impetus for further future studies.

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# MESSAGE

Birds constitute an important component of agricultural ecosystems. Agriculture provides a concentrated and highly predictable source of food to birds. Some species come in conflict with farmer's interests by inflicting economic damage to crops, fruits, and stored grains. To understand the role of depredatory birds in agriculture and to widen the understanding about them, there is a need for precise and compact information in the form of scientific publications.

I am happy that the Punjab Agricultural University, Ludhiana center of All India Network Project on Vertebrate Pest Management is publishing a bulletin entitled "Depredatory birds and their damage in agricultural crops of Punjab". It emphasizes the uniqueness of each bird species, their identifying features, habitat, feeding habits, breeding, damaging status in agriculture and their management. The effort made by the authors reflects a sincere, meticulous and objective-based attempt.

This bulletin is written in a well-defined manner based on the combination of data derived from published scientific knowledge, first-hand professional experience and scientific research carried out under All India Network Project on Vertebrate Pest Management. It will certainly provide a framework for learning about the depredatory birds and their management in agriculture ecosystem to farmers, the general public, students, extension workers, and researchers in a defined way.

**CONTENT**

**Avian Diversity in Punjab**

Punjab state, with an area of 50,362 $km^2$, is situated in the north western part of the country. It extends from latitude 29°33' to 32°32' North and longitude 73°55' to 76°50' East with an average elevation of 300 m above mean sea level. The state has been classified into five agro-climatic zones, i.e., sub-mountain undulating zone, undulating plain zone, central plain zone, western plain zone and western zone on the basis of homogeneity, rainfall pattern, distribution, soil texture, cropping patterns etc. The climate of Punjab is characterized by extreme hot and extreme cold conditions. Annual temperatures in Punjab range from 1°C to 46°C (min/max), but can reach 49°C in summer and 0°C in winter. It has three defined seasons; summer, monsoon and winter. Summer season tends to be very hot and very dry and it ranges from April through June with average highs in May and June hovering around 40 °C. A slight decrease in average temperature and an increase in humidity is witnessed in the monsoon season which runs from July through September with an annual precipitation average ranges between 960 mm in the sub-mountain region and 460 mm in the plains. Average temperature tends to decrease during the months of October and November. The winter months (December to February) are relatively mild with warm days and chilly nights and March is a transitional month from winter to summer.

Avian diversity have been monitored and recorded during the field surveys conducted in All India Network Project on Vertebrate Pest Management and in erstwhile All India Network Project on Agricultural Ornithology. It has revealed 189 species of birds belonged to 17 orders 56 families and 117 genera during field investigations. Findings have resulted in adding 62 species of birds to the earlier Checklist of Bird Species of Punjab. Of these 111 were recorded as resident species, 47 resident migrant, 30 migrant and 1 species in the vagrant category. Observations of the avian diversity were made in relation to their habitat types, i.e., agricultural habitat, residential area - urban/rural, aquatic habitat-ponds/canal/river/wetland and uncultivated area/forest/barren land revealed 125, 63, 67 and 19 respectively. With some species having overlapping habitat types, i.e., occupying more than one habitat type. In term of conservation status, of the recorded 189 avian species, 10 species were in critical endangered category. Critical endangered category further comprised of 1 endangered, 1 vulnerable and 8 near threatened species.

The birds have a significant role in agricultural landscape, being both beneficial and harmful. Insectivorous avian species play important role in decreasing insect populations in crops, thereby proving useful to farmers. On the other hand, damage caused by depredatory birds is a matter of concern to ornithologists; worth mentioning point is that the intensity of bird damage may vary in relation to crop stage, location of field, population status of species, habitat features of surrounding area and community structure. Even the same species may be beneficial or problematic in different situations. Only a few of

about 300 species of birds of Punjab cause problems in crop fields and granaries. The Rose–ringed Parakeet is the only bird that seems to be exclusively harmful to farmer's interests.

**Harmful Birds:** Rose-ringed Parakeet is the major bird pest causing serious damage to almost all cereal crops. It is particularly harmful to sunflower. House crows damage sprouting maize, sunflower and maturing maize. Doves and pigeons damage pulses, weaver birds damage stored grains at shellers and godowns. These birds also damage rice nurseries and maturing bajra and sorghum. Bird damage in various agricultural crops show crop specific and stage specific damage range at different developmental stages. Ranges of crop damage caused by birds in selected fields of wheat (sowing), maize (sowing), maize (ripening), paddy (sowing) and paddy (ripening) were 3.0-9.o%; 4.5-8.6% ; 5-9.5%; 5-11.5% and 4-7.0% respectively. The ranges of damage by birds to sunflower (sowing), sunflower (ripening), safflower (ripening), mustard (sowing) and mustard (ripening) were 5-10%; 9-18%; 8.5-20% and 9-11% and 4-19% respectively.

**Table 1: Depredatory potential of birds in different agricultural crops**

| **Crops→** **Bird species↓** | **Paddy** | **Wheat** | **Maize** | **Mustard** | **Sunflower** | **Pulses** |
|---|---|---|---|---|---|---|
| Rose-ringed Parakeet | √ | √ | √ | √ | √ | √ |
| House Crow | √ | √ | √ | √ | √ | √ |
| Rock Pigeon | - | - | - | √ | √ | √ |
| Indian Peafowl | √ | √ | √ | √ | - | √ |
| Common Myna | - | - | - | - | - | √ |
| Ring Dove | - | √ | √ | √ | - | √ |
| Baya Weaver | - | - | - | √ | √ | √ |
| Green-bee Eater | - | - | - | - | - | - |
| Purple Moorhen | √ | √ | - | - | - | - |
| Red-vented Bulbul | - | - | - | - | - | √ |

(√- presence; - absence)

**Table 2: Depredatory potential of birds in different horticultural crops**

| Crops→ Bird species↓ | Grapes | Guava | Ber | Pear | Peach | Cucurbits sps. | Tomato | Pea |
|---|---|---|---|---|---|---|---|---|
| Rose-ringed Parakeet | - | √ | √ | √ | √ | √ | √ | √ |
| Alexandrine Parakeet | - | √ | √ | - | - | - | - | |
| House Crow | - | √ | √ | √ | √ | √ | √ | √ |
| Rock Pigeon | - | - | - | - | - | - | - | - |
| Indian Peafowl | - | - | - | - | - | √ | √ | √ |
| Common Myna | - | √ | - | - | - | - | - | - |
| Ring Dove | - | - | - | - | - | - | - | √ |
| Purple Moorhen | - | - | - | - | - | √ | - | - |
| Red-vented Bulbul | √ | √ | - | √ | √ | - | √ | - |
| Bank Myna | √ | - | - | - | - | - | - | - |

(√- presence; - absence)

**Table 3: Cultivated area under major crops of Punjab***

| | Paddy | Wheat | Maize | Mustard |
|---|---|---|---|---|
| Area (000 ha) | 3103 | 3520 | 109 | 30.5 |
| Production (000 tonnes) | 19137 | 18262 | 396 | 46.5 |
| Yield (Kg/ha) | 6167 | 5188 | 3625 | 1524 |

*According to Handbook of Agriculture 2021, Punjab Agriculture University, Ludhiana.

**Table 4: Birds damage in different developmental stages of crops**

| Crops | Sowing/ Transplanting | Germination stage | Vegetative stage | Maturing stage |
|---|---|---|---|---|
| **Paddy** | √ | - | - | √ |
| **Wheat** | √ | √ | - | √ |
| **Maize** | √ | √ | - | √ |
| **Mustard** | √ | √ | - | √ |
| **Sunflower** | √ | - | - | √ |
| **Pulses** | √ | √ | - | √ |
| **Horticulture crops** | - | - | - | √ |

(√- presence; - absence)

**Table 5: Stage specific use of depredatory bird management method**

| Crops | Sowing/ Transplanting | Germination stage | Maturing stage |
|---|---|---|---|
| **Paddy** | RR/PN/B/JR | RR/PN/B/JR | RR |
| **Wheat** | RR/B | RR/B | - |
| **Maize** | RR/B/S | RR/B/S | RR/WL/S/SC/LC |
| **Mustard** | RR/PN/ JR | RR/PN/JR | RR/B |
| **Sunflower** | RR/S | RR/S | RR/B/PN |
| **Pulses** | RR/PN | RR/PN | RR/B |
| **Horticulture crops** | - | - | RR/B/PN |

**Methods: RR-Reflective ribbon; PN- Poly net; B- Bioacoustics; JR- Jute Rope; S-Scare crow; WL- Wrapping of leaf; SC- Screen crop; LC-Lure crop**

**Details of important depredatory species have been given below:**

1. **Rose-ringed Parakeet *Psittacula krameri***

Rose-ringed Parakeet is also commonly known as *Tota*. It is one of the most destructive depredatory bird species in cultivated areas of Punjab.

**Order**: It belongs to the order Psittaciformes and family Psittacidae.

**Size:** Its body size is approximately 42cm

**Identifying features:** It has bright red bill and long tail and having all green colored body. Males have chin stripe and collar where as female lacks it.

**Resident status:** It is resident bird, very adaptable and it associates with human habitation and cultivation.

**Habitat:** Its habitat also included grain storage facilities, markets, deciduous trees, secondary growth, gardens and vicinity of habitation.

**Breeding:** Its breeding season ranges from February-April and form nests in holes of tree trunks or can excavated its nesting holes. Fledglings become independent and leave nest holes before monsoon season.

**Feeding habits:** The foraging behavior of parakeet is gregarious in nature, feeds and roosts in large flocks.

**Damaging status:** It is observed to cause damages to cereals, pulses, oilseeds, fruits and vegetables in standing crops, orchards and gardens.

**Indian Wildlife Protection Act Status: Schedule IV**

**Status in Punjab:** There has been observed shift in its preferred trees for nesting from traditional to agro forestry trees in recent years. Large flocks are often observed at grain store facilities. Orchard owners use variety of methods both traditional and mechanical like cracker fire gun / acetylene gas powered guns to scare them from fruiting trees. Netting has been found to be the most successful and efficient method to reduce parakeet damage.

## 2. Alexandrine Parakeet *Psittacula eupatria*

Alexandrine Parakeet is one of the largest parakeets also commonly known as *Raa Tota*. It is observed in good numbers in districts like Gurdaspur, Pathankot and Hoshiarpur; and also inhabits major wetlands like Harike and Nangal.

**Order**: It belongs to the order Psittaciformes and family Psittaculidae.

**Size:** Its body size is approximately 53 cm.

**Identifying features:** It is having red bill and maroon colored shoulder patch. Males have black chin stripe joining pink and turquoise hind collar. Females and juveniles don't have black chin stripe and hind collar.

**Resident status:** It is resident bird of Punjab. It is found in areas having good forest cover and uneven terrains.

**Habitat:** Its habitat is like Rose-ringed Parakeet which includes grain storage facilities, deciduous trees, secondary growth, gardens and vicinity of habitation.

**Breeding:** Its breeding season coincides with that of Rose-ringed Parakeet; ranges from February-April. More than one brood has been noted in a breeding season.

**Feeding habits:** Foraging habits of alexandrine parakeet include feeding on fruits in orchards and on grains particularly at grain godowns.

**Damaging status:** It is observed to cause damages to cereals, pulses and oilseeds at post harvest facilities. Damage levels are high at solitary fruiting trees and in small acreage orchards.

**Indian Wildlife Protection Act Status: Schedule IV**

**Status in Punjab:** Localized damage has been noted at preferred sites like orchards and grain stores near tree plantations.

### 3. House Crow *Corvus splendens*

House Crow commonly known as *Kan* in vernacular language is an opportunist birds and can feed on variety of food available.

**Order**: It belongs to the order Passeriformes and family Corvidae.

**Size:** Its body size is approximately 43cm.

**Identifying features:** It has mostly black plumage; forehead crown and throat are glossy black contrasting with dusky gray nape, neck, upper breasts and upper back.

**Resident status:** It is resident bird, very adaptable and it associates with human habitation and cultivation.

**Habitat:** Its habitat has wide range; commonly found in rural / urban areas, cultivation and forest edges. It lives in close association with man and their habitat.

**Breeding:** Its breeding season ranges from April- August in this region. It makes nest in the form of a platform of twigs intermixed with iron wire, coir fibers, etc. and lays 4-5, pale blue green, speckled and streaked with brown eggs in one clutch and both parents perform the duties of raring the chicks.

**Feeding habits:** It is very bold, cunning and omnivorous feeder. Gregarious behavior noted during feeding and roosting times. Scavengers at rubbish dumps, seeks invertebrates and grain in cultivation near villages.

**Damaging status:** It causes damages to crops by pulling out freshly sown seeds of cereals, pulses, oilseeds and feeding on matured maize cobs and horticultural crops.

**Indian Wildlife Protection Act Status: Schedule V**

**Status in Punjab:** Because of wide-spread distribution it has been noted causing damage on maize and other cereals at sowing stages. Large numbers of House crows, Cattle Egrets and Common Myna are observed at waste/garbage dumps and at animal flaying centers in villages and small towns.

4. **Rock Pigeon *Columba livia***

The Rock Pigeon is also known as *Gola Kabutar*.

**Order**: It belongs to order Columbiformes and family Columbidae.

**Size:** It has body size of 33cm.

**Identifying features:** Grayish with glistering metallic green, purple green on neck, blackish terminal band on grey tail, short, broad black bars across inner wing

**Resident status:** It is resident and having wide distribution.

**Habitat:** Its lives in flocks and colonies near human's habitation, villages, towns and cities. It lives in colonies all throughout the year.

**Breeding:** Its nest is a flimsy collection of a few sticks on ledge, on refers, ceilings of houses and it lays two white, elliptical eggs.

**Feeding habits:** Feeds chiefly in cultivations, mainly on seeds, pulses, grains and also eats green shoots.

**Damaging status:** It pulls out newly sown seeds of cereal, pulse and vegetable crops.

**Indian Wildlife Protection Act Status: Schedule IV**

Status in Punjab: It is widely distributed in agricultural landscapes. Their population runs into hundreds in cities where people offer grains. Flocks observed foraging either in newly sown cereal /pulses fields or gleaning in fields after harvesting operations.

**5. Indian Peafowl *Pavo cristatus***

The Indian Peafowl also known as *Mor*. It is our national bird and well known for its beautiful plumage.

**Order**: It belongs to order Galliformes and family Phasianidae.

**Size:** It has a body size approximately 122cm.

**Identifying features:** Male and females can be differentiated on the basis of appearances. Male has blue neck and breast and long, trailing bronze, green upper tail coverts ending in blue green while females are duller having lower neck metallic green instead of blue and lacks the long train.

**Resident status:** It is resident and having wide-spread distribution.

**Habitat:** It inhabits dense scrub, villages and cultivations. It can be commonly seen in cultivated areas and in light wooded habitats.

**Breeding:** It's breeding season ranges from January-October and built a nest having shallow scrape in ground in dense thicket lined with leaves and sticks. It lays 3 eggs of glossy pale cream color.

**Feeding habits:** Feeds chiefly in cultivations, mainly on grains, vegetables shoots, insects, lizards and snakes.

**Damaging status:** It causes damages to germinating crops.

**Indian Wildlife Protection Act Status: Schedule I**

**Status in Punjab:** Indian Peafowl is of considerable abundance in some districts like Patiala, Hoshiarpur, some locations like Mirzapur water body ( Mohali), Harike wetland surroundings, Ropar wetland, foothills near Ballowal Saunkeri and forest belt along canal in district Fatehgarh Sahib.

**6. Common Myna *Acridotheres tristis***

It is also known as *Lalri/Gutar/Shark* in local language. It is a familiar bird in villages, towns and cities.

**Order**: Common Myna is a member of Order Passeriformes and Family Passeridae.

**Size:** Its body size is 25cm.

**Identifying features:** It is having rich vinous-brown plumage, Black head, neck, upper breast, during flight, blackish tail, with broad, white tips to all but central feathers. Abdomen is whitish in color. Sexes are alike in Common Myna.

**Resident status:** It is resident and having wide distribution.

**Habitat:** Its lives in pairs and flocks near human's habitation, villages, towns and cities.

**Breeding:** Its breeding season ranges from April-August. It is a cavity nester and builds nest in a hole of tree, wall, ceiling etc. Its nest is a collection of twigs, roots, paper and rubbish, sometime shed skins of snakes are also used. The eggs are glossy blue and ranges from 4-5 in single clutch.

**Feeding habits:** Common Myna is omnivorous and can feed on fruits, cereals, nectar, insects, kitchen scraps and refuse. It follows grazing cattle or the plough for insects and invertebrates or feeds in cultivation. It has observed in large number at waste/garbage disposal sites.

**Damaging status:** It is also reported to cause very negligible.

**Indian Wildlife Protection Act Status: Schedule IV**

**Status in Punjab:** It is having high abundance in areas adjoining habitations. Common Myna population along with Rock Pigeon has increased in recent years because of supplemental feeding sites in urban areas.

7. **Ring Dove *Streptopelia decaocto***

Ring Dove commonly known as *Ghuggi*.

**Order**: It is a member of order Columbiformes and family Columbidae.

**Size:** Ring Dove has a body size of 32cm.

**Identifying features:** It is pale grey and Brown color distinguished by prominent narrow black half ring or collar on the hind neck. The breast is lilac, turns into ashy grey on abdomen and darker grey on remaining under parts. Its broad whitish tips to brown tail feathers, can be seen as a terminal band when fanned during landing. Its bill is brownish swollen at the base and the feet are dark pinkish red or magenta in color.

**Resident status:** It is resident and having wide distribution.

**Habitat:** It can be easily seen in human habitation especially cultivated land. Small parties are noted during non-breeding season and it associates with other doves.

**Breeding:** Its breeding season is throughout the year. Its builds it nest in a bush or small tree, rarely in human dwellings and is scanty twig platform like structure. It lays two white eggs.

**Feeding habits:** Large gatherings feed in cultivated areas, paddy stubbles, newly sown millet fields, matured mustard and sunflower.

**Damaging status:** It causes damage to crops during post harvest stage, on the threshing ground or in the godown.

**Indian Wildlife Protection Act Status: Schedule IV**

**Status in Punjab:** It's having good abundance and widely distributed like Rock Pigeon.

Large flocks along with other species dove species are often seen feeding/foraging in fields after crop harvesting operations. In godowns with open plinth storage, it causes damage along with other granivores.

**8. Baya Weaver *Ploceus philippinus***

It is also known as *Bijra* or *Baya* locally.

**Order**: Baya Weaver Bird is a member of order Passeriformes and Family Passeridae.

**Size:** Its body size is 15cm.

**Identifying features:** female and male in non breeding plumage are having dark- streaked fulvous brown above, plain whitish reddish yellow below. It has a stout conical bill short square-cut tail.

**Resident status:** It is resident species and usually lives in flocks and colonies.

**Habitat:** It roosts in large numbers bordering ponds, found in paddy and cereal cultivation, which provides nesting material and food.

**Breeding:** During breeding season which ranges from May to September, male has bright yellow breast, cream buff on under parts. It mainly flocks about open cultivations and agricultural fields. Its nest is a swinging retort-shaped structure with long vertical entrance tube, woven with strips of paddy leaf and rough edged grasses. It lays 2-4 eggs of pure white colorations.

**Feeding habits:** It feeds in large flocks, gleaning paddy fields and other grains in harvested fields. It is omnivorous feeds on cereal grains, seeds of weeds and also eats insects.

**Damaging status:** It damages ripening crops.

**Indian Wildlife Protection Act Status: Schedule IV**

**Status in Punjab:** It has localized distribution as was noted during surveys. Colonies of baya weaver birds have been found near canals in wild grasses, near sugarcane fields and on Acacia/ Date palm trees. Damage has been found low to mild in field adjoining to their colonies. Being omnivorous and particularly insect eater in breeding season, it has dual role in agriculture.

**9. Green Bee-eater** *Merops orientalis*

Green Bee-eater also known as *Makhi khora.*

**Order**: It belongs to order Coraciiformes and family Meropidae.

**Size:** The size of Green Bee-eater is 16-18 cm with 5-7 cm elongated central tail-feathers.

**Identifying features:** It is a grass-green bird, having a golden-brown crown, a black eye-stripe above bluish throat and cheeks, which are separated from the breast by a thin black line. The dark bill is thin, sharp and slightly curved. It has two prominent elongated feathers that extend from the green tail.

**Resident status:** It is resident species but local summer migration was also present and it mostly lives in flocks.

**Habitat:** It is found in open countryside, often close to habitation and cultivation, and in wooded areas It is usually seen in pairs or small groups on wires and fence posts.

**Breeding:** The breeding months are from February to May. The birds usually nest in colonies, excavating horizontal tunnels, in the sides of earth banks, mounds, dry nullahs and burrow pits. It lays 4 to 7 eggs of pure white color and roundish ovals.

**Feeding habits:** It feeds on bees and other insects.

**Damaging status:** It causes damage to honey bee colonies by eating bees.

**Indian Wildlife Protection Act Status: Schedule IV**

**Status in Punjab:** It has wide distribution but seasonal in abundance. It has been mostly noted in areas having canals with wild vegetation and near wetlands. Large groups have been observed near apiaries; honey growers often use scaring methods to save bees from predation.

**10. Purple Moorhen** *Porphyrio porphyrio*

Purple Moorhen is also known as *Nili Jal kukari.*

**Order**: It is a member of order Gruiformes and family Rallidae.

**Size:** The size of the bird is 51 cm.

**Identifying features:** It is having dark, shiny indigo or purple feathers and red bills and frontal shields. Plumage color of their backs and wings are dark green, brown or black with a green sheen. Their tails are short, and they have bright white feathers on the undersides of their tails. Their legs are long, scaly, and orange-red.

**Resident status:** It is resident species and can be seen in small flocks.

**Habitat:** It lives in freshwater ponds and wetlands which containing plenty of vegetation.

**Breeding:** It makes its nest in a large pad of interwoven reed flags, etc., on a floating debris or amongst reeds slightly above water level in swamps. It lays 3–6 speckled eggs, pale yellowish stone to reddish buff, blotched and spotted with reddish brown.

**Feeding habits:** They eat the bulbs of aquatic plants, vegetable matter, small animal prey and browse on the shoots of marsh grasses and reeds.

**Damaging status:** Causes occasional and localized damage in paddy nurseries before transplantation and even after transplantation.

**Indian Wildlife Protection Act Status: Schedule IV**

**Status in Punjab:** It is one of the ubiquitous species noted around village ponds and large water bodies. Even though it is very less in abundance but localized damage have been recorded in paddy at its initial stages near ponds. Small parties of 15-20 birds have been noted causing damage to paddy nurseries and at transplantation stage.

**11. Bank Myna *Acridotheres ginginianus***

**Order:** Bank Myna belongs to Order Passeriformes and family Sturnidae.

**Size:** Its body is 23 cm.

**Identification feature:** Bank Myna has orange-red orbital patch and a prominent orange-yellow bill. It is bluish grey with blackish cap. The juveniles are duller and browner than adults.

**Resident**: It is resident bird and is wide-spread in northern and central India.

**Habitat**: It is widely distributed in damp grasslands, cultivation areas near villages and is often associated with grazing animals.

**Breeding:** Breeding season starts from March and lasts till August. The nest is always built in earth walls, on the banks of rivers, embankments or the sides of open wells. The nest is lined with grass, feathers and sometimes snake sloughs. Mostly clutch size is of 4-5 pale sky blue or greenish-blue eggs. Two broods have been recorded in the same season. The eggs hatch after about 13 to 14 days. Nestlings open their eyes after about 5 days and fledge in about 21 days.

**Feeding habits:** It is omnivorous and feeds on grains, insects and fruits. Like Common Myna they also follow grazing animals picking up disturbed insects or even ticks on the animals.

**Damage:** It causes minor damage during harvesting and post harvesting season of wheat, paddy and maize crop. In grape vines, it causes damage to unripe/ ripe berries. It has been recorded solitary or in pairs or small parties cause damage to different fruit tree types.

**IWPA status: Schedule IV**

**Status in Punjab:** Population abundance is good and more or less evenly distributed in small towns in rural areas and at peripheral areas of urban settlements. There has been observed large number of nesting sites of this species in storm holes of flyovers and cavities in bridges throughout Punjab.

**12. Red-vented Bulbul** ***Pycnonotus cafer***

It is also known as *Bulbul or Guldum* locally.

**Order**: Red-vented Bulbul is a member of order Passeriformes and Family Pycnonotidae.

**Size:** Its body size is approximately 20cm.

**Identifying features:** It has black head with dark sooty brown plumage. Pale edges of feathers on back and breast give scaly appearance. The presence of white rump and red vent are distinctive feature. Dark tail tipped white. Sexes are alike.

**Resident status:** It is a resident species.

**Habitat:** It lives in pairs or in small loose flocks according to season usually keeping itself to middle level of trees and bushes. Light scrub, secondary growth, gardens and roadside avenues are the preferred sites.

**Breeding:** It breeds in the months of February-May and make nest in cup shape made up of rootlets, in a bush or tree, plastered outside with cobwebs. It lays 2-3 eggs of pinkish white, botched with purplish brown color. It has often been noted aggressively defending nests and nestlings from even large birds like Crows.

**Feeding habits:** Insects, fruits, grains of sorghum, pearl millet, flower nectar and kitchen wastes.

**Damaging status:** Solitary bird or pair has been noted to cause damage to ripening fruits especially in kitchen gardens. Damage level may be moderate to high on individual or solitary fruit plant.

**Indian Wildlife Protection Act Status: Schedule IV**

**Status in Punjab:** It has been commonly observed but in low abundance throughout the Punjab.

**Conservation of useful birds**

Predatory birds like owls, falcons, hawks, eagles, kites etc. eat large number of rats and mice. A single owl normally eats 4-5 rats a day. Insect eating birds like drongos, babblers, shrikes, lapwings, mynas and many other small birds eat away numerous insect pests. Even grainivorous birds like sparrows and weaver birds feed a large number of insects to their young ones. A single pair of house sparrow feed insects to their young about 250 times a day. Therefore, the useful birds should not be killed. Rather they can be attracted to crop fields in several different ways and efforts can be made for conservation of beneficial bird species. Artificial nests are being utilized as a common conservation tool to augment the population of cavity nesting birds that are beneficial to our ecosystem. To combat the decline of and to conserve the beneficial bird species, experiments on use of artificial (wooden and earthen) nests were done under the All India Network Project on Vertebrate Pest Management (Agricultural Ornithology). Artificial nests were installed at selected locations in different habitat types in the field areas, urban and rural areas of different districts of Punjab i. e. Jalandhar, Ropar, Ludhiana, Shaheed Bhagat Singh Nagar, Fatehgarh Sahib, Barnala and Gurdaspur. Breeding success of cavity nestsing birds have been encouraging at farmer fields in different villages. These artificial nests were observed to be occupied by six bird species i.e. Common Myna *Acridotheres tristis*, Spotted Owlet *Athene brama*, Collared Scops Owl *Otus bakkamoena*, Magpie Robin *Copsychus saularis*, House Sparrow *Passer domesticus* and Blue Jay *Coracias benghalensis*. The successful breeding of beneficial bird species in artificial nests has the potential to augment the relative abundance of these beneficial bird species and their reproductive success in agro ecosystem of Punjab.

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**Birds in agricultural habitats of Punjab.**

| *Sr. No* | *Common Name* | *Scientific Name* | *Status in Punjab* | *Residential Status* | *Food* | IUCN status | *Habitat* |
|---|---|---|---|---|---|---|---|
| Anseriformes | | | | | | | |
| Anatidae | | | | | | | |
| 1. | Northern Pintail | *Anas acuta* Linnaeus, 1758 | UC | M | P, SI | LC | C |
| 2. | Northern Shoveller | *Anas clypeata* Linnaeus , 1758 | LC | M | P, SI | LC | C |
| 3. | Common Teal | *Anas crecca* Linnaeus, 1758 | UC | M | P | LC | C |
| 4. | Eurasian Wigeon | *Anas penelope* Linnaeus, 1758 | UC | M | P | LC | C |
| 5. | Mallard | *Anas platyrhynchos* Linnaeus, 1758 | LC | RM | I, SI, P | LC | C |
| 6. | Spot Billed Duck | *Anas poecilorhyncha* Forster, 1781 | VC | RM | SV,P | LC | C |
| 7. | Garganey | *Anas querquedula* Linnaeus, 1758 | UC | M | P | LC | C |
| 8. | Gadwall | *Anas strepera* Linnaeus, 1758 | UC | M | P | LC | C |
| 9. | Bar Headed Goose | *Anser indicus* (Latham, 1790) | UC | RM | P | LC | C |
| 10. | Common Pochard | *Aythya ferina* (Linnaeus, 1758) | UC | M | P, SV | LC | C |
| 11. | Tufted Pochard | *Aythya fuligula* (Linnaeus,1758) | UC | M | SI, P | LC | C |
| 12. | Ferruginous Pochard | *Aythya nyroca* (Guldenstadt, 1770) | UC | RM | P, SI | NT | C |
| 13. | Lesser-whistling Duck | *Dendrocygna javanica* (Horsefield, 1821) | UC | R | SI, P | LC | C |
| 14. | Red-crested Pochard | *Rhodonessa rufina* (Pallas, 1773) | UC | M | P, SI | LC | C |
| 15. | Comb Duck | *Sarkidiornis melanotos* (Pennant, 1769) | UC | R | P, G | LC | C |
| 16. | Brahminy Shelduck | *Tadorna ferruginea* (Pallas, 1764) | C | RM | P, F | LC | C |
| 17. | Common Shelduck | *Tadorna tadorna* (Linnaeus, 1758) | C | M | G, SV, P | LC | C |
| Apodiformes | | | | | | | |
| Apodidae | | | | | | | |
| 18. | House Swift | *Apus affinis* (J.E.Gray,1830) | C | RM | I | LC | AB |
| Charadriiformes | | | | | | | |
| Scolopacidae | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 19. | Common Sandpiper | *Actitis hypoleucos* Linnaeus, 1758 | VC | RM | I, SI | LC | C |
| 20. | Dunlin | *Calidris alpine* (Linnaeus, 1758) | C | M | SI, I | LC | C |
| 21. | Little Stint | *Calidris minuta (Leisler, 1812)* | C | M | SI | LC | C |
| 22. | Broad-billed Sandpiper | *Limicola falcinellus (Pontoppidan, 1763)* | UC | M | SI | LC | C |
| 23. | Wood Sandpiper | *Tringa glareola* Linnaeus, 1758 | C | M | I, SI | LC | C |
| 24. | Common Green Shank | *Tringa nebularia* (Gunner, 1767) | C | M | I, SI | LC | C |
| 25. | Green Sandpiper | *Tringa ochropus* Linnaeus, 1758 | C | M | I, SI | LC | AC |
| 26. | Marsh Sandpiper | *Tringa stagnatilis* (Bechstein, 1803) | LC | M | I, SI | LC | C |
| 27. | Common Red Shank | *Tringa totanus* (Linnaeus, 1758) | LC | RM | SI | LC | C |
| Burhinidae | | | | | | | |
| 28. | Stone Curlew | *Burhinus oedicnemus* (Linnaeus, 1758) | C | R | I, SI | LC | A |
| 29. | Great Stone-plover | *Esacus recurvirostris* (Cuvier, 1829) | LC | R | I | LC | C |
| Charadriidae | | | | | | | |
| 30. | River Lapwing | *Vanellus duvaucelii* (Lesson,1826) | LC | R | I, SI | NT | C |
| 31. | Red-wattled Lapwing | *Vanellus indicus* (Boddaert,1783) | VC | R | I, SI | LC | AB |
| Jacanidae | | | | | | | |
| 32. | Pheasant Tailed Jacana | *Hydrophasianus chirurgus* (Scopoli, 1786) | LC | R | SI, I | LC | C |
| Laridae | | | | | | | |
| 33. | Gull-billed Tern | *Gelochelidon nilotica* (Gmelin, 1789) | LC | RM | SI, I | LC | C |
| 34. | Pallas's Gull | *Ichthyaetus ichthyaetus* Pallas, 1773 | LC | M | P, SI, SV | LC | C |
| 35. | Little Tern | *Sterna albifrons* Pallas, 1764 | LC | R | SI, I | LC | C |
| 36. | River Tern | *Sterna aurantia* J.E. Gray 1831 | LC | R | SI, I, SV | NT | C |
| Recurvirostridae | | | | | | | |
| 37. | Black-winged Stilt | *Himantopus himantopus* (Linnaeus, 1758) | VC | R | I | LC | AB |
| Ciconiiformes | | | | | | | |
| Ardeidae | | | | | | | |

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|---|---|---|---|---|---|---|---|
| 38. | Grey Heron | *Ardea cinerea* Linnaeus, 1758 | LC | RM | SI, SV | LC | C |
| 39. | Goliath Heron | *Ardea goliath* Cretzschmar, 1827 | LC | V | SV | LC | C |
| 40. | Purple Heron | *Ardea purpurea* Linnaeus, 1766 | LC | RM | SV | LC | C |
| 41. | Indian Pond Heron | *Ardeola grayii* (Skyes,1832) | VC | R | I,SI, SV | LC | AC |
| 42. | Black Crowned Night Heron | *Nycticorax nycticorax* (Linnaeus, 1758) | C | R | I,SI | LC | AC |
| 43. | Cattle Egret | *Bubulcus ibis* (Linnaeus,1758) | VC | RM | I, SI | LC | AC |
| 44. | Great Egret | *Ardea alba* Linnaeus, 1758 | LC | R | SI, SV | LC | C |
| 45. | Little Egret | *Egretta garzetta* (Linnaeus, 1766) | C | R | I, SI | LC | C |
| 46. | Median Egret | *Mesophoyx intermedia* (Wagler, 1827) | LC | RM | I, SI | LC | C |
| Threskiornithidae | | | | | | | |
| 47. | Glossy Ibis | *Plegadis falcinellus* Linnaeus, 1766 | LC | RM | I, SI | LC | AC |
| 48. | Oriental White Ibis | *Threskiornis melanocephalus* (Latham, 1790) | C | R | I, SI | NT | AC |
| 49. | Black Ibis | *Pseudibis papillosa* (Temminck,1824) | C | R | I, G | LC | AC |
| Ciconiidae | | | | | | | |
| 50. | Asian Open-bill Stork | *Anastomus oscitans* Boddaert 1783 | LC | R | SV, I | LC | C |
| 51. | European White Stork | *Ciconia ciconia* (Linnaeus, 1758) | LC | M | SV, I | LC | C |
| 52. | White-necked Stork | *Ciconia episcopus* (Boddaert, 1783) | LC | R | SV, SI | LC | C |
| 53. | Painted Stork | *Mycteria leucocephala* (Pennant, 1769) | LC | RM | SV, SI | NT | C |
| Columbiformes | | | | | | | |
| Columbidae | | | | | | | |
| 54. | Blue Rock Pigeon | *Columba livia* Gmelin,1789 | VC | R | G | LC | AB |
| 55. | Spotted Dove | *Streptopelia chinensis* (Scopoli,1786) | C | R | G | LC | AB |
| 56. | Eurasion Collared Dove | *Streptopelia decaocto* (Frivaldszky,1838) | VC | R | G | LC | AB |
| 57. | Oriental Turtle-Dove | *Streptopelia orientalis* (Latham, 1790) | C | RM | G | LC | AB |
| 58. | Little Brown Dove | *Streptopelia senegalensis* (Linnaeus,1766) | VC | R | G | LC | AB |
| 59. | Red-collared Dove | *Streptopelia tranquebarica* (Hermann, 1804) | C | R | G | LC | AB |

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|---|---|---|---|---|---|---|---|
| 60. | Yellow Legged Green Pigeon | *Treron phoenicoptera* (Latham, 1790) | LC | R | F | LC | A |
| Coraciiformes | | | | | | | |
| Alcedinidae | | | | | | | |
| 61. | Small Blue Kingfisher | *Alcedo atthius* (Linnaeus,1758) | LC | RM | I, SV | LC | C |
| 62. | Lesser Pied Kingfisher | *Ceryle rudis (*Linnaeus, 1758*)* | C | R | I, SV | LC | C |
| 63. | White-breasted Kingfisher | *Halcyon smyrnensis* (Linnaeus,1758) | VC | R | I, SV | LC | ABC |
| Bucerotidae | | | | | | | |
| 64. | Indian Grey Hornbill | *Ocyceros birostris (Scopoli, 1786)* | C | R | F,I | LC | AB |
| Coraciidae | | | | | | | |
| 65. | Indian Roller | *Coracias benghalensis* (Linnaeus,1758) | C | R | I | LC | A |
| 66. | European Roller | *Coracias garrulous* Linnaeus, 1758 | R | RM | I | NT | A |
| Meropidae | | | | | | | |
| 67. | Small Bee-Eater | *Merops orientalis* Latham,1801 | VC | R | I | LC | A |
| 68. | Blue-tailed Bee-Eater | *Merops philippinus* Linnaeus, 1766 | LC | RM | I | LC | A |
| Upupidae | | | | | | | |
| 69. | Common Hoopoe | *Upupa epops* (Linnaeus,1758) | C | RM | I | LC | AB |
| Cuculiformes | | | | | | | |
| Cuculidae | | | | | | | |
| 70. | Lesser Coucal | *Centropus bengalensis* (Gmelin, 1788) | LC | R | I,SI, SV | LC | A |
| 71. | Greater Coucal | *Centropus sinensis* (Stephens, 1815) | C | RM | I,SI, SV | LC | A |
| 72. | Pied Crested Cuckoo | *Clamator jacobinus* (Boddaert, 1783) | LC | RM | I | LC | AB |
| 73. | Asian Koel | *Eudynamys scolopacea* (Linnaeus,1758) | C | R | I,F | LC | AB |
| 74. | Brain Fever Bird | *Hierococcys varius* (Vahl,1797) | LC | R | I,F | LC | AB |
| Falconiformes | | | | | | | |
| Accipitridae | | | | | | | |
| 75. | Besra Sparrow Hawk | *Accipiter virgatus* (Temminck, 1822) | LC | R | SV, I | LC | D |

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|---|---|---|---|---|---|---|---|
| 76. | Shikra | *Accipiter badius* (Gmelin,1788) | C | R | I, SV | LC | AB |
| 77. | Eastern Imperial Eagle | *Aquila heliacal* Savigny, 1809 | LC | RM | SV | VU | AD |
| 78. | Tawny Eagle | *Aquila rapax* (Temminck, 1828) | LC | R | SV | LC | ABD |
| 79. | White-eyed Buzzard | *Butastur teesa* (Franklin, 1832) | LC | R | SV, I | LC | AD |
| 80. | Pallied Harrier | *Circus macrourus* Gmelin, 1770 | LC | M | SV | NT | ABD |
| 81. | Black-shouldered Kite | *Elanus caeruleus* (Desfontaines,1789) | C | R | I,R | LC | AB |
| 82. | Black Kite | *Milvus migrans* (Boddaert,1783) | VC | R | I,R | LC | AB |
| 83. | Egyptian Vulture | *Neophron percnopterus* (Linnaeus,1758) | LC | RM | Carrion | EN | D |
| 84. | Oriental-Honey-Buzzard | *Pernis ptilorhyncus* Temminck, 1821 | LC | RM | I, SV | LC | AD |
| 85. | Crested Serpent-Eagle | *Spilornis cheela* (Latham, 1790) | LC | R | SV | LC | AD |
| 86. | Changeable Hawk Eagle | *Spizaetus cirrhatus* (Gmelin, 1788) | LC | R | SV | LC | AD |
| Falconidae | | | | | | | |
| 87. | Common Kestrel | *Falco tinnunculus* Linnaeus,1758 | LC | RM | I, SV | LC | AD |
| Pandionidae | | | | | | | |
| 88. | Osprey | *Pandion haliaetus* Linnaeus,1758 | LC | RM | SV | LC | AC |
| Galliformes | | | | | | | |
| Phasianidae | | | | | | | |
| 89. | Black Francolin | *Francolinus francolinus* (Linnaeus,1766) | LC | R | G,I | LC | AB |
| 90. | Grey Francolin | *Francolinus pondicerianus (Gmelin,1789)* | C | R | G,I | LC | AB |
| 91. | Red Junglefowl | *Gallus gallus* (Linnaeus, 1758) | LC | R | G, I, P | LC | AD |
| 92. | Indian Pea Fowl | *Pavo cristatus* Linnaeus,1758 | C | R | G,P,I, SV | LC | AB |
| Gruiformes | | | | | | | |
| Rallidae | | | | | | | |
| 93. | White-breasted Waterhen | *Amaurornis phoenicurus* (Pennant,1769) | VC | R | I,SI,G,P | LC | ABC |

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|---|---|---|---|---|---|---|---|
| 94. | Common Coot | *Fulica atra* Linnaeus 1758 | LC | RM | P, I, SI | LC | C |
| 95. | Water-cock | *Gallicrex cinerea* (Gmelin, 1789) | LC | R | SI, I, P,G | LC | C |
| 96. | Common Moorhen | *Gallinula chloropus* (Linnaeus,1758) | VC | RM | I,SI,G,P | LC | C |
| 97. | Purple Moorhen | *Porphyrio porphyrio* (Linnaeus, 1758) | C | R | SI, P, I | LC | C |
| Passeriformes | | | | | | | |
| Acrocephalidae | | | | | | | |
| 98. | Paddy Field Warbler | *Acrocephalus agricola (Jerdon, 1845)* | VC | RM | I | LC | A |
| Alaudidae | | | | | | | |
| 99. | Eastern Sky lark | *Alauda gulgula Franklin, 1831* | C | R | I, G | LC | A |
| 100. | Common Crested Lark | *Galerida cristata* (Linnaeus, 1758) | C | R | I,F | LC | A |
| Campephagidae | | | | | | | |
| 101. | Scarlet Minivet | *Pericrocotus flammeus* (Forster, 1781) | LC | R | I | LC | AB |
| 102. | Common Wood Shrike | *Tephrodornis pondicerianus* (Gmelin, 1789) | LC | R | I, SV | LC | A |
| Corvidae | | | | | | | |
| 103. | Common Raven | *Corvus corax* Linnaeus 1758 | *LC* | *R* | *O* | *LC* | ABD |
| 104. | Jungle Crow | *Corvus macrorhynchos* Wagler,1827 | LC | R | O | LC | AD |
| 105. | House Crow | *Corvus splendens* Vieillot,1817 | VC | R | O | LC | AB |
| 106. | Indian Treepie | *Dendrocitta vagabunda* (Latham,1790) | VC | R | I,SV | LC | AB |
| 107. | Yellow-bellied Blue Magpie | *Urocissa flavirostris* (Blyth, 1846) | LC | R | P, SV, F | LC | AB |
| Dannidae | | | | | | | |
| 108. | Great Grey Shrike | *Lanius excubitor* (Linnaeus,1758) | C | RM | I, SV | LC | A |
| Dicruridae | | | | | | | |
| 109. | Black Drongo | *Dicrurus macrocercus* Viellot,1817 | VC | R | I | LC | AB |
| Emberizidae | | | | | | | |
| 110. | Red-headed Bunting | *Emberiza bruniceps* Brandt, 1841 | LC | M | G | LC | A |
| Estrildidae | | | | | | | |

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|---|---|---|---|---|---|---|---|
| 111. | Red Munia | *Amandava amandava* (Linnaeus, 1758) | LC | R | G, F | LC | A |
| 112. | White-throated Munia | *Lonchura malabarica* (Linnaeus,1758) | C | R | G, P | LC | AB |
| 113. | Black-headed Munia | *Lonchura malacca* (Linnaeus, 1766) | C | R | I,G | LC | A |
| 114. | Spotted Munia | *Lonchura punctulata* (Linnaeus,1758) | C | R | I,G | LC | AB |
| Fringillidae | | | | | | | |
| 115. | Common Rose-finch | *Carpodacus erythrinus* (Pallas,1770) | LC | RM | F, P | LC | AB |
| Hirundinidae | | | | | | | |
| 116. | Red-rumped Swallow | *Hirundo daurica* Linnaeus,1771 | C | RM | I | LC | A |
| 117. | Common Swallow | *Hirundo rustica* (Linnaeus,1758) | VC | R | I | LC | A |
| 118. | Wire-tailed Swallow | *Hirundo smithii* Leach, 1818 | VC | R | I | LC | A |
| Laniidae | | | | | | | |
| 119. | Rufous-backed Shrike | *Lanius schach* Linnaeus,1758 | C | R | I | LC | A |
| 120. | Baybacked Shrike | *Lanius vittatus* Valenciennes,1826 | C | R | I, SV | LC | A |
| Monarchidae | | | | | | | |
| 121. | Asian Paradise Flycatcher | *Terpsiphone paradisi* (Linnaeus, 1758) | LC | M | I | LC | AD |
| Motacillidae | | | | | | | |
| 122. | Oriental Tree Pipit | *Anthus hodgsoni* Richmond, 1907 | C | RM | I,P | LC | A |
| 123. | Paddy Field Pipit | *Anthus rufulus* Vieillot, 1818 | VC | R | I,P | LC | A |
| 124. | Brown Rock Pipit | *Anthus similis* Jerdon, 1840 | C | RM | I,F | LC | A |
| 125. | White Wagtail | *Motacilla alba* Linnaeus,1758 | C | RM | I,SI | LC | AB |
| 126. | Grey Wagtail | *Motacilla cinerea* Tunstall,1771 | C | M | I,F | LC | AB |
| 127. | Citrine Wagtail | *Motacilla citreola* Pallas, 1776 | C | RM | I, SI | LC | A |
| 128. | Yellow Wagtail | *Motacilla flava* Linnaeus, 1758 | C | RM | I,SI | LC | AB |
| 129. | Large Pied Wagtail | *Motacilla maderaspatensis* Gmelin,1789 | C | R | I,SI | LC | AB |
| Muscicapidae | | | | | | | |
| 130. | Oriental Magpie Robin | *Copsychus saularis* (Linnaeus,1758) | VC | R | I | LC | AB |

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|---|---|---|---|---|---|---|---|
| 131. | Verditer Flycatcher | *Eumyias thalassina* (Swainson,1838) | LC | R | I,F | LC | AD |
| 132. | Indian Blue Robin | *Luscinia brunnea* (Hodgson, 1837) | LC | RM | I | LC | A |
| 133. | Blue Throat | *Luscinia svecica* (Linnaeus, 1758) | LC | RM | I | LC | A |
| 134. | Common Tailor Bird | *Orthotomus sutorius* (Pennant,1769) | VC | R | I,P | LC | AB |
| 135. | Black Redstart | *Phoenicurus ochruros* (Gmelin, 1774) | C | RM | I | LC | A |
| 136. | Pied Bush Chat | *Saxicola caprata* (Linnaeus,1766) | C | R | I | LC | AB |
| 137. | White Tailed Stonchat | *Saxicola leucura* (Blyth, 1847) | LC | R | I | LC | AB |
| 138. | Common Stone Chat | *Saxicola torquata* (Linnaeus,1766) | C | RM | I | LC | A |
| 139. | Indian Robin | *Saxicoloides fulicata* (Linnaeus,1758) | VC | R | I | LC | A |
| 140. | Jungle Babbler | *Turdoides striatus* (Dumont,1823) | VC | R | I,F | LC | AB |
| Nectariniidae | | | | | | | |
| 141. | Purple Sunbird | *Nectarinia asiatica* (Latham,1790) | VC | R | P | LC | AB |
| Oriolidae | | | | | | | |
| 142. | Eurasian Golden Oriole | *Oriolus oriolus* (Linnaeus, 1758) | LC | RM | I,F | LC | AB |
| Passeridae | | | | | | | |
| 143. | House Sparrow | *Passer domesticus* (Linnaeus,1758) | *C* | *R* | G,I | LC | AB |
| 144. | Yellow-throated Sparrow | *Petronia xanthocollis* (Burton,1838) | LC | R | G, P, F, I | LC | AB |
| Sylviinae | | | | | | | |
| 145. | Large-billed Leaf Warbler | *Phylloscopus magnirostris* Blyth, 1843 | C | M | I | LC | AB |
| 146. | Greenish Leaf Warbler | *Phylloscopus trochiloides* (Sundevall, 1837) | C | M | I | LC | AB |
| 147. | Common Chiffchaff | *Phylloscopus collybita* (Vieillot, 1817) | C | M | I | LC | A |
| 148. | Ashy Prinia | *Prinia socialis* (Sykes, 1832) | VC | R | I | LC | A |
| 149. | Jungle Prinia | *Prinia sylvatica* Jerdon, 1840 | VC | R | I | LC | A |
| Ploceinae | | | | | | | |
| 150. | Streaked Weaver Bird | *Ploceus manyar* (Horsfield, 1821) | C | R | I,G | LC | AB |

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|---|---|---|---|---|---|---|---|
| 151. | Baya Weaver Bird | *Ploceus philippinus* (Linnaeus,1766) | C | R | I,G | LC | A |
| Pycnonotidae | | | | | | | |
| 152. | Himalyan Bulbul | *Pycnonotus leucogenys* (Gray, 1835) | LC | R | I, F | LC | D |
| 153. | Red-vented Bulbul | *Pycnonotus cafer* (Linnaeus,1766) | VC | R | I,P,F | LC | AB |
| 154. | White-eared Bulbul | *Pycnonotus leucotis* (Gould, 1836) | LC | R | F, G, I | LC | AB |
| Sturnidae | | | | | | | |
| 155. | Rosy Sterling | *Sturnus roseus* (Linnaeus, 1758) | LC | M | I,F | LC | A |
| 156. | Jungle Myna | *Acridotheres fuscus* (Wagler, 1827) | C | R | O | LC | A |
| 157. | Brahminy Starling | *Sturnus pagodarum* (Gmelin,1789) | *C* | *R* | I,F | LC | AB |
| 158. | Bank Myna | *Acridotheres ginginianus* (Latham,1790) | VC | R | I,F | LC | AB |
| 159. | Common Myna | *Acridotheres tristis* (Linnaeus,1766) | VC | R | I,F | LC | AB |
| 160. | Asian Pied Starling | *Sturnus contra* Linnaeus, 1758 | VC | R | I,F | LC | AB |
| 161. | Common Starling | *Sturnus vulgaris* Linnaeus, 1758 | LC | M | I,F | LC | A |
| Timaliidae | | | | | | | |
| 162. | Rufous Bellied Babbler | *Dumetia hyperythra* (Franklin, 1831) | C | R | I, F | LC | A |
| 163. | White-headed Babbler | *Turdoides affinis* (Jerdon, 1845) | C | R | I,F | LC | AB |
| 164. | Common Babbler | *Turdoides caudata* (Dumont, 1823) | VC | R | I,F | LC | A |
| 165. | Striated Babbler | *Turdoides earlei* (Blyth, 1844) | C | R | I,F | LC | AB |
| 166. | Large Grey Babbler | *Turdoides malcolmi* (Sykes, 1832) | C | R | I,F | LC | A |
| Turdidae | | | | | | | |
| 167. | Dark-throated Thrush | *Turdus ruficollis* Pallas, 1776 | LC | M | I, G | LC | A |
| Turdinae | | | | | | | |
| 168. | Indian Chat | *Cercomela fusca* (Blyth, 1851) | C | R | I | LC | AB |
| 169. | Blue Whistling Thrush | *Myiophonus caeruleus* (Scopoli, 1786) | LC | R | I, SV, SI | LC | D |
| Zosteropidae | | | | | | | |
| 170. | Oriental White Eye | *Zosterops palpebrosus* (Temminck,1824) | C | R | F,P | LC | AB |
| Pelecaniformes | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Anhingdae | | | | | | | |
| 171. | Snake Bird | *Anhinga melanogaster* Pennant, 1769 | C | RM | SI, SV | NT | C |
| Phalacrocoracidae | | | | | | | |
| 172. | Great Cormorant | *Phalacrocorax carbo* Linnaeus, 1758 | VC | RM | SI | LC | C |
| 173. | Little Cormorant | *Phalacrocorax niger* Vieillot,1817 | VC | RM | SI, SV | LC | C |
| Piciformes | | | | | | | |
| Picidae | | | | | | | |
| 174. | Lesser Golden-backed Woodpecker | *Dinopium bengelensis* (Linnaeus,1758) | C | R | I | LC | AB |
| 175. | Common Golden-backed Woodpecker | *Dinopium javanense* (Ljungh,1797) | C | R | I | LC | AB |
| Capitonidae | | | | | | | |
| 176. | Great Barbet | *Megalaima virens* (Boddaert,1783) | LC | R | F, I | LC | AD |
| 177. | Coppersmith Barbet | *Megalaima haemacephala* (Statius Muller,1776) | C | R | F, I | LC | AB |
| 178. | Brown-headed Barbet | *Megalaima zeylanica* (Gmelin, 1788) | C | R | I,F | LC | AB |
| Podicipediformes | | | | | | | |
| Podicipitidae | | | | | | | |
| 179. | Great Creasted Grebe | *Podiceps cristatus* (Linnaeus, 1758) | LC | M | I, SI | LC | C |
| 180. | Little Grebe | *Tachybaptus ruficollis* (Pallas, 1764) | C | R | I, SI, SV | LC | C |
| Psittaciformes | | | | | | | |
| Psittacidae | | | | | | | |
| 181. | Alexandrine Parakeet | *Psittacula eupatria* (Linnaeus,1766) | C | R | F,P,G | LC | AB |
| 182. | Plum-headed Parakeet | *Psittacula cyanocephala* (Linnaeus, 1766) | LC | R | F,P,G | LC | AB |
| 183. | Slaty-headed Parakeet | *Psittacula himalayana* (Lesson,1832) | LC | R | G, F | LC | AB |
| 184. | Rose-ringed Parakeet | *Psittacula krameri* (Scopoli,1769) | VC | R | F,P,G | LC | AB |
| Strigiformes | | | | | | | |
| Strigidae | | | | | | | |
| 185. | Barn Owl | *Tyto alba* (Scopoli, 1769) | C | R | SV | LC | AD |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 186. | Spotted Owlet | *Athene brama* (Temminck,1821) | VC | R | I, SV | LC | AB |
| 187. | Eurasian Eagle-Owl | *Bubo bubo* (Linnaeus, 1758) | LC | R | I, SV | LC | AB |
| 188. | Collared Scops-Owl | *Otus bakkamoena* Pennant,1769 | LC | R | I, SV | LC | AD |
| Suliformes | | | | | | | |
| Phalacrocoracidae | | | | | | | |
| 189. | Indian Shag | *Phalacrocorax fuscicollis* Stephens, 1826 | C | RM | SV | LC | C |

**Status:** VC- Very common; C – common; LC- Less Common; UC-Un-common; R- Rare; VR- Very rare; V- Vagrant;
**Habitat** : Type A - Agricultural Habitat; Type B -Residential area: Urban/Rural; Type C - Aquatic Habitat/ponds/canal/river/wetland; Type D-Uncultivated area/forest/barren land.
**Residential Status**: R -Resident, RM - Resident migrant; M- Migrant.
**Food Habit**: I - Insectivorous; G – Granivorous; F - Fruits/berries; P - Plants/aquatic vegetation/nectar; SI - Small invertebrates; SV – Small vertebrates/fishes/mice/rat/small birds/eggs/reptiles); O - Omnivorous.
**IUCN Status**: EN – Endangered; VU – Vulnerable; NT - Near Threatened; LC - Least Concern.

# Depredatory birds and their damage in agricultural crops of Punjab

## Pictorial presentation of depredatory birds in agro-ecosystem

**Rock Pigeon in post harvested wheat crop field**

**Bird species in post harvested agricultural field**

**House crow and Rock Pigeon damaging germinating maize crop**

**Rose Ringed Parakeet damaging pearl millet crop.**

**Group of Indian Peafowl in germinating wheat crop field**

**Bird damage in tomato field.**

**Use of reflected ribbon for management of bird pests in maize crop**

**Use of reflected ribbon for management of bird pests in mustard crop**

**Reflected ribbon in germination maize crop fields**

**Use of Jute rope in for management of pest birds in germinating mustard crop**

**Use of black polybags for management of bird pests in germinating maize crop**

**Wrapping method for protection of maize cobs from bird damage**

**Screen crop method for protection of maize cobs from bird damage**

**Use of polynet for protection from pest birds in fish pond**

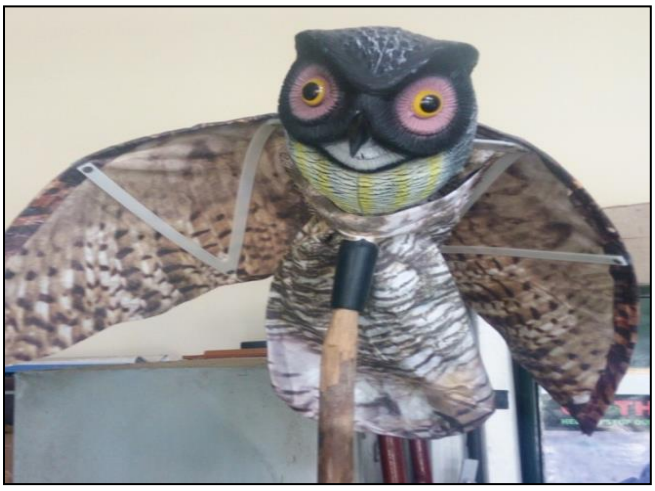
***Machan* used for scaring birds from field**

**Scare crow and netting in germinating maize field.**

**Scare crow, reflective ribbon and netting in germinating maize field.**

**Bio-acoustic device *Kheti Rakshak* in maize crop field**

**Predator eye Balloon in Guava plantation**



**Dummy Owl (Plastic model)for scaring pest birds**

**Rotating head Dummy Owl for scaring pest birds**

## Conservation of beneficial birds

**Different types of artificial nests for birds**

**Nest of House Sparrow in earthen artificial nest**

**Eggs of Common Myna in earthen artificial nest**

**Young ones of Common Myna in earthen artificial nest**


**Large sized artificial nest occupied by Common Myna**

**Medium sized artificial nest occupied by Common Myna**

**Eggs of Common Myna in artificial nest**

**Artificial nest box occupied by Spotted Owlet**


**Large sized artificial nest occupied by Spotted owlet**