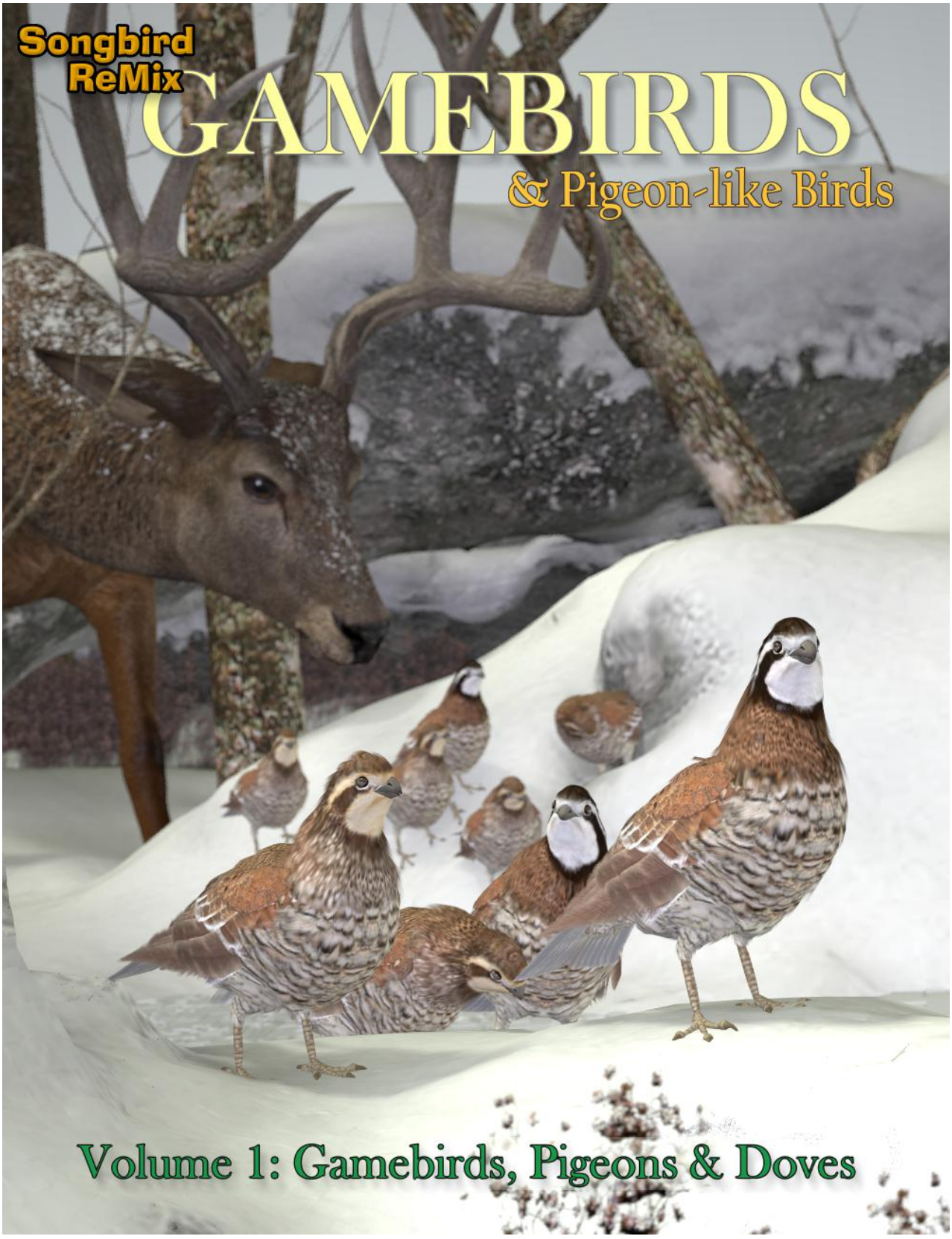


Avian Models for 3D Applications

Characters and Texture Mapping by Ken Gilliland

Songbird ReMix Gamebirds

Volume 1: Gamebirds, Pigeons & Doves

Contents

Songbird ReMix Gamebirds

Volume 1: Gamebirds, Pigeons & Doves

Introduction

Songbird ReMix Gamebirds adds Doves, Pigeons, Quail, Grouse and many other Upland Game birds to the Songbird ReMix library. Using the powerful morphs from the Songbird ReMix Gamebird model, the represented birds are portrayed more accurately and with stronger degree of realism. Included are 11 species of birds, some with male and female markings for use in DAZ Studio and Poser and supports Iray, Superfly, 3Delight and Firefly renderers.

Birds range from the elusive Spruce Grouse to the magnificent Ring-necked Pheasant and travel the globe from the Americas to China and Australia. The most common bird in North America, the mourning dove, is in this set as well as its Australian cousin, the crested dove. Whether you're a bird lover, a game hunter or a landscape artist, this is the package for you!

Overview and Use

The set is located within the **Animals : Songbird ReMix** folder. Here is where you will find a number of folders, such as **Bird Library**, **Manuals** and **Resources** . Let's look at what is contained in these folders:

- **Bird Library:** This folder holds the actual species and poses for the "premade" birds. Birds are placed into a "type" folder (such as "Birds of Prey (Order Falconiformes)" which for example would hold falcons, hawks and eagles). The birds for this set can be found in the following folder(s):
  - **Gamebirds (Order Galliformes)**
  - **Pigeons and Doves (Order Columbiformes)**
- **Manuals:** Contains a link to the online manual for the set.
- **Props:** Contains any props that might be included in the set
- **Resources:** Items in this folder are for creating and customizing your birds
  - **Bird Base Models:** This folder has the blank, untextured model(s) used in this set. These models are primarily for users who wish to experiment with poses or customize their own species of bird. When using physical renderers such as Iray and Superfly, SubD should be turned to at least "3". For DAZ Studios 3Delight renders, the SubD must be turned from the "High Resolution" setting to the "Base" setting (otherwise some areas will render incorrectly transparent).

Poser Use

Select **Figures** in the **Runtime** Folder and go to the **Animals : Songbird ReMix** folder. Select the bird from the renderer *Firefly or Superfly*) folder you want and simply click it to

load. Some birds in the Songbird ReMix series may load with attached parts (*Conformers*) such as tail or crest extensions. Some of these parts have specific morphs. You will need to click on the attached part to access those controls. Associated poses can be found in the same folder- **Bird Library : (Type) : Poses**.

DAZ Studio Use

Go to the **Animals : Songbird ReMix** folder. Select the bird from the renderer (*3Delight or Iray*) folder you want and simply click it to load. Some birds in the Songbird ReMix series may load with attached parts (*Conformers*) such as tail or crest extensions. Some of these parts have specific morphs. You will need to click on the attached part to access those controls. Associated poses can be found in the same folder- **Bird Library : (Type) : Poses**. **Note:** Using the "Apply this Character to the currently selected Figure(s)" option **will not** properly apply the correct scaling to the bird selected. It is better to delete the existing character first and load the one you want to use.

Physical-based Rendering

Iray and **Superfly** requires more CPU and memory horsepower than the legacy renderers because of ray-trace bounces and higher resolution meshes needed for displacement. Poser's **Superfly** renderer will require that the "Min Transparent Bounces" be set to **at least 16** and that the "Max Transparent Bounces" be set to **at least 32** in render settings. Superfly renders may show artifacts in the head area. This is a known Poser issue and may be addressed in the future. Increasing the SubD may minimize this issue.

Where to find your birds

Type Folder	Bird Species
Gamebirds (Order Galliformes)	All Gamebirds
Pigeons and Doves (Order Columbiformes)	All Pigeons and Doves

Where to find your poses

Type Folder	For what species?
Gamebirds (Order Galliformes)	All Gamebirds
Pigeons and Doves (Order Columbiformes)	All Pigeons and Dove

Posing Considerations

This volume has various species, with both male and female versions, so when using generic poses not every pose will work perfectly with every bird. You may find that some minor alteration on the stock poses may be warranted. All poses specific to this set will be labeled either “Gamebird …” or “Pigeon …”

Here are some of the most common alterations you may need to make:

- Birds will not be flat on the zero plane for those who use the "Shin Size" control.
- The Beak Open/Close control is highly variable depending on the other shaping morphs used on the beak. Turning this control to a full “1” to close will usually be too much; “0.8” is almost always a better setting.

Specific Poses

There are a few poses that are very specific to certain types of birds. For instance, with the “Gamebird Display” pose, a male Spruce Grouse would definitely do this pose but a Quail or Pheasant wouldn’t.

- “Gamebird Display” pose- used for the males in the Grouse family
- “Gamebird Scratch” pose- a very common behavior in the Quail family

Specific Bird Controls

There are several controls with the ***Action Controls*** section of the model that are specific to certain species of bird.

- Under ***Specific Species Controls:***
  - Dove Call. As you would expect this control should only be used with Doves and some Pigeons.
- Under ***Fluff Controls-->Head-->Quail Crest Controls:***
  - Jiggle-QuailCrest. These controls jiggle the Quail Crest.
- Under ***Fluff Controls-->Head-->Beak Fluff:***
  - The Beak Fluff controls are not used in this set but may be used in future ones. Beak Fluff controls will not work unless it is turned on (unhidden) first.

More Crest Controls can be found by accessing ***Creation Controls-->Crest Shapes.*** Many Crest Controls will not work unless their Crest is turned on (unhidden) first.

Songbird ReMix Gamebirds v1

Field Guide

Upland Game Birds

Gambel's Quail
Mountain Quail
Northern Bobwhite
Spruce Grouse
Rock Ptarmigan
GreyPartridge
Ring-necked Pheasant

Pigeon-like Birds

Band-tailed Pigeon
Mourning Dove
Crested Dove
Wompoo Fruit Dove

Common Name: Gambel's Quail
Scientific Name: *Callipepla gambelii*

Size: 9.5-11 inches (24–28 cm)

Habitat: North America; throughout the Sonoran Desert.

It occurs in three types of desert: low warm desert valleys dominated by mesquite, upland warm deserts dominated by cat's claw, yucca and prickly pear cactus and cool desert dominated by sagebrush or alkaline-adapted scrub.

Status: Least Concern. **Global Population:** 1,340,000 mature individuals with a slightly declining population. Widespread and common. The population has declined by 500,000 in the last ten years. Populations in the United states have been relatively stable since 1960s, although there is some circumstantial evidence of a decline in Arizona. It is an important gamebird in Southwestern United States, thus populations and habitats are to some extent managed on behalf of the species. Tolerant of conversion of desert to cropland, although

heavy grazing can reduce populations. Populations in Mexico are poorly known.

Diet: Mainly flowers and seeds, especially of legumes; generally few insects, although more eaten by chicks. Unusual items include snails, insect eggs, bone fragments and rodent droppings.

Breeding: The male is boldly patterned with black face and throat with a black belly patch. The overall coloration is blue-gray with crown reddish brown. There is brown and white streaking on flanks. The male has a long black teardrop-shaped crest. The female lacks all the head and throat markings the male has, as well as the black patch on the belly. The female has a stubby crest.

When adults pair up and become a mated pair, it is not just for a single breeding season – these birds mate for life. They remain monogamous till death do them part. Both adults perform all parenting duties equally. Both select nesting sites, incubate eggs and, together, teach their young how to be quail.

The female lays 10-15 white eggs with brown splotches in dense brush, often by the base of a tree or large rock. The young quickly learn to follow their mother to food and water sources within hours after hatching.

Cool Facts: The Gambel's Quail does look similar to the California quail but lacks chestnut coloring on it's flanks, the color is much darker brown. The Male crest is lighter than that of the California Quail. Their calls is also very different, while the California Quail makes the very recognizable *"cu-Ca-cow"* the Gambel's Quail lets out a *"Ka-KAHHHH"*

The Gambel's Quail is adapted to living in a dry, desert environment; however it reproduces best in years with adequate water.

Adults and immature young congregate into coveys of many birds in mid-summer through the winter. In the springtime, Gambel's quail pair off for mating and become very aggressive toward others. Gambel's quail are monogamous, and rarely breed in colonies.The young chicks diet is mostly insect, gradually consuming more plant matter as they mature.

Subspecies and Distribution:

- *C. g. gambelii.* Discovered by Gambel in 1843. The nominate race is found in the western United states (from south Nevada, south Utah and west Colorado) south to northwestern Mexico (northeast Baja California and north Sonora). The nominate race has upper back of the male washed olive, flanks between chestnut and bay, and larger than other races.
- *C. g. ignoscens.* Discovered by Friedmann in 1943. It is found in south New Mexico and extreme western Texas, in the south-central United States. Race *ignoscens* similar to *gambelii*, but the flanks of male are paler and browner, and crown and upperparts are generally paler.
- *C. g. pembertoni.* Discovered by van Rossem in 1932. It is found on Tiburon Island in Gulf of California and northwest Mexico. Race *pembertoni* is characterized by its pallid, ash-gray coloration.
- *C. g. fulvipectus*. Discovered by Nelson in 1899. It is found in northern central Sonora south to northwestern Sinaloa, in northwest Mexico; possibly also southeast Arizona and southwest New Mexico, in southwestern United States. Race *fulvipectus* is also similar to *gambelii* but darker overall with the

upper back washed olive, and the abdomen deep, rich buff. The wing span averages shorter, whereas bill averages longer.

- *C. g. stephensi.* Discovered by A. R. Phillips in 1959. It is found in southern Sonora and northwest Mexico. Race *stephensi* is like *fulvipectus*, but smaller and at least half of females are male-like in having cap rusty, supercilium and rear edge of throat white, and having strong facial lines (though females in other populations may also, very rarely, develop male-like plumage).

Quail is a collective name for several genera of mid-sized birds generally placed in the order *Galliformes*. The collective noun for a group of quail is a flock, covey, or bevy.

Quail are infrequent fliers and prefer to stay on the ground. Average life expectancy for a wild quail is 1.5 years although on occasion they may live for up to four years.

Common Name: Mountain Quail
Scientific Name: *Oreortyx pictus*

Size: 10 to 11.5 inches (26-28 cm)

Habitat: North America; the western United States from the Canadian border southward into Baja California.

There preferred habitat is variable, depending on population and race. They are found in mixed evergreen forest and chaparra, brushy oak and manzanita, forest edges, brushy thickets and farms. During the summer, they occur at 500–3000 m, but generally lower during winter months. It is found at higher altitudes and on steeper slopes with more extensive and taller ground cover than sympatric populations of the California Quail (*Callipepla californica*).

Status: Least Concern. **Global Population:** 1,130,000 mature individuals. Common and widespread. It is not considered threatened by the IUCN, being plentiful across a wide range. However, its success is tied to sufficient habitat, which expands in cooler and more arid climate.

Diet: Its diet consists primarily of plant matter and seeds. The chicks are decidedly more insectivorous than adults, gradually consuming more plant matter as they mature.

Quail are infrequent fliers and prefers to stay on the ground. Any flight is usually short and explosive, with many rapid wing beats followed by a slow glide to the ground.

Breeding: This quail is unmistakable with its long black sword-shaped crest. It has a white eyeline continuing onto throat. The chin and throat are cinnamon. The overall coloration is gray and the belly is chestnut with white streaks on flanks. The flight feathers have white margins. The bill is black and the legs are brown. Females are similar, with smaller crest, curving backward. Immatures has buff-tipped greater primary-coverts but lack the boldly patterned flanks, rich face and throat markings. It has grey-brown and buff upper parts.

The female lays 8-10 white eggs with brown splotches in dense brush, often by the base of a tree or large rock. The young quickly learn to follow their mother to food and water sources within hours after hatching.

Cool Facts: The Mountain Quail is the largest quail in the United States.

Adults and immature young congregate into coveys of up to 20 birds in mid-summer through the winter. In the springtime, quail pair off for mating and become very aggressive toward others. Quail are monogamous, and rarely breed in colonies.The young chicks diet is mostly insect, gradually consuming more plant matter as they mature.

Subfossil remains have been found, for example at Rocky Arroyo in the Guadalupe Mountains and Shelter Cave, New Mexico, where sufficient habitat no longer exists. The bones date found from the end of the last ice age to not much more than 8000 BC.

Subspecies and Distribution:

- *O. p. pictus.* Discovered by Douglas in 1829. The nominate race is found in the western United States coastal mountains from southwestern Washington south to central California; also (probably introduced) to Vancouver Island (southwest Canada) and western Washington (northwestern United States). The races separated on coloration, mainly of back and breast: the nominate has brown of back (seldom darker than dark buffy brown), sometimes extending forward as buff tint to grey of upper back and nape, forehead medium and belly pale.
- *O. p. plumifer.* Discovered by Gould in 1837. It is found in the interior ranges of western United States from southern Washington south to western Nevada and southern California, and extreme northwest Mexico (extreme northern Baja California). Race *plumifer* has brown of back; dark (olive-brown to sepia), often extending forward to obscure grey of upper back and nape, forehead dark and belly pale.
- *O. p. russelli.* Discovered by A. H. Miller in 1946. It is found in the Little San Bernardino Mountains, in southern California. Race *russelli* has brown of upper parts; often greyish olive, forehead pale and belly dark.
- *O. p. confinis.* Discovered by Anthony in 1889. It is found in north Baja California, in northwestern Mexico. Introduced locally in western Idaho (northwest United States), where may be native, too. Race *confinis* has brown of back (more greyish than Northern populations) and breast darker grey than nominate *pictus*.

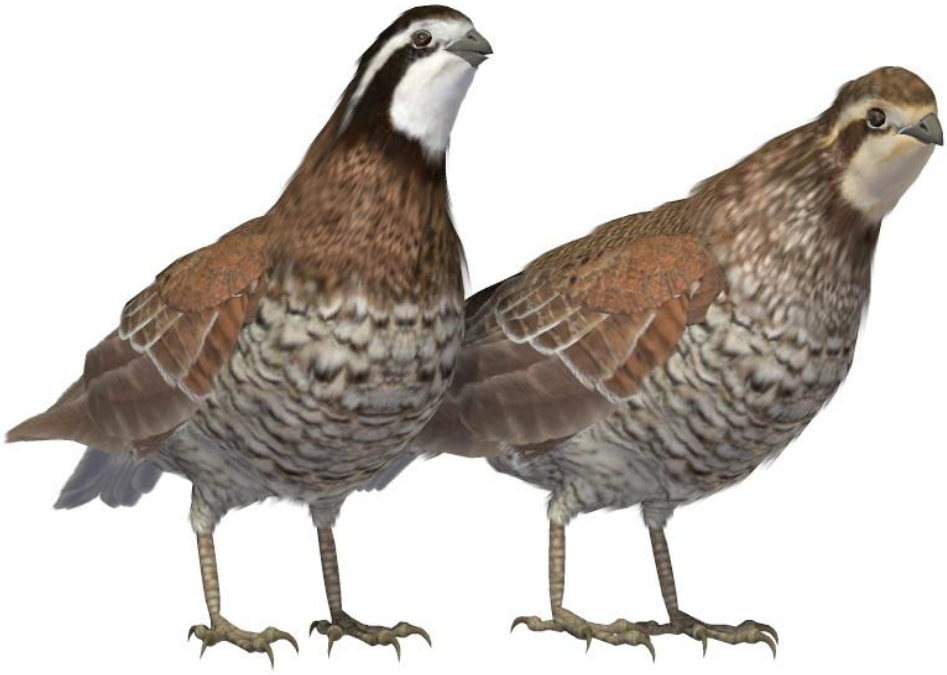
Common Name: Northern Bobwhite
Scientific Name: *Colinus virginianus*

Size: 7.9-11 inches (20-28 cm)

Habitat: North America; United States and Mexico (east of the Rockies). Also introduced in Pacific Northwest, Caribbean (possibly native to Cuba), Hawaii, New Zealand, Europe, and China.

Preferred habitat varies with population and species but includes pine woodlands, woodland edge, shrubs, agricultural fields, pastures, range-land and fallow fields.

Status: Near Threatened. **Global Population:** 10,100,000 mature individuals with a declining population tread. Changes in agricultural land use (weed removal and herbicide use), forestry (high-density pine plantations), and lack of use of prescribed fire have resulted in widespread habitat fragmentation. There was a 5.4% decline per year in population from 1980-2003 due to hunting and land use issues. Almost 73,000 bobwhites were hunted in South Texas alone across nine seasons.



Diet: Seeds, fruits, flowers, and a few insects.

Breeding: Both the male and females lack prominent crests. This species is extremely variable, both within and among races, with greatest variation on head and underparts. The overall coloration involves combinations of gray, brown and white. Several races have white supercilium and black or brown eyeline, combined with white moustachial streak or all-white throat while others have blackish chin and throats, with their breasts often blackish or brownish. Their bills are blackish and their legs are pale brown to pale yellow in color. Females lack the striking black-and-white facial patterns with their heads and throats being mostly buff. Immatures have greater primary-coverts that are tipped buff. The races (subspecies) are separated mainly on plumage,which include the pattern of the white eye stripe bordered by black-and-white throat which are found in those from the United States and some

of Mexico, but also on size with races sometimes divided into four or more groups (one in North and three in South). Northern races comprise seven very similar races distributed across Canada, the United States, Northern Mexico and Cuba, namely the nominate, *marilandicus, floridanus, mexicanus, taylori, texanus* and *cubanensis*. Southern races can be subdivided into at least three groups: *ridgwayi*, which has forehead, throat and face blackish, with diffuse post-ocular supercilium; the *pectoralis* group, which is generally characterized by white supercilium and throat, and black mask and breast (which is most extensive in southernmost taxa); and the *atriceps* group, in which the black on head is generally more extensive and extends to the breast; however, there is some disagreement about the best arrangements and the number of taxa that can be recognized.

Both males and females can incubate nests, with most nests predominantly incubated by females. If the first clutch of eggs is unsuccessful, a breeding pair (may be the same pair or a different pair as that which led to the previous nesting attempt) will attempt to lay, incubate, and hatch additional clutches. Chicks will leave the nest approximately 24 hours following hatching.

Cool facts: The bobwhite is a small chicken-like bird found in the eastern United States and Mexico. It is an important game bird and extensively hunted in some areas. It gets it's name from it's call which sounds a little like *"B… Bob… White!"*

The Northern Bobwhite is divided into 22 different subspecies. Females show little variation among the different forms, but the males can vary dramatically. Some Bobwhites from Mexico have little banding across the chest, are uniformly rufous, and have all black heads.

Subspecies and Distribution:

- *C. v. marilandicus.* Discovered by Linnaeus in 1758. It is found in the northeastern United States from southern Maine south to central Virginia and west to Pennsylvania.
- *C. v. virginianus.* Discovered by Linnaeus in 1758. The nominate race (Eastern Bobwhite) is found in the Eastern United States from Virginia south to northern Florida and westward to Alabama.
- *C. v. floridanus.* Discovered by Coues in 1872. It is found in peninsular Florida (southeastern United States).
- *C. v. mexicanus.* Discovered by Linnaeus in 1766. It is found in extreme Southern Canada (SE Ontario) and the central United States from east South Dakota eastward to western New York, southward to eastern Texas, Alabama and western South Carolina.
- *C. v. taylori.* Discovered by Lincoln in 1915. It is found in the central United States from central South Dakota southward to north Texas and eastward to west Missouri and northwestern Arkansas.
- *C. v. texanus.* Discovered by Lawrence in 1853. It is found in the southern United States (southwestern Texas) and northeast Mexico southward to Coahuila, Nuevo León and Tamaulipas.

- *C. v. maculatus.* Discovered by Nelson in 1899. It is found in northeastern Mexico from central Tamaulipas south to northern Veracruz and southeastern San Luis Potosí.
- *C. v. aridus.* Discovered by Aldrich in 1942. It is found in west central Tamaulipas to southeastern San Luis Potosí (northeastern Mexico).
- *C. v. graysoni.* Discovered by Lawrence in 1867) – Grayson's Bobwhite is found in central Mexico from southeastern Nayarit and south Jalisco eastward to south central San Luis Potosí, southern Hidalgo and Morelos.
- *C. v. nigripectus.* Discovered by Nelson in 1897. It is found in south central Mexico in México, Morelos and Puebla.
- *C. v. cubanensis.* Discovered by G. R. Gray in 1846. It is found in Cuba and Isla of Pines.
- *C. v. pectoralis.* Discovered by Gould in 1843. Black-breasted Bobwhite is found on the eastern slope of mountains of central Veracruz (east Mexico).
- *C. v. godmani.* Discovered by Nelson in 1897. It is found in the lowlands of Veracruz (east Mexico).
- *C. v. minor.* Discovered by Nelson in 1901. It is found in northeastern Chiapas and adjacent Tabasco, in South Mexico.
- *C. v. atriceps.* Discovered by Ogilvie-Grant in 1893. It is found in the extreme western Oaxaca, in Southern Mexico.
- *C. v. thayeri.* Discovered by Bangs & J.L. Peters in 1928. It is found in northeastern Oaxaca (South Mexico).
- *C. v. ridgwayi.* Discovered by Brewster in 1885. It is found in north central Sonora (North Mexico); reintroduced, with limited success, to southeastern Arizona (southwestern United States), where extirpated in past.
- *C. v. harrisoni.* Discovered by Orr & Webster in 1968. It is found in southwestern Oaxaca, in Southern Mexico.
- *C. v. coyoleos.* Discovered by Statius Müller in 1776. The Masked Bobwhite is found on the coast of eastern Oaxaca and western Chiapas, in southern Mexico.
- *C. v. nelsoni.* Discovered by Brodkorb in 1942. It is found in the southern extreme end of Chiapas (Mexico).
- *C. v. salvini.* Discovered by Nelson in 1897. It is found in the southern coast of South Chiapas (Mexico).
- *C. v. insignis.* Discovered by Nelson in 1897. It is found in southeastern Chiapas and western Guatemala (Huehuetenango).

Common Name: Spruce Grouse
Scientific Name: *Falcipennis canadensis*

Size: 15 to 17 inches (38-43cm)

Habitat: North America; Canada and portions of the northern United States.

Distribution largely coincides with boreal coniferous forest; linked mainly with pine (*Pinus banksiana, P. contorta*), but also spruce (Picea mariana, P. glauca, P. rubens), fir (*Abies balsamea*) and others.

Status: Not Threatened. **Global Population:** 11,000,000 Mature individuals. Habitat loss leads directly to the dramatic reduction or elimination of Spruce Grouse populations. Spruce Grouse have historically inhabited forests showing a fire-related patchwork of various stages of regeneration; timber harvesting can produce similar patterns, but only if clear-cut areas are small and if sufficient quantities of optimal habitat are preserved. Listed as "endangered" or "threatened" in some states at the edge of its range.

Diet: During winter, they eat mainly pine or spruce needles or both, constituting up to 100%. Summer and autumn food of adults is mostly growing tips, leaves, flowers and berries of blueberry, crowberry (*Empetrum nigrum*) and other ground vegetation. In spring, females concentrate on foods rich in protein, thus conifer foliage, flowers, fruits, and foliage of ground plants, grit, and arthropods, with large clutches associated with high intake of two especially preferred foods,

flowers of trailing arbutus (*Epigaea repens*) and spore capsules of *Polytrichum* mosses. Chicks less than one week old subsist entirely on arthropods, but soon switch to berries, and in autumn to needles. Fungi may be important for chicks. They feed predominantly on ground, but also in mid-crown of trees. They forage throughout day, with peaks in early morning and late afternoon; often in family groups and, in winter, sometimes in loose flocks of up to 30.

Breeding: A dark, rather short-tailed, relatively small grouse, mainly grey above and black below, with white spots along sides, and throat bordered with white. It differs from *F. franklinii* in having broad orange-buff tips of rectrices, all-dark tips to elongate uppertail-coverts, strong continuous (not broken) white line across breast, and broader rectrices; from *F. falcipennis* in lack of white bars on underparts and in having non-attenuated outer primaries; from *Dendragapus obscurus* and *D. fuliginosus* in lack of cervical sacs. The bill is black and the combs scarlet in both sexes, becoming geranium-red in males during courtship. The sexes fairly similar, but female is paler than male, extensively barred, with throat and breast tawny to whitish, sides predominantly ochre, and underparts barred brown and white.

The female has two color morphs; grey and rufous. First-winter plumage resembles adult markings, but is duller and has two outer primaries more pointed than other plumages and buffier. Juveniles resemble the rufous-morph adult female, with white or buffy markings at tips of wing-coverts and primaries, while feathers with dark markings have these smaller and more barred, less blotched. Races differ mainly in extent of white on underparts and in tail pattern: male canace is like the nominate, but grey-phase female is more extensively brown; male atratus is more olive-grey on back and uppertail-coverts than previous race, while female is more brown-grey on upperparts.

Males give territorial displays include fanning and sweeping of the tail, and wing claps but unlike some other grouse, the Spruce Grouse does not have throat-sacs that inflate during the displays. The female lays 4-6 olive eggs in a depression in the ground, lined with conifer needles and feathers. Site always has overhead cover, often at the base of a tree.

Cool Facts: The Spruce Grouse's crop can store up to ten percent of the bird's body weight in food, to be digested at night. The Spruce Grouse's gastrointestinal organs change with seasonal shifts in diet. In winter, when the bird must eat more food to maintain its mass and energy balance, the gizzard grows by about 75 percent, and other sections of the digestive tract increase in length by about 40 percent.

Subspecies and Distribution:

- *F. c. osgood.* Discovered by Bishop in 1900. It is found in Alaska (Yukon and Kowak Valleys) and northwest Canada eastward to Great Slave Lake and Lake Athabaska.
- *F. c. atratus.* Discovered by Grinnell in 1910. It is found in southern Alaska (Bristol Bay to Cook Inlet and Prince William Sound) and Kodiak Island.

- *F. c. canadensis.* Discovered by Linnaeus in 1758. It is found in southern Canada from central Alberta eastward to Labrador Peninsula.
- *F. c. canace.* Discovered by Linnaeus in 1766. It is found in southeast Canada (south Manitoba to New Brunswick) and northeastern United States (North Minnesota to East Maine).
- *F. c. torridus.* Discovered by Uttal in 1939. It is found in Nova Scotia.

Introduced (*F.c. canadensis*) to Newfoundland and Anticosti Island.

Common Name: Rock Ptarmigan
Scientific Name: *Lagopus muta*

Size: 13 to15.7 inches (33-40 cm)

Habitat: **Habitat**: Northern Hemisphere; breeds in northern Asia, northern Europe and northwestern North America. It migrates further south in winter.

Found in the open tundra, barren and rocky slopes in Arctic and alpine areas; in winter, some movement to thickets and forest edge.

Status: Least Concern. **Global Population:** 25,000,000 to 50,000,000 mature individuals. Common and widespread with a decreasing population trend due to global warming.

Diet: Winter food mainly taken from ground; varies greatly between localities, as well as depending on snow conditions. In Alaska, mainly buds and catkins of dwarf birch (*Betula*), followed by buds and twigs of willow (*Salix*), and in Greenland food plants include *Saxifraga*, *Polygonum*, *Oxyria*, *Carex* and *Salix*; but in Iceland willows are preferred as well as *Vaccinium*, *Empetrum* and other berry-bearing shrubs are main winter food in Alps and other southern areas. Diet usually much more varied from spring to autumn, consisting of leaves, flowers, berries and seeds of many plants.

Breeding: In summer, adults have grayish brown plumage, without reddish tones. During winter, all white; male has characteristic, conspicuous black loral stripes. Female are slightly more yellowish gray. First-winter birds are like adults, but outer two primaries differ in amount of pigment. Races separated mainly on slight differences in color and pattern of summer plumage, with four general groups often identified: the first possesses rather dark coloration in summer (including *ridgwayi*, *evermanni* and *japonica*), the second is typically rather gray in summer (*sanfordi*), the third is generally brown (the southern Siberian montane taxa *macrorhyncha*, *nadezdae* and *transbaicalica*) and the fourth has a yellowish tint to male summer plumage (almost all Aleutian, American, Greenland and North Siberian taxa).

Lays 3-13 eggs. Chicks, covered with dense down feathers, leave the nest within 24 hours.

Cool Facts: A true bird of the tundra, the Rock Ptarmigan changes it's coloring between seasons to blend in with its surroundings. It is pure white in the snow-covered winter, but mottled dark and white when the snows melt. The male Rock Ptarmigan takes longer than the female to change from its white winter plumage into the brown summer garb. During courtship the male is a conspicuous white patch on the brown tundra, visible for kilometers away. The female sitting on the eggs, however, is so well camouflaged that she is difficult to find from less than 2 meters (6 feet) away.

The word *ptarmigan* comes from the Scottish Gaelic *tàrmachan*, which may be related to *torm* "murmur". The silent initial *p* was added in the 17th century through the influence of Greek, especially *pteron*, Greek for "wing".

Subspecies and Distribution:

- *L. m. hyperborea.* Discovered by Sundevall in 1845. It is found in Svalbard, Franz Josef Land and Bear Island.
- *L. m. muta.* Discovered by Montin in 1781. The nominate species is found in Norway, Northern Sweden, Northern Finland and Kola Peninsula.
- *L. m. millaisi.* Discovered by E. J. O. Hartert in 1923. It is found in Scotland.
- *L. m. pyrenaica.* Discovered by E. J. O. Hartert in 1921. It is found in the Central & Eastern Pyrenees.
- *L. m. helvetica.* Discovered by Thienemann in 1829. It is found in the Alps from Savoie (France) to Central Austria.
- *L. m. komensis.* Discovered by Serebrovski in 1929. It is found in the Northern Urals.
- *L. m. pleskei.* Discovered by Serebrovski in 1926. It is found in Northern Siberia from Taimyr Peninsula Eastward to the Chukotskiy Peninsula.
- *L. m. macrorhyncha.* Discovered by Serebrovski in 1926. It is found in Tarbagatai Mountains.
- *L. m. nadezdae.* Discovered by Serebrovski in 1926. It is found in the mountains of Southern Siberia and Mongolia (Altai, Sayan, Khangai and others).

- *L. m. transbaicalica.* Discovered by Serebrovski in 1926. It is found in Southeast Siberia from Lake Baikal Eastward to Sea of Okhotsk.
- *L. m. kraschenninnikowi.* Discovered by Potapov in 1985. It is found in the Kamchatka Peninsula.
- *L. m. gerasimov.* Discovered by Red'kin in 2005. It is found in Karaginskiy Island, off Northeast Kamchatka Peninsula.
- *L. m. ridgwayi.* Discovered by Stejneger in 1884. It is found in the Commander Islands.
- *L. m. kurilensis.* Discovered by Nagamichi Kuroda in 1924. It is found in the Kuril Islands.
- *L. m. japonica.* Discovered by A. H. Clark in 1907. It is found in Central Honshu (Japan).
- *L. m. evermanni.* Discovered by Elliot in 1896. It is found on Attu Island and Agattu Island (Western Aleutian Islands).
- *L. m. townsendi.* Discovered by Elliot in 1896. It is found on Kiska Island and Little Kiska Island (Western Aleutian Islands).
- *L. m. gabrielsoni.* Discovered by Murie in 1944. It is found in Little Sitkin, Rats Islands and Amchitka (Western Aleutian Islands).
- *L. m. sanfordi.* Discovered by Bent in 1912. It is found on Tanaga Island and Kanaga Island (West-central Aleutian Islands).
- *L. m. chamberlaini.* Discovered by A. H. Clark in 1907. It is found on Adak Island (West-central Aleutian Islands).
- *L. m. atkhensis.* Discovered by Turner in 1882. It is found on Atka Island (Central Aleutian Islands).
- *L. m. yunaskensis.* Discovered by Gabrielson & Lincoln in 1951. It is found on Yunaska Island (East-central Aleutian Islands).
- *L. m. nelsoni.* Discovered by Stejneger in 1884. It is found on Unimak, Unalaska and Amaknak Islands (Eastern Aleutian Islands).
- *L. m. dixoni.* Discovered by Grinnell in 1909. It is found on Glacier Bay islands and adjacent mainland (Southeastern Alaska) to Alexander Archipelago and extreme West Canada (Northwestern British Columbia).
- *L. m. kelloggae.* Discovered by Grinnell in 1910. It is found in Alaska (except Southeast) and Northern Yukon.
- *L. m. rupestris.* Discovered by J. F. Gmelin in 1789. It is found in Northern Canada from Melville Island and Ellesmere Island to Central British Columbia, South Mackenzie, Southampton Island, Northern Quebec and Labrador.
- *L. m. macruros.* Discovered by Schiøler in 1925. It is found on the coasts of Northern & Eastern Greenland.
- *L. m. saturata.* Salomonsen in 1950. It is found on coastal Northwestern Greenland.
- *L. m. reinhardi.* Discovered by C. L. Brehm, 1824. It is found on coastal Southwestern and Southeastern Greenland.
- *L. m. welchi.* Discovered by Brewster in 1885. It is found in Newfoundland.
- *L. m. islandorum.* Discovered by Faber in 1822). It is found in Iceland.

In 1992, tiny population of apparently undescribed race discovered in Pamir-Alai Mountains (Tajikistan)

Common Name: Grey Partridge
Scientific Name: *Perdix perdix*

Size: 12-13 inches (29-31 cm) **Wingspan:** 17.7-18.9 inches (45–48 cm)

Habitat: Eurasia; introduced to North America (along flat areas of the Canadian/US border).

Found in grasslands in temperate zone, steppe regions and open arable landscapes. Typically found in large tracts of grassland, or in other ground cover that is only slightly taller than the bird itself, with some dense shrubby patches such as hedgerows. Seeks proximity of ploughed fields, dunes and other kinds of open area. Much of species' original habitat is now under agriculture, but it appears to be reasonably adaptable to some less intensive practices.

Status: Least Concern. **Global Population:** 5,000,000 - 10,000,000 mature individuals. Numbers have declined markedly in all parts of its native range. Reduction in numbers believed to be as high as 80% in some areas; causes probably include loss of nesting cover, predation, herbicides (chick survival rates in UK declined from 49% to 32% once their use became widespread) and pesticides that reduce insect abundance in spring; all are consequences of intensification of agricultural practices. Specific recommendations to address these problems include: provision of good-quality nesting cover; reduction of nest

predation by controlling impact of foxes (*Vulpes vulpes*), mustelids and feral cats (*Felis catus*); and improving insect abundance in spring so that chicks have sufficient prey items, with the latter sometimes considered to be the single most important issue, although it is also the case that nesting success and chick survival rates (still reasonably high in parts of CE Europe) are also governed to a large extent by weather conditions.

Re-introductions have rarely been successful because released birds do not appear to survive well in Europe. Large-scale introductions attempted (with some success) in the United States between 1790-1972, where naturalized populations are currently present in Northern Nevada, Western and Northern Utah, Northern Wyoming, Southeastern Nebraska, Northern South Dakota, Northwestern Iowa, Northern Illinois, Northern Missouri, Southern Michigan, Northern Vermont.

Diet: Feeds on seeds of grains and weeds, cereals and clover, and grass leaves; also insects such as beetles (*Coleoptera*), aphids and bugs.

They form coveys of up to 20–25, more usually 5–15 birds, in non-breeding season.

Breeding: The male is larger than female.It can be very variable, especially in terms of grayer or browner plumage. There is a chestnut patch on breast which can be absent in females. Females are slightly darker in summer. The iris is brown and the bill greenish ivory. The facial skin red and legs grayish (more yellow in young). Juveniles have broader bars on wing and browner legs.

There is considerable individual variation within each race, but subspecies in the west are usually more rufous-brown, those in the east are generally paler and grayer.

Clutch size can range up to 22 eggs, and averages 16 to 18. Chicks can leave the nest almost immediately and feed themselves. Chicks eat mostly insects during their first weeks of life.

Cool Facts: Grey Partridge hens produce some of the largest clutches of any bird species ranging up to 22 eggs.

A partridge in a pear tree? “In Middle English pertriche "partridge," was derived from *Perdix*, one of Athene's sacred kings, thrown in the seas from a tower, and carried to heaven in the form of a bird by his goddess. He was the partridge, she the pear tree. Athena was worshiped in Boeotia as Once, the Pear Tree, mother of all pear trees. Perdix, whose name originally meant "the Lost One," was a form of Vishnu-Narayana, called Lord of the Pear Trees in his holy city of Badrinath in the Himalayas (from *badri*, "pear tree"). The pear tree had a feminine-masculine significance through Eurasia. It was also sacred to Hera, whose oldest image at Heraeum in Mycenae was made of pear wood. European peasants considered the pear a favorite "life-tree" for a girl. In Russia pears were used as protective charms for cows. It seems that when the partridge in a pear tree was made into a

Christmas carol the symbol of Christ was substituted for Perdix. “ (*Encyclopedia Mythica,* Alan G. Hefner)

Subspecies and Distribution:

- *P. p. perdix.* Discovered by Linnaeus in 1758. The nominate race is found on the British Isles and Southern Scandinavia southward to the Alps and Balkans.
- *P. p. armoricana.* Discovered by E. J. O. Hartert in 1917. It is found in Brittany, Normandy and central France northwards to the Ardennes and Morvan Mountains. Race *armoricana* is overall more rufous than the nominate, even over breast.
- *P. p. hispaniensis.* Discovered by Reichenow in 1892. Found in Northeastern Portugal and Northern Spain. This race is darker above than the nominate, lacking chestnut below, with more extensive blackish markings above and larger and darker belly patch.
- *P. p. lucida.* Discovered by Altum in 1894. It is found in Finland eastward to the Ural Mountains and southwards to Black Sea and Northern Caucasus. It is paler and grayer than most other races, especially on breast.
- *P. p. canescens.* Discovered by Buturlin in 1906. It is found in Turkey, Caucasus, Transcaucasia and Northwestern Iran. Race *canescens* is paler than *lucida*, although they intergrade in Caucasus, and has reduced brown on upper parts.
- *P. p. robusta.* Discovered by Homeyer & Tancré in 1883. Found in the basin of lower River Ural eastwards through Kazakhstan to Southwestern Siberia (West Sayan Mountains) and Northwestern China (West Xinjiang). Race *robusta* is even paler and grayer than *canescens*.
- *P.p.sphagnetorum.* Proposed New Race (offshoot of *lucida*). The “Peat Partridge” is very dark, especially gray of breast with close barring, almost blackish-rufous belly patch and heavily marked upper-parts.

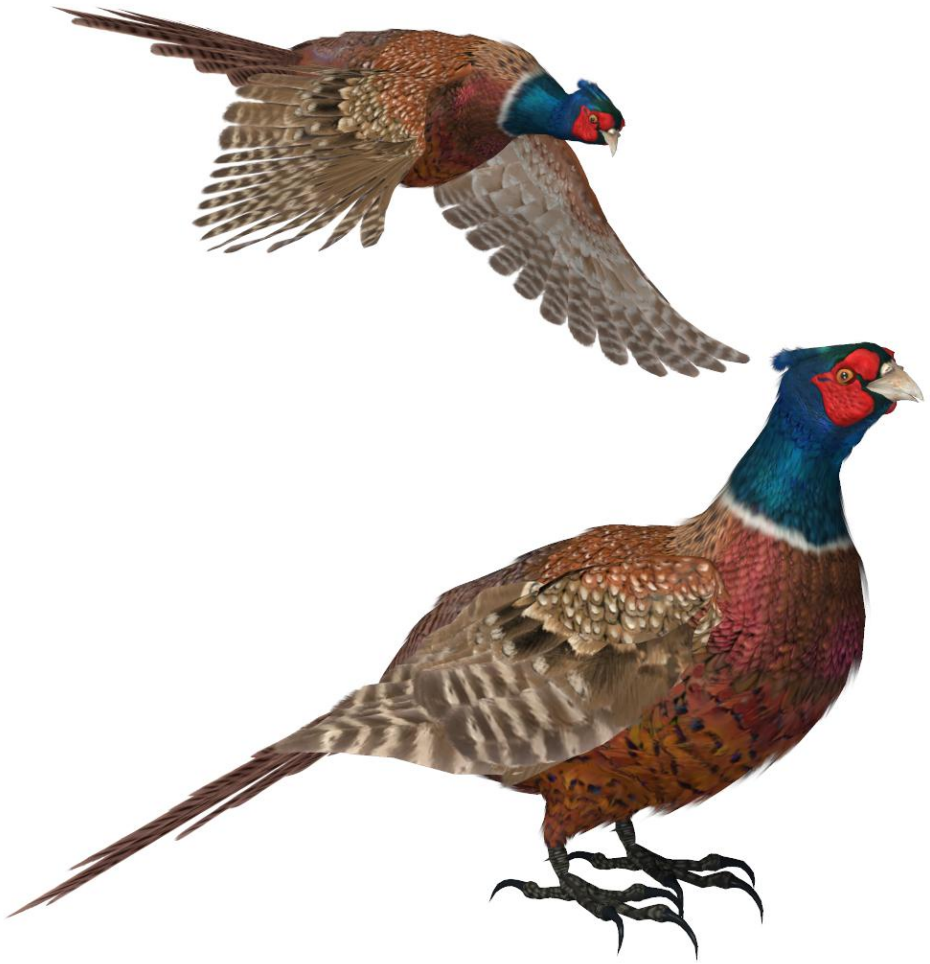
Introduced and reintroduced to many parts of Europe, including Finland, Britain, Russia and France; also successfully introduced to United States and Canada.

Common Name: Ring-necked or Common Pheasant
Scientific Name: *Phasianus colchicus*

Size: Males: 29.5-35 inches (75–89 cm), Females 20.8-24.4 inches (53–62 cm)
Wingspan: 27.5-35.4 inches (70–90 cm)

Habitat: Asia; introduced throughout North America.

Considerable variation in habitat throughout natural range, where occurs in mountains and foothills, to at least 3500 m in China (and probably even higher in Western Sichuan). It is found on overgrown edges of rivers, hilly areas close to cultivation and level ground under cultivation, and tends to avoid dense forest, highest mountains and very dry areas.



Status: Least Concern.
Global Population: 45,000,000 - 300,000,000 mature individuals. Not globally threatened (Least Concern). It is declining in some areas, but stable at most sites. Extensively hunted, both for food and sport, and suffering due to agricultural intensification in some areas, but still widely distributed even outside protected areas. Population declining in Taiwan, fairly common in the east and south, but scarce in Northwest. It has disappeared from some lowland areas which have been lost to development. In late 1940s was common in Northeastern Myanmar, but no recent data. Very little information available concerning status in western part of natural range. In Azerbaijan, nominate *colchicus* is common resident, with population of 20,000–25,000 individuals but race *talischensis* is very rare resident, with only 200–300 individuals, following decline due to habitat loss and uncontrolled hunting which together have brought it to brink of extinction in 1940s and 1950s (40,000 birds killed by hunters each

year). Race *septentrionalis* is very rare in Kazakhstan, with few recent records and evidence of local extinctions, whereas races *turcestanicus* and *mongolicus* are still common, although the latter has been reintroduced in some areas. Populations of wild birds, or derived from such, sometimes claimed to occur as far west as northern Turkey or even northern Greece, where the supposedly wild population is extremely small, perhaps just 150 individuals. Common to superabundant in many parts of introduced range, where wild populations frequently bolstered by large numbers of captive-bred birds for shooting. The introduced German population is also estimated to be increasing, albeit from a much lower level, with an estimated 205,000–285,000 territories in 2005–2009.

Diet: In natural range, diet consists primarily of plant matter, with much less animal food: fruits, seeds, leaves, buds and insects in autumn; fresh buds, grasses, leaves, insects and small invertebrates in spring; birds seen flying into grain fields to feed. Where introduced, a very diverse diet has been described, depending on local and seasonal food availability, indicating opportunism and omnivorous tendency; prefers large, energy-rich kinds of food, e.g. cultivated grains, mast and fruits.

Feeds at edges in early morning and late afternoon, and may also seek water at these times. Observed singly, in pairs, in groups containing a male and several females and, in winter, single-sex flocks in some areas, or flocks in which males outnumber females by scratching on ground and digging with its' bill for food.

Breeding: Male highly variable according to race, but usually not as dark as male *P. versicolor*; has longer tail, and at least some coppery colouring on underparts. Female differs from that of *P. versicolor* in paler, less blotched and vermiculated plumage. Juvenile resembles female, but is duller and has shorter tail.

Pheasants practice "harem-defense polygyny" where one male keeps other males away from a small group of females during the breeding season. Nests are built on the ground, in tall grass or weeds. 7-15 olive brown eggs are laid. Chicks can leave the nest almost immediately and feed themselves. Chicks eat mostly insects during their first weeks of life.

Cool Facts: The Ring-necked Pheasant is one of the most popular "Game" birds and is hunted extensively. The bird was brought to Britain around the 10th century but became extinct in the early 17th century. It was then reintroduced in the 1830s and is now widespread. Continual reintroduction has made the pheasant a very variable species in regard to size and plumage. Pheasants were introduced to North America in the 18th century.

In bad weather, pheasants are known to stay in their roost for several days without eating, waiting out the storm.

Pheasants are short-distance fliers and prefer to run. If startled they can suddenly burst upwards at great speed. Their flight speed is only 27 to 38 mph when cruising but when chased they can fly up to 60 mph.

Subspecies and Distribution:

Considerable geographical variation in many aspects of male plumage, partly clinal, partly not; white ring on neck usually absent in the West, present in most of Eastern races. Five subspecies groups usually identified on basis of male plumage: white wing-coverts distinguish both mongolicus group (with more coppery upperparts), and chrysomelas/principalis group (with a more orange or yellowish tinge on upperparts); brown or buff wing-coverts distinguish colchicus group (with reddish-brown rump), tarimensis group (with yellowish cast on green rump), and torquatus group (with greyish or bluish cast on green rump); within each group, species differ in colour of head and neck gloss, and in other details of plumage.

The Nominate Group

- *P. c. septentrionalis.* Discovered by T. K. Lorenz in 1888. It is found in Northern Caucasus from Dagestan north of the Volga Delta (Russia). It is paler, less spotted and barred, with golden tones than the nominate race.
- *P. c. colchicus.* Discovered by Linnaeus in 1758. The nominate species is known as the “Black-necked Pheasant”. Transcaucasia in Eastern Georgia, Northeastern Azerbaijan, South Armenia and Northwestern Iran.
- *P. c. talischensis.* Discovered by T. K. Lorenz in 1888. Found in Southeastern Transcaucasia and Caspian lowlands of Iran. It reportedly has narrower purplish-blue fringes to breast feathers, and female is usually darker than that of nominate.
- *P. c. persicus.* Discovered by Severtsov in 1875. Found in Southwestern Transcaspia in Southwestern Turkmenistan and Northeastern Iran. *Persicus* is paler than previous forms in the nominate group, with more buffy wing-coverts and paler golden body.

The Mongolicus group:

- *P. c. turcestanicus.* Discovered by T. K. Lorenz in 1896. It is found along valley of River Syr Darya, in Kazakhstan, southeast to the Fergana Basin, in Uzbekistan and borders of Kyrgyzstan. It differs from *mongolicus* in being more purplish, less bronze-green above, with bolder, more regularly marked underparts and a more prominent white collar.
- *P. c. mongolicus.* Discovered by J. F. Brandt in 1844. The Kyrghyz Pheasant is found in Northern Tien Shan in North Kyrgyzstan northwards through Eastern Kazakhstan to Lake Balkhash, and eastwards to Northwestern Xinjiang and Urumchi (Western China). Like *turcestanicus*, it is distinguished from races in the *chrysomelas/principalis* group in having iridescent copper-maroon and green upper parts, and a partial white collar.

The Chrysomelas/principalis group:

- *P. c. principalis.* Discovered by P. L. Sclater in 1885. Found in Turkmenistan, extreme Northeastern Iran and N Afghanistan. race principalis appears redder, less purplish than members of nominate group, with whitish wing-coverts and a partial white collar.

- *P. c. chrysomelas.* Discovered by Severtsov in 1875. The White-winged Pheasant is found in the Amu Darya Delta, in Western Uzbekistan, and adjacent Northern Turkmenistan. It is brighter than previous race, but darker (tinged copper and bronze) above, with distinct but irregular white collar and breast markings do not merge.
- *P. c. zerafschanicus.* Discovered by Tarnovski in 1893. It is found in Southern Uzbekistan (Bukhara, Zerafshan Valley and Kaska Daya, near Samarkand). It differs from rest of group in having well-developed white collar, but is otherwise similar to race *zarudnyi* in being overall rather pale, buff and golden.
- *P. c. zarudnyi.* Discovered by Buturlin in 1904. Found in the valleys of Central Amu Darya on the Eastern Turkmenistan–Uzbekistan border. It is paler and brighter than previous race with variable white on nape.
- *P. c. bianchii.* Discovered by Buturlin in 1904. Found in the Upper River Amu Darya in South Uzbekistan, Southwestern Tajikistan and extreme Northern Afghanistan. It is darker below than previous two races with blackish markings merging on breast, while upper parts are duller and browner, less reddish, than others.

The Tarimensis group:

- *P. c. shawii.* Discovered by Elliot in 1870. The Tarim Basin Pheasant is found in the Western Tarim Basin (Xinjiang), in Western China. It differs from *tarimensis* in having whitish wing-coverts, and reddish rump and uppertail-coverts.
- *P. c. tarimensis.* Discovered by Pleske in 1889. Found in the south and east Tarim Basin, in Western China. It has no white collar and olive-yellow lower back and rump.

The Torquatus group:

- *P. c. hagenbecki.* Discovered by Rothschild in 1901. Found in western Mongolia (Kobdo Valley), it is largest and palest of group, with complete white collar, pale crown and straw-yellow ground colour to plumage.
- *P. c. pallasi.* Discovered by Rothschild in 1903. Found in Southeastern Siberia (Ussuriland, Southern Amurland), adjacent Northeastern Korea and Northeastern China (Northern and Eastern Heilongjiang). It is darker than previous race, with a browner crown and more golden-yellow overall plumage.
- *P. c. karpowi.* Discovered by Buturlin in 1904 – Northeastern China (Southern Heilongjiang and Northern Hebei) and central and southern Korea, including Jeju Island (off South Korea). It is darker and more richly coloured than previous race.
- *P. c. kiangsuensis.* Discovered by Buturlin in 1904 – Northeastern China (West Hebei, North Shanxi and Shaanxi to adjacent Southeastern Inner Mongolia). It is even darker and more richly coloured, with a dark crown and narrower white collar.
- *P. c. alaschanicus.* Discovered by Alphéraky & Bianchi in 1908. Found in North-central China (western foothills of Helan Shan in South-Central Inner Mongolia and Ningxia). It is paler than previous race, with whiter eyebrows and a narrow white collar that is broken in front.

- *P. c. edzinensis.* Discovered by Sushkin in 1926. Found in the lower Ruo Shui (River Ejin), in W Inner Mongolia (N China). It has marked scapulars and paler underparts than next taxon that contrast strongly.
- *P. c. satscheuensis.* Discovered by Pleske in 1892. Found in Northern China (extreme Northwestern Gansu). It is very pale, sandy above, but dark coppery red and golden-yellow below, while crown is pale and collar narrow and broken.
- *P. c. vlangalii.* Discovered by Przevalski in 1876. Found in North-Central China (West Qaidam Basin, in North Qinghai). It is darker than previous race, being relatively rufous above without pale centers to scapulars, while crown is rather dark and the collar vestigial.
- *P. c. strauchi.* Discovered by Przevalski in 1876. Found in Central China (South Shaanxi and South & Central Gansu). It is most like *kiangsuensis*, but even darker and richer coloured, with a narrow, broken collar (virtually absent in some).
- *P. c. sohokhotensis.* Discovered by Buturlin in 1908. Found in North-Central China (Sohokhoto Oasis, in Helan Shan; possibly this race also in Qilian Shan). It is like the previous race but is paler and duller.
- *P. c. suehschanensis.* Discovered by Bianchi in1906. Found in West-Central China (Songpan southwards to Kwansien, in Northwestern Sichuan). It is also dark with no collar, being coppery and maroon above, glossed bronze-green, and copper-brown below, glossed green, becoming purple-blue on lower foreneck and has purplish-brown tail.
- *P. c. elegans.* Discovered by Elliot in 1870. Found in Central-South China (East Tibet and adjacent West Sichuan southwards to northwest Yunnan) and Northern Myanmar. It is similar to previous race, but blacker below, with more extensive purple-blue on breast, and is more reddish (less maroon) on scapulars.
- *P. c. rothschildi.* Discovered by La Touche in 1922. Found in Southern China (Southeast Yunnan) and Northwestern Vietnam (North Tonkin). It is like previous race, but blue of breast more restricted, flanks and mantle paler and more golden, and sometimes has a vestigial collar.
- *P. c. decollatus.* Discovered by Swinhoe in 1870. Found in Central China (East Sichuan eastwards to Western Hubei and southwards to Northeastern Yunnan and Guizhou). It is paler above and below than previous race, with more boldly spotted scapulars and tail virtually identical to *suehschanensis*.
- *P. c. takatsukasae.* Discovered by Delacour in 1927. Found in Southeastern China (South Guangxi) and Northeastern Vietnam (Northeastern Tonkin). It is darker and more richly coloured than nominate race.
- *P. c. torquatus.* Discovered by J. F. Gmelin in 1789. The “Grey-rumped Pheasant” is found in Eastern China (Shandong and Henan Southwards to China–Vietnam border). It has golden-yellow mantle and flanks, purplish-red central breast, bluish belly centre and prominent collar that is broken at front.
- *P. c. formosanus.* Discovered by Elliot in 1870. Endemic to Taiwan. It is paler than nominate, with green-based rump (not blue), flanks almost whitish buff and straw-coloured mantle.

Common Name: Band-tailed Pigeon
Scientific Name: *Patagioenas fasciata*

Size: 13.4-16 inches (34-40 cm)

Habitat: North and South America; in NA, along the Pacific Northwest. Found in forested areas and forest edges.

Status: Near Threatened. **Global Population:** 4,000,000 mature Individuals. Despite large range, species may be vulnerable and requires careful monitoring. Perhaps breeds as far north as Southeastern Alaska, where young have occasionally been observed. Hunting continues in Oregon, California, in the United States interior, and Mexico southward. Listed as a species of concern in Canada, but not listed as threatened in USA. Hunting closure 1913–1932 may have prevented further serious decline, but no evidence that recent restrictions/closures have resulted in increases in population sizes. Populations of coastal North America known to have declined over past 15–30 years; a declining trend of 6% of population per year has been documented. A study in 1992 revealed that populations in 1980s represented only 30–50% of those in 1960s, with causes of this decline uncertain, although alteration of nesting and roosting habitats may have contributed in part; herbicides may have reduced availability of berry-producing plants, notably from British Columbia to California; studies of effects of logging and regeneration on movements and nesting are needed. However, in other parts of USA, species is colonizing towns and surburban areas. Fairly common to common in Mexico; more numerous in winter due to influx of migrants. In North America, suburban populations have occasionally been infected by trichomoniasis, Trichomonas gallinae, this pathogen probably originating from contact with feral pigeons for which it can be fatal; overall impact of trichomoniasis on present species unclear, but an estimated 15,000 individuals died in California in 1988. Lack of management efforts stem from inadequate funding at state and region-wide levels, and activist

groups have not championed the species. Of greatest importance is implementation of reliable methods to survey abundance over large areas, especially in south and the interior of the United States. Low annual reproductive rate estimated from recent research in Oregon underscores urgency to measure population trend well.

Diet: 98% of food is field grains, oak acorns, fruit, wild and domestic, especially *Rubus spp*. and *Prunus spp*., cascara; madrone and elderberries. Its diet change seasonally.

Band-tailed pigeons are very gregarious. They may form flocks of up to 300 individuals..

Breeding: Both male and females are drab gray-olive, paler and usually grayish on malar and throat regions. There is a white bar across nape or upper hind neck with a metallic bronze below. Feathers with sharp outlines producing a scaly effect. The back and wings greyish brown with bronze gloss in certain lights and the rump and upper tail-coverts gray. The tail is gray over proximal half, turning more pale and more brownish gray over distal half, with a band of dark gray or dull black across middle. The primaries, primary-coverts and alula are dusky, primaries edged white. The under parts are drab gray-olive. The iris pale yellow to dark red brownish with outer ring of pink or lilac. The eyelids are reddish. The bill is yellow with apical third turning to black. The legs are yellow. Females are duller with the upper parts browner, head and under parts grayer. Juveniles lack white nape bar and metallic neck feathers with their heads and sides of neck being brownish gray. They are paler on chin and upper throat, and the scapulars sometimes suffused with brown. The rectrices, remiges, primary-coverts and alula are dusky.

Nests look like a flat saucer of loosely intertwined twigs, placed on a sturdy tree limb, and usually contain only one egg. Young are helpless at birth and fledge in about three weeks.

Cool Facts: Band-tailed Pigeons are the closest living relative to the extinct Passenger Pigeon which was once the most populous bird in the world (until humans droves it to extinction in 1914). The parasitic louse *Columbicola extinctus*, believed to have become extinct with the extinction of the passenger pigeon, was recently rediscovered on the band-tailed pigeon. In 2012, geneticists started a “de-extinction” project using edited Band-tailed Pigeon DNA to recreate the extinct Passenger Pigeon.

Subspecies and Distribution:

- *P. f. monilis.* Discovered by Elliot in Vigors in 1839. It breeds from Southwestern British Columbia (including Vancouver Island) southwards through Washington to Southern California and Western Nevada; winters South from Central California, rarely north to British Columbia. This race is browner than the nominate.

- *P. f. fasciata.* Discovered by Elliot in Say in 1822. The nominate race breeds from Southwestern United States (South-central Utah, Northwestern Colorado, Arizona, New Mexico, West Texas) through most of Mexico to Guatemala, Honduras, El Salvador and N Nicaragua. It winters south from Southern Arizona and New Mexico.
- *P. f. vioscae.* Discovered by Elliot in Brewster in 1888. Found in the mountains of extreme Southern tip of Baja California (Sierra de la Laguna). This race is larger and more richly coloured than the nominate.

Band-tailed Pigeons mob the feeder at Ken Gilliland's home

Common Name: Mourning Dove
Scientific Name: *Zenaida macroura*

Size: 8.6-13.3 inches (22-34 cm)

Habitat: Throughout North America.

A very successful species that has adapted well to human agricultural practices. Usually in savanna, but also thrives in arid or semi-arid areas from sea-level up to 2500 m East of Sierra Nevada divide in California, and to 2300 m in Costa Rica. Sometimes in willows and cottonwoods along stream courses, or among oak and digger pines in California Sierran foothills. Although present species has been shown to survive well without drinking for 4–5 days at temperatures of 23°C, water is a prerequisite and birds will fly long distances to water-holes, to drink at dawn and dusk; sometimes flocks will roost by a drinking place and leave the following morning. May breed in extremely hot regions e.g. at Deep Canyon, California, recorded incubating in ambient temperatures of 44°C.

Status: Least Concern. **Global Population:** 130,000,000 mature Individuals. Abundant and widespread. It has been suggested that the recent successful invasion of North America by the Eurasian Collared-dove Streptopelia decaocto might result in the Mourning Dove facing competition for food. There is evidence that Eurasian Collared-Doves select broader and/or thicker seeds, of corn and sunflower, than those selected by Mourning Doves, which may act to mitigate foraging competition between them

Diet: Opportunistic, although almost the entire diet consists of seeds and other plant matter. Seeds are taken from the ground or directly from plant stalks. In one study, the seeds of 200 different species were found in birds' crops, of which grasses comprised over 50%. Pine seeds are an important item in some areas,

notably in Mississippi. Agricultural crops (corn, wheat) are eaten wherever available; at least one study has shown that the species is significantly more abundant on organic than on conventional farms. Composite seeds are locally important, e.g. sunflowers (*Helianthus*), thistles (*Circium*), Oxalis, Croton, or buckweed (*Polygonium*). Animal food taken includes grasshopper eggs, ants, scales, beetles, isopods; both aquatic and land snails eaten throughout range. Fruit eating is important locally; those of the Saguaro Cactus Carnegeia gigantea have been found to provide some 14% of the summer diet in the Sonoran desert, Arizona.

Breeding: Males are larger than females. The forward part of forehead and superciliary is fawn becoming gray on cap and the hind neck is grayish brown with metallic purple or bronze, gloss on the sides of neck. There is a small black facial streak below eye. The back, upper tail-coverts and wings are grayish brown. The rump is grayish with a darker gray on the sides. There are roundish black spots on inner wing-coverts and scapulars. The primaries are black, edged white. The middle pair of rectrices are the same color as back but other rectrices are gray with a black bar and grayish-white or white tips. The tail is long and graduated. The underparts are fawn, paler on chin and throat, shading to pinkish fawn on breast. The iris is dark brown with the eye surrounded by narrow orbital skin of light blue or greenish blue. The bill is black, thin and delicate looking. Legs and feet are dull red. The female is paler, with less gray on head and less iridescence on neck. Juveniles resemble female but has pale buff fringes to most feathers and blackish spots on some head and breast feathers.

During nest-building, the female stays at the nest and the male collects the materials. She takes the materials and weaves it into the nest. Some believe that's why the mourning nests are so poorly built is because the male stands on the female's back while handing her the materials. Doves lay two eggs; clutches of three or four are the result of more than one female laying in the nest. A dove may have up to five or six clutches in a single year.

A mourning dove pair rarely leaves its eggs unattended. The male usually incubates from mid-morning until late afternoon, and the female sits the rest of the day and night.

Cool Facts: The mourning dove is the most widespread and abundant game bird in North America. Despite being hunted throughout most of its range, it remains among the 10 most populous birds in the United States.

Subspecies and Distribution:

- *Z. m. marginella.* Discovered by Woodhouse in 1852. Found in British Columbia, Saskatchewan and Manitoba southwards to Baja California, Oklahoma and W Arkansas, and on to South-central Mexico; winters South to Panama.
- *Z. m. carolinensis.* Discovered by Linnaeus in 1766. It is found in Wisconsin, Michigan and Southern Ontario to Central New York state, Southern Maine,

New Brunswick and Nova Scotia, and southwards to Gulf coast of Florida, Bahamas and Bermuda. It is darker than race *marginella.*

- *Z. m. macroura.* Discovered by Linnaeus in 1758. Found in Cuba, Isle of Pines, Hispaniola, Puerto Rico and Jamaica. The nominate tends to be darker with a deep buff belly and has a shorter wingspan than North American races.
- *Z. m. clarionensis.* Discovered by C. H. Townsend in 1890. Found on Clarion Island in Revillagigedo Archipelago (off Western Mexico). It is relatively large-footed, large-billed and dark, while forehead tends to be chestnut and thus reminiscent of *Z. graysoni.*
- *Z. m. turturilla.* Discovered by Wetmore in 1956. It is found in Costa Rica and Western Panama. It is pale gray, with longer bill and is shorter winged like the nominate species.

Introduced (*macroura*) to Hawaiian Islands.

Common Name: Crested Dove or Pigeon
Scientific Name: Ocyphaps lophotes

Size: 12 to 14 inches (31-36 cm)

Habitat: Australia; found widely throughout mainland Australia except for far tropical north areas.

Habitat is grasslands, brush and wooded areas but they can also be seen at watercourses, homestead gardens, pastoral areas, sports grounds, and golf courses. Their habitat has expanded since settlement has produced pastoral lands (previously they were only found in inland and Western Australia).

Status: Least Concern. **Global Population**: unknown. Now common throughout most of Australia. Has benefited from the European settlement of the continent and associated forest clearance, as well as provision of water supplies for livestock, producing more favourable habitat conditions for present species.

Diet: Feeds on seeds and leaves, and takes small quantities of insects and other invertebrates (up to 10% by volume). Feeds on a variety of herbs and grasses, both native and introduced. Important plant families include Boraginaceae (*Echium*), Fabaceae (*Trifolium*), Euphorbiaceae, Chenopodiaceae and Poaceae. In grain-growing districts, feeds heavily on spilled wheat. Feeds on the ground, usually in small flocks of 5–6 birds, though large flocks may form near water during droughts.

Breeding: The head and neck are mostly light gray, with a characteristic long pointed gray-black crest on hind crown which may be held erect or flattened. The nape, hind neck, mantle, back and rump are brownish gray, grading to pinkish brown on sides of neck, mantle and upper breast. The upper tail is blackish brown, with slight green or purple iridescence and narrow white tip. The secondary coverts are gray with a distinct black and pinkish buff barring on lesser and median coverts. The most greater secondary-coverts and inner secondaries are iridescent green, bronze or purple, with white tips. The under parts are pale gray with pinkish-brown on sides of breast and flanks. The bill is gray-black and the eye has a thick pink-red orbital ring. The legs and feet are pink-red. The sexes are similar. Juveniles are similar to the adult but the crest is shorter with rounded (not pointed) feathers, and duller overall, with much less iridescence on wings and tail.

Nesting usually occurs in shrubs or trees. Nests usually consist of a platform of twigs with two oval, white and glossy eggs.

Cool Facts: Their most distinctive behavior is the beating and whistling sound their wings make when they take off. This is most likely to draw the attention of predators to birds on the wing, and away from any birds remaining on the ground.

There are only two Australian pigeon species that possess an erect crest, the Spinifex Pigeon and the Crested Dove. The Crested Dove is the larger of the two species.

Subspecies and Distribution

- *O. l. whitlocki.* Discovered by Mathews in 1912. Found in western and central Western Australia. It is very similar to the nominate species, averaging slightly smaller and with narrower white tip to tail.
- *O. l. lophotes.* Discovered by Temminck in 1822. The nominate race is found in northwestern, central, southern and eastern Australia.

Common Name: Wompoo Fruit-dove
Scientific Name: *Megaloprepia magnifica*

Size: 11.4-17.7 inches (29-45 cm)

Habitat: Australia; the eastern coast from central New South Wales to the tip of Cape York Peninsula.

Inhabits a variety of forest types: primary and well developed secondary rain forest, gallery forest and monsoon forest. In New Guinea, occurs from near sea-level up to 1400 m; commonest at lower elevations. In fragmented habitat in northern New South Wales is sometimes found in eucalyptus forests and farmland in winter; this indicates the ability of the species to cross open country and use degraded habitat and native habitat other than rain forest.

Status: Least Concern to Near Threatened. **Global Population:** unknown. Not globally threatened (Least Concern). Remains widespread and common to fairly common in many areas. However, the southernmost race, nominate *magnifica*, has declined severely and is now extinct through much of its former range due to habitat loss and over-hunting; its most important stronghold is in the Border Ranges of South Queensland and North New South Wales; New South Wales population is estimated at over 7000 birds.

Diet: Frugivorous; eats a wide variety of fruits; the most important plant families were figs (*Moraceae*), laurels (*Lauraceae*), palms (*Arecaceae*) and Annonaceae; figs and laurels were also very important in the diet of Australian populations, as

were Elaeocarpaceae. This broad diet is probably an important factor in allowing the species to be generally sedentary.

Breeding: Large and long-tailed; head and neck gray to greenish grey; mantle, rump and uppertail-coverts bright green with yellow tinge; wings mostly green, with yellow patches on central secondary-coverts forming a broken wing-bar on folded wing; narrow purple strip in centre of throat, broadening down neck; breast and upper belly deep purple; lower belly, vent and undertail-coverts mostly golden yellow; undertail pale grey; wing lining mostly orange-yellow, with some chestnut on greater primary-coverts; inner primaries green, outer ones greenish grey, grading to chestnut at base; bill orange-red with yellow tip; legs yellow-green. Sexes alike. Juvenile similar to adult, but with dull green cap and hindneck; duller and less extensive purple on underparts; and duller yellow on lower belly; bill dull yellow with orange base. Races vary in size and coloration, especially on the breast and under side of tail.

Nests are sturdily constructed from forked twigs not high from the ground. Both genders help in the construction of the nest. One white egg is laid and the parents share the incubation and care of the chick. In the event, that the chick dies, the doves will attempt to have a second offspring in the same season.

Cool Facts: The Wompoo Fruit-dove is the largest Fruit-dove native to Australia. It can be seen in large flocks where food is abundant. The birds feed off fruit-bearing trees in rainforests. They can eat large fruits, such as figs, and are able to acrobatically collect fruit of trees and vines.

They do no travel long distances preferring to stay in their local area.

Subspecies and Distribution:

- *M. m. puella.* Discovered by Lesson & Garnot in 1827. It is found on West Papuan Island (Waigeo, Batanta, Salawati and Misool) and Northwestern New Guinea (Vogelkop). It is among smallest race, with a brighter, redder breast.
- *M. m. poliura.* Discovered by Salvadori in 1878. Found in most of lowland New Guinea (except Northwest), including islands off the north coast.
- *M. m. assimilis.* Discovered by Gould in 1850. Northeastern Australia (Cape York region of North Queensland).
- *M. m. keri.* Discovered by Mathews 1912. Found in Bellenden Ker Range (near Southeastern base of Cape York Peninsula).
- *M. m. magnifica.* Discovered by Temminck in 1821. The nominate race is found in coastal South Queensland southwards to Central-east New South Wales.

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….my beta tester**, FlintHawk,** and to **Szark,** for all his knowledge on Iray materials.

Species Accuracy and Reference Materials

Many birds of the same species do vary considerably in color. This package tries to emulate the colors and markings in the most commonly found variants.

The author-artist has tried to make these species as accurate to their real life counterparts as possible. With the use of one generic model to create dozens of unique bird species, some give and take is bound to occur. The texture maps were created in Painter with as much accuracy as possible. Photographic references from photographs from various Internet searches and several field guides were used.

Field Guide Sources:

- **Wikipedia** (http://www.wikipedia.com)
- **Birdlife International** (http://www.birdlife.org)
- **"The Sibley Guide to Birds"** by David Allen Sibley
- **Handbook of the Birds of the World Alive** (https://www.hbw.com)

Other Resources:

- **Songbird ReMix Central** (http://www.songbirdremix.com)
- **Songbird ReMix on Facebook** (http://www.facebook.com/pages/Songbird-ReMix/208762869171101)


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