

Avian Models for 3D Applications by Ken Gilliland



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#### Introduction

Ravens and crows through the ages have represented the darker and sometimes, playful elements in human cultures. In Irish mythology, crows are associated with Morrigan, the goddess of war and death while the Norse believed that ravens carry news to the god Odin about the mortal world. In Hawaiian, Aboriginal and Native American cultures, crows and ravens are believed to be embodiments of ancestor's spirits or sometimes "The Trickster"; a deity that breaks the rules of the gods or nature, sometimes maliciously but usually with ultimately positive effects. The collective name for a group of crows is a "murder of crows".

Ravens and crows are now considered to be among the world's most intelligent animals. Recent research has found some species capable of not only tool use but also tool construction.

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):
  - Perching Birds (Order Passerines)
- **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**. <u>Note:</u> 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.

### Where to find your birds

Type Folder	Bird Species
<b>Perching Birds (Order Passeriformes)</b> Crows, Jays and their Allies	All Crows and Ravens

### Where to find your poses

Type Folder	For what species?
Perching Birds (Order Passeriformes) Poses can be found in "Universal Poses" & "type" folders	All Crows and Ravens

### One Folder to Rule Them All

When I reworked the entire Songbird ReMix library starting in 2018, I decided to abandon the way the birds were sorted (by product name) and choose an Ornithological approach. All birds are found in the Bird Library folder and are arranged by type of bird. This approach is hopefully easier for most to find what bird they are looking for. Admittedly, it will take some getting use to for some longtime users, but I've always approached the Songbird ReMix series as a learning tool as well as a graphics tool, so hopefully some knowledge will rub off by seeing how birds are grouped.

Probably the most deceiving subfolder in the **Bird Library** is "**Perching Birds (Order Passeriformes)**". This is folder you probably will end up "favoriting" because this one folder Passeriformes) holds more than 50% of all birds. Perching birds range from cardinals and jays to chickadees, crow and swallows.



Finding the bird you want within the **"Perching Birds (Order Passeriformes)"** folder can be daunting, even for an experienced birder (such as myself), so I've included an online reference tool within this folder that helps to make your search easier. Click the **"Perching Birds Finder"** icon and when loaded, look at the first column and search for the type of bird you want. For example, I want a "manakin" (a bird common to Central and South America). Scroll down the

first column alphabetically and stop on "manakin". Looking across to the second column, you will now know that manakins can be found in the "Tyrant Flycatchers & their Allies" subfolder.

### **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.

### **Posing & Shaping Considerations**

This volume has various species, 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.

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

- Birds will not be flat on the zero plane due to leg size and overall scale.
- Because of the numerous beak shapes, closing the beak may range from 0.5 to 1. Usually 0.8 is about right.
- **Raise Upper Beak** (*in Action Controls*): This morph is a "one size fits all" control. Because of the variety of beak shapes. It may not work with all birds.
- **Tongue poke-through** (especially when the beak is open). This can be easily solved by using the **Throat-Fuller1 & 2** morphs (*found in Creation Control/Head Shapes*).

#### **IK Concerns**

Some poses may go askew when IK is turned on. By default, Poser's IK feature is turned off when loading a bird. To turn it on, select the "Figure" category from the main tool bar and "Use Inverse Kinematics" from the submenu. By default, DAZ Studio's IK feature is turned on when loading a bird. This will cause the thigh and shin rotations change when the character is moved. The **CTRL K** keypress will turn IK on and off in DAZ Studio. IK doesn't work that well in Studio, so I suggest selecting the character in the **Scene tab** and simply deleting the two IK body parts to remove IK.



# **Field Guide**

Australían Raven

Common Raven

White-necked Raven

American Crow

Common or Western Jackdaw

'Alala - Hawaíían Crow

Rook

### **Common Name:** Australian Raven **Scientific Name:** *Corvus coronoides*

**Size**: 18-21 inches (48-54 cm)

**Habitat**: Australia; Endemic--not common throughout eastern, southern Australia and southern Western Australia (the populations being connected by a narrow strip across the Nullarbor Plain) but is found in the far north. It has adapted very well to human habitation in some cities and is a common bird in urban Sydney, and Rottnest Island.

It is omnivorous and has adapted well to urban environments and is a common city bird in Sydney and Canberra.



**Status:** Least Concern. **Global population**: 7,870,000 mature individuals. It has increased in range and numbers with spread of agriculture, artificial water sources in range lands, and urbanization. It has benefited from artificial food sources, and is common in developed habitats. It is considered a pest species in sheep-rearing lands, orchards, around poultry and in cities, and consequently is legally unprotected and is

persecuted by shooting, trapping and poisoning in farmland (with little apparent effect on numbers).

**Diet:** Omnivorous predator and scavenger; strongly carnivorous. Feeds mainly on invertebrates, small birds, eggs, nestlings, small mammals and carrion; occasionally frogs and lizards, rarely fish. Also seeds, some fruit, other plant material, occasionally nectar. Sometimes attacks weak or dying lambs.

It is opportunistic in nature, feeding mainly on the ground in open habitats, occasionally in trees. It forages mainly by walking and gleaning from the ground or low vegetation, occasionally snatching prey from foliage or in the air. It commonly patrols roads, sheep paddocks, rubbish dumps and parks for carrion and refuse. It often dunks carrion and household food scraps in water before eating. It may cache or bury leftover food, later retrieving those stored items. It forages singly, in pairs and in family parties. Sometimes it is seen in small flocks in non-breeding season.

**Nesting:** A large crow with a stout bill and long, lanceolate throat hackles. It has tapered wings and a rather long, slender tail in flight. The plumage is entirely glossy black, with a sometimes gray feather base on the head and neck. Its iris is white and the bill is black. Legs are black. Sexesare alike. Juveniles are duller than adults, with shorter hackles, pink gape and gular skin. The eyes are blue-gray (fledgling) to brown. Older immatures (in 2nd-3rd year) have brown eyes, becoming hazel.

Breeding season is from July to September. Ravens always nest in tall trees, never near to the ground as some species do. Nests are generally large and untidy, consisting of a bowl or platform of sticks lined with grasses, barks, and feathers. A clutch can comprise 3–6 eggs, though usually 4 or 5 are laid. Measuring 45x30 mm ( $1\frac{3}{4} \times 1\frac{1}{4}$  in), eggs are pale green or bluish-green splotched with darker olive, brown and blackish markings. Incubation of the eggs is done solely by the female over roughly 20 days. Only one brood is raised per year. Fledged by 45 days and staying with parents for about four months after that.

**Cool Facts:** One of three Australian species commonly known as "ravens". It is a more slender bird than the Common Raven of the Northern Hemisphere but is otherwise similar. It can live up to 22 years.

- *C. c. coronoides.* The nominate subspecies is found in eastern and southeastern Australia, including some major offshore islands (e.g. Kangaroo Island, in South Australia).
- *C. c. perplexus.* It is found in southwestern Australia. Race *perplexus* is slightly smaller than nominate, and has slightly shorter hackles.

### **Common Name**: Common Raven **Scientific Name**: *Corvus corax*

Size: 22-27 inches (56-69 cm)

**Habitat**: North America and Eurasia, southward into Central America and northern Africa.

**Status:** Least Concern. **Global Population:** 137,000,000 mature individuals with an increasing population trend. The Common Raven had nearly disappeared from the northeastern United States in the early part of the 20th century. Its numbers in that area increased markedly in the last half of the century, and it is reoccupying much of its former range. Because of small population sizes in much of the East, it is listed as endangered or threatened in a number of states. Populations have been increasing all across the range, especially in the West where it has taken advantage of human-modified habitats.

**Diet:** Omnivorous; meat, eggs, insects, grain, fruit, garbage and carrion.



Actively scans for carrion, investigates locations of gunshots, wolf howls, and calling conspecifics. It watches foraging birds and mammals for cues. It actively hunts from perch, in flight and on foot. Where large animal carcasses a primary food, and when carcasses especially widely dispersed and ephemera, naive ravens follow their roost mates to newly discovered food bonanzas.

**Breeding**: The nominate race is black, with greenish gloss on head and tail, primaries and under-parts, more bluish-purple gloss on upper-parts and rest of wing.

The raven often uses sheep wool to line its nest. When the female leaves the nest for a while she may cover the eggs with the wool. The nest is usually placed on a cliff or in tree, but has also been found in man-made structures such as telephone poles and abandoned cars.

**Cool Facts:** The largest of the songbirds, the raven is one of the most widespread species in the world. The raven is perhaps the smartest of all birds. It has been documented that Ravens carry "favorite" sticks with them that they use as tools to spear grubs. They are known to drop hard-to-crack nuts into crosswalks, let the cars run them over and then wait for a red light to collect their meal.

Breeding pairs will hold territories and try to exclude all other ravens throughout the year. Intruders who discover food within another bird's territory may call to other ravens to swamp the territories defenses to steal the food.

Continued urban development has helped the raven populations to increase causing significant negative effects on the populations of endangered desert tortoises and Least Terns. Ravens have also been implicated in causing power outages by contaminating insulators on power lines, fouling satellite dishes at the Goldstone Deep Space Site, peeling radar absorbent material off buildings at the China Lake Naval Weapons center, pecking holes in airplane wings and even stealing golf balls.

- *C. c. principalis*. First reported by Ridgway in 1887. It is found in Alaska eastward across ice-free portions of Canada to coasts of Greenland, southward in USA to Pacific coast of Oregon and Washington and, in the east, in Appalachian Mountains southward to northern Georgia. A large race but slightly smaller and with less massive limbs, skull, and bill than *kamtschaticus*. The ravens of the Alaskan tundra approach the *kamtschaticus* size.
- *C. c. sinuatus.* First reported by Wagler in 1829. It is found the west-central USA to southern Baja, the Revillagigedo Islands and northwestern Nicaragua. It intergrades with *principalis* in central-south British Columbia, Washington, and Oregon. Intermediates are with shorter wing and tail, a slenderer and shorter bill, smaller feet and skull. The southern-most populations (southern Mexico,Central America) may average larger than northern *sinuatus.*
- C. c. varius. It is found in Iceland and Faroe Island.

- *C. c. corax.* First reported by Linnaeus in 1758. The nominate subspecies is found in Europe and the Mediterranean islands to western Asia.
- *C. c. laurencei.* First reported by Hume in 1873. It is found in eastern Greece and Cyprus eastward through Middle East to eastern Kazakhstan, western China (except in the mountain regions) and northwestern India. This race is slightly larger than the nominate, and often has worn, brown plumage on the nape, mantle and throat. It integrades with the nominate in central Europe.
- *C. c. tingitanus.* First reported by Irby in 1874. It is found in the Canary Islands and coastal Morocco to Egypt. It is small, with a very short, stout bill, long wings and a short tail. It has short and less lanceolated throat plumes. The plumage appears glossy and "oily."
- *C. c. tibetanus.* First reported by Hodgson in 1849. It is found in central Asia from Tien Shan and Pamirs southward to Himalayas and the mountains of western. It is very large and highly glossy, with the longest of the throat hackles.
- *C. c. kamtschaticus.* First reported by Dybowski in 1883. It is found in Siberia eastward to Kamchatka, Commander Island and the coastal regions of Sea of Okhotsk, southward to northern Mongolia, northeastern China, Sakhalin, Kurils and northern Japan (Hokkaido).

## **Common Name:** White-necked Raven **Scientific Name:** Corvus albicollis

Size: 19.7-21.3 inches (50-54 cm); Wingspan: 29.5-33.9 (75-86 cm)

**Habitat**: Africa; it is endemic to Uganda and western Kenya southward over eastern DRCongo, Rwanda, Burundi, Tanzania, Zambia, Malawi, Northern and Western Mozambique, most of Zimbabwe (except in the west), Eastern and Southern South Africa (southward to Cape Town), Swaziland and Lesotho. It has been seen in eastern Botswana.



It occurs in eastern and southern Africa in open, mountainous country. It is quite commonly found in small towns and villages as long as there are mountains or hills for roosting and nesting relatively nearby. **Status:** Least Concern. **Global Population:** 5,660,000 mature individuals with a declining population trend. It is considered a pest in parts of South Africa and elsewhere because of its sheep-killing habits, and is widely trapped, poisoned or shot and its nests destroyed by farmers. There is a marked decrease reported in the extreme northern part of range in Kenya as a result of eating poisoned carcasses put out for predators of cattle and sheep.

**Diet:** Omnivorous, but mainly carnivorous. It is most often seen eating carrion from road kills. Fruit, grain, insects, small reptiles, peanuts and human food are also readily taken, and the bird forages in back yards and gardens quite openly.

Most of this bird's food is obtained from the ground, but it will take food from trees as well. It has been seen to drop a tortoise from a height on to hard ground, preferably on rocks, and then swoop down to eat it, or even pick it up again if not sufficiently broken.

**Breeding**: A very large, chunky raven with relatively short tail and broad-based wings. The nasal bristles are fan-shaped, upcurving, almost concealing basal third of upper mandible. The throat feathers pointed and slightly forked. It has a massive bill with a strongly arching culmen. The head, neck and the under parts are blackish-brown with a purplish sheen. The lores are blacker. There is a large white patch across the lower nape and the upper mantle, extending slightly onto the sides of neck. The feathers of foreneck and breast can be fringed whitish, forming weak breastband. The remainder of the plumage, including wings and tail, are coal-black with green sheen. The iris is dark brown and the bill is black with an ivory-white tip. The legs are black. Sexes are alike. The juvenile lacks white tip of bill, is duller than the adult, often with some dark streaking in the white nape patch, and sometimes with scattered white feathers over the neck and breast..

Nests are bowls of sticks lined with grass, hair, and wool, built mainly on cliff ledges but occasionally found in trees. There are usually 3-5 eggs laid.

**Cool Facts:** The call is a surprisingly high-pitched, short, rolled "*kraa*" or longer "*krrraaa*", often uttered without the rolling quality (then sounding like bleat of a trumpet). Also reported is a short metallic clattering "*cluk-cluk-cluk*", directed, with the head bowed, at a presumed mate.

White-necked ravens form flocks after leaving their parents and, once fully matured, will pair off and form territories. They are often found in the company of other scavengers such as kites or vultures.

### **Common Name:** American Crow **Scientific Name:** *Corvus brachyrhynchos*

Size: 16-21 inches (40-53 cm)

**Habitat**: North America; its range extends from the Pacific Ocean to the Atlantic Ocean in Canada, on the French islands of Saint-Pierre and Miquelon, south through the United States, and into northern Mexico.

American Crows are found in a wide variety of habitats, particularly in open landscapes, with scattered trees and small woodlots. The clearing of hardwood and coniferous forests, planting of trees around prairie homesteads and urban centers, and tilling of agricultural land has created additional habitat for the species, which is now more abundant than it was when the first European settlers arrived.



**Status:** Least Concern. **Global Population:** 31,000,000 mature individuals. Populations are common and widespread with a slight increase since 1950. Crows have been killed in large numbers by humans, both for recreation and as part of organized campaigns of extermination. American crows are protected internationally by the Migratory Bird Treaty Act of 1918. Despite attempts by humans in some areas to drive away or eliminate these birds, they remain widespread and very common. Populations may decrease due to the high susceptibility from West Nile Virus.

**Diet:** Omnivorous. A wide variety of invertebrates (terrestrial and marine); amphibians; reptiles; small birds and mammals; birds' eggs, nestlings and fledglings; grain crops; seeds and fruits; carrion; and discarded human food.

It forages alone, in pairs, in families, or in small to large flocks. It is vigilance while feeding in an urban environment decreased as group size, time of day, relative distance to source of disturbing factor (e.g., car traffic, degree of human activity), and duration of current day's precipitation increased. The group size alone was best predictor of vigilance while foraging. It obtains most its food on the ground by walking, sometimes hopping, when sees prey at a distance. It It probes with bill into turf, flicking aside debris, and grabs or tilts larger objects, such as dry cow pies, sideways or forward with bill, to let them fall over and to expose hidden food.

**Breeding**: Sexes are alike, however male crows are slightly larger than females. Adults have glossed black feather tinged with violet. It has a stout, glossy black bil. The nares covered with stiff, bristle-like feathers. The iris is brown. The tips of the folded wings do not reach tip of tail at rest and the tail is slightly rounded. It is very similar in appearance to the Northwestern Crow (*Corvus caurinus*), this species is larger, has a higher-pitched voice, and is less social during the breeding season. The American Crow is also similar in appearance to the Fish Crow (*Corvus ossifragus*), which is smaller and has a distinct nasal voice. Where American Crow overlaps Northwestern Crow (e.g., Puget Sound, Washington) and Fish Crow (Atlantic seaboard and southeastern U.S.), identification is difficult, with voice the most reliable character.

American crows are socially monogamous cooperative breeding birds. Mated pairs form large families of up to 15 individuals from several breeding seasons that remain together for many years.

The nest is built by both sexes and is a large open cup of sticks lined and grass and mud. For one to 3 days prior to onset of incubation, the female sits in or next to the nest and gives a "Food-Begging" call. The male (and helpers) feed the female.Three to six pale blue-green eggs with brown markings are laid. Incubation lasts about 16-18 days. Brooding lasts 9-14 days.

**Cool Facts:** Crows are extremely intelligent birds. They are known for their problemsolving skills and amazing communication skills. For example, when a crow encounters a mean human, it will teach other crows how to identify the human. In fact, research shows that crows don't forget a face. While crows are carrion eaters they are not specialists at being scavengers. Their bills are not strong enough to break through the skin of road kill mammals; they must wait for others to open up their meal or wait for the carrion to decompose.

American Crows communally roost. Roosting areas are established and often are used for decades. Some are reported to be hundreds of years old. Roosts can be of a few hundred, several thousand, or even up to several million crows.

Crows often lead a double life. They may spend part of the day at home with its family in town and the rest of the day with a flock feeding in the country.

Large-scale persecution during the nineteenth century and first half of the twentieth made crows shy of people. They learned quickly, however, that there is safety from guns in villages and cities and that food is abundant there.

There are four recognized subspecies:

- C. b. brachyrhynchos. First reported by Brehm in1 822. The nominate species, the Eastern Crow, is found in eastern North America (northern populations migratory) from southwestern Northwest Territories eastward to Newfoundland southward to eastern Texas and southern New Jersey (excluding southeast U.S.). Boundary in west uncertain, range extended westward to include Montana and Wyoming south to central Arizona by Johnston (Johnston 1961b), who also synonymized C. b. paulus with nominate brachyrhynchos. Birds in Great Basin region (s. Idaho, Utah, and Nevada) were ascribed to C. b. brachyrhynchos by Richards (Richards 1971), who noted small bill in these populations matched C. b. hesperis . Large; bill long, decurved, and blunt (nares to tip 31.4–44.0 mm); tarsus relatively short: 50.8–64.4 mm; female: wing 284–327 mm, tail 158–187 mm (n = 100); male: wing 295–341 mm (n = 75), tail 162–199 mm (n = 71).
- *C. b. paulus.* First reported by Howell in 1913. The Southern Crow is a resident in the eastern and southeastern U.S. from Delaware and Maryland southward through south and eastern West Virginia, southeastern Kentucky, and eastern Tennessee and southwestward to southeastern Texas including Louisiana, southeastern Arkansas, and Mississippi; southern limit uncertain but at least to northwestern Florida. The validity of this race has been doubted, but authors disagree on how to treat them. Synonymized with the nominate *brachyrhynchos*. Although practically inseparable from *C. b. hesperis* based on measurements (wing and tail lengths; but more data needed with weights and bill lengths of known adults), suggestion by Rea that *paulus* be synonymized with *hesperis* would seem to have little biogeographic support. May intergrade in northern Florida Peninsula with *C. b. pascuus*, as characteristics for latter race most distinct only in southern two-thirds of peninsula.
- *C. b. pascuus.* First reported by Coues in 1899. The Florida Crow is a resident in the Florida Peninsula. It has proportionately large feet and a relatively long tarsus and bill. Characteristics best developed in southern portion of peninsula (see *C. b. paulus*, above), where also differs behaviorally (see Geographic variation, above). Measurements: bill (nares to tip) 32.7–41.9 mm; tarsus relatively long (55.4–65.9

mm); female: wing 278–320 mm (n = 49), tail 156–179 mm (n = 48); male: wing 288–327 mm, tail 159–188 mm (n = 32).

C. b. hesperis. First reported by Ridgway in 1887. The Western Crow is a resident (northern populations migratory) from northern British Columbia, central Alberta, central Saskatchewan southward to northwestern Baja California, central Arizona, and north-central New Mexico. Birds in Great Basin region (central-southernmost Idaho and southeastern Wyoming southward to central Arizona and central New Mexico) said to have slender bill that is laterally compressed (especially distally) ascribed to race "C. b. hargravei " by Phillips. Small; bill small, straight, and sharp (nares to tip 28.3–40.1 mm); tarsus 48.8–63.5 mm; female: wing 272–317 mm, tail 147–179 mm (n = 100); male: wing 277–330 mm, tail 153–188 mm (n = 100). Measurements for " hargravei " in Pyle 1997c: large; bill small, straight, and sharp (nares to tip 30.0–38.0 mm); tarsus relatively short (50.5–65.3 mm); female: wing 305–323 mm (n = 15), tail 169–183 mm (n = 14); male: wing 310–333 mm (n = 15), tail 178–196 mm (n = 14).

There is debate of whether the Northwestern Crow (*C. b. caurinus*) is a true subspecies. Its ancestors became separated by Ice Age glaciation west of the Rocky Mountains. It is endemic to Pacific temperate rain forests where it all but replaces the American crow. Only in the Seattle region do they co-occur to any extent. There is a marked difference in voice.

# **Common Name:** Eurasian Jackdaw **Scientific Name:** *Corvus monedula*

Size: 13 inches (34-39 cm)

**Habitat:** Eurasia and Northwest Africa. In western and southern Europe it is a resident or short-distance migrant with some reaching North Africa. There is a native North African population which is resident. In Britain, they leaves higher ground, dispersing southwest with many reaching Ireland. Central European birds seem to disperse northward to the Netherlands and adjacent low-lying areas. Those from north of the range, particularly in western Siberia, move farther, although most winter in the southern and western Caspian region within southern limits of breeding range in central Asia.



It is found in a great variety of open country, preferably with scattered trees. It favors mixed farmland, parks and gardens, churchyards, wooded steppe, quarries and coastal cliffs. It tends to avoid both tracts of treeless country and extensive woodland or forests. Ascends to 2000 m in parts of Asia and Morocco; non-breeding birds reported up to 3500 m in Kashmir.

**Status:** Status: Least Concern. **Global Population:** 20,000,000 –100,000,000 Mature individuals. Abundant in most of range, but apparent population decreases over recent decades in most European countries.

**Diet:** Omnivorous, but less of a carnivorous scavenger than most of the Corvus family. In one study, 84% of diet plant materials, including grain, seeds and berries, but primarily carnivorous during breeding season. Normal summer diet includes wide variety of invertebrates, e.g. grasshoppers (*Orthoptera*), ants (*Formicidae*) and great variety of flies (*Diptera*); moth caterpillars (especially *Tortrix viridana*) and beetles (*Coleoptera*) also important components. Some individuals specialize, and become adept at taking eggs of both small and large birds. It forages along tideline, primarily for sandhoppers (*Talitridae*).

It takes household scraps of different kinds, and may become cautiously confiding about picnic sites and in city parks. It feeds chiefly on the ground, walking with bold, strutting gait, as it searches for insects. It will side-hop to catch prey items. It often perches on cattle and sheep to feed on ectoparasites. It will fly high during ant emergences of flying ants, catching the ants on the wing and pursue other birds to make them drop food items. It is sociable in non-breeding season and seen in large numbers joining C. frugilegus and C. corax on short-cropped grassland and fields. It rarely stores food items, and even then seems not to bury them.

**Breeding:** It is a small, sociable crow with moderately long tail somewhat rounded at tip. It has a small and short bill and a flat forecrown. Feathers can be raised to form slight mid-crown crest. Sexes are similar. The nominate race has a forecrown blackish with a slight bluish gloss. The rear crown, nape and side of head are a contrastingly pale gray. It has a distinct whitish collar at base of the nape with the remainder of the plumage bring dark gray. The upper parts with weak bluish sheen, the upper wing and the tail are similar but darker. The iris is light gray-white. The bill and legs are black.

The juvenile has a dark iris and the entire head and body plumage is softer, tinged brownish and without gloss. By the first autumn, most of the head and body plumage are replaced with adult-like colors. The dark iris may persist until end of the first winter.

Breeding season starts in late April in Britain and northern Europe, mid-April in central Europe, and first half May in northwestern Russia and in central Asia and Kashmir. Jackdaws form a long-term pair bond. They are semi-colonial, with several pairs nesting in close proximity on rooftop chimneys and in quarries and caves. Both sexes take part in construction of the nest. The foundation is a mass of branches and twigs, interspersed with mud and dung, inner cup quite deep and thick, of mosses, rotten wood, feathers and fur and wool, usually in some cavity of some kind, e.g. tree hole, rock crevice in quarry, or in sea cliff alongside Razorbills (*Alca torda*) and Black-legged Kittiwakes (*Rissa tridactyla*), in rabbit (*Oryctolagus*) burrow, chimney, mine-shaft, or bridge. A clutch 3–8 eggs is laid and the female incubates for about 17–19 days. The chicks fed by both parents with the nestling period lasting about 30 days. Family-members soon join up with others and form quite substantial summer flocks. Cool Facts: The jackdaw is one of the smallest species from the Crow family.

"The complex social interactions that occur in groups of Jackdaws was studied by Konrad Lorenz and a detailed description of the Jackdaw's social behaviour is described in his book "King Solomon's Ring". Lorenz put coloured rings on Jackdaws' legs so that individual birds could be easily identified and he caged them in the winter because of their migration from Austria. Lorenz observed Jackdaws' hierarchical group structure with dominance of the higher-ranking birds over others. He noticed Jackdaws' strong male–female bonding and that each bird of a pair occupy about the same position in the hierarchy. He reported that a low-ranked female Jackdaw rocketed up the Jackdaw social ladder when she became the mate of a high-ranking male. He also described some Jackdaw calls." (Wikipedia)

**Cool Facts:** Races differ mainly in color saturation and in prominence of pale collar at side and rear of nape:

- *C. m. monedula*. First reported by unknown. The nominate species is found in Scandinavia to the northern Alps, Carpathian Mountains and western Russia.
- *C. m. spermologus.* First reported by unknown. It is found in Western and Southern Europe from British Isles, eastward to Italy, southward to Morocco and northwestern Algeria. It is darker than nominate, especially on the nape, with the blacker face, lores and throat, and lacks the pale hind collar or has only a weak, diffuse grayish-white line at base of neck;
- *C. m. soemmerringii.* First reported by unknown. It is found in southern and southeastern Europe to Turkey, Cyprus and northern Israel, eastward in Asia to south-central Siberia, western Mongolia, western China (Northern and Western Xinjiang) and Kashmir. It winters in the northern Middle East and eastward to northwestern India. It is paler gray than *soemmerringii.* especially on the nape, and it has very distinct pale collar which, in southern and eastern populations, finishes in wider whitish blotch at side of neck.
- *C. m. cirtensis.* First reported by unknown. Found in northeastern Algeria. It is uniformly slate-grey, with far less contrast on the head and nape than other races.

### **Common Name:** 'alalā (Hawaiian Crow) **Scientific Name:** *Corvus hawaiiensis*

**Size**: 19-20 inches (48-50 cm)

Habitat: Oceania; Hawaiian Islands.

Before the Hawaiian crow became extinct in the wild, the species was found only in the western and southeastern parts of Hawaii. It inhabited dry and mesic forests on the slopes of Mauna Loa and Hualālai at elevations of 3,000 to 6,000 feet. Ōhi'a lehua (*Metrosideros polymorpha*) and koa (*Acacia koa*) were important tree species in its wild



habitat. Extensive under-story cover was necessary to protect the crow from predation by the Hawaiian Hawk, (*Buteo solitarius*). Nesting sites of the 'alalā received 600–2,500 mm (24–98 in) of annual rainfall. Fossil remains indicate that the Hawaiian crow used to be relatively abundant on all the main islands of Hawaii, along with four other extinct crow species. **Status: Extinct in the wild. Global Population:** 114 mature individuals. The reason of its decline and extinction in the wild is unknown, although avian malaria passed by the non-endemic mosquito is believed to be a contributing factor. Although the 'alalā survived human colonization of the islands, beginning about 1,600 years ago, it is besieged by formidable threats and is one of the most highly threatened species in the world.

The last two known wild individuals of this species disappeared in 2002. There are some individuals in captive breeding facilities, but attempts to reintroduce captive-bred birds into the wild have been hampered by predation by the Hawaiian hawk or 'lo (which is also endangered). While some scientists believe that the small number of remaining individuals may be too small to offer a diverse gene pool, the San Diego Zoological Society's breeding program produced 11 new fledglings in 2010 giving this species hope to survive.

Activity within the captive flock has been relatively low and unreliable since 'alalā were first captured for captive propagation in 1973. Of 27 'alalā released to the wild during 1993–1999, 21 disappeared or died mainly because of diseases, predation by 'lo, and possibly poor nutrition (USFWS). None produced eggs, although many survived to sexual maturity and two 4-yr-olds paired and constructed nests. The 6 surviving 'alalā were captured in 1999 and have been held with other captive-reared birds for protection and breeding until limiting factors in the wild can be reduced.

There have been attempts to reintroduce the 'alalā to the forests since 2016. Out of the 30 birds released, only these five had survived. The five birds were recaptured, one of those is named Kia'ikūmokuhāli'i (Guardian of the Forest). In the days before his recapture, researchers could hear Kia'ikūmokuhāli'i making alarm calls as an 'lo (Hawaiian Hawk) was seen circling the area. But he stood his ground quite well.

"We call him the 'champion bird," project coordinator Jackie Guadioso-Levita says, citing his survival skills. "He can be aggressive and has been seen mobbing 'lo."

"These five birds can serve as really valuable mentors," she says. "We want to make sure that their skills and wild culture can be passed on to future release birds."

Since the captive 'alalā have been given a more natural diet, the birds have started engaging in courtship behaviors and formed multiple breeding pairs, many of which went on to display preliminary nest-building efforts (though only one pair successfully completed a nest).

Most of the mated pairs chose to make their nest attempts in the 'Ōhi'a tree, a native flowering evergreen preferred by breeding 'Alalā. Unfortunately for the project, the species' reliance on these trees adds a layer of complexity to the reintroduction effort.

The 'Ōhi'a is threatened by an invasive fungal species that swiftly kills the trees, which make up a large portion of Hawaii's forests.

Such complications are what make any reintroduction difficult, and though the crows have shown encouraging progress, the researchers are aware of how fragile the situation remains. Next up in the plans is to release birds in areas other than the Pu'u Maka'ala Natural Area Reserve and to continue spreading awareness to local communities about the importance of restoring 'Alalā to their natural habitat.

"It's really important to keep in mind that it takes many years to establish a species back to the wild," says Gaudioso-Levita. "We're all in it for the long haul."

**Diet:** A varied diet, including carrion, eggs and nestlings, other small creatures, fruits, and even human food and scraps. The main portion of their diet, and 50% of their feeding activity is spent foraging on trunks, branches, and foliage for invertebrates such as isopods, land snails, and arachnids. They feed in a woodpecker fashion, flaking bark and moss from trunks or branches to expose hidden insects, foraging mostly on ohia and koa, the tallest and most dominant trees in their habitats. Fruits are the second most dominant component in the Hawaiian crow's diet. The crows often collect kepau and olapa fruit clusters. Although hoawa and alani fruits have hard outer coverings, crows continue to exert energy prying them open. Passerine nestlings and eggs are consumed most frequently in April and May, during their breeding season. Other prey include red-billed leiothrix, Japanese white-eye, Hawai'i 'amakihi, 'l'iwi, 'elepaio, and 'apapane. The 'alalā also commonly forages on flowers, especially from February through May. Nectar to feed the young are obtained from the ohia flower, oha kepau, and purple poka during the nestling period. Crows also foraged various plant parts, including the flower petals of kolea, koa, and mamane. The palila is the only other Hawaiian bird known to eat flower petals. The 'alalā only occasionally forages on the ground, but only for a limited amount of time for risk of predators.

Captive individuals can use sticks as tools to extract food from holes drilled in logs. The juveniles exhibit tool use without training or social learning from adults, and it is believed to be a species-wide ability.

**Nesting:** It is similar to a carrion crow but with more rounded wings and a much thicker bill. It has soft, brownish-black plumage and long, bristly throat feathers; the feet, legs and bill are black.

Female crows are considered sexually mature at about 2 or 3 years of age and males at 4 years. The Hawaiian crow's breeding season lasts from March to July; it builds a nest in March or April, lays eggs in mid-to-late April, and the eggs hatch in mid-May. Both sexes construct nests with branches from the native ohi'a tree strengthened with grasses. The crow typically lays one to five eggs (that are greenish-blue in color) per

season, although at most only two will survive past the fledgling phase. Only the females incubate the 2–5 eggs for 19–22 days and brood the young, of which only 1–2 fledge about 40 days after hatching. If the first clutch is lost, the pair will re-lay, which serves to be helpful in captive breeding efforts. Juveniles rely on their parents for 8 months and will stay with the family group until the next breeding season

**Cool Facts:** The 'alalā was one of the largest native bird populations in Hawaii. Its disappearance in the wild has had cascading effects on the environment, especially with the seed dispersal of the native plants. Many of these plants rely on the 'alalā not only for seed dispersal, but also for seed germination as seeds are passed through the crow's digestive system. Without seed dispersal, the plants have no means of growing another generation. The 'alalā plays a key role in the maintenance of many indigenous plant species, which now could become a rarity in Hawaii's ecosystems, specifically the dry forests, without their main seed disperser. The Hawaiian crow has become known as an indicator species; the disappearance of the 'alalā indicates serious environmental problems.

### Common Name: Rook Scientific Name: Corvus frugilegus

Size: 17.3-18.1 inches (44-46 cm); Wingspan: 31.8-39 (81-99 cm)

**Habitat**: Eurasia; a resident over the western and southern parts of its range. It is migratory in the north and east. Many Baltic and Dutch breeders winter in eastern England, those from eastern Europe (including Poland and Russia) winter in central Europe, those from western and central Ukraine move to plains from Hungary to



northern Italy, and the southern Ukrainian birds winter in Bulgaria, whereas those from south-central Ukraine move to the western Caspian region. Northern Caspian breeders winter in Iraq and birds from northwestern Kazakhstan move to lowlands of the southwestern Caspian, and many other Kazakh birds winter from northern Iran to Uzbekistan, being joined by others from Altai region to winter from eastern Uzbekistan to Tajikistan and western Pakistan (chiefly North West Frontier), a few entering Ladakh and northwestern India (exceptionally to Haryana). Vagrants have been reported in Iceland, Svalbard, Bear Island, the Balearic Islands, Malta, Lebanon, Jordan, Kuwait, Tunisia, Algeria, and Azores and Madeira. Northern populations of the eastern Asian race (*pastinator*) winter over eastern China southward to Guangdong, with vagrants recorded Hainan I and Taiwan; also winter visitor to Japan, chiefly to Kyushu and have been reported in Tsushima, on Hokkaido and southward to Okinawa, on Sakhalin Island and the extreme southern Kuril Islands (Kunashir). In South Korea, it is now thought to be uncommon winter visitor. In New Zealand, where it was introduced, it disperses widely, with vagrants reported Northland, Wellington, Stewart Island and even the Chatham Islands.

It prefers mixed farmland in fairly flat open country, typically in lowland riverine plains, with stands of tall trees or patches of woodland for nesting and roosting. It requires extensive areas of grassland or arable farmland for foraging. It can be found in large city parks, with tall trees at edges of towns and villages being ideal for rookeries. In Europe mostly below 400 m, but reaches 700 m in Carpathians; in foothills of Altai, in central Asia it can breed up to 2000 m elevations.

**Status: Status:** Least Concern. **Global Population:** 54,000,000-94,999,999 Mature individuals with a declining population trend. The nominate race is abundant, and also well studied. Colonial nesting makes it an easy bird to census. Some winter gatherings reach immense size, with roosts of up to 500,000 individuals recorded in several urban centers in Poland. Although flocks widely regarded as destructive to crops (either by perching on and flattening growing corn or by digging up sprouting cereals and root crops), it can be argued that any harm done by this species is balanced by its usefulness in consuming large quantities of insect pests. Nevertheless, is still persecuted in many countries, by means of shooting and also indirectly through use of pesticides.

Throughout the 20th century populations of this corvid have risen and fallen according to changes in farming practices, notably the loss of extensive pasture, and also the application of pesticides and seed-dressings. In Netherlands, for example, population was estimated at 40,000 pairs in 1944, had dropped by 97% to 1,100 pairs by early 1970s (this blamed principally on pesticides), but by 1985 had risen again to 28,000 pairs. In Latvia, the 16,000 pairs of early 1970s had dropped to 7,000–9,000 ten years later through persecution.

Race *pastinator* appears to have declined considerably over much of its wide range, probably through use of pesticides. At Beidaihe, in northeastern China, where very large numbers were noted on migration in 1940s ("cloud-like flocks of 10,000" in Nov 1945) and where it was described as a common breeding species, there was no evidence of breeding and only relatively small numbers passing (peak day count of 392) during observations in 1985–1990, despite popularity of the area as a birdwatching holiday destination. The status in Korea is unclear, but is suspected to have declined considerably and is now thought to be uncommon winter visitor.

The nominate race introduced into New Zealand during 1862–1874 and about 30,000 birds were present in 1978, of which 25,000 in Hawkes Bay area and 2,500 about Canterbury, despite attempts to control numbers (at least 35,000 were poisoned or shot during 1971–1976). It is well established over the southeastern part of North Island and the Canterbury area of the eastern coast of South Island.

**Diet:** Omnivorous, but less of a carrion-feeder than are many other crows. The main food items include earthworms and grain. A wide range of other small invertebrates taken, notably beetles and cranefly larvae, as well as such vertebrates as small lizards, frogs and small mammals, and eggs and nestlings of small birds. Grain and seeds taken mostly in autumn and winter, when can account for up to 90% of diet. Grain may be salvaged from stubble fields or dug up from freshly sprouting crop, causing crop damage.

They are highly gregarious, foraging in flocks in open country. They freely mixes with the Eurasian Jackdaw (*C. monedula*), Daurian Jawdaws (*C. dauuricus*), Carrion Crows (*C. corone*), Hooded Crows (*C. cornix*) and starlings (*Sturnidae*). They feed by probing and digging, walking and hopping between bouts of digging. They will scavenges about picnic sites and even entering litter bins. In suburban gardens, many now visit birdtables and feeders, where they show great ingenuity by hanging on suspended bones or fat, or pulling string up with bill and clamping it underfoot to get at food. They also chase other birds to force them to drop food item.

In autumn, they store food items for the winter, placing acorns, walnuts and pine cones in hole and covering it over with grasses. They roost in stands of large trees, often flying quite high for considerable distances to reach roost, which usually also attended by large numbers of jackdaws; some winter gatherings reach immense size.

**Breeding**: Relatively small-headed, short-legged crow with low-slung belly, loose tibia feathering ("baggy shorts") and tapered pointed bill. The nominate race is wholly black, highly glossed with bluish and purplish (blue gloss tinged violet in the southern range), gloss most evident on wing. The plumage of head and neck particularly dense and silky; distinctive bare whitish area on chin and lores extending to bill base (bare face empathizes peaked crown). The iris is dark brown and the bill dusky towards tip, becoming lighter towards base. It does not have nasal bristles. The legs are dark slate-gray. Sexes are alike. Juveniles are duller than adults, with the nape and mantle browner, and the bill base and face more fully feathered. The bare face and absence of nasal tuft may not be apparent until 10–15 months of age.

Egg-laying begins early to mid-March in Britain; early April in central Europe but not until mid-April in Moscow region, and early May in Omsk region (Russia) and in Kazakhstan. Introduced birds in New Zealand breed during austral spring, laying late August to mid-November. The Rook is single-brooded. Despite being of a highly gregarious nature, Rooks form a long-term, possibly lifelong pair-bond. Promiscuity, however, is commonplace. They are strongly colonial, forming rookeries of a few pairs up to thousands of pairs in stands of tall mature trees. Nests are built by both sexes, the male bringing in material and the female undertaking most of construction work. Work can take one to four weeks (depending on how much material stolen by the occupants of neighboring nests). The nest is a bulky structure of twigs and sticks, with the cup lined with roots, dry grasses and dead leaves. The nest may be repaired and reused for many years. A clutch two to seven eggs are laid and the incubation is performed by the female alone (although the male briefly covers eggs while female leaves nest). The incubation period lasts 16–18 days. The chicks are tended and fed by both sexes, with the male alone feeding for first 10 days. The nestling period lasts 30–36 days and the young will take wing at 42–45 days, remaining with the parents and fed by them for 6 weeks from fledging.

**Cool Facts:** Francis Willughby mentions rooks in his Ornithology (1678): "These birds are noisome to corn and grain: so that the husbandmen are forced to employ children, with hooting and crackers, and rattles of metal, and, finally by throwing of stones, to scare them away." He also mentions scarecrows "placed up and down the fields, and dressed up in a country habit, which the birds taking for countrymen dare not come near the grounds where they stand". It was some time before more observant naturalists like John Jenner Weir and Thomas Pennant appreciated that in consuming ground-based pests, the rooks were doing more good than harm.

There are two subspecies:

- *C. f. frugilegus.* The nominate subspecies, the Western Rook is found from southern Sweden, southern Norway and western Finland, the British Isles, France and Spain eastward across Europe (north of the Alps) and western Siberia to River Yenisey and the northwestern foothills of Altai and, in the south, to Asia Minor, Armenia, Azerbaijan and northwestern Iran, patchily northward through Caucasus region (avoiding mountains) to southern Russia, and from southern Kazakhstan, Uzbekistan and northern Turkmenistan eastward to the foothills of Tien Shan in Kyrgyzstan and extreme northwestern China (western Xinjiang). Northern populations migrate southward to the Mediterranean Basin and the Middle East eastward across Iran to Afghanistan, northwestern China and the northwestern Indian Subcontinent.
- *C. f. pastinator.* The Eastern Rook is found from central Siberia and northern Mongolia (from upper River Yenisey) eastward to southeastern Russia (Amur Basin southward from Yakutsk) and in central and northeastern China (eastward from eastern Qinghai and eastern Gansu, southward to northern Zhejiang). Northern populations migrate to eastern China, Korea and southern Japan. Race *pastinator* has a feathered face and chin, with just the bill base bare and whitish. The gloss of the head and neck is dull reddish-purple (rather than shiny bluish). Northern populations have a bluer gloss on the head and neck are on average a little smaller.

### Special Thanks to...

....my beta teams

**2013 release:** FlintHawk, Kat, Linda, Jan, and Sandra **2020 rerelease:** FlintHawk and Alisa

### **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.

### **Sources for this Bundle and Field Guide**

#### **Books, Magazines and Papers**

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