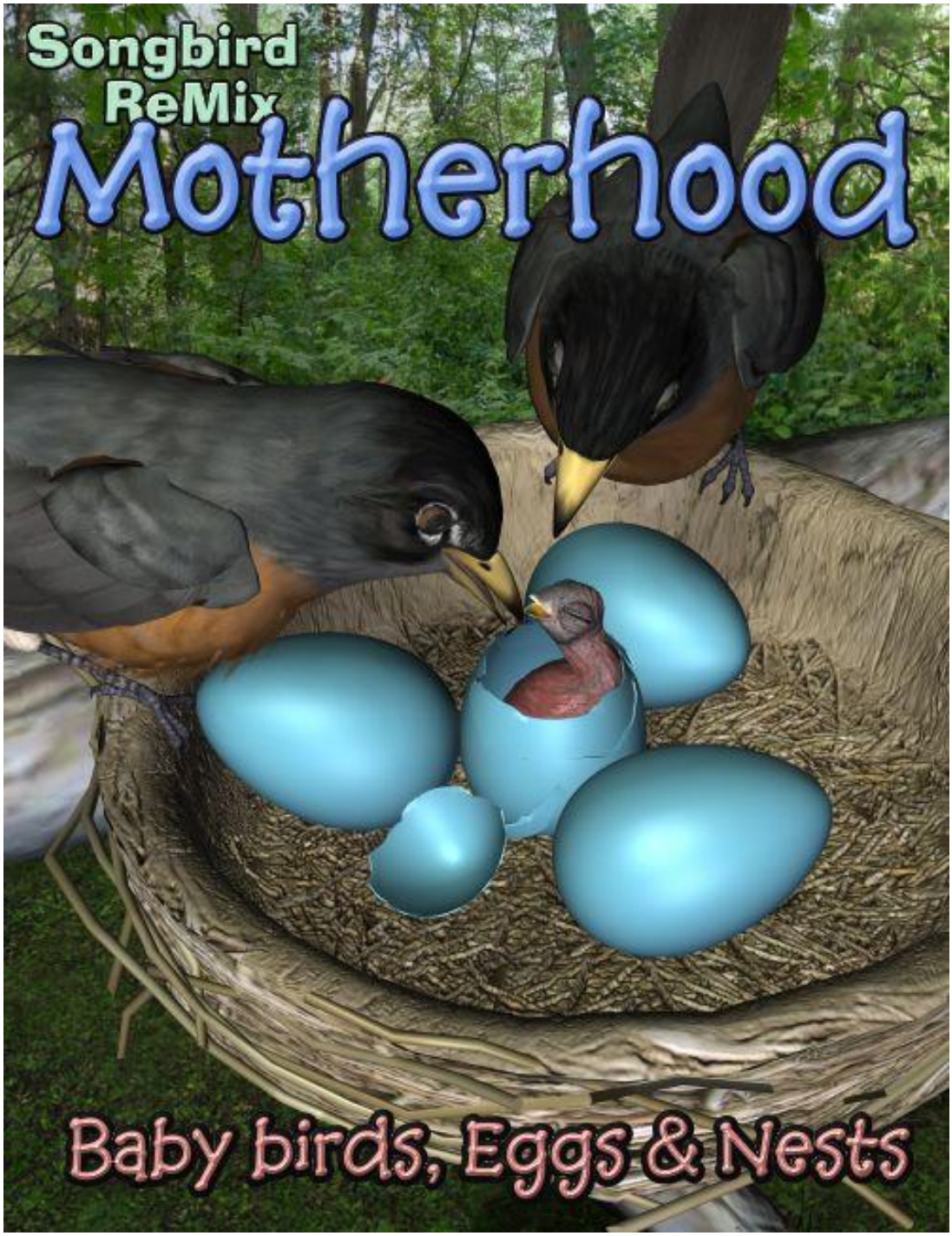


Avian Models for 3D Applications

Characters and Procedural Maps by Ken Gilliland

Songbird ReMix Motherhood

http://www.empken.com/SongbirdReMix/

Contents

Songbird ReMix Motherhood

Opinions expressed on this booklet are solely that of the author, Ken Gilliland, and may or may not reflect the opinions of the distributor, DAZ 3D.

Introduction

"Songbird ReMix Motherhood" adds eggs, nests and hatchlings to the Songbird Remix series. The product is focused on the time frame from the laying of the egg to the first few days after hatching. While most of these naked, featherless babies have the looks that only a Mother could love, hopefully you'll find a spot in your heart to love them as well….

Overview of Motherhood for Poser and DAZ|Studio Use

Motherhood is much more "free-form" in creation and use than existing Songbird ReMix packages. Due to the wide range in baby bird sizes, some manual resizing on the models and nests may be required. This overview will help to express general concepts used in this package.

Go to the **Songbird ReMix** folder; It's found in Animals in DAZ|Studio and Figures in Poser. Select the **Motherhood** Folder. Here you'll find the core of this product; two egg models and two hatchling models.

- **Models**
  - **Egg-Hatchable** - This egg model will "hatch" or break into several pieces and can be used to emulate bird hatching through the use of XYZ rotate and movement dials on the various pieces. Faint lines may occur on some eggs during renders. The "Egg-Solid" model should be used if the egg doesn't have to hatch.
  - **Egg-Solid** – This egg is the same size and shape of the "Hatchable Egg" but doesn't "hatch". The solid egg is meant as a lower polygon alternative for use when an egg doesn't need to break. It is suggested that this egg be used in all imagery in which the egg doesn't have to hatch.
  - **Hatchling**- This is the basic baby bird for use as a Songbird, Raptor or Hummingbird.

- **HatchlingZ**- This is the basic baby bird for use with birds that have Zygodactyl feet (two toes forward, two toes back) such as a Woodpeckers, Parrots or Toucans.
- **HairTuft**- This is a tuft of hairs/fine feathers often seen on the heads are newborns. It is a conforming part and meant to conform to the Hatchling.

In the **Motherhood** Folder (in the "**Pose"** section in Poser), there are several sub-folders:

- **Eggs**- Once an egg model is loaded (solid or hatchable), one of the thirty-two egg materials found in this folder can be applied to it to create a specific bird species egg. The egg will be resized to Poser /DS human figure scale. It should be a comparative size to its Songbird Remix Mother.

- **Hatchlings-Scaled**- Once a Hatchling model is loaded, the species found in this folder can be applied to create a bird species. It, too, will be resized it's respective Songbird Remix Mother. The Hatchling Model should use the Hummingbird, Raptor or Songbird settings and the Hatchling "Z" Model should use the Parrot or Toucan settings.

  The nestlings are sized for their respective eggs. The "**1wk**" titled materials will produce a larger nestling. Some play with **SCALE** (in the BODY section of the hatchling model) may be required to create specific species for their egg counterparts. If too much negative scaling is done to a specific model, displacement settings **may** need to be reduced on the Legs, Plumage and Eyelids materials.

- **Hatchlings-UnscaledMAT**- Within this folder, materials are unscaled. In addition, there are several alternate mouth colors for the hatchlings. These unscaled versions are included because the scaled versions are very, very small. It is suggested that the Mothers, Eggs and Nest be scaled to the the hatchling size. If the Hatchling model is scaled some adjustment to bump and displacement materials settings in the Legs, Plumage and Eyelids may be required.

- **Poses-Hatchlings**- These are poses for the egg and hatchling models. Unless noted, the Hatchling and HatchlingZ can use the pose. The Egg poses are specifically for the Hatchable Egg.

- **Poses-Mothers**- These are poses for the Songbird ReMix Model (not included in this package).

In the **Motherhood** Folder (in the "**Props : Songbird Remix** in Poser), there are two nest props:

- **HummerNest**- This nest is primarily for Hummingbirds and is sized to the scale of the Songbird Remix Hummingbird found in "Songbird ReMix 2: Second Edition". **Note:** If the nest is scaled, displacement settings will need to be adjusted.
- **SongbirdNest**- This is a generic songbird nest based on American Robin's nest. This nest should be scaled to reflect the size of the songbird using it. **Note:** If the nest is scaled, displacement settings will need to be adjusted.
- **NestBox**- This nest box is used by a number of birds from wrens to nuthatches to finches. (The Nest Box is found in the Figure Section of Poser and Songbird ReMix Props section of DAZ|Studio).

Specific Poser Issues

There are several things to keep in mind when using Poser with this product.

POSER Render settings. This product uses Displacement Maps. Displacement **must** be manually turned on in Poser. Turn on displacement by clicking the checkbox in Render Settings options entitled "Use Displacement Maps".

POSER Weird Shadows. Most of the eggs and scaled babies will render with a SQUARE shadow. This is a bug in Poser. Poser can't figure out how to render a shadow for something really small, so it creates a square shadow. The solution is to put a larger item that casts a normal Poser shadow in the scene (even if it is off camera) and the square shadows will be fixed.

Scaling. Displacement Maps do not scale with the model. In some case, the displacement and sometimes bump settings may need to be increased or decrease with scaling. On the Hatchling models, Legs, Plumage and Eyelids materials use displacement. The Nest models use displacement as well. Egg models do not use displacement.

Specific DAZ|Studio Issues

There are several things to keep in mind when using DAZ|Studio with this product.

Scaling. Displacement Maps do not scale with the model. In some case, the displacement settings may need to be increased or decrease with scaling. On the Hatchling models, Legs, Plumage and Eyelids materials use displacement.

The Nest models use displacement as well. Egg models do not use displacement.

Fitting a Nestling into an Egg Tutorial

This tutorial will show basic concepts used in Songbird ReMix Motherhood. Although this tutorial is in Poser, the concepts are the same and it can be easily translated for DAZ|Studio use.

1. Load the Hatchling and Hatchable Egg models (figure1). You notice immediately that the Hatchling is far too big for the egg. There are two solutions; one is to resize the egg to the size of the hatchling. The Egg can be easily resized with the BODY scale dial. In this case, we want the scale of the egg to match its Songbird ReMix parents.

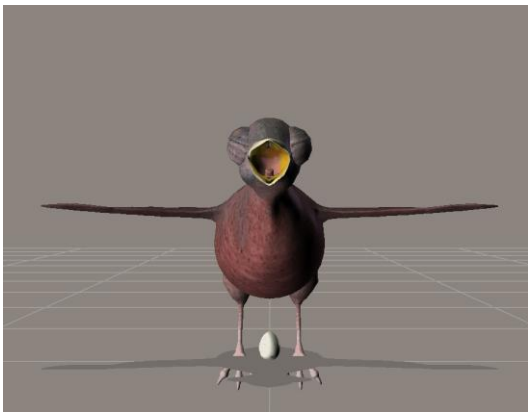


Figure 1

2. The first thing we'll do is to select the species we want. For this example, we'll use the tiny of the possible species… the Hummingbird. So First we'll just the egg to the right size. Go to the **Egg Folder** and apply the **Hummingbird-Anna material** over the Hatchable Egg (figure 2a)

Figure 2a

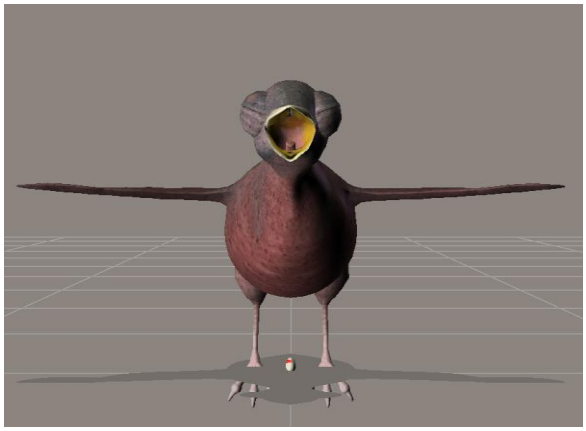


Figure 2b

Wow! That egg is really tiny now. We had better get the hatchling to the right size now, so go out of the Egg Folder and select the **Hatchling-Scaled Folder.** You'll notice that there are two hummingbird material settings. The Hummingbird-1wk setting will give you a Nestling that is larger—from the icon you can see its a few days after birth with the "feed me" pose. The one we want is the **Hummingbird**— the one with the fetal position icon—indicating it's a newborn (figure 2c). Apply that material to the nestling and now the size seems more appropriate (figure 2d), although you'll need to zoom in quite a bit to see it.

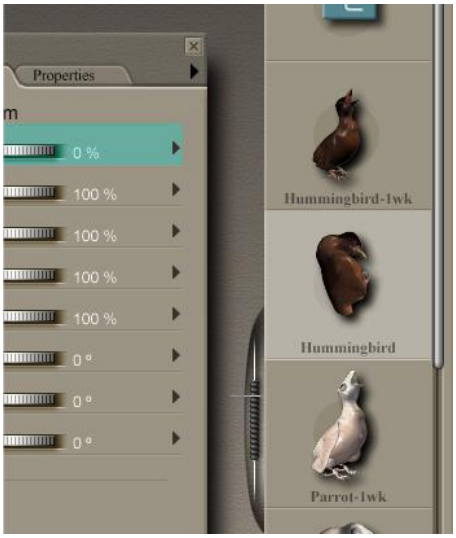


Figure 2c

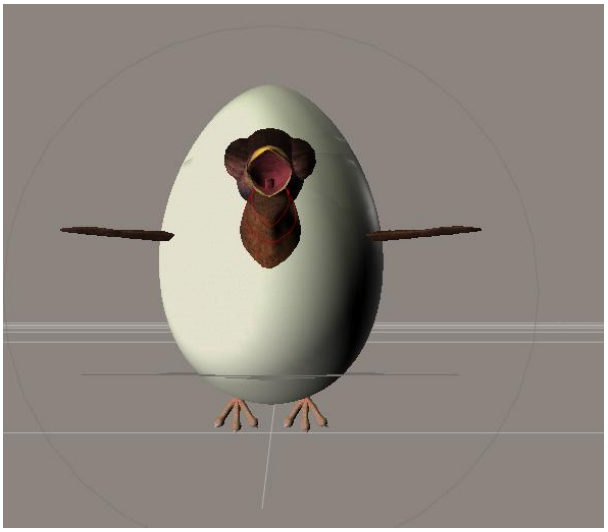


Figure 2d

3. Now it's time to get the Nestling posed so it will fit in the egg. Go out of the Hatchling-Scaled folder and go into the **Poses-Hatchling Folder.** The pose we'll want is appropriately called **Hatchling-EggFit.** We don't want to use the Hatchling-EggFit**Z** pose on this because we aren't using the HatchlingZ model (and again, Z stands for Zygodactyl, two toes forward, two toes back).

Apply the pose to the Hatchling. (Figures 3a and 3b)

Figure 3a

Figure 3b

4. Now, selecting the BODY part of the Hatchling and using Y and Z Translate. Position the hatchling inside the egg (Figure 4). **TIP:** You may want to parent the hatchling to the egg (once the hatchling is position). That way, you'll be able to position the egg with the hatchling inside easily within your scene.

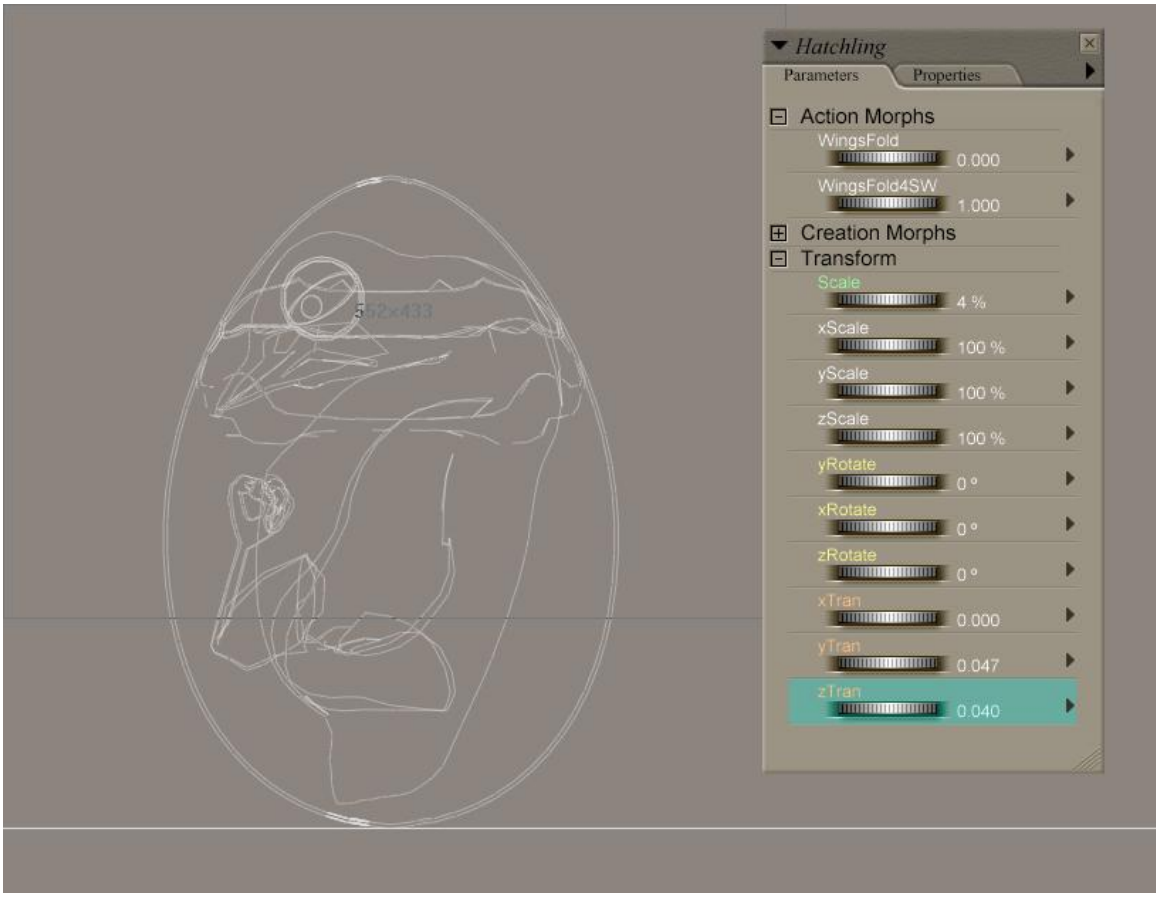


Figure 4

Hair Tuft Tips

The DAZ|Studio version is really easy to use-- if you have your hatchling already loaded. Load the Hair Tuft and use "FIT TO" command to attach the HairTuft to the Hatchling DS automatically scales this conforming part with the size of the hatchling, too.

In the Poser version, you'll need to "Conform" the HairTuft to the hatchling and then manually SCALE the BODY size to match its hatchling counterpart in the BODY SCALE. setting.

The hairs are simply a diffuse color and can be easily changed in the Material Tab/Room.

Where Birds Nest

from **Wikipedia**, the free encyclopedia *with editing by Ken Gilliland*

A bird nest is the spot in which a bird lays eggs, incubates them and raises its young. While the term “Nest” popularly refers to a specific structure made by the bird itself—such as the grassy cup nest of the American Robin or Common Linnet, or the elaborately woven hanging nest of the Black-headed Weaver-- that is too restrictive a definition. For some species, a nest is simply a shallow depression made in sand; for others, it is the knot-hole left by a broken branch, a burrow dug into the ground, a chamber drilled into a tree, an enormous rotting pile of vegetation and earth, or a mud dome with an entrance tunnel. Some species of cave swiftlets make their nests entirely from their saliva, which dries and hardens to form a bracket on the cave wall. This is often harvested by man to make “Bird Nest Soup”

The smallest bird nests are those of some hummingbirds, tiny cups which can be a mere 2 cm across and 2–3 cm high. At the other extreme, some nest mounds built by the Dusky Scrubfowl measure more than 11 m in diameter and stand nearly 5 m tall.

In most species, the female does all or most of the nest construction, though the male often helps. In some polygynous species, however, the male may do most or all of the nest building. The nest may also form a part of their courtship display such as in bowerbirds and weaver birds. The ability to choose and maintain good nest sites and build high quality nests may be selected for by females in these species. With Wrens, the male construct the rough frame work of the nest and the female adds the lining. In some species the young from previous broods may also act as helpers for the adults.

Not every bird species builds or uses a nest. Some auks, for instance—lay their eggs directly onto the narrow rocky ledges they use as breeding sites. The eggs of these species are dramatically pointed at one end, so that they roll in a circle when disturbed. This is critical for the survival of the developing eggs, as there are no nests to keep them from rolling off the side of the cliff. Presumably because of the vulnerability of their unprotected eggs, parent birds of these auk species rarely leave them unattended.

King and Emperor Penguins also do not build nests; instead, they tuck their eggs and chicks between their feet and folds of skin on their lower bellies. They are thus able to move about while incubating, though in practice only the Emperor Penguin regularly does so. Emperor Penguins breed during the harshest months of the Antarctic winter, and their mobility allows them to form huge huddled

masses which help them to withstand the extremely high winds and low temperatures of the season. Without the ability to share body heat (temperatures in the center of tight groups can be as much as 10C above the ambient air temperature), the penguins would expend far more energy trying to stay warm, and breeding attempts would probably fail.

A few species, such as the Eurasian Eagle-Owl and Hume's Tawny Owl, lay their eggs in the relative shelter of a crevice in the rocks or a gap between boulders, but provide no additional nest material. Potoos lay their single egg directly atop a broken stump, or into a shallow depression on a branch—typically where an upward-pointing branch died and fell off, leaving a small scar or knot-hole. Brood parasites, such as the New World cowbirds, the honeyguides and many of the Old World and Australasian cuckoos, do not build nests at all, but rather lay their eggs in the active nests of other species and simply leave. The Mother of the nest is then left to raise not only her own but the new additions as well.

Types of Nests

The Scrape

The simplest nest construction is the scrape, which is merely a shallow depression in soil or vegetation. This nest type, which typically has a rim deep enough to keep the eggs from rolling away, is sometimes lined with bits of vegetation, small stones, shell fragments or feathers. These materials may help to camouflage the eggs or may provide some level of insulation; they may also help to keep the eggs in place, and prevent them from sinking into muddy or sandy soil if the nest is accidentally flooded. Ostriches, most tinamous, many ducks, most shorebirds, most terns, some falcons, pheasants, quail, partridges, bustards and sand grouse are among the species that build scrape nests.

The eggs, young and the adults that brood them are more exposed to predators and the elements than those in more sheltered nests since scrape nests are on the ground and typically in the open, with little to hide them. The eggs of most ground-nesting birds are cryptically colored to help camouflage them when the adult is not covering them; the actual color generally corresponds to the substrate on which they are laid. Brooding adults also tend to be well camouflaged, and may be difficult to flush from the nest. Most ground-nesting species have well-developed distraction displays, which are used to draw or drive-out potential predators from the area around the nest. Most species with this type of nest have precocial young, which quickly leave the nest upon hatching.

The technique used to construct a scrape nest varies slightly depending on the species. Beach-nesting terns, for instance, fashion their nests by rocking their

bodies on the sand in the place they have chosen to site their nest, while skimmers build their scrapes with their feet, kicking sand backwards while resting on their bellies and turning slowly in circles. The Ostrich also scratches out its scrape with its feet, though it stands while doing so. Many tinamous lay their eggs on a shallow mat of dead leaves they have collected and placed under bushes or between the root buttresses of trees, and Kagus lay theirs on a pile of dead leaves against a log, tree trunk or vegetation. Marbled Godwits stomp a grassy area flat with their feet, then lay their eggs, while other grass-nesting waders bend vegetation over their nests so as to avoid detection from above. Many female ducks, particularly in the northern latitudes, line their shallow scrape nests with down feathers plucked from their own breasts, as well as with small amounts of vegetation.

Among scrape-nesting birds, the Three-banded Courser and Egyptian Plover are unique in their habit of partially burying their eggs in the sand of their scrapes.

The Mound Nest

Burying eggs as a form of incubation reaches its zenith with the Australiasian megapodes. Several megapode species construct enormous mound nests made of soil, branches, sticks, twigs and leaves, and lay their eggs within the rotting mass. The heat generated by these mounds, which are in effect giant compost heaps, warms and incubates the eggs. Recent research has shown that much of the nest's heat results from the respiration of thermophilic fungi and other microorganisms rather than fermentation, as had been previously believed. The size of some of these mounds can be truly staggering; several of the largest—which contain more than 100 cubic meters of material, and probably weigh more than 50 tons—were initially thought to be Aboriginal middens.

In most mound-building species, males do most or all of the nest construction and maintenance. Using his strong legs and feet, the male scrapes together material from the area around his chosen nest site, gradually building a conical or bell-shaped pile. This process can take five to seven hours a day for more than a month. While mounds are typically reused for multiple breeding seasons, new material must be added each year in order to generate the appropriate amount of heat. A female will begin to lay eggs in the nest only when the mound's temperature has reached an optimal level.

Both the temperature and the moisture content of the mound are critical to the survival and development of the eggs, so both are carefully regulated for the entire length of the breeding season (which may last for as long as eight months), principally by the male. Ornithologists believe that megapodes may use sensitive areas in their mouths to assess mound temperatures; each day during the breeding season, the male digs a pit into his mound and sticks his head in. If the mound's core temperature is a bit low, he adds fresh moist material to the

mound, and stirs it in; if it is too high, he opens the top of the mound to allow some of the excess heat to escape. This regular monitoring also keeps the mound's material from becoming compacted, which would inhibit oxygen diffusion to the eggs and make it more difficult for the chicks to emerge after hatching. The Malleefowl, which lives in more open forest than do other megapodes, uses the sun to help warm its nest as well—opening the mound at midday during the cool spring and autumn months to expose the plentiful sand incorporated into the nest to the sun's warming rays, then using that warm sand to insulate the eggs during the cold nights. During hot summer months, the Malleefowl opens its nest mound only in the cool early morning hours, allowing excess heat to escape before recovering the mound completely.

One recent study showed that the sex ratio of Australian Brush-turkey hatchlings correlated strongly with mound temperatures; females hatched from eggs incubated at higher mean temperatures.

Flamingos make a different type of mound nest. Using their beaks to pull material towards them, they fashion a cone-shaped pile of mud. It is between 15 to 46 cm tall with a small depression in the top to house their single egg. The height of the nest varies with the substrate upon which it is built; those on clay sites are taller on average than those on dry or sandy sites. The height of the nest and the circular, often water-filled trench which surrounds it (the result of the removal of material for the nest) help to protect the egg from fluctuating water levels and excessive heat at ground level. In East Africa, for example, temperatures at the top of the nest mound average some 20C cooler than those of the surrounding ground.

The Burrow Nest

Soil plays a different role in the burrow nest; here, the eggs and young—and in most cases the incubating parent bird—are sheltered under the earth. Most burrow-nesting birds excavate their own burrows, but some use those excavated by other species; Burrowing Owls, for example, sometimes use the burrows of prairie dogs, ground squirrels, badgers or tortoises, China's endemic White-browed Tits use the holes of ground-nesting rodents and Common Kingfishers occasionally nest in rabbit burrows. Puffins, shearwaters, some megapodes, motmots, todies, most kingfishers, the Crab Plover, miners and leaftossers are among the species which use burrow nests.

Most burrow nesting species dig a horizontal tunnel into a vertical (or nearly vertical) dirt cliff, with a chamber at the tunnel's end to house the eggs. The length of the tunnel varies depending on the substrate and the species; Sand Martins make relatively short tunnels ranging from 50–90 cm, for example, while those of the Burrowing Parakeet can extend for more than three meters. Some species, including the ground-nesting puffbirds, prefer flat or gently sloping land,

digging their entrance tunnels into the ground at an angle. In a more extreme example, the D'Arnaud's Barbet digs a vertical tunnel shaft more than a meter deep, with its nest chamber excavated off to the side at some height above the shaft's bottom; this arrangement helps to keep the nest from being flooded during heavy rain. Buff-breasted Paradise-kingfishers dig their nests into the compacted mud of active termite mounds, either on the ground or in trees.

Birds use a combination of their beaks and feet to excavate burrow nests. The tunnel is started with the beak; the bird either probes at the ground to create a depression, or flies toward its chosen nest site on a cliff wall and hits it with its bill. The latter method is not without its dangers; there are reports of kingfishers being fatally injured in such attempts. Some birds remove tunnel material with their bills, while others use their bodies or shovel the dirt out with one or both feet. Female paradise-kingfishers are known to use their long tails to clear the loose soil.

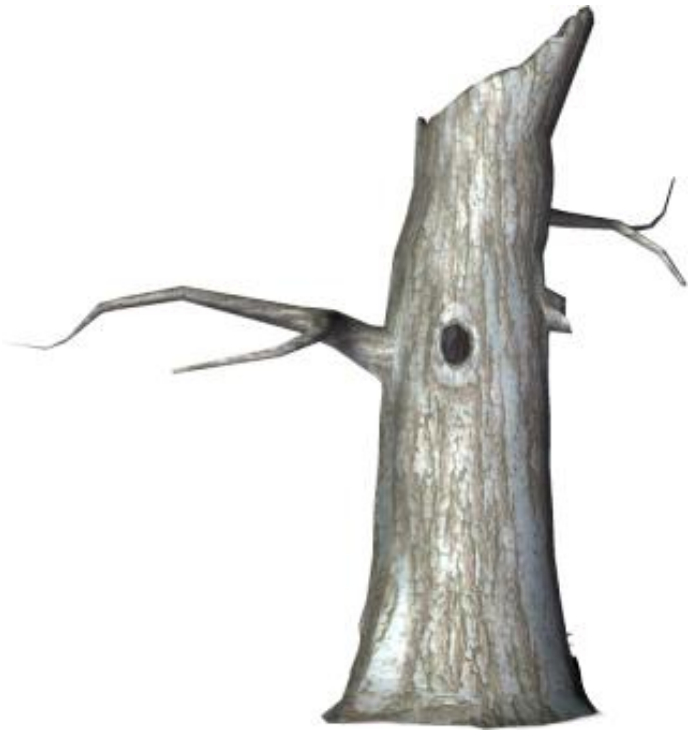
Predation levels on some burrow-nesting species can be quite high; on Alaska's Wooded Islands, for example, river otters munched their way through some 23 percent of the island's Fork-tailed Storm-Petrel population during a single breeding season in 1977. There is some evidence that increased vulnerability may lead some burrow-nesting species to form colonies, or to nest closer to rival pairs in areas of high predation than they might otherwise do.

Not all burrow-nesting species incubate their young directly. Some megapode species bury their eggs in sandy pits dug where sunlight, subterranean volcanic activity, or decaying tree roots will warm the eggs.

The Cavity Nest

The cavity nest is a chamber, typically in living or dead wood, but sometimes in the trunks of tree ferns or large cacti, including saguaro. In tropical areas, cavities are sometimes excavated in arboreal insect nests. A relatively small number of species, including woodpeckers, trogons, some nuthatches and many barbets, can excavate their own cavities. Far more species—including parrots, tits, bluebirds, most hornbills, some kingfishers, some owls, some ducks and some flycatchers—use natural cavities, or those abandoned by species able to excavate them; they also sometimes usurp cavity nests from their excavating owners. Cavity-nesting species can be enticed to use nest boxes (also known as bird houses); these mimic natural cavities, and can be critical to the survival of species in areas where natural cavities are lacking. The term primary cavity-nester is used for species that excavate the nests while secondary cavity-nesters use existing cavities including those made by primary cavity-nesters.

Woodpeckers use their chisel-like bills to excavate their cavity nests, a process which takes, on average, about two weeks. Cavities are normally excavated on the downward-facing side of a branch, presumably to make it more difficult for predators to access the nest, and to reduce the chance that rain floods the nest. There is also some evidence that fungal rot may make the wood on the underside of leaning trunks and branches easier to excavate. Most woodpeckers use a cavity for only a single year. The endangered Red-cockaded Woodpecker is an exception; it takes far longer—up to two years—to excavate its nest cavity, and may reuse it for more than two decades. The typical woodpecker nest has a short horizontal tunnel which leads to a vertical chamber within the trunk. The size and shape of the chamber depends on species, and the entrance hole is typically only as large as is needed to allow access for the adult birds. While wood chips are removed during the excavation process, most species line the floor of the cavity with a fresh bed of them before laying their eggs.



Cavity Nest in a Snag (from “Perching Places”)

Trogons excavate their nests by chewing cavities into very soft dead wood; some species make completely enclosed chambers (accessed by upward-slanting entrance tunnels), while others—like the extravagantly-plumed Resplendent Quetzal—construct more open niches. In most trogon species, both sexes help with nest construction. The process may take several months, and a single pair may start several excavations before finding a tree or stump with wood of the right consistency.

Species which use natural cavities—or old woodpecker nests—sometimes line the cavity with soft material such as grass, moss, lichen, feathers or fur. Though a number of studies have attempted to determine whether secondary cavity nesters preferentially choose cavities with entrance holes facing certain directions, the results remain inconclusive. While some species appear to preferentially choose holes with certain orientations, studies (to date) have not shown consistent differences in fledging rates between nests oriented in different directions.

Cavity-dwelling species have to contend with the danger of predators accessing their nest, catching them and their young inside and unable to get out. They have

a variety of methods for decreasing the likelihood of this happening. Red-cockaded Woodpeckers peel bark around the entrance, and drill wells above and below the hole; since they nest in live trees, the resulting flow of resin forms a barrier that prevents snakes from reaching the nests. Red-breasted Nuthatches smear sap around the entrance holes to their nests, while White-breasted Nuthatches rub foul-smelling insects around theirs. Eurasian Nuthatches wall up part of their entrance holes with mud, decreasing the size and sometimes extending the tunnel part of the chamber. Most female hornbills seal themselves into their cavity nests, using a combination of mud (in some species brought by their mates), food remains and their own droppings to reduce the entrance hole to a narrow slit.

The Cup Nest

The cup nest is smoothly hemispherical inside, with a deep depression to house the eggs. Most are made of pliable materials—including grasses—though a small number are made of mud. Many passerines and a few non-passerines, including some hummingbirds and some swifts, build this type of nest.

Hummingbird Cup Nest (from ”Songbird ReMix Motherhood”)

The Saucer Nest

The saucer or plate nest, though superficially similar to a cup nest, has at most only a shallow depression to house the eggs.

Songbird Saucer-type Nest (from ”Songbird ReMix Motherhood”)

The Platform Nest

The platform nest is a large structure, often many times the size of the birds which build and use it. In the case of raptor nests, these are often used for many years, with new material added each breeding season. In some cases, the nests grow large enough to cause structural damage to the tree itself, particularly during bad storms where the weight of the nest can cause additional stress on wind-tossed branches.

The Pendant Nest

The pendant nest is an elongated sac woven of pliable materials such as grasses and plant fibers and suspended from a branch. Oropendolas, caciques, orioles, weavers and sunbirds are among the species that weave pendant nests.

Weaver Pendant Nest (from “Songbird Remix Africa”)

The Sphere Nest

The sphere nest is a roundish structure; it is completely enclosed, except for a small opening which allows access.

Nest Protection and Sanitation

Many species of bird conceal their nests to protect them from predators. Some species may choose nest sites that are inaccessible. Some may make specific modifications to keep predators at bay. Bird nests can also act as habitats for other inquiline species which may not affect the bird directly. Birds have also evolved nest sanitation measures to reduce the effects of parasites and pathogens on nestlings.

Nests can become home to many other organisms including parasites and pathogens. The excreta of the fledglings also pose a problem. In most passerines, the adults actively dispose the fecal sacs of young at a distance or consume them. This is believed to help prevent ground predators from detecting nests. Young birds of prey however usually void their excreta beyond the rims of their nests. Blowflies of the genus Protocalliphora have specialized to become obligate nest parasites with the maggots feeding on the blood of nestlings.

Ground birds such as plovers may use broken wing or rodent run displays to distract predators from nests.

Some birds have been shown to choose aromatic green plant material for constructing nests that may have insecticidal properties, while others may use materials such as carnivore scat to repel smaller predators.

Some aquatic species such as Grebes are very careful when approaching and leaving the nest so as not to reveal the location. Some species will use leaves to cover up the nest prior to leaving.

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Special Thanks to…

….my beta testers (Bea, Gary, Jan, Kelvin, Nancy, Rhonda and Sandra)

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Besides the obvious, parent birds, here is a list of figures and props found in other Songbird Remix products that easily fit the “Motherhood” theme…

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