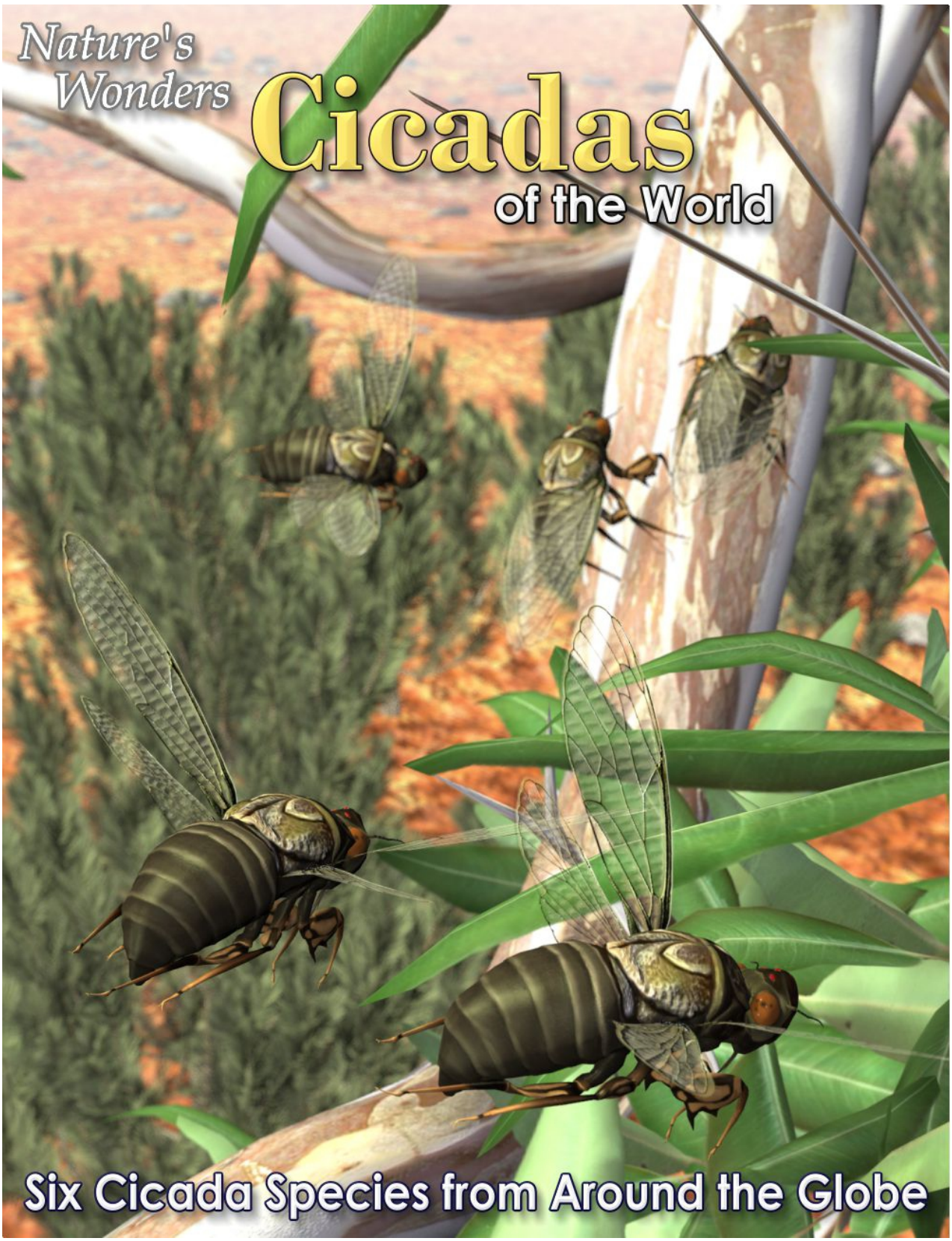


A 3D Model set by Ken Gilliland

Nature's Wonders

Cicadas

Cicadas

Introduction

Cicadas are in the superfamily, *Cicadoidea*, in the order *Hemiptera* (true bugs). This family is divided into two groups; the *Tettigarctidae*, with two species in Australia, and the *Cicadidae*, with more than 3,000 species described from around the world.

The Nature's Wonders Cicadas of the World comes with a good variety of cicadas found around the world. These include the Razor Grinder, an Australian cicada, noted for its greenish tint and buzz saw-like call. From Asia, there's the Large Brown Cicada, native to Japan, the Korean Peninsula, and China and from Europe, the New Forest Cicada. The North American cicadas are represented by the yearly Putnam's Cicada from the Western United States and the infamous 17-year Pharaoh Cicada from the Eastern United States (Brood X). The set completes with the Giant Cicada from Central and South America, which is easily as large as a human outstretched hand.

Cicadas have been featured in literature since the time of Homer's Iliad, and as motifs in art dating back to the Chinese Shang dynasty. They have been featured in myths and folklore as symbols of carefree living and immortality.

The Nature's Wonders Cicadas of the World set comes in both Poser and DAZ Studio native versions and support Firefly, 3Delight, Superfly and Iray render engines.

Overview and Use

This set uses a common model to recreate digitally the *Cicadoidea* species included in this volume. Each species uses specific morphs from the generic model to single-out its unique features. Select **Figures** in the Runtime Folder and go to the **Nature's Wonders Insects** folder:

- **Models included in this volume:**
  - **Nature's Wonders Cicada Base** - This model is used with all cicadas included in this set. The "blank" version of this model is in the Resources folder.

Creating a Cicada using Poser or DAZ Studio

1. For this example, we'll create a Pharaoh Cicada.
2. Load Poser, select the FIGURES library and go to the Animals / Nature's Wonders / Fauna Libraries / Insects /**Cicadas of the World** folder and the Firefly or Superfly sub-folder.
3. Select the Pharaoh Cicada (or a Cicada of your choice).

The InsectCam

All of the *Cicadoidea* species in this set have been scaled to their appropriate sizes in relation to human figure models. In most cases, these can be very small. With that in mind, this set comes with an "InsectCam".

The InsectCam is a camera set-up to focus on the default position of the insect and in useful on focusing on very small, hard-to-find insects. This camera is useful **as a starting point** to build your scene. The camera isn't really meant as your "final" camera. You could "parent" the insect to the camera and then position the camera where you want it in the scene, thus keeping the focus on the insect and not losing it in the scene.
In Poser, the InsectCam also changes the "hither" setting from its default value of 0.800 to 0.0 which allows close focus. If you've noticed that part of the scene that are very close disappear, yes, that's the hither setting and we're turning it "off".

Posing the Cicada Model, Sizing & Poser Issues

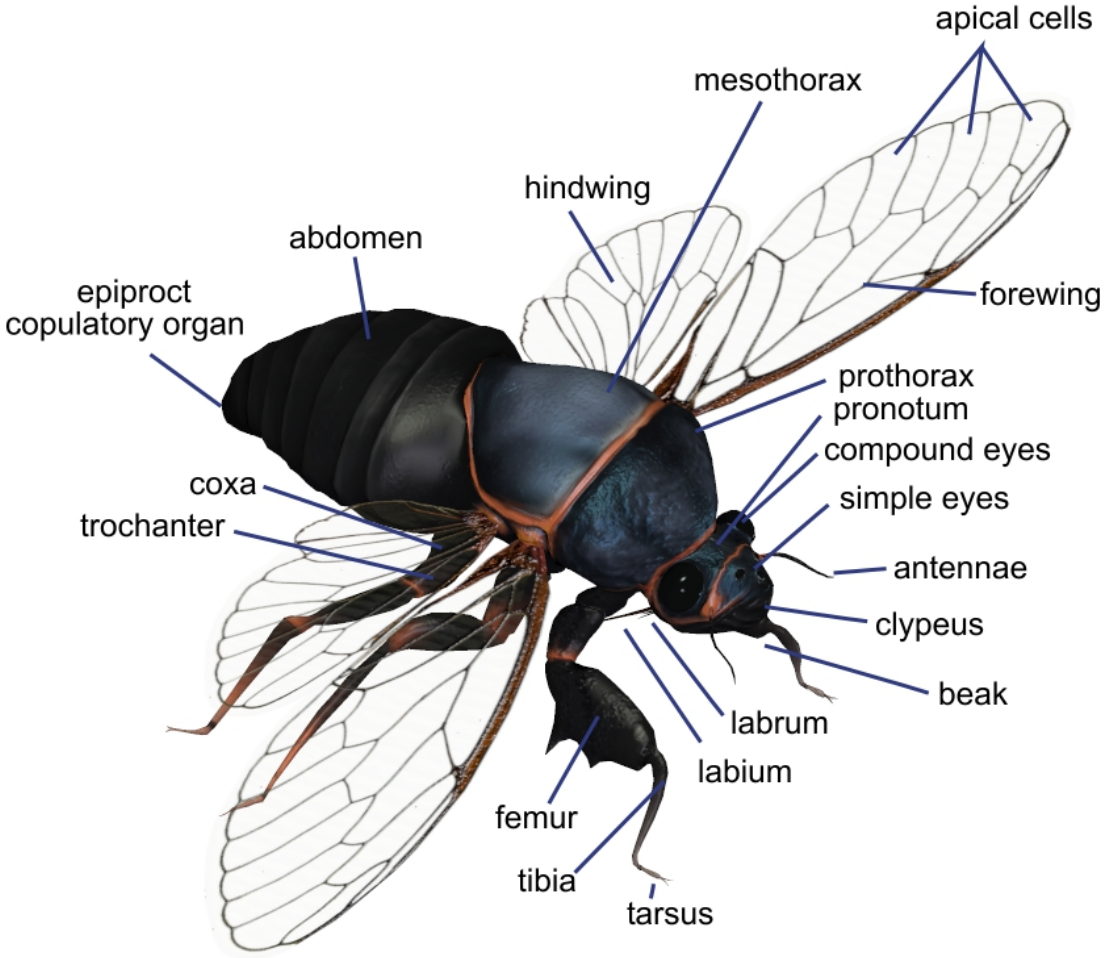
With most figure-based models the center of the model is the "hip" area. The mesothorax is considered the "hip" in this model.

An issue that can appear when rendering in Poser, with only a cicada (no other items) in the scene, is that it will produce a default square shadow. It is a known bug within Poser. To correct this issue, include a second larger item off-screen and the shadows will render correctly.

General Information on Cicadas

Cicadas are in the superfamily, *Cicadoidea*, in the order *Hemiptera* (true bugs). This family is divided into two groups; the *Tettigarctidae*, with two species in Australia, and the *Cicadidae*, with more than 3,000 species described from around the world.

All cicadas have prominent eyes set wide apart, short antennae, and membranous front wings. They have an exceptionally loud song, produced in most species by the rapid buckling and unbuckling of drumlike tymbals (located between the wings and mid-legs).



Cicadas are known for their emergence behavior. The North American genus, Magicicada (the periodical cicadas), which spend most of their lives as underground nymphs, emerge in predictable intervals of 13 or 17 years, depending on the species and the location. The unusual duration and synchronization of their emergence may reduce the number of cicadas lost to predation, both by making them a less reliably available prey (so that any predator that evolved to depend on cicadas for sustenance might starve waiting for their emergence), and by emerging in such huge numbers that they will sate any remaining predators before losing enough of their number to threaten their survival as a species.

Most species are annual cicadas that emerge every year. Though these cicadas' life cycles can vary from 1–9 or more years as underground larvae, their emergence above ground as adults is not synchronized, so some members of each species appear every year.

Bird populations are linked to cicada emergence. While the easy answer is that bird populations swell to the abundance of insect food, some bird populations actually decline. Field researchers had noticed that certain bird populations appeared to be lower in the years that periodical cicada broods emerged in their territories. Maybe the cicadas were the cause, but it was also possible the birds were being under counted because scientists couldn't hear them as easily on their surveys, which often rely on identifying birds through their sounds. It could also be that some birds avoid the area or fail to breed because they can't hear each others warnings and mating calls.

The Red-headed Woodpecker, American Crow, Tufted Titmouse, Gray Catbird, and Brown Thrasher populations were smaller in cicada years compared to years without cicadas. Their numbers also appeared to spike the following year and then stabilize. The study also showed that the number of Red-bellied Woodpeckers, Blue Jays, Common Grackles, and Brown-headed Cowbirds in an area increased sharply one to three years following a feast of cicadas, then declined after that, suggesting that populations swelled to meet the abundance of food, and then dwindled when not as many of their species survived during cicada off years.

Cicadas have been featured in literature since the time of Homer's Iliad, and as motifs in art dating back to the Chinese Shang dynasty. They have been featured in myths and folklore as symbols of carefree living and immortality.

Courtesy: Cocina On Market Restaurant in Virginia

The cicada is also mentioned in the "Shield of Heracles" (Hesiod; 8th century BCE), its voice sings when millet first ripens.

Cicadas are eaten by humans in various countries, including China, where the nymphs are served deep-fried in Shandong cuisine. The 17-year Brood X from the eastern United States became a culinary delicacies in May and June 2021 with such concoctions as Cicada Tacos.

Razor Grinder

Henicopsaltria eydouxii

Range: The razor grinder is found along the east coast of Australia from Gladstone in Central Queensland south to Narooma in southern New South Wales, generally below 500 m (550 yd) elevations. It reaches inland to Toowoomba, Inverell, Tamworth and the Capertee Valley. It is common in Brisbane, but rare in Sydney. There is also an isolated population in Cathu State Forest. They are most visible in December and January, sometimes appearing in early November in some years.

Habitat and Ecology: Their habitat is dry or wet sclerophyll forest or rainforest margins. Male razor grinders sing in large groups on the main trunks of tall eucalypts, especially spotted gum (*Corymbia maculata*).

Life History: They emergence is yearly; occurring from October through April, with the height in January. In some years their numbers can be locally immense, but in other years very few adults emerge.

Size: Fore wing is 50–55 mm (2.0–2.2 in).

Description: Males and females are similar in color and markings. The head and thorax is green-brown with dark markings. The wings are transparent with some green-brown discoloration.

The male's call lasts for a few seconds, increases in volume, suddenly stops, and then suddenly starts again. They usually silently feed throughout the

afternoon, and then groups call at maximum volume around dusk. There is a secondary population, referred to as the “laughing” razor grinder, which is only observed in rainforest and wet sclerophyll forest, and has a distinct call.

Razor grinders can also emit a distress call – a fragmented irregular noise – upon being seized by a predator.

This species is not threatened. It was first described in 1838 by Félix Édouard Guérin-Méneville as *Cicada eydouxii* before being moved to the new genus *Henicopsaltria* in 1866. Its common name refers to its harsh call, which has been likened to the noise of a metal grinder.

Adult razor grinders are wary and flighty, especially at dusk, and are difficult to approach. They are fast fliers.

Large Brown Cicada

Graptopsaltria nigrofuscata

Range: It is found across East Asia (including Japan, the Korean Peninsula, and China).

Habitat and Ecology: This species inhabits streams and rivers of the arid southwest.

Life History: They emerge yearly from April to July with the height being in June. Their median life cycle from egg to natural adult death is around three years.

Size: Fore wing is 75 mm (3 in).

Description: It is a large brown cicada (about 55–60 mm (2.2–2.4 in)).

They are called *aburazemi* (アブラゼミ) in Japanese. The males make a loud chirping that ends with a click caused by a flick of the wings.

There are two subspecies:

- *G. n. badia.* First reported by Kato in 1925.
- *G. n. nigrofuscata.* First reported by de Motschulsky in 1866.

New Forest Cicada

Cicadetta montana

Range: It is found across Europe. It is regarded as endangered over large parts of Europe, and has vanished from several areas in Western Europe. It is the only cicada species native to England and Finland. It has not been seen or heard anywhere in Britain since 2000 and is considered “endangered”.

Habitat and Ecology: It prefers Betula pendula (European white birch), Betula pubescens (downy birch), Corylus avellana (common filbert), Crataegus monogyna (common hawthorn), Fagus sylvatica (European beech), Pteridium aquilinum (northern bracken fern) and Ulex europaeus (common gorse)

Life History: They emerge every 17 years

Size: Fore wing is 44–48 mm (1.7–1.9 in)

Description: Females have a body measuring about 50 mm in length, with the males being much smaller. It has transparent wings with prominent veins, folded over the back when at rest, and a dark slate-grey or black body with dull orange rings around the abdomen. The legs are marked with dull orange as are the leading edges of the wings.

In 1772, Scopoli described and named the type specimen from Slovenia as *Melampsalta montana*, and this was later changed to *Cicadetta montana*. It has turned out to be not a single taxon, but a complex of closely related species distinguishable by their songs.

Pharaoh or Linnaeus's 17-Year Cicada
Magicicada septendecim

Range: It is found in the mid-Western and Eastern United States; including Connecticut, District of Columbia, Delaware, Georgia, Iowa, Illinois, Indiana, Kansas, Kentucky, Maine, Maryland, Michigan, Missouri, North Carolina, Nebraska, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Virginia, Wisconsin and West Virginia.

Habitat and Ecology: This species inhabits streams and rivers of the arid southwest.

Life History: They emerge every 17 years from May to June with the peak being in June. Their median life cycle from egg to natural adult death is around seventeen years. However, their life cycle can range between thirteen and twenty-one years.

Size: Fore wing is 70-75 mm (2.8-3 in).

Description: It has a black body with orange wings and legs and about 38 mm (1.5 in) in length. There are orange stripes on the abdomen. There is an orange patch between eye and wing. Its eyes and legs are generally reddish-orange, and the wings are clear with orange veins. The pronotal collar color is black.

It is the largest of the 17-Year species. Its song sounds like “Wee-Oh”, “Pharaoh” and a group of them are said to sound like a “UFO from a science fiction movie”.

This species was first reported by Linnaeus in 1758. Historical accounts cite reports of 15- to 17-year recurrences of enormous numbers of noisy emergent cicadas ("locusts") written as early as 1733. Pehr Kalm, a Swedish naturalist visiting Pennsylvania and New Jersey in 1749 on behalf of his nation's government, observed in late May one such emergence. When reporting the event in a paper that a Swedish academic journal published in 1756, Kalm wrote:

> *“The general opinion is that these insects appear in these fantastic numbers in every seventeenth year. Meanwhile, except for an occasional one which may appear in the summer, they remain underground. There is considerable evidence that these insects appear every seventeenth year in Pennsylvania.”*

Kalm then described documents (including one that he had obtained from Benjamin Franklin) that had recorded in Pennsylvania the emergence from the ground of large numbers of cicadas during May 1715 and May 1732. He noted that the people who had prepared these documents had made no such reports in other years. Kalm further noted that others had informed him that they had seen cicadas only occasionally before the insects appeared in large swarms during 1749. He additionally stated that he had not heard any cicadas in Pennsylvania and New Jersey in 1750 in the same months and areas in which he had heard many in 1749. The 1715 and 1732 reports, when coupled with his own 1749 and 1750 observations, supported the previous "general opinion" that he had cited.

Kalm summarized his findings in a paper translated into English in 1771, stating:

> *“There are a kind of Locusts which about every seventeen years come hither in incredible numbers .... In the interval between the years when they are so numerous, they are only seen or heard single in the woods.”*

Based on Kalm's account and a specimen that Kalm had provided, Carl Linnaeus gave to the insect the Latin name of *Cicada septendecim* in the 10th edition of his Systema Naturae, which was published in Stockholm in 1758.

In 1766, Moses Bartram described in his Observations on the cicada, or locust of America, which appears periodically once in 16 or 17 years the next appearance of the brood (Brood X) that Kalm had observed in 1749. Bartram noted that upon hatching from eggs deposited in the twigs of trees, the young insects ran down to the earth and "entered the first opening that they could find". He reported that he had been able to discover them 10 feet (3 m) below the surface, but that others had reportedly found them 30 feet (9 m) deep.

In 1775, Thomas Jefferson recorded in his "Garden Book" Brood II's 17-year periodicity, writing that an acquaintance remembered "great locust years" in 1724 and 1741, that he and others recalled another such year in 1758 and that the insects had again emerged from the ground at Monticello in 1775. He noted that the females lay their eggs in the small twigs of trees while above ground.

In April 1800, Benjamin Banneker, who lived near Ellicott's Mills, Maryland, wrote in his record book that he recalled a "great locust year" in 1749, a second in 1766 during which the insects appeared to be "full as numerous as the first", and a third in 1783 (Brood X). He predicted that the insects "may be expected again in the year 1800, which is seventeen years since their third appearance to me".

Brood	Years	States
I	1961, 1978, 1995, 2012, 2029	TN, VA, WVA
II	1962, 1979, 1996, 2013, 2030	CT, GA, MD, NC, NJ, NY, OK, PA, VA
III	1963, 1980, 1997, 2014, 2031	IA, IL, MO
IV	1964, 1981, 1998, 2015, 2032	IA, KS, MO, NE, OK, TX
V	1965, 1982, 1999, 2016, 2033	LI NY, western MD, east OH, south-west PA, north-west VA, northern half of WV
VI	1949, 1966, 1983, 2000, 2017	GA, NC, SC, WI, OH
VII	1950, 1967, 1984, 2001, 2018	NY
VIII	1951, 1968, 1985, 2002, 2019	OH, PA, WVA and OK
IX	1952, 1969, 1986, 2003, 2020	NC, VA, WVA
X	1953, 1970, 1987, 2004, 2021	DE, GA, IL, IN, KY, MD, MI, NC, NJ, NY, OH, PA, TN, VA, WVA, Washington DC
XIII	1956, 1973, 1990, 2007, 2024	IA, IL, IN, MI, WI
XIV	1957, 1974, 1991, 2008, 2025	GA, IN, KY, MA, MD, NC, NJ, NY, OH, PA, TN, VA, WVA

Putnam's Cicada

Platypedia putnami

Range: It is found throughout western North America. In the United States; Arizona, California, Colorado, Idaho, Montana, Nebraska, Nevada, New Mexico, Oregon, South Dakota, Utah, Washington and Wyoming, and in Canada; British Columbia.

Habitat and Ecology: This species inhabits streams and rivers of the arid southwest. It is native to shrublands of mountain-mahogany or Gambel oak and pinyon/juniper habitats. They have adapted to landscapes and most commonly are associated with crabapple, honeylocust, maple, mountain-ash, and oak.

Life History: They emerge yearly from April to July with the height being in June.

It is thought that their lives take three to five years to complete. The entire immature stage occurs underground, with the nymphs feeding on the plant roots. When full-grown, the nymphs emerge from the soil and transform into adults, leaving behind their cast nymphal skins on the lower trunk of their host. Adults are present for about four to six weeks from June through early July. After mating, the adult females lay eggs in slits in the twigs of various hosts.

Upon hatching, nymphs drop to the ground, burrow beneath the soil surface, and spend the next two to five years feeding on the roots of plants. Damage is produced not by feeding, but instead occurs when the females insert eggs into twigs (oviposition wounds). This causes a gouging and splintering of twigs that frequently causes them to break, producing conspicuous "flagging" of wilted foliage. Nymphal damage from root feeding is not considered to be significant for this or any regional cicada species.

Size: Fore wing is 40 mm (1.6 in).

Description: It is a black cicada with orange highlights. The head is broader across the eyes with front not as strongly produced. Its eyes are black and its pronotal collar is orange. Its fore wings are twice as long as its hind wings. The body is black with bluish reflections, especially on the pronotum and mesonotum. The fore femoras, in mature individuals, is entirely black and pale at the extremities, with the exception of race *occidentalis*, which has chestnut-colored fore femoras.

Putnam's cicada produces a clicking noise, likened to the striking of two dimes. Their large size and ability to produce noise results in many concerns related to this insect.

There are four subspecies:

- *P. p. keddiensis.* First reported by Davis in 1920.
- *P. p. lutea.* First reported by Davis in 1920.
- *P. p. occidentalis.* First reported by Davis in 1920.
- *P. p. putnami.* First reported by Uhler in 1877.

Giant Cicada

Quesada gigas

Range: It is found in the Americas. It currently is found in the United States (Texas), Argentina, Belize, Bolivia, Brazil, Colombia, Costa Rica, Ecuador, Guatemala, Guyana, Mexico, Panama, Paraguay, Peru, Tobago, Trinidad, and Venezuela. There are historical records of the cicada in Bexar County, Texas starting in 1934, but this population died out - possibly due to the extended drought of the 1950s. Since 2005, the cicada population has grown and become widespread in central Texas.

Habitat and Ecology: In the United States, it primarily resides in the south Texas brushlands, which extend from the southern border to approximately Austin, Texas. Further south, it has been observed in forest parks in Brazil, and in the tropical cloud forests and rain forests in Argentina. The cicada feeds off a wide variety of plant families. As an endothermic species, the giant cicada has the ability to live in a wide range of environments.

Life History: They emerge yearly between April and October in south Texas, and from June to July in central Texas.

Immature giant cicadas spend at least four years underground before emerging as adults. The cicadas feed on tree roots, typically Sweet Acacia or other members of the legume family.

Size: Fore wing is 120 mm (4.7 in).

Description: The insects are usually a combination of black, green, and brown patterns, with brown eyes and brown to green pronotal collar color.

Giant cicadas produce a remarkably distinct and loud sound, singing primarily at dusk, and less often at dawn in central Texas. It has been known to sing all day and occasionally through the night further south. Its loud, shrill song has been described as a siren or alarm, a whistle, or gas escaping a pressure release valve. Although the giant cicada resides over a large area of land, there is almost no variation in its song throughout its range.

The giant cicada was discovered by Guillaume-Antoine Olivier in 1790. British naturalist Henry Walter Bates described the shrill songs of the cicadas during his exploration in the Amazon in the late 1840s.

Special Thanks to:

.. to my beta testers, Alisa, FlintHawk and Tparo

Species Accuracy & Reference Materials

Many forms of the same species do vary considerably in color. This often depends on location and age. 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. There was scant resources and materials on some of the represented species. There are also was a significant range of coloration and marking differences. In some cases, the end result was a compilation and best guess as to what the species looks like from different angles. Artistic license won out in any guess work decisions, since the end product was meant for art use anyways.

Sources:

Wikipedia (https://www.wikipedia.org/)
Cicada Mania (https://www.cicadamania.com/)
iNaturalist (https://www.inaturalist.org/)
Cocina On Market (http://cocinaonmarket.com/)


Shirts, jerseys, sweatshirts,
prints, cards, posters, pillows,
coffee cups, calendars & more
Pelicans of the World
Try, try, try... again
Songbird ReMix
BIRD BRAINS
JANUARY 2010
Songbird ReMix
www.empken.com/store