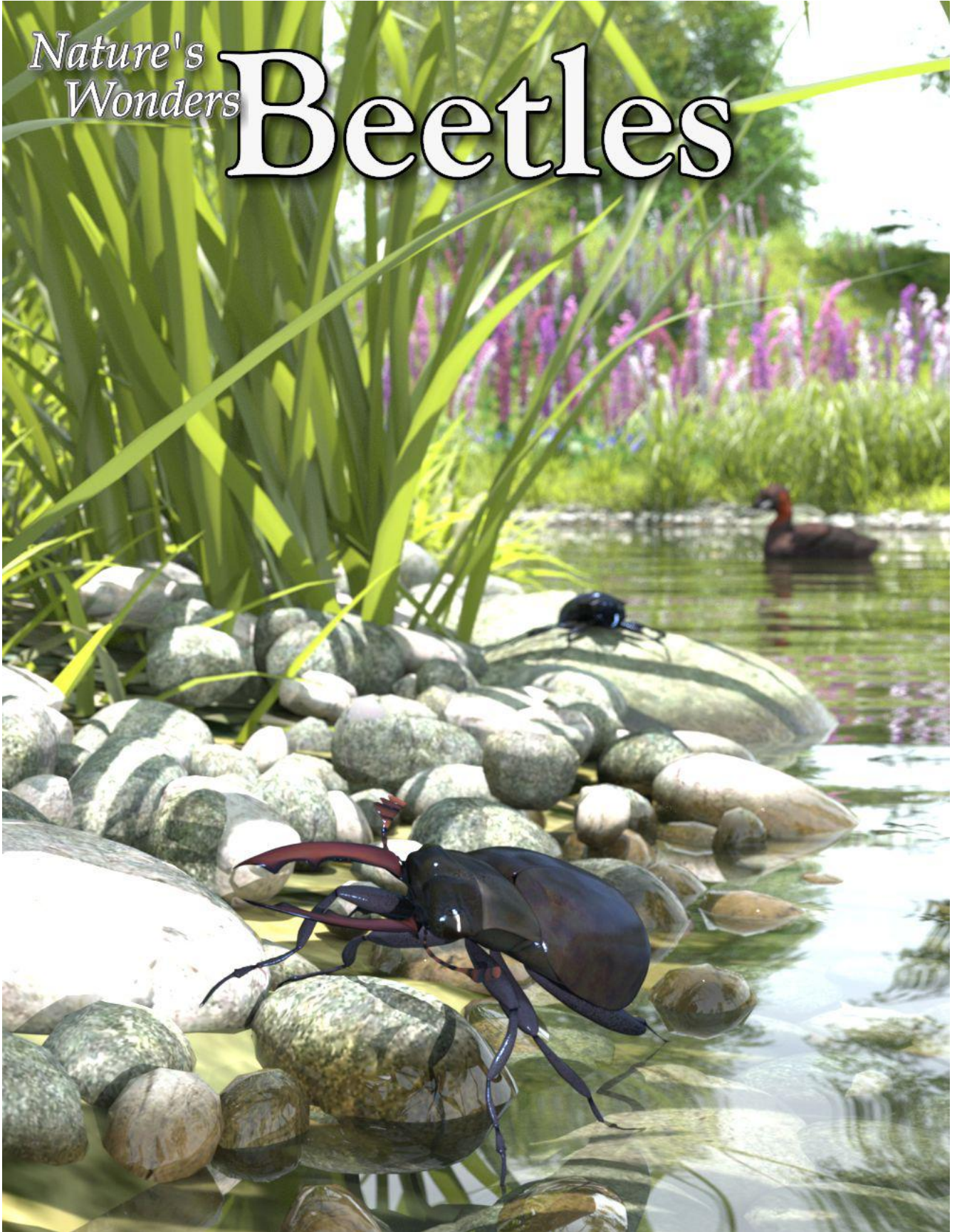


*Nature's
Wonders*

Beetles



3D model set by Ken Gilliland

Nature's Wonders

BEETLES

Manual

Introduction	3
Overview and Use	3
Creating a Beetle	4
Using the Poses	4

Field Guide

List of Species	5
Pinacate Beetle	6
Stag Beetle	7
Resources, Credits and Thanks	9

Introduction

Beetles are insects that form the order *Coleoptera*. Their front pair of wings are hardened into wing-cases, called the Elytron which distinguishes them from most other insects. There are about 400,000 described species making it the largest of all orders and about 25% of all known animal species.

They are found in almost every habitat except the sea and the polar regions. They interact with their ecosystems in several ways: beetles often feed on plants and fungi, break down animal and plant debris, and eat other invertebrates. While some species are serious agricultural pests, others such as ladybirds eat aphids, scale insects, thrips, and other plant-sucking insects that damage crops. Some others also have unusual characteristics, such as fireflies, which use a light-emitting organ for mating and communication purposes.

This Base Set comes with two different species of Beetle. It includes the Pinacate Beetle of the American Southwest, which is often referred to as the Stink Bug because it raises its hind end in the air and sprays a noxious liquid to defend itself (much like a skunk). The other beetle included is the popular Stag Beetle which found in Europe and is unmistakable with its large “pinchers” (maxillary palps).

It 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 beetle species included in this volume. Each species uses specific morphs from the generic model to single-out its unique features.

- **Models included in this volume:**
 - Nature's Wonders Beetle

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

- **Fauna Libraries:** This folder holds the actual species and poses for the "premade" fauna. The fauna for this set can be found in the following folder(s):
 - **Insects / Beetles of the World**
- **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 fauna included in the set

Creating a Specific Beetle using Poser

1. For this example, we'll create the Stag Beetle.
2. Load Poser, select the FIGURES library and go to the "Animals", "Nature's Wonders" and then the Nature's Wonders Fauna Libraries Insects folder.
3. Go to the Beetles of the World folder and select the Firefly or Superfly sub-folder.
4. Select the Stag Beetle (or a Beetle of your choice) and load it by clicking the mouse.

Creating a Specific Beetle using DAZ Studio

1. For this example, we'll create the Stag Beetle.
2. Load DAZ Studio and go to the "Animals", "Nature's Wonders" and then the Nature's Wonders Fauna Libraries Insects folder.
3. Go to the Beetles of the World folder and select the Iray or 3Delight sub-folder.
4. Select the Stag Beetle (or a Beetle of your choice) and load it by clicking the mouse.

Using the Poses

The poses were designed for the default model. The base or "hip" section of the model is **elyrta**. Since different individual species may use body scaling, it may alter the expected ground level of the species model. Some adjusting may be necessary (e.g. the "ytran" dial may need to be used to raise or lower the model).

To Fly or Not Fly?

First, a crash course in Insect Biology... All beetles have 2 sets of wings; the Elytron (2 halves of the shell) are technically the fore wings, and then the hind wings (which actually do the flying). Some beetles through evolution have lost their ability to fly, and while they have hind wings, they are of no use because the Elytron (shell halves) are fused together.

Below, are the flight capabilities of beetles included in this set that can fly:

- **Pinacate Beetle-** It cannot fly, the Elytron is fused together.
- **Stag Beetle-** They are clumsy fliers; males are more likely to fly than females

Nature's Wonders

BEETLES

FIELD GUIDE

Pinacate Beetle

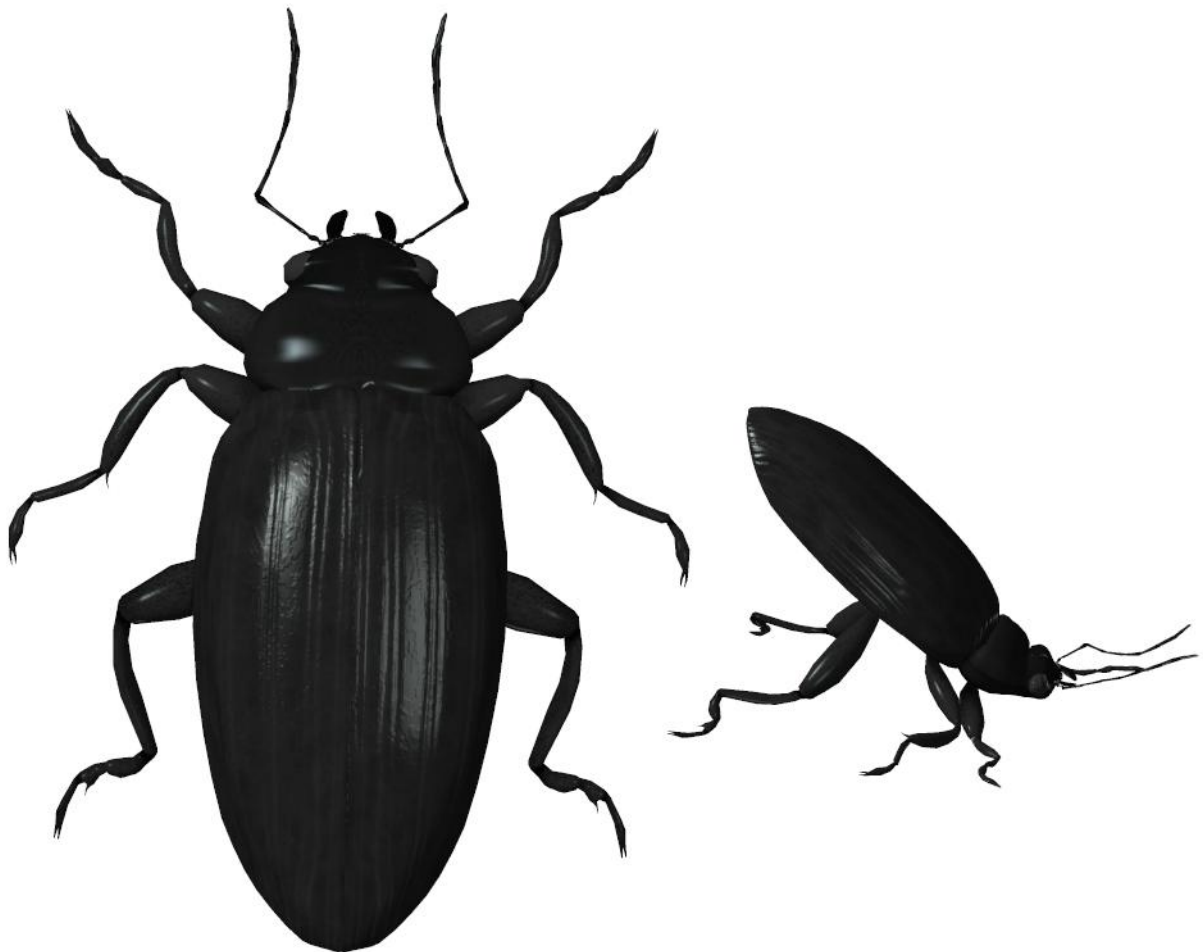
Stag Beetle

Pinacate Beetle

Eleodes littoralis

It is commonly known as the desert stink beetles. They are endemic to western North America (California). The name "pinacate" is Spanish, derived from the Aztec name for the insect, "pinacatl", which translates as "black beetle".

Eleodes species range from about 10 to 50 mm (0.39 to 1.97 in) in length and are black in color with some having a reddish tint on their abdomen. It produces quinone (a noxious smelling liquid derived from quinic acid), and stands on their heads to spray it. They are typically found in the arid desert regions of their range but can also be found in forests and grasslands. All species in the Eleodes family are flightless because their elytra (shell halves) are fused together and their second pair of wings is very reduced and have become functionless in the course of evolution.



Stag Beetle

Lucanus cervus

This beetle gets its name because the males enormous jaws (palps) resemble a stags antlers. It lives in woodland edges, hedgerows, traditional orchards, parks and gardens throughout Western Europe, including Britain – but not Ireland. They are relatively widespread in southern England and live in the Severn valley and coastal areas of the southwest. Elsewhere in Britain they are extremely rare or now extinct. The most obvious problem for stag beetles is a significant loss of habitat. Development will continue to reduce stag beetle habitats, but increased awareness of their existence can help defend the beetles against development.

In addition the cleaning up of woodlands, parks and gardens has led to the removal of dead or decaying wood habitats which is the stag beetle larvae's food source. Tree surgery operations such as stump-grinding of felled trees removes a vital habitat for the beetle. Humans are, unfortunately, the most direct threat to stag beetles.



A stag beetle's head and thorax are shiny black and their wing cases are chestnut brown. Male beetles appear to have huge antlers. They are actually over-sized mandibles, used in courtship displays and to wrestle other male beetles. Adult males vary in size from 35mm – 75mm long and tend to be seen flying at dusk in the summer looking for a mate. Female beetles are smaller at

between 30-50 mm long, with smaller mandibles. They are often seen on the ground looking for somewhere to lay their eggs.

They spend most of their life underground as larvae, only emerging for a few weeks in the summer to find a mate and reproduce. Larvae feed on decaying wood under the ground. Adults can't feed on solid food – they rely on the fat reserves built up whilst developing as a larva. They can use their feathery tongue to drink from sap runs and fallen soft fruit.

Special Thanks to...

....my betatesters Alisa and FlintHawk

and the Beatles (who I listened to throughout this project)

Species Accuracy and Reference Materials

The author-artist has tried to make these species as accurate to their real life counterparts as possible. Beetles of the same species vary considerably, as do all other animals in nature. These Beetles were created using the correct field markings and the most common similarities.

With the use of one generic model to create dozens of unique Beetle species, some give and take is bound to occur. In addition, 3D-models have many technical challenges, which make exact representations difficult, if not impossible. It's best to think of these Beetles represented as resembling the particular species, and they may not, in some cases, be 100% scientifically accurate.

The model and morphs were created using Luxology's Modo. The texture maps were created in Corel's Painter. The model was rigged and materials were created in Smith-Micro's Poser and DAZ's DAZ Studio.

Internet Sources:

- **Wikipedia** (<http://www.wikipedia.com>)
- **The Smithsonian** (<https://www.si.edu/spotlight/buginfo/beetle>)
- **San Diego Zoo** (<https://animals.sandiegozoo.org>)
- **The Wildlife Trusts** (<https://www.wildlifetrusts.org>)
- **BugGuide.Net** (<https://bugguide.net>)