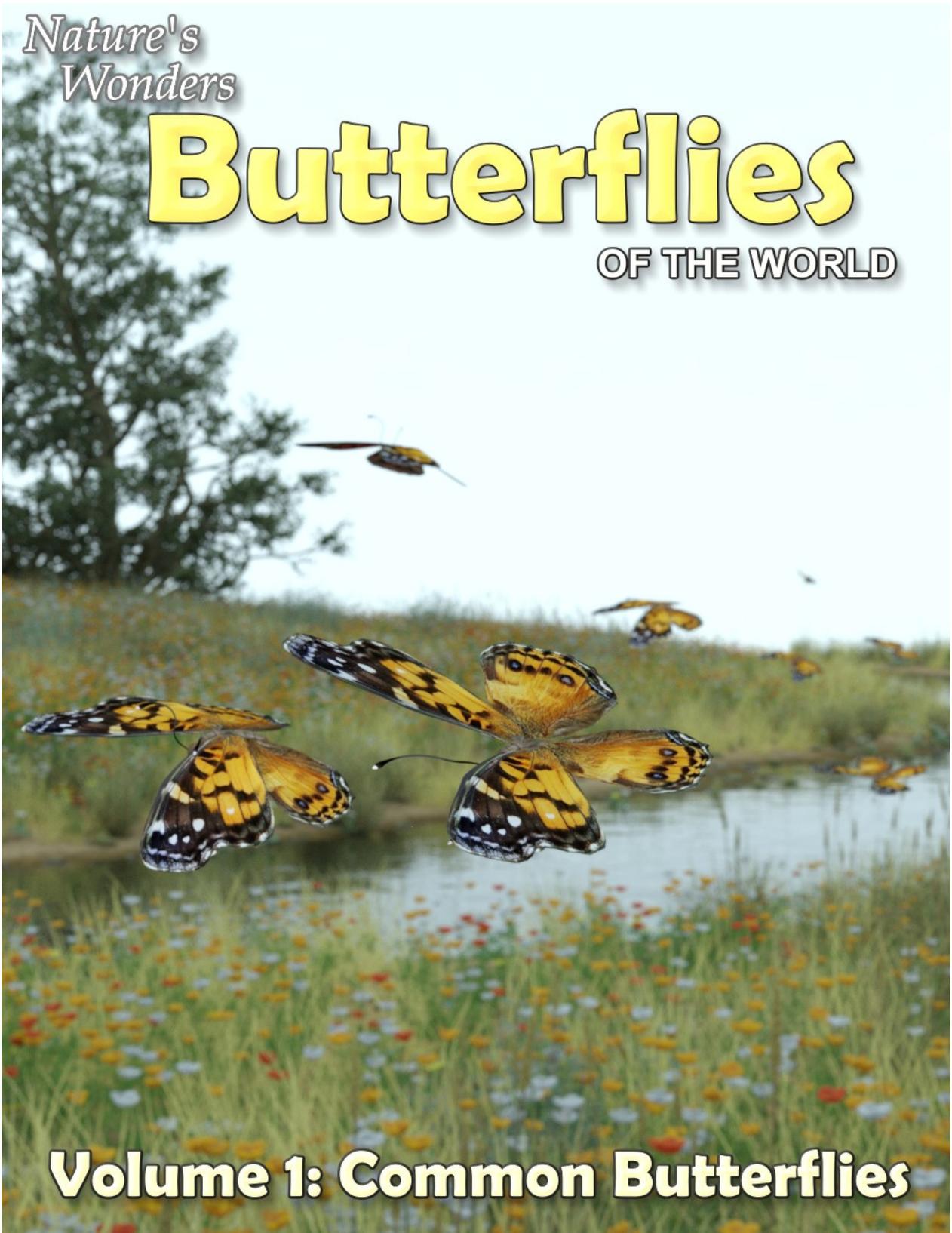


*Nature's
Wonders*

Butterflies

OF THE WORLD



Volume 1: Common Butterflies

A 3D Model set by Ken Gilliland

Nature's Wonders

Butterflies

of the World Volume 1

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Nature's Wonders

Butterflies

of the World Volume 1

Introduction

Butterflies and moths belong to the insect Order *Lepidoptera*, which is a word that comes from the Greek words for “scale” and “wing.” While most of the 150,000 species in this order are moths, there are an estimated 18,000 butterfly species found globally. The earliest known butterfly fossils date to the mid Eocene epoch, between 40–50 million years ago.

Butterflies and moths are indicators of a healthy environment and healthy ecosystems. They are an important element of the food chain and are prey for birds, bats and other insectivorous animals, as well as, providing a wide range of environmental benefits from pollination to natural pest control.

As masters of metamorphosis, butterflies are significant symbols of transformation, freedom, and rebirth. These winged creatures have long been viewed as otherworldly messengers and heralds of good fortune and joy.

Nature's Wonders Butterflies of the World Volume 1 add-on set expands the 3D butterfly world with 8 commonly seen species through the globe. It supports Poser's Firefly and Superfly and DAZ Studio 3Delight and Iray render engines.

Overview and Use

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/Butterflies 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
 - **... Based 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. 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).

Loading a Butterfly using Poser

1. Load Poser, select the FIGURES library and go to the "Animals", "Nature's Wonders" and then the Nature's Wonders Fauna Libraries Insect folder.
2. Go to the Butterflies of the World folder and select the Firefly or Superfly sub-folder.
3. Select a butterfly of your choice and load the model clicking the mouse.

Loading a Butterfly using DAZ Studio

1. Load DAZ Studio and go to the "Animals", "Nature's Wonders" and then the Nature's Wonders Fauna Libraries Insects folder.
2. Go to the Butterflies of the World folder and select the Iray or 3Delight sub-folder.
3. Select a butterfly of your choice and load the model clicking the mouse.

Sizing & Poser Related Issues

All the caterpillars included in this set have been scaled to their appropriate sizes in relation to human figure models. In some cases, these butterflies can be quite small measuring around one-inch.

The size of the butterfly can produce some issues in Poser and may disappear when the camera is in close focus. The "hither" setting on Poser's cameras is set to 0.800 by default. Reducing this setting to "0.0" will correct this issue.

A second issue can appear when rendering a small butterfly solely (without any other items in the scene). It will produce a default square shadow. It is a known bug with Poser. To correct this issue, include a second larger item off-screen and the shadows will render correctly.

Posing

The base body part with this model is the "Thorax 1" part. This part, as well as the main body part, control and entire models XYZ Rotate and Transition. There are several Easy Pose chains. One controls the entire abdomen (Abdomen1-5) from the abdomen to tail. There are two other chains; one controlling the Proboscis (nectar feeding tube) and one with controls for each individual Antennae.

The Proboscis, by default (0), is fully outstretch for feeding. When not feeding, the "ProboscisBendAll" dial spun to 33 is the normal position.

Butterfly Family Types

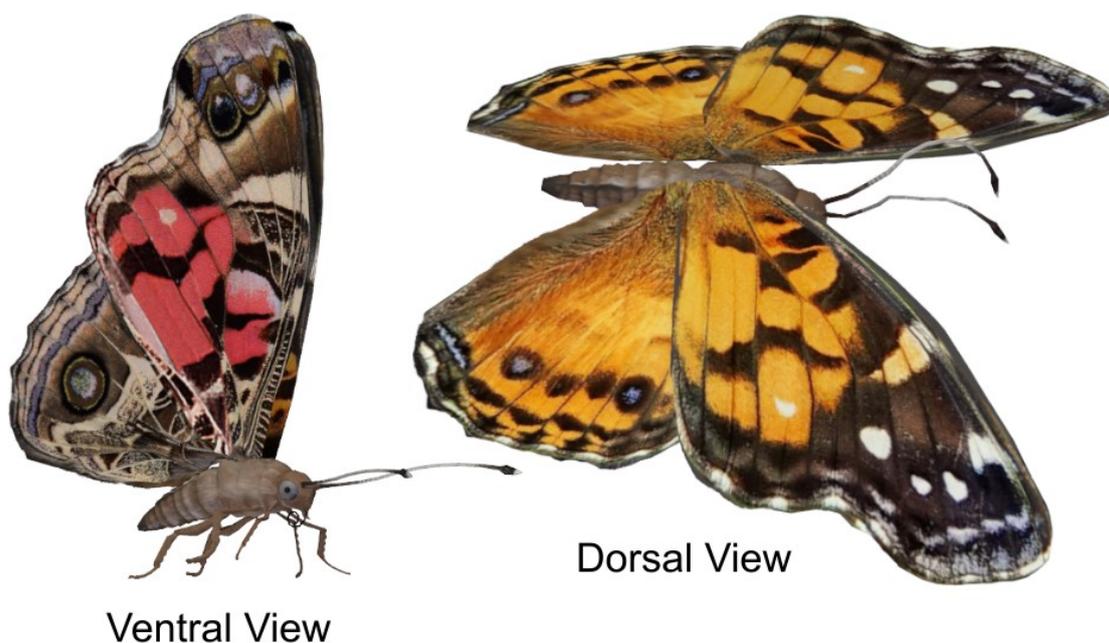
Family	Common name	Characteristics	Image
<i>Hedylidae</i>	American moth-butterflies	Small, brown, like geometrid moths; antennae not clubbed; long slim abdomen	
<i>Hesperiidae</i>	Skippers	Small, darting flight; clubs on antennae hooked backwards	
<i>Lycaenidae</i>	Blues, coppers, hairstreaks	Small, brightly colored; often have false heads with eye spots and small tails resembling antennae	
<i>Nymphalidae</i>	Brush-footed or four-footed butterflies	Usually have reduced forelegs, so appear four-legged; often brightly colored	
<i>Papilionidae</i>	Swallowtails	Often have 'tails' on wings; caterpillar generates foul taste with osmeterium organ; pupa supported by silk girdle	
<i>Pieridae</i>	Whites and allies	Mostly white, yellow or orange; some serious pests of <i>Brassica</i> ; pupa supported by silk girdle	
<i>Riodinidae</i>	Metalmarks	Often have metallic spots on wings; often conspicuously colored with black, orange and blue	No image available

American Lady (*Vanessa virginiensis*)

It is most easily distinguishable by its two large eyespots on the ventral side. It also uniquely features a white dot within the forewing subapical field, set in pink on the underside and usually also in the dorsal side's orange field. A less reliable indicator is the row of black eyespots on the dorsal submarginal hindwing. In the American Painted lady, those on the opposite ends of the row are often larger and have blue "pupils". Its size ranges from 1.75 - 2.75 inches (4.5–7 cm).

Where is it found: It found throughout North America (except in the Northwest). Occasionally individuals can be found as far as southwest Europe. It has been introduced to Hawaii where it is one of four *Vanessa* species.

The American Lady prefers open areas with low vegetation, weedy fields, and woodland clearings. Unable to survive cold winters, adults overwinter in warm southern regions.



Ventral View

Dorsal View

Diet: Cudweeds (*Gnaphalium*), pussytoes (*Antennaria*), and the everlastings (*Anaphalis*), which all belong to *Gnaphalieae* family.

Threats: Climate change poses serious threats to this species, both on its own and in conjunction with other stressors to species' populations.

Other Notes: The American Lady has two large eyespots on the hindwing below, whereas the Painted Lady has four eyespots. On the forewing, the American Lady features a white dot on an orange spot, not seen on the Painted Lady.

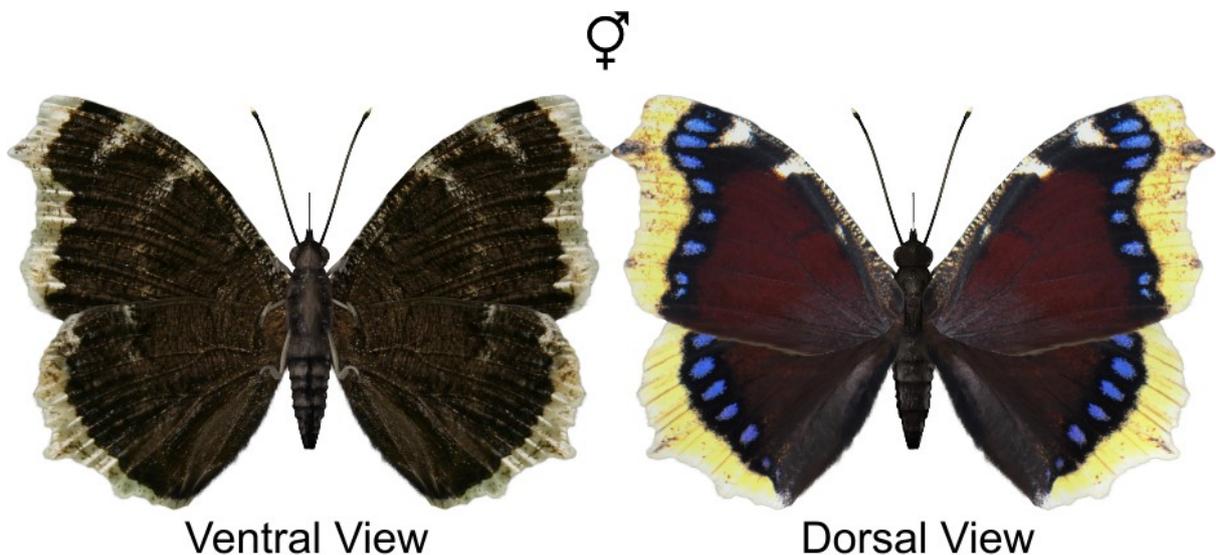
Mourning Cloak (*Nymphalis antiopa*)

This butterfly is known as the "Camberwell Beauty" in Britain. It is a large, unique butterfly. The dorsal side of its wings are a dark maroon, or occasionally brown, with ragged pale-yellow edges. Bright, iridescent blue spots line the black demarcation between the maroon and the yellow. The ventral side of the wings has gray striations, with the same pale-yellow edges. The species does not display any obvious sexual dimorphism. It has a wingspan of 3.5–4.0 inches (8.9–10.2 cm).

Where is it found: They are distributed broadly around the northern hemisphere. They are commonly found throughout all of North America and northern Eurasia. □

They can usually be found in hardwood forests, though they have been found in virtually all habitats. They may also be found as far as the northern part of South America, though they are typically not seen as frequently in southern states such as Florida, Louisiana, or Texas. They are occasionally seen in the more temperate places in Asia, and a few have even been seen in Japan. However, the mourning cloaks tend to be found predominantly in cold, mountainous areas.

Diet: Their primary food source is sap of deciduous trees rather than flowering plants.



Threats: They are protected by law in Switzerland and Austria, though they generally have an increasing trend regarding population density in Finland. They also assume "safe" status in the Czech Republic. In general, the mourning cloak butterflies find areas that have experienced fire breaks to be more inviting, presumably because the fire breaks increase the amount of open space and clearings available to the butterflies, which is a more ideal habitat for these butterflies to live in.

Because they preferred cold climates, the warming of the planet is a threat to

their existence.

Other Notes: These butterflies have a lifespan of 11 to 12 months, one of the longest lifespans for any butterfly. Mourning cloaks will play dead by closing their wings tightly together and tucking their legs up against their body for protection and holding completely still. They'll maintain this for a few minutes before returning to their natural healthy and lively behavior.

There are five subspecies:

- *N. a. antiopa*. First reported by Linnaeus in 1758. The nominate species is found in northern Eurasia.
- *N. a. hyperborea*. First reported by Seitz in 1913. This race is referred to as the Northern Mourning Cloak. This race is found in Canada and Alaska.
- *N. a. lintnerii*. First reported by Fitch in 1857. This race is referred to as the Eastern Mourning Cloak. This race is slightly larger than Race *hyperborea* and is found in eastern Canada and the eastern United States.
- *N. a. thomsoni*. First reported by Butler in 1887. This race is referred to as the Southwestern Mourning Cloak. This race is found in the southwestern eastern United States.
- *N. a. asopos*. First reported by Fruhstorfer in 1909. This race is endemic to Japan.

Red Admiral (*Vanessa atalanta*)

The forewing of this butterfly bears on a black ground an oblique vermillion band and a group of white subapical spots. On the hindwing the larger portion of the distal margin is red, with a row of small black spots and at the anal angle an elongate blue spot. The underside is partly variegated with blue; the forewing is on the whole similar in markings to the upper, while the hindwing is brightly variegated and clouded, bearing black markings, of which those in the cell resemble a figure in the middle of the costal area there is a pale patch and in the distal marginal area a row of ocellus-like spots. Sometimes, especially in the female, the red band of the forewing bears a small white spot in the middle. It has a wingspan of 2 inches (5 cm).

Where is it found: It is widely distributed across temperate regions of North Africa, the Americas, Europe, Asia, and the Caribbean.

Diet: It prefers nettle, false nettle, pellitory and related plants.



Threats: Climate change poses serious threats and advantages to this species. Spring temperatures in central England between 1976 and 1998 increased by 1.5 degrees Celsius and summer temperatures increased by 1 degree Celsius. Following this 22-year period of warming, the red admiral appeared six weeks earlier in the year. Of 35 species of butterflies studied in central England, the change in the duration of flight period was most significant in the red admiral, exhibiting a 39.8 day increase. These changes in migration time and length could result in an increased abundance of red admirals and a northward range expansion. Warmer climates could lead to an increase in time spent finding mates, laying eggs, and collecting nectar. Conversely, more frequent droughts associated with climate change would decrease egg survival and lead to habitat and host plant destruction.

Other Notes: The red admiral is also known to hibernate, re-emerging individuals showing prominently darker colors than the first brood.

Gulf Fritillary (*Dione vanillae*)

This butterfly exhibits sexual dimorphism as females are typically distinctively larger in size than males. The underside of the wings is brown and speckled with silvery white dots. In contrast, the top surface layer of the wings is deep orange in color with black streaks running across. In addition to the size difference between the two sexes, females are usually darker in color and are more marked with black streaks as compared to the males. a wingspan of 2.6–3.7 inches (6.5–9.5 cm).

Where is it found: It is commonly found in the southern parts of the contiguous United States, from Florida to Texas and California. However, this butterfly's range can extend from the Southern United States into parts of Mexico and Central America and sometimes as far as parts of South America. They are also found in Hawaii.

They prefer open habitats, like in moderately sunny areas near open grasslands, parks, and woodlands.



Diet: Nectar from many flowers, including Lantana plants. The *Passiflora* family are host plants for this species. These passion vine plants are suitable host plants as they provide a good structure for larval host habitats which enables young populations of gulf fritillaries to be sufficiently nurtured and protected.

Threats: Climate change poses serious threats to this species, both on its own and in conjunction with other stressors to species' populations.

Other Notes: Gulf Fritillaries have a chemical defense mechanism in which they release odorous chemicals in response to predator sightings. As a result, common predators learn to avoid this species.

Cabbage White (*Pieris rapae*)

It is known in Europe as the “Small White”. The upper side is creamy white with black tips on the forewings. Females also have two black spots in the center of the forewings. Its under wings are yellowish with black speckles. It is sometimes mistaken for a moth due to its plain appearance. It has a wingspan of 1.3–1.9 inches (3.2–4.7 cm).

Where is it found: It has a natural range across Europe, Asia, and North Africa. It was accidentally introduced to Quebec, Canada, around 1860 and spread rapidly throughout North America.

Diet: It prefers purple, blue and yellow flowers over other floral colors. Some flowers, like *Brassica rapa*, have a UV guide for aiding nectar search for the butterfly where the petals reflect near UV light whereas the center of the flower absorbs UV light, creating a visible dark center in the flower when seen in UV condition.



Threats: Climate change poses serious threats to this species, both on its own and in conjunction with other stressors to species' populations.

Other Notes: The caterpillar of this species, often referred to as the "imported cabbageworm", is considered a pest to cabbage, kale, bok choy and broccoli.

Gray Hairstreak (*Strymon melinus*)

It is also called the “Bean Lycaenid” or “Cotton Square Borer”. The upper sides of the wings are gray with an orange spot on the hind margin. The underside of the wings are a lighter gray with white and black lines and orange and blue marginal spots near the hind-wings' tail-like extensions. It has a wingspan of 0.8–1.26 inches (2–3.2 cm).

Where is it found: It is one of the most common hairstreaks in North America, ranging over nearly the entire continent. It also occurs throughout Central America and in northern South America.

It lives in a wide range of habitats ranging from tropical forests and mountains to temperate woodland areas and meadows, as well as cities and farmland.

Diet: A variety of flowering plants. They use mallows and legumes as their preferred host plants.



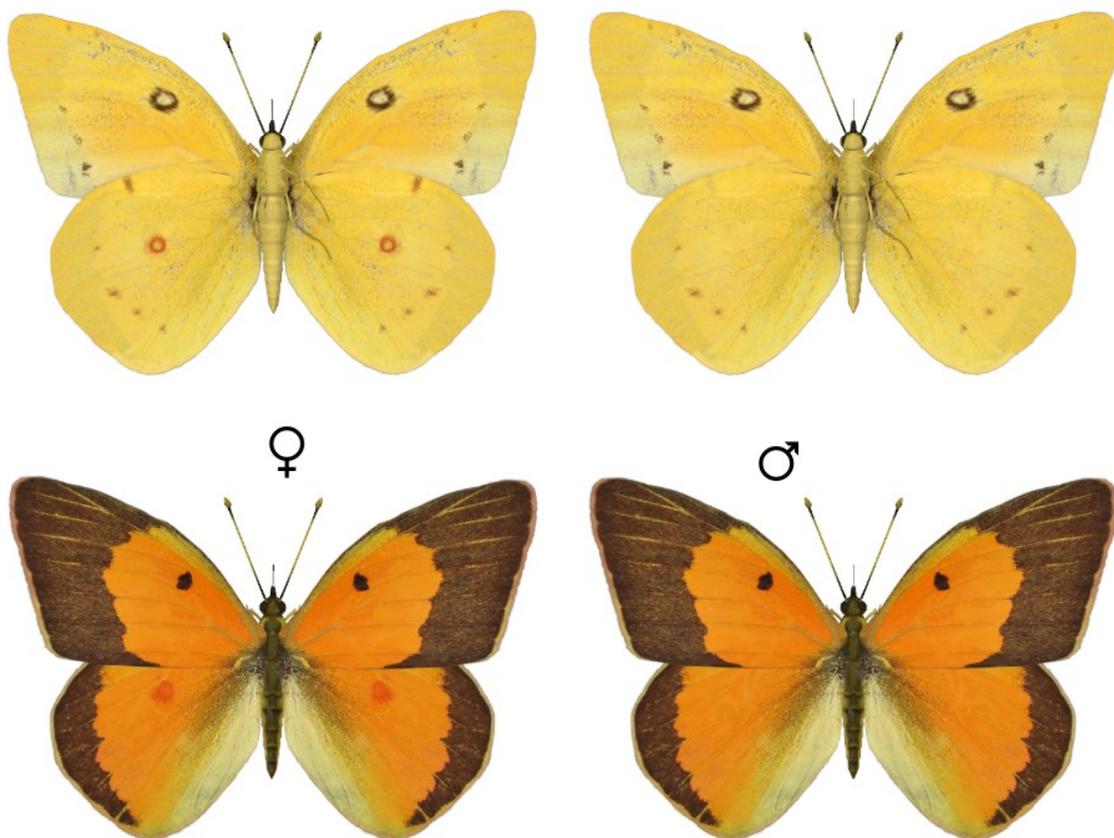
Threats: Climate change poses serious threats to this species, both on its own and in conjunction with other stressors to species' populations.

Other Notes: Young caterpillars are typically found eating flowers and fruiting bodies of their host plant while the older caterpillars eat the leaves.

Alfalfa Butterfly (*Colias eurytheme*)

It is also called the “Orange Sulphur”. When the wings are open, they show a distinct bright yellow coloration with various amounts of scaling in light orange. Both the dorsal and the ventral wings have black borders at the margins. The color orange is evidently seen when they are in flight. When the wings are closed, the ventral side shows a yellowish-orange color along with an indistinct row of tiny black spots by the margins, as also, a double spot at the center of the wings. The males have a solid black border around the wings, while the females have yellow spots in its place. It has a wingspan of 2.5–3.3 inches (6.4–8.4 cm).

Where is it found: It is found throughout North America from southern Canada to Mexico.



Diet: It feeds off various species in the pea family (*Fabaceae*) and are usually only found feeding at night. Occasionally this species multiplies to high numbers, and can become a serious pest to alfalfa (*Medicago sativa*) crops.

Threats: Climate change poses serious threats to this species, both on its own and in conjunction with other stressors to species' populations.

Other Notes: Unlike that of many other butterfly species, the courtship of this butterfly is very brief and does not involve many elaborate displays. Mature female butterflies participate in mate selection by utilizing a specific refusal posture that prevents any undesired mating with both conspecific and non-conspecific males.

Purple Emperor (*Apatura iris*)

Adults have dark brown wings with white bands and spots, and a small orange ring on each of the hindwings. Males have a wingspan of 2.8–3.1 inches (7–8 cm), and have a purple-blue sheen caused by iridescence that the slightly larger (8–9.2 cm) females lack.

Where is it found: It is widely distributed in dense, broadleaved woodlands throughout Europe including southern Britain, and across the Palearctic to central and western China.

Diet: Honeydew secreted by aphids, sap oozing from oak trees, and on dung, urine, and animal carcasses.

Threats: Climate change poses serious threats to this species, both on its own and in conjunction with other stressors to species' populations.

Other Notes: Females spend most of their lives in the tree canopy, favoring dense and mature oak woodlands, coming down only to lay their eggs on the small willow bushes that grow in clearings and bridleways. Males also spend much of their time in the tree tops, defending their territory from rivals, though they will sometimes descend to drink from puddles or feed.

Some butterfly collectors once used animal carcasses "in a somewhat advanced state of decay" to lure the males down to the ground. This practice was declared "unsportsmanlike" and has since then been frowned upon by enthusiasts.



Special Thanks to my Beta-Testing Team...

Alisa & FlintHawk

Species Accuracy and Reference Materials

The author 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 species, some give and take is bound to occur. The texture maps were created in Corel Painter with as much accuracy as possible.

Field Guide Sources:

- **Wikipedia** https://en.wikipedia.org/wiki/Main_Page
- **Cambridge Butterfly Conservatory** <https://www.cambridgebutterfly.com>
- **Butterfly Conservation** <https://butterfly-conservation.org>
- **US Fish and Wildlife** <https://www.fws.gov>
- **What's That Bug** <https://www.whatsthatbug.com>
- **Butterflies at Home** <https://www.butterfliesathome.com>

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