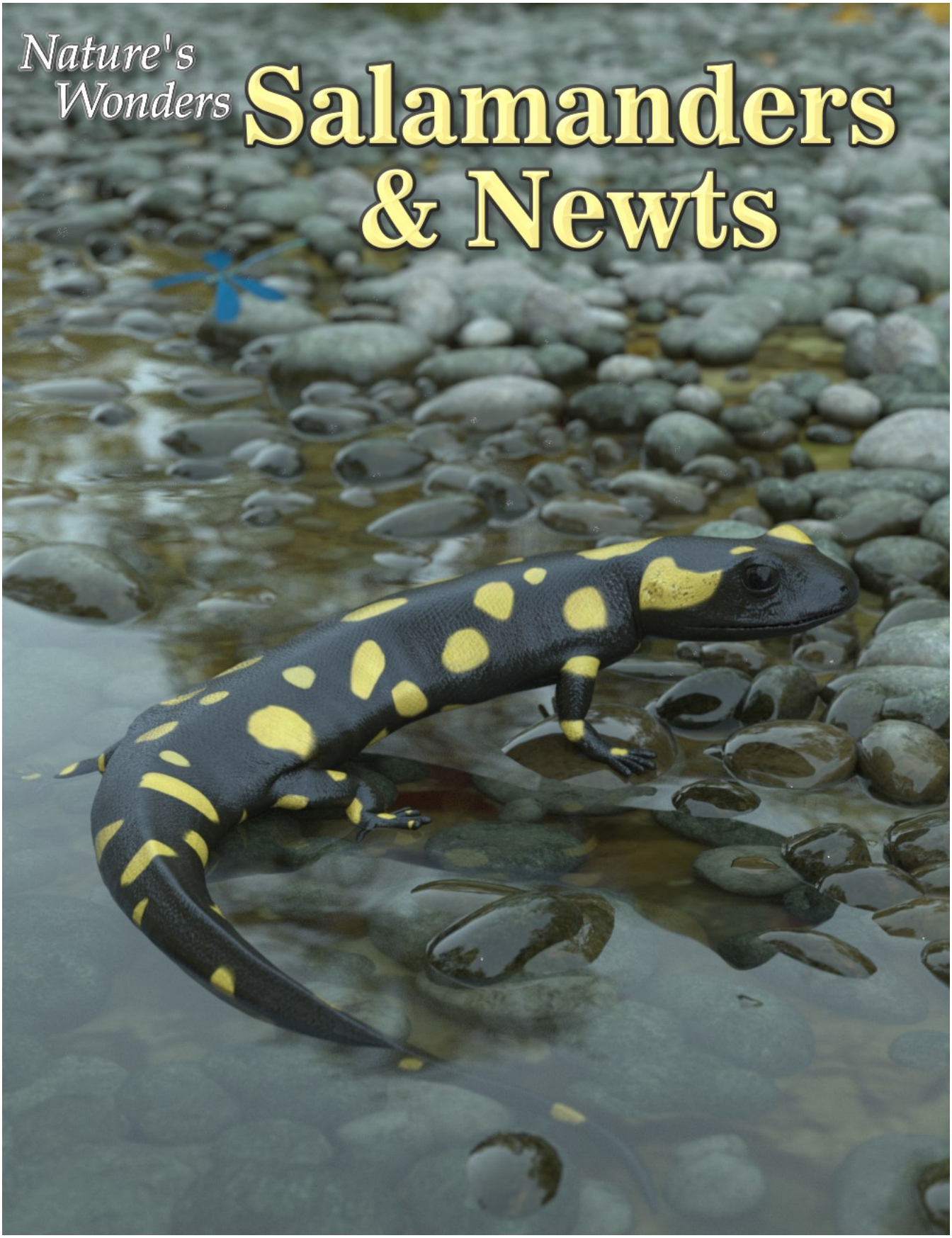

3D model set by Ken Gilliland

Nature's Wonders

Salamanders & Newts

Introduction

Salamanders and Newts are a group of amphibians typically characterized by their lizard-like appearance with some frog qualities.They generally have slender bodies, blunt snouts, short limbs, and the presence of a tail in both larvae and adults. All ten extant salamander families are grouped together under the order *Urodela* ("conspicuous tail").

Their diversity is highest in eastern North America, especially in the Appalachian Mountains. Most species are found in the nearctic and palearctic regions of the planet, with a few species being present in the neotropical areas. These amphibians are capable of regenerating lost limbs as well as self-repairing other damaged parts of their bodies. All salamanders have poisonous skin, ranging from mildly irritating to deathly toxic . The skin of the California newt for example secretes tetrodotoxin, which is the same toxin found in puffer-fish, making them deadly to most creatures, including humans.

Legends have developed around the salamander over the centuries, many related to fire. This connection likely originates from the tendency of many salamanders to dwell inside rotting logs. When the log was placed into a fire, the salamander would attempt to escape, lending credence to the belief that salamanders were created from flames.

This fully articulated base model comes with 3 Salamanders, plus a Newt and Mudpuppy characters. It has both Poser and DAZ Studio Versions and support Superfly, Firefly, Iray and 3Delight Render engines.

Overview and Use

This set uses a common model to recreate digitally the lizard 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:**
    - **Natures Wonders Salamander Base** - This model is used with all salamanders and newts included in this set. .

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):

- **Amphibians/Salamanders 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).

Creating a Specific Salamander using Poser

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

Creating a Specific Salamanders using DAZ Studio

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

Using the Poses

The poses were designed for the default model. Since different individual species may use torso, neck, leg and tail 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).

Fire Salamander *Salamandra salamandra*

It is one of the most common species of salamander found in Europe, and are found in most of southern and central Europe. They are most commonly found at altitudes between 250 meters (820 ft) and 1,000 meters (3,300 ft).

Fire salamanders live in the forests of central Europe and are more common in hilly areas. They prefer deciduous forests since they like to hide in fallen leaves and around mossy tree trunks. They need small brooks or ponds with clean water in their habitat for the development of the larvae. Whether on land or in water, fire salamanders are inconspicuous. They spend much of their time hidden under wood or other objects. They are active in the evening and the night, but on rainy days they are active in the daytime as well.

The diet of the fire salamander consists of various insects, spiders, millipedes, centipedes, earthworms and slugs, but they also occasionally eat newts and young frogs.

It is 6 to12 inches (15.2-30.5 cm) in length. It is black with yellow spots or stripes to a varying degree; some specimens can be nearly completely black while on others the yellow is dominant. Shades of red and orange may sometimes appear, either replacing or mixing with the yellow according to subspecies. This bright coloration is highly conspicuous and acts to deter predators by honest signaling of its toxicity (aposematism).

Females are generally larger than males and possess relatively shorter

extremities and tail. Male's cloaca much more swollen than female's cloaca.

Fire salamanders can have a very long lifespan; one specimen lived for more than 50 years in Museum Koenig, a German natural history museum.

Despite its wide distribution and abundance, it is classified as Vulnerable on the IUCN Red List due to its susceptibility to infection by the introduced fungus Batrachochytrium salamandrivorans, which has caused severe declines in fire salamanders in parts of its range.

The fire salamander's primary alkaloid toxin, samandarin, causes strong muscle convulsions and hypertension combined with hyperventilation in all vertebrates. The poison glands of the fire salamander are concentrated in certain areas of the body, especially around the head and the dorsal skin surface. The colored portions of the animal's skin usually coincide with these glands. Compounds in the skin secretions may be effective against bacterial and fungal infections of the epidermis; some are potentially dangerous to human life.

Quite a few subspecies of the fire salamander are recognized. The most notable are Races fastuosa and bernadezi, which are the only viviparous (live birth) subspecies – the others are ovoviviparous (egg hatching).

- *S. s. almanzoris.* This subspecies is found at Sierra de Gredos and Sierra de Guadarrama in central Spain, and is small with a reduced yellow dorsal stripe on a back dorsum.
- *S. s. bejarae.* This race is found in central and central- eastern Meseta areas in Spain in dry highlands, and is small with irregular yellow dorsal spots on a black dorsum, a pointed snout, and a short, high tail.
- *S. s. bernardezi.* It can be found in the Asturia, western Cantabria and north-eastern Galicia regions of Spain, and is small with a mostly yellow dorsum with a black stripe. However, the dorsum may also be dirty gray-yellow, gray, brown, orange-brown or olive-green. This subspecies may also be mistaken for *S. s. fastuosa.*
- *S. s. beschkovi*
- *S. s. crespoi.* This race is found between Serra de Monchique in southern Portugal to to the Serra de Grandola in the north and east to the Spanish border. They are large with many small yellow spots on a black dorsum, long tail, long limbs, long fingers, and small paratoids.
- *S. s. fastuosa.* The Yellow-striped fire salamander is is found in the in the western and central Pyrenees and has a range overlap with race *bernardezi* at eastern Asturia and western Cantabria, however the former is larger in size. It has two bright yellow dorsolateral strips.
- *S. s. gallaica*. The Galician fire salamander is found in Northern Portugal,

and is large with yellow, horseshoe or comma-shaped spots on a black background.

- *S. s. gigliolii.* It is found in Italy and is long with extensive yellow coloration, almost masking the black background. They also have red throats and ventrums. Salamandra s. "hispanica" is found in the eastern Pyrenees
- *S. s. longirostris.* This race is found in Cadiz and Malaga of southern Spanish, and is large with lemon-yellow, comma or horseshoe-shaped spots on a black dorsum, four large yellow spots on the head, and two yellow spots above the corners of the mouth.
- *S. s. morenica.* It is found in the Sierra Morena, from the Portuguese boarder to Murcia, Spain. The species is large with red coloration and small yellow spots on a black dorsum.
- *S. s. salamandra.* The nominate race is called commonly the “Spotted fire salamander”. It can be found ranging from central Italy north throughout central Europe and the Balkan Peninsula. It has a stocky body with variable, irregular yellow spots that sometimes merge into bands.
- *S. s. terrestris.* The Barred fire salamander is found in France and in the Pyrenees region. They are moderately sized with two either continuous our discontinuous yellow dorsolateral stripes. They can also be found with spots instead of stripes or with red coloration.
- *S. s. werneri.* This race found in southern and central Greece, and are large with irregular small spots, sometime forming longitudinal rows, that can have red centers.

California Newt *Taricha torosa*

The California newt or orange-bellied newt is a species of newt endemic to California, in the Western United States. It reside in the coastal counties of California and in the southern Sierra Nevada and occupy a diverse array of habitats found near the small ponds and creeks where they breed, including woodlands and chaparral.

Its adult length can range from 5 to 8 in (13 to 20 cm). It has warty, slate-gray skin on its back and bright orange-yellow skin underneath. It is very similar in appearance to the rough-skinned newt and they are often indistinguishable without dissection, but in general, the California newt has orange skin around the bottom of its eye while the Rough-skinned has gray skin. It also has eyes that protrude beyond the edge of the jaw line when viewed from above (while the eyes of the rough-skinned do not protrude), giving its head a more bullet-like appearance. Newts are amphibians. Their skin tends to be rougher than the skin of salamanders.

The California newt's prey include earthworms, snails, slugs, woodlice, bloodworms, mosquito larvae, crickets, and other invertebrates.

Its skin produces the potent toxin tetrodotoxin, which is hundreds of times more toxic than cyanide. This neurotoxin is strong enough to kill most vertebrates, including humans. Due to their toxicity, California newts have few natural predators.

The California newt, is currently a California Special Concern species (DFG-CSC). Some populations have been greatly reduced in southern California coastal streams due to the introduction of non-native, invasive species and human habitation. The mosquitofish (Gambusia affinis) and red swamp crayfish (Procambarus clarkii) have caused the greatest reduction in newt populations. Garter snakes are the most common predator, and some species have developed a genetic resistance to tetrodotoxin.

Habitat loss and destruction, particularly as a result from human alteration of the land, is a threat to newt populations throughout California.

Common Mudpuppy *Necturus maculosus*

It is a species of salamander in the family, Proteidae. It lives an entirely aquatic lifestyle in parts of the Great Lakes region and surrounding states in lakes, rivers, and ponds, in North America.

Adult mudpuppies can be 8 to 13 inches (20-33 cm) long. They are usually a rusty brown color with gray and black and often has blackish-blue spots. In clear, light water, their skin gets darker, likewise in darker water, their skin gets lighter in color. Their external gills resemble ostrich plumes and their size depends on the oxygen levels present in the water. In stagnant water, mudpuppies have larger gills, whereas in running streams where oxygen is more prevalent, they have smaller gills. The distal portions of the gills are very filamentous and contain many capillaries. Mudpuppies also have small, flattened limbs which can be used for slowly walking on the bottoms of streams or ponds, or they can be flattened against the body during short swimming spurts. They have mucous glands which provide a slimy protective coating.

Mudpuppies use rows of teeth to eat their prey. Typically they prey upon animals such as insects and their larvae, mollusks, annelids, crayfish, small fish, amphibians, earthworms, and spiders.

Mudpuppies are generally docile and rarely bite humans, but they do possess mild toxins in their skin secretions, acting as a defense mechanism against potential predators.

Three subspecies are recognized as being valid, including the nominotypical subspecies.

- *N.m. louisianensis. First reported by Vioscain 1937. It is called the Red*

River mudpuppy.

- *N.m. maculosus. First reported by Rafinesque in 1818. It is called the common mudpuppy.*
- *N.m. stictus. First reported by Bishop in 1941. It is called the Lake Winnebago mudpuppy.*

.

Special Thanks to…

….my betatesters Alisa and FlintHawk

Species Accuracy and Reference Materials

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

With the use of one generic model to create dozens of unique salamander 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 salamanders 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)
- **San Diego Zoo** (http://animals.sandiegozoo.org/animals/lizard)
- **Caudata Culture** (https://www.caudata.org)