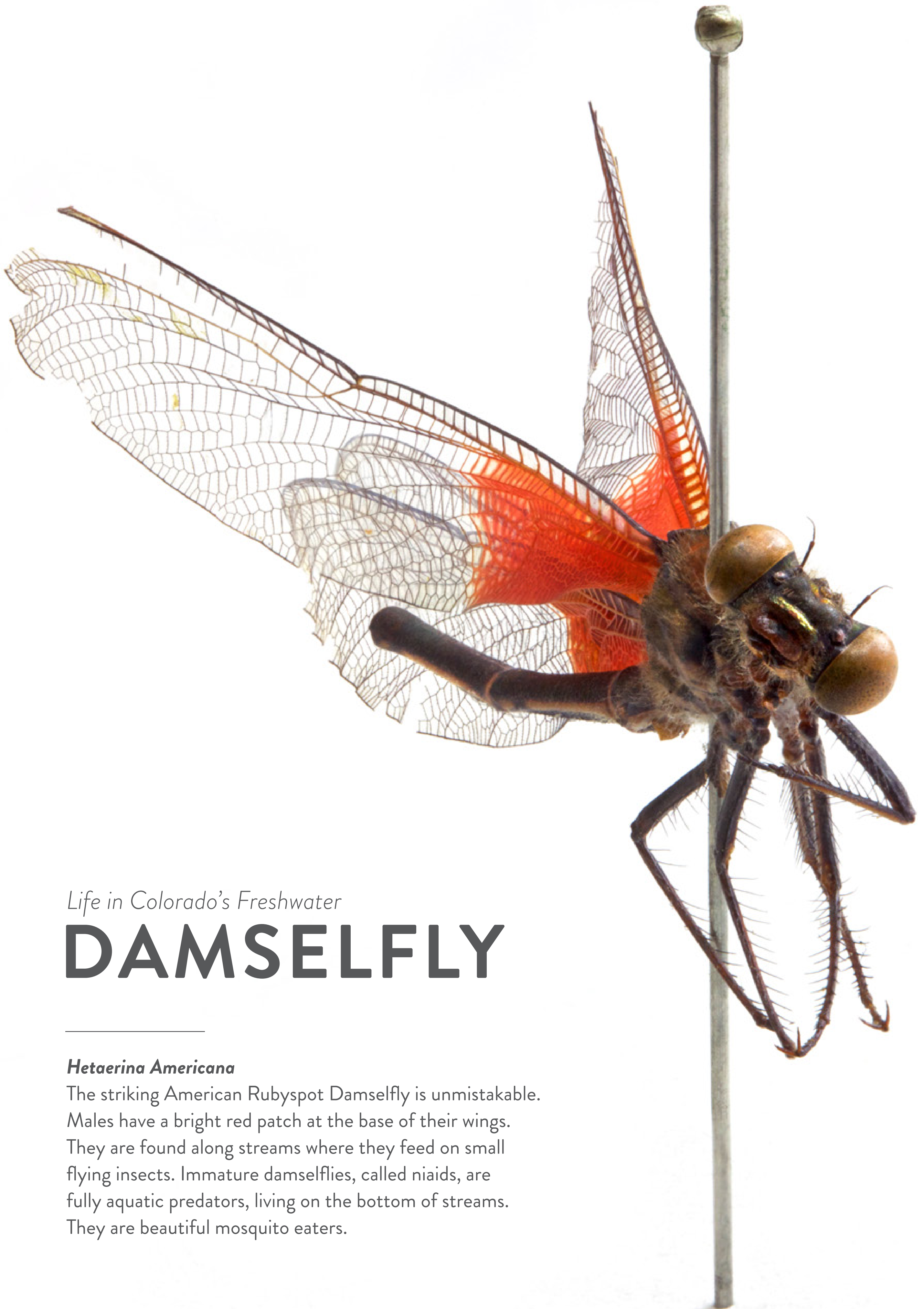# LIFE IN COLORADO'S FRESHWATER

Colorado freshwaters begin in high mountain peaks as rain or snow that spills over granite slabs and gathers in wet subalpine meadows. They cascade through forests of spruce, fir, and pine on their irrepressible flow to the sea. Along the way, they form meandering rivers, ecologically rich wetlands, lakes and ponds. Each habitat is home to unique lifeforms and contributes to the rich biodiversity of the Southern Rockies.

This poster series features specimens from the University of Colorado Museum of Natural History. They are part of a collection of 4.5 million objects that are used for research, teaching, and education.

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DAMSELFLY

Hetaerina Americana

The striking American Rubyspot Damselfly is unmistakable. Males have a bright red patch at the base of their wings. They are found along streams where they feed on small flying insects. Immature damselflies, called niaids, are fully aquatic predators, living on the bottom of streams. They are beautiful mosquito eaters.

Life in Colorado's Freshwater

POUCH SNAIL

Physa gyrina
The Pouch Snail is a genus of small freshwater snails commonly found throughout Colorado. They have shells that coil in a counterclockwise direction and are thin and transparent. These snails, along with the other species of snails in the family *Physidae*, can evade predators by twisting their shells to a 120-degree angle.

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BEAVER

Castor canadensis

The North American Beaver fells trees with its large incisors. Iron gives beaver incisors their red-brown color and makes their enamel harder and more resistant to acid. Their dams and lodges enact landscape-level changes that alter the flow of water and flood hundreds of acres, providing habitat for many other species.

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WATERSIDE FEATHER MOSS

Brachythecium rivulare

Mosses such as Waterside Feather Moss form an important component of freshwater wetlands; a habitat essential for water quality and the moderation of flood waters. As the name implies, this is a species associated with streams and rivers.

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BOTANY COLLECTION
Photo by Felix Salazar

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BOWFIN FISH

Amia scutata

This fossil specimen is an imprint of the tail of a Bowfin Fish that lived in an ancient Colorado lake 34 to 36 million years ago. They were bottom dwellers, tolerant of low-oxygen water conditions. Exceptionally preserved fossils resulted when ash from volcanic eruptions blanketed the lake. They can be seen at Florissant Fossil Beds National Monument.

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GREENBACK CUTTHROAT TROUT

Oncorhynchus clarkii stomias

The Greenback Cutthroat Trout was once abundant in Colorado but experienced extreme declines due to water contamination from mining and overfishing. Presumed extinct by 1937, a small population was discovered in the 1950s in Rocky Mountain National Park. While still considered a federally threatened species, the official Colorado state fish has benefited from aggressive conservation efforts.

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ELEPHANT HEAD

Pedicularis groenlandica
Elephant Head is an attractive plant of boggy meadows and streambanks in the high mountains. It is a *hemiparasite*, securing some of its nutrients and defensive compounds through its underground connections with other plants.

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Photo by Felix Salazar

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SCUD

Hyalella azteca

The Scud is an extremely common species of freshwater amphipod that is found in unpolluted clear waters. It has a wide range of ecological tolerances, including brackish and alkaline waters, as well as hot springs with temperatures up to 40 degrees Celsius. This propensity, along with its abundance, makes it ideal for studying and testing sediment toxicity.

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LADY FERN

Athyrium filix-femina

Lady Fern is a lovely fern, found in cool shaded forests and along streams below timberline. Streamside habitats in our semi-arid environment often shelter a wealth of ferns, providing a soothing effect upon weary hikers.

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WESTERN PAINTED TURTLE

Chrysemys picta bellii

The Western Painted Turtle is easily identified by the ink-blot patterning on the underside of its shell. They produce antifreeze compounds that prevent cellular damage caused by freezing in subzero temperatures and are able to survive without oxygen while hibernating for up to five months—longer than any other known air-breathing vertebrate.

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CORYPHODON

Coryphodon

Coryphodon is an extinct herbivorous mammal that lived from the Paleocene into the Eocene Epoch, ranging from 56–45 million years ago. Isotopic analyses of their teeth support the interpretation that they were semi-aquatic waders similar to modern hippos. Their large, tusk-like canines are diagnostic of the group and thought to be possessed only by males.

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ASTERIONELLA WITH CHYTRIDS

Asterionella formosa

Diatoms are golden brown algae that form the base of the food chain in most Colorado freshwaters. They produce glass houses that have holes and slits to allow them to communicate with their environment. Some can even move. This starburst shaped colony of *Asterionella formosa*, found in reservoirs and lakes across Colorado, is infected with a blob shaped water mould.

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DIATOM COLLECTION
Photo by Patrick Kociolek

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YELLOW POND LILY

Nuphar lutea

The Yellow Pond Lily is a denizen of subalpine ponds. It is a mystery why some ponds harbor this plant while others do not, but it is always a delight to come upon a display of dramatic yellow flowers and broad leaves forming a remarkable floating mass upon the surface of a pond.

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BOTANY COLLECTION
Photo by Felix Salazar

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GIANT FLOATER

Pyganodon grandis
The Giant Floater is a native species of freshwater
mussel that is widely distributed within Colorado,
the US, and Canada. Its tolerance for sedimentation
and pollution enable this species to become abundant
and large in size for a freshwater mussel.

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KINGFISHER

Megaceryle alcyon

The Belted Kingfisher lives near streams, lakes, rivers, and ponds feeding on a diet of fish and aquatic invertebrates. They are one of a handful of bird species with the ability to hover in place. They survey clear bodies of water for prey, then plunge headfirst into the water to capture their quarry in their oversized bills.

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DEATH RAFT

Sometimes in a lake environment, large accumulations of
dead insects may be gathered in small areas by wave action.
This particular piece of shale was created much in this way.
It contains several types of ants, flies, beetles, and other
insects, along with plant debris.

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INVERTEBRATE PALEONTOLOGY COLLECTION
Photo by Felix Salazar

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ASIAN CLAM

Corbicula fluminea
The Asian Clam is an invasive species from eastern Asia.
The first occurrence of this species in Colorado was from
the South Platte River drainage in 1993 and it has since
expanded its range to the Arkansas, San Juan, and Colorado
River drainages. Its primary impact is the befoulment
of power plants, irrigation systems, and pipes.

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SNAIL-CASED CADDISFLY

Hetaerina Americana
The spiral-like shapes attached to this rock are made by the larvae of Snail-cased Caddisflies. Each larva lives inside its own protective case that it makes by cementing small pebbles together. They are usually found clustered on rocks in streams where they feed on diatoms and detritus.

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ENTOMOLOGY COLLECTION
Photo by Felix Salazar

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CATTAIL

Typha spp.

Cattails are wetland plants of lower altitudes. They often form large, monospecific stands. Cattail marshes are ecologically important, in some cases filtering out pollutants and providing productive habitat for wildlife, while in other cases becoming so weedy as to reduce biodiversity and displace desirable plant species needed by other varieties of wildlife.

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DRAGONFLY

Anisoptera

Dragonflies often break up before being preserved as compression fossils because of their size and fragility, making complete specimens quite rare. When these insects are juveniles they are fierce underwater predators, with some even feeding on small fish. Adults are no less voracious and can be seen tackling their prey mid-air with amazing precision.

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BROWN WATERSCORPION

Ranatra fusca

The Brown Waterscorpion is not a scorpion at all, but rather a true bug. They sit on submerged vegetation and grab prey with their grasping front legs. The tube near the tail acts like a snorkel, allowing the insect to stay submerged and continue to breath.

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CERATIUM

Ceratium

This dinoflagellate, whose name is *Ceratium*, occurs in lakes and reservoirs across Colorado. It has a unique organization to its whip-like flagella, with one encircling the cell and the other trailing it. When it moves, *Ceratium* like most other dinoflagellates, whirls or corkscrews through the water. This alga is photosynthetic, but some dinoflagellates are colorless. The group is more common in marine ecosystems, where they enter into symbioses to form corals, or some species may bloom and cause 'red tides' now common along both coasts of the USA and around the world.

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BEAVER

Eucastor

This *Eucastor* specimen is a fossil beaver that lived 9-11 million years ago. This now extinct rodent genus, which was once fairly widespread in the United States and Canada, would have been similar to a modern beaver in both appearance and behavior. *Eucastor* lived in and near rivers in northwestern Colorado, browsing for wood and other plants.

Life in Colorado's Freshwater
BONY FISH

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Phareodus testis

This fossil specimen is a Bony Fish that lived 34 to 36 million years
ago in an ancient Colorado lake. Volcanic eruptions sent fine-grained
ash into the air, which settled into the lake burying fish, plants,
insects, and anything else living in the water. The sediments
from this lake are now known as the Florissant Formation.

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DIPPER

Cinclus mexicanus

The American Dipper is highly specialized to life in mountain streams. It forages for insects and invertebrates by walking underwater along rocky riverbeds. Dense bones reduce buoyancy and, instead of webbed feet, these birds possess sharp claws that grip the river bottom to prevent them from floating to the surface or being washed downstream.

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DINOBRYON

Dinobryon

Dinobryon is a colony of cells, each one sitting within a vase-shaped lorica or covering, and the whole colony swims together. The pigmentation of this alga is dominated by brownish to orange hues, giving it a golden-brown color, a feature of the algal group called Chrysophytes. The small red pigment, termed a 'stigma' or 'eye spot' allows the cells to orient themselves relative to light. *Dinobryon* species are "mixotrophic" being able to produce their own food through photosynthesis, but also able to capture and digest bacteria. *Dinobryon* is commonly found in lakes and reservoirs across Colorado.

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HELLGRAMMITE

Corydalis cornutus
Hellgrammite may sound more like a type of rock than an insect.
Also called the Dobsonfly, these massive aquatic insects have a
wing-span approaching 4 inches. The predaceous larvae live in
fast flowing streams while the adults flutter around the shores.

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