Focus on Nature XIII

NATURAL AND CULTURAL HISTORY ILLUSTRATION

April 19, 2014–January 4, 2015

The New York State Museum is a program of The University of the State of New York | The State Education Department | Office of Cultural Education

Acknowledgements

The *Focus on Nature XIII* Selection Jury members and the curator, Patricia Kernan, would like to thank the people who help make *FON* a success. Alan Male and Steve Young served as the guest jurors for *FON XIII* and their opinions were an important part of the selection process. Ron Burch joined the jury for the award selection. The data base design of volunteer Nancy Yule made selecting works from a huge number of entries possible. Careful review of the catalog text by NYSM staff scientists Tim McCabe, Jeremy Wright, Jeremy Kirchman, Charles Ver Straeten, Joseph Bopp, Diana Hurlbut and Lorinda Leonardi is greatly appreciated, as is the work of exhibit designer Ford Bailey, exhibit planner Mehna Harders Reach and graphic designer Leigh Ann Smith. The *FON* website is designed and maintained by Kelley Feranec and Dave Gerhard. The exhibit production crew—Michael Carlito, Koren Lazarou, Alan Noble, Steve Loughman, Tom Link, Chris Korbuskie, and Pete Seymour— accomplished an excellent and timely installation. Many thanks to Albert Gnidica and Antonia Valentine for media outreach.

Cover: Pam Little American Bison (*Bison bison*) Page 48

Title page: Tara Dalton Bensen Pacific Tree-frog (*Pseudacris regilla*) Page 7

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Focus on Nature XIII

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Introduction

Focus on Nature XIII: Natural and Cultural History Illustration (*FON XIII*) is part of a series of exhibitions that showcases world-class scientific-based illustrations from around the world. This biennial exhibition has continued to grow over the past 24 years, both in scope and reputation. Natural and cultural history illustrations representing the work of 71 illustrators from 14 countries were selected by a jury of artists and scientists. Countries represented are Australia, Brazil, Canada, Chile, England, France, Israel, Italy, the Netherlands, Portugal, South Korea, Spain, Sweden, Switzerland, and the USA.

The subjects represented are diverse, ranging from those only found in the artists' home country to those that have a worldwide distribution; from extinct creatures such as the *Titanosaur* by Chilean artist Mauricio Alvarez Abel, and the *Kosmoceratops* by renown New York artist James Gurney of Dinotopia fame, to newly discovered and named organisms such as the Principe Thrush (*Turdus xanthorhynchus*), and a new species of orchid, *Coelogyne*, sp. n.. A special feature of *FON XIII* is a 3D illustration by Swiss artist Livia Maria Enderli of Neanderthal (*Homo neanderthalensis*). This reconstruction of a skull, found in 1938 at an archaeological site in Uzbekistan in central Asia, uses the latest technology available to artists and scientists.

This catalog features artist's commentaries and supports the exhibition goal to demonstrate the role illustration plays in natural science research and education, to stimulate curiosity about the world, and to bring clearly into focus images of nature that people might not otherwise be aware of or able to visualize.

Jeffrey W. Cannell
Deputy Commissioner of Cultural Education
New York State Education Department

Selection Jury Members

Alan Male
Guest Artist Juror
Truro, Cornwall, England

Jeremy Kirchman
Curator of Ornithology
New York State Museum

Steve Young
Chief Botanist
New York State Heritage Program

Charles Ver Straeten
Curator of Stratigraphy & Sedimentology
New York State Museum

Patricia Kernan
Biological Illustrator
New York State Museum

Award Jury Members

Patricia Kernan
Biological Illustrator
New York State Museum

Jeremy Kirchman
Curator of Ornithology
New York State Museum

Steve Young
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New York State Heritage Program

Charles Ver Straeten
Curator of Stratigraphy & Sedimentology
New York State Museum

Ronald Burch
Senior Historian Emeritus of Art & Architecture
New York State Museum

Artist Commentary

Sue deLearie Adair

Schenectady, New York, USA

Razorbill (*Alca torda*)

Renewing Their Bond

Graphite on paper, 2012
10 × 10 in (24.4 × 24.4 cm)

I had the good fortune to visit Machias Seal Island in the Gulf of Maine on a day when sea conditions allowed us to land on the island to observe and photograph nesting birds from blinds. It was a magical experience! Atlantic Puffins surrounded us and even clattered around on top of the blind. There were fewer numbers of Razorbills and Common Murres. I was drawn to the Razorbills; their black and white plumage is perfect for my favorite medium of graphite pencil. I simplified the background by eliminating plant material and distant rocks, then added a wedge of black to emphasize the focal point and mimic the lines of this preening pair.

Mauricio Alvarez Abel

Castro, Los Lagos, Chile

Titanosaur (*Atacamatitan chilensis*)

Acrylic on paper, 2012
12 × 16 in (30.4 × 40.6 cm)

Atacamatitan chilensis is a species of titanosaurs which lived in what is now Chile during the Late Cretaceous Period. This painting depicts a pair of titanosaurs dominating the landscape as they emerge from a forest of *Araucarioxylon*, cautiously crossing in front of a group of ornithopods. This scene was inspired by an expedition with paleontologist David Rubilar, of the Natural History Museum of Chile, and his team that included several Brazilians. We worked at Quebrada la Higuera in Atacama, a region of northern Chile. During the creation of this piece, I changed the faces at least three times as research and recent publications brought to light new information. This image has been frequently published and won second place in the IV International Competition of Scientific Illustrations of Dinosaurs, sponsored by the Foundation for the Study of Dinosaurs, in Castile and Leon, Burgos, Spain, 2012.

Lúcia Antunes

Lisbon, Portugal

Gray Long-eared Bat (*Plecotus austriacus*)

Graphite on scratch board, 2012
8 × 9 in (20.3 × 22.8 cm)

There is wide diversity of bat species both on the Portuguese mainland and in the archipelagos of Madeira and the Azores. The species shown here, although quite common on the Portuguese mainland, is listed as Critically Endangered in the Madeira Island.

There are many myths and misunderstandings surrounding bats, and I became aware of the lack of graphic material that provides sufficient information. This realization inspired the focus of my Master's thesis in Scientific Illustration, a publication entitled *Morphological Identification Guide to Bats in Portugal*, to be completed in 2014. This study depicts each species' snout and ears, their key defining characteristics, in great detail. Its broader objective is to familiarize people with the important role bats play in biodiversity and to highlight the threats they face. The start of this project coincided with the Year of the Bat 2011–2012.

I scanned the graphite drawing and digitally added color to the final version of this illustration.

Cláudia Baeta

Lisbon, Portugal

Principe Thrush *(Turdus xanthorhynchus)*

Mixed media: graphite, watercolor on paper, 2013
12 × 16.5 in (30 × 42 cm)

This illustration is of a bird recently recognized as a distinct endemic species to the island of Príncipe in the Gulf of Guinea, West Africa. Formerly, this bird was treated as the same species as the more abundant *Turdus olivaceofuscus* from the nearby island of São Tomé. The Príncipe Thrush is considered rare and likely to be restricted to primary rainforest.

The published description and naming of this thrush was written by Dr. Martim Melo of the Research Center in Biodiversity and Genetic Resources in Vairão, Portugal, and he reviewed my illustration for accuracy. Due to its rarity, it is very difficult to see this species live or obtain good reference materials. Consequently, I was careful to check every detail with specialists. One of the intended uses of this illustration is to highlight the need of conservation efforts in the forests of Príncipe Island. This awareness campaign, as well as environmental education programs, is ongoing.

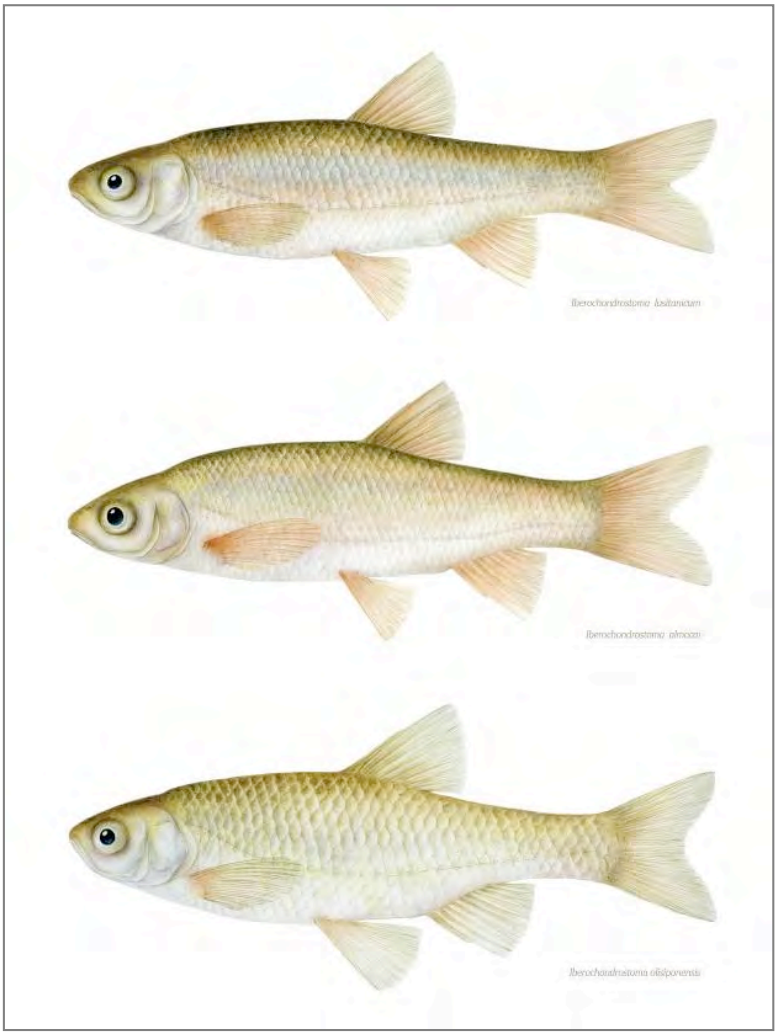
Cláudia Baeta

Lisbon, Portugal

Nases (*Iberochondrostoma lusitanicum*, *I. almacai*, *I. lisiponensis*)

Mixed media: color pencil, watercolor, digital on paper, 2013
12 × 16.5 in (30 × 42 cm)

This illustration is of three small freshwater fishes, 4–5 in (10.5–14.8 cm) in length that are endemic to various regions of Portugal. My portrayals will appear in a field guide, still in progress, to be published by the Science University of Lisbon. For a field guide, it is necessary to highlight the identifying characteristics between species. Therefore, I carefully observed and illustrated morphological features such as the number of lateral line scales, the shape of the head, mouth and fins, the number of rays in the fins, the size of the eye, and the color of the scales. My preparatory work is made from preserved specimens selected by ichthyologists, and the coloration I studied from live specimens.



Cláudia Barrocas

Vilar de Mouros, Viana do Castelo, Portugal

Carpenter Bee (*Xylocopa cantabrita*)

Digital (entirely) on paper, 2013
11 × 8 in (27.9 × 20.3 cm)

This piece was commissioned for a book on invertebrates that are potentially damaging to pine trees. It illustrates a female specimen of a species native to Portugal in the genus *Xylocop*, mostly wood-burrowing, solitary bees. They excavate nesting tunnels in dead limbs and trunks that have lost their bark. Although sometimes blamed for damaging pine trees, they use trees killed by other factors. Adults hibernate inside abandoned tunnels and emerge in the late spring to search for mates and nesting sites. The fertilized female drills a perfectly round .5 in (1.2 cm) tunnel that turns at right angles to form several galleries. In each chamber she places one egg along with a ball of pollen for the larvae to feed upon. They do not eat the wood so the sawdust is discarded or chewed into plugs to separate the individual egg chambers. The young adults emerge in late summer for a short time and then hibernate until the following year, often in the same nest from which they emerged.

This piece was created under the guidance of Fernando Correia and other investigators at the University of Aveiro Laboratory of Scientific Illustration.

Tara Dalton Bensen

Scotts Valley, California, USA

Pacific Tree-frog (*Pseudacris regilla*)

Mixed media: watercolor, graphite on paper, 2013
8.5 × 6.5 in (21.5 × 16.5 cm)

The Pacific Tree-frog, also known as the Pacific Chorus Frog, is the most common frog found on the Pacific Coast of California, Oregon, and Washington. Individuals are usually either brown or green, and up to two inches in length. Their mottled, leaf-like patterning, and unique ability to change color quickly from dark to light in response to environmental light levels, makes them very hard to spot unless they are moving!

My model, which I found in my backyard in the Santa Cruz Mountains, was close to one inch long and particularly beautiful, having both brown and green coloration. I chose to paint this tiny frog much larger than life so I could thoroughly enjoy rendering the skin texture in all its glorious detail. This species is particularly close to my heart because in my youth I would rescue the tadpoles in the springtime from various quickly-evaporating buckets and pools. I would watch them metamorphose into tiny frogs, and hand feed them until they were big enough to be released.

Michael Beseau

Victoria, British Columbia, Canada

African Barred Owlet (*Glaucidium capense*)

Let Me Think!

Graphite on illustration board, 2012
10 × 8 in (25.4 × 20.3 cm)

The African Barred Owlet, *Glaucidium capense*, is a species of owl in the Strigidae family, and one of the few owls legitimately called an owlet. There are small owls (genera *Glaucidium* and *Athene*, family Strigidae) found in Africa and Asia that now have "owlet" as part of their name. This owlet was one of the highlights of our stay at Kruger National Park, South Africa, in part because it remained fully visible and active in broad daylight. This may be because the Barred Owlet is partially a diurnal hunter.

I have always been intrigued by anthropomorphism: attributing human characteristics to objects that are not human. It is tempting to look at this small bird, simply cleaning its beak, and imagine it as a "wise old owl" deep in thought.

Belinda Biggs

Wyee Point, New South Wales, Australia

New South Wales Waratah (*Telopea speciosissima*)

Mixed media: graphite, watercolor on paper, 2008
11 × 12.5 in (27.9 × 31.7 cm)

The *Telopea speciosissima*, commonly known in Australia as the Waratah, is the floral emblem for the state of New South Wales. It is a large erect shrub up to 10–13 ft (3–4 m) rising from a large woody base. In late spring there is a growth spurt of new shoots that arise from the old inflorescences (flowers) and produce up to 250 flowers! The leaves are dark green and coarsely toothed. This plant grows wild in the bush landscape near where I live, and while out walking I often come upon the brilliant red flowers that seem to glow from within. I loved painting this plant and the challenge of depicting the solid look of these striking wild flowers.

Irene Blecher

Arad, Israel

Giant Reed (*Arundo donax*)

Watercolor on paper, 2012
12 × 9 in (30.4 × 22.8 cm)

Giant Reed is a very tall perennial grass, up to 19 ft (6 m) high, and is an exceptionally fast-growing plant, about 4 in (10.1 cm) per day. They usually grow on the banks of rivers and are well adapted to withstand powerful floods. *Arundo donax* seeds are sterile or nonexistent and reproduction is by way of thick creeping rhizomes. Although this reed is native to Eastern Asia, it has been cultivated throughout Asia and Mediterranean for thousands of years and, in the past two centuries, in North and South America, Australia, and South Africa. The canes of this plant contain silica, making it good for uses such as fishing rods and walking sticks. It is also the primary source of reeds for woodwind instruments. In many areas it is now considered an invasive weed and has been nominated among 100 of the world's worst invaders. Since I would rather not label plants "good" or "bad", I chose to portray this strong and tenacious plant as a symbol of life-power and regeneration.

Joana Araújo Bruno

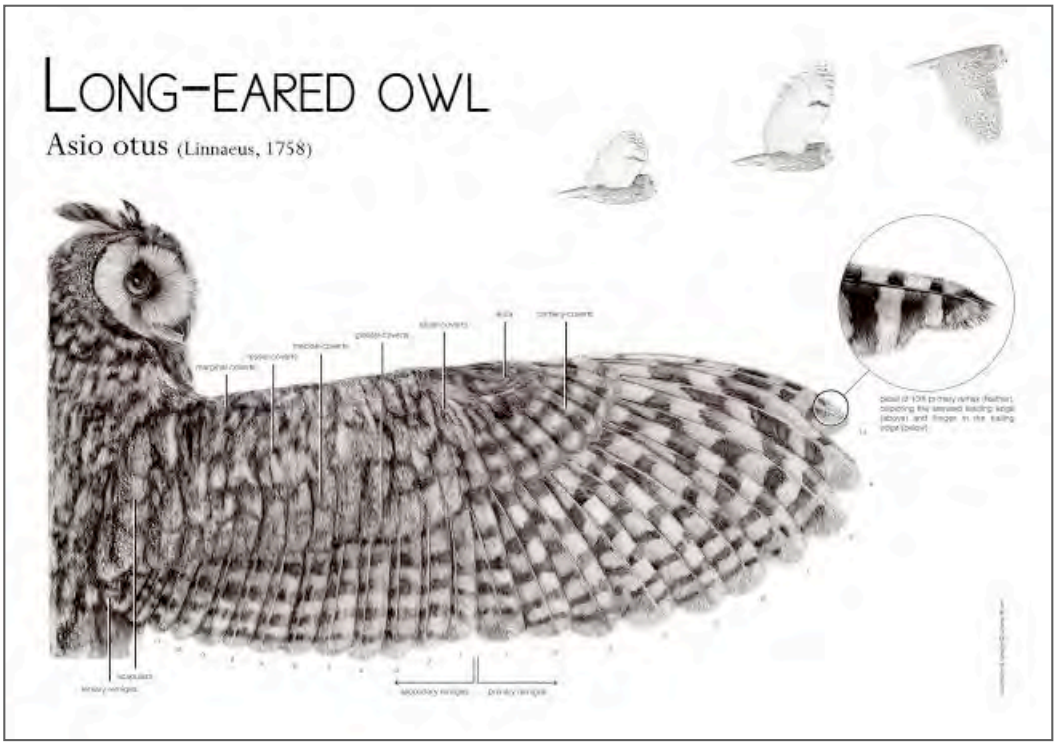
Barreiro, Portugal

Long-eared Owl (*Asio otus*)

Graphite on scratch board, 2012
20 × 12 in (50.8 × 30.4 cm)

I've always had an interest in nocturnal birds of prey and was especially interested to learn that their wings are uniquely adapted to reduce noise, making them capable of flying silently. The goal of this illustration was to depict in detail the wing of a Long–eared Owl, *Asio otus*, with characteristics that assist its silent flight. The wing is spread to show these features: 1) the broad wing surface which enables it to float without flapping very much; 2) the velvety touch of the body and the wing feathers; and 3) the comb-like serrations on their primary feathers break turbulence which normally creates noise. Flying soundlessly is the key to the successful hunting and feeding strategies of nocturnal raptors. This makes it possible for them to hear their prey and take them by surprise.

I chose the medium of graphite on scratch board because it perfectly portrays the soft color and texture of an owl. I scanned the drawing and added labels digitally.



Juan Castillo

Valdemorillo, Madrid, Spain

Juan Fernandez Firecrown, Cabbage Tree (*Sephanoides fernandesis*, *Dendroseris litoralis*)

Digital (entirely) on paper, 2012
11 × 17 in (27.9 × 43.1 cm)

The Juan Fernandez Firecrown, *Sephanoides fernandesis*, is a hummingbird endemic to Robinson Crusoe Islands in the Juan Fernandez Archipelago, Chile (designated as National Park in 1935 and an UNESCO Biosphere Reserve in 1977). This species arguably shows the greatest degree of sexual dimorphism (difference between males and females of the same species) found among hummingbirds. They feed on the nectar of several native flowers such as *Dendroseris litoralis*, a plant which is endemic to Juan Fernandez Islands. Both the plant and the bird are critically endangered, according to the International Union for Conservation of Nature (IUCN) Red List of Threatened Species.

Kathryn Chorney

Toronto, Ontario, Canada

Birch Polypore (*Piptoporus betulinus*)

Watercolor on paper, 2013
10.5 × 14 in (27.1 × 35.5 cm)

While walking in the woods near a river north of Toronto, I found the fungus depicted on a birch tree which had collapsed into a tangle of weeds. To develop the composition and emphasize the interesting geometry of the fungus, I included various angles as it emerges from the trunk, The goldenrod standing at right provides both a counterpoint to the fungus' form, and orientation to the fallen, horizontal tree trunk.

The birch bark was as fascinating to paint as the fungus, with its delicate patterns and hues, the peeling bark strips curling into scrolls. In order to blend didactic faithfulness of the subject with aesthetic appeal, I created an impressionistic effect in the background suggestive of a maze of grasses and weeds. Then I added a calligraphic element to enhance both information and visual appeal.

Jordi Corbera

Argentona, Catalonia, Spain

Southern Elephant Seal (*Mirounga leonine*)

The Cry

Watercolor on paper, 2007
11 × 12.5 in (27.9 × 31.7 cm)

After more than three days crossing the rough waters of the Drake Passage beyond the southern tip of Chile, we arrived at the South Shetland Islands, one of the doors to Antarctica. Our main goal was to study the benthic (ocean bottom) communities of the Bellingshausen Sea, but for a couple of days we visited the coastal areas of the islands. In the summer, thousands of penguins establish their breeding colonies there, and on a beach on the northern coast of King George Island, we found a small group of Southern Elephant Seals, *Mirounga leonine*. Slightly apart from the females was the young male depicted here, grunting his warning to approaching intruders.

Painting mammalian hair is always a delicate task, especially in the case of these marine giants. Thick fur protects them from the cold waters as they plunge into the icy depths in search of fish and cephalopods, their favorite food.

Fernando Correia

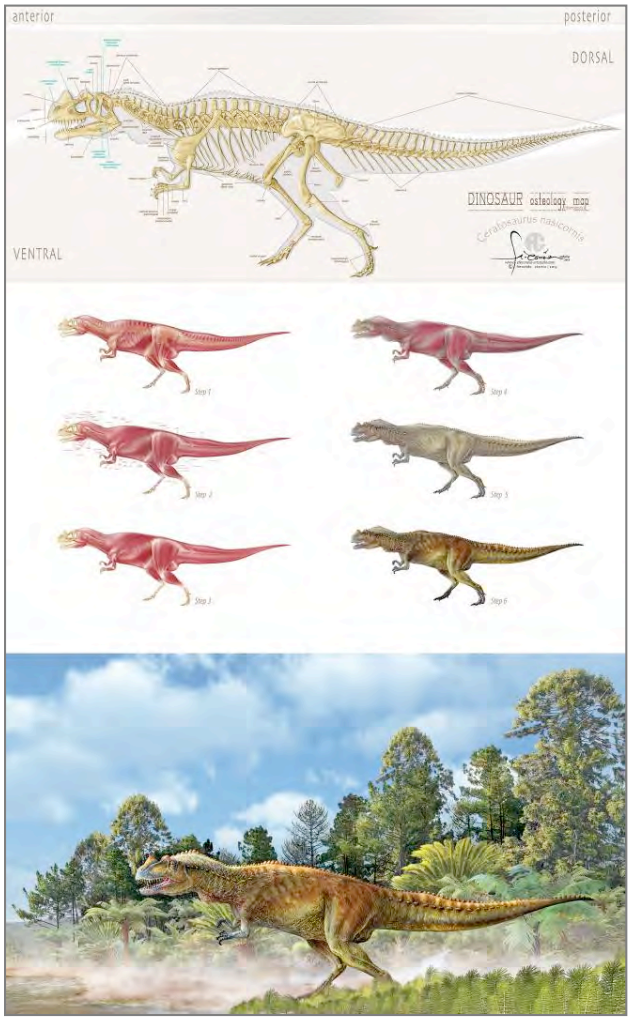
Pampilhosa, Mealhada, Portugal

Horned Lizard (*Ceratosaurus nasicornis*)

Jurassic Dinosaur

Digital (entirely) on paper, 2013
12 × 20 in (30.4 × 50.8 cm)

This multiple image piece describes a theropod as it might have been seen in a Jurassic riparian environment at a place in Portugal called Lourinhã. The composition focuses on the objective and concise reconstruction of a skeleton (bone identification), skeletal muscular system (major muscles identification) and in vivo body (volume & integument texture / pattern). It is based on the research of Robert Bakker (2004). This horned lizard hunted aquatic prey (fish or crocodiles).



Fernando Correia

Pampilhosa, Mealhada, Portugal

Mongoose Lemur (*Eulemur mongoz*)

United Nations Endangered Species Worldwide Postal Stamps Series

Digital (entirely) on paper, 2013
16 × 13 in (40.6 × 33 cm)

The Mongoose Lemurs are inhabitants of the island of Madagascar off the eastern coast of Africa. They eat fruits and flowers and, as they browse, carry pollen from flower to flower on their coats and snouts, fulfilling the role of fluffy, furry pollinators. I had several goals in the composition of this piece. One was to show that these lemurs are arboreal quadrupeds. Another was to highlight that male and female mongooses are so chromatically different (sexually dimorphic) that they could easily be mistaken for separate species. Males have pale faces with red cheeks and red beards whereas females faces are dark with white cheeks and white beards. A third consideration in the composition and detail was to focus attention on the appealing head area, in particular the very large expressive and inquiring eyes that seem to follow the viewer around in silent askance, "why"? This species has become vulnerable to extinction as have so many other organisms on Madagascar, mostly because of habitat loss. Finally, I kept in mind, while creating this image, that one of its final uses would be the size of a postal stamp.

Marco Nunes Correia

Alcobaça, Portugal

Woodchat Shrike, Great Gray, Shrike
(*Lanius senator*, *Lanius meridionalis*)

Mixed media: graphite, digital on paper, 2013
17.75 ×17.75 in (45 × 45 cm)

A curious characteristic of shrikes is their behavior of impaling prey on thorns of bushes and barbed wire. This behavior is both to help to tear their prey into manageable size and to cache food.

Shrikes are relatively abundant in Portugal and Spain, although in recent years ornithologists have noted that populations are declining. This is of particular concern because shrikes are very sensitive to habitat change, making them good indicators of what is happening in their preferred mixed agricultural–forest landscapes as well as of the overall health of the environment. This illustration was commissioned for a future magazine article by the Portuguese Society for the Study of Birds.

Miguel Cunha

Brasilia, Brazil

Araticum (*Anona* species)

Watercolor on paper, 2012
27 × 17 in (68.5 × 43.1 cm)

The Annona genus includes a great many species that are endemic to the Brazilian *cerrado*, the second largest biomass region in central Brazil. This particular species is a shrub 3.5 ft (1 m) high and monoecious (separate male and female flowers on the same plant). The leaves are sometimes covered by rufous (reddish) hairs. Yellow, fleshy flowers form in October or November and, like the other species in this family, are solitary and emerge from stems and branches. The fruits that ripen from January to March, the wet season in Brazil, are yellow, pulpy, and very sweet. They are eaten by a number of organisms including humans. Propagation is exclusively by seed.

Maria Alice de Rezende

Paracambi, Rio de Janeiro, Brazil

Syngonium podophyllum

Watercolor on paper, 2012

15 × 22 in (38.1 × 55.8 cm)

Syngonium is a genus of flowering plants native to tropical rainforests of Central and South America. The species I depict in my painting is frequently found in the Atlantic forests of the state of Rio de Janeiro where I live. They are woody vines that grow up to heights of 30–70 ft (10–20 m). One of the common names of this plant is the Arrowhead, Vine, or Philodendron Plant, because of the shape of the young foliage. The leaves, however, typically change shape as the plant matures and become less lobed. Then other common names make more sense, such as Goosefoot, or African Evergreen, although it does not grow in Africa. *S. podophyllum* is the most commonly cultivated species, grown as a houseplant since the late 19th century.

Monika de Vries Gohlke

Brooklyn, New York, USA

Horseshoe Crab (*Limulus polyphemus*)

Etching on textured *chine–collé* paper, 2013
12 × 18 in (30.4 × 45.7 cm)

This piece was done with an etching technique called aquatint, and on *chine-collé* paper. The choice of paper means that the image was transferred to a delicate surface that needed to be bound to a heavier support. By using a thinner than usual paper, I was able to print much finer details.

Interestingly, the mouths of horseshoe crabs are located in the center of their bodies, surrounded by five pairs of legs that partially function like jaws to help grind food. The long, stiff tail can be used to flip itself over if turned upside down.

The species depicted, a survivor of millions of years on earth, is found along the American Atlantic coast and in the Gulf of Mexico.

Carrie Di Costanzo

Piscataway, New Jersey, USA

Gray Pine (*Pinus sabiniana*)

Gouache on paper, 2013
16.5 × 19.5 in (41.9 × 49.5 cm)

The Gray Pine, native to California, was once important to Native Americans who used the seeds, parts of the cone, and bark as food, and, in some cases, used the needles for bedding and floor covering. The resin was used for medicinal purposes by both settlers and Indians. This pine tree is tall and narrow, reaching up to 125 ft (38 m) in height with a trunk that is less than 6.5 ft (2 m) wide. The long needles and asymmetrical shape of the cone are what attracted me to portray the Gray Pine. I loved the challenge of depicting the complex and sculptural shape of the cone, while maintaining an interesting composition with the branch. To show movement in the painting, the needles overlap, intersect, and flow throughout the page. I used many layers of gouache to obtain the rich browns of the cone and branch, as well as the greens in the needles.

Sofia Manuela dos Santos Ferreira

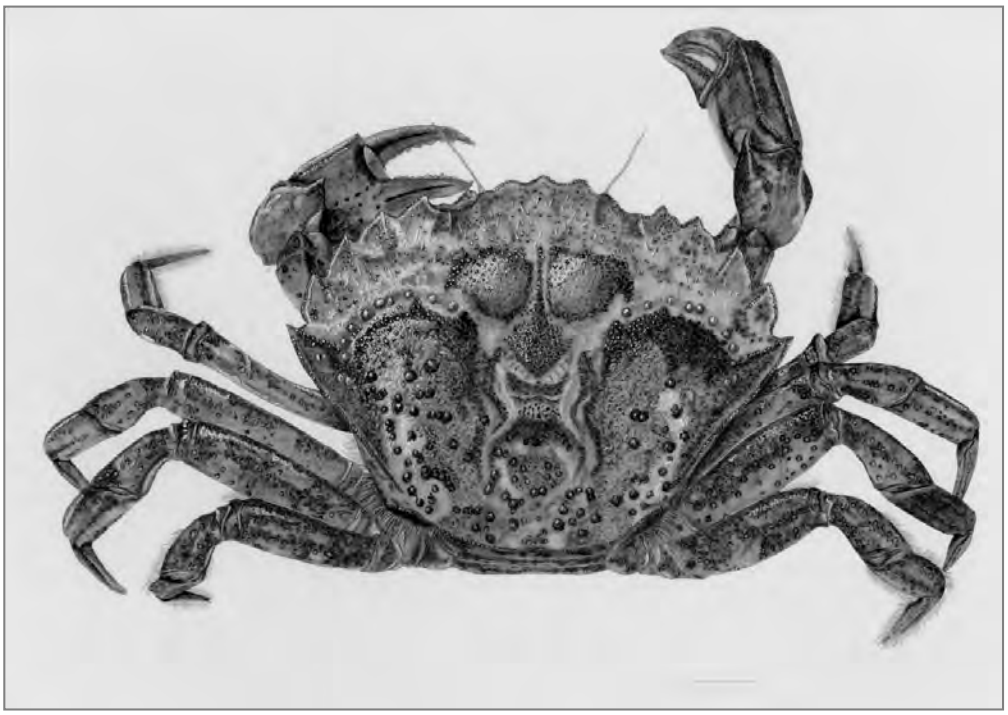
Vila Nova de Poiares, Coimbra, Portugal

Green Crab (*Carcinus maenas*)

Mixed media: carbon dust, gouache on paper and acetate, 2013
16.5 × 11.5 in (42 × 29.7 cm)

The species of crustacean illustrated here, *Carcinus maenas*, is considered invasive in Portugal where it is commonly found on littoral and infra-littoral areas, the lowest areas exposed by the tide. Its over-abundance in the estuary of the Ria of Aveiro, where it flows through the city of Aveiro on the coast of Portugal, has spawned the development of an economically viable crab fishery in recent years.

The creation of this illustration was done under the direction of Fernando Correia, another artist in this exhibition, as part of my studies at the Laboratory of Scientific Illustration at Aveiro University. Because it is difficult to accentuate lights and darks using the carbon dust technique, I decided to add a layer of clear acetate, on which I painted both white and black gouache to provide stark contrast. This gave it depth and made details, such as the hairs, pop out.



Livia Maria Enderli

Winterthur, Zürich, Switzerland

JURY AWARD

Neanderthal (*Homo neanderthalensis*)

The Boy of Teshik-Tash

Digital (entirely) of gypsum; Digital (entirely) on paper, 2013
14.5 × 11 in (37.2 × 27.9 cm), 14.5 × 11 in (37.2 × 27.9 cm)
7.2 × 10 × 8.5 in (18.3 × 25.6 ×21.6 cm)

My work is a three-dimensional reconstruction of a Neanderthal skull. I reconstructed the head, including the face, over a 3D scan of the original fossilized skull of an approximately 13-year-old Neanderthal boy of *Teshik-Tash*, Uzbekistan. My work consists of several colored renderings of the head and of a 3D print in scale 1:1. On the renderings I worked with transparency to show the viewer not only the reconstruction, but also the original skull. The reconstructed head is portrayed in the contagious act of yawning in order to give an emotional touch and to create a personal relationship between the *Homo neanderthalensis* and us, *H. sapiens*. In order to be scientifically accurate, I collaborated with the Max Planck Institute for Evolutionary Anthropology in Leipzig and the Neanderthal Museum in Düsseldorf, both in Germany. This piece was part of my Bachelor's degree from the Zurich University of the Arts.

Emily M. Eng

Bellevue, Washington, USA

Giant Kelpfish (*Heterostichus rostratus*)

Watercolor on paper, 2013
12 × 10 in (30.4 × 25.4 cm)

When diving through a kelp forest, I often find myself playing hide-and-seek with many of its well-camouflaged inhabitants. One such concealed organism is the Giant Kelpfish. The adults keep close to Giant Kelp, using their elongated, slender bodies to blend in amongst the kelp blades. But the adults aren't the only ones that can disappear; tucked away within rockweed algae, juvenile kelpfish also turn invisible. I chose to paint a close up scene of one such juvenile, where the viewer has to hunt a little to find the kelpfish, just as they would in the ocean.

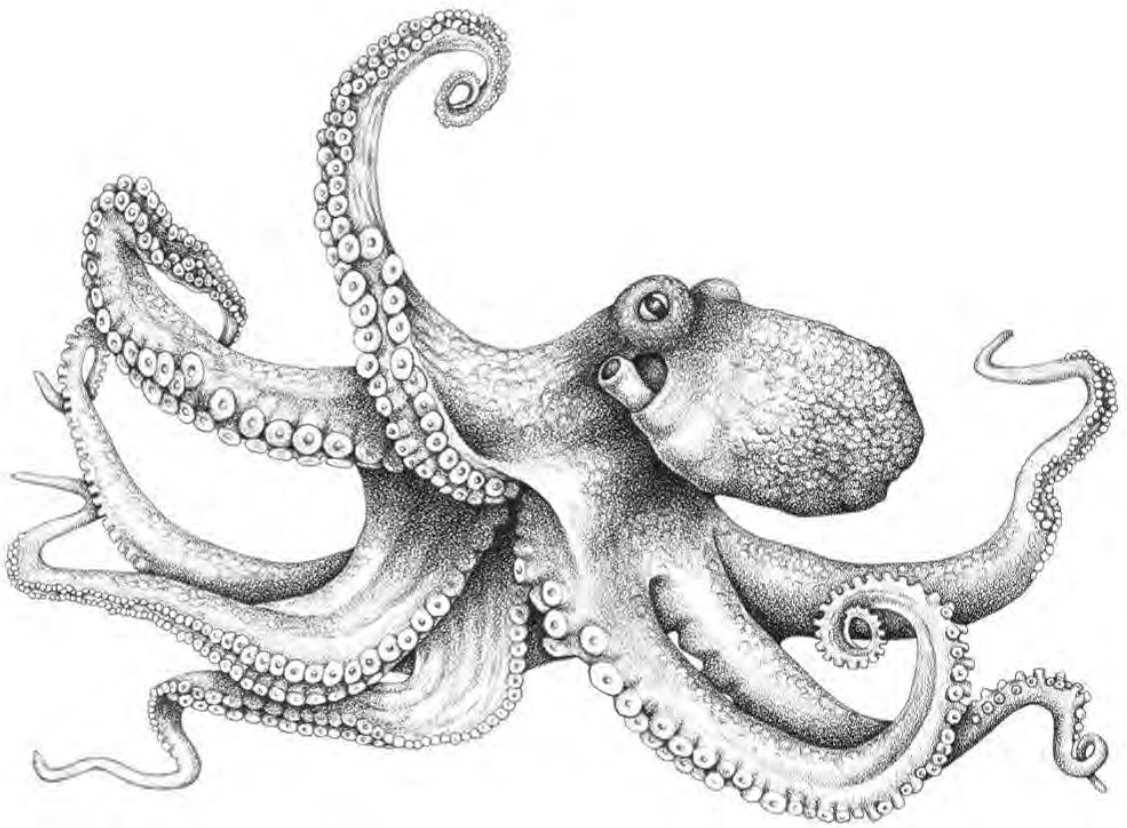
Emily M. Eng

Bellevue, Washington, USA

Caribbean Reef Octopus (*Octopus briareus*)

Color pencil on coquille, 2013
14 × 11 in (35.5 × 27.9 cm)

Octopuses are best known for their ability to change their appearance in order to blend in with their environment. They can match colors, patterns, and textures in their surroundings almost instantly. Specialized muscles in their skin allow them to take on the roughness of a bumpy coral reef or the smooth planes of a sand flat, enabling them to hide in plain sight. This is why I chose to draw the Caribbean Reef Octopus on coquille paper. I used the bumpiness of the paper to represent the sometimes rough skin texture of an octopus.



Lisa Falkenstern

Califon, New Jersey, USA

JURY AWARD

Eastern Gray Squirrel (*Sciurus carolinensis*)

Oil on illustration board, 2009
18 × 14 in (45.7 × 35.5 cm)

This painting was done for a children's book, *The Busy Tree*, by Jennifer Ward (Marshall Cavendish, 2009), about the many creatures that live on and around an oak tree. One of them, the Eastern Gray Squirrel, depends on oak trees both to support their large, messy nests and as a source of acorns which make up a large part of their diet.

The Eastern Gray Squirrel's fur color is a perfect match for the mottled gray bark of the oak, making them difficult for predators to spot. And their agile climbing and acrobatic abilities are handy when camouflage fails. This painting depicts squirrels in poses familiar to anyone who does a bit of squirrel watching in their backyard, as I did.

There is no background due to the book design.

Nuno Farinha

Lisbon, Portugal

Iberian or Spanish Psammodromus (*Psammodromus hispanicus*)

Digital (entirely) on paper, 2012
29.5 × 9.5 in (74.93 × 24.1 cm)

The Iberian or Spanish Psammodromus are small lizards with unique and beautiful patterns on their back, and particularly long, slender tails. They are found in the Mediterranean habitats of Portugal, Spain and southern France, where they inhabit a wide variety of shrubby vegetation, especially along the coasts. The genus name, *Psammodromus*, is derived from the Greek words for "sand" and "to run."

This illustration is part of a collection of drawings selected to illustrate an exhibition about the fauna and flora of the dune system of Cresmina, in the Cascais municipality of central coastal Portugal. Several springtime visits to the habitats of these lizards were required to gather reference photos of their bright mating season colors. This was not an easy task as they prefer to rest, cryptically hidden, in dense vegetation clumps instead of on the sunny open walls and stones typical of most lizards.

Nuno Farinha

Lisbon, Portugal

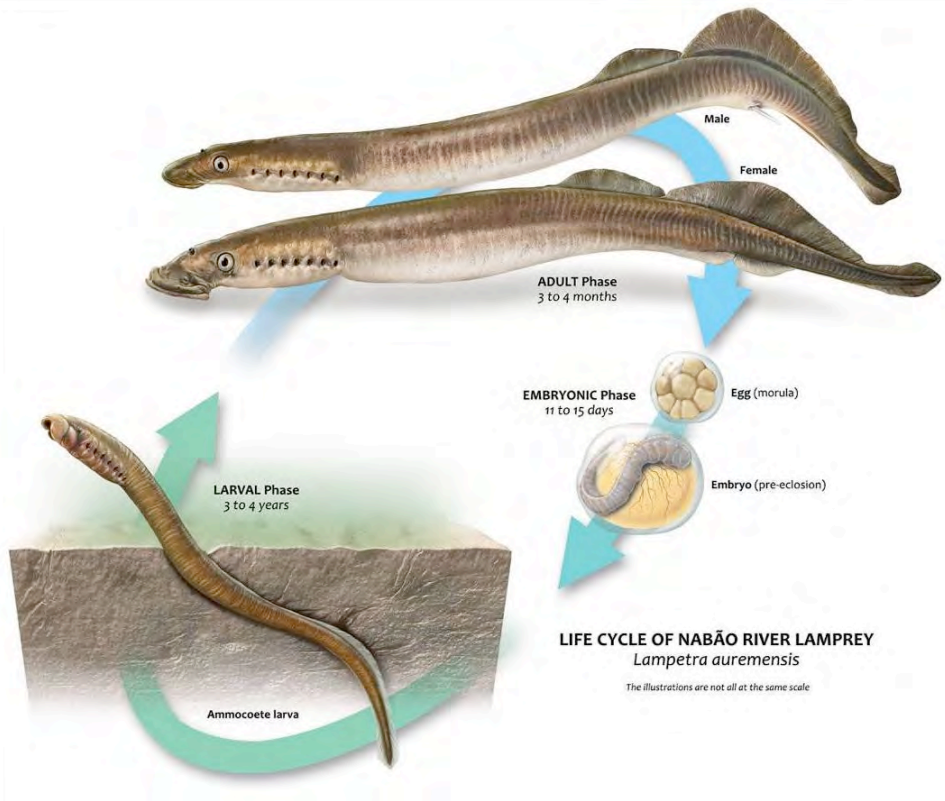
Nabão River Lamprey (*Lampetra auremensis*)

Life Cycle of Nabão River Lamprey

Digital (entirely) on paper, 2013
20 × 16.5 in (50.8 × 41.9 cm)

Lampetra auremensis is a new species that was recently described based almost entirely on ecological and genetic characteristics. It is endemic to the Nabão River and three small streams in central Portugal, which means it is one of most rare and endangered fish in the world.

This illustration is part of a national effort to raise awareness about this fish amongst local inhabitants. The limited area where it is found is susceptible to extreme threats, such as severe drought or pollution outbreaks. Moreover, this region is based on a limestone outcrop, which means water levels drop drastically during summer when the scarce water is retained only in subterranean conduits. What role these underground spaces play in the survival of the Nabão River Lamprey is still a mystery!



Michael J. Felber

Port Townsend, Washington, USA

JURY AWARD

Brown Bear (*Ursus arctos*)

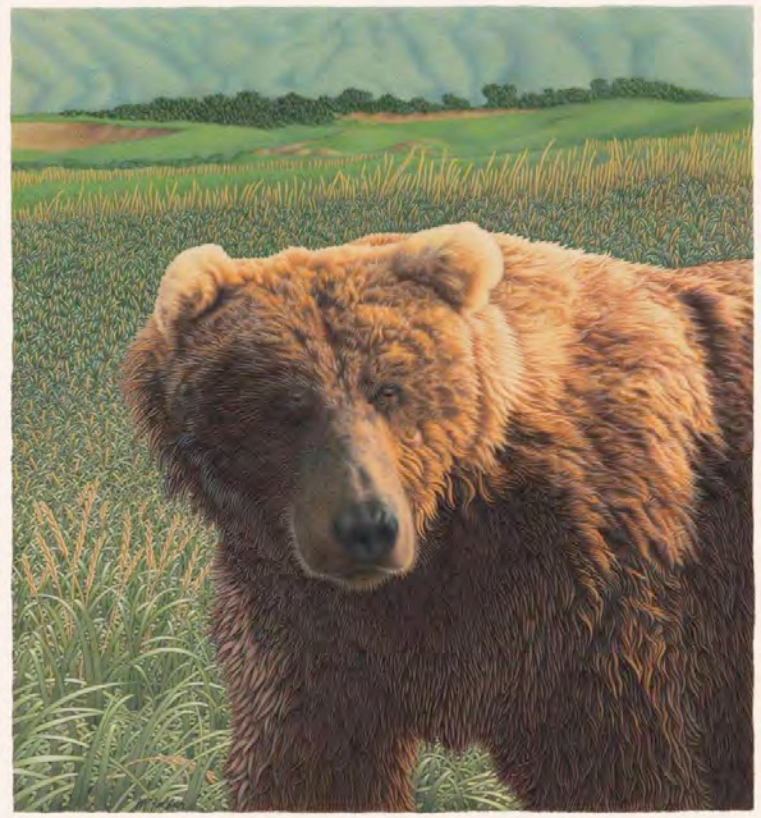
Grandfather

Mixed media: color pencil, watercolor on coquille, 2013
11 × 12 in (27.9 × 30.4 cm)

This color pencil drawing is of a male Brown Bear I observed several times during two expeditions to Katmai National Park, Alaska. The scene depicted was inspired late one day when the sun was low in the sky, and the light raked across the fur on his face in a beautiful way. This bear was about 20 years old, in his prime, and clearly dominant. If I was observing other bears and this one came along, they would scatter. He seemed very relaxed, but the wound on his cheek and the scar on his nose were evidence of his fights.

I call this drawing *Grandfather* partly because Native Americans traditionally address a brown bear this way as a sign of respect, and partly because this individual is known to be a grandfather.

The process of drawing bears is my way of getting to know them in intimately. I bring the viewer close to the "wall of fur" of a massive dominant male; close enough to see the bear as a specific individual with a unique personality.
I continue to find the experience of viewing brown bears completely captivating and exciting.



Concetta Flore

Rome, Lazio, Italy

Earthenware Kiln, Spear, Stone Mortar, Reed Baskets

Bronze Age Artifacts in Landscape, Torre Guaceto, Puglia, Italy

Graphite on paper, 2009
8.25 × 17 in (20.9 × 43.1 cm)

This illustration is one of four that together depict cultural evolution in a particular area of southern Italy. The series was commissioned by the Visitor Interpretive Center in Torre Guaceto, Puglia, a nature reserve. Because of its abundant fresh water and strategic location by the sea, the area was used as a trading harbor very early in human history.

The vertical format, intended to be enlarged, needed a forced perspective with multiple eye-levels progressing from the artifacts in front, to the scenes of fishing and life in the reed-beds, to the horizon with warehouses and ships sailing in at the top. I used several styles and gradations of graphite pencils to develop the variety of textures and light. Every aspect is carefully researched, from the shape of objects to fishing techniques and boat types.

The artifacts depicted were provided by the University of Salento, Departments of Paleontology and Archeology.

James Gurney

Rhinebeck, New York, USA

Koolasuchus cleelandi, Timimus hermani, Qantassaurus intrepedius, Serendipaceratops arthurcclarkei, Diamantinasaurus matildae, Australovenator wintonensis
Australia in the Cretaceous

Gouache on illustration board, 2013
28 × 13 in (71.1 × 33 cm)

Last year, Australia Post commissioned me to design a set of postage stamps showing six prehistoric animals in a panoramic landscape. The final commemorative stamp sheet was published September 24, 2013, with the title "Australia's Age of Dinosaurs." The research stage was especially important since Australian dinosaurs are known only from fragmentary fossils, most of them recently discovered. Some of the dinosaurs would have to be reconstructed from single bones, so a good deal of extrapolation would be required. Before I went too far with sketches, I traveled to Melbourne to meet with paleontologist Tom Rich of Museum Victoria. We looked at the bones not only of the dinosaurs, but also the large amphibian *Koolasuchus* and various insects and small mammals that lived alongside them. We also wanted to feature the changing floral environments, so we consulted with paleobotanist Barbara Flagstaff of the School of Earth Sciences, University of Melbourne. What you see here is the comprehensive sketch in gouache painted in Australia that was presented to the Australia Post. The final oil painting was rendered in oil on illustration board.

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James Gurney

Rhinebeck, New York, USA

JURY AWARD

Kosmoceratops (*Kosmoceratops richardsoni*)

Oil on illustration board, 2012
19 × 13 in (48.2 × 33 cm)

I did this illustration for *Scientific American* under the direction of paleontologist Scott Sampson of the Natural History Museum of Utah. The subject is the recently-discovered Kosmoceratops. With its 15 bizarre bony horns, it is one of the most highly ornamented of the *ceratopsians*. After reviewing my sketches, which included various dramatic predation scenarios, Scott said: "My bias is to stay away from the giant croc–attacking–dinosaur scenario, as this has been done multiple times in recent years." Instead, he was more interested in showing the lush, swampy environment of what is now Utah. For the dinosaur reference, I sculpted a scale maquette of the head and photographed it in sunlight to understand the pattern of light and shade. The cypress swamp is based on photographs that I took in Florida, along with other photo references that I've collected the old-fashioned way in filing cabinets.

Agathe Haevermans

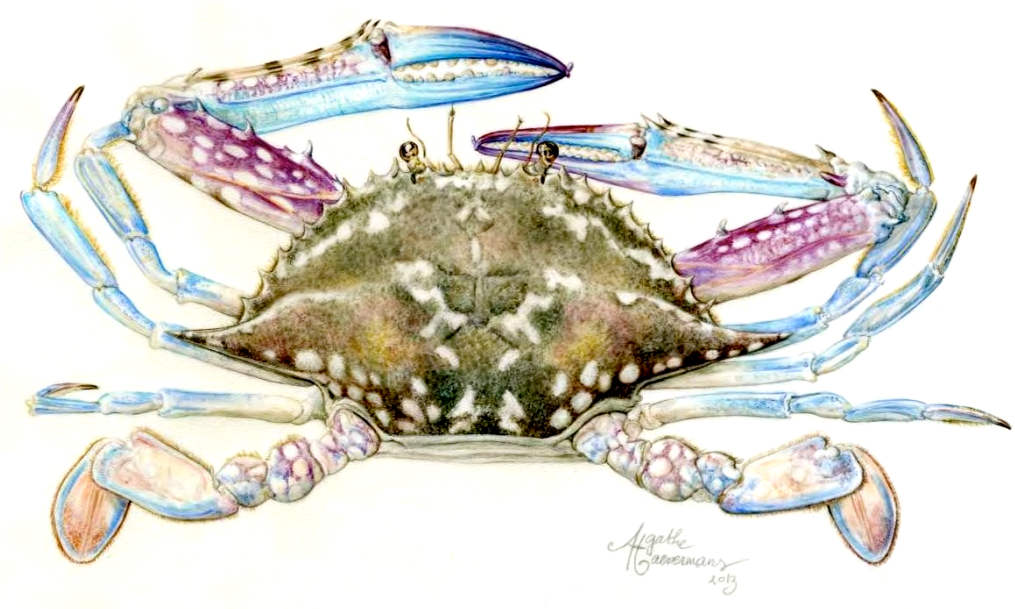
Thorigny-sur-Marne, Seine et Marne, France

Flower or Blue Crab (*Portunus pelagicus*)

Watercolor on sheep vellum, 2013
11 × 8.25 in (27.9 × 20.9 cm)

This lovely crab, known in South-East Asia as Flower Crab and Blue Crab in Australia, has long attracted my attention. I love its bluish hue, and dreamt of finding a fresh specimen one day to paint from life. My dream came true when I found one in a fish shop in Paris. It had the vibrant blue color I dreamt of and its beauty overrode the dead-crab stench that haunted my freezer! I discovered that this organism, which seemed rare to me, is in fact is quite commonly found in the intertidal waters of Asia, Australia, and the Mediterranean. These days it can easily be found in exotic food shops. It was first described by Linnaeus in 1758.

My choice of watercolor on sheepskin was to take advantage of the light that naturally emanates from white vellum (skin) and that would emphasize the almost surreal, vivid colors.



Agathe Haevermans

Thorigny sur Marne, Seine et Marne, France

Wild Banana (*Musa haekkinenii*)

Mixed media: graphite, watercolor on paper, 2012
14.25 × 19.75 in (36.1 × 50.1 cm)

During a plant-collecting expedition involving the French Muséum National d'Histoire Naturelle, in Paris, and the Vietnamese Institute of Tropical Biology, the team discovered this beautiful new species of banana. The aim of the trip was to sample wild bananas in Vietnam. Although it is common to find new species of plants, it is not common to find new bananas, especially one so large. I was delighted to be the first to illustrate it and have the rare opportunity to study the plant in the wild. I collected my model, made preparatory sketches and took photographs, noting the shapes and colors as they appear in a natural setting.

Back in Paris, I worked from the specimen that had been preserved in alcohol. The only drawback of this banana is that the fruit are full of seeds and cannot be eaten! This was published by Ngoc Sam Ly and Thomas Haevermans in *Phytotaxa* 75: 35 (2012).

Linda Hampson

Dunkeswell, Honiton, Devon, England

Cape Parrots (*Poicephalus robustus*)

Mixed media: color pencil, pastel on paper, 2012
15.5 × 18.25 in (39.3 × 46.3 cm)

The Cape Parrot, *Poicephalus robustus*, is the only parrot endemic to South Africa. It is critically endangered in the wild, mainly due to habitat loss and the "beak and feather" virus. Fortunately, while I was living in South Africa, I was able to see these beautiful parrots being raised in captivity. A friend licensed to breed endangered species enabled me to see them and provided me with photographic reference from which I could create my artwork.

I worked in my favored medium of color pencil, which is wonderful for detail, and combined it with pastel to produce unique effects that the pencil alone could not achieve. Then I introduced a slight quirkiness by drawing the impression of pieces of paper on a pin board, thus allowing the viewer to see the growth stages of these endangered birds.

Annika Silander Hökerberg

Stockholm, Sweden

JURY AWARD

Horse Chestnut (*Aesculus hippocastanum*)

Watercolor on paper, 2008
22.25 × 30 in (56.5 × 76.2 cm)

This painting was inspired by a Horse Chestnut tree in autumn attire that grows in a park next to where I live in Sweden. I always paint from live specimens and found it a challenge to illustrate such a large leaf as this one. The longest parts of these compound leaves are up to 12 in (30.4 cm); therefore I needed a very large piece of paper. Since it was not possible to keep the entire leaf fresh for as long as it would take me to paint it, I made a composite of several leaflets to complete the work. The first leaf I used as a model to make sure the structure was correct. Then, for each of the other parts, I gathered a fresh specimen and painted each leaflet in its correct place.

This portrait took me several months of work. It was very satisfying to finish just before the snow came and all the leaves on the tree turned completely brown.

Jessica Shult Huppi

San Francisco, California, USA

Lady Beetles (*Mononeda cardinalis*, *M. marginata*, *M.* sp. n. (new species))

Digital (entirely) on paper, 2013
11 × 14 in (27.9 × 35.5 cm)

This piece was created for the Smithsonian US Department of Agriculture (USDA) Systemic Entomology Department. I worked closely with scientists using specimens and photographs to create illustrations that showed the difference in shape and patterns between three different species of Lady Beetles.

Lady Beetles have been used as biological controls to prey on aphid and scale insects in agriculture crops. However, some introductions have led to naturalization that has displaced native species.

The most recognizable species of Lady Beetles are red with a number of striking black spots. However, many have stripes instead of spots, or are without elaborate markings, such as the ones in this illustration.

Barbara Ierulli

Port Townsend, Washington, USA

Snowy Owl (*Bubo scandiacus*)

Acrylic on hard board, 2012
14 × 11 in (35.6 x 27.9 cm)

The Snowy Owl, *Bubo scandiacus*, is one of the largest of the northern owls. This species lives in circumpolar-arctic regions, preferring tundra areas where voles and lemmings, their preferred food, are plentiful. In years of major population irruptions, heavy snowfalls, or reduced rodent populations, the young owls are forced to migrate far south in the winter in search of more abundant food sources. I was privileged to be able to observe these owls two years in a row at Boundary Bay, near Vancouver, Canada. They were roosting in large numbers near accessible trails which allowed me to observe them closely over extended periods of time.

I chose a pair of young, probably male, owls to paint from a group of four that were sunning themselves on driftwood logs near the trail. This scene is rendered in acrylic paint on hard board.

Frank Ippolito

Jersey City, New Jersey, USA

Tiger Lily, Black Swallowtail Butterfly (*Lilium humboldtii*, *Papilio polyxenes*)

Spilled Cargo

Digital (entirely), 2013
17 × 12 in (43.1 × 30.4 cm)

Under our watchful eye, the processes of nature unfold with little fanfare. The relationship between flower and pollinator is much studied and well understood. And yet with a simple shift of scale, this symbiotic act takes on a whole new perspective. The Swallowtail's wings cut through the air to create leading edge vortices, which creates lift. Loaded with grains of pollen, the wing's membrane can hardly contain its cargo and the spilled granules dance on vortices in the late afternoon light. The beauty and the nuance of this interplay go largely unnoticed by many who happen upon such a scene. But for those willing to stop and take a closer look, nature still has the power to educate, surprise and delight.

Beverley J. Irwin

Toowoomba, Queensland, Australia

Red-browed Finch (*Neochmia temporalis*)

Nest of Firetail

Mixed media: acrylic, gouache on watercolor board, 2013
14.25 × 10 in (36.1 × 25.4cm)

This is the nest of a Red-browed Finch, also known as Firetail. It is said that their nests are unattractive, but I found this nest an engineering masterpiece; it is a complicated structure of grass and small twigs woven into the shape of a small bottle and lined with feathers. Both parents share in the nest building, which is normally placed in the middle of a prickly shrub. The clever little birds which I watched build this nest did so in a very dense, prickly lantana bush (a noxious weed in Australia) about 6 ft (2 m) from the ground. They normally lay four to five white, oval eggs, but can lay up to eight. The nest was set too deeply in the lantana bush for me to look inside, but happily four babies emerged after a few weeks. When the nest was abandoned, I was able to gently extract it for my collection. The majority of the painting has been completed in acrylic, however, I used gouache to highlight a few pieces of the grass.

Beverley J. Irwin

Toowoomba, Queensland, Australia

Koala, Forest Red Gum
(*Phascolarctos cinereus*, *Eucalyptus tereticornis*)
No Tree No Me!

Mixed media: acrylic, gouache on watercolor board, 2013
14.5× 11.5 in (36.8 × 29.2 cm)

When a koala is born, it is about .78 in (2 cm) long, blind and hairless. In spite of its helplessness, it finds its way through the mother's thick fur to the safety of her pouch. The embryo attaches itself to one of her two nipples, which then enlarges to fill its mouth so it is unable to be dislodged. There it will stay for six to seven months drinking only milk before emerging.

This little koala had been raised by a friend after his mother was killed by a car, and had recently been moved from his inside lodging to the first stage release pen. He was around eight months old and still being fed milk while gradually being introduced to the adult staple diet of eucalyptus leaves. I have placed him on a limb amongst the leaves of the koala's favorite food, *Eucalyptus tereticornis*, or Forest Red Gum. The name of the painting, *No Tree No Me!*, is after the slogan for the Australian Koala Foundation. Unfortunately, koalas are on the Critically Endangered list in South East Queensland, mainly because of habitat loss.

David Killpack

Cedar Hill, Texas, USA

Vampire Squid (*Vampyroteuthis infernalis*)
Alarm Response in a Deep Sea Cephalopod

Digital (entirely) on paper, 2013
8 × 24 in (20.3 × 60.9 cm)

The Vampire Squid, *Vampyroteuthis infernalis*, is a bathypelagic (deep water) species found in very oxygen-poor zones. It feeds primarily on marine snow, the detritus that drifts down from above. As the only surviving member of its order, the Vampyromorphida, it is considered a living fossil. When this species is startled, it has a very unique response. It turns itself nearly inside out, hiding its true eyes beneath its webbed cloak, and exposing a bioluminescent pair of false eyes. Its tentacles are bioluminescent and release glowing compounds that emit light from a few seconds up to several minutes. During this display, the cephalopod may contract the membrane surrounding the false eyes, making it appear to swim away into the depths whereas in reality, it has moved very little. The work was done entirely with digital tools. It was created as a 3D model with post processing in Photoshop. Each state of the display is a moment from an animated version still in production.

David Killpack

Cedar Hill, Texas, USA

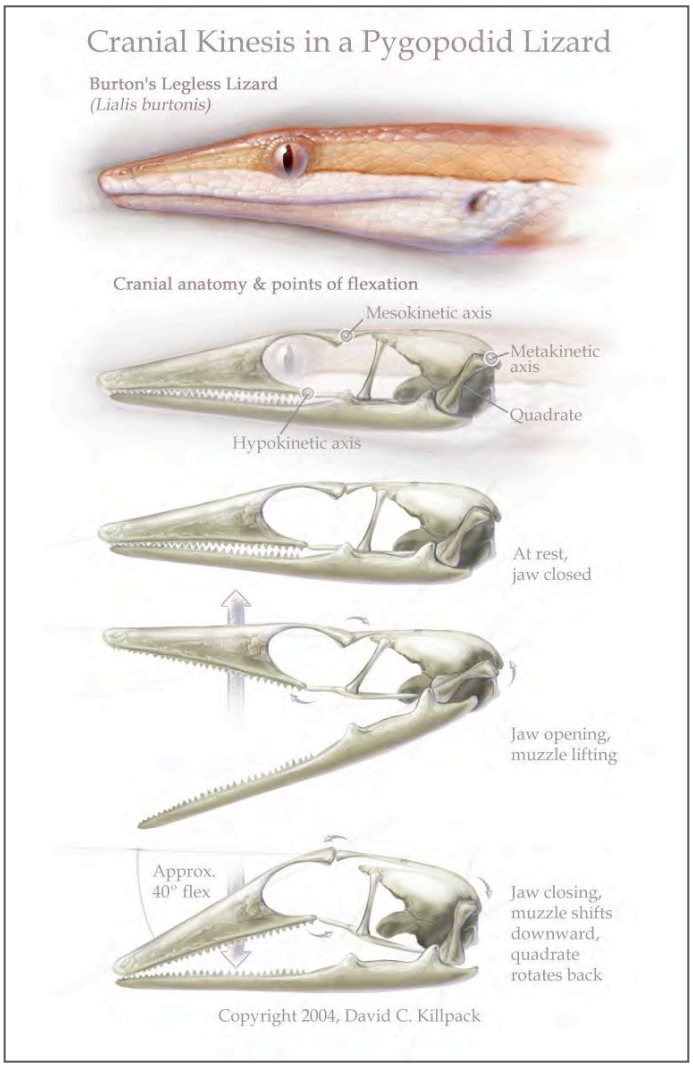
Burton's Legless Lizard (*Lialis burtonis*)

Digital (entirely) on paper, 2004
7 × 10 in (17.7 × 25.4 cm)

Burton's Legless Lizard, *Lialis burtonis*, is a pygopodid (scaled reptiles that look like snakes, with no fore limbs and only vestigial hind limbs) from Australia that feeds primarily on other lizards, particularly skinks. To facilitate capture of their prey, they have developed a cranial hinge with approximately 40 degrees of flexation which allows these predators to pinch down on a struggling, slippery meal.

This piece was published in several popular herpetological magazine articles related to pygopodids. Because the action is difficult to understand from external photos, the mechanism of action for cranial kinesis was greatly clarified by illustrating the various axes and flexation of the skull during the act of feeding.

This work was done entirely in Photoshop, but painted with digital tools in order to look like a graphite pencil sketch over which subtle watercolor was applied.



Kristine A. Kirkeby

Eugene, Oregon, USA

Baldhip Rose (*Rosa gymnocarpa*)

Winter Bud 1

Watercolor on paper, 2013
11 × 11 in (27.9 × 27.9 cm)

I'm an inquisitive person. I've spent a good bit of my life looking at our natural world in a state of wonder. In my art I am constantly seeking to capture the essence of natural objects. I explore their details—shapes, textures, colors, and unique features—in effect asking what it was that first caught my attention. I'm awed by the simple elegance in nature's creatures. Seeing something special about a species leads me to research and intensely study an object. The fun part is turning what I've discovered into an art image. I believe artists serve as visual translators.

My art is a fusion of accurate depictions with a focus on organic forms. Using traditional watercolor methods I strive to develop different interpretations of nature's forms. I explore details creating macro vignettes. Over time my images are becoming less obviously illustrative as I invite viewers to take a hiatus from broad horizons and enjoy the unnoticed minutia of our natural world.

Jee-Yeon Koo

Gangseo-gu, Seoul, South Korea

JURY AWARD

Tiger-spotted Stanhopea (*Stanhopea tigrina*)

Watercolor on paper, 2013
19 × 28 in (71.1 × 48.2 cm)

Stanhopea tigrina is an orchid with a very brief flowering period of two to three days, during which time it produces a strong scent and then withers quickly. Just by chance, I was told by a Korean orchid collector where a specimen of this plant would be blooming, and I rushed to observe and draw the entire process. It was an exciting and truly precious opportunity to observe all stages. Although the flowers withered so quickly that I could not illustrate the internal parts to my entire satisfaction, I tend to focus on illustrating the overall plant when faced with an unfamiliar species anyway. Painting the habit preserves and celebrates the plant's wild beauty and elegance.

Normally, the flowers are pointing downward, but this natural position is not suitable for illustrating the dramatic morphological details of the flower. Therefore, I chose to create a composition that could show both the natural upside-down growth habit and a point of view that shows the details of internal structure of the flowers.

Elayne Leighton

Jackson, New Jersey, USA

New Jersey Pine Barrens Tree frog, Atlantic White Cedar, Staggerbush (*Hyla andersonii*, *Chamaecyparis thyoides*, *Lyonia mariana*)

Oil on canvas, 2008
16 × 20 in (40.6 × 50.8 cm)

This beautiful little frog is found in the Pine Barrens of New Jersey, where water has a relatively low pH. *Hyla andersonii* is not yet considered endangered, but is disappearing due to residential and commercial development. Lawn fertilizers and pesticides leach through the soil and raise the pH level within its habitat, allowing the encroachment of predators such as bull frogs, which cannot tolerate low pH.

The frogs were found in an Atlantic bog that included White Cedar, *Chamaecyparis thyoides*, and Staggerbush, *Lyonia mariana*.I was able to locate the frog by visiting the bog at night. Three of us worked as a team and triangulated its position.

Newma Gusmao Lima

Brasilia, Brazil

JURY AWARD

Cecropia (*Cecropia saxatilis*)

Watercolor on paper, 2013
21.5 × 18.5 in (54.6 × 46.9 cm)

Cecropia, commonly known in Brazil as embauba, has red stipules and jarring green leaves that set it apart from other plants found in the savanna-like biome of Brazil known as cerrado. It is not native to Brazil and this species of cecropia is considered an invasive. It does have some useful characteristics, however. Its sugary fruit attracts animals such as toucans, bats, and coatis. Certain species of ants live symbiotically inside cecropia's hollow trunks, gaining and giving protection and sustenance. In rural areas, cecropia's sprouts are used as an antidote to snake poison.

It was a challenge to illustrate this plant because of its large size. It was, however, satisfying to overcome the difficulties and portray the full volume of its leaves as well as its fine details.

Pam Little

Hamilton, Montana, USA

JURY AWARD

American Bison (*Bison bison*)

Buffalo Ford

Digital (entirely) on paper, 2012
24 × 13 in (60.9 × 33 cm)

One of the first signs of spring in Yellowstone National Park is the appearance of the bright orange buffalo calves. Although buffalo are found in all areas of the park, the Lamar River Valley and the northern range are home to many herds. Most of the herd I depict crossing Soda Butte Creek, before its confluence with the Lamar River, was walking in the shallows, but one youngster decided to take a more exciting route, shown in the front of the painting. The tranquility of summer for the cows and calves is interrupted in July and August by the noise and jousting of the large bulls during the rut and mating season. By fall, the calves' orange coats fade to the dark brown and black of the adults, and they've grown large enough to face, and hopefully survive, the rigors of winter.

Pam Little

Hamilton, Montana, USA

Steller's Jays (*Cyanocitta stelleri*)

Digital (entirely) on paper, 2011
16 × 11 in (40.6 × 27.9 cm)

The brightly-colored and lively Steller's Jays are regular visitors to our house in the Bitterroot Mountains of Montana. Our bird feeder is suspended from rollers on a cable strung from the deck roof to one of the trees north of the house. This keeps it well out of the reach of bears, but accessible to the nocturnal flying squirrels, which are frequent feeders. It seems as if the jays know who fills the feeder for if it is empty and I go outside, they let me know with their calls. Sometimes they hop around on the deck and look in the windows to get my attention. In addition to their typical raucous caws, they make calls I've termed their 'penny whistle' sound.

Steller's Jay and the Blue Jay, *Cyanocitta cristata*, are the only two species in the genus *Cyanocitta*. The name derives from a Greek word *kýanos* meaning dark blue. They are members of the Corvidae Family, which includes, among others, the crows, ravens, and magpies. This family is notable for their ability to mimic sounds, sometimes of other birds and even the human voice.

Peggy Macnamara

Wilmette, Illinois, USA

JURY AWARD

Field Museum Bird Lab with Eggs

Watercolor on paper, 2013
30 × 22 in (76.2 × 55.8 cm)

This watercolor is part of a series of 40 plates showing the wonder and diversity of the collections housed in the Field Museum, Chicago, Illinois. Approximately one percent of this natural history museum's artifacts and specimens are on public display. The bulk of the collections remain "behind the scenes" for research and scientific study. This piece illustrates part of the egg collection. Specimens were used to prove that the bird eggs were thinning due to over use of DDT. The reversal of this trend is an example of the invaluable nature of collections. I created a poster and a children's book with these plates to spread the "good news!"

Janet Matthews

Narre Warren North, Victoria, Australia

JURY AWARD

Short-beaked Echidna (*Tachyglossus aculeatus*)

Look, I Can Swim!

Color pencil on paper, 2013
12 × 14 in (30.4 × 35.5 cm)

The Short-beaked Echidna, are easily recognized by their covering of long spines and fur. They are usually seen foraging in the undergrowth of the countryside, or what in Australia is called the bush, looking for ants and termites. It is a little known fact, however, that they can and do swim, not only in emergency situations, such as escaping a bush fire, but occasionally for pleasure, especially on hot days.

Look, I Can Swim! is inspired by my personal experience of seeing an echidna swimming in a friend's dammed pond. It was a great surprise and delight to experience this rarely-observed occurrence. I included the underwater scene and no shoreline in order to show that the echidna is swimming in water over its head, not just in a little puddle. This was a unique situation for a very unique creature.

Trudy Nicholson

Cabin John, Maryland, USA

Andean Condor, California Condor, King Vulture, Greater Yellow-headed Vulture, Lesser Yellow-headed Vulture, Turkey Vulture, Black Vulture (*Vultur gryphus*, *Gymnogyps californianus*, *Sarcoramphus papa*, *Cathartes melambrotus*, *Cathartes burrovianus*, *Cathartes aura*, *Coragyps atratus*)

New World Vultures and Condors

Pen and ink on scratch board, 2012
10 × 13 in (25.4 × 33 cm)

Vultures, although possessing wondrous elegance when aloft, are considered inelegant and ungainly on land. I've attempted to override this impression by presenting the New World vultures and condors of the Cathartidae Family with a solemnity approaching beauty. The species that I'm able to observe live are the King Vulture at the Smithsonian National Zoo, in Washington D.C., and the Black and Turkey Vultures along the banks of the Potomac River in Maryland. The Yellow-headed Vultures (Greater and Lesser) are found in South America as is the Andean Condor. The California Condor, which almost became extinct, was saved and continues to soar on invisible lofty streams of air. To my mind and eyes, these are uniquely beautiful birds.

Mafalda Paiva

Palmela, Setúbal, Portugal

Pine Processionary Moth (*Thaumetopoea pityocampa*)

Mixed media: acrylic, graphite, digital on paper, 2012
11.75 × 15.75 in (29.8 × 40 cm)

The Pine Processionary, *Thaumetopea pityocampa*, is a moth that has become a plague in Portugal, destroying most of the country's pine trees. Over the past decade this problem has devastated large areas of forest, which in turn is causing major environmental problems. The common name, Pine Processionary Moth, comes from the behavior of the larvae (caterpillar stage) that leave their nests at night in single file, nose to tail, to feed on pine needles or find pupation sites. This illustration is one in a series about forest problems in Portugal.

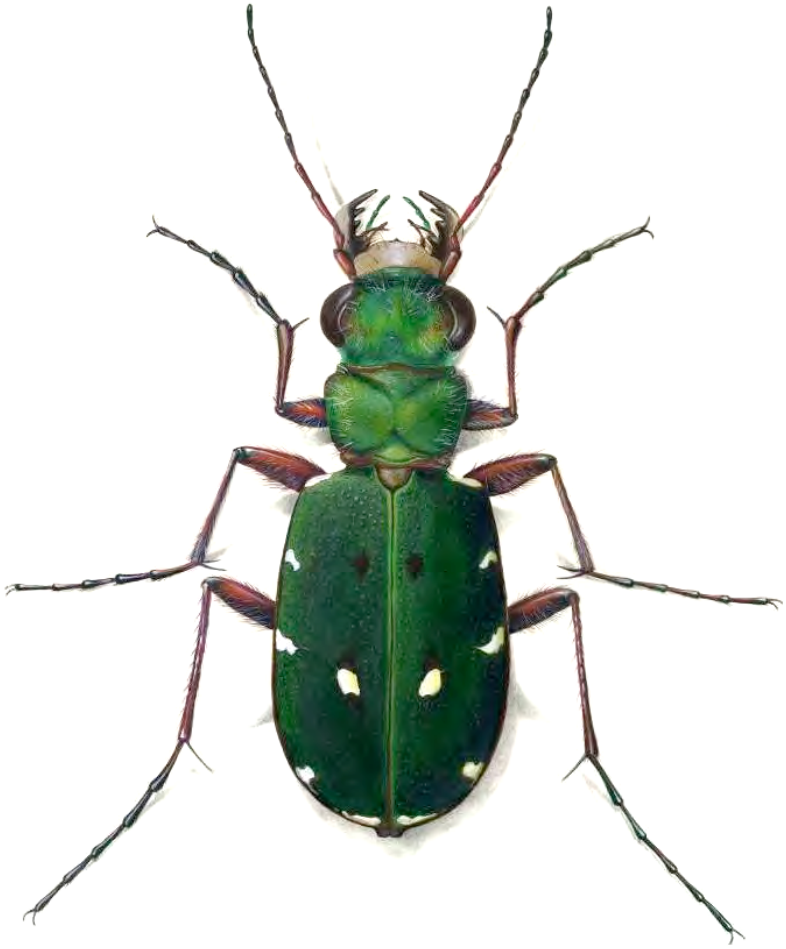
Mafalda Paiva

Palmela, Setúbal, Portugal

Tiger Beetle (*Cicindela campestres*)

Mixed media: acrylic, graphite and digital on paper, 2013
11.75 × 15.75 in (29.8 × 40 cm)

The beautiful Tiger Beetle, *Cicindela campestris*, is one of the most common species of beetles found in Portugal. It has striking bright colors and moves so quickly that it is among the fastest animals on earth. Over the years, I have devoted much time to entomological illustration. The brilliant, often iridescent, mix of colors makes them living works of art. These colors, which can change dramatically depending on light and surroundings, make them a challenge for the scientific illustrator. This illustration was made in 2013 as part of a series depicting Portuguese beetles.



Teresa Pedroso

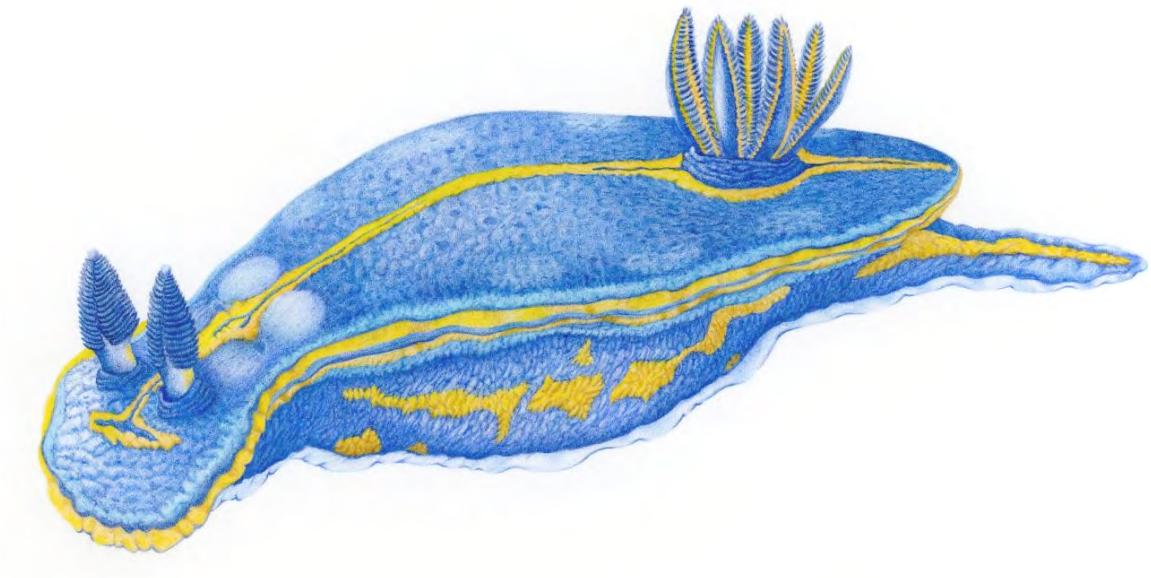
Porto, Portugal

Fontandrau's Doris (*Felimare fontandraui*)

Color pencil on paper, 2013
16 × 12 in (40.6 × 30.4 cm)

Fontandrau's Doris is a species of nudibranch or sea slug, found in the Atlantic Ocean off the coast of southern Portugal. These marine gastropods, colloquially known as *nudirânquios*, grow to 1.5 in (4 cm) or longer, live in poorly lit areas, and feed on a species of sponge, *Pleraphysilla spinifera*. The identifying feature of *Felimare fontandraui*, the species portrayed here, is the pair of straight yellow or white lines that start at the antennae-like rhinophores (sensory organs at the head), and progress towards the posterior end, going around the feathery looking gills.

In order to draw this organism accurately, I felt it was important to observe and understand as much as possible about how it moves. For reference, I gathered and studied videos, articles and books, as well as the work of Portuguese photographer, João Pedro Silva. From this material I made graphite studies of anatomical details, movements and positions, and forms, as well as color studies. My illustration was reviewed by Fernando Correia, a professor of scientific illustration at the University of Aveiro, whose work is also represented in this exhibit.



Dorie Petrochko

Oxford, Connecticut, USA

Horseshoe Crab (*Limulus polyphemus*)

Watercolor on paper, 2012
15 × 21 in (38.1 × 53.3 cm)

Limulus polyphemus is a marine arthropod, related to arachnids (invertebrates with eight jointed legs) and is considered the oldest living fossil. It dates back to the Ordovician Period, around 450 million years ago. The blood of Horseshoe Crabs is blue because it contains hemocyanin, which is similar to the hemoglobin that gives our blood its red color, but contains copper instead of iron. Their blood also contains amebocytes, which are similar to our white blood cells and are used to make Limulus amebocyte lysate (LAL), a clotting agent which is used in tests to detect bacterial infections such as meningitis and Escherichia coli (E.coli), in vaccines, and in medical devices. The pose in this illustration depicts the opisthosoma, or abdomen, which is hinged to the prosoma or head. When drawing blood from the horseshoe crab, it is flipped in half and a needle is inserted into its primitive heart, where 30% of its blood is extracted. The crabs are then released. An estimate of 3% to 15% mortality occurs during blood harvesting. Horseshoe Crabs are also harvested as bait for fishing eels and whelk. Important conservation efforts, such as Project Limulus, continue to help conserve and protect this ancient species from extinction.

Maura R. Piccoli

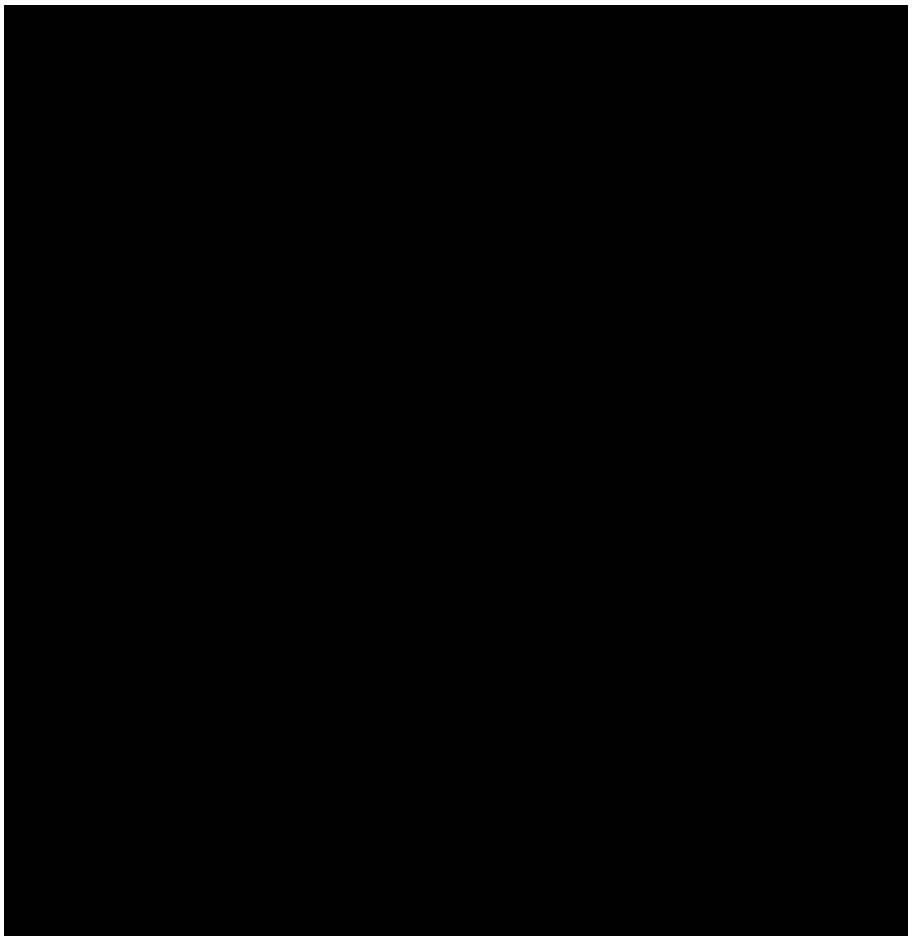
Curitiba, Paraná, Brazil

Cashew (*Anacardium occidentale*)

Mixed media: watercolor, pastel on paper, 2013
14 × 10.5 in (35 × 27 cm)

The Cashew tree is native to the north and northeastern coastal areas of Brazil but it has been widely cultivated since the 16th century, when the Portuguese introduced it to other tropical areas of the world. It produces a pseudo-fruit, often called an "apple," that is colorful and fleshy. It is consumed in a variety of ways, both fresh and preserved in jams and juices. What is typically known as the cashew "nut" is actually a seed that is attached to the lower part of the pseudo-fruit. Cashew nuts are always sold shelled because parts of the shell are toxic.

The common English name, cashew, has a complicated derivation. It is from the Portuguese name for the fruit of the cashew, *caju*, which itself is derived from the indigenous Tupi name, *acajú*.



Xavier Pita

Lisbon, Portugal

Tarantulas (*Hogna schmitzi*, *Hogna ingens*)
Endemic Wolf Spiders of Porto Santo Island and Desertas

Digital (entirely) on paper, 2012
16 × 11.75 in (40.6 × 29.8 cm)

In the archipelago of Madeira, located in the Atlantic Ocean, one often hears about the dreaded "Tarantula of the Desertas," *Hogna ingens*, as being the biggest spider in Madeira. It is a large spider, reaching 4.7 in (12 cm), but is found only in Deserta Grande, a small uninhabited island in the east of the archipelago. Other endemic species of the genus *Hogna*, however, are found on many of the islands in the archipelago. Among them is *Hogna schmitzi*, or *carangujeira* as it is known in Portuguese, only found in Porto Santo Island. Besides the captivating color, this tarantula has a respectable size of about 3.9 in (10 cm). These illustrations were made from the study of specimens preserved in the Natural History Museum of Funchal, and were painted using digital tools and techniques.

Xavier Pita

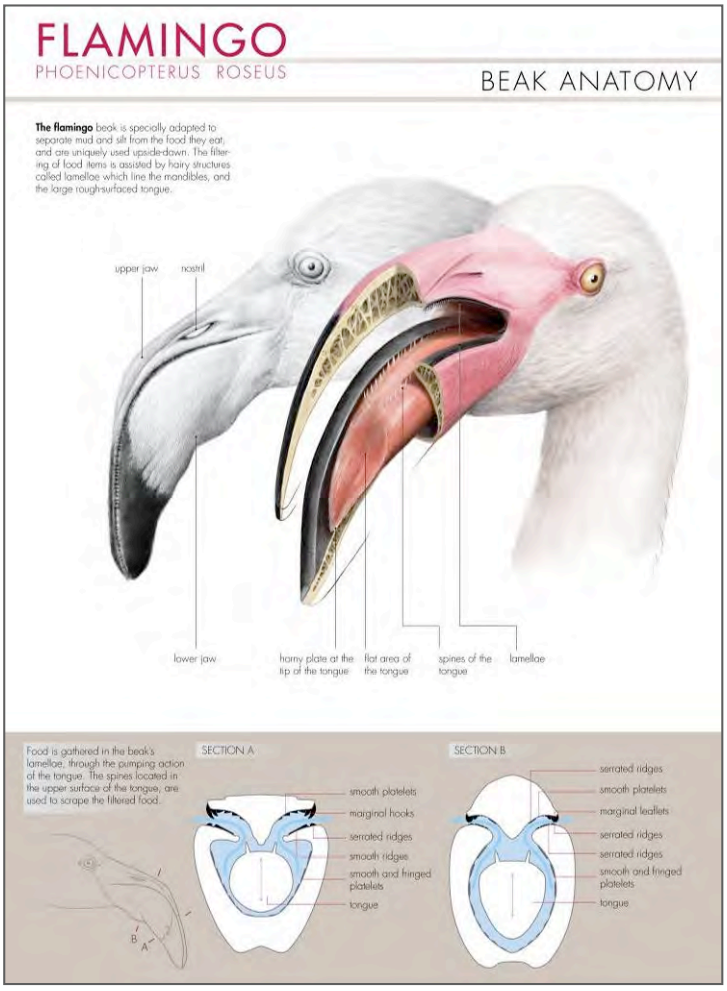
Lisbon, Portugal

Greater Flamingo (*Phoenicopterus roseus*)

The Anatomy of the Beak of the Flamingo

Mixed media: digital, graphite on paper, 2012
11 × 12 in (27.9 × 30.4 cm)

The flamingo bill is specially adapted to separate mud and silt from food, and is uniquely used upside-down. The filtering of food items is assisted by hairy structures called lamellae which line the mandibles, and the large rough-surfaced tongue. This illustration shows the peculiar anatomy of this bird's bill. To achieve accuracy, it was necessary to study the flamingo skull, as well as cat scans of his head. The foreground image, showing the cut at the tip, was created entirely using computer techniques. For the profile of the head, in the background, I opted for a monochrome graphite illustration that I scanned and combined with the digital piece.



Consie Powell

Ely, Minnesota, USA

Long-tailed Weasel (*Mustela frenata*)

Autumn Molt

Mixed media: digital, pen & ink, scratch board, watercolor on paper, 2012
21 × 9.5 in (53.3 × 24.1 cm)

As autumn days grow shorter and colder, a long-tailed weasel molts from a coat of summer brown to its white winter finery. Over the course of about seven weeks, this change happens very gradually. It starts at the belly and ends with the fur down the center of the back, and shows rather lovely patterns along the way.

This illustration is a page created for *Zeep: Little Weasel on Her Own*, my as-yet unpublished, nonfiction picture book that tells the story of a year in the life of a long-tailed weasel. The written and visual information presented in *Zeep* is based on decades of living around, working with, and studying these marvelous, diminutive mammals. I've been able to illustrate exactly how a weasel's color change progresses because I've been lucky enough to watch it happen, day by day, right near my own house.

Carles Puche Rius

Barcelona, Campins, Spain

Mouse-eared Bat, Serotine Bat, Commissaris's Long-tongued Bat, Heller´s Broad-nosed Bat, Riparian Bat, Lesser Bulldog Bat

(*Myotis myotis*, *Eptesicus serotinus*, *Glossophaga commissarisi*, *Platyrrhinus helleri*, *Myotis riparius*, *Noctilio albiventris*)

Watercolor on paper, 2009

12 × 17 in (30.4 × 43.1 cm)

Bats are the only flying mammal on earth and one of the few that have the ability to navigate using ultrasound. There are more than 1,000 species of bats. Although most eat insects, such as the Riparian Bat, *Myotis riparius*, , many have specialized diets, such as the fruit-eating Heller´s Broad-nosed Bat, *Platyrrhinus helleri*, or the nectar-drinking Commissaris's Long-tongued Bat, *Glossophaga commissarisi*, depicted here.

In Charles Darwin's *The Origin of Species*, bats appear a number of times. For example, he refers to them as transitional forms of flying mammals (Chapter VI) and again in an observation about the presence of endemic bat species on remote oceanic islands, even in the absence of other terrestrial mammals (Chapter XII).

The bat's resemblance to rats is reflected in the names given them by cultures across the world. In Spanish *murciélago* means "blind rat," whereas in Catalonia and Basque (regions of Spain with their own languages) they are called *ratpenat*, "rat with wings," and *sagu zahar* "old rat," respectively. In German *Fledermause* means "rat that flies," and in Chinese *sein–shii* translates as "celestial rat." In Aztec (a language still widely spoken in Mexico) *quimich-papaloti* means "butterfly rat."

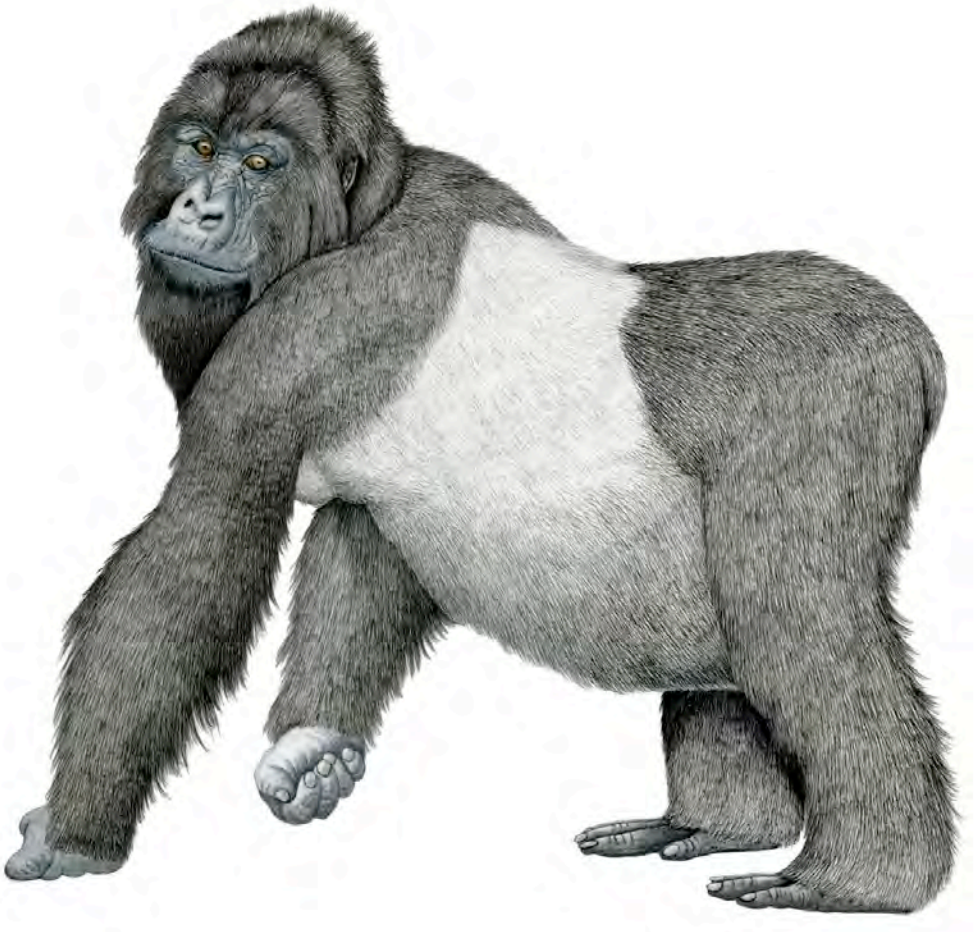
Carles Puche Rius

Barcelona, Campins, Spain

Western Gorilla (*Gorilla gorilla*)

Watercolor on paper, 2000
14.25 × 14.25 in (36.1 × 36.1 cm)

National Geographic magazine commissioned this illustration for the *Enciclopedia de los Animales Mamiferos II* (*National Geographic*, 2005, pages 54–55). Silverbacks gain their coloration with age and are the dominant male of each group. They make decisions regarding the best places to get food and the general well-being of their troop. These herbivore primates are genetically one of the mammals most closely related to humans, sharing 95-99% of the same DNA.



Carles Puche Rius

Barcelona, Campins, Spain

Chocolate-band Snail, Garden Snail (*Eobania vermiculata, Cryptomphalus aspersus*) *Snails Found in Valencia, Spain*

Watercolor on paper, 2009
12 × 17 in (30.4 × 43.1 cm)

Although not necessarily endemic to the region, the snails portrayed here were all found in the vicinity of Valencia, on the Mediterranean Sea side of Spain. The beautiful patterns and colors, usually a result of their diet, have a practical purpose by helping to camouflage them from predators.

The diversity of snail shells is an example of individuality in natural populations, one of the pillars of Charles Darwin's theory of natural selection. Darwin performed experiments with small snails to evaluate their survival in salt water and explore the possibility of land colonization by shells adhering to the feet of birds. He studied this in the context of his observations on animal dispersal and geographical distribution in *The Origin of Species* (Chapter XII).

Kelly Leahy Radding

Colombia, Connecticut, USA

JURY AWARD

Harris's Hawk (*Parabuteo unicinctus*)

Tag Team

Watercolor on calf skin vellum, 2012
16 × 20 in (40.6 × 50.8 cm)

I had the pleasure of meeting this sibling pair of Harris's Hawks at a raptor rehabilitation center. Their magnificence inspired me to paint them but at first I wasn't sure of my composition. Then I researched the species and discovered that Harris's Hawks hunt cooperatively in pairs or trios. The hawks surround their prey, flush it for another to catch, or take turns chasing it. I chose to portray the moment one bird (on the right) was lifting its wings ready to chase the lure. A second later, the other hawk flew after his brother, taking his turn "tagging" the prey. They continued taking turns until, called home by the handler, they quite reluctantly returned. The title came easily for this piece: *Tag Team*—two or more people working in association toward the same goal. In this instance, however, two hawks worked together to catch their prey.

Lynne Railsback

Williams Bay, Wisconsin, USA

American Hazelnut (*Corylus americana*)

Watercolor on paper, 2012
8 × 8 in (20.3 × 20.3 cm)

One of my students provides my classes with a never-ending source of interesting plant material. She finds these curios on her farm in the kettle moraine area of Wisconsin, and usually includes informative literature about the specimens. One day she arrived with hazelnut fruits she had managed to harvest before they were devoured by deer. With the plant material was an article from *The National Arbor Day Foundation Publication,* and of particular interest to me was the fact that hazelnuts are dioecious(have male and female flowers on the same tree) but do not self-pollinate. This bit of biological information is included by showing the male inflorescence above and the female below. Equally, or even more interesting, were the complexly curled and dried shapes of the leaves, flowers, and fruits. It took two tries for me to be satisfied with this final composition.

Raquel Raimundo

Lisbon, Portugal

Waterbuck (*Kobus ellipsiprymnus*)

Graphite on polyester paper, 2011
8.5 × 11.75 in (21.5 × 29.8 cm)

Waterbucks are large antelopes found in scrub forests, savannas, swamps, and riparian areas of sub-Saharan Africa. They graze on grasses and sometimes use water as a refuge from predators. The males, much larger than females, grow unbranched, spiraled horns that can be nearly 3.5 ft (1 m) in length. All waterbucks are notable for producing an unpleasantly strong scent that comes from the waterproofing fat excreted by their sweat glands.

Particularly enjoyable in creating this illustration was the challenge of drawing fur on this waterbuck. I chose to render in graphite on polyester film because the surface of this paper, although extremely smooth, provides good adhesion of the graphite particles, allowing sharp, clean detail of every hair. With this technique it is possible to achieve accuracy with near photographic realism.

Betsy Rogers-Knox

Bethlehem, Connecticut, USA

Sugar Maple (*Acer saccharum*)

Maple Lifecycle

Watercolor on paper, 2010
19 × 19 in (48.2 × 48.2 cm)

The Sugar Maple is one of North America's most beautiful and productive trees. Its strong, hard wood is used for numerous purposes, and its maple syrup is highly valued. Maple syrup, made by boiling sap to concentrate the sugar content, is one the few North American agricultural processes not imported from Europe. According to oral traditions and archaeological evidence, Native peoples were producing maple syrup long before the arrival of European settlers.

Having observed this maple tree at a nearby farm for a full year, I became intrigued by its life cycle and decided to illustrate it in a spiral format to show details of each stage. This composition was quite a challenge! To show the changing leaves, both in color and shape, and also include the development of the samaras (winged seeds), it took many hours of drawing and rearranging elements to balance the entire piece. I decided to include a small rendering of the habitat in the center in order to provide the viewer with information about the tree's structure.

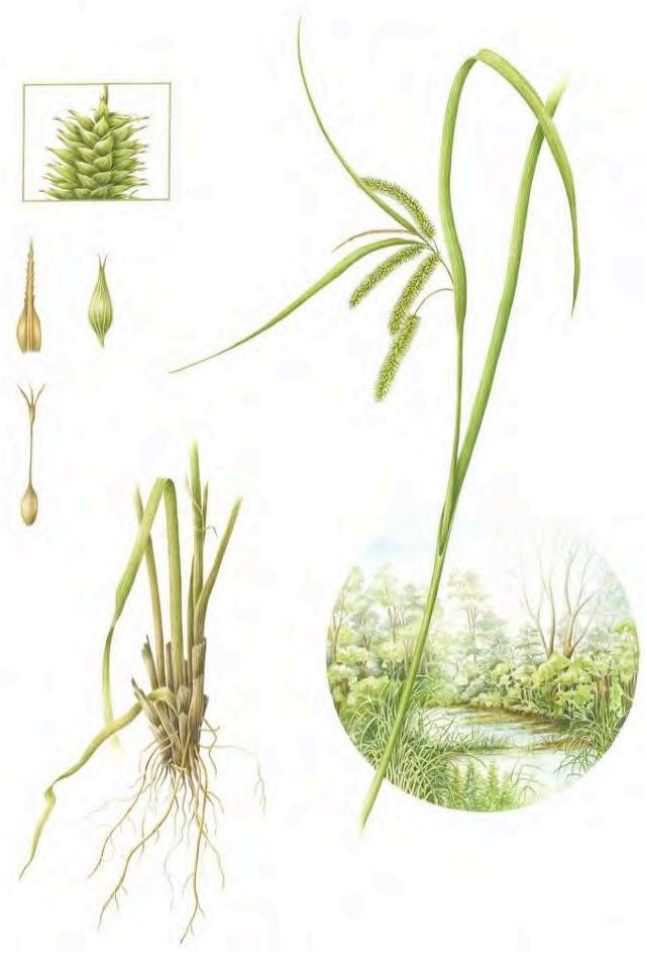
Betsy Rogers-Knox

Bethlehem, Connecticut, USA

Sedge (*Carex pseudocyperus*)

Watercolor on paper, 2009
18 × 23 in (45.7 × 58.4 cm)

Those who serve as stewards of threatened and endangered plants are rightfully protective about divulging their locations. My endeavor to locate and illustrate an endangered plant took numerous emails to find an enthusiastic supporter in Dr. James Fischer, the Research Director at The White Memorial Conservation Center in Litchfield, Connecticut. He put me in touch with William Moorhead, a local botanist who had discovered *Carex pseudocyperus*, a rarely observed, endangered plant in Connecticut. This sedge tends to grow in habitats of frequent, seasonal flooding, an ecological process which is usually prevented by human land-use practices. Dr. Fischer and Moorhead concluded that the sedge portrayed survives in this particular wetland because the flooding is uninhibited, which creates the required environment.



From a boardwalk over the wetland I spent many hours observing and illustrating this rare plant. Its preferred wetland habitat is depicted in the circular rendering.

Emilio Rolandi

Barcelona, Catalonia, Spain

Lavocatavis africana cf., Gaudeamus lavocati cf., Polypterid polypteriform, Cichlid perciform, Lepidosireniform dipnoan, Lepidosireniform dipnoan, Podocnemidid species, Amphisbaenian species, Acridocarpus species, Opisthocomus hoazin

Phororhacoid Bird in Eocence Landscape

Digital (entirely) on paper, 2012
28 × 16 in (70 × 40 cm)

This illustration depicts several vertebrate groups in a setting during the Tertiary Period of the Cenozoic Era when the first modern flora and large fauna started to appear. This painting was done for the July 2012 cover of *Systematic Biology* (61 (4)). It recreates a landscape shared between South America and Africa within the paleoprovince of Atlantogea, as proposed by Martín D. Ezcurra and Federico L. Agnolín. At the center of the image is the figure of a now extinct bird, *Lavocatavis Africana* cf., preying upon an also extinct rodent, *Gaudeamus lavocati* cf.. In a slow-moving freshwater river there are three tertiary fishes that look remarkably similar to their modern relatives, *Polypterid polypteriform* (left), a *Cichlid perciform* (center) and *Lepidosireniform dipnoan* (right).

In the foreground, at the right of the image, there is an extinct member of the modern podocnemidid turtles and an extinct amphisbaenian, a rare worm-like reptile. At the far left, perched on a bush, is a species of *Acridocarpus*, an extinct relative of the modern hoatzin, *Opisthocomus hoazin*.

Michael Rothman

Ridgefield, Connecticut, USA

JURY AWARD

Samoan Toothed-billed Pigeon, Samoan Flying Foxes (*Didunculus strigirostris*, *Pteropus samoensis*)

The Little Dodo of Samoa

Acrylic on canvas, 2013
38 × 30 in (96.5 × 76.2 cm)

This painting depicts the critically endangered endemic Samoan Toothed-billed Pigeon in its native, moist upland rainforest at about 3000 ft (900 m) elevation on the island of Savaii. In the Samoan language, this bird is called *manumea*. It is a national symbol, although its numbers have fallen to possibly as few as 100 individuals. Efforts are underway to preserve some of this bird's remaining habitat from logging concessions that are causing habitat loss.

This pigeon is considered the closest living relative of the extinct Dodo, based upon phylogenic studies and the fact that their heads bear a striking resemblance. Through the trees, in the center left, Samoan Flying Foxes can be seen.

Stephanie Rozzo

Monterey, California, USA

Ruby-throated Hummingbird, Pipevine Swallowtail, Scarlet Bee-balm (*Archilochus colubris*, *Battus philenor*, *Mondarda didyma*)

Scarlet Pollinators

Digital (entirely) on paper, 2013
14 × 11 in (35.5 × 27.9 cm)

Hummingbirds' diminutive size, speed, energy, and tenacity fascinate most people, including me. One day I was watching a ruby-throated hummingbird at a window feeder near my desk. It rushed up to the feeder and then stopped, backed up and flew away when it suddenly realized how close we were. I imagined a similar situation could occur if a hummingbird was flying toward a particular flower only to find that the spot was already occupied. This inspired my illustration of a hummingbird backing away from a flower that is already occupied by a butterfly.

Stephanie Rozzo

Monterey, California, USA

JURY AWARD

Weedy Seadragon (*Phyllopteryx taeniolatus*)

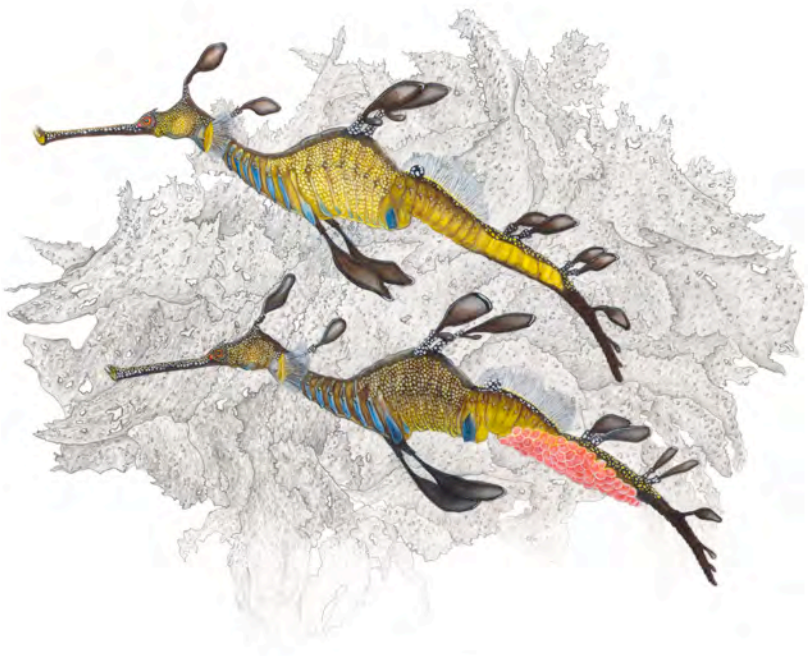
Weedy Seadragon Life Cycle

Mixed media: acrylic, graphite on illustration board, 2012
14 × 11 in (35.5 × 27.9 cm)

Weedy Seadragons, *Phyllopteryx taeniolatus*, have beautiful bright colors and move gracefully, resembling the seaweed among which they live. While volunteering at the Monterey Bay Aquarium at the seahorse exhibit, one of the male Weedy Seadragons became pregnant and gave birth to a brood of seadragon fry. This inspired me to create an illustration. I researched how they move, live, and breed. Through personal observation, videos, photographs, and by consulting a research paper on their life cycle, I came up with this illustration. Once I created the acrylic painting, I scanned it and added the labels.

Final image as it appears with computer changes.

Loan courtesy of Julie Veitch



Stephanie Rozzo

Monterey, California, USA

Cochineal (*Dactylopius coccus*)

Cochineal: A Natural Red Dye

Mixed media: gouache, watercolor on paper, 2011
18 × 18 in (45.7 × 45.7 cm)

If you look at Prickly Pear Cactus growing in the desert, you may see a waxy white substance on it that is secreted by, and covers, a small scale insect called Cochineal. Many people are unaware that this insect has been used as a natural red dye for thousands of years. It was especially highly valued in the past when red dye was more difficult to obtain or create. Today it is used in fabric dye, makeup, paint, and food. My illustration showcases the history of the insect as it relates to art and beauty. It includes the first published magnified drawing of the insect illustrated in 1694; the first detailed drawing of Cochineal illustrated in 1704; a painting of Mexican families farming the Cochineal during the same era; and a Renaissance, upper class woman's portrait in a garment dyed red as well as the paint pigment of the time. I added items currently being made that contain Cochineal such as lipstick and a tube of paint pigment.

Bart Rulon

Greenbank, Washington, USA

JURY AWARD

House Wren (*Troglodytes aedon*)

Song Above San Pedro

Acrylic on gessoed hard board, 1996
30 × 20 in (76.2 × 50.8 cm)

This painting is based on a scene I witnessed during a two month research trip to Ecuador. The inspiration came to me while I was sketching a House Wren singing. Although I was using pen and ink at the time, the light of the bird and habitat was so spectacular that I knew I would someday create a painting of the scene. The inspiration for many of my wildlife paintings start with an interesting play of light, either in the scene or on the subject. Although the wren is the main subject of the work and provides a crucial spark of life, the lighting is the star of the show.

David E. Schuppert

Simpsonville, South Carolina, USA

Green Sea Turtle, Schooling Bannerfish, Coral Hawkfish, Clark Anemonefish

(*Chelonia mydas*, *Heniochus Diphreutes*, *Cirrhitichthys Oxycephalus*, *Amphiprion Clarkii*)

Mixed media: acrylic, digital on illustration board, 2012
15 × 3.5 in (38.1 × 8.8 cm)

Acrylic paint is one of the most convenient mediums with which to make changes. This is one of the many characteristics I like about using it. It dries quickly and permanently, which allows me to re-create or work over an area without lifting preceding layers. My method for using acrylics is to work from the back to the front, from dark to light, and from the inside out. For me, this is a very natural way to paint and gives wonderful results. I began this piece by airbrushing the background with several layers of transparent acrylics. Immediately, I laid in the middle ground of rocks and corals without fear of lifting any of the background. Then I added in the foreground and lighter organisms.

This illustration was one of six unit openers commissioned for a new *Life Science* textbook published by BJ Press in 2013. The original acrylic painting, done for the same publisher, seemed to fit the request but I needed to include additional species to make it work for the new application. It was a simple matter to add the additional species in Photoshop to complete the work.

David E. Schuppert

Simpsonville, North Carolina, USA

Red-eared Slider (*Trachemys scripta elegans*)

Acrylic on illustration board, 2012
16.5 × 8 in (41.9 × 20.3 cm)

This piece was one of twenty-three chapter openers for a *Life Science* textbook published by BJ Press in 2013. The author requested an illustration for the "Cold-Blooded Vertebrates" section and we settled on the Red-eared Slider. After a long search in my reference files, vowing to be better organized, I found a perfect photograph of the slider that I had taken years ago at a local zoo. The background, however, required a trip outdoors to find references of appropriate vegetation.

After planning the composition, I began working on the background, using dark colors and shapes, and then adding layer after layer of paint to give the forest floor its depth and dimension. One of the things I enjoy most about using acrylics is the way it is possible to watch the painting take on characteristics of the subject, such as leaves and twigs. In this case it was as if I was creating a leaf litter as I worked, finally coming to the living plants on top. The next stage was to paint the log and moss textures by applying many layers of transparent paint. The last step was to depict the turtle by using both opaque and transparent paints. In this process I was constantly referring to photographs to achieve accuracy of form and color.

The Red-eared Slider, native to the southern United States and northern Mexico, is a popular pet because it is easy to maintain in captivity. However, because it is often released into non-native areas, it is now considered one of the world's 100 most invasive species as published by the International Union for the Conservation of Nature.

Rodger Scott

Princess Hill, Victoria, Australia

Orange Lacewing Butterfly (*Cethosia Penthesilea*)

The Leaf Fairy

Gouache on paper, 2013
17 × 10 in (43.1 × 25.1 cm)

The Orange Lacewing is native to Southeast Asia and northern Australia, but does not occur in New Guinea. It has a 2.5 in. (65 mm) wing span and is unpalatable to predators. These tropical rainforest butterflies can be found in vine thickets, often along streams associated with larval food plants. As the name implies, Orange Lacewing is orange above with broad black patches on forewing tips within which is a white patch. The upper surfaces of the hindwings are primarily orange bordered with black. The underside of the wings has an intricate pattern of white bars, edged with black lines and dots on an orange background, and a large white patch on the underside of each forewing. It was an intriguing challenge to paint such a complicated pattern accurately.

This painting uses gouache, an opaque watercolor that is my preferred medium. The paper is a heavy, smooth watercolor paper that doesn't need to be stretched to stop warping if it becomes wet.

Cindy Scrivner

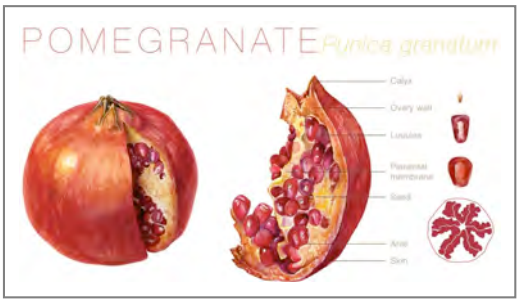
Denver, Colorado, USA

Pomegranate (*Punica granatum*)

Watercolor on paper, 2013
12 × 27 in (30.4 × 70 cm)

Pomegranates have a rich history and symbolism in many cultures. Ancient Egyptians thought the pomegranate a symbol of prosperity, ambition and abundance. It is said King Solomon designed his coronet based on the crown or calyx of the pomegranate. In Greek mythology, the tale of Persephone consuming a pomegranate explained the onset of the seasons; giving the pomegranate the name "jewel of winter." Today, pomegranates are now well-regarded for their multiple health benefits, especially for their disease-fighting antioxidants. The delicious arils (fleshiness around seed) are small jewels; edible treasure to be found if one is patient enough to hunt through the thick skin and tough membranes.

Final image as it appears with computer changes.



Stephen Sepe

Katonah, New York, USA

American Bittern (*Botaurus lentiginosus*)

Watercolor on paper, 2013
14 × 11 in (35.5 × 27.9 cm)

American Bitterns nest on isolated reed platforms, unlike most other members of the heron family. When mature, they will use a behavioral technique to disguise themselves: they stretch their necks and, with bills pointing skyward, stand motionless or sway back and forth, becoming nearly invisible among cattails and rushes. But before they learn self-defense, juveniles, such as the one in my painting, are very vulnerable to predation. Depicted here is a young bird with a frightened but intense look, taking in as much of its exciting and dangerous new world as possible.

Giorgio Smiroldo

Milan, Italy

Eurasian River Otter (*Lutra lutra*)

First

Watercolor on paper, 2011
9 × 6 in (22.8 × 15.24 cm)

First is the title of this work because it was my first watercolor. I began animal tracking after finishing at the University of Milan with a degree in natural science. This activity enabled me to explore interesting parts of the country, such as the southern region of Basilicata where there exists, although small, the largest population of otters in the country. In Italy, as in all of Europe and Asia, otter populations declined drastically due to chemical pollutants in rivers during the last half of the 20th century. There are now hopeful signs that the trend has slowed, and in some cases, particularly in England, even reversed.

The Eurasian or European Otter is the most widely distributed species in the *Lutra* genus, ranging from Ireland to South Korea, from Southeast Asia to Lapland. It differs in anatomical proportions from the North American River Otter.

Heidi A. Snyder

Lakewood, Colorado, USA

Common Mullein (*Verbascum thapsus*)

Color pencil on drafting film, 2012
14 × 11 in (35.5 × 27.9 cm)

This biennial produces a large, thick rosette of fuzzy leaves the first year and a single, stout, erect stem, 2–6 ft tall, the second year. The leaves are fuzzy, the flowers sessile and yellow, and the very small fruits brown and angular.

This weed (now classified as noxious) was introduced from Europe, but is a native of Asia and is common throughout the temperate parts of North America. It grows along river bottoms, meadows, fence rows, pastures and especially on gravelly soils. Livestock will not eat the plant due to its fuzziness, but Native Americans ground and ate the seed in flat cakes. The leaves were used as shoe insoles, and the stalks, smeared with grease, as torches. Due to its copious seed production and its deep roots, it is difficult to control.

Heidi A. Snyder

Lakewood, Colorado, USA

Osprey (*Pandion haliaetus*)

Color pencil on drafting film, 2013
11 × 14 in (27.9 × 35.5 cm)

This very large raptor is predominantly black and white. It is boldly patterned, with a distinct white chest and a blackish mask. Ospreys are found near both fresh and salt water, most commonly along the coast, but also inland. Nests are usually built in large trees and may be used for decades. Ospreys feed exclusively on fish. They cruise slowly over open water, hover when a fish is spotted, and then plunge feet first into the water to grab their prey. They utter a variety of shrill whistles.

After a decline in the 1970's due to DDT, Ospreys have experienced a remarkable comeback.

Heidi A. Snyder

Lakewood, Colorado, USA

Alamos Barrel Cactus (*Ferocactus* ssp. (sub–species))

Color pencil on drafting film, 2013
11 × 14 in (27.9 × 35.5 cm)

This specimen grows at the Tohono O'Chul Park and the Arizona Desert Museum in Tucson, Arizona. The cactus originates from a restricted area in the mountains east of Sonora, Mexico, and is likely to be put on the endangered list. For a barrel cactus it is atypically tall, but simultaneously twisted diagonally, resulting in interesting shapes and colors.

This is a small species, usually solitary, with needle-like intermeshed spines. The flowers are yellow-green, the fruits a dull brown–red, splitting open when ripe. The majority of the species flowers in summer, pollinated by bees of the *Lithurge* genus. Fruit and seeds are eaten by rodents, birds, bighorn sheep, mule deer and javelinas, or peccaries. The plant itself is eaten by packrats, javelinas and jackrabbits.

Michael Stünzi

Kilchberg, Zürich, Switzerland

Bull or Spear Thistle (*Cirsium vulgare*)

Digital (entirely) on paper, 2012
11 × 16 in (27.9 × 40.6 cm)

To create this piece, I first made sketches from a live thistle specimen then I scanned the sketches into a computer to have an accurate basis on which to develop the color image. The text was added as a last step in the process.

This illustration is an example of what an illustrator can do that is impossible for a photographer. Across the bottom is shown the sequential development of the Spear Thistle from a bud into full bloom, and then to mature seeds being dispersed, something that would be impossible to show with a photograph. The enlarged cross-section shows clearly how multiple individual flowers evolved, eventually becoming a compact inflorescence. This structure is difficult to see with the naked eye or a photograph, but I clarified it so that the concept is immediately understood.

This thistle is native to Europe and western Asia, but now is found naturalized in most parts of the world. The species name, *vulgare*, means common.

Kelly Mills Sverduk

Greenwood, Delaware, USA

Cucumber (*Cucumis sativus*)

Mixed media: color pencil, watercolor on paper, 2013
20 × 16 in (50.8 × 40.6 cm)

Cool, watery, crunchy cucumbers are one of my favorite products of summer gardening. Until beginning this painting, however, I hadn't paid much attention to the plant's aesthetic qualities. As part of my certificate project through Brookside Gardens School of Botanical Art and Illustration, I spent time studying *Cucumis sativus*. My first intention had been to portray the plant from ground level, below the leaves. This required lying flat on the ground to do sketches and after an hour of boiling in the sun with my elbows sinking ever lower in the carefully tilled soil, I decided to change the point of view to a slightly elevated position. The focus then became the texture of the leaves, the growth habit of the plant, the beautifully coiled tendrils, and the delicate yellow flowers that hide beneath a canopy of large, hairy leaves. Though originally from Southeast Asia, cucumbers are now widely cultivated around the world.

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Luis Miguel Terrones

Málaga, Spain

Fiery-billed Aracari (*Pteroglossus frantzii*)

Watercolor on paper, 2013
15.5 ×10.5 in (39.4 × 27.1 cm)

Fiery-billed Aracari, *Pteroglossus frantzii*, is a species that is found along the Pacific coast of Costa Rica and Panama. Its population status is lower than it's more abundant, and therefore more often seen, close relative *Pteroglossus torquatus*. The Fiery–billed Aracari lives in undisturbed, healthy forested areas at altitudes of 1640 ft (1500 m) above sea level. It is common to see them feeding on fruits in the forest canopy, although their diet also consists of small vertebrates, eggs, and insects. The individual depicted in this watercolor is one of a group which I observed feeding in a cecropia tree. I was able to make a series of rapid sketches and notes with the use of my field spotting scope. This watercolor, done with loose brushstrokes, conveys the freshness and excitement of that moment. I've detailed just enough to capture the essence or soul of the bird.

Linda Thomas

Trumbull, Connecticut, USA

Bobolink, Red-winged Blackbird, American Bittern (among sixty four)

(*Dolichonyx oryzivorus*, *Agelaius phoeniceus*, *Botaurus lentiginosus*)

Seneca Meadows Wetland

Acrylic on canvas, 2011

64 × 28 in (162.5 × 71.1 cm)

This mural depicts sixty-three species of plants and animals within the context of several natural communities that define the Seneca Meadows Wetland Complex in Waterloo, NY. The Complex, a 576-acre mitigated wetland on former agricultural land, was restored by Seneca Meadows, Inc., a waste management and recycling facility nationally recognized for its exemplary environmental record. A digitally reproduced and enlarged version of the mural serves as an educational exhibit for visitors to the Environmental Education Center. The Complex, which is geographically close to the Montezuma National Wildlife Refuge and the Montezuma Audubon wetlands parcels, attracts thousands of migratory bird species year-round. For the artist, the wetlands are compelling in their beauty whatever the season, and this mural represents a celebration of the richness of the color, life and texture found there.

Mim Wells

East Victoria Park, Western Australia, Australia

Red-winged Fairy Wren (*Malurus elegans*)

Family Life

Mixed media: color pencil, pen and ink on paper, 2013
11 × 10 in (27.9 × 25.4 cm)

Red-winged Fairy Wrens are one of many species in the genus *Malurus* found in the southwest of Western Australia. Averaging six inches in length, much of which is tail, they are truly fairy-like. Although their status is common, it is always exciting to see one. They live in communal groups of about five, and all members assist in the care and feeding of the young after incubation. Fairy Wrens inhabit low-hanging branches and dense shrubbery where they find the insects that comprise the bulk of their diet. Their delicate beauty and lively personality make them a very appealing subject for study.

Esmée Winkel

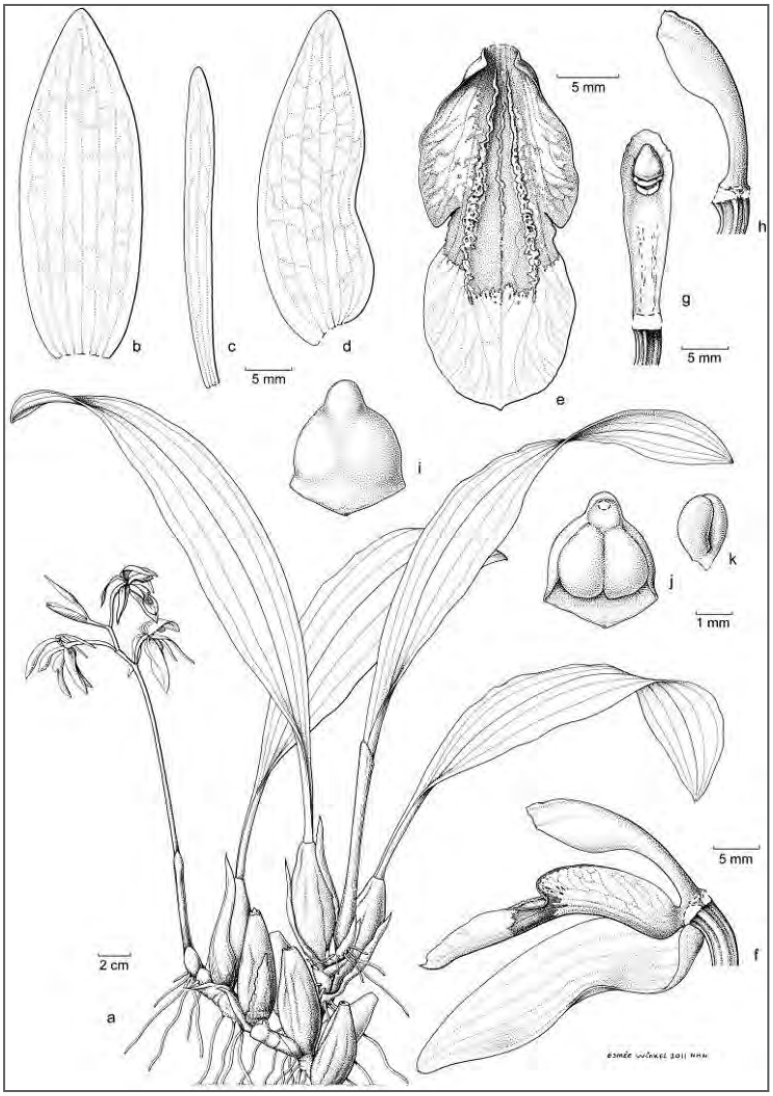
Leiden, Züid-Holland, The Netherlands

Coelogyne, sp. n. (new species)
A New Orchid Species from Papua New Guinea

Pen and ink on paper, 2011

12 × 15.75 in (30.4 × 40 cm)

This orchid was collected by orchid specialist Dr. Ed de Vogel in Papua New Guinea, where he goes on expedition at least once a year. The specimens he collects will then be nurtured at the Hortus Botanicus Leiden. As a botanical artist from Naturalis Biodiversity Center, I often visit to study and draw these beautiful orchids. First I draw the habit. During the dissection of the flowers I quickly make pencil sketches which I work out afterwards into correct drawings, taking into account, among other things, perspective, shifting parts and important details such as certain bumps, holes, hairs, glands etc. Once this is done, I make a complete composition and ink the drawings. Very tiny flowers, such as this one, can be quite a challenge!



Fátima Zagonel

Curitiba, Paraná, Brazil

Redflower Mallow (*Modiola caroliniana*)

The Hidden Beauty

Watercolor on paper, 2012
15 ×13 in (38.1 × 33 cm)

This mallow, the only species in the genus, is probably native of South America, but now found throughout tropical and temperate forests worldwide. It used to grow commonly in my neighborhood and every time I saw it, I would think: "Any day now I'm going to illustrate this little beauty!" I noticed that it never grew in polluted areas. Then one day a notification appeared in front of my house saying that the streets would be widened and I realized that I no longer lived in a peripheral suburb, but that the city had arrived. Concerned for the little mallow, I quickly collected and photographed it. Sure enough, soon afterwards, there was no sign that it had ever grown in the area and I feel sad that its presence no longer cheers my trips to the market. But I'm glad to have been able to make a record of it. This is a low growing, unpretentious plant, whose beauty demands close attention. Out of dry leaves and grasses, protrudes a little flower of deep red with yellow shinning stamens.

Fátima Zagonel

Curitiba, Paraná, Brazil

Giant Arrowhead (*Sagittaria montevidensis*)

The Beauty and the Beast

Watercolor on paper, 2010
19.6 × 27.5 in (50 × 70 cm)

Near my house is a lake where this arrowhead grows so lushly that it makes the lake invisible. This species is native to the Americas, but unfortunately, it has become invasive and its presence is now an indicator of pollution. In fact, it grows most vigorously in polluted water with high nutrient content, reaching up to 5 ft (1.5 m) whereas in clean waters it grows 7–25 in (20–60 cm). Although efforts to eradicate this plant have been made, it is highly resistant to pesticides, and breaking up the deeply buried rhizomes only encourages it to come back stronger. It is considered one of the worst invaders of rice fields and drainage channels. The contrast between the magnificent beauty and elegance of this plant with the fact that it thrives best in a polluted environment is what enticed me to paint this portrait.

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Natural & Cultural History Illustration Resources

Focus on Nature: Natural and Cultural Illustration Exhibitions

Curator: Patricia Kernan
NYS Museum/Research and Collections
Cultural Education Center, Room 3140
Albany, New York, USA, 12230
518–486–2024 / pkernan@mail.nysed.gov / www.nysm.nysed.gov/illustrations/fon/
Focus on Nature (FON) is a biennial, international exhibit of natural and cultural history illustration. Started in 1990 in conjunction with the Northeast Natural History Conference, it continues to highlight the status of contemporary illustration. Each *FON* is juried by three scientists and two artists. Entry deadline for *FON XIV* will be October 1, 2015 for an exhibition in 2016.

GNSI: Guild of Natural Science Illustrators

652 Ben Franklin Station
Washington, District of Columbia, USA 10044–0652
301–309–1514
www.gnsi.org
The Guild of Natural Science Illustrators (GNSI), a nonprofit organization of natural science illustrators and associated professionals, was founded in 1969 by artists who believed that ideas and techniques should be shared. With this concept in mind, the Guild has grown to be an international group, the goal of which continues to be encouraging and maintaining high standards of competence and professional ethics through education.

ASBA: American Society of Botanical Artists

200th Street & Kazimiroff Boulevard
Bronx, New York, USA, 10458–5126
866–691–9080
www.asba–art.org
The ASBA is a nonprofit organization dedicated to promoting public awareness of the botanical art tradition and furthering its development. It does this by sponsoring juried exhibits, responding to inquiries, and presenting lectures and workshops for artists and the general public at botanic gardens, natural history museums, art galleries, and educational institutions. The ASBA newsletter provides information about these events and features book reviews, articles about botanical artists, and news of botanical art worldwide.

COM.EN.ART: COMmunity/ENvironment/ART

Edmund Niles Huyck Preserve
Box #1
Rensselaerville, New York, USA, 12147
518–797–3440 / info@huyckpreserve.org / www.huyckperserve.org
COM.EN.ART (COMmunity.ENvironment.ART) is a natural history artist residency program that takes place at a biological research station. It is designed to provide rich, concentrated field experience and study for illustrators as well as encourage interaction and discussion about the environment among artists, scientists, and the community. The artists, during their two–week residency, contribute a piece of artwork to the research station in exchange for studio and living quarters.