# Journal of Natural Science Illustration

GUILD OF NATURAL SCIENCE ILLUSTRATORS

VOLUME 50 • NUMBER 3 • 2018

50 1968 2018

# A Note From...

Clara Richardson, GNSI Journal Editor-In-Chief

Greetings Members, on this, the last issue of our 50th anniversary year. In celebration of our 50 years, we have an article by one of our Founders, Carolyn Gast, on stereographic images, reprinted from the journal *Stereographic World*. This was a personal passion she pursued, after being introduced to it in the course of her job at the Smithsonian. Our thanks to Trudy Nicholson who suggested the article and helped with the permissions. We found the subject fascinating and the author's ability to focus and follow her passion to be truly inspiring.

We are also happy to present to you new views on several subjects of drawing and painting. We are grateful to the authors for sharing their knowledge, perspective, and images with us. You will also find our annual awards and the annual conference write-up, which this year emphasizes the positive effect that social media is having on GNSI, Inc. Our sincere thanks to everyone who sent us conference photos and sketches. Sadly we could not use them all.

Your Journal staff is very happy to report that we are growing! We have three new stellar staff members. We are grateful for their skills, interest and enthusiasm; more than that, we are grateful for their willingness to wade into our particular swamp, learn our ways and teach us new things. Our conference article is a great example of this: we had no idea our printer would be able to do the 'cross-over' images you see there — until we asked. (You won't find us employing this with actual art, but we hope you'll agree that it aids and abets design of the conference article.)

As always, please contact us with any article ideas you may have.

— Clara Richardson
clara@illustratingforscience.com

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**Cover:** Jewelweed (*Impatiens capensis*) and poison ivy (*Toxicodendron radicans*) are naturally found together and have an ethnobotanical compatibility as well. Box turtles (*Terrapene carolina*) frequent the moist ditches where these plants grow together and one happened by while I was drawing. Illustration © 2018 Preston Montague

GUILD OF NATURAL SCIENCE ILLUSTRATORS

*The Guild of Natural Science Illustrators is a nonprofit organization devoted to providing information about and encouraging high standards of competence in the field of natural science illustration. The Guild offers membership to those employed or genuinely interested in natural scientific illustration.*

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## GNSI JOURNAL


Volume 50, Number 3 /2018 • ©2018
GNSI JOURNAL OF SCIENTIFIC ILLUSTRATION (ISSN 01995464) is published roughly four times a year from 2201 Wisconsin Ave., NW, Suite 320, Washington, DC 20007, by the Guild of Natural Science Illustrators, Inc.

$28 of your dues is dedicated to your GNSI JOURNAL subscription; no separate subscription is available.

This paper meets the requirements of ANSI/NISO Z39.48-1992 (Permanence of Paper).


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# *Beyond Accuracy:* Pursuing the Spirit of Place in Botanical Illustration

— *Preston Montague*

Learning to draw begins with learning how to see. Drawing is the easy part, same fine motor skills as buttering toast. The challenge with drawing is coordinating marks on a two-dimensional surface to communicate an extra-dimensional idea. Visual artists develop their work by first making connections between what is and what they see. Seeing, an expansion on looking, requires the artist to push beyond reflexive identification and see the world in an authentic way. With vision and intent the artist can work clues into their drawings that expand the narrative depth of their image to include reflections of the world around their subject. Looking intentionally is the first step to learning how to see, and therefore the first step in learning how to draw.

Regarding my own journey to learning how to draw, botanical illustration would become critical to learning how to see. Growing up near the Shenandoah Valley of Virginia my early mentors encouraged the landscape as a model for drawing. Years later, I would draw in the garden, zooming in to study plants I had previously only drawn from a distance. Watching plants respond to water, light, and pruning revealed a world to me previously hidden. Plants provide, in their own visual language, the news of an invisible world. They are the rolling text of an ancient internet and gardening a sort of search engine.

Gardening improves the practice of botanical illustration by revealing how and why plants grow. Gardening also facilitates seeing because it (as any act of drawing) is a form of meditation. Through practice, meditation fosters a fertile state of slowness, allowing for the complex exchange between looking and imagining that transforms into seeing. Finding plants to draw encourages slowness because it requires exploration and engagement with one's surroundings. Whether an artist's subject grows on their front stoop, or is hidden deep in the center of a forest, the act of stepping outside, walking a bit, breathing, looking, and engaging the imagination unlocks the first of many gates to slowing down, relaxing the reflexes, and seeing.

Five years ago, I stumbled into botanical illustration at the center of the Nantahala National Forest where isolation in profound beauty fast-tracked slowing down. During those initial expeditions I was exposed to a richness of natural and cultural history so inspiring that I felt compelled to document it. I chose drawing as my medium, the product of which became *Codex Carolinum*, a compendium of plants native to North Carolina historically used for food

**'T' for Trillium** (*Trillium caetsbaei*) in all four seasons. The ants and the toad give clues about Trillium's natural history and provide an environmental narrative. Colored pencil and ink on paper.



[Background rectangles added by Journal staff.]

*(Top right):* Me in the buckwheat. Celo, North Carolina, 2014.

*(Bottom left and right):* Ebony jewelwing scouts o(*Calopteryx maculata*).

**THIS ISSUE** features a small subset of illustrations from *Codex Carolinium*. More of Preston's work can be seen at *carolinanaturalist.com/art*. Each letter of the alphabet is posted as it is developed.

or medicine. Originally, *Codex Carolinum* was designed to be a strict botanical illustration project. The idea was to create a 26-panel graphic novel using the English alphabet as a structure with each plant drawn to resemble a letter corresponding with the first letter of their common name (e.g., 'A' for Alder).

During my first expedition in Nantahala, I sat down to draw 'Y' for Yellowroot *(Xanthoriza simplicissima)*, a ground-hugging shrub found on streambanks. The more focused I became on drawing the more the forest seemed to incorporate me. In this synchronized mode, breathing in time with the wind and water, ebony jewelwings *(Calopteryx maculata)* began emerging from the yellowroot to resume their daily routines. The more still I was, the more active they became until it appeared they were totally unaffected by my presence. As noon approached, the morning fog lifted into the sky, and great beams of sunlight spilled into the forest sparking the jewelwings into a frenzied game of tag. This exhibition of *Calopteryx* culture felt so authentic, and so utterly dependent upon the yellowroot as a stage, that I felt as if I was watching two species slow motion sculpt one another. Drawing the yellowroot without the jewelwing suddenly felt negligent and dishonest.

Documenting moments when animal and plant are one became an integral part of *Codex Carolinum*. The lesson of the yellowroot and the jewelwing is that focusing on the individual in botanical illustration and extracting it from a larger web of connections does very little to illustrate why plants behave the way they do or are shaped the way they are. Sitting before the yellowroot, sunlight crawling

**Y' for Yellowroot** (*Xanthoriza simplicissima*) with Ebony Jewelwings (*Calopteryx maculata*). Colored pencil and ink on paper.

up the trunks of trees, the murmur of the mountain stream organizing into sentences, I began sensing time differently. Slowing down allowed me to step beyond reflexive looking to focus less on what and begin seeing why. Layers of connections assembled one by one before my eyes until the trees became a forest and a sentience revealed itself.

Sentience within a place is a sensation that seems to be part of the human experience. We have anthropomorphized the wild energies that give places their character throughout our history, and for Westerners this concept is known as the *genius loci*. Though the concept can be found in cultures worldwide, the term *genius loci* is more commonly associated by Westerners with spiritual beliefs of the ancient Romans. Contemporary Western culture defines it in a more secular context, describing it as the dominant character of a place. However, for much of our human history the *genius loci* was an anthropomorphized and sentient force. This 'spirit of place' is a translation of the Latin '*genius loci*,' regarded as a benign force made physical by the natural forces within a space and assigned to its protection.

Sitting soggy-bottomed at the stream's edge I gave myself permission to not block this experience with skepticism, and allow the spirit to communicate the news of the forest. Yellowroot isn't a discreet thing, it is the living expression of the biotic (living) and abiotic (nonliving) components of the mountain stream. The rock that provides the soil its chemical

**'C' for Cohosh** (*Actaeae racemosa*) *(top left)*: This arrangement reflects cultural narratives and connects a plant used for women's health with a Cherokee origin story about Grandmother Spider. Colored pencil and ink on paper.

**'R' for Rhododendron** (*Rhododendron maximum*) *(top right)*, with bees and hummingbirds. Colored pencil and ink on paper.

[Background rectangles added by *Journal* staff.]

base, the generations of plants decomposed into soil, their progeny who grow into the sky and shape the fall of sunlight below, the wind that combs the forest like hair, the animals and insects who sculpt plants into new forms, and the water beneath that triggers all these mechanisms into motion. With little effort of the imagination, the web of connections extended to the surrounding forest, to the great spine of mountains above, and to the sky and stars beyond.

The weekend excursion to Nantahala ended and I returned to the studio with some photos, a few pressed leaves, and an itch to draw the yellowroot as an expression of a larger environment. Drawing plants *en plein air* made earlier illustrations of yellowroot using photos feel simple, flat, and lifeless. I felt as if I was parodying the grand machinations which gave the yellowroot its flare of foliage, or the rhododendron branch its writhing curves, or the trillium flower its characteristic nod. Drawing *en plein air* had revealed a new challenge: reflecting the spirit of a place through the illustration of a single plant. How does one tell the story of a whole through parts extracted?

**Documenting moments when animal and plant are one became an integral part of *Codex Carolinum*.**

By its nature, the spirit of a place is anchored to its space. When illustrations for *Codex* can take upwards of a year, and the places so remote as to only be accessed on perfect weekends, I have had to figure out how to make the spirit portable. Photographs help but can be flat and literal (amateur photographer here). Capturing the character of a place, in my experience, requires a multidisciplinary approach. Photos are a powerful tool for capturing a glimpse but sketching and writing can document in infinite detail. The trick was triangulating these media to conjure the spirit of a place within the sterile space of a studio: photos as skeleton, sketches as muscle, writing as flesh.

From this multimedia approach to documenting place, the botanical artist can more accurately draw plants based upon clues to how they grow and why. Deep in the cove, *Magnolia ashei* grows massive leaves to maximize its exposure to hesitant light. By contrast, the merciless pounding of sunlight on the mountain meadow forces *Asclepias tuberosa* to creep lower and more compact than it would at the edge of the forest. Understanding how a place impacts plant behavior informs the artist about how to accurately draw their subject, as well as how hue, value, and composition can be manipulated to reflect the place the subject inhabits.

Pushing the portable, multimedia approach further, model-making offers the artist an opportunity to further study and describe how wild energies impact a subject. Models provide an evidence-based approach to representation by simulating conditions experienced by the specimen being drawn. The gentle flow of pages from an open book blowing in the breeze off a sun-warmed deck can provide inspiration for composing the curves of dune grass leaves blowing in the ocean wind. Wadded paper uncurling in a rain storm can simulate how trillium flowers open at different stages of bloom. Exposing a model to wild energies allows the artist to simulate drawing *en plein air*, lending vigor to illustrations that have been de-animated through work in a studio.

Documenting a plant in its natural habitat exposes the botanical artist to the context that shapes that plant, improving the artist's understanding, and potentially increasing the accuracy in which the plant is drawn. When access to a plant in its natural habitat isn't possible, gardening, photography, sketching, writing, and model-making can also inform the artist about how to accurately represent their subject. With a strong foundation of information to support accuracy, the botanical artist has more license to amplify hue, value, and composition to expand upon ideas presented by the illustration and include clues about a plant's environment. Through creative exploration and approaches to representation, the botanical artist has an opportunity to invoke the spirit of a place in their work and teach their audience how to see.

*(Top):* Studying paper flower models blooming as they are immersed in water.

*(Bottom):* Paper flower models, bud to bloom.

Photo © Erin Weston

## About the Author

Preston Montague is an artist, educator, and landscape designer who developed a passion for the natural world while growing up in the rural foothills of Virginia. Currently he lives in Durham, North Carolina, working on projects that encourage stronger relationships between people and their environment for the purpose of improving public health. Preston holds a Master of Landscape Architecture degree from North Carolina State University as well as bachelor's degrees in horticulture and fine art. His latest body of work, *Codex Carolinum*, is a series of didactic botanical illustrations using art and storytelling to foster natural science literacy.

Preston uses botanical illustration as a medium to teach drawing and observation skills in an effort to encourage environmental awareness and natural science literacy. Though he offers advanced classes for students with previous art experience, he is currently focusing on teaching basic techniques for quick sketching. Preston believes that there is a broader need to encourage the development of observation and visualization skills in the outdoors through spontaneous documentation without the pressure of creating labor-intensive, "finished" works of art.

*Contact Preston for commissions and teaching requests: naturalistnc@gmail.com.*

# *Illuminations* of a 3D Alphabet*

*—Carolyn Bartlett Gast*

**'A'** *(above)* was completed in 1981 while the author was still a scientific illustrator with the Department of Invertebrate Zoology at the Smithsonian. The painted and drawn parts of the image are watercolors and India ink on Bristol Board.

This image is sized correctly for stereoscopic viewing. See instructions on the next page.



*Reprinted from *Stereo World* 1991 Vol. 18(1) March/April with permission from the National Stereoscopic Association

*www.stereoworld.org*

***EDITOR'S NOTE: Several of the images in this reprinting are presented smaller than the original standard interocular distance would dictate. While this makes the normal method of "free viewing" (no special viewing lenses) trickier, it is still possible to see the stereo effect. Only image "A" above and the two at the end of the article ("G" and "Allover Alphabet" are correctly sized. Instructions for viewing are on the next page.***

***Introduction by Trudy Nicholson:***

*Carolyn Gast, along with Elaine Hodges, worked as scientific illustrators at the Smithsonian's National Museum of Natural History in DC. They recognized that, although there were numerous illustrators working with similar challenges, there was little connection between them. Fifty years ago she and Elaine changed the scene of separation by the founding of GNSI.*

*Why a Guild? This came from Carolyn's intense interest in all things medieval. Even before her retirement in 1985, she studied the methods of creating 3-dimensional effects and tried to convince the scientists who she worked for in the Invertebrate Zoology Department to let her add them to her staff illustrations. Failing at that, she explored using them on her own time, and continued after her retirement, to create an alphabet that captures the beauty and mystery even beyond the illuminated manuscripts of the Middle Ages, as seen in her 1991 article, reprinted here.*

For thirty-one years I was a scientific illustrator peering through a stereoscopic microscope to make two-dimensional drawings of the beautiful, highly sculptured organisms that I saw. By analyzing stereographic pairs of Scanning Electron Microscope photographs, I found the principles of placement of matching details to achieve stereoscopic results.

Being a long-time lover of Late, High Gothic (almost decadent) medieval manuscript illumination and decoration, when my scientists were underwhelmed by my ability to make stereo scientific illustrations ("But nobody has ever done that!") I decided to dash off the letters of the alphabet, incorporating medieval elements and using stereo principles. This turns the letters into little sculptural forms; i.e., 'A' has an imaginary tension axis between the front and back round dots around which the rest of the letter is three dimensionally structured. Four years later, about two weeks before I finished 'A' and was getting used to the disappointment of seeing the reality on paper contrasting with the wonderful image of it that I had held in my head for so long, an uninvited and unexpected visitor asked sweetly, "Well, if 'A' took you four years, when do you think you'll finish the whole alphabet?" The complete irrelevance and inappropriateness of the question startled me into questioning my motives and goals.

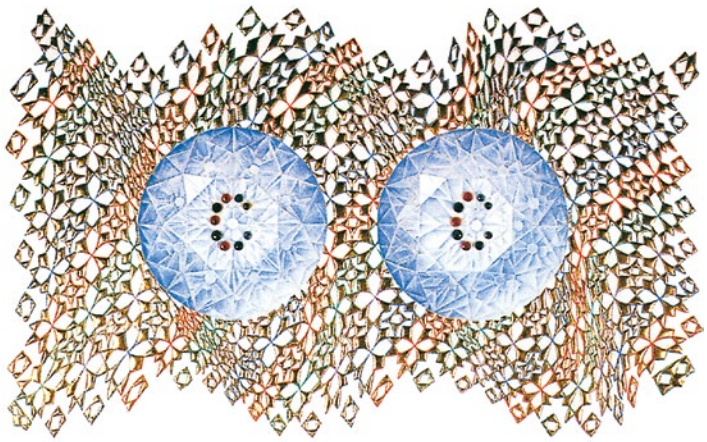
I found that I regarded each letter as a brand new opportunity to attempt to produce a wonderful bit of fantasy, and that I would never settle for anything less than right regardless of the time involved. 'B' took me 6 years, but before I stopped being a scientific illustrator in 1985 I had completed 'All Over Alphabet' [next page] just in case anyone asked that particular question again.

**'B':** While overall widths of the originals vary, most of the image separations are spaced for free-viewing [in the original article], with the central frame elements shared when the halves are fused. © 1982

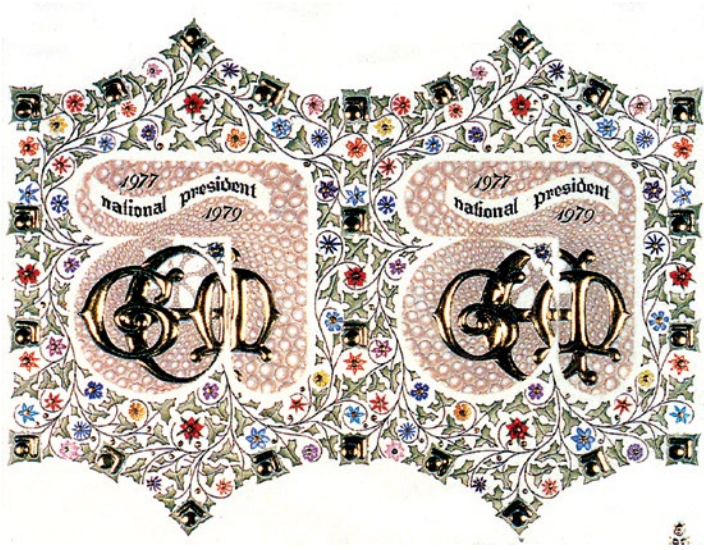
I have exhibited them in my retrospective exhibition at the Smithsonian's Museum of Natural History, at Northern Virginia Community College's Tyler Gallery and at the Cosmos Club in Washington, D.C. Eventually I plan to have a portfolio of quality reproductions made to accompany future exhibitions.

'GME' is a personal monogram that was presented to the outgoing national president of Artists Equity, which adopted the logo (outlined by the floral design) during her tenure. I painted the ivy leaves dark to light in reverse on the two corresponding images, and when I finally viewed them stereoscopically the leaves fluttered so wildly they made me sea-sick. I calmed them down by adding identical white lines along their stems.

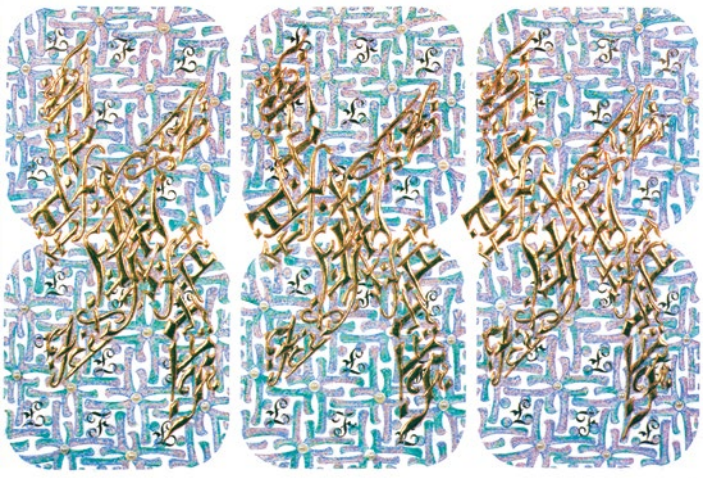
Once, by accident, I painted two different colors on corresponding areas and when viewed together the area glowed as if lit from behind. I've been trying to re-achieve this 'luster" ever since, with only moderate success, which is why I've painted blue, violet and turquoise against each other in "A" 's flowers. (Note the lower blossom on the center vine).



**'C':** The shaped base for the gold leaf is formed from built-up and compressed typewriter correction fluid. The C's are real rubies and sapphires.




**'GME'** is an illuminated monogram made for a special presentation but it clearly shows the "depth" potential of this truly mixed media format. © 1981



**'F'** can be fused three different ways. The pearls are (temporarily) fake but the gold is real. © 1989

### *How To View The Stereographs*

*A transcription of a letter from Carolyn to her mother-in-law: Monday, July 29, 1991*

Dear Ma,
Today would have been my mother's 91st Birthday, so I will celebrate by writing to you.
I am sending you a copy of Stereo World, the magazine for the National Stereographic Association, which has my latest illuminations on the back cover (enlarged) and it and 6 others inside with the article I wrote. I think that John, the editor, did a superb job of presenting them. I am especially pleased with the caption he wrote for the Dragon "G".
To view them stereographically:

1) Lay the drawing flat on a table surface with equally bright light on both sides of the drawing.
2) Leaning over the drawing hold one of your hands vertically parallel to your nose (thumb your nose at my drawing).
3) Relax and focus beyond the drawing until you see two hands, one on either side of a central drawing of three images.
4) Concentrate on the middle drawing and gradually remove your hand. The middle image will have details you focus up on, and details you focus down on. When you are comfortable with this you can explore each center drawing thoroughly.

The back cover [not reproduced here] is too big to try this on because it is further apart than your eyeballs, so try the dragon "G" inside [next page].
If you need to throw this away, please send it back to me instead, other wise this is yours to keep, with all my Love.
Affectionately,
Carolyn

**'G'** *(left)* is a more dramatic medieval fantasy which leaves only the question: *is the G for George?* © 1990

This image is sized correctly for stereoscopic viewing. Please see instructions on the previous page.

***Editor's Note:*** The editors are grateful to the National Stereoscopic Association (NSA) for their permission to reprint this article from *Stereo World*. We have had to reformat the text and images to fit our Journal. Three images ('A', 'G', and Allover Alphabet) are reproduced at correct size for viewing them stereoscopically.

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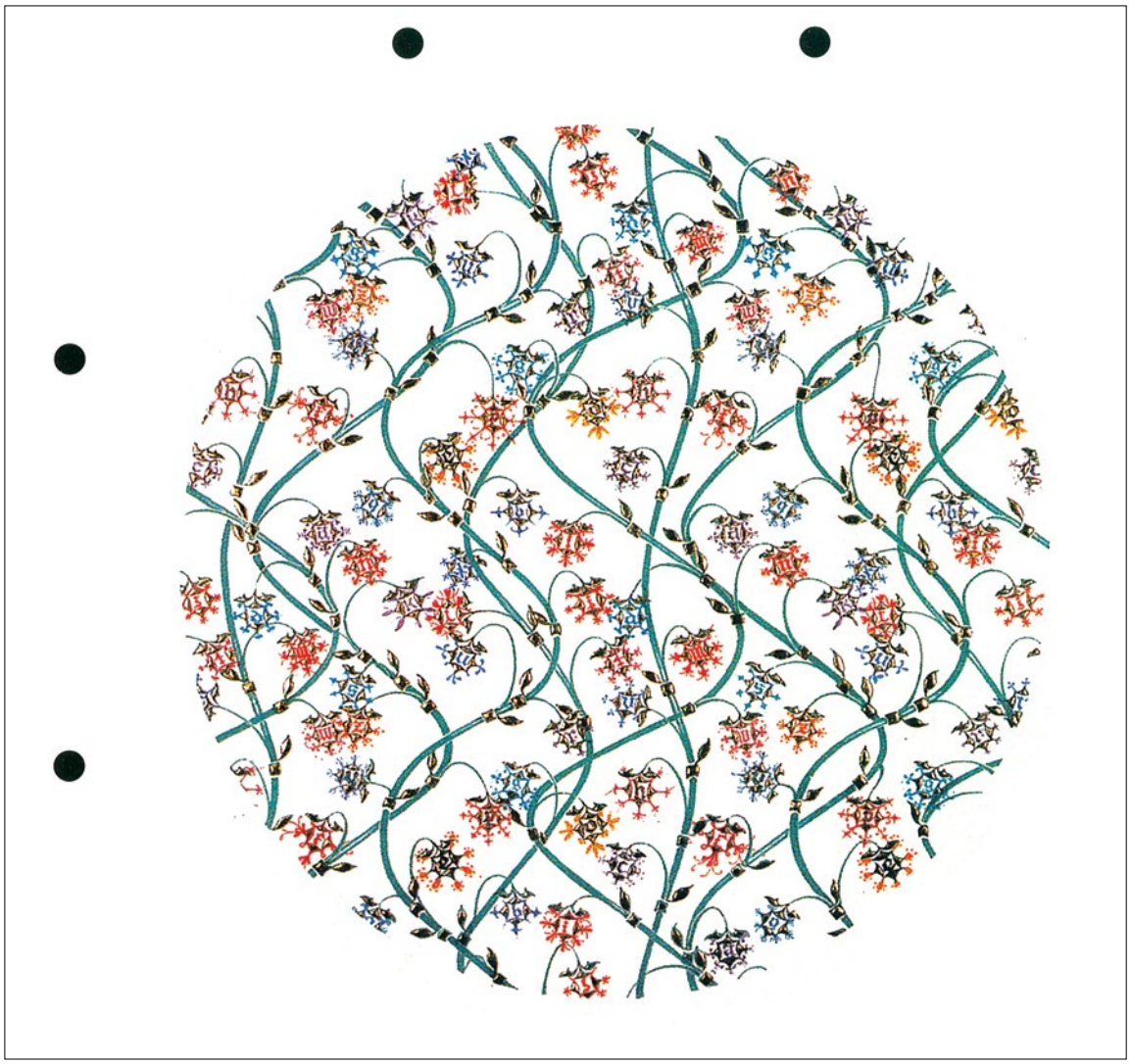
The NSA provides a link to a site that sells stereo viewers in case anyone has trouble 'free-viewing':

*www.3dglassesonline.com*

We are also extremely grateful to Michael Gast for his help and for providing Carolyn's letter.

**'All Over Alphabet'** *(right)* is a unique stereo image in more ways than may be evident at first. Fuse the spots at the top to see the vines with their crop of letters in 3-D, then turn the page on its SIDE and fuse the other spots. The work incorporates pairs for both horizontal and vertical fusion! © 1984

This image is sized correctly for stereoscopic viewing. Please see instructions on the previous page.



# LEAVES: What They Are, How They Work, Ways To Draw

*— Gretchen Kai Halpert*

What are leaves? What may help us draw them? This article relays some of the information dispensed in the GNSI conference workshop, *How to Draw Your Best Leaf Ever.* Not *How to Draw a Perfect Leaf*; rather, what information will help you and your drawings grow. We began talking about what leaves are, how to study them, draw them, and finally, ways to preserve them. The more we know of our subjects, the more informed our drawings, the more ways we learn to see, and the more accurate our artwork.

### Are you breathing? Have you eaten?

Leaves allow our existence. They give us oxygen to breathe and food to eat. Even if you're the most devout carnivore, everything you eat traces back to leaves.

### HISTORY, ANATOMY, PHYSIOLOGY

*Where did they come from? When? Why?*
It is widely believed leaves developed during the Devonian Period[1], when falling carbon dioxide ($CO_2$) levels required a more efficient method of photosynthesis. Photosynthesis is how plants make food for themselves. (They're not even thinking of us.)

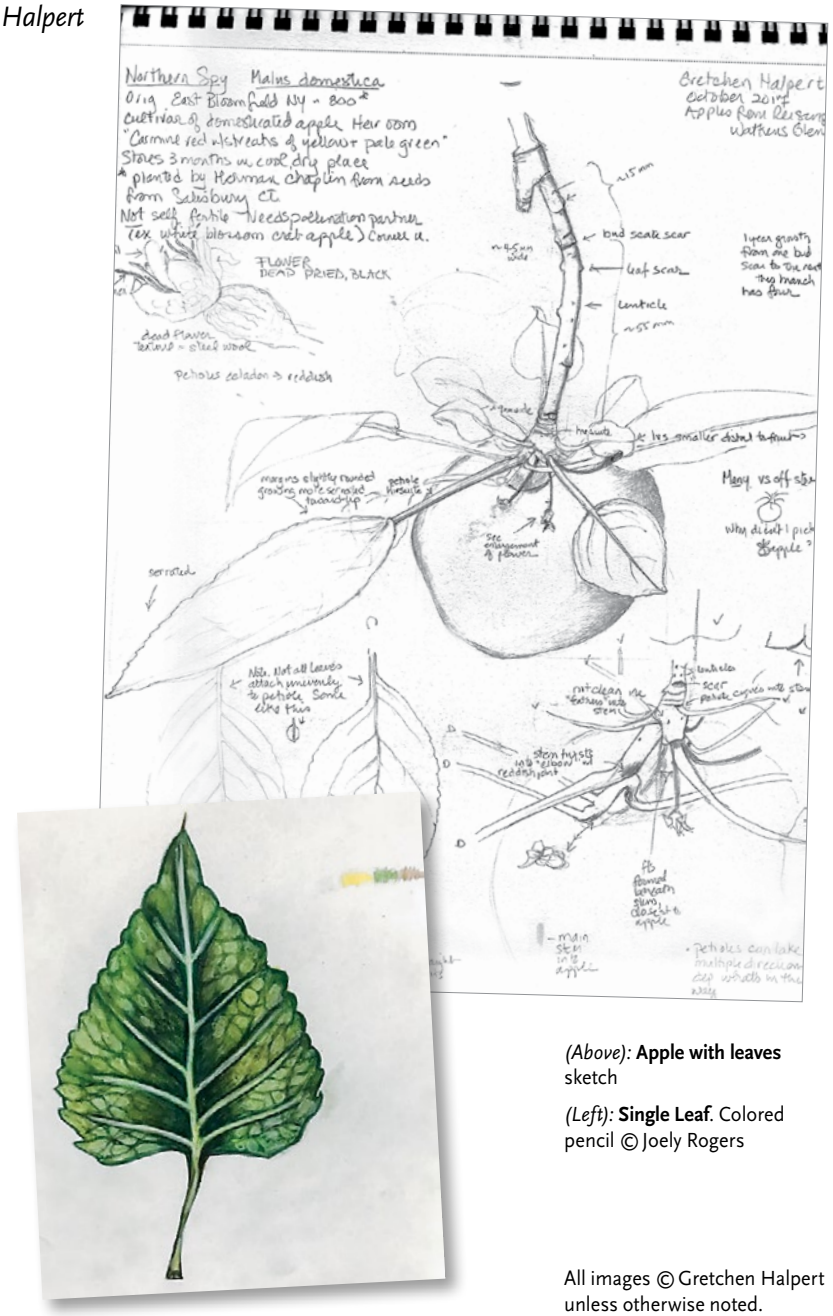
Very simply, using $CO_2$, light energy, and water ($H_2O$), leaves make themselves lunch in the form of sugar. This takes place in the presence of chlorophyll. Oxygen is a byproduct of photosynthesis.

Chlorophyll, located in chloroplasts, is the green pigment you see in leaves. You may notice the tops of many leaves are greener than the undersides. This is because there is more chlorophyll present where exposure to sun (light energy) is greater. Prior to the development of leaves, photosynthesis took place on stems. You can still see this in some desert plants, when there is not enough water to support leaves.

The backside of photosynthesis is respiration, where plants break down the food and oxygen produced during photosynthesis to release water. Transpiration is the process of water movement through the plant, some of which evaporates through its leaves, stems and flowers.

### What IS a leaf?

Botanically speaking, a leaf is a flattened or expanded portion of a stem. Leaves are made up of many of the same cells and tissues as stems, but are programmed for limited growth. A stem may continue growing long after a leaf has reached its growth limit. Leaves may lose their green color, harden, and be called spines. Stipules are modified leaves. The fleshy part of onions and cabbages? Leaves. Thorns? Not leaves. Thorns are modified branches or stems. "Thorns" on roses? These are not modified leaves or branches, just a protective outgrowth from the cortex and epidermis that pricks your fingers. Often, one can identify a modified plant part by its location. A leaf modified into a spine will be located just below an axillary bud or a shoot.

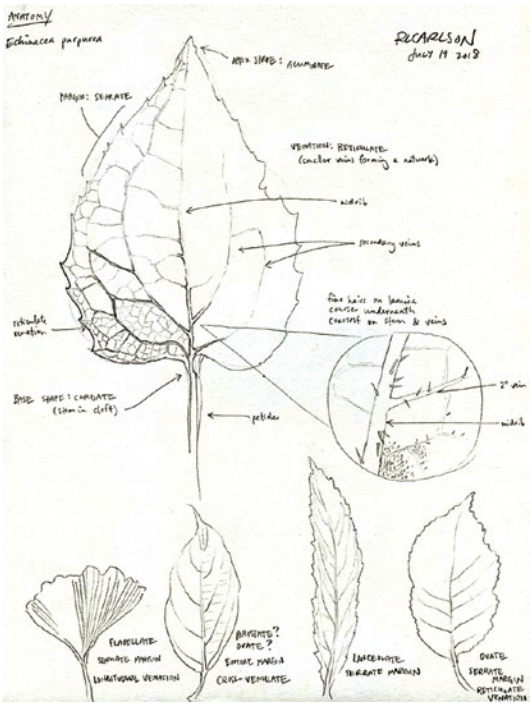


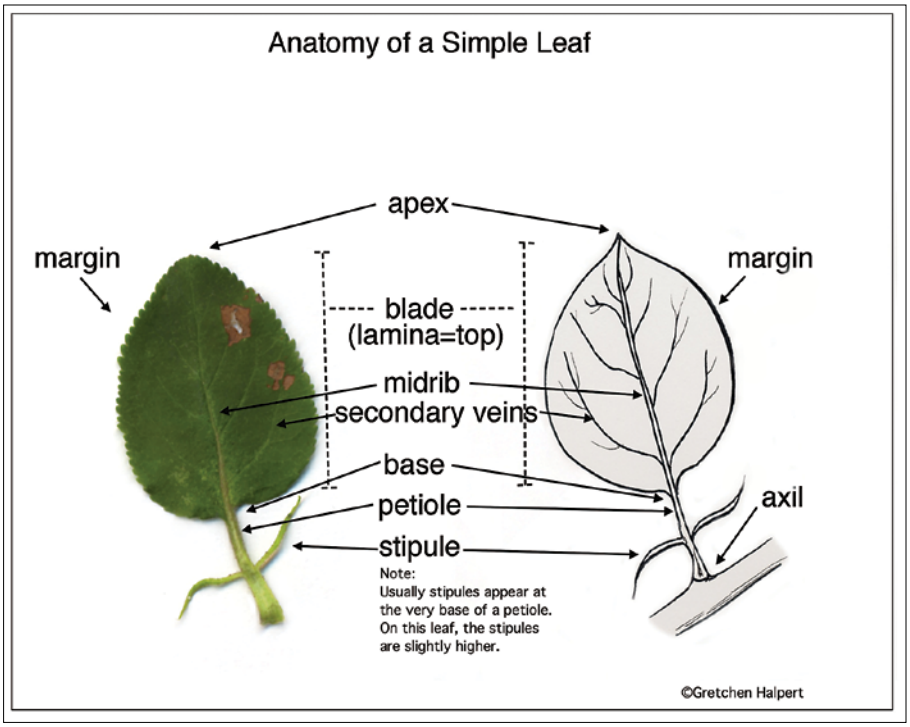

*(Above):* **Apple with leaves** sketch

*(Left):* **Single Leaf**. Colored pencil © Joely Rogers

All images © Gretchen Halpert unless otherwise noted.

[1] The Origin and Early Evolution of Vascular Plant Shoots and Leaves, C. Jill Harrison and Jennifer L. Morris. *Philosophical Transactions of the Royal Society B Biological Sciences* 373 (1739); December 2017






**Leaf anatomy,** *(above):* graphite
© Robin Carlson-Cornus

**Figure 1,** *(above right)*: Anatomy of a simple leaf

Leaves and branches are not the only structures with modifications. The fleshy leaves of the onion surround a central modified stem. Petioles are delicious, in the modified form of celery stalks.

Leaves take many forms. Look at the end papers of most botanical field guides and you will see diagrams of simple and compound leaves with varying shapes and arrangements. A simple leaf is shown identifying basic anatomy (Fig. 1).

### What do all these parts do?

Knowing the functionality of anatomy helps us be more observant and, thus, more accurate in our drawing.

*Blade*: photosynthesis
*Petiole*: structure
*Veins*: conduit for food and water. Support.
*Stipules*: produce energy like the blade. Stipules protect the leaf during the bud stage and are located at the base of the petiole. There are many variations of stipules, and they may also not be present in all plants. You won't find them outside of angiosperms.

### Monocots vs Dicots vs Eudicots

Flowering plants have traditionally been divided into two categories: monocots and dicots, short for monocotyledons and dicotyledons. In recent history, the term eudicots has replaced dicots. In general, because there are always exceptions:

*Monocots* break through the soil with one seed leaf. They exhibit parallel venation, fibrous roots, and have flower parts (petals, sepals, stamens, carpels) primarily in threes or multiples of three. Their vascular tissue is in scattered bundles and pollen grains have a single aperture. Examples of monocots are lilies, sedges, grasses, orchids and palm trees.

*Eudicots* are comprised of 200,000 species versus 55,000 species of monocots. Eudicots have two seed leaves, net venation, and tap roots. Flower parts usually occur in 4s and 5s, or multiples thereof. The vascular tissue in their stems is arranged in cylinders and pollen grains have three apertures. The largest plant families of eudicots are the buttercups, mallows, mustards, roses, legumes, mints, composites and carrots. Don't think simply "Carrots, I love them!"; nearly 4,000 species comprise this family.

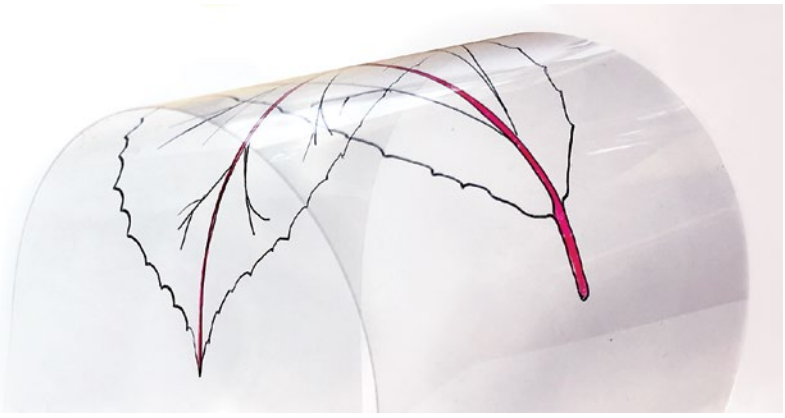
### Do you really need to know all this to draw a leaf?

Take a quick look at your plant's leaves. Are veins parallel or netted? Right away you know how many flower parts to look for, and what kind of roots lay beneath the soil. You understand something about the plant's internal structure without even looking.

There is, of course, much more to be said about the anatomy and physiology of leaves. During the workshop, I spoke briefly about xylem and phloem, my favorite gas exchange via stomata, turgor pressure, and whatever came to mind while students were drawing.

## DRAWING EXERCISES

We know leaves are not flat, yet we often draw them so. This is fine for field guides and diagrams, but not for learning to draw leaves with dimension. If you



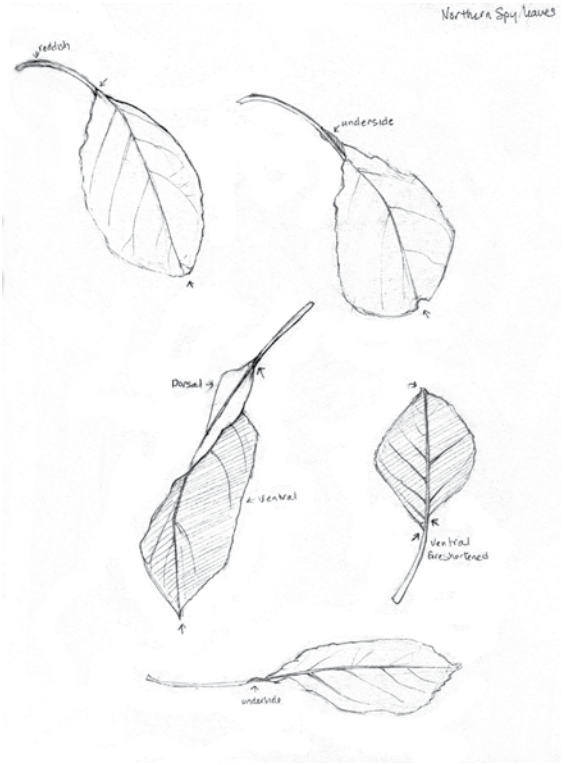




**Figure 2a and b** *(top)***:** Leaf drawn on acetate to place midrib correctly. Midrib in red.

**Figure 3** *(bottom left)***:** Drawing leaves in perspective.

**Figure 4** *(bottom right)***:** This beautiful *Plumeria* by G.D. Ehret shows a lapse in midrib accuracy. Can you find his error? © G.D. Ehret

can draw one leaf from multiple perspectives, you can draw every leaf on a plant, no matter which way it turns.

To understand perspective and foreshortening, it is helpful to look at the midrib. To make following the midrib easier, create a model by drawing a simple leaf on acetate or tracing paper (Fig. 2a). Hold this model at different angles. Turn it. Bend it. You will be able to see how the midrib turns on both the front and back of the leaf through the acetate or tracing paper (Fig. 2b). Then hold your actual leaf at different angles and practice drawing it (Fig. 3). Once you start looking at leaf paintings, it becomes obvious when a midrib goes awry (Fig. 4).

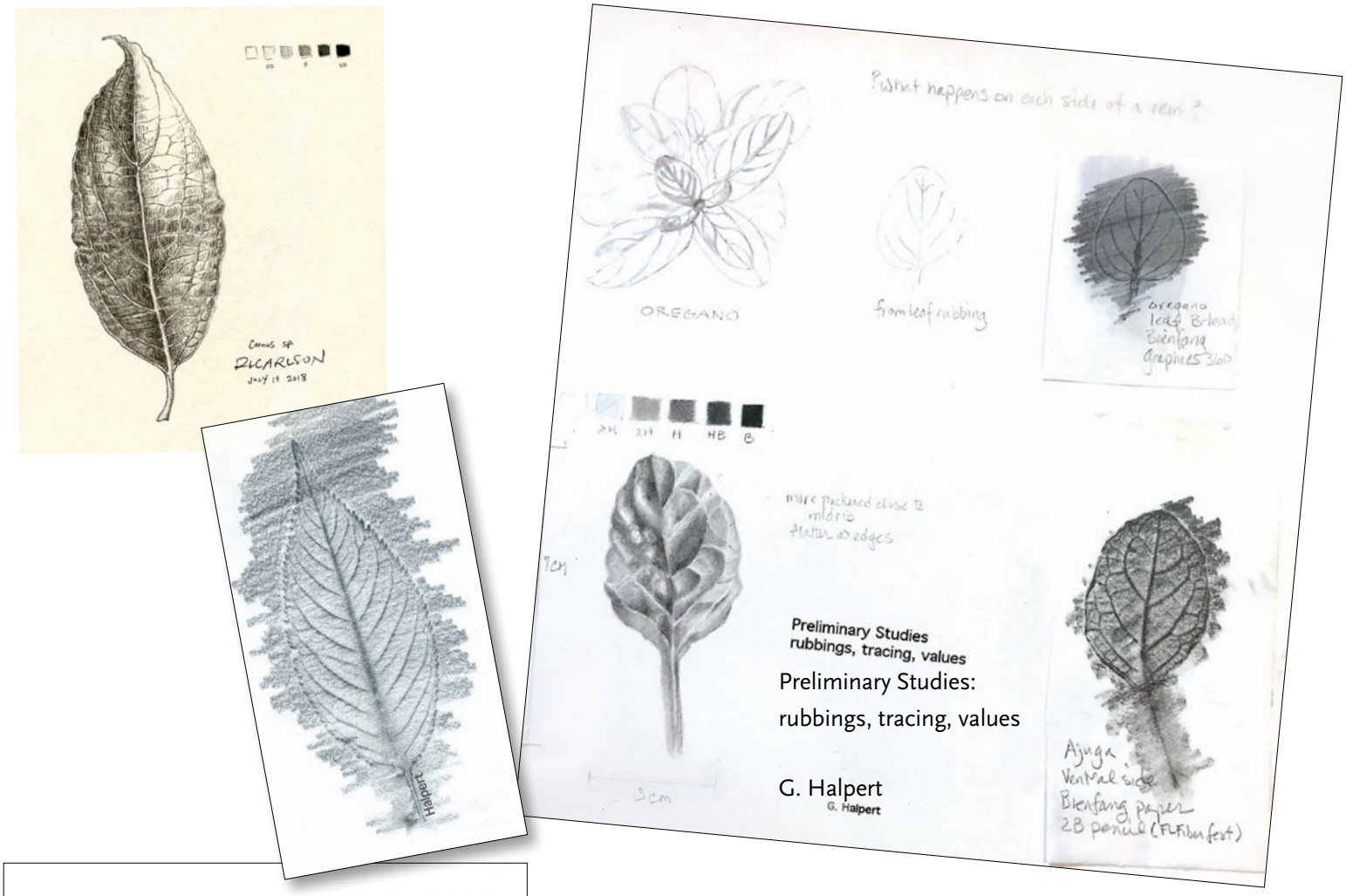
### Understand Planes and Values

Forget about your actual light source for the moment. Imagine light coming from your upper left, the traditional light source for scientific illustration. Wherever light hits will be lighter in value than that plane turned away from the light source. (For more information about light on form, refer to *The Guild Handbook of Scientific Illustration*, in print or on line).

Cut a leaf shape from scrap paper. Fold it, bend it. Draw in a midrib. Your paper model will reduce margin errors.

Make some bumps in your paper. Turn your model different ways, thinking about light intellectually, and then observing where light is actually hitting. Now draw your paper leaf, shading what turns away from the light. This will give your drawing form.

You can make another model by scanning a leaf on both sides, cutting out your scan and taping wrong sides together, so you have dorsal and ventral




**Single leaf; Graphite** *(top left)*: © Robin Carlson-Cornus

**Figure 5** *(middle left)*: Leaf Rubbing

**Figure 6** *(top right)*: Leaf Texture Practice

**Figure 7** *(bottom left)*: Leaf, Graphite ©Pamela Riddle

surfaces. Lay a thin wire down on the midrib and main veins. Bend and shape. Make another set covering the underside with foil tape for more flexibility of form.

These exercises above are to see form and value, without the distractions of wilt and surface detail.

### See Your Veins and Leaf Margins Clearly

Pick a leaf, any leaf. If you have a disposable one, make a rubbing so you can see the veins with fewer distractions. Use a soft pencil and try a few papers. Ventral veins are usually most prominent (Fig. 5).

If your leaf is precious, use a scanner or copy machine, eliminate color, and trace the paper leaf. You will easily see the venation pattern, margin, apex and base, and quickly understand your leaf. You will see that serrated edges fluctuate; they are not saws.

### Surface Texture

Use your scan, photocopy, or smart phone, with color discarded, to observe texture. Think of each bump as a three-dimensional form, a landscape. Each hill and valley will vary in value depending on where light hits. Use your intellectual lighting knowledge from your folded paper leaf exercise. *Note:* This step of surface texture is midway into your drawing, though you can practice technique on a small section in advance (Fig. 6). Here, it's helpful to keep a small value scale, showing five values, close to your drawing (Fig. 7).

## TEN STEPS TO DRAWING A LEAF

(Note: these steps are using real leaves. The paper and acetate models are to help you reach this point.)

1. Choose a leaf.

2. Study it, using your hand lens. Look at both sides.

3. Make an anatomical sketch and identify your leaf and its parts.

4. Review for yourself the purpose of each structure.

5. Choose your views. Practice foreshortening.

6. Make some gesture drawings. Gesture drawings help your hand, eye and brain see your subject, as well as place your leaf on the page (where do you want it? What size?). It also insures you won't run out of room. Include the midrib in your gestures.

7. Measure your leaf and sketch, making sure proportions are accurate.

8. Refine margins, apex, base and petiole.

9. Render the form using at least three values, preferably five or more.

10. Details! Now you can add details like surface texture, hairs, secondary veins (Fig. 7).

**PRESERVING LEAVES** (Fig. 8):

- Keep fresh in water, store in plastic in the refrigerator during your drawing project.
- Press in a plant press or between newspaper and blotter paper under weight. Leaf is flat, color is maintained to a degree, details are maintained.
- Air dry. Leaves will curl and stay this way forever. Color is somewhat maintained, sheen is lost.
- Microwave. Leaves dry quickly and thoroughly with similar results to air-drying.
- Spray dried and fresh leaves with fixative for varying amounts of sheen and preservation.
- Glycerin and water. Mix 2:1, soak submerged several days to weeks. Dry with paper towels. Leaves remain flexible and in natural form for months. Leaves may curl depending on humidity. Can press flat. Color is marginally maintained depending on specimen.
- Wax. Dip leaves 2-3 times in melted paraffin. Maintains shape.
- Bring a dried leaf back to life. Rehydrate by soaking dried leaf in water for 30 min to an hour to soften. Another technique for rehydration, used for flowers, is to add a drop of wetting agent (detergent) to water, add specimen to soak 20 minutes or microwave 30-40 seconds.
- Preserving fluids: herbariums may use FAA (formalin-acetic acid-alcohol) solutions to preserve leaves and plant specimens.

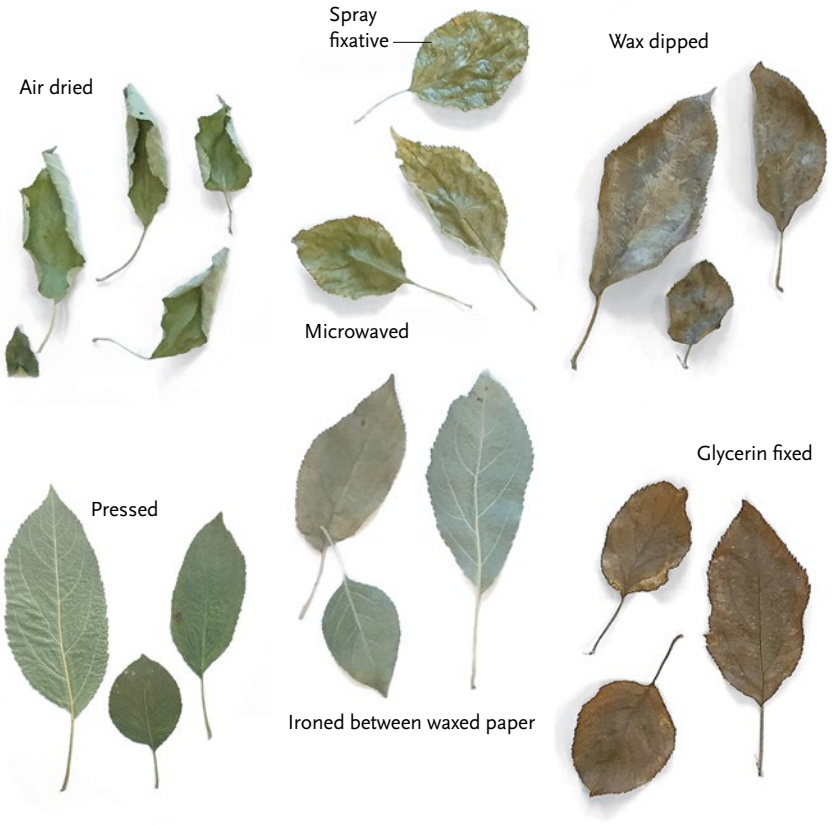



**Figure 8** *(above):* Leaf preservation technique

**About the Author**

Gretchen Kai Halpert has been combining art, science, and education for decades. Her educational background includes a degree in botany from Connecticut College, graduate work in biological illustration, and a certificate in scientific and technical illustration from the Rhode Island School of Design Continuing Education(RISD)/CE. Halpert worked as a cell and molecular biologist for 25 years while freelancing and teaching illustration at RISD/CE and Brown University, before devoting herself full time to freelance work and designing the Scientific Illustration Distance Program—an online certificate program.

Halpert is a Past President of the GNSI, a regular contributor to GNSI conferences, and an enthusiastic promoter of the Guild.

For more information on Halpert's Scientific Illustration Distance Program and her work, visit: *www.gretchenhalpert-distanceprogram.com, www.gretchenhalpert.com*

# Product Review:

## Inktense® Pencils by Derwent®

*— By Minnelli Lucy France*

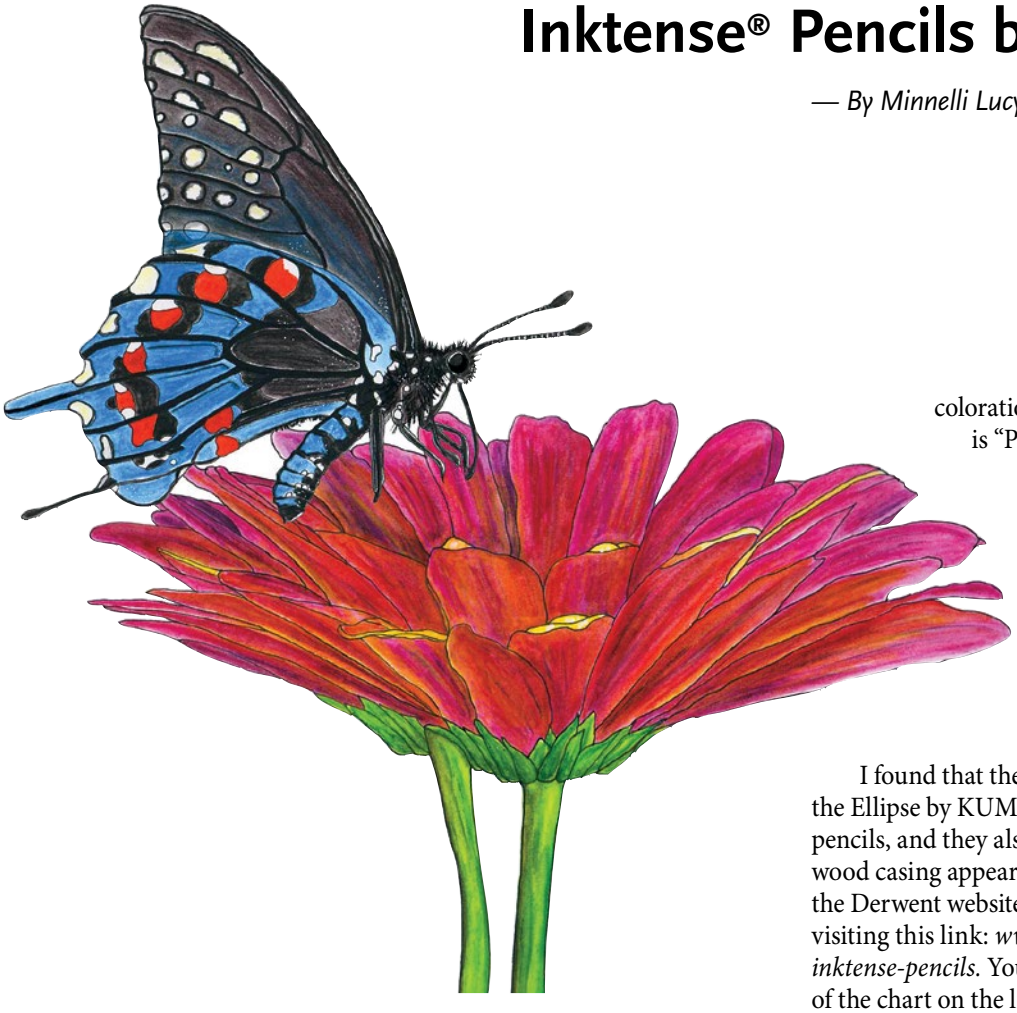


**Figure 1:** Swallowtail on Gerber, original on (9x12) mixed media paper in Inktense pencils.



Are you looking for art materials that may not trigger allergies as severely as paints with fumes, or solvents from oils and acrylics? This summer, I was desperate for just that. To this end, I re-evaluated my various art media and in doing so I ventured upon new discoveries and artistic possibilities. Inktense by Derwent was one of my favorite new discoveries and is now rapidly becoming one of my main media.

Inktense (a portmanteau of the words "ink" and "intense") is basically ink in the form of pencils. They are not to be confused with watercolor pencils for two reasons. While they are initially water-soluble, they are ink and do not reactivate with water once they are dry, making them permanent.

### PRODUCT DESCRIPTION

Inktense pencils have a similar design to many of Derwent's colored pencil products such as the pencil width, wood casing, color labeling, and pencil tip coloration. The Inktense brand slogan is "Pencil to Ink in Just One Wash." The pencils come in a blister of 6, tin of 12, wooden box of 18, tin of 24, tin of 36, wooden box of 48, tin of 72, and wooden box of 72. Derwent also sells Inktense blocks that can be used in conjunction with the pencils or independently.

I found that the standard KUM sharpener or the Ellipse by KUM was great for sharpening these pencils, and they also sharpen very smoothly. The wood casing appears to be good quality. You can visit the Derwent website for a complete color chart by visiting this link: *www.derwentart.com/us/us/4407/inktense-pencils*. You can also click the link on the left of the chart on the link provided to download their color chart via PDF.

### PRODUCT USAGE TIPS & TRICKS

I tried the tins of 12 and 36 pencils on various types of paper including Fabriano® Artistico hot press watercolor paper, Fabriano Artistico cold press watercolor paper, Arches® hot press watercolor paper, Arches cold press watercolor paper, Canson® Mixed Media paper, Strathmore® mixed media paper, Strathmore Bristol Board, and several sketchbooks. They all worked very nicely; however I truly enjoyed working with these pencils on the L'Aquarelle Heritage by Canson hot press, 140-pound watercolor paper.

These pencils are very heavily pigmented and can be used for a plethora of applications and techniques. While they have some similarities to India ink, colored pencils, watercolor pencils, watercolor tube paints, and watercolor half-pans, mainly they are very much their own, unique medium. When colored pencils are applied to paper, the artist always works

in careful mini-circles, or strokes with a very sharp point, understanding that the lines they make on the paper will remain exactly as they were applied, and despite the fact that solvent or blender pencil may be applied afterwards, the lines remain in the exact areas. The same is true for the Inktense.

Watercolorists can apply a high number of translucent and diluted layers to very thick or even semi-dry layers for a much heavier pigment load, and the same can be accomplished with Inktense. India ink dries waterproof as does Inktense. Aside from these similarities to the aforementioned media, these pencils can be used heavily in mixed media artwork, because they don't lift off the paper once they are dry even if rewet. One can then add areas in watercolor or simply work over the layers with other media.

Each 36-pack or higher brings a color liner called the Outliner pencil. The Outliner is particularly useful if one wants to outline an illustration and then work in the color for a bleed proof technique. There are also ways to accomplish this without making use of the liner. One nifty trick I learned is to take a sheet of sanding paper and mix the color on it before applying it to the surface. You may also choose to shade with a very light hand and blend out, or work on a heavier toothed surface, which allows for greater color blending on the actual area being colored. I prefer to dry draw color sections on folded parchment paper, and then take my wet brush and blend the shades I want prior to applying it on the watercolor paper where my illustration is being created.

I use this technique for light washes or during the underpainting phase.

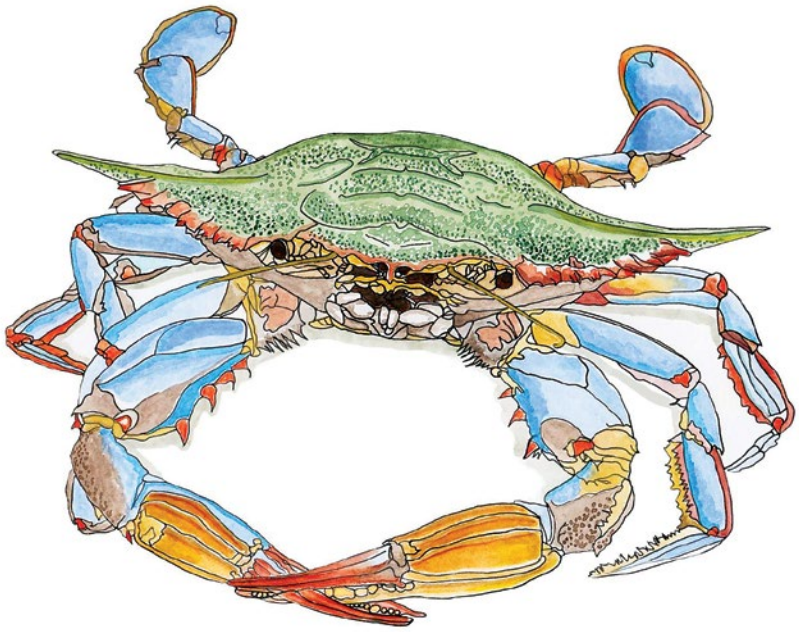
## PRODUCT INFORMATION

Derwent uses the Blue Wool Scale to test their products' lightfastness, and many of these pencils have a very good or great lightfast rating. According to the Derwent chart, "lightfastness refers to the chemical stability of a pigment under long exposure to light". The Derwent pencils that are marked with the highest level of lightfastness won't start to fade for over 100+ years, making them very archival for use in fine art. But, it is always a standard practice to place finished originals under UV glass in a spot away from direct sunlight when hanging fine art. Adding a varnish and working on acid free archival professional artist grade paper always increases protection. Creating artworks and then scanning them into your computer to prepare them for making fine art prints is also a fantastic way to make use of your artwork.

**Figure 2** *(below)*: Chesapeake Blue Crab *(Callinectes sapidus)*, original on (9x12) mixed media paper in mixed media (20% watercolor and watercolor pencils).

**Figure 3** *(below left)*: Inktense pencils

**Figure 4** *(below right)*: Inktense tin of 36



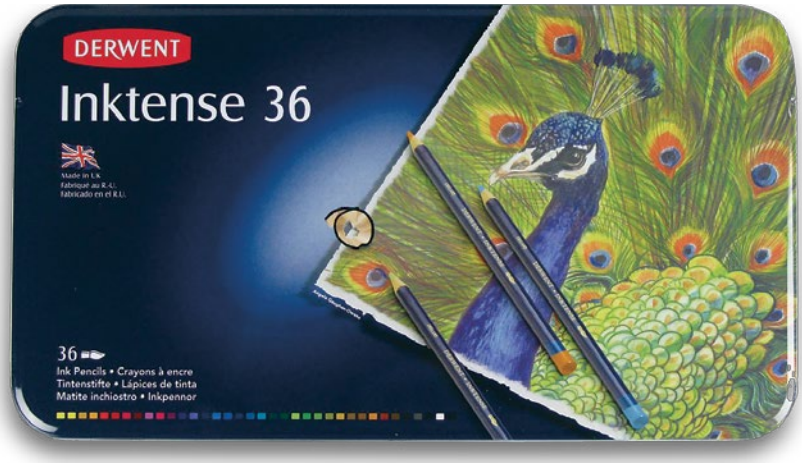



**Figure 5:** Blue Walking Iris, original on (9x12) fine watercolor paper in Inktense pencils; black added afterward, digitally.

A YouTube video of the rendering can be seen here: *www.youtube.com/watch?v=0L_G4tJyMQg&list=PL1YiRfcwtM1G-pnEt1q306s8_Vf1ocIr-U*

These pencils are all vegan friendly, and are biodegradable. Derwent Company won the Queen's Award for Enterprise for manufacturing their environmentally friendly art products. If you wish to read further on their awards you can visit this link via their website: *www.derwentart.com/en-gb/c/about/company/corporate-social-responsibility.*

## THE BOTTOM LINE

These pencils are a fantastic choice for those looking for a solvent-free, no-odor method of coloring your artworks without sacrificing lightfastness or archival quality. If you are looking for a vegan art product or an eco-friendly method of painting, Inktense are a great choice! They are easy to travel with, hold a great point, have a high pigment concentration, and blend beautifully. If you live in an area near a Hobby Lobby® retail store, you can use their 40% off coupon (one-per-day-per-customer) downloadable via their website (*www.HobbyLobby.com*) and use it to purchase their tin of 12 and try them out to get started.

Minnelli Lucy France is a natural science freelance illustrator. She works out of her home art studio based in Florida where she is from. Her work in Natural Science Illustration focuses on marine wildlife, botanical art, botanical scientific illustration which is only in grey or ink, and her insect work is specifically on Anthophila and Lepidoptera. She illustrates traditionally but on occasion digitally. She also cares deeply about biodiversity and conservation.

Her website is *www.MinnelliLucyFrance.com*


# Artwork Gallery Exhibition

*This installment of* RRRRipped From The List *begins as a discussion about insurance protection while exhibiting works in Galleries. It morphed into recommendations for framing options when preparing for a show, and shipping considerations.*

*—Stephen DiCerbo, RRRRipped Editor*

*[Editor's Note: The responses regarding framing and shipping considerations will be continued in a future Journal issue.]*



## ORIGINAL POST

*From: Karen Ackoff*

Date: Wed., 19 Oct 2016

Subject: Exhibiting Artwork

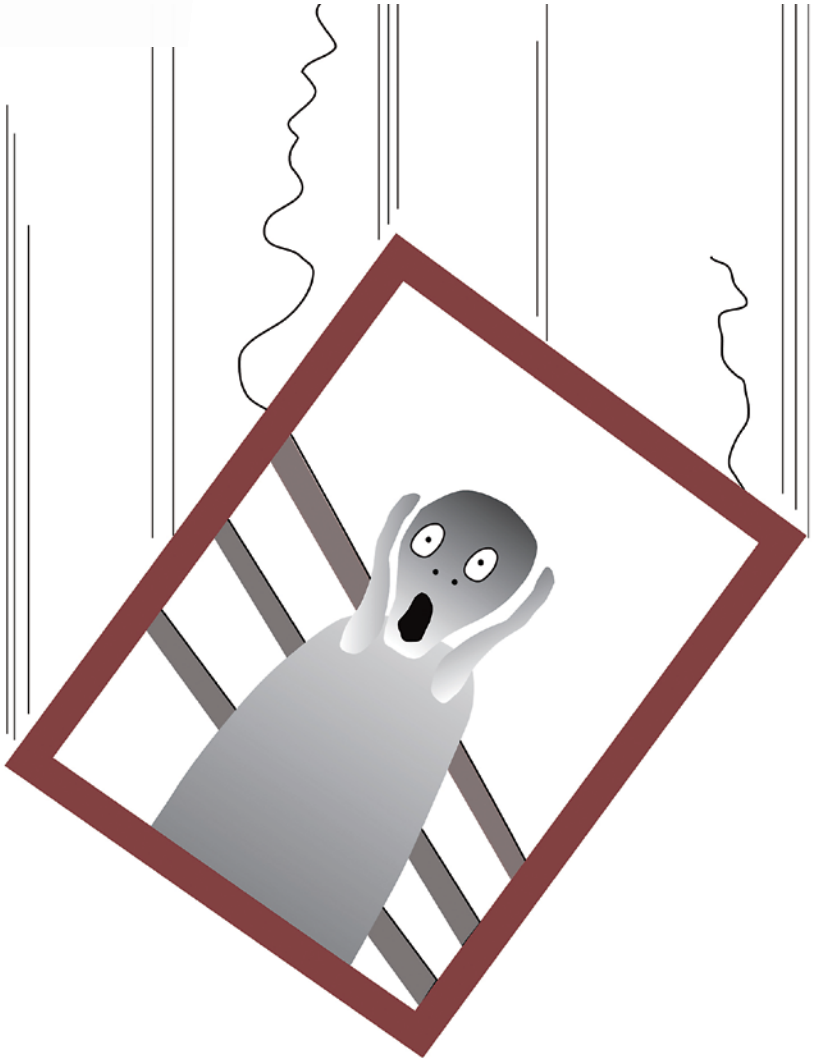
I've been entering a few exhibitions lately, and it's troubling to find that more and more galleries do not insure the work while it is in their possession. They want the right to use your images in their publicity materials, some require the work be for sale and of course they get a percentage of the sale price, and there is an entry fee. All of that is fine… and I am used to paying shipping/insurance there and back. But they don't insure it while it is in their possession.

My choice would be to get private insurance or not to submit. I did look into private insurance, but my homeowner's will only insure artwork up to $1,000, and my work is priced higher than that. I'm sure I could pursue other insurance companies, and I'm sure it wouldn't be cheap. If I can submit a print, then insurance is less of an issue, but there is still the cost of the frame and museum/plexi (no glass as the work is shipped).

The galleries profit from the exhibition and take no responsibility other than "reasonable care" (which is conveniently vague).

I'm surprised that this seems to be more and more common. Wondering what you have experienced, and what you think about this.

— Karen



## RESPONSES:

### GALLERY REQUIREMENTS

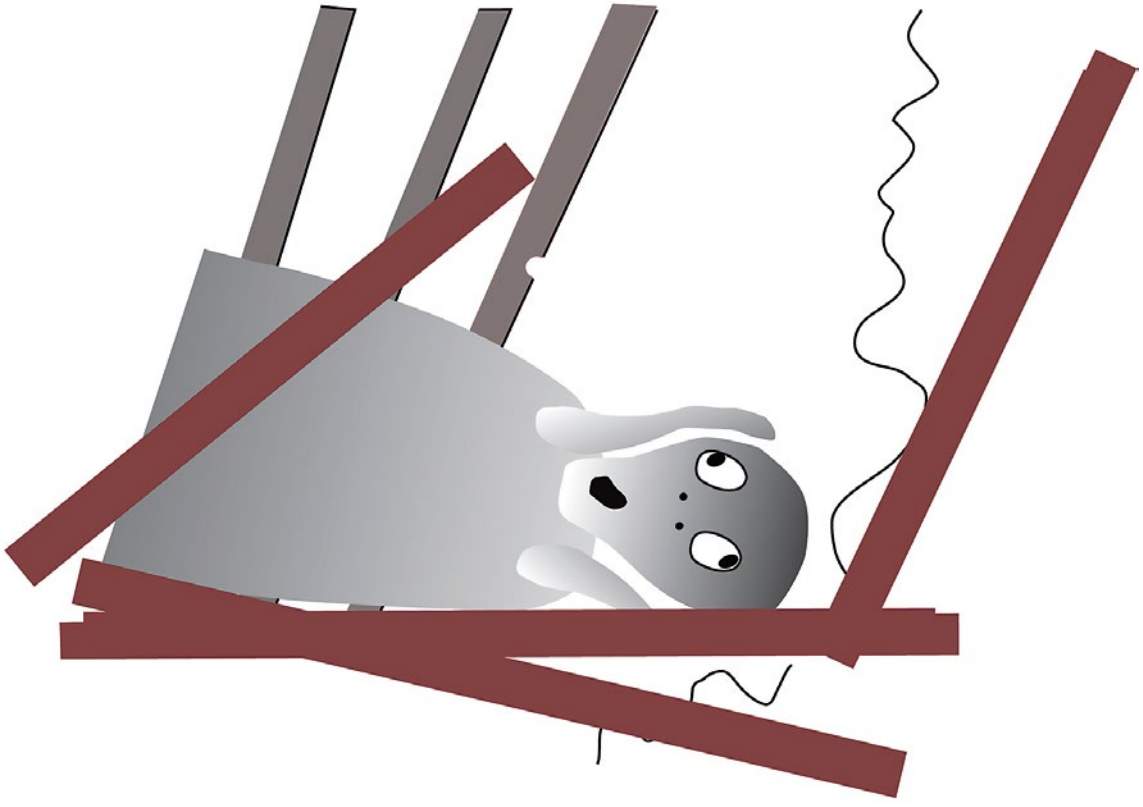
*From: Emily S. Damstra*

Interesting observation, Karen.

In my (limited) experience, most venues that regularly exhibit artwork do insure the art while it is on the premises. There have been exceptions, such as libraries and other non-commercial galleries, and in those cases I just decided I could live with the risk. Perhaps I have not exhibited art frequently enough in recent years to have noticed the trend you suspect—and if it's a trend I would not be surprised. I used to exhibit my work more frequently but have curtailed this practice because of the expense of framing and shipping artwork (and the hassle of sending it across the border).

What struck me about your story is your mention of entry fees. In my opinion, commercial galleries should not be charging entry fees or exhibition fees. I think in some cases when a venue charges an entry fee for a juried exhibit it is acceptable, but only if the fees come back to the artists in some way, such as being divided among the exhibiting artists and/or being used for awards.

Kudos to the GNSI for not charging an entry fee for their annual exhibit!



*From: Linda Feltner*

Hi Karen:

You have raised an interesting question.

I don't enter too many exhibits, just the few organizations that I support. So far, all of the venues for exhibits offer insurance while in the galleries, and in the traveling exhibits, too.

There was one group who was negotiating for a deal on group insurance, but oddly enough there was not enough interest. I assume then, that these other folks have independent insurance.

Talk about the fine print. I was going to join a regional organization, enter their exhibit, they were anxious to include me under the deadline. Then I read where in order to insure the painting while in their gallery, the artist had to sign over ownership in order to have the piece insured. They said that it was so they could get the price down on insurance. He said "Oh, we never really consider that we own the artwork" Whaaa? The contract says they DO..... so, Deal-Breaker.

I've recently heard some disturbing tales about treatment of paintings while at the gallery during installation. So "reasonable care" is extremely vague, you are right. It seems chipped frames and scored plexi don't rate high on claims. It largely supports fire, theft or damage to the artwork.

I've had several folks tell me to only use frames that can be touched up easily. Hmmm.

Thanks for the thoughts; it is something we need to consider.

*From: Sara Taliaferro*

One of the shows I recently had work in was one of which I was also a lead planner on. The gallery was one of our sponsors, and we held a series of events there and in the community that were associated with the event. The gallery had some insurance coverage and [was] vague about details, as

you say. We had ongoing discussions with their board and finally paid $100.00 through their policy so that the show was properly covered. We got a private donor to cover the cost. The entire undertaking we ran as a pilot project that we could document and cite as an example to use in grant applications for future exhibits, and we plan to discuss the insurance coverage with a variety of venues before applying for grant coverage so that we have an idea of the range of costs and possible insurance coverage scenarios we would face for any exhibition held in that venue.

This, I realize, is perhaps a less than helpful example. One could potentially, however, negotiate to pay additional insurance through the venue's policy to cover one's own work. It might also be an opportunity to start dialogues with various venues on the issue. Just because they "have never had an incident", it is worth exploring. This particular gallery had someone hurl a block of concrete through one of the front windows the month prior to our show. No security, no witnesses, no idea why. No artwork was stolen or damaged, but....Our show too had some pieces of significant value, so we took the extra steps to have multiple conversations and work out this arrangement.

We as artists pay a bit for the privilege of exhibiting, for sure....

.....

*From: Anne Runyon*

I stopped looking for/accepting exhibits for my original work, because it was just too costly for the return I received. I do exhibit in some local shows where I can deliver my art myself, when I am able.

I especially like the ones our GNSI-C hold ... because I like being in such good company! But I prefer to see my illustrations printed, and used where they were designed to be used.

.....

*From: Lynette Cook*

I've entered a good many shows over the years, and though I haven't noticed an increase in the venues that do not have insurance, there certainly are quite a few that require exhibiting at your own risk. In my experience these tend to be (though are not all) less prestigious galleries and nonprofits. In many cases I refuse to exhibit there; other times I grit my teeth and hope for the best.

Venues connected with the federal government may not provide insurance, either. I learned that when exhibiting at the Visitor Center at the NASA Ames Research Center.

Right: usually one's homeowner's insurance does not cover all one's artwork — especially when it is off the premises. I once looked into art insurance via other sources and found it prohibitively expensive. Some art organizations, with membership, at least used to offer a discount on standalone art insurance. I recall an art group based in New York that did so, but it's been too many years and I can't remember the name of it.

Most of the time, I've never had any problems to speak of, in terms of damage. The work I framed and exhibited in the science illustration category were all presented with metal frames and an acrylic glazing. [It is] Fairly durable. Over time, however, as they were shipped here and there and went up and down assorted walls they did get dinged up: scratches on the plexi, drill holes and touch-up paint on the frames, etc. Usually not so bad that they couldn't be put into another show, but scuffed up enough that a buyer wouldn't be super happy to purchase without some "refreshing." More recently I've gone to wood frames and find myself even more reluctant to have multiple unknown hands moving the pieces around as they are more fragile. As examples, I have some floaters that get chipped, requiring periodic paint touchup, and a couple other moldings with "depressions" on the edges where they got hit. The latter aren't easy to fix or hide.

Twice — in two separate solo exhibits — there were serious fires in the buildings. Both seemed to be from electrical shorts. Neither time was the art itself destroyed (maybe too bad. . . think of the insurance payoff?). However, some mats were ruined from water damage when the sprinklers turned on, and there was some smoke that got inside some of the pieces, even with those tight metal clips securing the backing board. Both venues had insurance and that insurance replaced the mats; thankfully I could haul the work to a framer and have him do it. So I didn't have to volunteer my time/labor. The smoke was removed by special "eraser" pads provided by the disaster company that was called in to help salvage what was left.

Given the fire experiences, I think it comes down to how much risk you're ready to take on. In a group show you'll have probably one or maybe two or three (at most) works in the exhibit. Not a terrible amount of risk. If it's a solo show and you have 12 — 20 pieces of art, I vote for selecting a venue that has insurance coverage. Note that insurance takes effect only when the work is on THEIR premises, not when it is in transit.

.....

*From: Lynette Cook*

In most cases, when there is an "open" call for a juried show, there is an entry fee. This is whether it is a commercial gallery, a [not for] profit, or other host organization. The show will be open to any artist who wishes to enter, though there may be some stipulations, such as geographical area. As another example, some shows are open to artists who will hand deliver only (i.e.. no shipping).

I suspect that one of the reasons GNSI does not charge an entry fee for their annual exhibit is that it is open only to the members. It is a benefit of membership. (I'm sure someone on this list can correct me if this isn't so.)

.....

*From: Karen Ackoff*

There are entry fees and entry fees. One exhibition I just submitted to is charging $25 for 3 entries (they insure the work when it is in their possession). Another (that does not insure the work) is charging $25 per entry, which can get steep for just 3 entries. College galleries, as long as they have a dedicated space, tend to carry insurance (this is just a generality, and may not apply to all). Community spaces seem less likely to carry insurance. Private galleries seem to go either way.

A friend of mine ran a small gallery for several years, and while his space limited how much he could display at a given time, he said insurance was affordable and ran him approximately $100 per show.

It isn't like we, as artists, are making piles of money, and the fact that we are being nickeled and dimed over things like insurance is a drain on our finances. When I ship work, I use a reinforced box expressly made for shipping art— the small size runs about $60 (Uline sells these; they include egg foam padding and can be reused many times). Shipping, with $1,000 insurance (even if the piece is valued at more than that), runs me about $45 one-way. So total shipping runs about $90. I understand galleries need to make a profit (except perhaps for spaces such as community centers and colleges and universities). But [there] needs to be a reasonable balance.

There is a gallery in Sofia, Bulgaria that runs a small print show every year, with entries from all over the world. [It is] Prints only. It is juried. You send the print, unframed, and they mount the work and it is returned at the close of the exhibit. There is an entry fee, which covers the cost of a very nice color catalog I think this is a nice way to run an exhibition, albeit for prints only.

Lately, I've been using wooden frames, but they are easily scratched [and/or] damaged. And UV plexi is very expensive. [It] might be time to go back to using a simple matte metal section frame and plain plexi for exhibiting work.

Just some thoughts [of mine].

.....

*From: Gretchen Halpert*

I exhibit several pieces 3-4 times a year, and have an occasional solo show. I decided a couple years ago that the show really has to be significant for me to invest in entry fees, framing, packaging and shipping fees (and time). Somehow it takes as much time to frame, package and ship as to do the artwork....or feels that way). I do not exhibit original artwork at any venue that does not hold insurance. For local venues the investment is much less, and I am more apt to exhibit just to share what I do.

I am also reluctant to pay entry fees that seem to be primarily "a Money Maker" for the gallery. Really, why do we pay to have our work accepted or rejected, on top of the 30%-50% commission, and cost of framing, shipping, etc.? I support the galleries by purchasing other artists' work through them.

Sometimes the entry fees are used for awards, sometimes to pay jurors, and/or for publicity. Non-profits tend to not charge a submission fee and have lower, if any, commission fees.

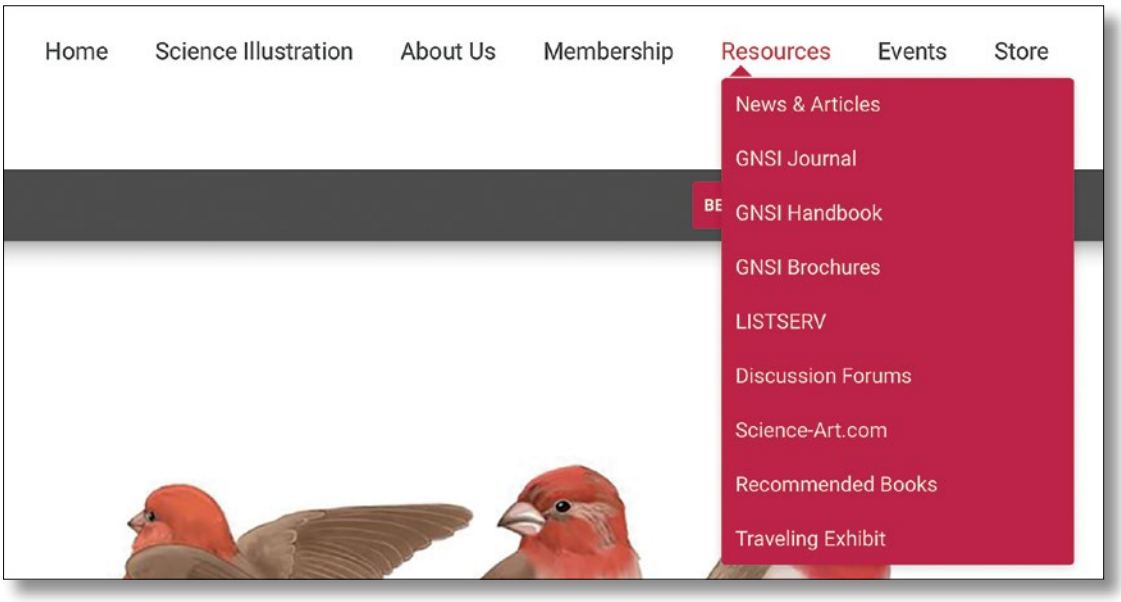
I keep track of all exhibiting expenses, especially entry fees, which offer no return unless you are successful selling the work. It's sobering.

Karen, your work is too precious to risk lack of insurance.

*[Stay Tuned!! The final two segments of this discussion, on framing and shipping, will be continued in a future issue of the Journal.]*

# Our BRAND NEW Website: gnsi.org

— *Diana Marques*
*GNSI Web Committee Chair*




Screenshot of new website homepage with drop-down menus.

Early this winter, you will be surprised with all the new and improved features at your same trusted URL of many years: *www.gnsi.org*. We are so proud about the upcoming GNSI website that we wanted to tell you all about it!

It's interesting to recall that our online presence began in 1998 with a one-page static website created and maintained by GNSI member and webmaster Heike Blum. Step back in time and take a look. We have archived this legacy website to preserve the institutional memory and history: *wayback.archive-it.org/10600/20180822190052/https://legacy.gnsi.org/*.

In 2009, GNSI member and webmaster Britt Griswold became friends and partner in crime with Ron Williams, a Drupal developer (Ron makes regular in-person and remote appearances at the Annual Auction!), and together they envisioned and implemented the current website. It was transformative, as membership registration and renewal became an online process, news and event information was more available, and the work of GNSI members was better represented. Nevertheless, time and technical limitations have kept parts of the website "in progress" for several years and technology advancements have presented alternative promising solutions. The time had come to rejuvenate GNSI's web presence.

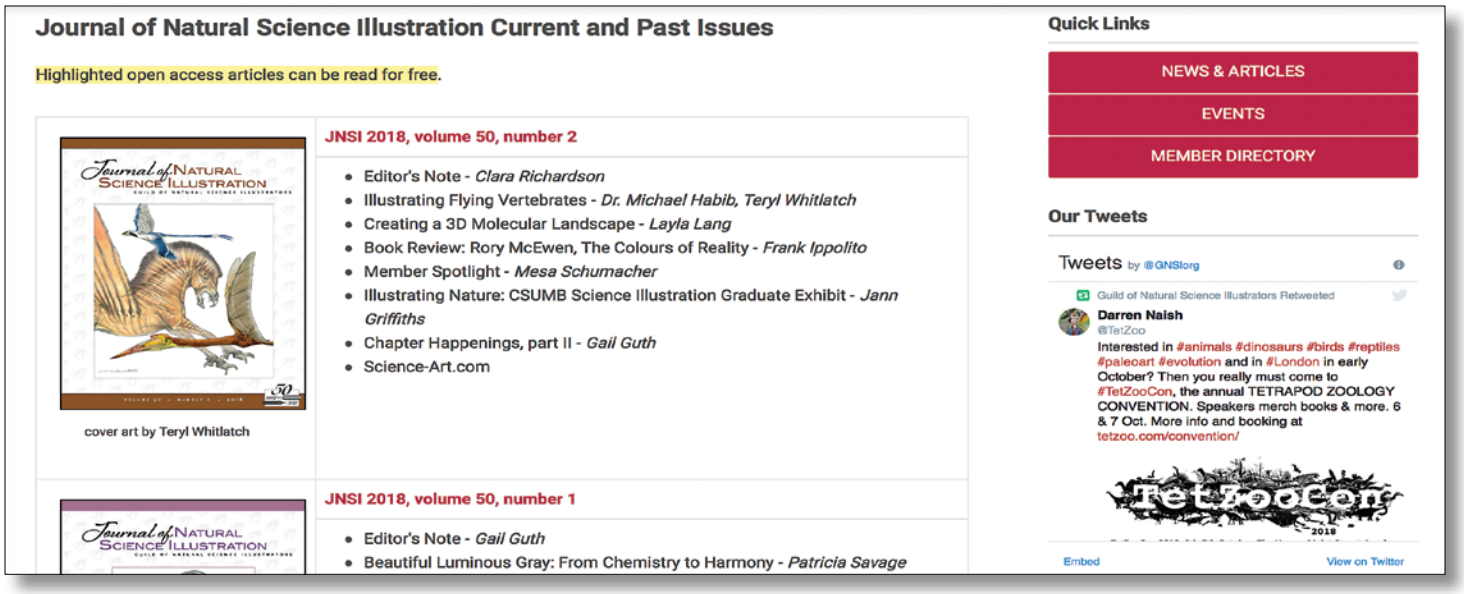
The GNSI Board appointed a Web Committee to find and implement these changes. Chaired by myself, and composed of Linda Feltner, Ikumi Kayama, Daisy Chung and Deb Shaw, we set out on a challenging and edifying endeavor that took us over a year to accomplish.

## THE RESEARCH

We started by compiling a ranked list of requirements for the new website. On the public-facing side, it was a priority to have the information structured and written in an intuitive and accessible fashion and include solid and functional features such as a member directory, event calendar and list, plus news and in-depth articles. A member-only area would have options for online reading and downloading issues of the *Journal of Natural Science Illustration*, and facilitating communication between individual members, GNSI Chapters/Groups, and the Board.

On the administrative side of the website, it was very important to have strong database and member management tools, event registration, and good reporting capabilities for ease of keeping track of GNSI's finances, member count and events. Above all, it needed to be a user-friendly platform that multiple volunteers and Board members could access, at different levels of permissions, without requiring extensive training.

The Web Committee was faced with two options: the first, employing a software developer to improve the existing website built on the Drupal platform, or rebuild the website on the same or on a different




Screenshot of new website showing member access to JNSI issues.

platform; the second, subscribe to an existing membership management service which allowed the Committee to be trained to build the website without an external developer, and make use of a back-end platform with existing tools designed for managing associations.

The research began. We consulted with multiple developers to get recommendations and quotes. We also enlisted a few volunteers (thank you Charles Chen and Bruce Kerr!) to join us in doing a thorough investigation into seven membership management services highly ranked in the market. Luckily, most of these services offer trial versions or have representatives ready to demonstrate the product. We also consulted with Bonnie Stein, the talented web developer who has worked with Deb Shaw for many years and, for the last six or seven, has been on the team that builds GNSI's conference websites.

The initial conclusion was that using the service of a developer to improve the existing website or rebuild it was no longer the best option for GNSI. Despite the control over look-and-feel and functionalities that come with starting from scratch, the process is considerably more expensive and time-consuming at the onset, and also more resource-intensive to maintain in the long run. Endless customization comes with a greater risk of technical and security concerns, which poses a challenge to GNSI and its volunteer-based structure.

Another conclusion was that, among the more competitive membership management services available, the one that suits GNSI requirements the best is MemberClicks (MC). The tipping points were MC's strong member-only area tools and member directory, the community tools (member-to-member messaging, social media-like features that can be used by GNSI Chapters and Groups, forums) and the possibility to integrate with third-party services to provide image galleries and Journal distribution. Of equal relevance was their prompt and reliable customer support and useful reporting options.

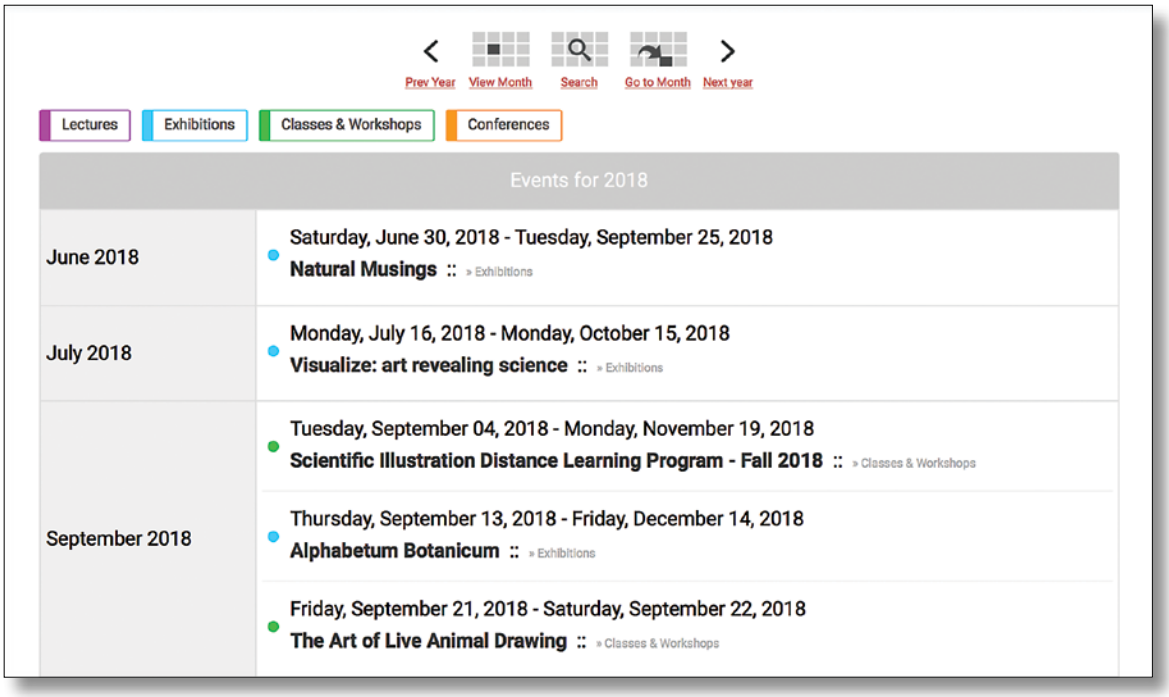
At the same time these technical aspects of designing and implementing the website were under study, the Web Committee was also looking into engaging one or more professional writers to generate the text content of the main menu webpages. After two stages of recruiting and sample reviewing, science writer Emily Underwood was selected to draft the majority of the webpages, according to assignments provided by the Committee.

## CONCLUSION

It has now been several months since we started developing the new website using MC's services and platform. Their online documentation and videos are very helpful, as are the one-on-one training sessions and email consultations with our dedicated onboarding specialist. All in all, the emphasis of the new website is on its functionality, we are striving to provide accessible and high quality content to GNSI members. And to do it in a way that is easy and efficient—to both our volunteers that are creating and distributing that content, and to Board members that are managing our membership and finances.

### We are especially proud of:

- The professionally-written and well-structured information about science illustration. We would like the new GNSI website to be the go-to place for anyone getting acquainted with the field, considering a career, or enrolling in an education program.




*(Left):* Screenshot of new website showing events for GNSI members.

*(Below):* Screenshot showing frequently asked questions.

- The new features regarding the *Journal of Natural Science Illustration*. Members and nonmembers will be able to see the full index of articles and easily read those that are open access. In the member-only area, all *Journal* issues will be available for reading online, using a beautiful full-page viewing mode, or for download. And nonmembers can purchase digital or print copies of any *Journal* issue.
- The very functional and complete member directory, which includes partial or full contact details according to the user's member status.
- The long list of resources including up-to-date news and in-depth articles in a blog format that can be easily searched, lists of events that can be viewed in a calendar format and filtered by categories, and many more features.
- The prominence given to GNSI's social media feeds which are carefully curated and always up to date.

We are now adding the final touches, beta-testing, and looking forward to finally launching the new website! The announcement will come with instructions for GNSI members, including the password to access the member-only area to update the directory profile. We are confident the process will be easy and self-explanatory, but there will be no lack of support for those who need it.

## Frequently Asked Questions

### Science Illustration and Illustrators

- What is science illustration?
- Why is a science illustration better than a photograph at visualizing science?
- What do science illustrators do?
- How can I become a science illustrator?
- How can I find science illustration classes where I live?
- How can I find a science illustrator to commission a project?
- I would like to interview a science illustrator – can you recommend someone?

### Guild of Natural Science Illustrators

- How do I become a GNSI member?
- What are the benefits of being a GNSI member?
- How can I get involved with GNSI?
- What does GNSI provide at no cost?
- What do GNSI Chapters and Groups do?
- How do I start a GNSI Chapter or GNSI Group in my area/country?
- Can I submit a proposal to write an article for the Journal of Natural Science Illustration?

Don't forget to let us know what you think of the new site, and report on any typos, missing links, or general improvements—your feedback is always welcome. Enjoy!

**The sight of this treasure-filled table elicited a collective gasp from a group of science illustrators. Followed by chills.**

— Jen Christiansen

Members view a collection of rare books at the Smithsonian. Photo © 2018 Mattias Lanas

# Conference Review: Five Decades from Grassroots to Golden Anniversary

— *Linda M. Feltner, GNSI President (2016–2018)*

The Guild of Natural Science Illustrators celebrated their 50th anniversary in Washington, DC, where it all began. From the labyrinth of offices in the expanse of the Smithsonian National Museum of Natural History, it was born of encouragement from Carolyn Gast *[see page 8]* to gather others together for monthly lunches to "talk shop" and share a passion for illustration. Fifty years later, the passion has endured.

Guild history grew through steadfast dedication and activity of our members. This sparked a community of professionals whose broad interests provided inspiration for decades. Our conferences have energized us with speakers with household names and those whose names are not on our lips, but their artwork and characters are international icons.

**Opening night:** Attendees viewed in awe at the breadth of talent shared by their colleagues. The GNSI's annual exhibit, *Visualize: Art Revealing Science*, was hosted by the prestigious AAAS in Washington D.C. and was open to the public July 16–October 15, 2018. Photo © 2018 [Unknown photographer]

**...when individuals come together to form a community like this, they become something greater than themselves.**

Our anniversary conference held true to that rich tradition. Speakers and presenters raised the bar for professional accomplishment and motivation. The core conference was jam-packed with plenary speakers in the mornings and concurrent speakers in the afternoons. It was hard to keep one's head from spinning after the captivating morning speakers to focus on new and intriguing topics, projects, and presenters of the afternoon.

The depth of knowledge and character of our speakers and presenters revealed not only the creative and passionate aspects of their careers but also their intensity and high standards of professionalism in art and science visualization.

## PLENARY TALKS

New for this year, live-streaming of plenary speakers for those who were unable to attend was provided by Media Mavens Jenn Deuscher and Brooke Weiland. Throughout the conference, near-immediate experiences were shared in posts on Twitter and Facebook. The hashtag *#GNSIconf* was used frequently to group conference content. Others documented their experiences in sketches and handwritten notes.

### Member comments on the speakers:

***Science Visualization at National Geographic***, by Fernando Gomez Baptista, Senior Graphics Editor at National Geographic Magazine

"I can't believe I'm in the same room as Fernando Baptista from *@NatGeo* my favorite illustrator ever!!!!" — Kelly Lance *@2Bfreelance*

"I enjoyed *@fg_baptista*'s … presentation very much. He sculpts, draws, photographs and animates—a renaissance man!" — Karen Johnson *@KAJNatureArt*

"...the audience was silent in rapt attention as he walked us through his career and techniques for producing award-winning graphics and

Sketch of a trilobyte. Illustration © 2018 Daniel Robertson.

animations. He was mobbed afterward during the break." — Britt Griswold

***Visualizing Science Journalism***, by Nancy Shute, Editor in Chief of *Science News*

"*@nancyshute* is getting our *#creativity* going with a 'how would you illustrate it' exercise. *#GNSIconf* begins!!!" — GNSI *@GNSIorg*

"We need to educate people/scientists/everyone really, on the need for good visuals." — Karen Johnson (from her notes)

***Visualization in Geology***, by Callan Bentley, Geology Professor and Contributing Editor for EARTH magazine

"Amazing geologic infographic presentation by Callan Bentley! Wow! The examples, techniques and suggested software/hardware camera rigs were great resources! Beautiful images!" — Amanda Almon *@Amanda_Almon*

"Really enjoyed *@callanbentley*'s talk on geological visualization. It was interesting, inspiring, and entertaining! Photo shows sat image vs LiDar of the same river." — Alisa Singh *@jellyandstone*

**Conference swag**. Photo © 2018 Mattias Lanas

"This morning's presentation about geoscience visualization by *@callanbentley* was superb." — Emily S. Damstra *@EmilyDamstra*

***Visualizing Science, Illustration, and Beyond***, by Jen Christiansen, Senior Graphics Editor at *Scientific American*

"*@ChristiansenJen* Totally Amazing presentation at *#GNSIconf* 2018! So much content, context, resources, and higher level thinking and considerations for the broader field of information design and experience! — Amanda Almon *@Amanda_Almon*

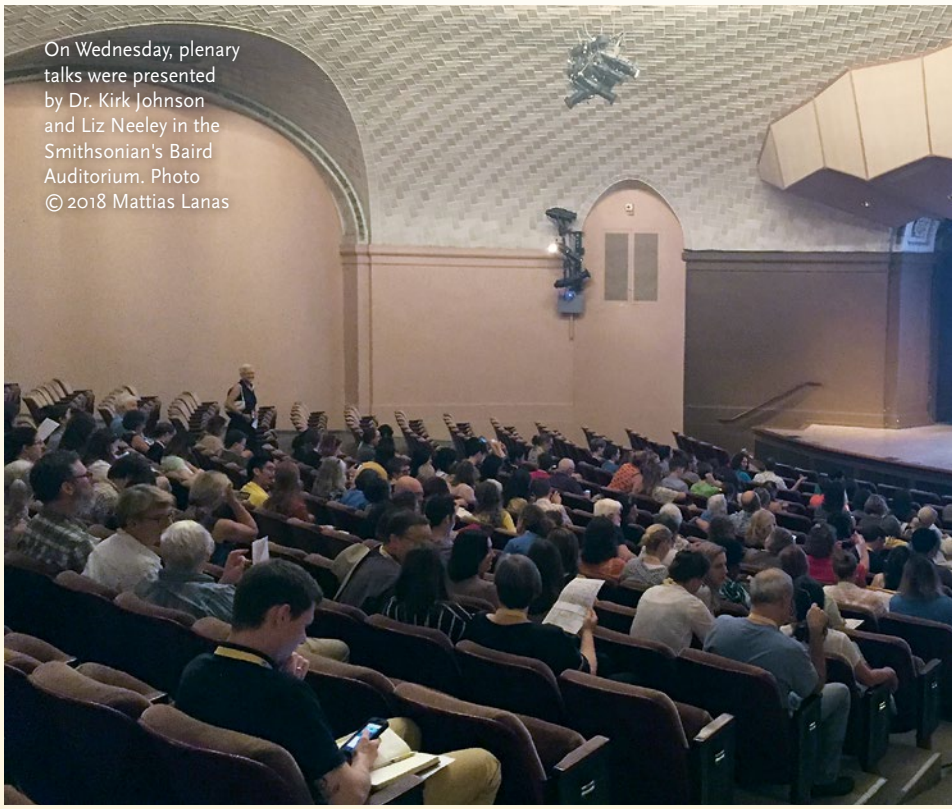
" 'There's lots to be learned by each of these clusters and I would love to see more cross-pollination…science illustrators across the full spectrum should learn from each other.' *@ChristiansenJen @sciam #GNSIconf #scicomm*" — GNSI *@GNSIorg*

***Fossils, Lost Worlds, and the Hero's Journey***, by Dr. Kirk R. Johnson, Paleontologist and Sant Director of the Smithsonian National Museum of Natural History

"Museums are our culture's memory and we should cultivate curiosity, creativity … in young people. His talk about the museum and all of its

*(Top left):* Fernando Baptista, Senior Graphics Editor at *National Geographic*.

*(Bottom left):* Nancy Shute, Editor in Chief at *Science News*. Photos © 2018 Britt Griswold



On Wednesday, plenary talks were presented by Dr. Kirk Johnson and Liz Neeley in the Smithsonian's Baird Auditorium. Photo © 2018 Mattias Lanas

millions of specimens made me wish I could see more of the museum than I had the chance to." — Karen Johnson

"He told the audience to mentor a kid and take them outside." — Amelia Janes

***Storytelling for Eyes, Ears, Brains and Minds***, by Liz Neeley, Executive Director of The Story Collider

"Liz Neeley, an EXTRA-Ordinary story teller and scientist, brings *@storycollider* to the *#GNSIconf* this morning. New ways to interpret stories; very memorable quote: 'Stories are how people fly in flocks.'" — Amanda Almon *@Amanda_Almon*

"I'm looking forward to revisiting essays about storytelling with data from the dataviz community…with *@LizNeeley*'s thoughtful words in mind." — Jen Christiansen *@ChristiansenJen*

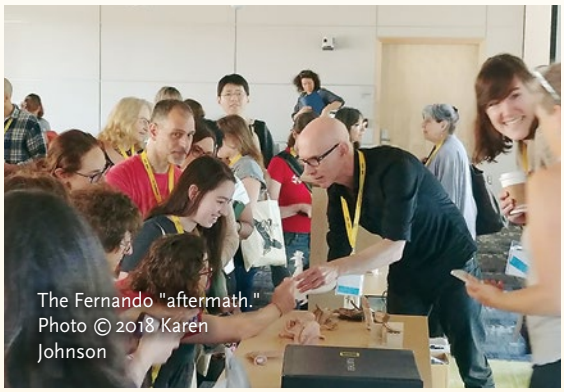
"*@LizNeeley* shares *@storycollider*'s definition of story: Believable characters, experiencing meaningful events, linked by profound causality. Why tell them? To give voice to experience, bear witness, construct identity, galvanize action. *#GNSIconf*" — Jen Christiansen *@ChristiansenJen*


*(Left):* Plenary speaker Jen Christiansen shared her diagram of connections between representative illustrations, illustrated diagrams, and data visualizations. Photo © 2018 @GNSIorg

**There's lots to be learned by each of these clusters and I would love to see more cross-pollination… science illustrators across the full spectrum should learn from each other.**

— Jen Christiansen

**Liz Neeley,** Executive Director of The Story Collider. Photo © 2018 Britt Griswold



The Fernando "aftermath." Photo © 2018 Karen Johnson

**Terryl Whitlatch and Michael Habib gave a joint presentation on creature design.** Photo © 2018 Britt Griswold

## PRESENTATIONS

***A Beacon for Broader Impact: Illuminating Science***, by Kim Moss

"*#GNSIconf* Kim Moss gave an excellent and informative talk about how health literacy can be approached by accessible, aesthetically beautiful and accurate scientific fine (public) art with information for all…Relieving anxiety and stress in confusing clinical situations. Go Kim!" — Amanda Almon *@Amanda_Almon*

**On a professional level, the conference is amazing in that it shows different career paths that we may not have realized are available to us.**

— Julia Lunavictoria

***Scientific Illustration on Scuba: Underwater Field Sketching***, by Kirsten Carlson

"Why sketch underwater? 'It's about muscle memory,' says *@kirstencarlson*. *#GNSIconf*" — GNSI *@GNSIorg*

***Murals: Minuscule to Monumental, My Journey***, by Biruta Akerbergs Hansen

"Showed how she went from moth genitalia to murals. Encouraged us to say 'yes' to projects that might be outside our comfort zone." — Karen Johnson

## A DAY AT THE MUSEUM

Internationally-renowned Kirk Johnson, Sant Director of the Smithsonian National Museum of Natural History and paleontologist, launched a memorable Wednesday with an overture exemplifying the expression of scientific storytelling. Narrative, imagery, objects, humor, and surprise are integral to the absorption of meaning. He shared his delightful collaboration with artist Ray Troll. His address demonstrated that the personality of a storyteller can engage their audience, and he easily made us all smile. His warm welcome led to an inspiring day at the museum.

**Scott Rawlings shares**. Photo © 2018 [Unknown Photographer]

Wednesday continued to be inspirational with Techniques Showcase demonstrations held in the acclaimed Q?rius Center and open to the public. Coordinator Catherine Miller facilitated a selection of experts that spoke with fellow members as well as many young people who listened in awe.

Behind-the-scenes tours were orchestrated to privately view the collections of human anthropological specimens, minerals, rare books, plants, insects, invertebrates, fish, and mammals. Museum curators and staff volunteered to provide

Glenda Mahoney and Erin Hunter visit Dr. Alexander Konstantinov and the Department of Entomology where they were once science illustration interns. Photo © 2018 Erin Hunter

Nancy Halliday and other members view rare books in the Cullman Library. Photo © 2018 Mattias Lanas

The Department of Physical Anthropology shared human anatomical specimens. Photo © 2018 Britt Griswold

*(Top):* Giant insects seen during the Smithsonian Entomology tour. Photo © 2018 Gretchen Halpert

*(Bottom):* Coral specimens in the Invertebrate Zoology Collection. Photo © 2018 Emily Damstra

The Smithsonian's Division of Birds maintains the 3rd largest bird collection in the world. Attendees were excited to see specimens of extinct passenger pigeons, an ivory-billed woodpecker, and even ostriches. Photo © 2018 Fiona Martin


The GNSI's annual exhibit, *Visualize: Art Revealing Science*. Photo © 2018 Britt Griswold

*(Above):* Trenton Jung unpacking Ried Psaltis's *Eohippus*. The GNSI is extremely grateful that Trenton took time off work to help with the exhibition! Photo © 2018 Joel Floyd

*(Below):* Sara Taliaferro, our President-Elect, wearing a cape created by the Great Plains Chapter. Photo © 2018 Lana Johnson.

unique opportunities for members to be guided through the magnificent collections.

## EVENTS THAT ENTERTAIN & AWE

*Visualize: Art Revealing Science*, the Annual Exhibition, was an exceptional evening held in the spiral gallery of the American Association for the Advancement of Science (AAAS). This prestigious venue provided an elegant combination of art and science visualization. This went well beyond a traditional gallery exhibit. The exhibit team received the highest praise for their extraordinary efforts to organize this complex interpretive exhibit that encompassed not only icons of early illustration but also today's innovations in both traditional and digital techniques. Five exhibit categories included augmented reality and animation. Two beautifully produced videos were created by Neil Orman and can be viewed on the *GNSI YouTube site (www.youtube.com/c/GNSIVideo)* *Guild of Natural Science Illustrators 50th Anniversary Exhibit* and *Diana Marques: Visual Science Communicator.*

An exhibit of this caliber does not spring up on its own. Exhibit Coordinators included Sally Bensusen, Charles Chen and Dakota Harr, along with assistance from Trenton Jung and Kathy Shermer-Gramm. Over twenty people contributed their expertise, including Taina Litwak for initial venue contact, historic and iconic works obtained and managed by Joel Floyd (entomology), Mary Parrish (paleontology), as well as Alice Tangerini (botany and archival framing). Special thanks go to the AAAS Art Committee, whose stalwart team assisted in creating this singular exhibition.

The Sunday evening Portfolio Viewing has become the unofficial kick-off of the conference. This has become a favorite opportunity to meet new people, refresh acquaintances, share new and innovative work and exchange business cards. We are a community who shares so generously, and the energy was held in the room until they had to kick us out at closing time.

Scott Rawlins reminds us of the history of the Guild at the Awards Banquet. Photo © 2018 Mattias Lanas

Our greatly anticipated Auction Night was once again highlighted with pure entertainment from our Master of Ceremonies John Norton and two mysterious Agents in Black (Dave Clarke and Sara Taliaferro). Rows of tables held extensive books, collectible bones, memorabilia, and handmade items—all to tempt

At the banquet: Molly Ryan, Candy Feller, Alice Tangerini, and Debby Roney. Photo © 2018 Taina Litwak

Debby Roney and Leslie Becker; Debby, as President of GNSI, hired Leslie. Photo © 2018 Taina Litwak

*(Left to right)*: M.J. Brush, Virge Kask, Taina Litwak, Clara Richardson, Lana Johnson, Frank Ippolito, John Norton, Tamara Clark, Gretchen Halpert, Patricia Cassady. Photo © 2018 Taina Litwak

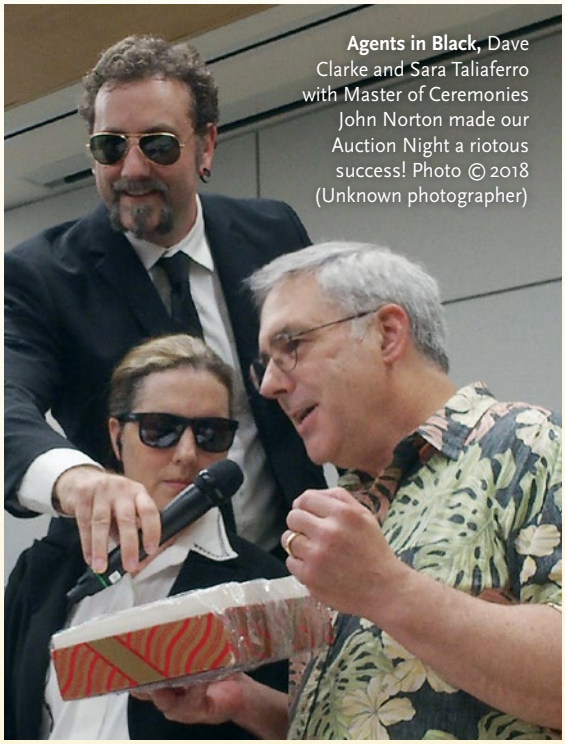
**The friendships and connections I made at the conference are priceless...**

— Julia Lunavictoria

the bidders for the silent auction. The live auction portion was entertaining with delightful antics from our MCs, while unique and creative treasures went to the highest bidders.

The Awards Banquet honored our fifty years of dedicated founders and charter members with an address by Scott Rawlins chronicling the history of the Guild (view at *www.youtube.com/channel/UC9h8X3orGuMHG4uhOQFpEfw*). His presentation included many historic photographs that reminded us of the Guild's early days. Honored guests this evening included Nancy Halliday (Founder) and Mike Gast, husband of Carolyn Gast (Founder). Mike Druckenbrod, Candy Feller, Trudy Nicholson; past presidents were also recognized for their long-standing dedication and passion for the Guild.

The banquet is also a time where we pause—in the midst of often hectic schedules, powerful programs, and workshops—to thank special dedicated members who often work



**Agents in Black,** Dave Clarke and Sara Taliaferro with Master of Ceremonies John Norton made our Auction Night a riotous success! Photo © 2018 (Unknown photographer)

*(Below, top)*: Sara Taliaferro auctioning a Trudy Nicholson original (scratchboard with color washes).

*(Below, bottom)*: The silent auction. Photos © 2018 Britt Griswold.

*(Above, top)*: Fernando Baptista reminded us of the importance of using maquettes and natural light. Photo © 2018 Daisy Chung

*(Above, bottom)*: Nancy Halliday gave us expert tips in watercolor layering. Photo and artwork © 2018 Mattias Lanas

behind the scenes for the benefit of the entire membership. Three Special Awards were presented this night, the highest recognition the Guild can bestow. I was honored to present them to Gail Guth and Britt Griswold (GNSI Special Projects Award 2018), Kalliopi (Kapi) Monoyios (GNSI Special Service Award 2018), and Diana Marques (GNSI Special Projects Award 2018). *[See Awards article starting on page 40 of this issue]*

## WORKSHOPS & FIELD TRIPS

The first three days of speakers and events were intensive with back-to-back presentations and mind-boggling take-home messages. The following days—Thursday, Friday, and Saturday—presented opportunities to slow down and become inspired, awed, and instructed through specialized workshops and local field trips. The Workshop Coordinators (Trudy Nicholson and Quinn Burrell) invited local, national, and international distinguished instructors to provide such individual experiences. Many provided learning opportunities often unavailable anywhere else. My advice: Class sizes are limited for a quality experience, so always remember—Sign. Up. Early!

**Reason #473 to love the GNSI 50th Anniversary Conference... I pet a raptor!!! *mic drop***

— Cheryl Rausch (Facebook)

Our adventurous field trip members experienced both rain and sunshine, and posted rave reviews and photos from their personal experiences. GNSI social media posted and shared the richness and diversity of field trips facilitated by the Field Trip, Transportation, and Volunteer Coordinators (Mary Ellen Carsley, Shannon Russell, and Lindsay Wright). Members wrote:

***Infographics and Sculpture***, with Fernando Baptista

> "It was such an honor to take a workshop with Fernando Baptista, ... I wish it could have been two weeks instead of two days...maybe next time, Fernando???" — Kelly Lance *@2Bfreelance*

***Drawing Birds: Live in the Classroom***, with Linda M. Feltner

> "An unbelievable privilege." — Charon Henning *@TheOddAngel*

> "This was a truly magical moment, as was every moment with Linda and the birds—never to be forgotten or surpassed." — Trudy Nicholson (Facebook)

> "It was also a huge joy to attend your workshop, thank you for sharing your knowledge and passion, it was wonderful to listen to your sensitive comments. Honestly such a dream!!" — April Brust

***Replicating Traditional Media Effects in Photoshop***, with Justine Lee Hirten

> "Aside from the wonderful presentations and plenaries…I attended in a superb day-long workshop by Justine Lee Hirten on making digital illustrations look more like traditional media." — Emily S. Damstra (from her blog) *http://emilydamstra.com/news*

***Sculpting Beetles in Polymer and Wire***, with Karen Johnson

> "Karen's beetle sculpture class was an informative step-by-step introduction to the use of oven-bake clay to create a model using my favorite subject matter, insects. All of us who took the workshop benefited greatly from her sharing years of experience mastering the technique she uses to create amazing insect and plant jewelry." — Joel Floyd

***Horns, Hooves, and Hair: Modeling Ungulates in ZBrush***, with Quinn Burrell

> "Quinn's class was extremely useful in helping me conquer my fears of dealing with the ZBrush interface." — Britt Griswold

***Let's learn about botany!*** with Mervi Hjelmroos-Koski


*(Above left):* Trudy Nicholson holding a burrowing owl (*Athene cunicularia*) in Linda Feltner's workshop *Drawing Birds: Live in the Classroom*. Photo © 2018 Karen Johnson

*(Above right):* Watercolor sketches of a crested caracara (*Caracara cheriway*) and barred owl (*Strix varia*). © 2018 Carrie Carlson

*(Left):* A graphite sketch of Juan the caracara (*Caracara cheriway*). © 2018 Carrie Carlson

**This was a truly magical moment as was every moment with Linda and the birds—never to be forgotten or surpassed.**

— Trudy Nicholson

Owl sketches. Illustration © 2018 John Higgins

*(Above):* Linda Feltner gave us a wonderful opportunity to draw and observe live birds in the classroom. Photo © 2018 Linda M. Feltner


*(Below):* Digital tablet sketches. © 2018 April Brust

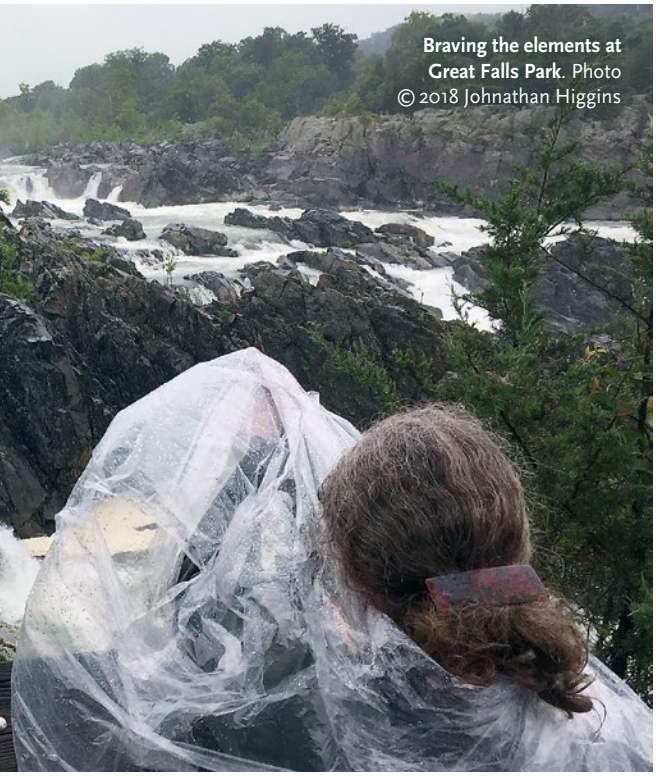
**Not even a historic 4.6 inches of rain could keep our members from hiking Great Falls and fossil hunting in Scientists Cliffs yesterday!** *#GNSIconf #totallyworthit*

— GNSI *@GNSIorg*

Emily Damastra, hunting for fossils at Scientists' Cliffs. Photo © 2018 Carrie Carlson


Behind-the-scenes tour of NASA Goddard Space Flight Center. Photo © 2018 Deborah Shaw

Sketching at Great Falls Park. Photo © 2018 Karen Johnson



**Braving the elements at Great Falls Park**. Photo © 2018 Johnathan Higgins

*(Top)*: Quinn Burrell's Zbrush workshop. Photo © 2018 Britt Griswold

*(Bottom)*: 3D renderings created in Quinn's workshop. Artwork © 2018 Yun-Kae Kiang

"I learned so much that now I know less." — Ikumi Kayama

***Digital Watercolor: The Workshop***, with Sarah Anne Dahlinger

"Sarah is a knowledgeable, patient teacher. She supplied to us and demonstrated a new set of PS brushes that behave very differently from ordinary brushes and have been extremely helpful for me in completing my current book project. Can't beat that!" — Marlene Donnelly

***Coquille Board: Classic and New***, with Scott Rawlins

"While I had used coquille board in the past this was a great refresher, with new tips and tricks as well. As always, Scott was a terrific teacher with a vast body of knowledge to share." — Marlene Donnelly

***M for Maned Wolf***, drawn in Karen Ackoff's workshop by Marilyn Heilbronner. Illustration © 2018 Marilyn Heilbronner

***Scientists' Cliffs***, with Mary Ellen Carsley

"…Mary Ellen Carsley was amazing—had homemade date bread, and hot coffee waiting for us when we arrived, and gave us a wonderful lecture about the area, history, the fossils, and how to make walnut ink (and vine charcoal), as well as giving us homemade walnut ink in TSA-approved, leak-proof containers!! A magical day." — Deb Shaw (Facebook)

Sketches from Great Falls Park. Artwork © 2018 Karen Johnson

***NASA Goddard Space Flight Center***, with Britt Griswold

"What a dream day. My brain is full and I'm all out of goosebumps. Many thanks to all the great people @NASAGoddard for sharing their work, our guide @pcharpoon, & @GNSIorg's @GNSIsciart" — Jen Christiansen *@ChristiansenJen*

## OUT-IN-FRONT & BEHIND-THE-SCENES

Our Conference Chair, Joel Floyd, deserved the highest praise for his commitment to the Guild and devotion to this conference. His organization, attention to detail, and kind patience, led the team throughout. Cordelia Norris (Housing/Meal Coordinator) posted the following: "…to congratulate everyone on the committees, especially Joel and Ikumi, for keeping all of the plates spinning, and all of the many volunteers on a very successful conference…it was amazing how smoothly it went given all of the logistical challenges that go with being in DC."

Drum circle. Photo © 2018 Helina Chin

A conference of this significance cannot be accomplished without volunteers who devote time away from their productive lives to contribute either a little or a lot. Each task is important and adds to the camaraderie that represents our Guild.



*(Above)* Elephant sketch. Illustration © 2018 Daniel Robertson

For several years, rumors circulated about the hope of hosting the anniversary in the place where it all began. While the Conference Oversight Committee was weighing possibilities of several cities, I joined a DC Chapter potluck dinner at Ikumi Kayama's house (GNSI Vice President and Conference Organizer), where Chapter members gathered to discuss the possibilities of hosting the conference. I listened to ideas, teams forming, and the potential of planning. The resulting vote set the wheels in motion to fulfill the dream of celebrating where it all began. When the conference concluded, the GNSI-DC Chapter has undoubtedly received our highest praise for their contribution.

**What a dream day. My brain is full and I'm all out of goosebumps...**

— Jen Christiansen

It's hard to tally the number that contributed to this conference. Consider the large and small tasks—from the amazing program development by Co-Coordinators Peter Green and Taina Litwak to the entire Programming Team, the Teams for Administration, Attendee Services and Communications/PR, then add to this the speakers, museum staff, field trip hosts, along with both local and long-distance volunteers—I estimate approximately 75 volunteers. I applaud those who stood in the front of the audience as well as the behind the scenes. They gave generously and made it historic. One volunteer described it as "the best organized conference in GNSI history."

## IN CONCLUSION

It has been said that when individuals come together to form a community like this, they become something greater than themselves. We are a diverse collaboration of expertise, brought together to share, learn and celebrate the Guild of Natural Science Illustrators. It was an honor to be President during GNSI's 50th Anniversary Conference. I returned home in awe of our members and their passion for their individual paths in science communication. From the early days of "talking shop" to an international presence, our Guild has broadened. We can only imagine what the next fifty years will bring.

**ABOUT THE AUTHOR:**
Linda M. Feltner is an award-winning nature artist and educator. Her aim is to provide a spark—to awaken curiosity and invite questions, to promote an appreciation for the complexity of nature and to foster a desire to protect it.
*www.lindafeltner.com*

# Sketches from Washington D.C.

◀ Sketches at the Smithsonian. © 2018 Carrie Carlson

▲ Squirrels around campus. Illustrations © 2018 Rick Simonson

▲ Short-beaked echidna. Artwork © 2018 Carrie Carlson

◀ Karl the barred owl. Illustration © 2018 Carrie Carlson

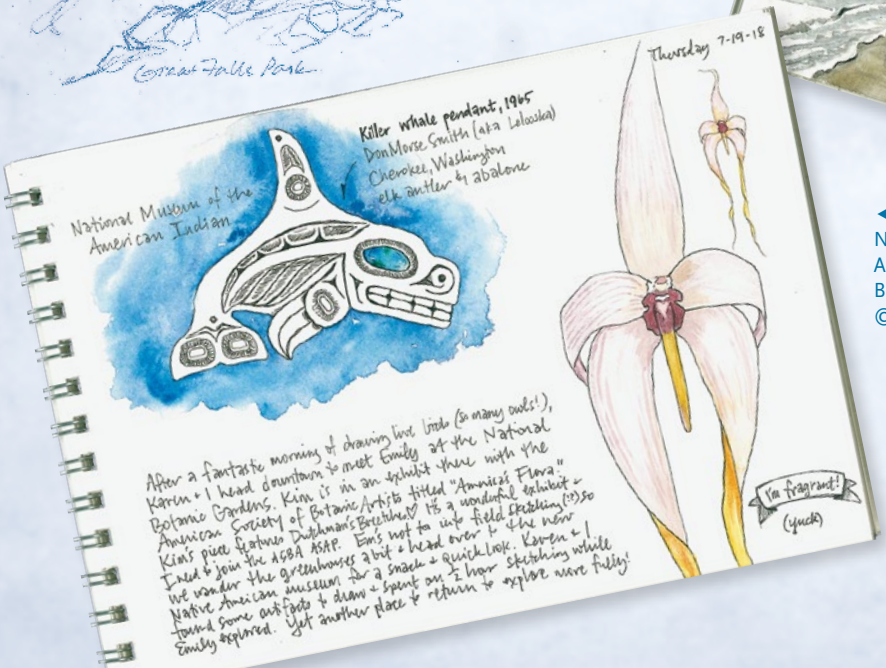
▲ Digital tablet sketch of a screech owl. Illustration © 2018 April Brust

◀ Conference Memories. © 2018 Karen Johnson



◀ Great Falls Park. Artwork © 2018 John Higgins

▼ Sketches from Scientists' Cliffs. Illustrations © 2018 Carrie Carlson



◀ Sketches from the National Museum of the American Indian and National Botanic Gardens. Illustrations © 2018 Carrie Carlson

▶ Sketch of a leaf from Gretchen Halpert's workshop. Illustration © 2018 Yun-Kae Kiang

# GNSI Awards 2018

*– Clara Richardson, Awards Committee*

In 2018, GNSI was honored to give three awards to four people, with gratitude for their outstanding service to the Guild. These awards were presented at the closing ceremony of the Annual Meeting (the Banquet). While all of these people have done many things for the Guild and some have received other awards for their overall efforts, GNSI wishes to recognize these particular efforts which have collectively resulted in a stronger Guild that is better able to communicate with the outside world. This writer, not knowing where to start, has decided to go in reverse chronological order of the efforts and projects. (Perhaps this can demonstrate how we all stand on the shoulders of those who go before us.)

## DIANA MARQUES

Diana Marques received a GNSI Special Projects Award for development and implementation of an extremely effective social media campaign on behalf of the Guild.

Diana, as Outreach Director, in 2016 began developing a strategic plan to use social media as a way to engage people with GNSI conferences. The purpose was to (1) reinforce the sense of community within participants, (2) give nonparticipants an opportunity to follow remotely, and 3) produce assets such as videos, photographs and written content that perpetuate and disseminate the value of these events.

Diana Marques

Since 2016, she has recruited and trained social media mavens to cover the core conference and has worked with them in planning a schedule and choosing the best communication methods.

She has defined and improved the role of the GNSI Social Media Coordinator, the person who throughout the year ensures that Guild and science illustration news is carried on Facebook and Twitter to the many GNSI followers.

Diana has worked with very dedicated GNSI members who have made the improvement of GNSI social media possible: Kapi Monoyios, Fiona Martin, Kirsten Carlson, Kelsey Jordan, Jen Burgess, Jenn Deutscher and Brooke Weiland. Together they have harnessed the technology, informed, educated, and amused hundreds of followers.

Throughout her career, Diana has been a part of multiple professional associations, having attended over 30 conferences, delivered more than 20 presentations, and published 13 papers. She has been a member of the Guild since 1999 and has served on the GNSI Board of Directors since 2015, first as Membership Director and more recently as Outreach Director.

Completing a Biology degree (College of Sciences, University of Lisbon) and several drawing and science illustration certificate programs in Portugal, she then graduated from the Science Illustration Program at the University of California, Santa Cruz, in 2004.

Diana has run her freelance business for 15 years, creating scientific illustrations, animations, information graphics and an assortment of other visual communications in collaboration with museums, publishers, and researchers. Her work can be seen in postal stamps from the United Nations, on the walls of some of the major natural history museums, and in many scientific journals.

She was an Assistant Lecturer teaching Scientific Drawing at the Drawing Master Program of the Fine Arts College of the University of Lisbon. She was also a Guest Lecturer at two other Portuguese science illustration programs, and has instructed countless workshops on the subject.

Diana recently completed a PhD in Digital Media. Her doctoral research took place at the Smithsonian's Natural History Museum and focused on the museum visitors' experience with Augmented Reality technology.

## KALLIOPI MONOYIOS

Kalliopi 'Kapi' Monoyios received a GNSI Special Service Award for a surprising amount of diverse

work, over the last decade at least, for GNSI. Her most recent efforts began in 2015 with a letter-writing campaign to the GNSI Board, suggesting that GNSI would benefit from cultivating a more comprehensive and contemporary online presence. This resulted in the Board creating a new position, Social Media Coordinator, which Kapi held 2015–2017.

She took over our Facebook page and we watched as we grew our followers by over 500 people a year. That page is currently followed by over 2,800 people, quite a feat considering our paying membership numbers. Our Facebook audience is critical since they have opted in to our broadcasts indicating an interest in what we do. Kapi hopes "it will serve as a platform to disseminate our coolness and ultimately as a source for converting followers into supporting members moving forward."

She also created the GNSI Twitter account that rapidly gathered followers. It currently stands at over 1,440 followers after 3 years of use. Her hope for the Twitter account is that we gain access to the highly active and academic-minded community she experiences on the platform, fostering beneficial collaborations and good relations between the Guild and supporting professions that make what we do possible.

Our recently outgoing Outreach Director, Diana Marques, has overseen all of this and has continued to grow these efforts started by Kapi. (Jenn Deutscher is currently our Social Media Coordinator and Tierney Brosius the Outreach Director.)

Kapi has served on the Education Committee longer than anyone (at least 15 years). Committee members review grant proposals that come to the Education Committee from chapters and members.

Kapi was one of our social media mavens at the 2017 Asheville conference. She also worked on the 2014 Boulder Conference team and was auction coordinator and mini-workshop leader. She presented at the 2010 Raleigh conference, constructed the 2009 Fort Kent website, organized digital workshops and presentations for the Bozeman conference in 2007, creating the conference logo and presenting at the conference. Kapi coordinated the auction in 2006 and attended her first conference in 2003 in Denver.

Kapi came to GNSI with a degree in Geology (Princeton University) while she held a long-running job as a lab tech-turned-illustrator for Neil Shubin's lab at the University of Chicago. She illustrated his book *The Inner Fish* during this time. She co-founded Symbiartic, Scientific American's original blog on the intersection of science and art, with fine artist Glendon Mellow and science cartoonist Katie McKissick. Kapi now lives in Denver and is currently pursuing fine art based on her deep fascination with the natural world and our connection to it.

Kapi Monoyios

## GAIL GUTH AND BRITT GRISWOLD

Gail Guth and Britt Griswold jointly received a Special Projects Award for re-booting the *Journal of Natural Science Illustration*, this publication, and for the GNSI website that made this possible.

GNSI has recognized these two on other occasions for the extraordinary amount of work each has given to the Guild over the decades. Britt received the Distinguished Service Award in 1994, the first year it was awarded, and in 2009 Britt received the Special Projects Award for Science-Art.com. Gail received the Distinguished Service Award in 2009. GNSI wishes at this time to particularly recognize one joint project they took on together, which gives high benefits to all members all year long.

When Gail became GNSI President in 2008, the Guild had a website presence and was publishing eight issues of a Newsletter and one issue of a Journal each year. The website, created in the early days of such sites, was mostly static and needed updates and improvements. And the Newsletters, although well-produced, included Chapter and member


Gail Guth and Britt Griswold

updates, and had become heavily focused on All Things Conference with information about the upcoming conference or accolades about how great the just-concluded conference was—an event that the majority of members had not attended.

It became obvious to Gail that, on average, 15–20% of the membership attended conferences. So for the other 80–85%, with so much focus on necessary conference information, there was limited value in the Newsletter, and that was the major perk that they received for their fees.

At that almost pre-internet time, the Newsletter, as the primary source for conference information for good turnout at conferences, was critical to the financial well-being of the Guild. The need was to generate meaningful content, and continue to provide important information and experience of the conference to all the members. Members and the Board identified the problems, yet someone was needed with both vision and determination to be the agent of change. Gail Guth stepped into the position of President and rose to the challenge, enlisting the right people to help make it possible.

When Gail joined the Guild in 1976, she had no formal training in scientific illustration, just a desire to go down that odd road that no one she knew had ever heard of. Lucky was the day that someone suggested the Guild to her. Her membership provided Newsletters every month that were full of substantive articles about technique. Gail could not afford to go to conferences at that time, but the Newsletters gave her the education and information she needed. This meant that she particularly felt the loss of these kinds of articles as she watched the Newsletter change. So as President, she felt motivated to bring the Guild forward and see a publication that was once again a major benefit to all members.

As newly elected President, Gail approached Britt Griswold, her Vice-President, because he had created the annual GNSI Journal in the late 1980s to provide high-quality articles of the sort Gail now envisioned. Britt agreed with Gail. Together they wanted to provide meaty publication content and also find a way to provide timely information about the Guild and related events. Their entire Board agreed, so Gail and Britt tackled the problem together.

The first step was to upgrade the website to a more dynamic resource. Britt accomplished this in 2010, partnering with web developer Ron Williams to provide hosting and coding services.

Next was the change to a more substantial Journal in 2012, which would now be published on a regular schedule. Their goal was to publish no time-dated material, except for a limited amount of conference promotion and a conference review. They gradually developed the current Journal format, as well as the schedule. The conference schedule material in the Journal occurs in one issue per year, in a pull-out section graphically distinct from the Journal itself.

Gail and Britt accomplished these successful undertakings with considerable help. Yet without their leadership and determination and hard work, the website and the Journal and other communication sources would not have evolved to what they are today. Gail and Britt have certainly achieved their goals of producing a high-quality publication that is a benefit to all members and of also of delivering time-dated information through the website and email Newsletters. Gail and Britt continue to contribute as core editorial staff of the Journal and have helped set a high standard that serves as inspiration as we enter the next fifty years of Guild change and growth.

Britt is a multimedia graphics specialist with the Science and Exploration Directorate (SED) at NASA's Goddard Space Flight Center.

Gail has been a freelance natural science illustrator and graphic designer for many years, working from her home in Battle Creek.

GNSI is grateful to all of these people and happy to be able to honor them in this way.

# GNSI Brisbane, Australia 2019

**Dive Down Under and join us for the 2019 GNSI Conference in Brisbane, Queensland, Australia!**

**June 29th – July 6th**

**University of Queensland, St Lucia Campus**

*The conference is to be held with support from local organisations, including the Australian Institute of Medical and Biological Illustrators (AIMBI), Queensland Museum, and Queensland University of Technology (QUT).*

**Brisbane is a multicultural city** with a vibrant cultural life and food scene. Queensland is known for its fresh produce and even in winter some exotic fruits are available. There are colorful farmers' markets mid-week and on weekends. The average temperature in Brisbane in July is between 59°F and 68°F, though warm days can reach 77°F.

**Queensland** is the state of the Great Barrier Reef, of rainforests, deserts, mangroves, bush, the tallest sand hills in the world, and the largest sand island in the world. The eastern coast stretches 1,720 miles from Coolangatta to Cape York. The state boasts unique flora and fauna: ancient living-fossil plants and animals.

**The University of Queensland (UQ)'s St Lucia Campus** sits on a magnificent 280-acre site, on the river at St Lucia, 7 kilometres (4.35 miles) from the Brisbane Central Business District. The campus has great facilities, expansive landscaped grounds and great transport to the city. Parrots, kookaburras, cockatoos, possums, magpies, and butcher birds are commonly seen on campus.

**Women's College** is a mid-century hall of residence with lovely gardens, great in-house facilities and a reputation for the best food on campus.

***Start making your travel plans! More information will be available in the next two months on the web and in the Conference Bulletin.***

*(Above)*: Panorama of Natural Bridge, Springbrook National Park. *(Right)*: Brisbane panorama in July, from Kangaroo Point Cliffs. Photos: © Geoff Thompson

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P.O. Box 42410
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20015

# SAVE THE DATE

Saturday June 29 –
Saturday July 6, 2019

## 2019 GNSI Annual Conference
University of Queensland,
Brisbane, Australia

Conference website
coming soon!

Check GNSI.org
for updates

*Brisbane, Australia*
*2019*