

the **NATURALIST** newsletter

Louisiana Master Naturalists, Greater New Orleans

Message From Your (New) President

By Janna Wisniewski

It is really fun to be a Master Naturalist. For example, last February, Dr. Bob sent out an urgent message- “Often when we need to chase frogs, there is short notice due to weather conditions becoming perfect. That is the case now!” The following night, after a courtesy check-in with a bemused Plaquemines Parish Sheriff, our group was knee-deep in frigid ditch water listening for spring peepers. After coming up short at a few sites we finally found them, not by understanding their ideal habitat, but by noticing the owl who was also hunting for them, much more successfully, in a puddle under a streetlight.

Everyone in our organization has a story like this. But if you dig a bit deeper, you will find that we are much more than an outdoors club. While the LMNGNO has only been around for twelve years, by joining it you join a tradition of naturalists that goes back to the beginnings of human history. Naturalists have always observed the cosmos, weather, waters, rocks, soil, trees, plants, animals and ourselves to understand how we all fit together and how we all survive together. Naturalists are often not trained scientists, and we don’t need to be. Our senses are our instruments, and our lives are our data set. We don’t limit ourselves to the collection of facts but may also engage with the natural world through art, music, recreation, and spirituality. Most importantly, naturalists teach what we know, understanding that when humans don’t understand their connections with nature, they tend to harm it.

To that end, the LMNGNO describes ourselves as “a community of citizens who engage with the natural environment through education and stewardship.”

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Tres Fisher photo

Ringless Honey Mushroom
Desarmillaria caespitosa

The Louisiana Master Naturalists of Greater New Orleans is a community of citizens interested in engaging with the natural environment through education, stewardship and volunteering.

Editor: Bill Van der Meer
Proof Reader: Dr. Mary Gubala

Contact: bvander1@gmail.com

president's message continued

In support of this mission and to help us all become better naturalists, I encourage us to focus on the following during the next two years:

- **Build the community.** Create opportunities to spend time together. Encourage members who have drifted away to re-engage. Recruit workshop classes that reflect the GNO community and focus on transitioning newly certified members into the organization.
- **Provide education.** Increase the number/diversity of events. Hold the Annual Gathering. Organize 4–6-month study groups. Launch a Graduated Certification program.
- **Engage in stewardship.** Work with local partners to organize volunteer projects that require naturalists' expertise. Offer training in advocacy.
- **Integrate environmental issues.** Hold events focused on the climatic/environmental issues that Louisiana faces and integrate these concepts into all activities as applicable.
- **Improve accessibility.** Consider that participants may have limited mobility, vision or hearing impairment, or other accessibility needs.
- **Reduce administrative headaches.** Improve our internal and external communications and fix the hour-tracking process.

As I move into this new position, I am so thankful for the work that my predecessors have done in growing this organization, steering it through the pandemic, and bringing it into a physical home. In this next phase, I invite everyone to find their niche in the LMNGNO. New Orleans needs naturalists! Let's go get our hands dirty.

-Janna

Board of Directors Update

Effective January 1, 2025 a new duly elected slate of officers and board members is seated as follows:

Officers - President: Janna Wisniewski; Vice President: Tres (Leonard) Fisher; Secretary: Janell Simpson; Treasurer: Michele Mire

New Board Member - Joe Llewellyn

Heartfelt thanks to all who have served and to those who continue to serve on the Board!

2025 Events Calendar:

Board of Directors Meetings (5:30 pm)

Also open to all members in good standing

Location TBD

January 22

April 16

July 16

October 15

December (if needed)

General Membership Meetings

Begin at 5:30pm
Loyola University
Miller Hall, Room 114

January 29

April 23

August 6

October 22

Special Events

LMNA State-wide Rendezvous 2025

April 11-13

Baton Rouge

**Annual LMNGNO Gathering
October 24-25**

Bogue Chitto State Park

[Visit us on the web](#)

A Mississippi River Delta Tour



Bill Van der Meer photo

Scofield Beach, La.

On a sunny and brisk November morning Captain Richie Blink eased his boat away from the Empire Marina dock. Our complement of eight passengers, which included several LMNGNO members plus one couple from the UK, were about set out on the advertised “Delta Circle Tour”. Following a brief lecture on the history and natural features of the lower Mississippi Delta, our trip plan was to traverse open water, marsh, barrier island, gulf and riparian environs to observe diverse habitats and species they encompass.

Once through the Empire floodgates Captain Richie steered southwestward away from the river across a large expanse of open water known as Adams and Bastian Bays. These bays had once been dominated by saltwater marsh. Various reef building projects are currently underway through the off-bottom aquacultural cultivation of oysters.

Circumnavigation of an indigenous site called the Lemon Tree Mounds revealed recent work by the Coalition to Restore Coastal Louisiana (CRCL) who had installed protective living oyster shorelines as well as bags of discarded shells provided by local restaurants. Once through a short pass into the Gulf proper we motored southeastward along a barrier island chain. One of these is Pelican Island which had recently undergone a major rebuild.

Funded with Deep Water Horizon funds the project was designed to reduce storm surge while creating vital wildlife habitat.

Here’s where things started to get really interesting. Pods of dolphins appeared and proceeded to usher us southward as they porpoised close to the port and starboard sides. Binoculars soon emerged from their respective pouches as a plethora of shore birds made their appearance along rock jetties and sandy shorelines. We had terns, plovers, ruddy turnstones, black necked stilts, American avocets, yellow legs, red knots, sanderlings and a large flock of resting white pelicans to name a few.

Ducking into a narrow pass we anchor up on the relatively sheltered Scofield beach and pass where captain and crew are given the opportunity to relax, snack and comb along a tall grass lined strand. We then headed east through a wet two to three foot swell towards Venice Marina via Red Pass. Once in the pass we make way past landforms consisting of a maze of, canals, sloughs and spoils.. The bank spoils provides sufficient high ground to support keystone species consisting of hardwoods, baccharis and wax myrtle. Here we witnessed soaring raptors including a bald eagle and one magnificent red tailed hawk. And then much to our collective amazement a rapidly pulsating dark cloud momentarily startled us. Quickly regaining our senses the so called “cloud” unfurled to expose thousands of tree swallows descending upon us.

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After a hearty Po-Boy meal to the sounds of clinking plastic glasses out on the deck of the marina's bar and grill we enter the Mississippi river and navigate upstream into the teeth of a cool north wind. All zipped up and tucked in we pass fort St. Phillip and Ft. Jackson along the river bend at Buras. We then briefly swing into newly created Neptune Pass. Since 2019 this naturally occurring crevasse has been widening and allowing ever increasing amounts of sediment laden river water through the east bank of the river. Here is where resulting large swaths of new land continues to emerge into formerly silt and sand starved Quarantine Bay and Bay Denesse.

As dusk settled in and folks disembarked at the Delta Discovery Dock there was an air of perceptible satisfaction about what had been a very adventurous and worthwhile day on the water.

In addition to the exhilarating experience had by all, Captain Richie Blink deserves a great deal of praise for not only his expert boat handling but for the copious breadth of knowledge and historical perspective he brought to the tour.

Fortunately, Captain Blink has accepted an invitation by LMNGNO Vice President Tres (Leonard) Fisher to offer a presentation on "The Past 10,000 Years of the Mississippi River Delta via Plaquemines Parish" at our general membership meeting scheduled on January 29, 2025. Thanks also to Joseph Llewellyn for his huge help in organizing this and other tours and activities for our members. Click [here](#) for information about Delta Discovery Tours. -Bill Van der Meer



**All eyes on a foraging
roseate spoonbill**



Bill Van der Meer photo

Tree Swallows on Red Pass, La.



LMNGNO Class of Fall 2024 at Elmer's Island, La.



Recent LMNGNO Graduates
Top left to right: Jacob Bopp, Mark Seymour, Anna Hernandez
Bottom left to right: Susan Brower, Ashley Glueck,
Vanessa Fernandez

Luminescence and Fluorescence

.....and its role in nature

by: Leon Zebrick

Bruce Bishop photo

Away from the concrete and bright lights of any urban area, I had the good fortune of a childhood close to nature. Our house was situated on the outside edge of a typical post-WWII suburban sprawl, cutting into the formally rural landscape. The Mississippi River Batture was within walking distance to our south and the “cow pasture” to our west – a large swath of grazing land that began where our back yard ended.

At dusk in early summer, when the remaining light of the day and the temperature were just right, the magic happened and thus began a lifelong appreciation of the fantastical insects we called “lightning bugs”, though now I call them fireflies for some reason..

In the waning years of my professional employment, just before retirement as director of cyclotron operations for a healthcare organization that produced its own PET radiopharmaceutical products, an encounter at work brought me unexpectedly face to face with, well, firefly stuff.

An encounter that rekindled my lifelong appreciation for the magical critters and sparked a more serious look into bioluminescence, its utility in the practice of medicine, and the overall role bioluminescence plays in nature.

No less interesting than luminescence scientifically, fluorescence will be addressed too. We will contrast and compare luminescence and fluorescence within the context of this article as they are distinctly different properties and many budding naturalists could use some help with differentiating them. As for luminescence, I’ll assume some curiosity on the reader’s part about its role in medicine may have been peaked, so we’ll begin there and dwell only briefly

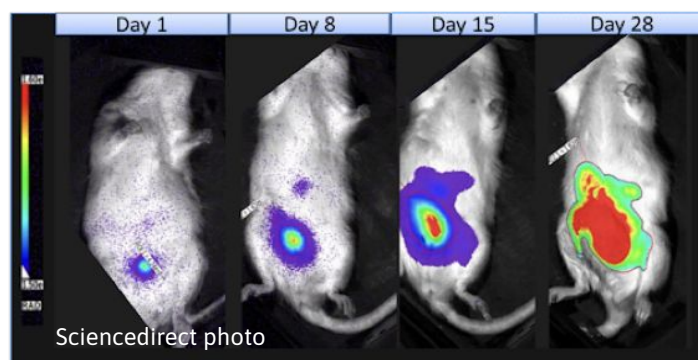
before we turn our attention back to the natural world.

The Mouse Avatar

An ingredient of firefly magic, called “Luciferase”, is produced by genetically engineered cells that through complex techniques are made to appear in tumors that have been grafted on to a specially prepared mouse, called a “humanized mouse”.

These tumors are in fact taken from a current cancer patient and thus the mouse will now carry a representative sample of that patient’s disease. By delivering a catalyst substance to the mouse, the luciferase will react and produce light (in the area of the tumor) that can be detected and imaged by special electronic equipment in a process known as bioluminescent imaging (BLI).

Experimentation proceeds to determine the best chemo-mix to combat the particular tumor as tumor growth and shrinkage can be monitored by BLI. Once an effective therapy has been identified it can be tested on the human subject participating in the trials. Hopefully, the favorable result noted in that patient’s mouse avatar will translate to their improving condition.



False color enhanced BLI image series

Luminescence vs Fluorescence

By definition Luminescence is the low-temperature emission of light by a chemical or physiological process, whereas Fluorescence is illumination that is caused by the absorption of radiation at one wavelength followed by nearly immediate re-radiation usually at a different wavelength

The process of luminescence in nature involves the generation of visible light through the occurrence of chemical reactions. Light generation, in bioluminescence, is not dependent upon an externally applied energy source. By contrast, fluorescence only occurs when certain materials are stimulated into the condition of “fluorescing” after they have absorbed an applied energy. In nature, the applied energy source that stimulates fluorescence is ultraviolet light.

Bioluminescence

In the firefly, which is in reality a beetle, light emission takes place when luciferin is oxidized upon the introduction of luciferase, a catalyst. Luciferin converts to oxyluciferin giving off light in the process. Firefly (FLuc emission) has a wavelength of 560 nm. “The abbreviation “nm” in a spectrum range is the unit used to measure the wavelength of light within the

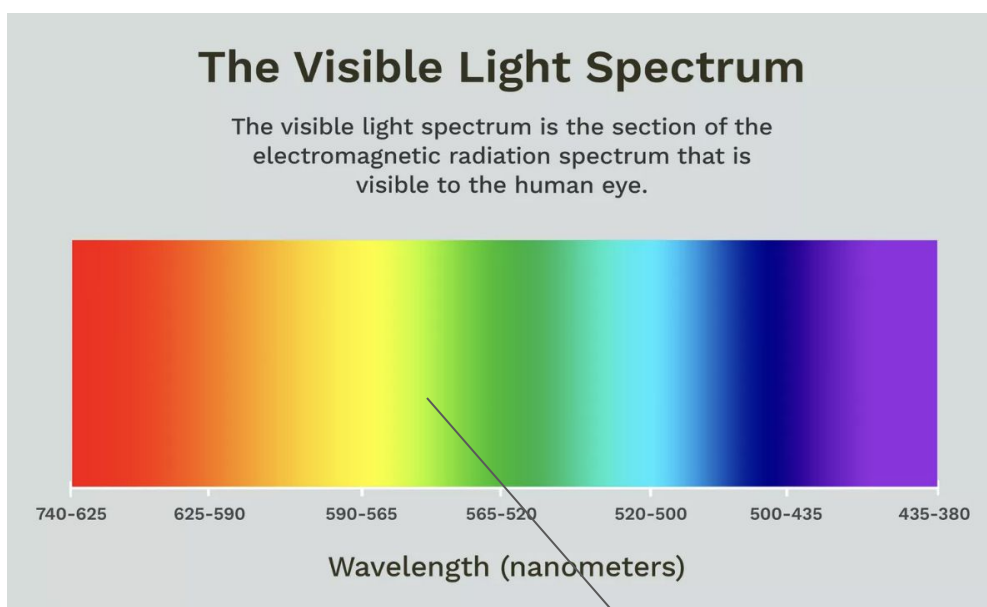
electromagnetic spectrum, including the visible light range that humans can see.

Bioluminescence in nature is colorful!

FLuc	firefly	560nm	green
RLuc	sea pansy	489nm	blue
LUX	bacterial	490nm	blue
LUZ	fungal	520nm	green

The “Why” of Bioluminescence

In the case of the firefly, we all understand their lanterns are used for **signaling** - specifically an interest in mating. Their light-dance finds the females generally at rest on leaves, flashing, while males fly about searching and responding in turn. What sequence of flashes and appreciations result in bringing specific couples together is for them to know.



Referencing the visible light spectrum representation, we see that fireflies light up yellow-green at **560 nm**.



Scripp's News Photo

Another use of bioluminescence in nature is for **mimicry**. If reproduction isn't on one's mind, it must be food. Pictured above we see a **deep-sea Angler fish** using his little light bulb to mimic a tasty morsel – from those teeth we know what happens next.

Bioluminescence can also be used for **defense**. A sudden flash may startle and deter an attacker.

Light at night may be used to promote **spore dispersal** as seems to be the case with luminous mushrooms. Insects are attracted to the light and pick up spores for transport – helping to spread the species of fungi.



Daily Telegraph Photo

Fluorescence

A bonafide scientific quantum leap can take place among many creatures that we may normally consider to be “drab” in appearance. The common millipede is a great example. Brown in color, when subjected to the right stimulation, they fluoresce brilliantly!

Here's what happens. Referencing the below electron “shell model” in an atom of fluorescent material (certain proteins present in the exoskeleton of our millipede, for example) electrons will move from a lower to higher, more energetic orbit when they absorb energy from an external stimulus. This represents an unstable, excited state and the electrons will soon give up this energy and revert to their normal “ground state”. When this occurs, visible light is emitted, whereas the stimulating light is not visible (ultraviolet light).

The *shell* model emphasizes electron energy...

1. e's absorb energy (e.g., a photon of light)

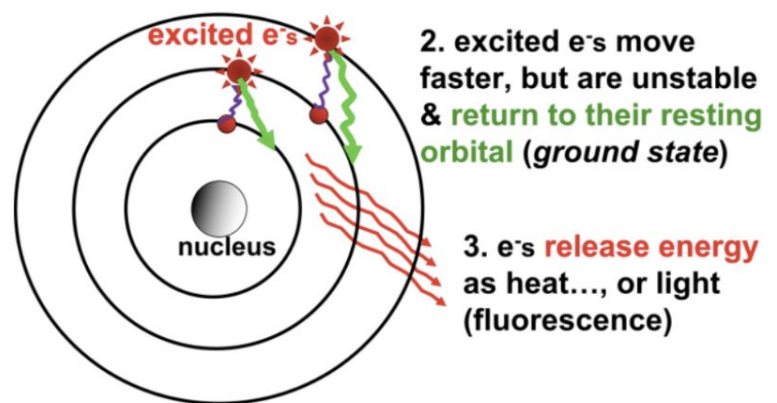


Image courtesy of – Biology Libre Texts

The “Why” of Animal Fluorescence

While the utility of bioluminescence is generally obvious, fluorescence is another story. For one thing, the arthropods in the photos on the next page are considered largely nocturnal and since there is very limited UV available at night (a very small amount is present in moonlight) the value of

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having fluorescent proteins as part of these creature's constitution would seem to be of little value. This may be the case as some scientists adhere to the "because it does" solution to the puzzle, suggesting the property of their fluorescence is happenstance to the building-stuff these beings are made of. On the other hand, some theories suggest that fluorescent properties extend the night in a sense, making late dusk and early dawn times when fluorescent exhibition may serve the purpose of signaling - a way for species to identify each other such as the millipede and scorpion..

An **excellent tool** for insect spotting is the "**uvBeast V3 mini**" flashlight, which emits at 365nm. The shorter the wavelength, the higher the energy content. Stimulus in the ultraviolet range has sufficient energy to force a "quantum leap" of the electrons in fluorescent material. As electrons revert to the ground-state, light is emitted in the visible portion of the spectrum.

Conclusion

Bioluminescence and fluorescence in nature are natural wonders that are accessible in any nearby woodland. There are phenomena for which the "how" is well understood, but not always the "why". In any case, anyone who would take the time to learn a little science and perhaps equip themselves with a basic special flashlight might expand their understanding and enjoyment of the natural world that much more.



Leon Zebrick photo

Millipede
class - Diplopoda



Tammany Baumgarten photo

Scorpion
class - Arachnida

Leon Zebrick is recently retired from a career in healthcare technology. His most recent position was Director of Molecular Imaging and Cyclotron Operations, Ochsner Health System. He holds an MS degree in Healthcare Management, University of New Orleans and undergraduate degrees in business administration and electronics technology.

Mr. Zebrick is a Mississippi Master Naturalist, and does volunteer water quality testing for the University of Southern Mississippi. He spends time between Mandeville, Louisiana and 45 rural acres in Mississippi. He's engaged in habitat restoration, plant rescue, amateur astronomy, and radio.