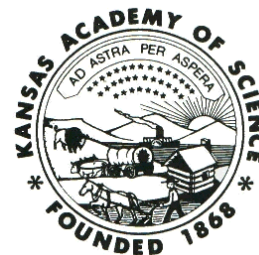


# KAS BULLETIN



## NEWSLETTER OF THE KANSAS ACADEMY OF SCIENCE

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## 152<sup>nd</sup> ANNUAL MEETING OF THE KANSAS ACADEMY OF SCIENCE

**CANCELLED**

April 3<sup>rd</sup> -4<sup>th</sup>, 2020  
Baker University  
Baldwin City, Kansas

**CANCELLED**

The 152<sup>nd</sup> annual meeting of the Kansas Academy of Science was cancelled due to the rapid spread of COVID-19 earlier in April. No decisions on the nature of the 2021 annual meeting have been made.



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Did you know KAS is on Facebook? Join over 2,000 science lovers at: [facebook.com/KansasAcademyOfScience](https://www.facebook.com/KansasAcademyOfScience).

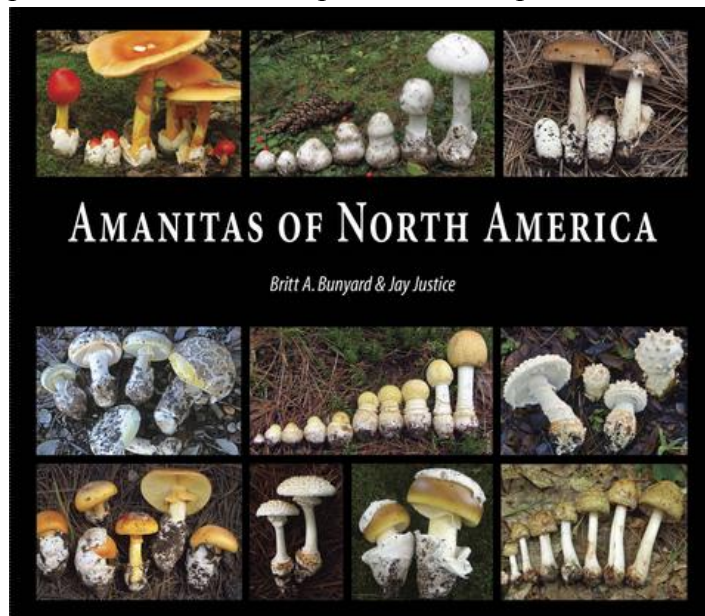
Check out this week's featured fossil on our Fossil Fridays postings!

## BOOK REVIEW: “Amanitas of North America”

2020. Britt. A. Bunyard and Jay Justice. The Fungi Press, Batavia, Illinois. 336 p.  
by Hank Guarisco, editor

This magnificently illustrated hardback treatise of the most poisonous mushrooms of North America, members of the genus *Amanita*, goes a long way to increasing our understanding and enjoyment of this enigmatic group. The authors begin by immediately cautioning their readers of the dangers of consuming wild mushrooms, and by debunking myths concerning simple methods used to determine if mushrooms are safe to eat. Just because animals are seen eating a mushroom, or if mushrooms didn't turn a silver spoon black, does not determine if they are poisonous or not. To obtain this information, accurate identification to the species level is required. To emphasize this point, there are several color plates, each containing edible mushrooms and deadly look-alikes!

The first step to accurately identify a member of the family Amanitaceae, is to look for relevant characteristics of the mushroom and its spores. A key is provided for this purpose. The genus *Amanita* is divided into two subgenera, each of which is divided into several sections. The main body of the book provides detailed descriptions of 115 species and varieties, with magnificent color images. Each species



account also contains home range and habitat information, look-alike mushrooms, and species interpretations found in older field guides in light of modern research. A large poisonous mushroom (*Amanita theirsii*) commonly found in Kansas lawns during the summer, has moved into the mid-west from Texas over the past 60 years.

There are interesting sections on the history of mycology, mushroom phylogeny, and folklore, including the religious uses of Amanitas and Psilocybin mushrooms. The extensive treatment of poisons and toxicology is very informative. Four classes of toxins are found in Amanitas: amatoxins, muscimol and ibotenic acid, allenic norleucine, and hemolytic toxins. The amatoxins are bicyclic octapeptides that interfere with the proper functioning of the enzyme RNA

polymerase II, which facilitates transcription of DNA into messenger RNA. Without messenger RNA proteins are not produced. This prevents cell division and proper organ function. The liver, kidneys, pancreas, adrenal glands and testes become severely damaged.

Several families of immigrants from Southeast Asia who collected mushrooms in their home countries, have made fatal mistakes when foraging near their new homes in the United States. It is better to err on the side of caution. After I first became a mushroom forager in the late 1970's, I developed a limited ability to distinguish several kinds of edibles and was rewarded with some delicious meals. On a fall field trip to Fort Leavenworth, I found some little brown mushrooms (lbms) that superficially resembled those I had been eating, so I collected them and looked forward to a great meal. Luckily, I decided to check with the person next to me who quickly informed me that they were *Galerina autumnalis*, a deadly species that possessed amatoxins.

Like most other living organisms found in nature, mushrooms are fascinating, beautiful, and have intricate ecological functions that are still being uncovered. The Amanitas conjure up the classical image of a mushroom, red with white polka dots. Some are deadly, while others within the section *Caesareae*, subgenus *Amanita*, are some of the most highly prized edibles found around the world, including in North America.

I highly recommend this book to the casual naturalist as well as the serious mushroom hunter and mycologist. The principal author, Britt Bunyard, also publishes “Fungi,” one of the best magazines I have seen.

## **Virus Reflections**

by Hank Guarisco April 17, 2020

You sit and watch yourself unraveling,  
Far away inside, suspended in a voiceless void.  
No urgency to move, to do what you would normally do.  
But the fish must be fed, the snake’s water bowl refilled.

Reflect once again, random silk strands of life remembered,  
Floating by once again.  
Go into the library of your mind and choose wisely.  
Each memory is refashioned, seen through your present light.

Spring came last week.  
Walking along paths through sacred woods in the cool morning.  
The timid sunlight warmed my skin with the promise to begin  
the new season of life.

Dutchman’s breeches, rue anemone, and dog-toothed violets  
in such profusion, it was hard not to trample them.  
An eagle flew above the lake, above the great blue heron  
standing there – watery sentinel along the shore.

But now it’s winter once again – gray, rainy with nighttime thunderstorms.  
The raging wind howls with indignation, remembering past grievances,  
making me grateful for the warmth and transient security of my home inside.  
Tonight, I would not want to bear Nature’s fury for humankind’s countless crimes.

## BOOK REVIEW: “Moths A Complete Guide to Biology and Behavior”

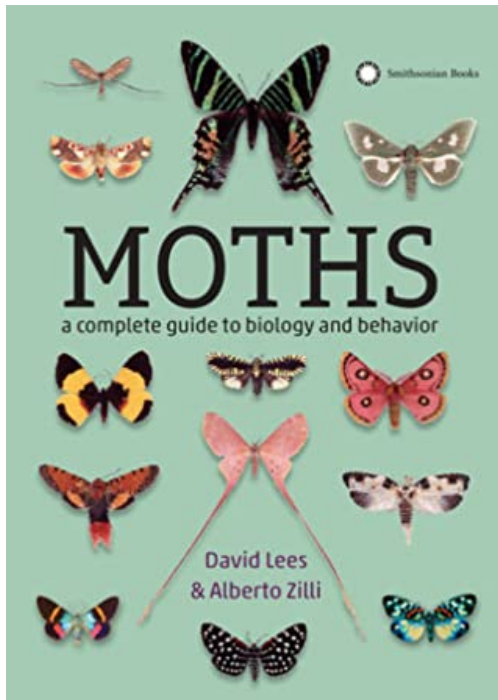
2019. David C. Lees and Alberto Zilli. Smithsonian Books, Washington, DC. 208 p.

by Hank Guarisco, editor

This interesting, amply illustrated volume on the biology of moths is definitely worth reading. The evocative chapter titles foreshadow the wealth of amazing information on various aspects of moth life presented in a very engaging manner.

For example, instead of a bland chapter on the fundamentals of moth anatomy, the authors present this basic information under the heading, “Blueprint for Success.”

Quoting part of the sub-section entitled, “How do moths use their scales?” will illustrate this:



“Lepidoptera (moths and butterflies) are in effect clothed insects. The functions of scales go beyond that of providing moths with colourful patterns. Scales are fairly easily detachable, which is an essential feature when a moth gets trapped in a spider’s web and needs to escape from its sticky threads. Some scales are fringed in order to disseminate scents that may be produced in different regions of the body. Black scales containing melanin help day-active species to absorb the sun’s heat. ...Furthermore, scales are water-repellent and prevent moths from becoming soaked during rainfall. Scales absorb the sonar produced by bats, so that a descaled moth would be much more ‘visible’ to their most fearsome predators, bats.”

Although we generally think of caterpillars consuming plant leaves, a species from Panama (*Perisceptis carnivora*) preys on a variety of arthropods, including grasshoppers and spiders. Some bagworm moths (Psychidae) begin active life as tiny larvae that consume their wingless mothers. Caterpillars of the horn moth (*Ceratophaga vastella*) have special enzymes that digest horn keratin, and consume water buffalo horns in South Africa.

There are also bizarre exceptions to the common habit of adult moths feeding upon pollen and nectar. The specialized proboscis of one Madagascan moth (*Hemiceratoides hieroglyphica*) is used to attach itself between the eye membranes of sleeping birds, apparently to suck the salts from their tears. Going one step further toward the incredulous, ten species of the genus *Calyptra*, aptly named “vampire moths,” pierce the skin of mammals, including humans, and drink their blood.

Like other animals, moths go to great lengths to blend into their surroundings. Some are superb leaf mimics. Others gain protection by mimicking bird droppings or dangerous animals, such as wasps, ants, or spiders. A startling example of a caterpillar that resembles a snake when threatened is the neotropical sphinx moth, *Hemeroplanes triptolemus*. Its head is inflated into a diamond shape and very realistic “eyes” appear on the sides. (see image at end of Bulletin)

Besides having wonderful color images to accompany the engaging text, the authors provide extensive discussions of polymorphism, speciation, biogeography, and evolution. Therefore, I highly recommend this book to interested amateurs as well as biologists.



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Amazing mimicry by neotropical sphinx moth, *Hemeroplanes triptolemus*

Photo by Samantha Hartery