



November 2022

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<http://www.tgcfersoc.org>

Our meeting this month will be “blended” by meeting in-person at the Judson Robinson, Jr. Community Center (2020 Hermann Dr., Houston, 77004) and/or via GoToMeeting – member’s choice.

A message from our President:

Hi Everyone,

I very much enjoyed Lisa George’s presentation last month on Texas Rock Quillworts. I am so glad she filled in for our scheduled speaker, Christopher Krieg, who had become sick. Quillworts always seemed so strange to me; such a primitive, and resilient member of the fern allies. My next visit to Austin I’ll have to add a day and drive over to Lake LBJ and see if I can help by mapping a public access route near the granite dome where *Isoetes lithophila* might be found.

As usual the meeting was well attended, and many brought delicious snack food. Please don’t forget to call or email Larry Rucker, letting him know what type of food you would bring, if you are.

I want to thank those who served on the nominating committee, for next year’s Officers and especially everyone who stepped up to fill our slate of officers for the upcoming year.

Last month we had another fine raffle, helping fund our merry band of fern nuts.

We are looking for someone to host the Christmas Party this year. Please don’t be shy about this. It’s always an enjoyable event. And as usual I expect we’ll have a gift swap which we’ll talk about at the meeting.

Board Members please plan on sticking around for a bit after the end of the meeting for a Board Meeting.

Take care everyone! See you at the meeting. Until then stay safe, and happy ferning!!

Pat



**Sunday’s Topic:
Texas Thelypteris and many more
By: Susan Facett**

Susan Facett’s primary research is focused on phylogenomics, taxonomy and historical biogeography of the fern family Thelypteridaceae. Susan will be highlighting all the Texas species of Thelypteridaceae. There is some

really interesting biology and hybrid evolution involving some of the species that we have some unpublished data for. Be sure to join us in this every interesting topic and close to our Texas hearts!

**Background supplied by this month’s speaker:
Susan Facett**

I recently received my doctoral degree from the Barrington/Sundue Lab at the University of Vermont. I am currently at Research Botanist at the University and Jepson Herbaria at UC Berkeley, and teaching faculty at the University of Michigan Biological Station.



**Announcing a Celebration of the life of
Jere Noerager:**

We are planning a celebration of life for Jere the Saturday after thanksgiving, 26 November from 2-4 at our home:
12358 Longworth Lane
Houston, TX 77024

Please join us.

Sincerely, the family of Jere Noerager



Dues!

We are requesting payment of 2023 dues. Dues should be paid by January 1, 2023.

Your dues may be paid in person at a meeting or sent by mail to me: Beth Ayer, 5815 Portal Dr., Houston, TX 77096.

Checks should be payable to: **Texas Gulf Coast Fern Society (TGCFs).**

If you have any questions about the status of you dues please contact me at either: beth.ayer@yahoo.com or 713.729.0994 (landline; you may leave a voice mail message).

Thanks -- Beth Ayer, Co-membership Chair



The American Fern Society (AFS)

The American Fern Society is over 120 years old. With over 900 members worldwide, it is one of the largest international fern clubs in the world. It was established in

1893 with the objective of fostering interest in ferns and fern allies. It exchanges information and specimens between members via their publications and spore exchange.

AFS non-professional membership (\$20) includes access to the Spore Exchange and subscription to the Fiddlehead Forum.

Professional membership (\$40) includes the benefits above plus access to the American Fern Journal.

Please note that donations to the AFS are not tax deductible.

To find out more about the Society and/or join, visit <https://www.amerfernsoc.org/>



2022 Officers and Committees:

President:	Patrick Hudnall
Vice President:	Lisa George
Secretary:	Ceil Dow
Treasurer:	Beth Ayer
Board Members-at-Large:	Darla Harris (Past Pres), Jacqueline Smith Malcolm McCorquodale
Education Chair:	Darla Harris
Hospitality Chair:	Larry Rucker
Library:	Betsy and Fred Robison
Membership Chair:	Ruby Adams
Newsletter:	Paul Geiger
Spore Exchange:	Patrick Hudnall
Ways and Means:	Larry Rucker
Raffle, Store, etc.	Rick Dow
Web Master:	Malcolm McCorquodale
Welcoming at Door:	Faye Stansberry



Minutes of Blended Meeting via “GoToMeeting” and In-Person

October 16, 2022

Texas Gulf Coast Fern Society

Meeting was held at 2:00pm at the Justin Robinson Community Center in Hermann Park. Members unable to attend the in-person meeting could still participate on the “GoToMeeting” app.

Called the meeting to order at 2:05 pm. By Patrick Hudnall

Approximately 22 members present in person and online.

A vote was held to determine the 2023 board members. The following officers were confirmed:

President: Darla Harris
Vice President: Patrick Hudnall
Secretary: Ceil Dow
Treasurer: Beth Ayer
Members at Large: Ruby Adams & Ken Warren

Christopher Krieg was unable to present “What’s in a Leaf”, due to illness. However, Lisa George was gracious to accept an invitation to present a lecture on Quillworts.

Presentation: “In Search of the Texas Rock Quillwort, *Isoetes lithophila*”, by Lisa George.

Lisa George, PhD did her doctorate on *Lycophytes* which *Isoetes* are part of that group. After raising her four children she has started working again helping with different research projects with Duke University and the Botanical Research Institution of Texas (BRIT). Now she is working with the Texas Wild Life and protection division on the endangered plant species of *Isoetes*.

Quillworts can range in size from a couple of centimeters tall to a foot tall. The name, Quillwort is derived from its resemblance to a quill pen or a porcupine quill because of its hollow stem.

What makes quillworts special? It is a simple looking plant with narrow ranges in which to live because of their special needs. The United States is a hot spot for quillworts. Texas is listed as number one for its type localities. They are also found in Mississippi, Georgia, North Carolina and Vermont.

Quillworts are found in lakes, ponds, rivers, bogs, ditches, sinkholes and even deep water. They are also found where water levels fluctuate like lake margins, estuaries, intermittent streams, vernal pools, periodically flooded forests and erosion pools. Quillworts can withstand flooding and is equally happy when water levels subside and become dry again.

Quillworts are members of the Lycophyte Clade which is the oldest lineage of vascular plants. The lineage diverged 370 million years ago. Less than 1% of species out there are Lycophytes and less than 200 species are Quillworts. The Carboniferous Lycophytes included *Sigillaria* trees and *Lepidodendron* trees. Over time, tree Lycophytes became extinct. In Jurassic times, modern day Lycophytes started to appear. Lycophytes have been around since the age of dinosaurs and have remained unchanged all this time.

Quillwort biology is simple. The inside of the stem looks like 4 straws welded together. Four air chambers are surrounded by vascular tissue. This is a unique biology to Quillworts. The stem has a characteristic yellow-green ladder rung design visible on the exterior of the stem. Leaves protrude from a spore bearing leaf base which sits atop the corm. Inside the spore bearing base are smooth and round, female spores and spiky, male spores. The female spore is a megaspore (300um) which is the size of a pin head. The male spore is a microspore (25um) and the size of dust.

There are 4 named species found in Texas. *Isoetes butleri* was found in 1984 and is the most common quillwort. *Isoetes melanopoda* was discovered in 1864 and

appears in Louisiana, Georgia & stops at the western extremity of the East Texas forest. *Isoetes texana* was discovered in 2011 but has not been studied in depth. *Isoetes lithophila* was discovered in 1922 and also has not been studied in depth.

Texas conservation license plates cost \$30 but \$22 dollars of that is dedicated to helping endangered animals and plants. Some Quillworts are considered endangered so purchasing a conservation license plate can help these plants.

Isoetes lithophila is called the Texas Rock Quillwort. It is endemic to the Llano uplift which encompass Burnet, Llano, Mason and Gillespie counties. They are found in Inks Lake and Enchanted Rock State Park. These little plants are found in erosion pools on the granite & gneiss outcrops. Most of the time, leaves are submerged under water. After water levels decline, the plant still stays green for approximately a month. If the dry season is extended, the plants go dormant.

Isoetes lithophila was first described in 1922 on Granite Mountain in Marble Falls, Texas. It is the second largest granite dome in the Llano Uplift. It has been used as a granite quarry for the last 100 years. It provided granite for the Texas capital building and the Galveston seawall. *Isoetes lithophila* has not been collected on this site since the 1950's. The quarry has changed the appearance of the granite dome and Ms. George would like to explore the site to see if the plant still grows there. However, the quarry management has not given her permission to do so.

There are many granite and gneiss outcrops in the Llano uplift. These provide the perfect habitat for the Rock Quillwort but the sites are hard to study because people are not allowed in some of these areas.

Her objectives are to explore, establish long term monitoring site, get genetic testing, and study drought effects. She would like to explore and study where the plants are found; to establish long term monitoring sites which get year to year information on the plants growth habits; to get genetic testing on multiple species. In the range of the Rock Quillwort, there are many species living in the same area. Fourthly, to study drought effects. Find out how these aquatic plants are effected by long range drought.

She hopes to find more populations of Quillworts & especially find out how spores are dispersed. Are birds eating them or do the spores attach themselves to the birds? This is her mystery that she would like to solve. Ms. George provided a dried, dissected sample of *Isoetes lithophila* to study under a jeweler's loop. The spore bearing leaf base and hollow stems were observed.

Questions & Answers

Question: Are quillworts found elsewhere in the world?

Answer: Yes, they are found all over the world.

Question: How are spores dispersed?

Answer: There is free water within the rock pool and the sperm can swim thru the water to get to the mega female spores.

Question: Where do we find the Quillworts around here?

Answer: The Spring Creek area has a lot of quillworts but it is the species *Isoetes melanopoda* not the Rock Quillwort.

Question: How do we identify them?

Answer: Use the INaturalist App on your phone. Please contact Lisa George when you find them and tell her their location for her study.

Question: Did the GCFS see any Quillworts when we visited the Little Thicket in East Texas?

Answer: The tour guide for the field trip, Sergio Henao, said that he did not think so.

Question: Would there be any Quillworts in the Kingwood area?

Answer: Yes, they exist along the greenbelt trails.

Question: Where have you looked for Quillworts?

Answer: All around Texas.

Question: Would you find Quillworts in retention ponds?

Answer: Yes, theoretically.

Question: What happens once female spore are fertilized?

Answer: The spores sink to the bottom of the pool where water can disperse them.

Question: Are these Quillworts found in sunny areas?

Answer: Rock Quillworts can take full sun. Yet, *Isoetes melanopoda* found in East Texas likes more shade.

Respectfully submitted, Ceil Dow.



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