At 8:15 on Saturday, July 24, thirty-three fern enthusiasts, in search of ferns, piled onto a very comfortable bus and cruised out of the New Orleans Hilton bus tunnel. We travelled southwest, bound for the Atchafalaya River basin and Avery Island. Atchafalaya River basin is part of the huge Mississippi River delta system. Over the millennia the Mississippi’s mouth has changed location many times, moving east and west across the delta. The Atchafalaya River is a secondary mouth of the Mississippi. At 137 miles long, the Atchafalaya is relatively short, forming at the confluence of the Red River and the Mississippi River. Because of concerns that the Atchafalaya would capture and cause a major reroute of the Mississippi River; the Army Corps of Engineers built river control structures just upstream of the confluence, allowing 30% of the Mississippi River to drain into the Atchafalaya River. Southern Louisiana is made of soil from the middle part of North America that has washed down the Mississippi and deposited on the delta. This fertile flat land combined with large amounts of water and a subtropical climate results in an intricate complex of swamps and waterways.

Much of our route was on an elevated freeway crossing vast expanses of bald cypress (Taxodium distichum) swamps, very wild looking country. Meanwhile, fascinating fern conversation filled the bus. About 60 miles southwest of New Orleans we stopped at Wilson’s Kountry Korner grocery/gas station in the tiny community of Chacahoula. Here we had a rest stop and chance to buy some junk food to tide us over until lunch. More importantly, we found our first fern, resurrection fern (Pleopeltis polypodioides). This epiphytic fern was growing on large branches of an old southern live oak (Quercus virginiana). Most importantly, this is where we joined our guide for the day, Garrie Landry, a biology Professor at the University of Louisiana, Lafayette. He gave us a handout that included a checklist for ferns of south central Louisiana, and a publication: Botanical Study of the Five Islands of Louisiana, by W. D. Reese and J. W. Thieret (Castanea, Volume 31, No. 4, December 1966). Avery Island, our final destination is one of those five islands.

The bus dropped us off at our first formal fern stop about three miles north of Chacahoula. We were on a road cutting through a forbidding bald cypress-tupelo swamp (Taxodium distichum, Nyssa aquatica). We searched swamp pools for the extremely rare, floating antler fern (Ceratopteris pteridoides). Garrie had made a special “Ceratopteris grabber” out of a long pole and small rake-head, which he used to scoop the floating ferns from the water (Fig. 1, next page). This allowed us a closer look at these unusual ferns. The leaves of this fern are dimorphic, the sterile leaf has broad
lobes, and the fertile blades are finely cut. Besides reproducing via spores, this fern also reproduces via buds that form in notches along the leaf margins. The plantlets arising from these buds are shown in Figure 2. Floating antler fern is growing at its northern range limit in Louisiana; it also grows in Florida, central and south America, southeastern Asia, India and China and is commonly sold as a “water sprite” aquarium plant because of its fast growth rate and ease of propagation. In swampy ditches along the road edge we saw several other ferns: marsh fern (*Thelypteris palustris*), common scouring rush (*Equisetum hyemale*), and Ferriss’ horsetail (*Equisetum x ferrissii*). Ferriss’ horsetail is a hybrid between tall scouring rush (*Equisetum hyemale subsp. affine*) and smooth scouring rush (*Equisetum laevigatum*). Because it is a hybrid between two species it does not produce viable spores, instead it reproduces vegetatively.
through its spreading rhizomes. Garrie pointed out the interesting fact that if the above-ground green stems are cut or mowed into fragments, each green fragment is quite capable of producing a new plant. Floating stem fragments in water will quickly produce roots and small stems at the nodes, which will then become full size plants.

Floating on the water’s surface was a mat of water spangles (*Salvinia minima*) (Fig. 3, next page). Water spangles is an invasive plant in North America. This tiny fern invaded southern and eastern states from an initial introduction to Florida about 80 years ago (water spangles are native to central and south America). This rapid spread is due to its tiny size and reproduction through fragmentation, these ferns and fragments are accidently moved from water body to water body via boats, boat trailers, animals, and flooding. It is interesting to note that water spangles is not included in J. W. Thieret’s *Louisiana Ferns and Fern Allies*, published in 1980. Now, 33 years later, this invasive plant covers great expanses of Louisiana’s still waters. At this one stop we saw five species of ferns displaying four modes of reproduction: spores, budding, spreading rhizomes, and fragmentation.

Just as a thunderstorm started to dump torrents of rain, the bus arrived to pick us up. Our next stop was relatively close by, near the town of Gibson. The ecosystem at this stop was similar to the previous stop; again, water played a major role in the ecosystem (and atmosphere--we were dodging rain squalls associated with thunderstorms). Ferriss’ horsetail was growing at the edge of a swamp pond. The surface of the water and associated ditches were covered with water spangles. Among the water spangles we saw another, much

Fig. 2. Floating antler fern (*Ceratopteris pteridoides*) plantlets emerging from notches in the fern’s leaf margins. The fern was released to its ditch. Photo by Chris Haufler.
smaller floating fern, Carolina mosquitofern (*Azolla caroliniana*), a native plant, which is distributed across the eastern half of the United States. As we were hurrying back to the bus (outrunning the rain) we saw a royal fern (*Osmunda regalis*) at a distance of about 50 feet across a swamp. No one was brave (or foolhardy) enough to launch into the swamp and closely examine the plant.

We then drove about 35 miles west to an important stop: lunch at the Forest Restaurant in Franklin, where we enjoyed a variety of real Cajun foods. After lunch we continued west across the very flat Atchafalaya delta toward Avery Island. Avery Island is one of five salt dome “islands” that are aligned in a northwest-southeast trending line (they are Jefferson Island, Avery Island, Weeks Island, Cote Blanche Island, and Belle Isle). These salt domes are surrounded by land, yet are called islands because they arise out of the flat delta and support ecosystems much different than those of the surrounding delta.

The numerous salt domes in the southern United States are located on land and offshore on the adjacent continental shelf. They originated from layers of salt that were deposited as an ancient sea filled and evaporated many times. Subsequently, thick layers of sediment covered the salt. Because the salt is lighter than the sediment (now rock) the salt slowly rose through weak areas in the overlying rock; the upwelling salt rose as blobs and columns (think, Lava Lamp). Some of the salt masses are close enough to the surface to protrude from the surrounding delta as visible domes such as the five islands.

As we were driving toward Avery Island, Garrie called our attention to one of the salt domes, Weeks Island, about eight miles in the distance. Although it was noticeable in the flat landscape, we would not have seen it had he not pointed it out. Now we were driving through farmland dominated by sugarcane plantations. As we approached Avery Island via a side road, farmlands gave way to sawgrass prairies. Sawgrass is not a grass, but a sedge (*Cladium jamaicense*). Garrie had special permission to lead our group to parts of Avery Island that are off limit to the public, so we whisked through gates and past “no trespassing signs” to be deposited in the middle of the Island near the entrance of a salt mine. People have used Avery Island salt since prehistoric times; now the island supports a large salt mine. In addition to salt, Avery Island is the home to Tabasco Sauce, a hot pepper sauce. In the late 1860s
an island resident, Edmund McIlhenny, mixed cap-
sicum peppers from his garden with salt and vinegar
-- Tabasco Sauce was born. Peppers are still grown on
the Island and the sauce is still made here. Much of the
island has been altered by human development, salt
mines, pepper fields, a sauce factory, roads, canals, oil
exploration, manicured areas and secluded residential
areas. However, about half of the Island remains as
mixed upland deciduous forest. Figure 4 shows Av-
ery Island protruding above surrounding swamp and
prairie, as well as the mosaic of land uses and forests
on the Island.

After being dropped off we walked up a dirt road
toward a pond called Blue Hole. The vine-like Japa-
nese climbing fern (Lygodium japonicum) was weav-
ing itself among the trees along the road to the pond.
The leaves of this fern are extremely long, each “fern
leaf” borne on the climbing tendril is a pinna, and the
climbing tendril is the leaf’s rachis. The pinnae are
dimorphic, sterile pinnae are not as finely cut as the
fertile pinnae. Sterile and fertile pinnae are pictured in
Figure 5. Japanese climbing fern is not native to the
Americas; it was introduced to the American south in
the early 20th century from eastern Asia. As we ap-
proached Blue Hole’s shore we saw a large live oak
supporting an attractive population of resurrection fern
(Fig. 6). When the weather is dry the leaves of these
ferns dry out and curl up, when they have enough
moisture they unroll, rehydrate and come back to life;
thus the name “resurrection” fern. Near the Blue Hole
there is a shaded gully in the forest with an interesting
array of ferns, but because water levels were high we
could not clamber down to see them. From the edge of
the gully we could peer down and see a Christmas fern
(Polystichum acrostichoides). At the forest edge, along
the forest/manicured meadow ecotone, we also saw
ebony spleenwort (Asplenium platyneuron) and downy
shield-fern (Thelypteris dentata).

Fig. 4. Avery Island, a little more than two
miles wide, is sur-
rrounded by swamps
and prairies. Image
from Google Earth.
Fig. 5. Japanese climbing fern showing sterile and fertile pinnae. Photo by Mary Stensvold.

Fig. 6. Resurrection fern growing on a live oak branch at Blue Hole pond. Photo by Chris Haufler.
Next we walked south on Pepper Field Road toward what Garrie called “a rookery”. Walking on this narrow road through the forest was very pleasant; forest plants were interesting and the sun came out and birds were singing (Fig. 7). Here we found southern shield-fern (*Thelypteris kunthii*) growing at the edge of the road on exposed soil (Fig. 8). As we approached a pool called Saline Woods Pond, we could easily see large white birds perched in the trees on the Pond’s far side (Fig. 9). This is part of a large colony of snowy egrets, the colony was established by Edward Avery McIlhenny, in the 1890’s. The hat-feather industry was eradicating snowy egrets, and he was concerned...
about their potential extinction. So he gathered the eight young egrets that initiated this nesting colony. Birds and their allies were impressive at Saline Woods Pond, which was almost entirely covered with water spangles, as shown in Figures 9 and 10.

It was time to head back to New Orleans, so we returned to the salt mine and awaiting bus. On the way back we gave our sincere thanks to Garrie for a wonderful trip and dropped him off at Franklin, in the middle of Cajun country. The drive was long, but the time went quickly because the conversation was lively and the passing landscape was interesting. With a large dose of strange and interesting ferns, food, geologic features and animals, we had a fine fern foray.
Fig. 11. Three generations of pteridologists enjoyed the foray, including Donald Farrar (center) and Eddie Watkins (left). Photo by Chris Haufler.

**Ferns we saw in the Atchafalaya Basin and on Avery Island:**

<table>
<thead>
<tr>
<th>Scientific and common names</th>
<th>Atchafalaya Basin</th>
<th>Avery Island</th>
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<tbody>
<tr>
<td><em>Asplenium platyneuron</em> (ebony spleenwort)</td>
<td></td>
<td>X</td>
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<tr>
<td><em>Azolla caroliniana</em> (Carolina mosquitofern)</td>
<td>X</td>
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<tr>
<td><em>Ceratopteris pteridoides</em> (floating antler fern)</td>
<td>X</td>
<td></td>
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<tr>
<td><em>Equisetum x ferrissii</em> (Ferriss’ horsetail)</td>
<td>X</td>
<td></td>
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<tr>
<td><em>Equisetum hyemale</em> (common scouring rush)</td>
<td>X</td>
<td></td>
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<tr>
<td><em>Lygodium japonicum</em> (Japanese climbing fern)</td>
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<td>X</td>
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<tr>
<td><em>Osmunda regalis</em> (royal fern)</td>
<td>X</td>
<td></td>
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<tr>
<td><em>Pleopeltis polypodioides</em> (resurrection fern)</td>
<td>X</td>
<td>X</td>
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<tr>
<td><em>Polystichum acrostichoides</em> (Christmas fern)</td>
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<td>X</td>
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<tr>
<td><em>Salvinia minima</em> (water spangles)</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><em>Thelypteris kunthii</em> (southern shield-fern)</td>
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<tr>
<td><em>Thelypteris dentata</em> (downy shield-fern)</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td><em>Thelypteris palustris</em> (marsh fern)</td>
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### BOTRYCHIUM CAROLS

**Botrychium, Botrychium**

(to the tune of "O Christmas Tree")

Botrychium, Botrychium  
How lonely are your pinnae.  
Botrychium, Botrychium  
How lonely are your pinnae.

1. Go to the dunes, get on your knees  
   look under all the cedar trees.

Refrain:  
Botrychium, Botrychium  
How lonely are your pinnae.

2. Your sporophore, your trophophore,  
   one species here, there must be more.  
   Repeat refrain between each verse.

3. Some reproduce by small gemmae;  
   They are these to B. cuneifolia.

4. So many forms of B. sempervirens,  
   so many xerophylous silhouettes.

5. Pegmas wings will indicate,  
   the pinnae are acuminate.

6. B. mertensii, B. spectabilis,  
   we're not sure of your parents yet.

7. B. pallidum is hard to find.  
   You must display your quarters mind.

8. Kaspermi, oh how I wish,  
   you didn't smell so much like fish.

9. If anyone finds lanceolatum,  
   make sure that you congratulatum.

10. Sceptreolum, there's two I sense,  
    miltifloras and m俱乐部.

11. In many forms, but only one  
    B. mertensii-form.

12. Virginianum, I know you  
    from rocky woods and sand dunes, too.

13. Well, I'll be damned -  
    funereal Botrychium hystericum.

---

Dashing Through the Dunes  
(to the tune of "Jingle Bells")

Dashing through the dunes  
one species on our minds;  
Rits high in the air,  
flagging all our finds.

Don't tell us what it is,  
but I don't see it yet.  
How will I ever know with just  
this silly silhouette?

Refrain:  
Botrychium, Botrychium hiding in the grass.  
Oh how fun it is to find B. pallidum at last.

---

The Twelve Days of the Field Trip  
(to the tune of "The Twelve Days of Christmas")

On the first day of the field trip, don didn't give to me,  
1. B. matricariifolium  
2. Two I didn't know  
3. Three hyphins  
4. Four small ferns  
5. Five new species  
6. Six to send to heger  
7. Seven bugs a-biting  
8. Eight forms of B. sempervirens  
9. Nine keys to sing in  
10. Ten cryptospecies  
11. Eleven new fern papers  
12. Twelve xerophytites
The 6th Asian Fern Symposium
26-28 August 2014  Bali Botanic Garden
Asian fern research: how far can we go?
url: www.ptti.or.id/afs2014
contact: Dr. Dedy Darnaedi (darnaedy@gmail.com), Dr. Bayu Adjie (bayu.adjie@lipi.go.id)

The Asian Fern Symposium is a meeting for fern scientists who work in Asia or work with Asian ferns. The 6th Symposium will be held at the Bali Botanic Garden, Indonesia in August 2014. It is a collaboration between LIPI and PTTI. This event is held in conjunction with the Bali Botanic Garden’s 55th anniversary.

All scientists, students, and fern lovers are invited to present their works either in oral presentations or posters. This meeting is also a good opportunity to share ideas and knowledge, as well as networking.

Penggalang Taksonomi Tumbuhan Indonesia (PTTI) or Indonesian Plant Taxonomy Society is the only professional non-profit organization in plant taxonomy, biodiversity and conservation in Indonesia.

Bali Botanic Garden is unique in Bali as a place for botanical research, conservation, education and recreation. It provides a place where you can relax in beautiful and peaceful surroundings while learning about the use of plants in the daily lives of Balinese people as well as many interesting tropical rainforest plants and birdlife.
Maurice Broun - Botanist and Ornithologist
by J.A. Lankalis, jalank@verizon.net

I recently purchased the new *Peterson's Field Guide to Ferns* to catch up on the latest taxonomy. I had been away from ferns for more than 35 years. I noticed that there were a few mistakes in it, but I would like to call attention to one particular mistake on the top of page 124. It reads, "Diplazium pycnocarpon (Spreng.) M. Brown." Everywhere my mentor, Maurice Broun went, his name was always misspelled and mispronounced. Brown should be Broun and pronounced Broon.

Maurice's forte was birds. He was also an accomplished botanist and started studying ferns in the mid 1930's. In 1938, he published in the AFJ that *Athyrium pycnocarpon* really belongs in genus *Diplazium*. The new second edition of Peterson's Field Guide agrees. Maurice published in 1938 his *Index to North American Ferns*. This book lists all of the North American ferns and articles published about them. This book is now obsolete due to being replaced by the internet.

Maurice was raised in an orphanage and only had a high school diploma. His interest in birds lead him to be granted an honorary Doctor's degree from Muhlenberg College in Allentown. He was the first curator at Hawk Mountain Sanctuary. Each fall, hoards of hunters showed up there to slaughter hawks by the thousands. Rosalie Edge purchased the mountain and in the fall of 1934, and Maurice single-handedly turned away the disgruntled hunters.

Maurice was a personal friend of mine. When I first started studying ferns in 1970, I was delighted to learn that he lived only 11 miles from me. He was my mentor. Maurice succumbed to stomach cancer in 1979. He was instrumental in providing protection for raptors. Photos and a more thorough biography can be found on the internet.
Polypodium rhizome in cross section
by Joan Nester-Hudson

I teach a plant morphology class and the students study a *Polypodium* rhizome in cross section. I am always fascinated with the different cell types and their organization in this rhizome.

At left is the cross section of *Polypodium loricum* rhizome viewed with the dissecting microscope and with the compound light microscope (below). The slide is over 25 years old and from Triarch, Geo. H. Conant, Ripon, Wisconsin.

The pith, cortex, meristele and cortex sclerenchyma are identified in the micrograph at left. The pith and cortex are primarily parenchyma cells. The sclerenchyma is for support/strength. This rhizome is approximately 4 mm in diameter.

The photomicrograph at left is an enlargement of the indicated meristele (above)

T = tracheids of the primary xylem which have a thick secondary cell wall and are dead at maturity, transporting water and dissolved minerals.

Phl = primary phloem which surrounds the xylem and transports sugar dissolved in water.

S = sclerenchyma cells - thick-walled cells which surround each meristele.

Per = pericycle

E = endodermis - some of the cells are torn because it is difficult to section through the sclerenchyma.

Par = Parenchyma cells
TO: A.F.S. COUNCIL AND OTHER MEMBERS OF THE SOCIETY

Ladies and Gentlemen:

I have the pleasure of presenting to you a report on the financial condition of the American Fern Society, Inc., for the year 2012.

Current receipts amounted to $61,214.11. With $4,068.31 in my checking account and $2,537.47 in the Membership Secretary’s savings account at the beginning of the year, the grand total of receipts was $67,819.89. Receipts from the dues category amounted to $20,474.11. This figure includes dues received by the Membership Secretary from the British Pteridological Society and dues received by the Treasurer from BSA by online transactions. The Membership Secretary received three life memberships this year. Gifts were about one-third less than the amount received last year. The society received no bequests and very little income from the Spore Exchange. Sales of back issues/volumes were about the same as for last year, and sales of Pteridologia were about three times more than last year. Receipts for page charges were about two-thirds less than for last year. Interest earned from checking and savings bank accounts was about half the amount this year than the amount for last year due to a continued downturn in the national economy. Revenue from Bio One, JSTOR, the Copyright Clearance Center, and the Gale Group was about $1,000.00 higher this year than last. The revenue from these organizations is a valuable help in paying expenses. The society received no Botany 2012 meeting revenue share this year from BSA. A statement on the financial status of the several accounts accompanies the Treasurer’s Report along with a statement of assets and liabilities. Overall, the receipts for 2012 were higher than for 2011 due to a slight increase in receipt of dues, revenue sharing, and a large withdrawal from savings to pay for the production and printing of Pteridologia 4 and increased costs of printing and mailing issues of AFJ.

Current disbursements amounted to $58,109.00. With $5,496.67 in the Treasurer’s checking account and $4,214.22 in the Membership Secretary’s savings account at the end of the year, the grand total of $67,819.89 balances with the grand total of receipts. Journal and bulletin printing costs were much higher this year than last due to the introduction of Pteridologia 4, and increased costs for AFJ as mentioned previously. The journal and bulletin editors continue to do an excellent job in keeping expenses to a minimum, and the journal editors in encouraging the payment of page charges by publication authors. Other Council members’ expenses were in the expected range as were other expenses.

There was a problem in the dues reconciliation program between the American Fern Society and the British Pteridological Society. I sent an international draft for $2,389.67 in Great Britain Pounds to the Treasurer of the BPS Gillian Smith last August. She forwarded the draft by mail to the bank in London where BPS has an account. The draft did not arrive to the BPS account. I stopped payment on the draft and was refunded $2,178.66 last November. The $202.01 loss was due to the change in rate of exchange at that time. I sent the $2,178.66 in GBP to the BPS bank account by electronic wire. The transaction appears on the January, 2013 bank statement and thus will be reported in the 2013 Treasurer’s Report along with the 2013 reconciliation payment.

In spite of the financial problems, I am pleased to report to you that the society is in a sound financial condition. In anticipation of 2013 invoices, there was not enough money left over in the treasury at the end of the year to add funds to the savings certificates.

I wish to thank the Membership Secretary, Dr. George Yatskievych; the Journal Editor-in-Chief, Dr. Jennifer Geiger; the Managing Editor, Dr. Jill Dill; the Pteridologia Editor, Dr. R. James Hickey; the Bulletin Editors, Drs. Joan Hudson and David Schwartz; and the Publications Curator, Dr. James D. Montgomery, for their help in keeping the society treasury accurate.

Respectfully submitted,
James D. Caponetti
Treasurer
Treasurer’s Report for 2013

Auditor Report

REPORT OF THE AUDITOR

I hereby certify that I have seen the books and accounts of James D. Caponetti, Treasurer of the American Fern Society, Inc., and have obtained confirmation of the correctness of the Society’s balance on hand as set forth in detail in the accompanying report of the Treasurer.

Broker, G.R.I.
Nathan E. Way

April 22, 2013
Did you know that the first newsletter of the American Fern Society was called *News and Views*? *News and Views* was published from January 1971 until November 1973. Mr. Gordon Foster and Dr. James Montgomery were the editors. I have scanned all issues of this newsletter and Stephen McDaniel, the AFS webmaster, has added them to the AFS website.

The *Fiddlehead Forum* was first published in February 1974, replacing *News and Views*. Dr. John Mickel was the first editor. I have scanned back issues from 1974 until 1985 and Stephen McDaniel has added them to the website.

I would like to thank John Mickel for providing the *News and Views* and issues of the *Fiddlehead Forum* which are missing from my collection. I am continuing to scan the back issues, as time permits. Check out the back issues of both of these newsletters. If you like puzzles about ferns, the early *Fiddlehead Forum* often had challenging puzzles. Answers were also provided. There are many interesting articles about ferns.

Please consider making a submission to the Fiddlehead Forum. The Fiddlehead Forum depends on you!