

CENTER FOR SYSTEMATIC ENTOMOLOGY TRAVEL GRANT REPORT FLORIDA
STATE COLLECTION OF ARTHROPODS (7–19 MARCH 2024)

26 March, 2024

I visited the Florida State Collection of Arthropods in Gainesville on March 7th to the 19th of 2024. Flight and lodging for my visit were funded by a \$1746.58 travel grant from the Center for Systematic Entomology. I was invited by Dr. Susan Halbert to review the aphids' collections, specifically of the genus *Aphis*. She previously reviewed the identification and found some uncertainties that needed to be resolved. Since my arrival until departure, she diligently worked and spent hours with me at the Division of Plant Industry (DPI) building (**Fig.1 and Fig. 2**). We worked almost every day from 3/8 to 3/19 except Sundays, when we worked from 1 to about 6 pm. The other days from 8 to 6 or 7 pm. I got to enjoy Pi Day on 3/14 (**Fig. 3**), couple days that I walked with Susan and Bill (**Figs. 4 and 5**) during lunch hour at the nature trails by the DPI and inspector's training on 3/19 Tuesday morning (**Fig. 6**).

The genus *Aphis* is one of the largest genera with about 500 species of Hemiptera aphids. Some have been described in North America by A. N. Tissot who described *Aphis* species based on host plants endemic to Florida. I reviewed Dr. Halbert's prints about *Aphis* descriptions, and happy that she considered my publications very useful to morphologically discriminate *Aphis* species (Lagos et al. 2012; Lagos et al. 2014, Lagos-Kutz et al. 2014, Lagos-Kutz et al. 2016, Lagos-Kutz et al. 2017, Lagos-Kutz et al. 2018). I also reviewed type specimens and online information: <https://influentialpoints.com>, <https://aphidsonworldsplants.info/>, <http://dmitriev.speciesfile.org/key.asp?key=Aphis&lng=En&i=1&keyN=1> (I published in 2007 this interactive key for the *Aphis* of the US Midwest, and I will update this key with more information collected from FSCA).

Dr. Halbert found multiple *Aphis* complexes, and I will describe our approaches to resolve some issues. The first complex to study contains the following morphologically close related: *A. astericola* Tissot, *A. coreopsidis*, *A. gerardiae* and *A. illinoisensis*, and *Aphis* sp. found on *Verbesina virginica*. For *A. astericola*, I did morphometrics of 26 specimens (17 winged and 9 apterous, 26 slides) of specimens collected on *Agalinis* (= *Gerardia*) *fasciculata* and *Ag. setacea*. I verified the identification of 42 slides labeled as *A. coreopsidis*, which host plant records are not *Agalinis*. I borrowed 22 slides of *A. gerardiae* to confirm identity. About *A. illinoisensis*, I confirmed the identity of 44 slides of this species found on *Viburnum obovatum*, *Nekemias* (= *Ampelopsis*) *arborea*, *Ficus benjamina* and *Vitis* spp. I did the morphometrics of the aphids found on *V. virginica* (4 slides of winged specimens, and 16 slides of apterous). This seems to be a new species, but I need to do a deeper observation and data analysis to confirm. I borrowed 32 slides. Another complex was *A. cephalanthi*, *A. cornifoliae* (I revised 72 slides from records from 1929 to 1997) and *A. impatientis* (I revised 83 slides, and separated 3 slides from *C. stricta* that seem to be new species). I synonymized in 2018 *A. impatientis* with *A. floridanae* Tissot (Lagos-Kutz et al. 2018). I collected morphometrics data of these 3 species. The last are more difficult to discriminate, but they are true species despite that they share winter host plant, *Cornus* spp. About *A. cephalanthi* (I revised 47 slides), records on *Cephalanthus* matched the aphids found on *Myriophyllum aquaticum* and *Proserpinaca* spp. (both grow in ponds and belong to the watermilfoil family Haloragaceae). I found 19 slides of these aphids. It's a possibility that *Cephalanthus* is the overwintering plant and the other 2 plant species are the summer host plants. But Dr. Halbert found out that the aphids that she found on *Cephalanthus* won't transfer to *Myriophyllum*, even the sequences obtained with universal DNA barcoding primers matched *A. cephalanthi*. We have to decide about the host plant transferring conflict.

Another complex was among *A. eugeniae*, *A. spiraecola* and *A. pomi*. After looking 14 slides of *A. eugeniae* and *A. spiraecola* (21 slides), Dr. Halbert and I agreed that the peg-like hairs on the hind tibiae is the only morphological character to distinguish them. The peg-like hairs are really hard to see and I will take pics of them for publishing. Also, the complex of *A. craccivora* and *A. cytisorum* and both feed on Fabaceae based on the morphological details provided by Stroyan (1984) and Blackman & Eastop (online version). We decided that in Florida there is not record of *A. cytisorum*. We confirmed that *A. solanella* is a new record in Florida with 13 host plant collections and 72 slides were revised. Another species that Dr. Halbert is hesitating on approving as record is *A. asclepiadis*, which genus record matches its range of feeding *Helianthus*, but not the species *H. debilis*. She thinks that many of the insects feeding on this plant are host plant specific. The morphology looks right, but I will closely review the slides again. I borrowed 9 slides. Finally, I revised and confirmed identity of *A. amaranthi* (51 slides), *A. caliginosa* (2 records from 1939, 30 slides), *A. folsomii* (13 records from 1928 to 2015, 48 slides), *A. forbesi* (7 records from 1931 to 1963, 23 slides), *A. gossypii* (55 records from 1930 to 2020, 157 slides), *A. hederiae* (6 records from 1948 to 2018, 19 slides), *A. illinoisensis* (12 records from 1973 to 2023, 44 slides), *A. iteae* Tissot (3 records from 1938 to 1941, 20 slides), *A. lugentis* (2 records in 1934, 21 slides), *A. minima* Tissot (3 records from 1930 to 1997, 31 slides), *A. mizzou* (1 record from 1981, 2 slides), *A. neilliae* (4 records from 1930 to 1945, 6 slides), *A. oestlundii* (5 records from 1927 to 1996, 15 slides), *A. pawnapee* (3 records from 1962 to 2023, 34 slides), *A. rubifolii* (9 records from 1927 to 1989, 30 slides), *A. sambuci* (23 records from 1949 to 2013, 68 slides), and *A. vernoniae* (15 records from 1926 to 2010, 44 slides). Another potential *Aphis* new species are the aphids collected in 1956 on *Saururus* sp. I borrowed 13 slides. Also, we revised *Protaphis*, which was a subgenus of *Aphis*. The only species found on this genus was *P. middletonii* (29 records from 1946 to 2019, 144 slides). There were also species that were identified from suction traps. We are planning to write a manuscript with these records with potential new host plant records, new *Aphis* species and with morphological key for apterous and winged morphs. I revised a total of 1294 slides, and have borrowed 252 slides, from which I am planning to complete morphological descriptions, and taking good quality pictures.



References:

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