JOHN LAWSON'S PLANT COLLECTIONS, VIRGINIA AND NORTH CAROLINA 1710-1711

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ABSTRACT

John Lawson, surveyor-general of Carolina, published a well-known travelogue and natural history called *A New Voyage to Carolina* in 1710. He also sent numerous herbarium specimens to James Petiver in London. Petiver's collections ended up in Hans Sloane's herbarium, where they are now part of the Sloane Herbarium in the Natural History Museum, London. We have digitally photographed these specimens and placed them online as part of the Botanica Caroliniana project. Here we present determination of the taxa in Lawson's collections along with observations on Lawson's movements and other work.

John Lawson was one of the great early explorers of North America. Between 1700 and 1711 he visited and mapped a good portion of the colony then called Carolina, staying with Indians and watching his colleagues' exploits with amusement. He turned this experience into both a good job — surveyor-general of Carolina — and a bestselling 1710 travel memoir, *A New Voyage to Carolina*. He even died a glamorous — albeit unpleasant — death, captured and executed by Indians.

He was also quite a good botanist. This is evident in *A New Voyage*, which is full of descriptions of plant species, both their appearances and their uses. Lawson was one of the new breed of scientist that appeared in the late 17th and early 18th century — an amateur who believed that he could contribute to new efforts to catalog the world's contents. Lawson and other individuals like him collected specimens and observations wherever they were and sent their findings back to centers in Europe (Stearns 1952). These "centers" were typically individuals with a penchant for collecting. Later in the 1700s, Carl Linnaeus used this method to assemble the collections that formed the basis of his *Systemae Naturae*. Linnaeus's students sailed the world, sometimes dying in the process, and sent scores of dried plants and other specimens back to Uppsala (Linnean Society 2013). The process was similar to crowdsourcing, with the contributors functioning as remote data collectors.

Lawson worked on a similar earlier project that never became as famous as Linnaeus' but that still has great value today. His dried plant specimens still survive in the Sloane Herbarium of the

Natural History Museum London. This is largely due to his relationship with his own "Linnaeus," James Petiver (Stearns 1952).

James Petiver: Apothecary and publisher

James Petiver was an apothecary who kept a shop "at the sign of the White Cross in Aldersgate Street" in London. He was also an amateur scientist, keen to capitalize on the potential of the ships that were now sailing in every direction from England carrying scientists, ministers, physicians, politicians, and people who hoped to find their fortunes in other lands. These adventurers also happened to be a great source of data in the form of new plants and animals in the Americas and Asia (Stearns 1952).

Petiver was one of the first members of the Royal Society, which formed around 1689, initially as a club of natural philosophers who met on Friday evenings to exchanged specimens and discuss botany. Hans Sloane, just back from 15 months in Jamaica, was one of the founding members. Other members included William Sherard, Samuel Doody, Samuel Dale, Charles du Bois, Leonard Plukenet, and Adam Buddle (Stearns 1952).

Petiver never attended a university, and he could not read modern European languages, though he could read and write Latin. His apothecary practice kept him quite busy, and he left hundreds of pages of notes on his treatment of various patients. It seems likely that his interest in botany came out of his profession; apothecaries used many medicinal plants and Petiver and his colleagues spent a good deal of time "botanizing" and visiting collections of medicinal plants (Stearns 1952).

Around 1690 Petiver began corresponding with scientists who had visited or were living in other locations. Initially he wrote to individuals he met through the Royal Society and then gradually expanded this network to anyone who would make collections and send them to him. Over the years a number of men took the trouble to collect specimens, pack them carefully, and ship them to London (Stearns 1952).

Petiver used this correspondence as the basis for a series of publications called Musei Petiverani Centuria Prima Rariora Naturae Continens, short books on natural history that he began producing in 1695. These books contained the names and descriptions of plants, animals, and shells that had been sent to him from locations such as Africa, China, Barbados, Cartagena, and Norway. He credited the individuals who had sent him the objects and concluded his volumes with a solicitation for contributions from others. Contributions were to be sent to his shop in Aldersgate Street (Stearns 1952).

Over the next decade, contributors sent Petiver more and more collections of natural history specimens. Petiver provided some of them supplies such as brown paper, bottles, packing lists, and instructions on how to preserve fleshy bodies and collect plant specimens. He told his contributors that whenever they went on shore they should bring with them a collection book, an insect box, paper bags, and pins, and to collect whatever butterflies and moths, fruits and berries, shells, and anything else they found, taking care not to break the brittle pieces (Stearns 1952).

In exchange for their contributions, Petiver served as a source of valuable information for his correspondents. He sent them journals and books, scientific instruments, and answered their questions. In the case of Joseph Lord, he seems to have served as a vital source of communication, perhaps an intellectual lifeline for an educated man living in the wilderness of South Carolina (Blackwell and McMillan 2013). He sometimes reimbursed contributors for expenses incurred in making collections. For the most part, however, Petiver promised his contributors fame as compensation for their work. This was sufficient to persuade many individuals to send him numerous collections (Stearns 1952).

The Carolinas were an especially rich source of contributions for Petiver. His contributors from the region included Major William Halsteed, Robert Ellis, George Francklin, and Edmund Bohun, all of whom collected in the Charleston area around 1700 (Dandy 1958). They also included John Lawson.

John Lawson: Author, adventurer, and real estate developer

Little is known about John Lawson's background. Stearns suggests that he might have been an apothecary, based on his connection with Petiver, his interest in botany, and a 1675 entry in the books of the London Society of Apothecaries mentioning "John Lawson, son of Andrew Lawson, Citizen & Salter of London, examined, approved & bound to John Chandler for 8 years" (Stearns 1952). Other accounts put Lawson's birth too late for that entry to refer to him. The Dictionary of North Carolina Biography lists his birth date as 27 December, 1674, and his parents as Dr. John Lawson and Isabella Love. Dr. Lawson owned estates in Yorkshire, where his son grew up (DocSouth 2014).

In any case, Lawson sailed to Carolina in 1700, arriving in Charleston late in the year. On December 28, 1700, he and a group of Virginia traders and native Americans set out on a journey through the backcountry of what is now North Carolina. The Lords Proprietor assigned him the task of mapping and surveying the interior of the territory (Bellis 2007).

Lawson's group followed the Santee and Wateree Rivers northwest through South Carolina and the followed the Trading Path used by Indians north and east through the interior of North Carolina. There they crossed the Eno River near Durham, crossed the falls of the Neuse River, and entered Tuscarora territory. Accompanied by some Tuscarora Indians, they made their way to the site of present-day Greenville and then came to the English settlements on the Pamlico River.

At the conclusion of his journey, Lawson built himself a house in what became the town of New Bern. In 1706 he participated in the foundation of the town of Bath. He spent much of the decade surveying the land around Bath, eventually becoming surveyor-general of Carolina (Bellis 2007).

Lawson had kept a detailed journal during his journey through Carolina, recording both human events and descriptions of nature. He used these notes as the basis of his popular 1709 travelogue, A New Voyage to Carolina. This book was a tremendous success and persuaded many immigrants to move to Carolina from Europe, perhaps one of Lawson's goals in publishing it. The book is still a good read today and remains justifiably popular among fans of North Carolina history.

Lawson had first written Petiver in 1701, responding to one of Petiver's advertisements seeking plant and animal specimens. This seems to have led to nothing, but in 1709 Lawson met Petiver in person when he traveled to London to oversee the publication of his book. Petiver was quite impressed with the book, particularly with Lawson's treatment of trees. Petiver gave Lawson supplies and asked him to send specimens after he returned to Carolina. He also gave him grape vines, some apothecary materials and collecting supplies, and a copy of John Ray's book on Virginia plants (Bellis 2007; Stearns 1952).

Lawson returned to North Carolina in early 1710, accompanied by several hundred Germans who intended to settle property Lawson owned on the Neuse River, near the house he built after his journey in 1700. This settlement became the town of New Bern (Bellis 2009).

Lawson's group landed in Norfolk, Virginia, in April and spent a month held by French privateers. After the French released them, Lawson and his colonists traveled south toward New Bern. On this journey Lawson began assembling the collection of plants that survives in the Sloane Herbarium, collecting plants as he led his settlers to their new home. He spent four months in the spring of 1711 exploring the Pamlico peninsula, taking cuttings and writing short notes that included collection dates, locations, and sometimes brief descriptions. The first packet of specimens went out to Petiver in July 1710, followed by another in July 1711. Lawson also sent Petiver a letter in which he described his plans to produce a complete natural history of Carolina, in which he would describe all the plants he could find as well as beasts, birds, fishes, insects, fossils, soils, and the weather Lawson's handwritten notes accompanying the specimens include numerous references to pages and lines in his A New Voyage; it appears that he was attempting to collect the plants that he had already described in his publication. Perhaps this was meant as preparation for his next work or simply as vouchers for the taxa he had already observed.

Lawson's natural history was not to be. He took his last journey up the Neuse in the fall of 1711, along with the German Christopher von Graffenried, one of the founders of New Bern. The two were captured by Tuscarora Indians. The Indians released van Gaffenried but killed Lawson on September 22 (Stearns 1952). Christopher Gale reported that Lawson was executed in a manner described in A New Voyage, stuck with splinters of torch wood and set afire. Van Graffenried did not know; he had heard that Lawson's throat had been cut with his own razor or that he had been hung or burnt (Lawson & Lefler 1967).

Petiver died in 1718 and Hans Sloane purchased his collections. Sloane's collections eventually formed the original collections of the British Museum (Dandy 1958).

Identification

Dandy lists Lawson's specimens as occurring in several volumes in the Sloane Herbarium: H.S. 145, ff. 45-66; H.S. 242, ff. 110-136; H.S. 171, f. 65; H.S. 158, ff. 129, 151, and 214; and H.S. 159, ??? (Dandy 1958). "H.S." is an abbreviation for "Herb. Sloane" and is the term used to refer to all the volumes in the Sloane collection. Other authorities claim that it is an abbreviation for "Hortus siccus," but that is incorrect in this case. The "f." used to mark pages is an abbreviation for "folio," the Latin word for "page."

We photographed all of these pages as part of our initial work on the Botanica Caroliniana project in November, 2012. We have posted images of all of Lawson's specimens on the Botanica Caroliniana website (Hackney, Blackwell, & Blackwell 2013).

Vincent Bellis, professor emeritus at East Carolina University, has worked with the Lawson specimens for years. In 2009 he published an article in Castanea in which he identified taxa found in these collections and provided a detailed analysis of Lawson's movements and likely collection locations. This article was based on examination of digital images at East Carolina University in their Digital Collections (John Lawson, Naturalist 2014). Bellis's geographical analysis and historical description are excellent, and we have not attempted to add to them.

McMillan and Hackney Blackwell identified the specimens in Lawson's collections using the same methods we employed with the Mark Catesby materials, examining the high-resolution digital images and referring to online flora and images (McMillan et al. 2013; McMillan & Blackwell 2013; Blackwell & McMillan 2013). All determinations are based on Alan Weakley's 2012 Flora of the Southern and Mid-Atlantic States (Weakley 2012).

RESULTS

We present two separate lists of determinations: one by volume and folio, and one by taxa organized by family. Most of these specimens are confirmed as Lawson's by Dandy; a few in H.S. 159 are specimens we suppose are Lawson's, based on the handwriting of the accompanying labels.

Determinations by volume and page

| Determinations by volume and page | | | |
|-----------------------------------|------------------|---|------------------|
| Volume and | Position on page | Species | Family |
| page | | | |
| H.S. 145 f. 45 | bottom second | Helianthus divaricatus L. | Asteraceae |
| | from right | | |
| H.S. 145 f. 45 | upper right | Liatris squarrosa (L.) Michx. | Asteraceae |
| H.S. 145 f. 45 | Second from | Cyperus echinatus (L.) Wood | Cyperaceae |
| | bottom left | | |
| H.S. 145 f. 45 | bottom right | Euphorbia pubentissima Michx. | Euphorbiaceae |
| H.S. 145 f. 45 | second from | Desmodium tenuifolium Torrey & A. | Fabaceae |
| | right | Gray | |
| H.S. 145 f. 45 | second from left | Galactia regularis (L.) B.S.P | Fabaceae |
| H.S. 145 f. 45 | bottom left | Galactia regularis (L.) B.S.P | Fabaceae |
| H.S. 145 f. 45 | upper left | Coreopsis tripteris L. | Asteraceae |
| H.S. 145 f. 46 | bottom left | Onosmodium virginianum (L.) A.DC | Boraginaceae |
| | | (=Lithospermum virginianum L.) | |
| H.S. 145 f. 46 | top right | Cyperus sp. | Cyperaceae |
| H.S. 145 f. 46 | top left | Chamaecrista fasciculata (Michx.) | Fabaceae |
| | • | Greene | |
| H.S. 145 f. 46 | top middle | Rhynchosia difformis (Ell.) D.C. | Fabaceae |
| H.S. 145 f. 46 | bottom right | Rhynchosia tomentosa (L.) Hook. & | Fabaceae |
| | | Arn. | |
| H.S. 145 f. 47 | top right | Lyonia mariana (L.) D. Don | Ericaceae |
| H.S. 145 f. 47 | bottom right | Lyonia mariana (L.) D. Don | Ericaceae |
| H.S. 145 f. 47 | top left | Lilium superbum L. | Lilliaceae |
| H.S. 145 f. 47 | second top | Platanthera ciliaris (L.) Lindley | Orchidaceae |
| H.S. 145 f. 47 | bottom left | Agalinis setacea (J.F. Gmel.) Raf. | Orobanchaceae |
| H.S. 145 f. 47 | bottom middle | Pleopeltis polypodioides (L.) E.G. | Polypodiaceae |
| | | Andrews & Windham subsp. | |
| | | michauxiana (Weatherby) E.G. | |
| | | Andrews & Windham | |
| H.S. 145 f. 47 | far right | Verbena carnea Medik. | Verbenaceae |
| H.S. 145 f. 48 | bottom left | Hieracium sp. | Asteraceae |
| H.S. 145 f. 48 | top right | Symphyotrichum sp. | Asteraceae |
| H.S. 145 f. 48 | fern | Pteridium aquilinum (L.) Kuhn | Dennstaedtiaceae |
| H.S. 145 f. 48 | top left | Vaccinium formosum H.S. Andrews | Ericaceae |
| H.S. 145 f. 48 | bottom second | Clitoria mariana L. | Fabaceae |
| | from left | | |
| H.S. 145 f. 48 | top center | Tephrosia spicata (Walt.) Torrey & A. | Fabaceae |
| | • | Gray | |
| H.S. 145 f. 48 | bottom flower | Sabatia sp. (Sabatia campanulata (L.) | Gentianaceae |
| | | Torrey?) | |
| H.S. 145 f. 48 | bottom right | Oenothera fruticosa L. | Onagraceae |
| H.S. 145 f. 49 | top third from | Ruellia caroliniensis (J.F. Gmel.) Steud. | Acanthaceae |
| | left | , | |

| H.S. 145 f. 49 | bottom fragment | Sambucus canadensis L. | Adoxaceae |
|----------------|------------------------|--|----------------|
| H.S. 145 f. 49 | top left | Chrysopsis mariana (L.) Ell. | Asteraceae |
| H.S. 145 f. 49 | center | Cyrilla racemiflora L. | Cyrillaceae |
| H.S. 145 f. 49 | top fourth from | Amphicarpaea bracteata (L.) Fernald | Fabaceae |
| | left | | |
| H.S. 145 f. 49 | bottom second | Hylodesmum nudiflorum (L.) H. Ohashi | Fabaceae |
| | from right | & R.R. Mill (= Desmodium nudiflorum | |
| | | (L.) DC) | |
| H.S. 145 f. 49 | top second from left | Aureolaria virginica (L.) Penn. | Orobanchaceae |
| H.S. 145 f. 49 | top right | Aureolaria virginica (L.) Penn. | Orobanchaceae |
| H.S. 145 f. 49 | bottom right | Penstemon sp. | Plantaginaceae |
| H.S. 145 f. 49 | bottom left | Thalictrum thalictroides (L.) Eames & Boivin | Ranunculaceae |
| H.S. 145 f. 50 | bottom right | Eutrochium dubium (Willd. ex Poir.) E.E. Lamont | Asteraceae |
| H.S. 145 f. 50 | top left | Taxodium distichum (L.) L.C. Richard | Cupressaceae |
| H.S. 145 f. 50 | center top | Cyrilla racemiflora L. | Cyrillaceae |
| H.S. 145 f. 50 | bottom center right | Desmodium paniculatum (L.) DC | Fabaceae |
| H.S. 145 f. 50 | top right | Cypripedium parviflorum Salisb. var. pubescens (Willd.) Knight | Orchidaceae |
| H.S. 145 f. 50 | bottom center left | Hexalectris spicata (Walt.) Barnhart | Orchidaceae |
| H.S. 145 f. 50 | bottom left | Maianthemum racemosum (L.) Link | Ruscaceae |
| H.S. 145 f. 51 | top left | Eutrochium dubium (Willd. ex Poir.) E.E. Lamont | Asteraceae |
| H.S. 145 f. 51 | bottom left | Tillandsia usneoides (L.) L. | Bromelliaceae |
| H.S. 145 f. 51 | Right | Scirpus cyperinus (L.) Kunth | Cyperaceae |
| H.S. 145 f. 52 | bottom left | Liatris squarrosa (L.) Michx. | Asteraceae |
| H.S. 145 f. 52 | top left | Scirpus cyperinus (L.) Kunth | Cyperaceae |
| H.S. 145 f. 52 | bottom center | Decodon verticillatus (L.) Ell. | Lythraceae |
| H.S. 145 f. 52 | Right, with | Poaceae sp. | Poaceae |
| | seeds in corner | | |
| H.S. 145 f. 53 | top left | Vernonia acaulis (Walt.) Gleason | Asteraceae |
| H.S. 145 f. 53 | top center | Poaceae sp. | Poaceae |
| H.S. 145 f. 53 | right | Zizania aquatica L. var. aquatica | Poaceae |
| H.S. 145 f. 54 | top right, bottom | Ageratina altissima King & H. Rob. | Asteraceae |
| | right, center | var. altissima | |
| IIC 1AFFFA | right | Deceden venti ill -to- (I \ Ell | Lythmossas |
| H.S. 145 f. 54 | left | Decodon verticillatus (L.) Ell. | Lythraceae |
| H.S. 145 f. 54 | top center | Chasmanthium sessiflorum (Poir.) Yates | Poaceae |
| H.S. 145 f. 55 | bottom center | Indet. | |
| H.S. 145 f. 55 | top | Apios americana Medik. | Fabaceae |
| H.S. 145 f. 55 | bottom left and right | Lilium michauxii Poir. | Liliaceae |
| H.S. 145 f. 56 | bottom right | Apios americana Medik. | Fabaceae |
| | three | | |

| H.S. 145 f. 56 | top left | Nyssa sylvatica Marsh. | Nyssaceae |
|----------------|---|---|------------------|
| H.S. 145 f. 57 | • | Magnolia tripetala (L.) L. | Magnoliaceae |
| H.S. 145 f. 58 | left center | Asplenium platyneuron (L.) B.S.P | Aspleniaceae |
| H.S. 145 f. 58 | bottom left | Symphyotrichum dumosum (L.) Nesom | Asteraceae |
| H.S. 145 f. 58 | bottom next to left | Silene virginica L. | Caryophyllaceae |
| H.S. 145 f. 58 | top three | Monarda punctata L. var. punctata | Lamiaceae |
| H.S. 145 f. 58 | bottom right | Platanthera ciliaris (L.) Lindley | Orchidaceae |
| H.S. 145 f. 58 | bottom second from right | Dichanthelium boscii (Poiret) Gould & Clark | Poaceae |
| H.S. 145 f. 58 | bottom center fern | Pleopeltis polypodioides (L.) E.G. Andrews & Windham subsp. michauxiana (Weatherby) E.G. Andrews & Windham | Polypodiaceae |
| H.S. 145 f. 59 | bottom left | Yucca filamentosa L. | Agavaceae |
| H.S. 145 f. 59 | bottom right | Solidago odora Ait. (with gall) | Asteraceae |
| H.S. 145 f. 59 | top center | Oxydendrum arboreum (L.) D.C. | Ericaceae |
| H.S. 145 f. 59 | top right | Vaccinium arboreum Marsh. | Ericaceae |
| H.S. 145 f. 59 | right center | Castanea pumila (L.) P. Mill. | Fagaceae |
| H.S. 145 f. 59 | top left | Maianthemum racemosum (L.) Link subsp. racemosum | Ruscaceae |
| H.S. 145 f. 59 | bottom center | Vitis aestivalis Michx. | Vitaceae |
| H.S. 145 f. 60 | top left | Verbesina walteri Shinners | Asteraceae |
| H.S. 145 f. 60 | bottom right | Clethra alnifolia L. | Clethraceae |
| H.S. 145 f. 60 | center right | Clitoria mariana L. var. mariana | Fabaceae |
| H.S. 145 f. 60 | bottom | Rosa palustris Marsh. | Rosaceae |
| H.S. 145 f. 60 | second from left bottom | Polygonatum biflorum (Walt.) Ell. | Ruscaceae |
| H.S. 145 f. 60 | top center two | Salix humilis Marsh. | Salicaceae |
| H.S. 145 f. 60 | bottom left | Smilax rotundifolia L. | Smilacaceae |
| H.S. 145 f. 60 | center left | Vitis rotundifolia Michx. | Vitaceae |
| H.S. 145 f. 61 | center right | Eupatorium sp. | Asteraceae |
| H.S. 145 f. 61 | top center | Clethra alnifolia L. | Clethraceae |
| H.S. 145 f. 61 | bottom left | Cyrilla racemiflora L. | Cyrillaceae |
| H.S. 145 f. 61 | top right | Cephalanthus occidentalis L. | Rubiaceae |
| H.S. 145 f. 61 | bottom center | Cephalanthus occidentalis L. | Rubiaceae |
| H.S. 145 f. 61 | top left | Phegopteris hexagonoptera (Michx.) Fée | Thelypteridaceae |
| H.S. 145 f. 62 | bottom left | Asclepias tuberosa L. | Apocynaceae |
| H.S. 145 f. 62 | bottom right | Cirsium sp. | Asteraceae |
| H.S. 145 f. 62 | top right | Ipomoea pandurata (L.) G.F.W. Meyer | Convolvulaceae |
| H.S. 145 f. 62 | top left | Sabatia angularis (L.) Pursh | Gentianaceae |
| H.S. 145 f. 62 | top center | Rumex crispus L. | Polygonaceae |
| H.S. 145 f. 63 | bottom right | Indet. | |
| H.S. 145 f. 63 | bottom center, folded | Helianthus heterophyllus Nutt. | Asteraceae |
| H.S. 145 f. 63 | bottom, skip helianthus in middle | Lonicera sempervirens L. | Caprifoliaceae |

| H.S. 145 f. 63 | top left | Commelina erecta L. | Commelinaceae |
|------------------------------------|-----------------------|---|-----------------|
| H.S. 145 f. 63 | top center | Cephalanthus occidentalis L. | Rubiaceae |
| H.S. 145 f. 64 | right | Oxydendrum arboreum (L.) D.C. | Ericaceae |
| H.S. 145 f. 64 | bottom center | Chamaelirium luteum (L.) A. Gray | Heloniadaceae |
| H.S. 145 f. 64 | top left | Cephalanthus occidentalis L. | Rubiaceae |
| H.S. 145 f. 65 | top second from | Indet. | |
| | right | | |
| H.S. 145 f. 65 | bottom center | Desmodium rotundifolium D.C. | Fabaceae |
| H.S. 145 f. 65 | bottom right | Chamaelirium luteum (L.) A. Gray | Heloniadaceae |
| H.S. 145 f. 65 | top | Magnolia tripetala (L.) L. | Magnoliaceae |
| H.S. 145 f. 65 | bottom left | Ceanothus americanus L. | Rhamnaceae |
| H.S. 145 f. 66 | top left | Prenanthes sp. | Asteraceae |
| H.S. 145 f. 66 | bottom left | Oxydendrum arboretum (L.) DC | Ericaceae |
| H.S. 145 f. 66 | top center | Sisyrinchium angustifolium P. Mill. | Iridaceae |
| H.S. 145 f. 66 | bottom right | Pycnanthemum flexuosum (Walt.) | Lamiaceae |
| | | B.S.P. | |
| H.S. 145 f. 66 | top right | Penstemon sp. | Plantaginaceae |
| H.S. 145 f. 48 | middle right | Cypripedium parviflorum Salisb. var. | Orchidaceae |
| | | pubescens (Willd.) Knight | |
| H.S. 158 f. 129 | lower center and | Antennaria plantaginifolia (L.) | Asteraceae |
| | right | Richardson | |
| H.S. 158 f. 129 | upper right | Chrysopsis mariana (L.) Ell. | Asteraceae |
| H.S. 158 f. 129 | 3 upper left | Pterocaulon pycnostachyum (Michx.) | Asteraceae |
| | | Ell. | |
| H.S. 158 f. 129 | lower left | Verbesina (probably V. virginica L.) | Asteraceae |
| H.S. 158 f. 151 | whole sheet | Helianthus divaricatus L. | Asteraceae |
| H.S. 158 f. 214 | | Houstonia purpurea L. | Rubiaceae |
| H.S. 159 f. 108 | top | Fagus grandifolia Ehrh. | |
| H.S. 159 f. 108 | bottom | Ulmus americana L. | |
| H.S. 159 f. 115 | top | Quercus elliottii Wilbur | Fagaceae |
| H.S. 159 f. 115 | bottom | Quercus virginiana P. Mill. | Fagaceae |
| H.S. 159 f. 117 | | Carya tomentosa (Lam. ex Poir.) Nuttall | Juglandaceae |
| H.S. 159 f. 121 | top | Quercus velutina Lam. | |
| H.S. 159 f. 122 | top | Quercus falcata Michx. | Fagaceae |
| H.S. 159 f. 122 | bottom | Quercus nigra L. | Fagaceae |
| H.S. 159 f. 123 | all | Quercus muehlenbergii Engelm. | Fagaceae |
| H.S. 159 f. 124 | | Quercus lyrata Walt. | Fagaceae |
| H.S. 159 f. 124 | 124v | Quercus shumardii Buckley | Fagaceae |
| H.S. 159 f. 129 | | Salix nigra Marsh. | Salicaceae |
| H.S. 159 f. 224 | top | Smilax smallii Morong | Smilacaceae |
| H.S. 242 f. 110 | Bottom left | Indet. | Indet. |
| | under label | | |
| H.S. 242 f. 110 | top right | Carya tomentosa (Lam. ex Poir.) Nutt. (leaflet) | Juglandaceae |
| H.S. 242 f. 110 | 1.0 | Magnolia acuminata L. | Magnoliaceae |
| | | | - viaviionaceae |
| L L C 2/2 f 110 | top left | | - |
| H.S. 242 f. 110 H.S. 242 f. 111 | bottom left and right | Nyssa biflora Walt. | Nyssaceae |

| H.S. 242 f. 111 | bottom | Asimina triloba (L.) Dunal | Annonaceae |
|----------------------|---------------------------------|---|----------------|
| H.S. 242 f. 111 | top center | Fabaceae sp. | Fabaceae |
| H.S. 242 f. 111 | top left | Galium hispidulum Michx. | Rubiaceae |
| H.S. 242 f. 113 | 1 | Smilax laurifolia L. | Smilacaceae |
| H.S. 242 f. 114 | bottom left | Indet. | |
| H.S. 242 f. 114 | top left | Ludwigia palustris (L.) Ell. | Onagraceae |
| H.S. 242 f. 114 | bottom center | Arundinaria tecta (Walt.) Muhl. | Poaceae |
| H.S. 242 f. 115 | Stenanthium | Stenanthium densum (Desrouss.) | Melanthiaceae |
| | densum | Zomlefer & Judd | |
| H.S. 242 f. 115 | left | Houstonia purpurea L. | Rubiaceae |
| H.S. 242 f. 115 | top center | Physalis sp. | Solanaceae |
| H.S. 242 f. 116 | far left | Hypericum virginicum L. | Hypericaceae |
| H.S. 242 f. 116 | center | Oxalis dillenii Jacq. | Oxalidaceae |
| H.S. 242 f. 116 | bottom right | Dichanthelium commutatum (Schultes) Gould | Poaceae |
| H.S. 242 f. 117 | bottom left | Elephantopus tomentosus L. | Asteraceae |
| H.S. 242 f. 117 | bottom right | Carex louisianica L.H. Bailey | Cyperaceae |
| H.S. 242 f. 117 | top center (male | Chamaelirium luteum (L.) A. Gray | Heloniadaceae |
| 11.5. 2-2 1. 117 | flower), female flower below | Chamachtum tuicum (L.) 11. Gray | Treformadacede |
| H.S. 242 f. 117 | top left | Lilium michauxii Poir. | Liliaceae |
| H.S. 242 f. 117 | bottom center | Potentilla norvegica L. | Rosaceae |
| H.S. 242 f. 118a | bottom left (two | Indet | |
| H.S. 242 f. | bottom | Elephantopus tomentosus L. (goes with | Asteraceae |
| 11.5. 242 1. 118a | | specimen on previous page) | Asteraceae |
| H.S. 242 f. | top left | Quercus nigra L. | Fagaceae |
| 118a | top icit | guereus mgra 2. | 1 agaccae |
| H.S. 242 f. | bottom center | Sisyrinchium atlanticum E.P. Bickn. | Iridaceae |
| 118a | right | | |
| H.S. 242 f. | top right | Vulpia octoflora (Walt.) Rydb. | Poaceae |
| 118a | | | |
| H.S. 242 f. | bottom right | Rumex hastatulus Baldwin | Polygonaceae |
| 118a | | | |
| H.S. 242 f. | top left | Juniperus virginiana L. | Cupressaceae |
| 118b | | | |
| H.S. 242 f. | big one | Quercus velutina Lam. | Fagaceae |
| 118b | | | |
| H.S. 242 f. | top right, bottom | Quercus falcata Michx. | Fagaceae |
| 118b | left | Organica whollI | Foregoes |
| H.S. 242 f. 119 | all | Quercus phellos L. | Fagaceae |
| H.S. 242 f. 120 | | Carya tomentosa (Lam. ex Poir.) Nutt. | Juglandaceae |
| H.S. 242 f. 121 | ton | Carya tomentosa (Lam. ex Poir.) Nutt. | Juglandaceae |
| H.S. 242 f. 122 | bottom | Ilex opaca Ait. | Aquifoliaceae |
| H.S. 242 f. 122 | bottom | Salix nigra Marsh. | Salicaceae |
| H.S. 242 f. 123 | ton right | Cornus florida L. | Cornaceae |
| H.S. 242 f. 123 | top right | Nyssa biflora Walt. | Cornaceae |
| H.S. 242 f. 124 | | Prunus serotina Ehrh. | Rosaceae |
| H.S. 242 f. 125 | | Cornus foemina Mill. (= Cornus | Cornaceae |

| | | asperifolia Michx. per Weakley) | |
|-----------------|-----------------|---------------------------------------|---------------|
| H.S. 242 f. 126 | upper right | Osmanthus americanus (L.) Benth & | Oleaceae |
| | | Hook. f. ex A. Gray = Cartrema | |
| | | americana (L.) Nesom | |
| H.S. 242 f. 126 | | Prunus caroliniana (P. Mill.) Ait. | Rosaceae |
| H.S. 242 f. 127 | Bottom Middle | Indet. | |
| H.S. 242 f. 127 | Bottom Left | Gaylussacia frondosa (L.) Torrey & A. | Ericaceae |
| | | Gray ex Torrey | |
| H.S. 242 f. 127 | top right | Lyonia mariana (L.) D. Don | Ericaceae |
| H.S. 242 f. 127 | Top Middle | Vaccinium tenellum Ait. | Ericaceae |
| H.S. 242 f. 127 | top left | Crataegus sp. | Rosaceae |
| H.S. 242 f. 127 | Middle Right | Symplocos tinctoria (L.) L'Her. | Symplocaceae |
| | and leaf at | | |
| | Bottom Right | | |
| H.S. 242 f. 128 | | Vaccinium stamineum L. | Ericaceae |
| H.S. 242 f. 129 | top left | <i>Ilex glabra</i> (L.) A. Gray | Aquifoliaceae |
| H.S. 242 f. 129 | all | Cercis canadensis L. | |
| H.S. 242 f. 129 | bottom right | Robinia pseudoacacia L. | Fabaceae |
| H.S. 242 f. 130 | right | Itea virginica L. | Iteaceae |
| H.S. 242 f. 130 | left | Prunus caroliniana (P. Mill.) Ait. | Rosaceae |
| H.S. 242 f. 131 | bottom left | Indet. | |
| H.S. 242 f. 131 | large branch | Lyonia lucida (Lam.) K. Koch | Ericaceae |
| H.S. 242 f. 132 | top right | Rhododendron viscosum (L.) Torrey | Ericaceae |
| H.S. 242 f. 132 | top left (leaf) | Magnolia virginiana L. | Magnoliaceae |
| H.S. 242 f. 132 | bottom right | Magnolia virginiana L. | Magnoliaceae |
| | (leaf) | | |
| H.S. 242 f. 132 | bottom left | Acer rubrum L. | Sapindaceae |
| H.S. 242 f. 133 | bottom | Indet. | |
| H.S. 242 f. 133 | top right | Rhododendron canescens (Michx.) | Ericaceae |
| | | Sweet | |
| H.S. 242 f. 133 | top left | Magnolia virginiana L. | Magnoliaceae |
| H.S. 242 f. 134 | | Magnolia virginiana L. | Magnoliaceae |
| H.S. 242 f. 135 | Middle Left and | Gelsemium sempervirens (L.) St. Hil. | Gelsemiaceae |
| | Top Left | | |
| H.S. 242 f. 135 | bottom right | Liriodendron tulipifera L. | Magnoliaceae |
| | (seedling) | | |
| H.S. 242 f. 135 | middle | Smilax smallii Morong | Smilacaceae |
| H.S. 242 f. 136 | most | Apocynum cannabinum L. | Apocynaceae |
| H.S. 242 f. 136 | bottom right | Quercus michauxii Nutt. | Fagaceae |
| H.S. 242 f. 129 | top right | <i>Ilex glabra</i> (L.) A. Gray | Aquifoliaceae |

TAXA BY FAMILY

Pteridophytes

| Aspleniaceae | Asplenium platyneuron (L.) B.S.P. | H.S. 145 f. 58 |
|------------------|---|--------------------------------|
| Dennstaedtiaceae | Pteridium aquilinum (L.) Kuhn | H.S. 145 f. 48 |
| Polypodiaceae | Pleopeltis polypodioides (L.) E.G. Andrews & Windham subsp. michauxiana (Weatherby) E.G. Andrews & Windham | H.S. 145 f. 47, H.S. 145 f. 58 |
| Thelypteridaceae | Phegopteris hexagonoptera (Michx.) Fée | H.S. 145 f. 61 |

Basal Angiosperms

| 2 districting 10 specific | | |
|---------------------------|----------------------------|--|
| Annonaceae | Asimina triloba (L.) Dunal | H.S. 242 f. 111 |
| Magnoliaceae | Magnolia tripetala (L.) L. | H.S. 145 f. 57, H.S. 145 f. 65 |
| Magnoliaceae | Magnolia acuminata L. | H.S. 242 f. 110 |
| Magnoliaceae | Magnolia virginiana L. | H.S. 242 f. 132, H.S. 242 f. 133, H.S. 242 f. 134 |
| Magnoliaceae | Liriodendron tulipifera L. | H.S. 242 f. 135 |

Gymnosperms

| Cupressaceae | Taxodium distichum (L.) L.C. Richard | H.S. 145 f. 50 |
|--------------|--------------------------------------|-----------------|
| Cupressaceae | Juniperus virginiana L. | H.S. 242 f. 118 |

Monocots

| Bromeliaceae | Tillandsia usneoides (L.) L. | H.S. 145 f. 51 |
|---------------|--|--|
| Commelinaceae | Commelina erecta L. | H.S. 145 f. 63 |
| Cyperaceae | Cyperus echinatus (L.) Wood | H.S. 145 f. 45 |
| Cyperaceae | Cyperus sp. | H.S. 145 f. 46 |
| Cyperaceae | Scirpus cyperinus (L.) Kunth | H.S. 145 f. 51, H.S. 145 f. 52 |
| Cyperaceae | Carex louisianica L.H. Bailey | H.S. 242 f. 117 |
| Heloniadaceae | Chamaelirium luteum (L.) A. Gray | H.S. 145 f. 64, H.S. 145 f. 65, H.S. 242 f. 117 |
| Iridaceae | Sisyrinchium angustifolium P. Mill. | H.S. 145 f. 66 |
| Iridaceae | Sisyrinchium atlanticum E.P. Bickn. | H.S. 242 f. 118 |
| Liliaceae | Lilium michauxii Poir. | H.S. 145 f. 55, H.S. 242 f. 117 |
| Lilliaceae | Lilium superbum L. | H.S. 145 f. 47 |
| Melanthiaceae | Stenanthium densum (Desrouss.) Zomlefer & Judd | H.S. 242 f. 115 |

| Orchidaceae | Cypripedium parviflorum Salisb. var. pubescens (Willd.) Knight | H.S. 145 f. 48 |
|-------------|--|----------------------------------|
| Orchidaceae | Cypripedium parviflorum Salisb. var. pubescens (Willd.) Knight | H.S. 145 f. 50 |
| Orchidaceae | Hexalectris spicata (Walt.) Barnhart | H.S. 145 f. 50 |
| Orchidaceae | Platanthera ciliaris (L.) Lindley | H.S. 145 f. 47, H.S. 145 f. 58 |
| Poaceae | Poaceae sp. | H.S. 145 f. 52, H.S. 145 f. 53 |
| Poaceae | Arundinaria tecta (Walt.) Muhl. | H.S. 242 f. 114 |
| Poaceae | Chasmanthium sessiflorum (Poir.) Yates | H.S. 145 f. 54 |
| Poaceae | Dichanthelium boscii (Poir.) Gould & Clark | H.S. 145 f. 58 |
| Poaceae | Dichanthelium commutatum (Schultes) Gould | H.S. 242 f. 116 |
| Poaceae | Vulpia octoflora (Walt.) Rydb. | H.S. 242 f. 118a |
| Poaceae | Zizania aquatica L. var. aquatica | H.S. 145 f. 53 |
| Ruscaceae | Maianthemum racemosum (L.) Link | H.S. 145 f. 50, H.S. 145 f. 59 |
| Ruscaceae | Polygonatum biflorum (Walt.) Ell. | H.S. 145 f. 60 |
| Smilacaceae | Smilax rotundifolia L. | H.S. 145 f. 60 |
| Smilacaceae | Smilax laurifolia L. | H.S. 242 f. 113 |
| Smilacaceae | Smilax smallii Morong | H.S. 159 f. 224, H.S. 242 f. 135 |

Eudicots

| Acanthaceae | Ruellia caroliniensis (J.F. Gmel.) Steud. | H.S. 145 f. 49 |
|---------------|---|---------------------------------|
| Adoxaceae | Sambucus canadensis L. | H.S. 145 f. 49 |
| Agavaceae | Yucca filamentosa L. | H.S. 145 f. 59 |
| Apocynaceae | Asclepias tuberosa L. | H.S. 145 f. 62 |
| Apocynaceae | Apocynum cannabinum L. | H.S. 242 f. 136 |
| Aquifoliaceae | Ilex opaca Ait. | H.S. 242 f. 122 |
| Aquifoliaceae | Ilex glabra (L.) A. Gray | H.S. 242 f. 129 |
| Asteraceae | Ageratina altissima King & H. Rob. var. altissima | H.S. 145 f. 54 |
| Asteraceae | Antennaria plantaginifolia (L.) Richardson | H.S. 158 f. 129 |
| Asteraceae | Chrysopsis mariana (L.) Ell. | H.S. 145 f. 49, H.S. 158 f. 129 |
| Asteraceae | Cirsium sp. | H.S. 145 f. 62 |
| Asteraceae | Coreopsis tripteris L. | H.S. 145 f. 45 |

| Asteraceae | Elephantopus tomentosus L. | H.S. 242 f. 117, H.S. 242 f. 118a |
|-----------------|---|---|
| Asteraceae | Eupatorium sp. | H.S. 145 f. 61 |
| Asteraceae | Eutrochium dubium (Willd. ex Poir.) E.E. Lamont (= Eupatoriadelphus dubius) | H.S. 145 f. 50, H.S. 145 f. 51 |
| Asteraceae | Helianthus divaricatus L. | H.S. 145 f. 45, H.S. 158 f. 151 |
| Asteraceae | Helianthus heterophyllus Nutt. | H.S. 145 f. 63 |
| Asteraceae | Hieracium sp. | H.S. 145 f. 48 |
| Asteraceae | Liatris squarrosa (L.) Michx. | H.S. 145 f. 45, H.S. 145 f. 52 |
| Asteraceae | Prenanthes sp. | H.S. 145 f. 66 |
| Asteraceae | Pterocaulon pycnostachyum (Michx.) Ell. | H.S. 158 f. 129 |
| Asteraceae | Solidago odora Ait. | H.S. 145 f. 59 |
| Asteraceae | Symphyotrichum sp. | H.S. 145 f. 48 |
| Asteraceae | Symphyotrichum dumosum (L.) Nesom | H.S. 145 f. 58 |
| Asteraceae | Verbesina (Verbesina virginica L.?) | H.S. 158 f. 129 |
| Asteraceae | Verbesina walteri Shinners | H.S. 145 f. 60 |
| Asteraceae | Vernonia acaulis (Walt.) Gleason | H.S. 145 f. 53 |
| Bignoniaceae | Bignonia capreolata L. | H.S. 159 f. 224 |
| Boraginaceae | Onosmodium virginianum (L.) A.DC (=Lithospermum virginianum L.) | H.S. 145 f. 46 |
| Caprifoliaceae | Lonicera sempervirens L. | H.S. 145 f. 63 |
| Caryophyllaceae | Silene virginica L. | H.S. 145 f. 58 |
| Clethraceae | Clethra alnifolia L. | H.S. 145 f. 60, H.S. 145 f. 61 |
| Convolvulaceae | Ipomoea pandurata (L.) G.F.W. Meyer | H.S. 145 f. 62 |
| Cornaceae | Cornus florida L. | H.S. 242 f. 123 |
| Cornaceae | Cornus foemina Mill. (= Cornus asperifolia Michx. per Weakley) | H.S. 242 f. 125 |
| Cornaceae | Nyssa biflora Walt. | H.S. 242 f. 123 |
| Cyrillaceae | Cyrilla racemiflora L. | H.S. 145 f. 49, H.S. 145 f. 50, H.S. 145 f. 61 |
| Ericaceae | Gaylussacia frondosa (L.) Torrey & A. Gray ex Torrey | H.S. 242 f. 127 |
| Ericaceae | Lyonia lucida (Lam.) K. Koch | H.S. 242 f. 131 |
| Ericaceae | Lyonia mariana (L.) D. Don | H.S. 145 f. 47, H.S. 242 f. 127 |

| Ericaceae | Oxydendrum arboreum (L.) DC | H.S. 145 f. 59, H.S. 145 f. 64, H.S. 145 f. 66 |
|---------------|---|---|
| Ericaceae | Rhododendron canescens (Michx.) Sweet | H.S. 242 f. 133 |
| Ericaceae | Rhododendron viscosum (L.) Torrey | H.S. 242 f. 132 |
| Ericaceae | Vaccinium arboreum Marsh. | H.S. 145 f. 59 |
| Ericaceae | Vaccinium formosum H.S. Andrews | H.S. 145 f. 48 |
| Ericaceae | Vaccinium tenellum Ait. | H.S. 242 f. 127 |
| Ericaceae | Vaccinium stamineum L. | H.S. 242 f. 128 |
| Euphorbiaceae | Euphorbia pubentissima Michx. | H.S. 145 f. 45 |
| Fabaceae | Amphicarpaea bracteata (L.) Fernald | H.S. 145 f. 49 |
| Fabaceae | Apios americana Medik. | H.S. 145 f. 55, H.S. 145 f. 56 |
| Fabaceae | Cercis canadensis L. | H.S. 242 f. 129 |
| Fabaceae | Chamaecrista fasciculata (Michx.) Greene | H.S. 145 f. 46 |
| Fabaceae | Clitoria mariana L. | H.S. 145 f. 48 |
| Fabaceae | Clitoria mariana L. var. mariana | H.S. 145 f. 60 |
| Fabaceae | Desmodium paniculatum (L.) DC | H.S. 145 f. 50 |
| Fabaceae | Desmodium rotundifolium D.C. | H.S. 145 f. 65 |
| Fabaceae | Desmodium tenuifolium Torrey & A. Gray | H.S. 145 f. 45 |
| Fabaceae | Fabaceae sp. | H.S. 242 f. 111 |
| Fabaceae | Galactia regularis (L.) B.S.P. | H.S. 145 f. 45 |
| Fabaceae | Hylodesmum nudiflorum (L.) H. Ohashi & R.R. Mill (= Desmodium nudiflorum (L.) DC) | H.S. 145 f. 49 |
| Fabaceae | Robinia pseudoacacia L. | H.S. 242 f. 129 |
| Fabaceae | Rhynchosia difformis (Ell.) D.C. | H.S. 145 f. 46 |
| Fabaceae | Rhynchosia tomentosa (L.) Hook. & Arn. | H.S. 145 f. 46 |
| Fabaceae | Tephrosia spicata (Walt.) Torrey & A. Gray | H.S. 145 f. 48 |
| Fagaceae | Castanea pumila (L.) P. Mill. | H.S. 145 f. 59 |
| Fagaceae | Fagus grandifolia Ehrh. | H.S. 159 f. 108 |
| Fagaceae | Quercus elliottii Wilbur | H.S. 159 f. 115 |
| Fagaceae | Quercus falcata Michx. | H.S. 159 f. 122, H.S. 242 f. 118b |

| Fagaceae | Quercus lyrata Walt. | H.S. 159 f. 124 |
|----------------|---|---|
| Fagaceae | Quercus michauxii Nutt. | H.S. 242 f. 136 |
| Fagaceae | Quercus muehlenbergii Engelm. | H.S. 159 f. 123 |
| Fagaceae | Quercus nigra L. | H.S. 159 f. 122, H.S. 242 f. 118a |
| Fagaceae | Quercus pagoda Raf. | H.S. 159 f. 125 |
| Fagaceae | Quercus phellos L. | H.S. 242 f. 119 |
| Fagaceae | Quercus shumardii Buckley | H.S. 159 f. 124 |
| Fagaceae | Quercus velutina Lam. | H.S. 159 f. 121, H.S. 242 f. 118b |
| Fagaceae | Quercus virginiana P. Mill. | H.S. 159 f. 115 |
| Gelsemiaceae | Gelsemium sempervirens (L.) St. Hil. | H.S. 242 f. 135 |
| Gentianaceae | Sabatia angularis (L.) Pursh | H.S. 145 f. 62 |
| Gentianaceae | Sabatia sp. (Sabatia campanulata (L.) Torrey?) | H.S. 145 f. 48 |
| Hypericaceae | Hypericum virginicum L. | H.S. 242 f. 116 |
| Iteaceae | Itea virginica L. | H.S. 242 f. 130 |
| Juglandaceae | Carya tomentosa (Lam. ex Poir.) Nutt. (leaflet) | H.S. 159 f. 117, H.S. 242 f. 110, H.S. 242 f. 120, H.S. 242 f. 121 |
| Lamiaceae | Monarda punctata L. var. punctata | H.S. 145 f. 58 |
| Lamiaceae | Pycnanthemum flexuosum (Walt.) B.S.P. | H.S. 145 f. 66 |
| Lythraceae | Decodon verticillatus (L.) Ell. | H.S. 145 f. 52, H.S. 145 f. 54 |
| Nyssaceae | Nyssa biflora Walt. | H.S. 242 f. 110 |
| Nyssaceae | Nyssa sylvatica Marsh. | H.S. 145 f. 56 |
| Oleaceae | Osmanthus americanus (L.) Benth & Hook. f. ex A. Gray = Cartrema americana (L.) Nesom | H.S. 242 f. 126 |
| Onagraceae | Oenothera fruticosa L. | H.S. 145 f. 48 |
| Onagraceae | Ludwigia palustris (L.) Ell. | H.S. 242 f. 114 |
| Orobanchaceae | Agalinis setacea (J.F. Gmel.) Raf. | H.S. 145 f. 47 |
| Orobanchaceae | Aureolaria virginica (L.) Penn. | H.S. 145 f. 49 |
| Oxalidaceae | Oxalis dillenii Jacq. | H.S. 242 f. 116 |
| Plantaginaceae | Penstemon sp. | H.S. 145 f. 49, H.S. 145 f. 66 |
| Polygonaceae | Rumex crispus L. | H.S. 145 f. 62 |
| Polygonaceae | Rumex hastatulus Baldwin | H.S. 242 f. 118a |

| Ranunculaceae | Thalictrum thalictroides (L.) Eames & Boivin | H.S. 145 f. 49 |
|---------------|--|---|
| Rhamnaceae | Ceanothus americanus L. | H.S. 145 f. 65 |
| Rosaceae | Crataegus sp. | H.S. 242 f. 127 |
| Rosaceae | Potentilla norvegica L. | H.S. 242 f. 117 |
| Rosaceae | Prunus serotina Ehrh. | H.S. 242 f. 124 |
| Rosaceae | Prunus caroliniana (P. Mill.) Ait. | H.S. 242 f. 126, H.S. 242 f. 130 |
| Rosaceae | Rosa palustris Marsh. | H.S. 145 f. 60 |
| Rubiaceae | Houstonia purpurea L. | H.S. 158 f. 214 |
| Rubiaceae | Cephalanthus occidentalis L. | H.S. 145 f. 61, H.S. 145 f. 63, H.S. 145 f. 64 |
| Rubiaceae | Galium hispidulum Michx. | H.S. 242 f. 111 |
| Rubiaceae | Houstonia purpurea L. | H.S. 242 f. 115 |
| Salicaceae | Salix humilis Marsh. | H.S. 145 f. 60 |
| Salicaceae | Salix nigra Marsh. | H.S. 242 f. 122, H.S. 159 f. 129 |
| Sapindaceae | Acer rubrum L. | H.S. 242 f. 132 |
| Solanaceae | Physalis sp. | H.S. 242 f. 115 |
| Symplocaceae | Symplocos tinctoria (L.) L'Her. | H.S. 242 f. 127 |
| Ulmaceae | Ulmus americana L. | H.S. 159 f. 108 |
| Verbenaceae | Verbena carnea Medik. | H.S. 145 f. 47 |
| Vitaceae | Vitis aestivalis Michx. | H.S. 145 f. 59 |
| Vitaceae | Vitis rotundifolia Michx. | H.S. 145 f. 60 |

DISCUSSION

Like the other volumes in the Sloane Herbarium, the volumes containing Lawson's specimens contain numerous addenda in the form of handwritten notes and pasted-on labels. These were placed on the pages by Petiver and the subsequent three centuries of curators of the collection. Of most interest to us are the handwritten notes that Lawson sent Petiver along with his plant specimens. Many of these notes contain collection dates and locations. We have used these collection dates to organize the discussion, presenting specimens in more or less chronological order.

Some of these handwritten notes include page and line references to A New Voyage. Where possible, we have incorporated Lawson's notes and botanical observations as published in A New Voyage (A New Voyage 2014) into our own discussion for the insight they offer into Lawson's thoughts about his specimens and the natural world of colonial days. (We have taken all text from the version published online by the University of North Carolina's Documenting the American South project.)

We have attempted to transcribe Lawson's labels but find his handwriting quite challenging to decipher and so our attempts are incomplete and probably inaccurate. Our learning to read Lawson is very much a work in progress. We revisit these labels periodically in the hope of finding fresh inspiration, which does occasionally happen; sometimes a previously indecipherable label comes into clear focus on the 9th or 10th viewing. We invite readers to visit the images and improve on our efforts!

We do not assume that physical proximity between a note and a specimen necessarily means the two are related, though in many cases they clearly are. Bellis pointed out that a number of specimens appear to have been mislabeled when the pages were prepared, perhaps by Petiver mixing up notes and specimens, though it is impossible to know where the errors crept in (Bellis 2009).

H.S. 145 – Spring 1710

H.S. 145 contains 66 folios, but the first 44 pages contain numerous mosses and plants collected by botanists other than Lawson in locations other than Virginia and North Carolina. Lawson's plants begin on f. 45. Lawson collected all of these plants in May and June of 1710. A number of them were collected on the Trent and Neuse Rivers; Bellis has include a useful map of Lawson's movements in his Castanea article (Bellis 2009).

There are a number of interesting specimens in this volume, enhanced by Lawson's handwritten notes. The Hexalectris spicata on H.S. 145 f. 50 might be the earliest collection of this species. On the top right of H.S. 145 f. 49 is a specimen of Ruellia caroliniensis with a bit of Amphicarpea bracteata wrapped around the stem.

H.S. 145 f. 47 contains a somewhat deteriorated specimen of *Lilium superbum* at the top left. We identified on the basis of the spots on the corolla – an exercise in forensic botany with the tiny pieces left of this plant. We have identified the specimens on the bottom right and left of H.S. 145 f. 55 as Lilium michauxii, but the spots do not go far up the petal, so this could also be a very early collection of Lilium pyrophilum.

H.S. 145. f. 48, top left, contains a specimen of Vaccinium formosum, the southern highbush blueberry. Pasted over the stem is a handwritten note reading "The largest huckleberry see page 104 the last sect of these fruits these green berries on the stem were gotten in Norfolk County in Virginia May the 10th." Bellis identifies this as one of the first specimens Lawson collected, before he'd even left Norfolk (Bellis 2009). Another "winter huckle berry" appears on the top right of H.S. 145 f. 59: sparkleberry, Vaccinium arboreum.

Page 104 of Lawson's A New Voyage tells us about huckleberries:

"Hurts.

The Hurts, Huckle-Berries, or Blues of this Country, are four sorts, which we are well acquainted withal; but more Species of this sort, and all others, Time and Enquiry must discover. The first sort is the same Blue or Bilberry, that grows plentifully in the North of England, and in other Places, commonly on your Heaths, Commons, and Woods, where Brakes or Fern grows.

The second sort grows on a small Bush in our Savannas and Meads, and in the Woods. They are larger than the common Fruit, and have larger Seed.

The third grows on the single Stem of a Stick that grows in low good Land, and on the Banks of Rivers. They grow three or four Foot high, and are very pleasant like the first sort, but larger.

The fourth sort grows upon Trees, some ten and twelve Foot high, and the Thickness of a Man's Arm; these are found in the Runs and low Grounds, and are very pleasant, and bear wonderfully. The English sometimes dry them in the Sun, and keep them to use in the Winter, instead of Currants. The Indians get many Bushels, and dry them on Mats, whereof they make Plum-Bread, and many other Eatables. They are good in Tarts, or infused in Liquors."

Zizania aquatica var. aquatica, H.S. 145 f. 53, was an important food grain for native Americans. Weakley notes that it is now uncommon in North Carolina. Lawson did not, however, remark on Indians using this grain for food. On pp. 75-76 of A New Voyage he discusses rice, but certainly he means Oryza sativa, which was brought into cultivation in the Carolinas in the 1690s: "There are several sorts of Rice, some bearded, others not, besides the red and white; But the white Rice is the best. Yet there is a sort of perfum'd Rice in the East-Indies, which gives a curious Flavour, in the Dressing. And with this sort America is not yet acquainted; neither can I learn, that any of it has been brought over to Europe; the Rice of Carolina being esteem'd the best that comes to that Quarter of the World. It is of great Increase, yielding from eight hundred to a thousand-fold, and thrives best in wild Land, that has never been broken up before."

On H.S. 145 f. 59, top center, is a specimen of Oxydendrum arboreum, also known as sourwood or sorrel-tree. Lawson sent it to Petiver with a note reading "Sourwood tree pag 98 ??? ?? Gott in Trent River June 16th 1710." On page 98 of A New History, he writes "The Sorrel, or Sowr-Wood-Tree, is so call'd, because the Leaves taste like Sorrel. Some are about a Foot or ten Inches Diameter. I am unacquainted with its Vertues at present."

Another specimen of sourwood appears on H.S. 145 f. 64 with the note "Sourwood vid before" and a penciled notation to "see 59," referring to the previous specimen of Oxydendrum. This penciled notation is one of many that were added to the pages of the Sloane collections in the early 20th century by James Britten, an assistant in the Department of Botany at the NHM (Bellis 2009).

H.S. 145 f. 60 contains several of Lawson's handwritten labels on specimens collected in May and June of 1710. The top center specimen is Salix humilis, which he described as "a species of willow gotten on the sand banks near Ranoak ... May the 29th 1710." He declares the specimen of Verbesina walteri on the top left of the page as "Unknown," and notes that he collected it on the Trent River on June 13, 1710. The Clitoria mariana var. mariana he describes as "A sort of vetch gotten in Trent River June 19th 1710." On June 20 Lawson collected a *Polygonatum biflorum* at the Neus River, but wrote that it was "a plant unknown to me."

H.S. 145 f. 61 contains two specimens of Cephalanthus occidentalis. The bottom one bears the label "Chinkapin in flower Jun the ?? 1710 Trent River pag 99." Of course, the herbarium specimens are not chestnuts of any sort; perhaps Lawson confused the flowers after he took the cuttings? In any case, on p. 99 of A New Voyage, Lawson writes, "Chinkapin is a sort of Chesnut, whose Nuts are most commonly very plentiful; insomuch that the Hogs get fat with them. They are rounder and smaller than a Chesnut, but much sweeter. The Wood is much of the Nature of Chesnut, having a Leaf and Grain almost like it. It is used to timber Boats, Shallops, &c. and makes any thing that is to endure the Weather. This and the Hiccory are very tough Rods used to whip Horses withal; yet their Wood, in Substance, is very brittle. This Tree the Vine much delights to twist about. It's good Fire-Wood, but very sparkling, as well as Sassafras."

On June 4, 1710, Lawson collected a specimen of Chamaelirium luteum (H.S. 145 f. 65). His label reads "The celebrated snake root Trent River June 4th 1710." Whether or not this species is actually useful against snakebite, blazing stars are traditional herbal medicines. (See, eg Crellin and Bass 1990). Another Chamaelirium luteum appears on H.S. 242 f. 117, labeled as "A bulbous sort of a Lilly common here in March & April." This page also contains a label reading "The celebrated snake root." Its placement between the *Elephantopus tomentosus* on the bottom left of - or the *Lilium* michauxii above it is somewhat confusing, but based on Lawson's previous collection of Chamaelirium we imagine that is the snakeroot in question. Lawson mentions snakeroots on p. 78 of A New Voyage, but this is not of much help with the herbarium specimens.

Also on June 4, Lawson collected a Desmodium rotundifolium and a Ceanothus americanus (both also H.S. 145 f. 65) and a *Penstemon* (H.S. 145 f. 66) which he labeled a "Golden Rod," also from the Trent River area. The Ceanothus specimen bears an intriguing note that we have not yet deciphered satisfactorily; it appears to refer to a "red root flower and leaf" and to suggest that "This flower the ??? (Indians?) eat; the root cures sore mouths."

On H.S. 145 f. 62 is a specimen that we have identified as Rumex crispus, curly dock. Lawson's label reads "Wild Dock a sorrel Trent River June 20th 1710 vid with seed[?]". If this is indeed Rumex crispus, it is a Eurasian plant. R. crispus is a perennial weed today in North Carolina ("NC State TurfFiles" 2014); if it was already growing wild when Lawson explored the Trent River, it must have gained a foothold in the colonies almost as soon as the first Europeans set foot on Carolina shores. Lawson mentions dock, sorrel, and several other salad greens that grew from European seed on p. 77 of A New Voyage; the colonists had already found that their typical European crops grew well in Carolina.

The label on the specimen on the lower right of H.S. 145 f. 63 reads "Golden rod vid before 11." We cannot identify this specimen at all, but it does not appear to be in the genus Solidago. The bottom center specimen is a Helianthus heterophyllus that Lawson writes was collected at the Neuse River on June 29 1710.

Presumably at this point Lawson packed up this collection for shipment in July of 2010.

H.S. 242 – Winter 1710-Spring 1711

H.S. 242 contains specimens Lawson collected between December 1710 and May 1711. Dandy's description of the volume reads "Some plants gathered by Dr. Plukenet. Some plants gathered by Mr. Petiver. Alpine plants by Dr. Scheuchzer. Carolina plants by Mr. Lawson. Guinea plants from Mr. Staphorst. Garden at the Cape and other plants by Mr. Cunningham. Varieties of absynthium marinum by Dr. Blair. On the title-page is a list of 'Lawson's Virginia trees' in Petiver's hand." Dandy also includes a synopsis of contributors in addition to Plukenet and Petiver, in which Lawson's collections are listed as occurring on ff. 110-136 (Dandy 1958).

On the bottom left of H.S. 242 f. 110 is a mystery: a tiny specimen of something that appears to have trifoliate leaves — maybe a *Desmodium*, though really we have no idea — with a label pasted directly on top of it. This label is intriguing. We believe it reads something like this: "Jan. 29th 1711. Spontaneous trefoil of Carolina growing on the fork of Neus River and in other places, having shed from flower like drops of blood a sweet herbage ??? all spontaneous trefoils are more hairy here than in England." Too bad the specimen is almost completely obscured!

Two evergreens collected in early 1711 appear on H.S. 242 f. 126. On January 31, 1711, Lawson collected an "evergreen" resembling a holly at "Mr. Hancock's on the south side Neus R." This specimen appears to be an Osmanthus americanus (currently identified by Weakley as Cartrema americana. The rest of the page contains specimens of "the pleasantest evergreen," Prunus caroliniana, collected on February 8, 1711. Both of these specimens are accompanied by very descriptive labels.

Lawson collected a moss that appears on the upper right of H.S. 242 f. 111, which he describes as "moss on little soft boggy hillocks, Feb. ?th 1711 on the side Neus." The same page contains a specimen of Asimina triloba with a label reading "Pawpaw I think April 30." It also contains a specimen of Galium hispidulum with a note reading: "Feb. 8th 1711, having black berries thereon as big as pepper corns now ripe a fecundant growing in most light fertile lands." Is "fecundant" a term for a weed?

- H.S. 242 f. 122 contains a specimen of *Ilex opaca* with a note presenting "2 forks of holly these leaves being more prickly and regular than what you have before; gotten at broad Creeks mouth on the north side Neus Feb. 8th 1711."
- H.S. 242 f. 113 contains a specimen of Smilax laurifolia. This specimen contains two notes. One, pasted over the stem, reads "An evergreen vine gotten at Carolina Feb. 20th 1711 having green unripe berries thereon." The other, stuck on the top of the page almost as an afterthought, reads "Evergreen vine with fruit ripe in Jan."

On the top of H.S. 242 f. 114 is a specimen of *Ludwigia palustris*. Its label reads "Growing on a sandy beach on the north side Neus cliff near Green landing Feb. 18 1711." An Arundinaria tecta on this page is described as a "Small reed growing in the low soft grounds of Neus and other places Feb. 9th 1711."

Several specimens of *Prunus serotina* appear on H.S. 242 f. 124, one bearing the note: "Native black cherry pag. 104 line??, gotten in Little?? April 12 1711." In A New Voyage, Lawson writes, "The Cherries of the Woods grow to be very large Trees. One sort, which is rarely found, is red, and not much unlike the Cornel-Berry. But the common Cherry grows high, and in Bunches, like English Currants, but much larger. They are of a bitterish sweet Relish, and are equally valuable with our small Black-Cherries, for an Infusion in Spirits. They yield a crimson Liquor, and are great Bearers."

On H.S. 242 f. 123 are several specimens of Cornus florida with a label reading "April 15th 1711 Dogwood pag 94...." Page 94 of A New Voyage states: "Dog-Wood is plentiful on our light Land, inclining to a rich Soil. It flowers the first in the Woods; its white Blossom making the Forest very beautiful. It has a fine Grain, and serves for several Uses within doors; but is not durable. The Bark of this Root infused, is held an infallible Remedy against the Worms."

On April 19, 1711, Lawson collected a Maple, in this case Acer rubrum (H.S. 242 f. 132). Lawson uncharacteristically has little to say about the maple, which appears on p. 99 of A New Voyage: "The Maple, of which we have two sorts, is used to make Trenchers, Spinning-Wheels, &c withal."

Lawson collected a Vaccinium tenellum (H.S. 242 f. 127), which he identified as the "great seeded huckleberry," at Salmon Creek on April 20, 1711. He refers to p. 104 of A New Voyage, where he notes that the common sort of hurts or huckleberries are "the same Blue or Bilberry that grows plentifully in the North of England and in other Places, commonly on your Heaths, Commons, and Woods, where Brakes or Fern grows." The sort with the larger seed and fruit grows "on a small Bush in our Savannas and Meads, and in the Woods."

On the same page appears a Crataegus, which Law labels as a "Red Haw tree April 12, 1711." The red haw is of course a hawthorn, described on p. 107 of A New Voyage: "The Haw-thorn grows plentifully in some parts of this Country. The Haws are quite different from those in England, being four times as big, and of a very pleasant agreeable Taste. We make no use of this Plant, nor any other, for Hedges, because Timber is so plentiful at present. In my Judgment, the Honey-Locust would be the fittest for Hedges; because it is very apt to shoot forth many Sprouts and Succours from the Roots; besides, it is of a quick Growth; and very prickly."

Lawson collected a specimen of *Vulpia octoflora* (H.S. 242 f. 118a) on May 7th. (There are two consecutive pages with the number "118" handwritten in the upper right corner. We have designated the first one 118a and the second 118b.)

Lawson's specimen of *Carya tomentosa* on H.S. 242 f. 120 bears the note "Hicory May 7th" 1711...." The same species appears on the next page with two notes, the top seeming to read "April 29? 1711 Salmon Creek." The two notes are difficult to decipher, but they appear to mention nuts and seeds, and the second concludes with the words "yet I take those two to be different." The first words may be "Smaller hicory with ??? and leaves may differ by a different ??? tree..."

On the upper right hand corner of H.S. 242 f. 123 is a specimen of Nyssa biflora. The note on this one "May 7th 1711 Col. Pollocks. I take this to be a Gum it grew under a very high bank by the water side." Lawson describes the black gums on p. 95 of A New Voyage: "Of the Black Gum there grows, with us, two sorts; both fit for Cart-Naves. The one bears a black, well-tasted Berry, which the Indians mix with their Pulse and Soups, it giving 'em a pretty Flavour, and scarlet Colour. The Bears crop these Trees for the Berries, which they mightily covet, yet kill'd in that Season, they eat very unsavory; which must be occasion'd by this Fruit, because, at other times, when they feed on Mast, Bears-Flesh is a very well-tasted Food. The other Gum bears a Berry in shape like the other, tho' bitter and ill-tasted. This Tree (the Indians report) is never wounded by Lightning. It has no certain Grain; and it is almost impossible to split or rive it."

A "Chestnut Oake" on H.S. 242 f. 136 is a Quercus michauxii. Of this tree, Lawson writes on p. 91: "Chesnut-Oak, is a very lofty Tree, clear of Boughs and Limbs, for fifty or 60 Foot. They bear sometimes four or five Foot through all clear Timber; and are the largest Oaks we have, yielding the fairest Plank. They grow chiefly in low Land, that is stiff and rich. I have seen of them so high, that a good Gun could not reach a Turkey, tho' loaded with Swan-Shot. They are call'd Chesnut, because of the Largeness and Sweetness of the Acorns."

H.S. 158 and H.S. 159 – Spring 1711

H.S. 158 and 159 are a pair of collections from diverse collectors enclosed in massive volumes. H.S. 158 contains 293 folios of small herbaceous plants, and H.S. 159 contains 400 folios of trees and shrubs. The specimens are systematically arranged and Petiver labeled most of them, some by hand and some with printed labels cut from his own publications.

It is difficult to determine who collected what in these volumes. Dandy observes that the names on the labels do not necessarily refer to collectors and that some labels bear the names of two The specimens come from many different locations, including collectors simultaneously. Newfoundland and Hudson Bay in addition to Virginia and Carolina. An "interesting series of North American oaks" appears on ff. 121-125.

Very few Lawson specimens appear in H.S. 158. Some specimens in H.S. 158 contain the notation "Virg. Marshall," suggesting that these were collected by James Marshall. Marshall was a surgeon who sent plants from Virginia to Petiver and Plukenet between 1695 and 1705 (Dandy 1958). For example, H.S. 158 f. 151 — which Dandy claims contains Lawson material — contains specimens of Helianthus divaricatus with the note "A sort of Snakeroot called St. Andrews Cross then length ??? of whose root always bends to the East. Lawson." Two of the specimens appear to have been collected by Marshall instead of Lawson.

H.S. 159 is a bit of a puzzle. It has enormous pages and numerous collections inside it. In the description of H.S. 159, Dandy writes that specimens from Lawson "are scattered throughout the volume," but he does not provide specific page numbers for Lawson specimens (Dandy 1958). On the second page of H.S. 159 is a handwritten catalog, listing collectors and the pages on which their specimens appear. This list records Lawson's specimens on folios 114, 115, 122, and 224.

Confusingly, it lists Robert Ellis' specimens on folios 102-130, which overlaps with the Lawson specimens. Some specimens attributed to Mark Catesby also appear within that range. We have done our best to determine collectors based on the notes that appear on the specimens; anything with a note in Lawson's distinctive style and dates we have listed as collected by him.

For example, H.S. 159 f. 108 contains a specimen of Fagus grandifolia and a note reading "May 7th 1711. The Beech" in what appears to be Lawson's handwriting. Following these words is the word "Virginia" in what might be another hand. Below this is a specimen of *Ulmus* with a label in a different handwriting, stating that the plant was collected in Virginia in what appears to be 1711, on the York River.

H.S. 159 contains several of Lawson's oak specimens. At the bottom of H.S. 159 f. 115 is a specimen of Quercus virginiana, with the note: "The live oak which bears the sweet acorn pag line an evergreen these are two of this sort of evergreen oaks this bears an acorn sweet as a nut yielding a good eatable oyl; the other has an acorn and leaf much ??? and is bitter and of a yellow color so that nothing ??? to eat it which is quite contrary to their ????? of eating all they can meet with as soon as they see? what it is." It appears that Lawson left the page and line numbers blank, intending to add them later, perhaps after referring to his book. On page 92 of A New Voyage Lawson describes the acorns of live oaks as "sweet as chesnuts, and the Indians draw an oil from them, as sweet as that from the olive, tho' of an amber-colour."

A Carya tomentosa appears on H.S. 159 f. 117, bearing the note "April 20 1711 Salmon Creek. White hiccory of the large nuts the leaves smell like balm of Gilead."

Lawson describes three types of hickory in A New Voyage. Of the white hickory, he writes: "The Hiccory is of the Walnut-kind, and bears a Nut as they do, of which there are found three sorts. The first is that which we call the common white Hiccory. It is not a durable Wood; for if cut down, and exposed to the Weather, it will be quite rotten, and spoil'd in three Years; as will likewise the Beech of this Country. Hiccory Nuts have very hard Shells, but excellent sweet Kernels, with which, in a plentiful Year, the old Hogs, that can crack them, fatten themselves, and make excellent Pork. These Nuts are gotten, in great Quantities, by the Savages, and laid up for Stores, of which they make several Dishes and Banquets. One of these I cannot forbear mentioning; it is this: They take these Nuts, and break them very small betwixt two Stones, till the Shells and Kernels are indifferent small; And this Powder you are presented withal in their Cabins, in little wooden Dishes; the Kernel dissolves in your Mouth, and the Shell is spit out. This tastes as well as any Almond. Another Dish is the Soup which they make of these Nuts, beaten, and put into Venison-Broth, which dissolves the Nut, and thickens, whilst the Shell precipitates, and remains at the bottom. This Broth tastes very rich."

Lawson describes Quercus nigra (H.S. 159 f. 122) as an "Olive coloured water oak. May 10 1711. A beautiful water oak tho not an evergreen."

A specimen of Quercus shumardii appears on H.S. 159 f. 124; it is distinguishable from Quercus rubra by the tufts of hairs in the leaf axils. Of this tree, Lawson observes: "April 20th, 1711; a leaf of red oak got at Salmon Creek, pag. 92 line 3." In A New Voyage, Lawson writes "We have Red Oak, sometimes, in good Land, very large, and lofty. 'Tis a porous Wood, and used to rive into Rails for Fences. 'Tis not very durable; yet some use this, as well as the two former, for Pipe and Barrel-Staves. It makes good Clap boards."

Lawson mailed his last package of specimens to Petiver in July 1711. He died soon after.

CONCLUSION

Lawson seems to have been an extraordinarily talented and energetic man, likely to have published more and contributed more to the cataloging of the biota of the Americas, had he lived longer. His A New Voyage displays both attention to detail and empathy for human desires. His approach to natural history is refreshingly multi-faceted — descriptions of plants and animals include physical appearance, natural habits, and also culinary and practical uses. Modern authors rarely write travelogues that also discuss ecology, biology, anthropology, cookery, and construction. Lawson also has provided an interesting exploration of pre-Linnaean taxonomy — on page 126, we learn that Insects of Carolina include alligators, snakes, and lizards, though p. 129 contains a wonderful description of rattlesnakes.

This essay is a continuation of the project begun in the 17th century, gathering the data needed to catalog the world's organisms. The great thing about doing it online is that we can now have chronological perspective — John Lawson definitely wasn't looking at the Carolina we see today and we can make connections rapidly. Lawson worked hard on his book and his collection. He never finished his natural history, but he's still in the conversation.

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