Long Island Botanical Society

Vol. 32 No. 4 | The Quarterly Newsletter | Fall 2022

Native Phragmites on Long Island

John E. Potente

Director, Native America, Hauppauge, Long Island, NY (ourialis@gmail.com)

The mere mention of phragmites is apt to raise the hair on the back of the neck of many a botanist. It has a notorious reputation of colonizing wetlands and spreading aggressively, marginalizing native species and compromising natural plant communities. Much effort is mustered throughout North America to combat its spread and keep it in check, or in some places, to attempt to eliminate it altogether. Already, plants rare and common have lost ground to phragmites and many financial budget allocations have been spent trying to clear it from landscapes, only to see phragmites creep back from its stolons and subterranean rhizomes. Where did phragmites come from, why is it so problematic, and how is native phragmites different from invasive phragmites?

Figure 1. Red culms of *Phragmites americanus* growing sparsely on high marsh of the Great South Bay, Long Island. Photo by John Potente.

Etymology

The name phragmites is derived from the Greek word "phragmos", which means hedge or fence. Indeed, phragmites grows tall, in clones, and sturdy, much like a natural living fence. As a member of the Grass Family (Poaceae), it raises its prominent stalk, supporting a prolific panicle of seeds atop. Its hallmark inflorescence flags above our heads as we near it, and try to work our way through its morass of jointed stalks. Emerging from the solid nodes are the sheaths that bend to flat blade leaves, narrow and long, knitting populations of phragmites above ground, as a network of rhizomes tie them together underground in their wet marsh footing.

Habitat and Classification

In his voluminous work of 1843, *A Flora of the State of New-York,* John Torrey described its occurrence, writing that phragmites inhabits "Borders of ponds and swamps; not common". Later, in 1915, Norman Taylor, in *Flora of the Vicinity of New York*, described phragmites as appearing "In swamps and wet places. Throughout the range, except the pine-barrens." The expansive collective work of Nathaniel Britton and Addison Brown, *An Illustrated Flora of the Northern United States and Canada*, called it "*Phragmites phragmites*, Common Reed-grass", which is "In swamps and wet places nearly throughout the United States." Finally, more contemporarily, in his 2017 *Catalog of the Vascular Plants of New York State*, David Werier registers two species of phragmites and one hybrid:

Phragmites americanus
(aka. *P. australis* subsp. *americanus*)
Phragmites americanus × P. *australis*
(hybrid)
Phragmites australis
(aka. *Phragmites communis*)

Origin

Some of the oldest palaeoecological records of phragmites reeds are from northern Europe, dating back 13 million years. Since the retreat of the most recent glacier, the species *Phragmites australis* has been thriving in the British Isles. While phragmites is often considered invasive in North America, preserved portions of the plant, dated to 40,000 years ago, have been found in Southwestern United States and remains have been recovered from 3000-year-old peat cores, retrieved from tidal marshes in Connecticut. Fragments of it have been found from fossilized sloth dung in southwest United States. Apparently, these oversized ground dwelling sloths, that lived during the Pleistocene epoch, and

(continued on page 39)

Society News

LIBS joins The Coalition for Hither Woods. The Town of East Hampton has plans to acquire and clear 14 acres of Suffolk County parkland in Hither Woods, Montauk for construction of a 75 million dollar sewage treatment plant. These environmentally sensitive lofty woods, cut by a deep ravine known as Laurel Canyon, were purchased by Suffolk County in 2000. The Town's sewer project would convert these woods (in the midst of the largest block of preserved open space on the South Fork) into something unrecognizable. Fourteen acres of forest will be leveled so the Town can construct a 22,500 square foot sewage treatment building, parking lots, maintenance facilities, and sink into the ground 150 cesspool rings (10 feet wide, 12 feet deep).

Letter from The Coalition for Hither Woods to Supervisor Peter Van Scoyoc & Members of the East Hampton Town Board (January 5, 2023):

At your December 13, 2022 public meeting, the Department of Natural Resources made a Power Point presentation concerning the Town's proposed wastewater treatment plan for Montauk. As you know, a crucial element in this plan is the construction of a sewage treatment plant on County parkland in Hither Woods, which you plan to acquire via a land swap. In the Natural Resources Department's presentation, Slide 16 listed the Town's "Requirements for Land Swap," with the first stated requirement being: "Broad Public Support."

It should be apparent to you all by now that there will never be broad public support for putting a sewage treatment plant on parkland in Hither Woods. In fact, just the opposite has happened. We know from our own feedback that a tremendous groundswell of opposition has built, and is still building, to the very idea of clearing 14 acres of land and building a sewage treatment plant ("STP") in Hither Woods. Among the groups that have announced their opposition to a Hither Woods STP are the Group for the East End, the Long Island Pine Barrens Society, the Long Island Botanical Society, the Long Island Greenbelt Trail Conference, the East Hampton Trails Preservation Society, the Southampton Trails Preservation Society, the East Hampton Sportsmen's Alliance, Concerned Long Island Mountain Bicyclists (CLIMB), Third House Nature Center, Inc., and the Open Space Council.

The handwriting is on the wall for you to read. The Town Board could hardly have proposed anything less popular than to put a sewer plant in Hither Woods. Thus, the time has arrived for you to publicly renounce this aspect of the Montauk wastewater treatment plant. If you do not, rest assured that The Coalition for Hither Woods and its allies will fight such a proposal, at all levels of government and at all times, with all our strength.

There are other methods available to the Town for treating wastewater in Montauk that do not involve a centralized sewage treatment plant on Hither Woods parkland. You should direct your energies to exploring and implementing those alternatives.

At the very least, if the Town Board does not abandon the proposed Hither Woods STP, you must declare yourselves lead agency for the sewer district proposal and issue a Positive Declaration under SEQRA. In the Power Point presentation to which I referred above, the Town listed its expected "Phases" for implementing the wastewater treatment program, including the sewer

(continued on page 47)

(Native Phragmites, continued from front cover)

migrated from South America to North America, had an appetite for the tall phragmites grasses.

Historically, Native Americans made use of phragmites reeds to make arrows, they made flutes from the culms, and wove mats out of the leaves and the stems. Remains of *Phragmites australis*, dating back to 600-900 A.D., have been identified in remnants of twined mats discovered in archaeological explorations of the ruins of Anasazi Puebloans of southwestern Colorado. The historic ground sloth disappeared from North America when the last glacier brought a long-standing chill to the continent, but phragmites persists, claiming wetlands throughout North America.

Despite the historical and archaeological accounts of phragmites in North America, on Long Island the genus *Phragmites* encountered is commonly referred to as an introduced invasive plant, presumed to be transported here from Europe during colonial period. Phragmites has been collected from Long Island as early as 1864, but at the time was not differentiated as being either a native or nonnative occurrence. Relatively recently, in 2002, a graduate student from Yale University, Kristen Saltonstall, was able to confirm through genetic analysis, that the invasive *Phragmites australis* is the same as that of Europe. As a result of the DNA profiling, *Phragmites australis* has now been morphologically and genetically separated out: the endemic native (*Phragmites australis* ssp. *americanus*) and the European lineage (*Phragmites australis* ssp. *australis*). Here, we now refer to *Phragmites australis* subspecies *americanus* as simply *Phragmites americanus,* the native phragmites.

Range and Invasion

Today, in the British Isles, *Phragmites australis* is considered an important grass, contributing to terrestrial, freshwater, and brackish plant communities. Historically, there, it served a key role in Phragmites-dominated reed beds. Here, on Long Island, we may find it antithetical that, in many instances in Britain, *Phragmites australis* populations are purposely managed to maintain their continuity. In the late 1700s and early 1800s, wooden sailing ships that traveled across the Atlantic Ocean, had their hulls loaded with heavy materials such as sand and stones as a ballast to stabilize the ships during heavy waves and sea storms. It was probably in this ballast that seeds of European phragmites traveled from continental Europe to continental North America. And thus began the aggressive takeover of the habitats of native North American *Phragmites americanus*, along with countless other wetland plants. Never-the-less, *Phragmites americanus* still occurs in limited scope in it's historical range throughout the United States, and remains widespread in western parts of the United States.

In Europe, *Phragmites australis* populations host over a hundred species of invertebrates, including more insect species than any other perennial grass. However, here in North America, there are fewer invertebrate herbivores that feed on *Phragmites australis*, and most of those that do are introduced, being invasive themselves. The fact that the nonnative *Phragmites australis* suffers less herbivory than the native *Phragmites americanus* here in North America may be an additional reason why *Phragmites australis* has an advantage overtaking Long Island wetlands that were previously occupied by *Phragmites americanus*.

Identification

While native phragmites is not well represented, nor well recognized on Long Island, among the tangled tall grass "forests" of *Phragmites australis,* there can still be found occasional survivors of *Phragmites americanus*. The native phragmites survives best along riparian avenues and coastal marshes near freshwater upwellings and streams. While hikers and hunters and nature lovers pass by colonnades of waving phragmites, little do they realize that among the millions of daunting stems, are hidden dwindled populations of *Phragmites americanus.* Upon first glance, one assumes that gatherings of phragmites are solely the introduced invasive species. But once one becomes familiar with the morphological differences between the two, one may find that while *Phragmites australis* dominates and overpowers landscapes with its densely growing stems, *Phragmites americanus* may be intermingled as occasional stems and panicles, hidden in the vegetative monotypic morass of *Phragmites australis*. *Phragmites americanus* plants typically grow 2-3 meters high (~6-7 feet), but can reach 4-5 meters (~12-15 feet) under optimal conditions. *Phragmites australis* can tower even higher to 6 meters (~20 feet), overshadowing *Phragmites americanus*. Even when *Phragmites americanus* is found as an isolated population, it tends to grow with a few sparse stems, spread out leaving space between one another, allowing other plants to join in and associate as a native plant community. It is for this, and many more reasons that the native *Phragmites americanus* needs to be known and appreciated on Long Island.

The most telling beacon of *Phragmites americanus* is a deep to lighter purple color on the lower portion of the hollow, aerial stems (called culms for grasses). This mauve coloration tends to be more concentrated near the nodes of the culm. The portion of the culm, not covered by the leaf sheath, exposed to more light, bears this purple that sometimes shifts to a bright red glimmer. When the seasons cool and the leaf sheaths dry and begin to break apart, more of the stems are exposed, displaying their colors in various shades of maroon. And once one notices their purplish-brownish calling, they're hard to miss. During the height of their flaunting, their colors may range from distinctive striking red, that seems like it's painted on the stems, to a pastel purple, to more subtle efforts with undertones of burnished chestnut brown (Figures 1 and 2).

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(Native Phragmites, continued from page 39)

Figure 2.(left) Exposed red culm of *Phragmites americanus*. The portion above the node is covered by the superior sheath and the culm is not visible. The lower area, where the lower sheath parts, reveals the red pigment. Photo by John Potente. Figure 3. (center) A lone panicle of *Phragmites americanus* among the brawnier *Phragmites australis* panicles. Note the there are several smooth *Phragmites americanus* culms that have already shed their panicles when this photo was taken in December. Photo by John Potente. Figure 4. (right) *Phragmites americanus* smooth red stem at base of culm and yellow-hued green leaf in May. Photo by John Potente.

The redness of the culms may be due to anthocyanin in the herbaceous stems. For, as late autumn and winter wears on, or when the stems are aged and detached, they may lose their red luster and appear as a darker chestnut brown. As with any persnickety exception, there are instances where the invasive *Phragmites australis* may proffer up a dash of red on a lower node, just to keep us guessing. But, for all intents and purposes, *Phragmites australis* wears its purple in its thick downy panicle of flowers, waving and bouncing above, as if advertising its imminent bounty of seeds. In more modest fashion, the panicles of *Phragmites americanus* are smaller and its spikelets less compact, offering a more sheer and open access for the tiny seeds to catch the wind (Figure 3**).**

Kneeling down to touch the purple-red stems, one notices that the stems of *Phragmites americanus* are as smooth and shiny as a straw from which we drink. We can feel around the stem and sense our fingers glide effortlessly across the polish of its surface. In contrast, the tan-coloured stems of *Phragmites australis* have a dullness to them and are more ridged and rough textured with noticeably raised vertical striations as we rotate our fingers around their circumference.

The leaves of *Phragmites americanus* are shorter than its introduced cousin and have a warm yellow cast to their green color, while *Phragmites australis* bears a wider longer leaf that is of a darker green with a blue hue. Of course, this is more evident when comparing the two species side by side, especially at the height of the growing season. The large *Phragmites australis* leaves extend rather erect alongside the stem, while the *Phragmites americanus* leaves tend to relax away from the stem, draping themselves a bit more horizontally (Figure 4).

The leaves of *Phragmites australis* disarticulate (break off) from the sheaths once the weather drops towards freezing. This leaves only the sheath portion of the leaf, which continues to wrap the culm tightly through winter. Even after the culms expire, they may remain standing like soldiers, with their winter sheaths covering them, persisting into December and through to the following spring. However, the leaf sheaths of *Phragmites americanus* tend to be loosely attached, unraveling and shedding earlier, some of the lower sheaths shedding even before flower time. This leaves culms of *Phragmites americanus* naked in late autumn. And as *Phragmites australis* stems bear the winter upright, the stems of *Phragmites americanus* tend to call it quits and fall down, come wintertime. Thus, phragmites may be botanized in winter, by the condition of the strewn, weather-beaten culms (Figures 5 and 6).

The smooth, ceramic-like culms of *Phragmites americanus* are often dotted by a native fungus, near the nodes, that makes its signature with little round black spots. This is not apparent on the nonnative *Phragmites australis*, although it may only be because the fungus, native to North America, has not yet figured out how to outsmart the nonnative phragmites. *Phragmites australis*, however, may show signs of a sooty mildew fungus that colonizes its culm in a more blotchy manner (Figures 7 and 8).

Figure 5. (left) Culm of *Phragmites australis* showing distinct vertical ridges and persistent winter leaf sheaths. Photo by John Potente. Figure 6. (left center) *Phragmites americanus* leaf sheath deteriorating and separating. Photo by John Potente. Figure 7. (right center) Culm of *Phragmites americanus* showing fungal black spots. Photo by John Potente. Figure 8. (right) Culm of *Phragmites australis* showing fungal mildew. Photo by John Potente.

To further differentiate the two species, one must then take out a hand lens or magnifying glass and begin the meticulous task of measuring, in millimeters, the ligules, glumes, lemmas and paleas with a metric rule. Ligules are part of the leaf and the glumes, lemmas and paleas are associated with the flower. A grass leaf is composed of a sheath that wraps around the stem, that then departs in a direction away from the stem as a blade of grass. At this juncture where the blade diverts course is a collar-like structure called the ligule, a membranous railing with a crew-cut of hairs at the termination of the sheath. Ligules line the upper portion of the leaf where the leaf veers off, away from the round stalk, as a leaf blade. It is a membraneous leaf organ composed of epidermal long cells, typical in grasses. The ligule, hidden away, facing the curved stem surface is active in synthesizing proteins and polysaccharides. To see the ligule, one must pull the leaf blade away from the stem and look for the tiny delicate palisade of fibers at the bend where the blade meets the sheath. Phragmites ligules have a dark lower band from which a lighter white fibrous array of hairs extends upward, although at times, the membrane may not be pigmented, helping to add ambiguity (Figure 9).

Measuring ligules and glumes is not an easy affair. It is akin to performing microsurgery, and in a botanical sense, it is. It is best done under a microscope, immobilizing the leaf or flower on the microscope platform. The ligules, of course, are three-dimensional and curved, which presents a small challenge. And when trying to get the glumes separated and confined under a cover glass of a glass slide, multiple microscopic white silky, centimeter long rachilla hairs, attached to the base of the florets, act to spring the florets out of view. Out in the field, it is even more arduous, trying to manage a metric rule and hand lens. But, with an abundance of patience and a prior good night's sleep, is possible. I found that, in the field, pressing the flowers between 2 glass microscopic slides made the chore easier. At home, or in a botany lab, an assortment of scissors, tweezers, magnifying glasses, and stabilizing tapes is not just handy, but essential (Figure 10).

Measuring the ligules when the leaves are green is easier than when they are aged and have become drier, fragile, and fraying. They are best measured in summer. I collected leaves and matured flowers that had already went to seed in early December, so the leaf ligules and flower glumes were end-of-the-season specimens, but still in satisfactory condition. When measuring the ligules of phragmites, there are two methods: one is to measure just the lower brown band (excluding the cloth of bound hairs); the other method is to include the lower brown band and the upper white fibrous haired membrane. Ligules of *Phragmites australis* have a thin, dark brown line from which a white fibrous edge extends upward. It appears as though the brown border was drawn with a fine point magic marker pen and as the upper border looks like a thin white brush edge. Similarly, the ligule of *Phragmites americanus* has a comb look. But, in comparison, that of *Phragmites americanus* has a broader brown base underscoring its white upper border (Figure 11).

There are often stray cellulose fibers or individual hairs that extend further vertically upwards from the ciliate ligules, but these stray longer hairs that wander from the defined band are not included in the measurement. In *Phragmites australis*, the

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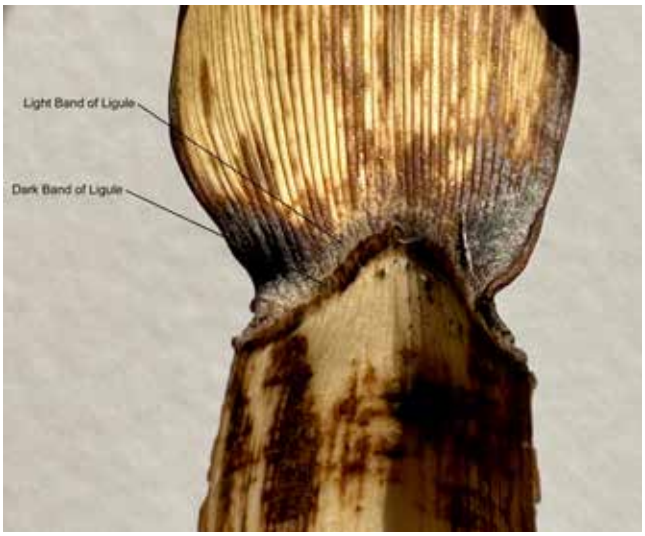

Figure 9. *Phragmites americanus* showing juncture of leaf sheath and leaf blade, with arrows indicating the light and dark bands of the ligule. Photo by John Potente.

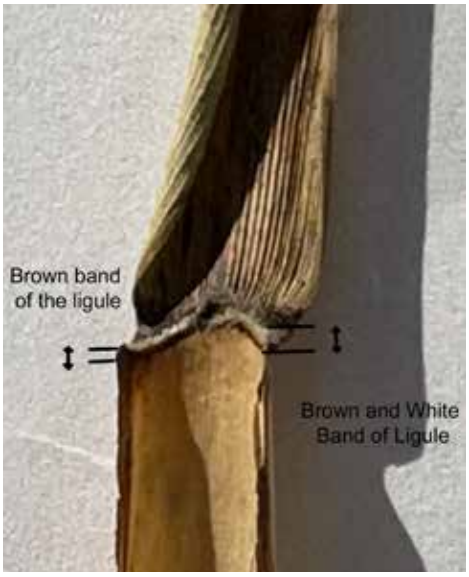

Figure 11. A leaf of *Phragmites australis* showing the two methods of measuring a ligule: on the left measuring just the lower brown band, on the right measuring the lower brown and upper white band. Photo by John Potente.

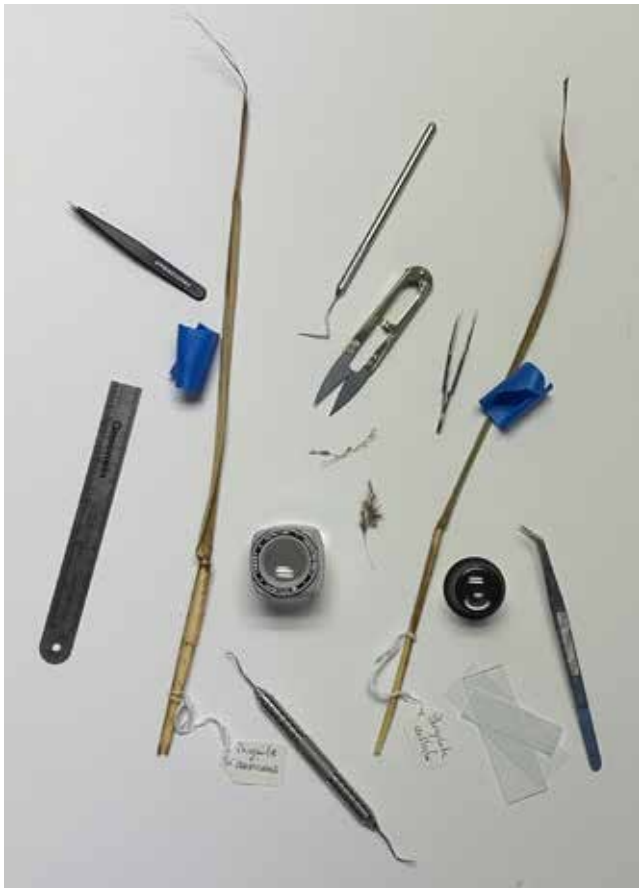

Figure 10. An assortment of handling tools, magnifying lenses and rulers to measure phragmites features. Photo by John Potente.

Figure 12. Measurement of a ligule of *Phragmites australis*. The ruler shows millimeter markings. The lower brown band alone measures about 0.2-0.3mm. If both the lower brown and upper white band are counted, the measurement is 0.6-0.7mm. Photo by John Potente.

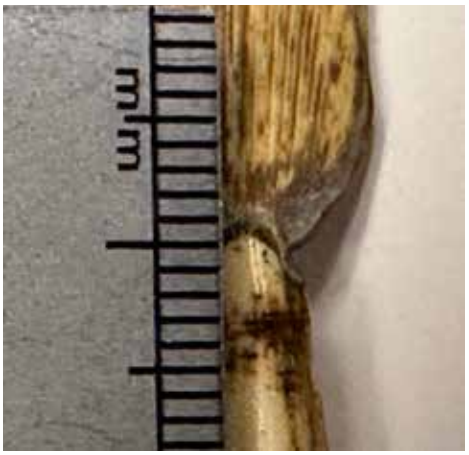

Figure 13. Measurement of a ligule of *Phragmites americanus*. The metric ruler shows millimeter markings. The lower brown band alone measures 0.7-0.8mm. If both lower brown and upper white band are counted, the measurement is 1.1-1.2mm. Photo by John Potente.

ligules are narrow. The lower brown band of its ligules measure a mere 0.1mm-0.4mm. If the upper white border is included, the combined height measures an average of a 0.4mm-0.9mm (from the bottom of the brown border line to the top of the white fibrous band). The ligules of *Phragmites americanus* are a bit broader with the brown band alone measuring 0.4mm-1.0mm. When both the brown and white band are included, the ligule usually measures over a millimeter, averaging 1.0mm - 1.7mm (Figures 12 and 13).

At the tops of the larger stems are the parading panicles that wave like territorial flags of dominion. In summer, *Phragmites australis* flaunts hefty purple-grey panicles, although that color fades to tan or yellow-brown as the seeds mature and the season wears on. *Phragmites americanus* yields a more meager panicle, usually more brown than purple. The hailing panicles of both species are an inflorescence, filled with an array of branches, splintering into more branches that divide into even thinner, tiny branchlets bearing spikelets. These multitudinous spikelets spread out as they fill the plume-like panicle with hundreds to thousands of barely visible, tiny flowers yielding minute seeds (Figure 14).

As with most grasses, the flowers are a decisive aspect of identification, that help distinguish *Phragmites australis* from *Phragmites americanus*. The petal-less flowers of phragmites are so small and so numerous and bunched together, they are referred to as florets. Individual florets of phragmites are attached, alternately, along a thread-thin branch called a rachilla. Near the area of attachment of the floret, the rachilla is encompassed with a spray of multiple, white fibrous hairs, that spread out like nearly-invisible tendrils surrounding and corralling the florets and seeds. Groups of florets are packaged into the basic inflorescence unit called the spikelet. Into autumn, the florets mature, turn a tan color, and drop off, leaving the seed with the rachilla, feathered with its long white, hair fibrils, to help carry it aloft in the wind. Continuing back down the plant, we find that multiple spikelets are attached via pedicels to a spindly rachis. It is these massive groups of spikelets that diverge from the tops of phragmites stalks that create the showcase of purple panicles atop the fields of phragmites (Figure 15).

Figure 14. A central culm (stalk) of phragmites branching out into a rachis of spikelets. Photo by John Potente.

A notable distinguishing feature are the glumes that embrace the flowers, like a vase at the base of each spikelet. Glumes are modified leaves defining a spikelet, cupping either a single floret or multiple florets. The glumes represent bracts that act as a protective husk, sheltering developing flowers. The glumes part as the flowers bloom. The glumes of phragmites species are uneven, the lower glume being the shorter one and the upper glume extending higher, helping to shield the stamens and pistils. It is these glumes that are one of the identifying clues, separating *Phragmites americanus* from *Phragmites australis*. But, one pair of glumes is not enough to separate them. A number of pairs of glumes should be averaged to get a better estimate.

The lance-shaped glumes of native phragmites are longer in length than those of the nonnative phragmites. The lower glume of *Phragmites americanus* is the shorter glume and measures 3.5mm-6.5mm (usually greater than 4.0mm) and the upper longer glume measures 5.5mm-11.0mm (usually greater than 6.0mm). By contrast, the invasive phragmites glumes are shorter, the lower glume usually less than 4.0mm (with an average range of 2.5mm-5.0mm) and the upper glume less than 6.0mm (with an average length of 4.5mm-7.5mm). Note that there is some overlap in the range of measurement of the glumes with *Phragmites americanus* and *Phragmites australis*. The shorter, smaller glumes are a trait of *Phragmites australis* that contributes to enabling their panicles to become more compact, giving them a downy appearance. The longer glumes of *Phragmites americanus* contribute to pushing neighboring spikes further apart, giving their panicles a looser, more open appearance (Figures 16 and 17).

To add to the perplexity of sorting out the lower glume and the upper glume, there are often sterile florets that are staminate, having stamens, but no pistils. In these cases, the lemma becomes a lance-like projection that emerges from the base of the floret. Lacking a caryopsis (the one-seeded fruit), their lemma may protrude upwards past the ends of the glumes and stand out independently, or have either glume tucked around them at their base, confusing measurement. When present, these sterile florets can be thick, long and spear-like and can be mistaken for glumes. The

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(Native Phragmites, continued from page 43)

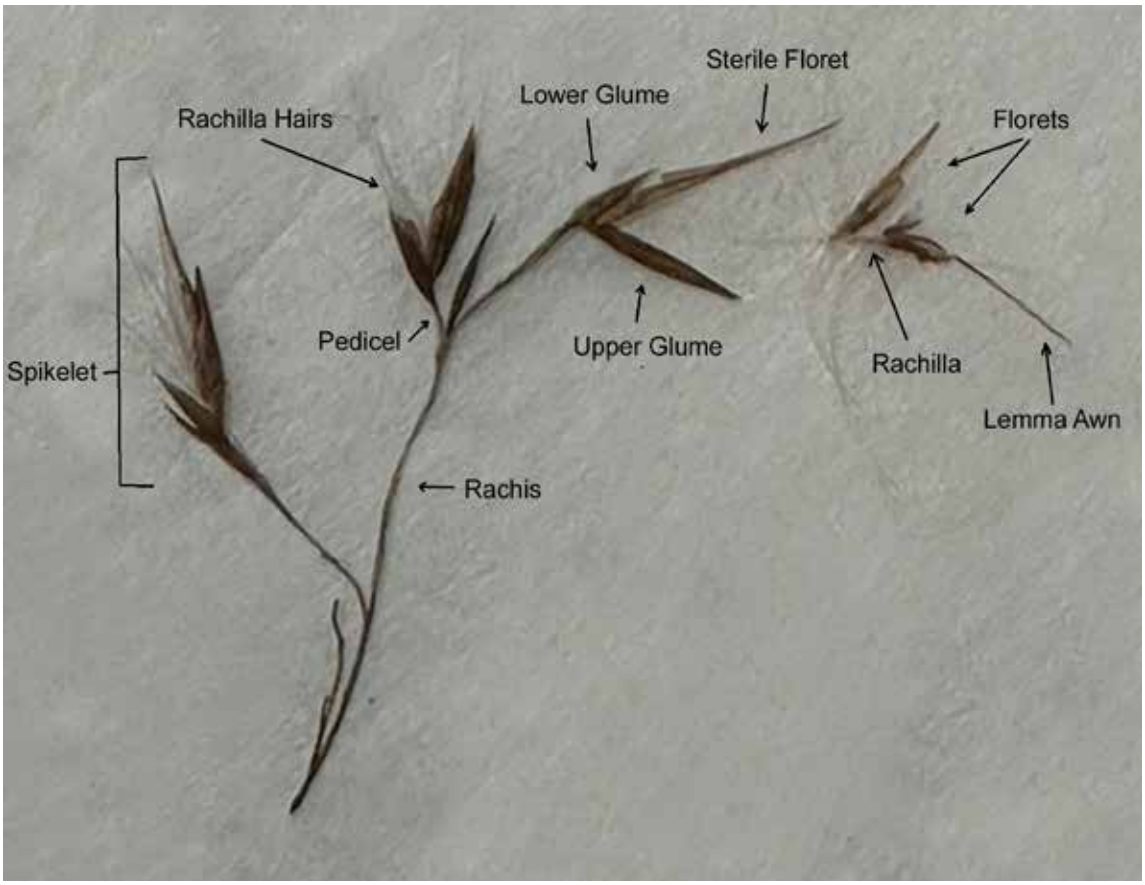

Figure 15. Morphology of a panicle showing the branching, spikelets, and florets. Note the shadows of the fine rachilla hairs emerging from within the spikelets and attached to the rachillas at the base of the florets. Photo by John Potente.

Figure 16. Measurement of 6.0mm lower glume of *Phragmites americanus*, using a millimeter probe. Note the many white fine hairs extending from the rachilla. Photo by John Potente.

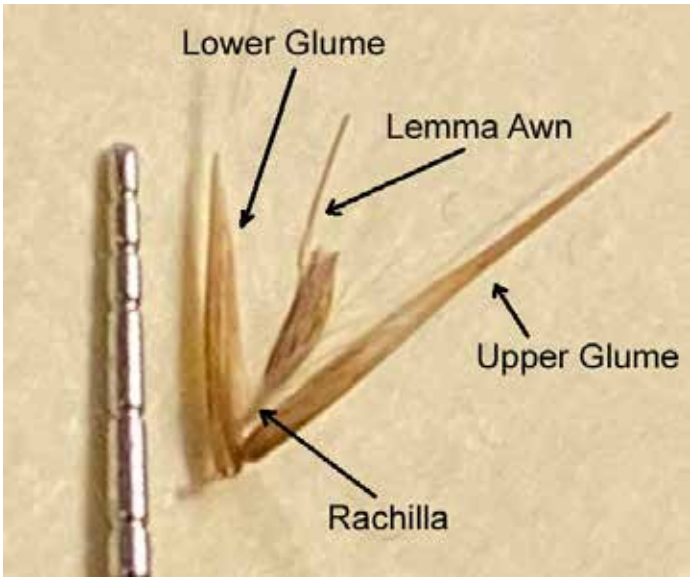

Figure 17. Measurement of 10.0mm upper glume of *Phragmites americanus*. Note the numerous silky white hairs that will eventually kite the floret away. Photo by John Potente.

Figure 18. Here we have a sterile basal floret of *Phragmites australis* that extends past the adjacent lower glume (to its left). Measurement of the sterile floret is 7.0mm, which if mistaken for an upper glume, could lead us to mistake this as belonging to *Phragmites americanus*. The actual lower glume measures 2.5mm, identifying it as *Phragmites australis*. The upper glume to the right at 45° measured 4.5mm. Photo by John Potente.

Figure 19. Shown above are two seeds covered with a palea and lemma, freed from the spikelet. The lemma, including its bristles (awns) shown are 8.0mm long. Note the 3 prominent veins in the upper and lower glumes. Photo by John Potente.

staminate florets with the elongated bulky lemma are usually the basal florets within a spikelet. Their prominence may result in a misinterpreted measurement of the glumes, leading one to mistake *Phragmites australis* for *Phragmites americanus* (Figure 18).

With phragmites species, separating lemma and palea for measurement is an even more tedious affair. Within the clasp of the glumes lie the florets, the tiny flowers of phragmites. They need to be seen and surgically teased apart, under magnification. The lemma and palea are bracts even smaller than the glumes, and each individual floret is attended by an external lemma and an inner palea. These structures persist through seed production and into winter. Lemmas may appear similar to glumes, sheltering the flower and then the seed, and tending to have rolled margins that extend, terminating in thin bristles or awns. The lemmas of *Phragmites americanus* are 8.0mm-13.0mm long, measuring, on average, longer than, and often protruding past the glumes. The palea of phragmites grass is the final fragile bract that covers the floret, being partially within the overlying lemma. The palea of *Phragmites americanus* measures 4.0mm-6.5 mm (Figure 19).

It should be stressed that all of these identifying features are merely indicators of traits of either *Phragmites americanus* or *Phragmites australis*. The more distinguishing traits a phragmites plant possesses, the truer the particular plant is to its species. But variations of these traits may occur. The amount and intensity of the red hue on a culm may vary. The measurement of lengths of ligules or glumes on an individual plant may vary, necessitating an average. Add to that, hybridization occurs. It should also be noted that in some floral references and guides, only a description of *Phragmites australis* (Common Reed) is given, without a recognition of *Phragmites americanus*. In those cases, the botanical description for *Phragmites australis* may encompass measurement characterizations that belong to *Phragmites americanus*. This would incorrectly increase the measurement description (especially of the glumes and lemmas) of the *Phragmites australis* description, that should only apply to the lengthier glumes and lemmas of *Phragmites americanus*. An analysis of DNA separation and sequencing will give a definitive answer. But, the place to start is to be aware of the general morphological characteristics of the standing plants to find the elusive treasure of surviving native phragmites.

Restoration

Phragmites americanus, growing in tidal and freshwater wetlands, is amenable to co-habitation within plant and animal communities. Its culms tend to be more sparsely placed, allowing for more light exposure from above and more sharing of nutrients from the soil below. Although it tends to grow thinly dispersed, at times it may populate more densely. The introduced *Phragmites australis* is more aggressive, growing abundantly with its culms crowded tight together, depriving other plants of sustenance and starving them from sunlight. The invasion of *Phragmites australis* into wetland ecosystems and into native *Phragmites americanus* habitat has compromised biodiversity with its

(continued on next page)

(Native Phragmites, continued from page 45)

Figure 20. Efforts to erase phragmites from Wertheim National Wildlife Refuge salt marsh by machine plowing in 2009. Aerial Photo by John Potente.

Figure 21. Culms of *Phragmites americanus* sparsely growing on a shoreline in the Town of Oyster Bay, Long Island, 2020. Photo by John Potente.

monoculture growth habit. Wetland plant growth and the mobility of marine vertebrates and invertebrates are inhibited by their dense monoculture behavior. *Phragmites americanus* may be more hospitable to marsh birds and mammals, while the invasive compacted culms of *Phragmites australis* would make passage and nesting more difficult. Efforts to rid areas of *Phragmites australis* have been aggressive, themselves. Broad areas of acreage have been dredged, bulldozed, and poisoned with glyphosate in ecological combat to fight invasive phragmites. All being done with little or no regard for the possibility that in the midst of the morass are the valuable native phragmites survivors (Figure 20).

In 2019, I began searching Long Island for signs of native phragmites. I was intrigued when I heard that it may still survive here. And if it did, became concerned that in the many efforts to rid Long Island of the invasive phragmites, the last traces of native phragmites would be annihilated as well. Along the north and south coastal areas, I discovered patches in the Town of Oyster Bay, the Town of Smithtown, and the Town of Brookhaven that harbor phragmites species that fit some or all of the identifying features of the native *Phagmites americanus*. Further genetic profiling will help verify the findings (Figures 21, 22, and 23).

Now that living *Phragmites americanus* has been found on Long Island, any effort to undertake local or broad scale elimination of phragmites should be preceded by a survey to determine if there is any native *Phragmites americanus* present to be protected or salvaged. Certainly, since native phragmites is an asset to wetland ecosystems, it should be considered a principal plant to remain in, or restored to, areas where the invasive phragmites is being eradicated.

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Figure 22. (left) A stand of phragmites that includes culms indicative of *Phragmites americanus* on the north shore of the Town of Smithtown, Long Island, 2020. Photo by John Potente.

Figure 23. (right) A stand of *Phragmites americanus* showing their classic ruby-red culms on the south shore of the Town of Brookhaven, Long Island, 2019. Photo by John Potente.

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(Society News continued from page 38)

plant. The "Land Swap with Suffolk County" is forecast to occur in 2022-2023 and the "Map & Plan Report" is projected to be finished in "2021-2023." Yet completion of the SEQRA process is anticipated in "Late 2023."

This is unacceptable. No aspect of the sewer district project, least of all a land exchange with Suffolk County, should take place before completion of the SEQRA process. Furthermore, given the proposed bulldozing of 14 acres of forest in the midst of the largest block of preserved open space on the South Fork, and the many other potential adverse environmental impacts associated with this project, it is unthinkable that the Town Board would do anything less than prepare a full-blown Environmental Impact Statement ("EIS").

To date, the Town has not, to our knowledge, even begun the SEQRA process. It is totally unrealistic for you to project that an EIS on a project of this magnitude will be scoped, prepared, heard, and adopted before the end of 2023.

We believe you have clear choices to make. First, follow your own precept in regard to the proposed Hither Woods STP. The idea of developing a sewage treatment plan in Hither Woods is highly unpopular on Montauk and elsewhere. You should abandon this proposal without further delay. Second, if you choose to press forward with your ill-conceived idea of building an STP in Hither Woods, the entire Montauk Sewer District proposal must be the subject of a robust and fully transparent Environmental Impact Statement.

The ball is in your court.

Sincerely,
Richard E. Whalen, President, The Coalition for Hither Woods

Long Island Botanical Society
PO Box 507
Aquebogue, NY 11931

Field Trip

May 20, 2023 (Saturday) 10am
Flora and Vegetation of the Manetto Hills, Nassau County
Manetto Hills Park, Plainview
Trip Leader: Andy Greller
(limited to 10 participants)

Andy will share his research on the flora of the Manetto Hills and the region's different forest types. The oak-dominated forests around Manetto Hill, Plainview (elev. 278.9 ft asl) are typical of the middle portion of northern Long Island, where they occur on gravelly soils. The Manetto Hills, Dix Hills, and Half Hollow Hills (MDH Hills) straddle the Nassau/Suffolk County line in central Long Island and form some of the highest elevations on Long Island. The north/south trending MDH Hills are topographic anomalies when compared to the east/west trending moraines that dominate Long Island's topography.

Trails are narrow, steep, and rocky in places; walking stick might aid some. Be alert for off-road bicyclists. Boots, tick protections, water, lunch or snack, hand lens, camera (optional). Plan for a 4-hour walk. Meet at Washington Avenue just north of the LIE.

Pre-register with LIBS field trip chair, Bob Chapman (bob.chapman516@icloud.com). More details about the trip and directions to the meeting place will be sent after completing registration.

LIBS BBQ & Monthly Meetings

The Bill Patterson Nature Center at Muttontown Preserve is no longer available for public meetings. This closure is one of the many results of the Covid pandemic and marks an end to a LIBS tradition. Bill Patterson was an active LIBS member during the society's early years, leading field trips and hosting meetings at one of Nassau County's premier nature preserves. During the ensuing decades LIBS and Nassau County Department of Parks, Recreation, and Museums partnered on many botanical projects and at this time LIBS expresses sincere appreciation to all the individuals who made this special relationship possible, especially Lois and Al Lindberg.

John Potente, chair of the LIBS Program Committee, recently announced that 2023 will see a return of the LIBS BBQ as well as monthly programs. At this time definite plans have not yet been finalized but monthly meetings will likely take place at a public library in Nassau County. A full committee of individuals will be needed to make the return to in-person meetings a reality; help is needed in bringing and setting up a projector, hospitality tasks need to be planned, and other details need attention. Please contact John Potente or Eric Lamont if you can help.

Concerning the LIBS BBQ, John is following-up on some interesting possibilities, members will not be disappointed. Stay tuned in for further details!