

CUSCUTA AMERICANA L.

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In a study of the genus *Cuscuta* a peculiar situation in regard to *Cuscuta Americana* L. arose, which may prove of interest. The history of this species seems evident. The original plant was collected by Sir Hans Sloane in Jamaica and is described in *Hist. Jamaica*, 1707, vol. 1, p. 201. Gronovius in 1743 determined a specimen collected by John Clayton to be the same as the Sloane plant, to which he definitely referred; *Plantæ Virginica*, p. 18: 1743. Linnæus, 1753, in *Sp. Pl.*, vol. 1, p. 124, copies the description of Gronovius verbatim and gives the form its binomial name. Linnæus refers specifically to *Pl. Virg.*, p. 18.

It is clear, then, that Sloane's plant in the South Kensington Museum should stand as the type of *Cuscuta Americana* L. That as a matter of fact our present *Cuscuta Americana* L. is a very different plant from that of Sir Hans Sloane will perhaps be clear from the discussion which follows. Indeed, *Cuscuta Americana* L. as at present understood seems to have arisen without a type upon which to rest.

Through the courtesy of the authorities of the South Kensington Museum I was enabled to study the Sloane plant somewhat carefully, with the following results:

Calyx gamosepalous; tube short; lobes coriaceous in center, membranous at edges; diverging at an acute angle; apex abruptly acute; large cells (plainly made out with hand lens) irregularly scattered; membranous part of lobes, as well as inner and outer surface of petals, thinly clothed with velvety trichomes. Lobes of calyx one-half longer than the tube, the tips meeting those of the reflexed lobes of the corolla. Lobes rather spreading, at least not closely appressed to tube of the corolla.

Corolla; tube urceolate, about 2 mm. long; lobes reflexed, obtuse, separating from each other by a narrowly acute angle, about one-half as long as the tube. In many cases margins of petals infolded, which, however, may be due to imperfect drying.

Stamens apparently four, about one-half as long as lobes of the corolla, though exerted on account of the reflexed habit of the lobes.

Styles as long as tube of corolla, widely diverging.

Stigmas decidedly globose-capitate.

Inflorescence in cymose clusters of various sizes; peduncles often branched; pedicels, which are of varying length, bearing a single flower. Peduncles very generally stronger than the stems from which they arise. Pedicels in the majority of instances from 10 to 15 mm. long. Sloane's note that flowers arise from "single side of stalk" seems well taken, though his added statement, "as others of this kind are," needs modification.

Stem, closely appressed to stem of host where haustoria are developed and in such places strengthened and roughened. It also presents a large number of free ends which branch somewhat freely, each branch being subtended by an evident leaf-scale from 1 to 3 mm. long. The free branches have a twisted appearance and twine freely about each other. The plant as a whole is straw colored.

The abundant material permitted the dissection of the flowers, giving the following additional characters:

Flower generally four-parted, in this differing from the majority of American *Cuscutas*.

Anthers somewhat sagittate, filaments strong.

Scales large, about one-half length of filament; united at base; deeply cleft near top, less deeply at sides, intervening arch not fringed.

Sepals narrowly elliptical, the acumination being really a cuspidation.

Petals delicate in structure with but few large cells; elliptical, obtuse; reflexed fully one-third of their length.

Ovary lenticular, rather sharp-edged. In early anthesis styles are about length of ovary; later they become as long as corolla and very prominent. The styles are somewhat thick, awl-shape, and the globose character of the stigma is apparent from the first.

This is Sloane's Jamaica plant as I was able to make out its characters after an extremely careful study.

The Linnean description in *Sp. Pl.* (1753), p. 124, is as follows:

"*C. Americana*.

Cuscuta floribus pendunculatis.

Cuscuta caule aphylo volubili repente (Gron. *Fl. Virg.* p. 18).

Cuscuta inter majorem et minorem media, filamentis longis et floribus late super arbores et campos se extendens. Habitat in Virginia."

This is a verbatim copy of Gronovius' description of "*Cuscuta inter majorem et minorem media*" in *Flora Virginica*, *Pas Prima*, p. 18. 1743

Gronovius in turn closely followed the description of Sloane in his *Hist. Jamaica*, vol. 1, p. 201 (1707), t. 128, f. 3, his added characterizations being of very doubtful value.

Through the courtesies of the officials of the Linnaean Society I was able to examine the *Cuscutæ* in the Linnaean collection. This collection had evidently been examined by Dr. Engelmann in his study of the genus and his penciled annotations were upon the various sheets. There are three sheets, each of which is labeled *C. Americana* in the well known writing of Linnaeus. One of these is evidently *Cuscuta Gronovii* Willd., and Dr. Engelmann so regarded it, as is shown by his annotation. Another is probably *Cuscuta umbellata* H. B. K., at least it was so referred by Dr. Engelmann, and whether the reference be correct or not, the plant is certainly *not* the same as that upon the other two sheets. It is on the plant upon the remaining sheet that Dr. Engelmann rests his conception of the *Cuscuta Americana* of Linnaeus. It might be a fair question, in passing, as to why either of the other sheets might not have been selected as the basis of the Linnaean *C. Americana*.

The plant upon the third sheet, then, is to be taken as representing the notion of Linnaeus of the species under consideration. The specimen upon this sheet conforms fairly to Engelmann's description and also to that of Choisy, 1841, although it might be said that Choisy's figures of *C. Americana* L. in Choisy's *Cuscuta*, Jan. 21, 1841, No. 51, p. 186 tab. 4, f. 4, could not have been derived from his description of the species in his "*Cuscuta enumeratio*." The most cursory comparison of the description and drawings will make this fact plain.

The form upon this sheet, however, is not the same as Sloane's plant. A careful study and dissection of the plant gives the following characters:

Calyx 5-parted, polysepalous; lobes oval, acute, diverging from each other at an acute angle, coriaceous throughout, about as long as calyx tube. The calyx is quite large, being scarcely exceeded by the corolla. No evidence of large cells, although under hand lens the texture of the sepal is seen to be coarse, simulating veining.

Corolla 5-parted. Tube at first cylindric, later somewhat urceolate because of increase in size of ovary. Tube scarcely longer than calyx. Lobes, oval, acute, finally reflexed about one-fourth length of tube; in young flowers erect or spreading. Delicate in structure, no evidence of large cells.

Stamens, scarcely exerted, in the majority of cases not at all. Filaments strong, anthers *not* sagittate.

Scales about one-half the length of the petals, united at the base, arch narrow; top of scale deeply fringed, the fimbriations often branching; sides of scales much less deeply fringed, arches not at all. Base of scales plainly bilobate, as is often, though not always the case.

Styles two, parallel, short, subequal, scarcely exerted, in the majority of cases not at all.

Ovary somewhat globose, showing slight tendency toward triangularity, evidently due to development of three seeds. Styles only about one-half the length of ovary; stigmas globose-capitate.

Flowers from 2-4 mm. long and nearly as broad.

Inflorescence: Flowers gathered in clusters of various sizes, though none of the clusters exceed 8 mm. in diameter. Clusters contain from 3-5, up to 10-16 flowers. Flowering branches thickened, rugose, often branched. Pedicels short, single flowered, the flowers in many cases seeming sessile.

Scale leaves small, sub-triangular, acute, membranaceous.

Stem, where closely appressed to host-plant, strong, rugose, dark colored, almost brown. Free stems slender smooth, often branching. Scale leaves, more elongate and less acute than those found on flower branches, occur on free portions of the stem.

The individual flowers have no bracts, although the floral clusters are subtended by two or more membranaceous bracts from 1-2 mm. long and perhaps two-thirds as wide.

It is very evident that the plant in the Linnaean collection is far removed from the Jamaica plant of Sloane in the South Kensington Museum.

Grisebach, in *Fl. of British West Indies*, London, 1864, includes *Americana* and makes direct reference to Sloane, t. 128, f. 4, but the description shows that the plant he so refers is not that of Sloane. The following characters (*Fl. Brit. West Ind.* (1864), p. 476) mark his plant:

1. Pedicels shorter than flowers.
1. Calyx little exceeded by corolla.
3. Calyx lobes short, rounded.
4. Corolla 5-parted, lobes erect.
5. Scales small.

That much confusion has resulted from this uncertainty as to the type feature of *Cuscuta Americana* L. is evidenced by a study of the various large herbaria.

Thus the *C. graveolens* H. B. K. (Nov. Gen. et Sp. 3, p. 122, 1818) can scarcely be a synonym of *C. Americana* L. if the description there given is at all accurate.

In the collections at the Kew gardens, 21809 and 21810, Dr. A. Glazier, Brazil, chiefly from Province of Goyaz, 1896, are neither the *C. Americana* of Linnaeus and Engelmann, nor yet are they Sloane's plant. Herb. Guatemalens, 59, Jan., 1864, Gust. Bernoulli, and Herb. Guatemalens, 1916, Bernoulli and Cairo, with Herb. Mus. Paris 3353, Region de Orizaba, M. Bourgeau, 1865-1866, all mounted on same sheet and labeled *C. Americana* are *C. congesta*.

Ex Plantis Guatemalensibus, quas edidit John Donnell Smith, No. 855, *C. Americana* L. forma floribus majusculis, Coban, Dept. Alta Verapaz. Altitude 4,300 feet, January, 1886. Legit H. von Tuerckheim, is neither *C. Americana* nor a variety of it; the long slender, acuminate corolla lobes evidently throwing it in quite a different section of the genus.

Such a list might be greatly extended, but enough has been indicated to show into what inextricable confusion we have come because of this absence of a recognized type form for this species.

Personally I am not attempting any decision in the matter; I am simply reciting facts coming under my observation. If Sloane's Jamaica plant is the type of *C. Americana* L., then the form in the Linnæan collections, so labeled by Linnaeus and reaffirmed by our last specialist in the group can not be *C. Americana*, for it is not the same plant. If the form in the Linnæan collection be taken as the type, what is the name of Sloane's plant? How, also can it be assumed that any other plant than Sloane's was in mind in view of the references of Gronovius and Linnaeus to it specifically, references continued as late as 1797, when in Linne Sp. Pl. Willdenow, edn. IV., vol. 1, page 702, we find at the conclusion of the characterization, "Habitat in Virginie fructibus et at littora maris in herbis Jamaicae (v. s.)"? Gmelin, also in his Sys. Veg., 1796, vol. 1, p. 285, refers to Sloane's plant, as does also Vitman in his Summa Plant, 1790, vol. 1, p. 340.

How the riddle shall be read in view of these facts is left to adepts in nomenclature. It is entirely beyond my powers.