

considerable variation. There is some indication that variants are becoming established as populations, as indicated by the fact that *L. densipila*, var. *maxima* is separable, and it may be supposed that new variations are constantly arising. It is my distinct impression from initial field studies that these species are favorably situated for relatively rapid evolutionary differentiation. The solution to the phytogeographic problem posed by *Leavenworthia* and these isolated species of *Lesquerella* needs considerably more field study. However, I find it tempting to offer as an explanation the assumption that representatives of both genera migrated from the southwest into the Nashville Basin area. Once in such a favorable locality for evolutionary differentiation, each has produced a number of distinct species. The fact that interspecific hybridization does not appear to be a factor in producing present-day variation in *Leavenworthia* suggests that genetic barriers have paralleled the morphological distinctions that have evolved in that genus. I am less confident that interspecific hybridization has not played a part in producing some of the variant populations of *Lesquerella* in the Nashville Basin. On the other hand, I do not have any positive evidence that the different species hybridize naturally.

Following is a synoptic treatment of *Lesquerella* for the State of Tennessee:

KEY TO THE SPECIES

- Siliques strongly flattened parallel to septum, valves hirsute with bulbous-based trichomes. 1. *L. Lescurii*.
- Siliques globose to pyriform, inflated, not flattened, valves finely pubescent to sparingly hirsute with nonbulbous-based trichomes.
 - Cauline leaves auriculate, clasping the stem; stems and leaves with spreading simple or branched trichomes; style shorter than the silique.
 - Siliques glabrous within, globose to subglobose, densely pubescent with short erect trichomes on the exterior; septum present; petals yellow or white, obovate.
 - Trichomes of siliques minute, visible only with magnification; petals yellowish orange. 2a. *L. densipila*, var. *densipila*.
 - Trichomes of siliques comparatively large and prominent, visible without magnification; petals white with a yellow claw, occasionally yellowish. 2b. *L. densipila*, var. *maxima*.
 - Siliques densely pubescent within, pyriform to depressed-pyriform, glabrous to sparsely pubescent with large trichomes on the exterior; septum absent; petals white, spatulate. 3. *L. perforata*.
 - Cauline leaves narrowed at base, nonauriculate, not clasping the stem; stems and leaves covered with appressed stellate trichomes; style about twice the length of the silique. 4. *L. globosa*.

1. *Lesquerella Lescurii* (Gray) S. Wats. Proc. Amer. Acad. 23: 250. 1888.

Vesicaria ? *Lescurii* Gray, Manual, ed. 2, 38. 1856.

Alyssum Lescurii Gray, Manual, ed. 5, 72. 1867.

Known only from Tennessee and restricted to the central counties as follows: Cheatham Co.—roadside, state highway No. 12, 11 miles northwest of Bordeaux, March 31, 1952, *Reed C. and Diane Rollins 5212* (G²); Davidson Co.—dry hills near Nashville, April, *L. Lesquereux* (G, type); Nashville, 1878, *Dr. A. Gattinger* (G); same locality, May, 1906, *Albert Ruth 360* (G); same locality, 1896, *S. O. Barnes s. n.* (G); same locality, March 30, 1952, *Reed C. and Diane Rollins 5209* (G); same locality, April 1914, *W. H. Manning s. n.* (G); same locality, April, 1936, *H. K. Svenson 7525* (G); Peabody Campus, Nashville, April, 1940, *Jesse M. Shaver 6574* (G, P); thin soil in abandoned field, Nashville, April 20, 1940, *A. J. Sharp and R. E. Shanks 454*, *Plantae Exsiccatae Grayanae no. 1053* (G, UT); same locality, May, 1941, *A. J. Sharp 1529* (UT); Williamson Co.—two miles north of Nolensville, March 31, 1952, *Reed C. and Diane Rollins 5214* (G); Rutherford Co.—open field near Smyrna, March 30, 1934, *Harold Bold and A. J. Sharp 41* (UT); open field, nine miles northwest of Murfreesboro, April 1, 1952, *Reed C. and Diane Rollins 5224* (G), Wilson Co.—between Nashville and Lebanon, April 1, 1934, *A. J. Sharp 78* (UT).

2. *Lesquerella densipila* Rollins, sp. nov.

Annual; stems several to numerous, erect or the outer decumbent at base, simple or branched, purplish below, 1-4 dm. high, hirsute below with spreading simple trichomes, rachis of inflorescence and upper portion of stems hirsute with smaller less-spreading and frequently branched trichomes; basal leaves petiolate, lyrate-pinnatifid to pinnately lobed, obtuse, 4-8 cm. long, 1-1.8 cm. wide, terminal lobe comparatively large, lateral lobes decurrent on rachis, hirsute on upper surface with mostly simple trichomes, lower surface with a mixture of large simple and smaller branched trichomes; cauline leaves sessile, auriculate, broadly ovate to oblong, 1-3 cm. long, 0.5-1.5 cm. broad, lower broadly obtuse, upper smaller and tending toward acuteness, dentate to nearly lobed, hirsute on both surfaces with mostly simple spreading trichomes; inflorescence racemose, 1-2 dm. long; fruiting pedicels divaricately ascending, straight, expanded at summit, 1-2 cm. long, pubescent with a mixture of simple and branched trichomes; sepals non-saccate, sparsely to generally covered with appressed branched trichomes, oblong, alternating members flat and boat-shaped, narrowed toward apex but remaining rounded, 2.5-4.5 mm. long, 1.5-2 mm. wide; petals yellow to white, broadly obovate, not markedly differentiated into blade and claw, 6-8 mm. long, 4-5 mm. wide; filaments strongly dilated at base, attached to anthers just below middle,

² Citations of specimens are as follows: Gray Herbarium (G); Herbarium of Jesse M. Shaver, Peabody College, Nashville (P); Herbarium of Vanderbilt University, Nashville (V); Herbarium of the University of Tennessee (UT).

anthers nearly versatile, ca. 1.5 mm. long; glandular tissue in a thin continuous mold beneath stamens, forming projections between single and paired stamens and an abbreviated ring around the base of the filament of the single stamens; siliques subglobose to slightly broader than long, uncompressed, 3–4.5 mm. in diameter, densely pubescent with minute to longer simple or branched spreading trichomes; styles 2–3 mm. long, pubescent below, glabrous above, slightly expanded into a capitate stigma; ovules 4–5 in each loculus, funiculi free except at their very base; replum nearly orbicular; seeds immature, flattened, orbicular.

Herba annua; caulibus erectis hirsutis 2–4 dm. altis; foliis radicalibus lyratis vel runcinatis hirsutis 4–8 cm. longis, 1–1.8 cm. latis; foliis caulinis sessilibus auriculatis dentatis hirsutis 1–3 cm. longis, 0.5–1.5 cm. latis; pedicellis divaricatis 1–2 cm. longis; sepalis oblongis pubescentibus; petalis obovatis flavis vel albis 6–8 mm. longis; siliquis subglobosis sessilibus 3–4.5 mm. diametro pubescentibus; stylis 2–3 mm. longis; loculis 4–5 ovulatis; seminibus immaturis orbiculatis immarginatis.

2a. *L. densipila*, var. *densipila*

Flowers yellowish orange; siliques densely covered with minute simple or branched trichomes (Fig. 1). Type in the Gray Herbarium collected in the Duck River bottom, north of Verona, Marshall County, Tennessee, April 10, 1949, *A. J. Sharp, C. J. Felix and Wm. Adams 11187*. Other collections:—near Duck River, three miles south of Chapel Hill, Marshall County, March 31, 1952, *Reed C. and Diane Rollins 5217* (G); abundant annual in open glade, one mile north of College Grove, Williamson County, March 31, 1952, *Reed C. and Diane Rollins 5215* (G).

2b. *L. densipila*, var. *maxima* Rollins, var. nov.

Flowers white or occasionally yellowish; siliques densely covered with much longer trichomes than in var. *densipila*.

Herba annua; petalis albis vel luteis; siliquis dense pilosis.

Type in the Gray Herbarium, collected in an open field, 12 miles southeast of Nashville on the Lavergne-Couchville Pike, Davidson County, Tenn., April 1, 1952, *Reed C. Rollins, Diane Rollins, and Elsie Quarterman 5223*. Also collected near roadside, 10 miles southeast of Nashville, Lavergne-Couchville Pike, April 1, 1952, *Reed C. Rollins, Diane Rollins, and Elsie Quarterman 5222* (G); roadside in cedar glade area, 15 miles southeast of Nashville, April 4, 1949, *Elsie Quarterman 4081* (V).

The most singular characteristic of *L. densipila* is the presence of a dense pilose pubescence on the exterior surface of the siliques. There is no suggestion of the presence of trichomes on the inner face of the valves as in *L. perforata*. The trichomes of the siliques are most frequently simple or forked, but an occasional one can be found with a third branch. This pubescence is not detectable

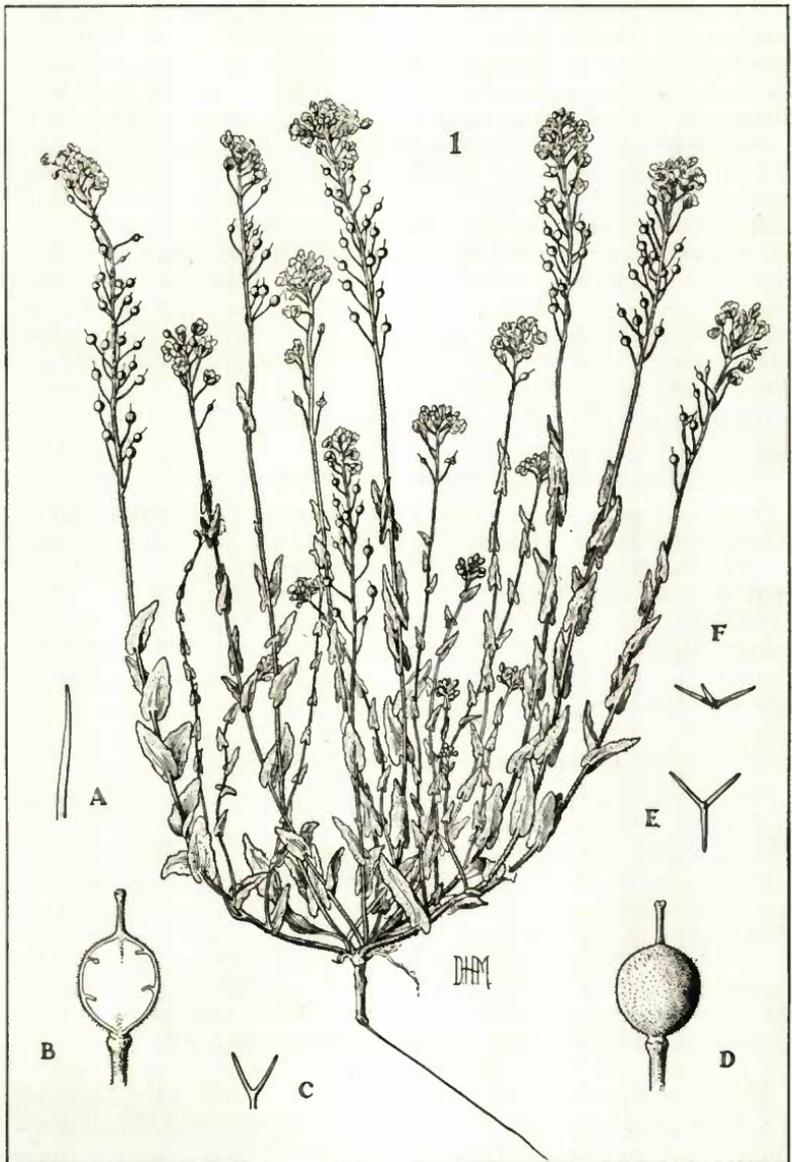


Fig. 1. *Lesquerella densipila*, var. *densipila*. Drawings by Dorothy H. Marsh from Sharp, Felix and Adams no. 11187. Habit $\times \frac{1}{2}$. A, C, E and F, trichomes $\times 25$. B, replum $\times 3$. D, silique $\times 3$.

with the naked eye in var. *densipila*, and a close inspection with a hand lens is required to see it. Young fruits naturally have a denser covering and the pubescence is more readily seen with low magnification than upon the older siliques. The trichomes are found well up the style, often extending nearly to the middle. This is somewhat unusual in *Lesquerella* for the styles are most often completely glabrous even though the adjacent valves may be densely covered with trichomes. Other features of significance are the auriculate cauline leaves and the stamens with dilated bases. These features are shared by *L. auriculata* and *L. perforata* but they are not general in the genus *Lesquerella*.

Unfortunately the drawing (Fig. 1) does not show the basal leaves, which are definitely petioled. In general outline they vary from lyrate lobed toward runcinate. In most of the twelve specimens in the type series, the basal leaves have been shed.

The two collections from near Duck River do not differ from each other significantly, but specimens taken from the population in Williamson County can be distinguished from the others on trichome size and form. In the latter collection, the trichomes of the siliques average 100μ and are most frequently single. In the Duck River collections the trichomes average 81μ and are most often forked. I could not detect any other correlated differences that seemed significant. The fact that the trichome-size differed in these two populations provided the basis for including in *L. densipila* (as var. *maxima*) a more divergent population with comparatively much longer and larger trichomes and white instead of yellow flowers. This latter population differed so strikingly from *L. densipila* in the field that it was at first thought to represent an undescribed species. However, once it became clear that trichome size was not a reliable distinguishing characteristic, the flower color seemed to represent a less significant difference. However, there is still room for doubt and further field studies may upset the conclusions that now seem valid. The trichomes of the siliques of var. *maxima* differ considerably from plant to plant. In the plants checked, the one with the longest averaged 413μ while that with the shortest showed an average length of 151μ .