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OBSERVATIONS ON OCCURRENCE AND RANGE
OF THREE SPECIES OF **DENTARIA** (CRUCIFERAE)
IN THE OUACHITA MOUNTAINS

Aileen McWilliam¹

Several interesting aspects of speciation and distribution present themselves in the genus **Dentaria** (Cruciferae) in the Ouachita Mountains of Arkansas and Oklahoma. Two species, **D. laciniata** Muhl. and **D. heterophylla** Nutt., are of quite widespread occurrence in the area, but with little overlapping. A third species, **D. multifida** Muhl., has been found only in a narrowly restricted area and habitat.

D. laciniata is distinguished from the other two species by the absence of basal leaves at flowering time, and by the more or less hirsute stem and rachis of the raceme. The cauline leaves are in a whorl of three. These leaves are divided into three leaflets, variously toothed or slashed, with the lateral two leaflets deeply two-parted, giving an appearance of five leaflets. The leaflets are sessile. The laciniation of the leaves is quite variable. The flowers are pale, white to purplish, with pale green sepals (Fernald 1950; Gleason 1952). This is the most robust of the three species.

D. heterophylla is distinguished by the basal leaves, usually present at flowering time. These leaves are trifoliolate, with oblong to rhombic entire or toothed leaflets, purple on the underside. The cauline leaves are usually two, opposite, with sessile, toothed leaflets, not divided. The rachis of the inflorescence is glabrous to only slightly pubescent. The flowers are pink to purple, with purple sepals. This species is generally lower-growing than the other two (Fernald 1950; Gleason 1952).

D. multifida is as tall as **D. laciniata** at anthesis, but is much more slender. Basal leaves, usually present, resemble the cauline leaves. The two or three cauline leaves are divided into three long-stalked leaflets which are dissected into very fine, long linear segments which may be toothed or further divided. The rachis of the inflorescence is entirely glabrous. The flowers are white to pinkish (Fernald 1950; Gleason 1952).

All three species are plants of rich, moist woods, wooded stream bottoms, and shaded rocky banks.

D. laciniata is eastern to middle-western in its range, occurring from Quebec and Vermont through Minnesota and Nebraska south to Florida and Louisiana (Fernald 1950). It is the species of the Ozarks (Steyermark 1964) and is the only species listed by Waterfall for Oklahoma (Waterfall 1962). In the Ouachita Mountains it is found in great abundance on the top of Rich Mountain and down the north slope in

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Range of Three Species of *Dentaria*

very rocky, but exceedingly rich soil of the hardwood forest. It is also found on adjacent mountains of the Jackfork Sandstone formation. Its range is interrupted to the east, but it is found again in Montgomery County in rich, cherty soil of the Novaculite Uplift. There seems to be no intermingling with *D. heterophylla* on Rich Mountain, but on the headwaters of the Ouachita River, which rises from springs at the foot of Rich Mountain, *D. heterophylla* is the prevalent species, and *D. laciniata* is not found. In one small area on Big Fork Creek, near the Polk-Montgomery County line, the two species are growing in association, with about equal numbers of each species. This location supports an exceedingly rich and varied flora.

D. heterophylla is somewhat more eastern in its range than *D. laciniata*, occurring from New Jersey to southern Ohio, and south to Georgia and Tennessee (Fernald 1950). In the Ouachitas it is widespread and common along the Ouachita River and in the stream valleys and on rocky banks of the area south and east of Mena in the Ouachita National Forest. Here it apparently does not occur in association with *D. laciniata*. It is especially prevalent in the beech forests, but by no means limited to them.

The range of *D. multifida* is similar to that of *D. heterophylla*, but somewhat more southern, from southern Ohio and Indiana to Georgia and Alabama. On March 29, 1964, a well-established small colony of this species was found on the headwaters of Blaylock Creek, which flows into the Little Missouri River. This find was brought to the attention of Dr. Dwight M. Moore, who reported it to the Arkansas Academy of Science in his discussion of "New Records of Arkansas Flora" at the April meeting of the Academy that year. These plants are all located in a narrow ravine in beech forest, and all are within a few feet of a cold, swift stream. Blooming was almost past at the time they were found, March 29, though *D. heterophylla* in the same location was just coming into bloom. Later a few scattered plants of *D. multifida* were found a short distance down Blaylock creek from the first location.

The disseminules of these plants are the seeds, which are scattered mainly by the mechanical propulsion of the opening silique and perhaps to some extent by small birds and mammals, and the rhizomes, which in all three species are constricted into short fusiform segments, very loosely attached. The rhizomes are deep-seated, but may perhaps be carried about by burrowing animals.

The occurrence of *D. laciniata* on Rich Mountain and elsewhere, and of *D. heterophylla* to the south and east of Rich Mountain might be determined as being based on geological divisions, except for the presence of *D. laciniata* on Big Fork Creek and in western Montgomery County on the Novaculite formations, and the presence of *D. heterophylla* along the Ouachita River in the Jackfork Sandstone areas.

D. heterophylla evidently is disjunct, and thus should probably be considered a relict species from a time when the Ouachita Mountain forest was continuous with the Appalachian forest. There are a num-

ber of such disjunct and probably relict species in the Ouachitas. **D. multifida** is surely a very much shrunken relict. It is possible, however, that this species may be found to have a more extensive distribution since its presence in the area is known. The fact that **D. multifida** has been found only in a narrow band of woodland very close to a cold, spring-fed stream may be an indication of a habitat restriction that has limited it to very cool, humid situations.

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