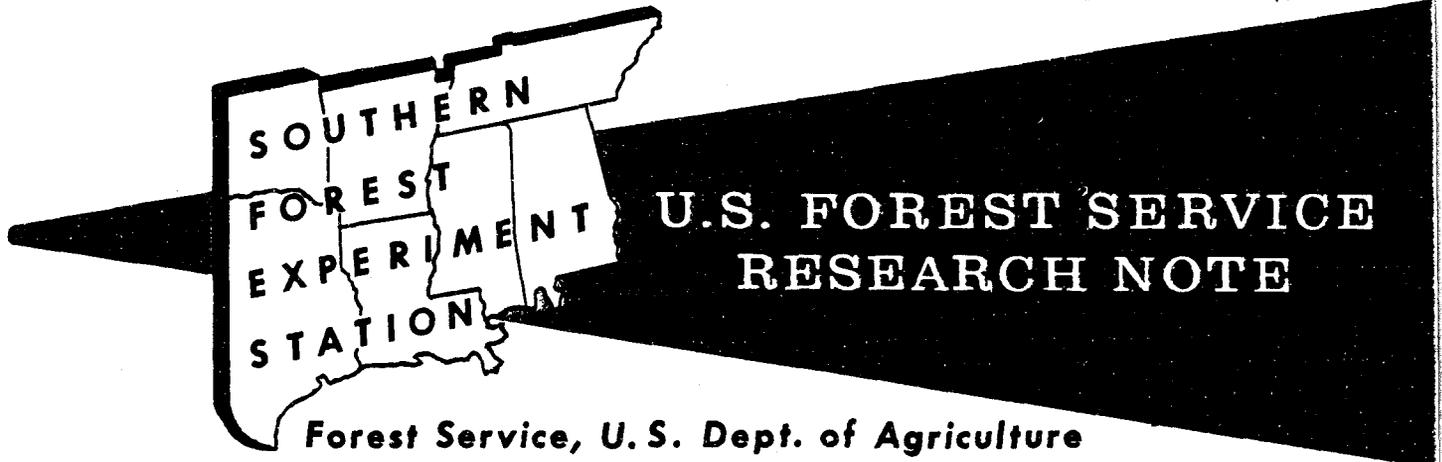


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## ANOTHER ARKANSAS COLONY OF NEVIUSIA

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SOUTHERN FOREST EXPERIMENT STATION

*Neviusia alabamensis* A. Gray (*Rosaceae*), snow-wreath or *neviusia*, was found in 1971 on the Henry R. Koen Experimental Forest in Newton County, Arkansas. This species, classed as threatened, has been reported at 8 other locations: 4 in Alabama, 3 others in Arkansas, and 1 in Missouri.

**Additional keywords:** Snow-wreath, *Neviusia alabamensis*, Rosaceae.

*Neviusia alabamensis* A. Gray is a shrub of the rose family (Rosaceae) that reaches a height of 3-6 feet, produces many slender stems, and has a growth habit like that of *Spiraea*. When in full bloom *Neviusia* resembles a wreath with snow. The snowlike flowers have numerous spreading white stamens but no petals. The shrub was discovered in 1857 by Reuben Denton Nevius and W. S. Wyman along shaded sandstone cliffs on the east bank of the Black Warrior River a few miles above Tuscaloosa, Alabama. The history of its discovery was reviewed by Moore (1956). Asa Gray (1859) described the distinctive shrub as a new genus and species, and named it in honor of the first collector

and the State. Three sheets collected by Nevius, apparently isotypes, are in the National Herbarium of the U.S. National Museum of Natural History (US).

We report here discovery of a colony in northern Arkansas. In addition to the colony discovered by Nevius and our colony the species has been found growing naturally at six locations.

### KNOWN COLONIES

Harper (1928) reported that *Neviusia* grew on bluffs and slopes of limestone and shale, usually in shady places, in four counties in northern and central Alabama: Madison, Jackson, Morgan, and Tuscaloosa (both banks of Black Warrior River).

A single plant of this species was found in 1918 by Uphof (1922, p. 7) about 7 miles west of Poplar Bluff, Butler County, in southeastern Missouri. It was growing on a southwestern sandy loam slope of a small hill near a creek bank. He made and published a drawing, but his specimens were not preserved. Steyermark (1963, p. 843), among others, failed to find this species at that locality or elsewhere in Missouri but predicted its eventual rediscovery. His plants grown in northern Illinois tended to spread vegetatively in shaded places.

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Moore (1556) found some shrubs of this species on a low sandstone ridge 200 yards long about 6 miles northwest of Conway in southeastern Conway County at about 300 feet altitude in the Ozark Plateau of northern Arkansas. In the University of Arkansas Herbarium he found filed under *Physocarpus* four other sheets collected in 1925 by Delzie Demaree along sandstone cliffs of Cove Creek in northern Faulkner County about 20 miles northeast of the other station. In 1971 a colony of *Neviusia* was found in Pope County, Arkansas, by Gary E. Tucker of Arkansas Polytechnic College (personal communication).

Mohr (1901), who knew only the type locality, cited *Neviusia* as a paired genus with *Stephanandra* of Japan. He concluded that this and several other species with isolated distribution were descendants of an ancient flora that had survived changes in geological history and found a refuge in their present localities. Fernald (1931, p. 29, map 3) cited *Neviusia* as a relative of *Kerria* of China. Before the range extensions were found, Cain (1944, p. 114) considered the species an example of local endemism. Moore (1956) concluded that *N. alabamensis* is a relatively old relic species. He noted that the species was found only beyond the margin of the Coastal Plain and on uplands exposed since late Paleozoic or early Mesozoic geologic periods.

Because it is an attractive ornamental, the species was cultivated soon after its discovery. It proved to be hardy north to eastern Massachusetts and at Kew, England. In Washington, D.C., *Neviusia* was distributed by a nurseryman by 1880 and, according to herbarium specimens (US), was grown in the Agricultural Grounds in 1885 and afterwards. Propagation is by seed and by cuttings. Index Londonensis (1930) cited 12 published illustrations as evidence of its popularity. Trelease (1931, p. 116) published a drawing for identification in winter.

#### NEW COLONY

We found the colony of *Neviusia alabamensis* while collecting for a list of the woody plants on the Henry R. Koen Experimental Forest. This 700-acre tract on the Ozark National Forest is in northern Newton County. The colony is beside a small, intermittent stream at an altitude of 940-1,000 feet.

Sterile plants collected in September 1971 (Yocom 138) were not recognized. Additional specimens with sufficient old fruits for identification were collected on August 28, 1972 (Little and Yocom 25961) and will be deposited in several herbaria (US, USFS, UARK).

The colony extends adjacent to the intermittent streambed on the northwest side in a strip about 1,000 feet long and about 60 feet wide. No plants were found on the other side of the streambed. The exposed bedrock in the stream bottom is limestone of Paleozoic age. The limestone extends up the slope on the northwest side about 66 feet to an outcrop of sandstone about 10 feet thick and overlain by more limestone. Shrubs 3-6 feet high grow in soil only a few inches deep over the limestone bedrock from the sandstone outcrop to the exposed bedrock at the bottom. The mean pH of 20 samples was 6.95 with a standard error of 0.12. The sandstone upslope may affect the properties of the soil in which the plants are found. The sparse forest stand in the area is mixed upland hardwoods, primarily oaks and hickories, with some eastern redcedar.

The combination of environmental factors that preserved this newly found colony from extinction is not known. The sandstone outcrop above the colony may provide more than average moisture and some nutrients. The rocks and cliffs may reduce plant competition and may offer some protection from fire.

It would be interesting to study further the site requirements and reproductive mechanisms of this rare species. The plants are readily propagated vegetatively and by seeds, yet they are not spreading in nature. The restricted colonies and absence of seedlings both imply that natural reproduction is largely vegetative.

The discovery of this additional station and range extension gives further support to the observation that *Neviusia alabamensis* is an ancient relic species. It has persisted in two ancient land masses that have been above the seas since the latter part of the Paleozoic era, about 225 million years ago according to geologists. The Alabama stations are near the southern end of the southern Appalachians; the Arkansas and Missouri stations are in the Ozark Plateau up to 450 miles to the northwest.

Several other plant species have a similar disjunct distribution pattern in the southern Ap-

palachians and Ozarks. Ten tree species occur separately in both regions, as shown in range maps of Little (1971).

Also, the monotypic genus *Neviusia* is one of many plant genera of the southern Appalachians that have persisted from the Arcto-Tertiary flora of more or less uniform forests which extended through Eurasia and North America in late Mesozoic and early Cenozoic eras and which have their closest relatives in eastern Asia. The most closely related genera are two monotypes that have persisted in eastern Asia: *Kerria japonica* (L.) DC., kerria, of central and western China (not native in Japan but cultivated there), and *Rhodotypos scandens* (Thunb.) Mak., jet-bead, of both Japan and central China. All three have the same chromosome number ( $2n = 18$ ). A fossil species of *Kerria* from western Kamchatka of Middle Pliocene age has been described. No fossil records of the other two genera have been discovered.

*Neviusia alabamensis* is included in the list of endangered and threatened plant species compiled by the Smithsonian Institution (1975). This species is classed as threatened. That term, as defined, means likely to become endangered, or in danger of extinction in the wild, within the foreseeable future in all or part of its range. The wild colonies are so small and local that they could be destroyed accidentally. For example, most of the plants at the type locality were removed by quarrying. Since the newly discovered colony is on public land within the Ozark National Forest, the shrubs will be given special protection by the U.S. Forest Service. Survival of these wild plants for future observation and study is assured. Also, seeds have been spread through cultivation by nurseries and botanical gardens in the United States and Europe. Thus this species would survive in cultivation and would not disappear.

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