

Summary: Dale Kruse, Roling, Davidson Bryophytes (Mosses, Hornworts, Liverworts)

Dale A. Kruse, began his research on historical records of bryophytes with a grant of \$1350 from BTA/ToD. About \$15,000 was received from other sources including the first WNPA grant through NPS facilitation.

Kruse served as a President of the Thicket of Diversity and worked with the ToD's first Executive Director, Linda Brindle. Kruse, as Curator of the S.M. Tracy Herbarium at Texas A & M University, and Paul G. Davison at the University of North Alabama, served as Taxonomic Working Group (TWiG) leaders for bryophytes in the Thicket of Diversity. Kruse and Davison were awarded grants by the Big Thicket Association and the Western National Parks Association to inventory most units within the Big Thicket National Preserve in southeast Texas. A total of \$25,740 was awarded. WNPA paid the bulk of the funding \$22,500. ToD paid for transportation. Free lodging was allowed.

In collaboration with Paul V. Roling of Spring, Texas, the team spent a countless number of hours in the field and lab, collecting, identifying, and vouchering specimens as part of the inventory. The final report summarizing the effort was submitted in early 2012.

Field work, conducted from January 2007 to September 2011, resulted in the accumulation of approximately 693 vouchers from the Big Thicket National Preserve. In addition, historical data from various herbaria in Texas were compiled and analyzed. The inventory resulted in an updated checklist of 170 species of mosses, liverworts, and hornworts, in 98 genera and 54 families. Thirteen potentially new state records, twelve liverworts and one moss, were reported. The total number of species in this inventory represented a 57% increase in reported taxa since the initial Big Thicket investigation completed in 1974.

Bryophytes have little if any commercial value in Texas, they do provide a number of important ecological benefits such as soil stabilization and nitrogen fixation. They also serve as

bio-indicators of air and water pollution. More recently, due to their sensitivity to changes in environmental conditions, bryophytes are increasingly being used as potential indicators of climate change in many parts of the world.

Mary C. Johnston and Mona Halvorsen communicated with Kruse to facilitate completion of the project with encouragement and a request for records. An excellent final report was received. It received approval from the Park Service's Superintendent and the project was closed. All WNPA requirements were fulfilled and reports submitted.

Submitted by Mary C. Johnston, October 25, 2020

In 2026 ToD Chair Mary C. Johnston and Intern Natalia Doiron reviewed data and records. The 179 total species for bryophytes remains unchanged as no additional research has been submitted to the ToD. In a Final Report, the ToD intern noted that several potential New Species to State were noted. At this time, the ToD recognizes this possibility but ToD has been unable to verify the species names to list on the Tally.

Dale has been observed guiding iNaturalist events since working with ToD and is an expert resource on use of that application with citizen science volunteers. Dale Kruse remains involved since 1999 as Curator of the S.M. Tracy Herbarium. He recently oversaw the merger of the Biology Department Herbarium (TAMU) into the S. M. Tracy Herbarium (TAES) creating the third largest herbarium in Texas with approximately 350,000 specimens. Dale continues to advocate for the preservation and use of this unique collection within the local community, as well as regionally and nation.

Submitted by: Mary C. Johnston, April 2026