

Broader collaboration *Digitaria filiformis* complex

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- ▶ **Joseph Wipff** – FNA author
- ▶ **Erin Sigel** - Albion Hodgdon Herbarium at the University of New Hampshire
- ▶ **Jorge Gabriel Sánchez Ken** - Instituto de Ecología, A.C.
- ▶ **Craig Barrett, Cameron Corbett** and **Lauren Kossow** –West Virginia University



Digitaria filiformis complex project goals

Determine the proper rank of taxa in the *D. filiformis* complex (Wipff FNA 2003)

var. *dolichophylla*

var. *filiformis*

var. *leaviglumis*

var. *villosa*

Is var. *laeviglumis* GH, GX, or extant in NH,
Mexico, and/or Venezuela





No *D. laeviglumis*
found on site

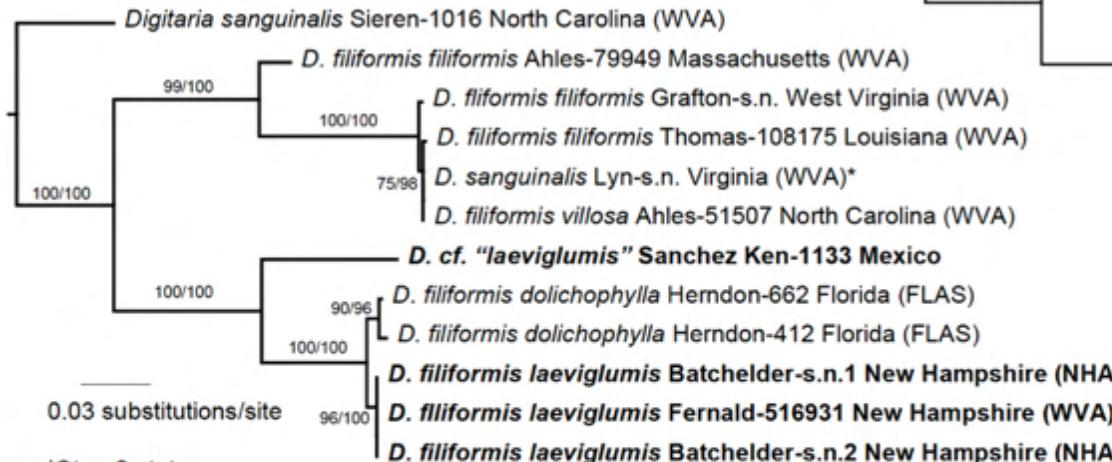
But....

D. ischaemum
and *D. sanguinalis*



Digitaria filiformis complex molecular study

A. Plastid DNA



IQtree2 stats:

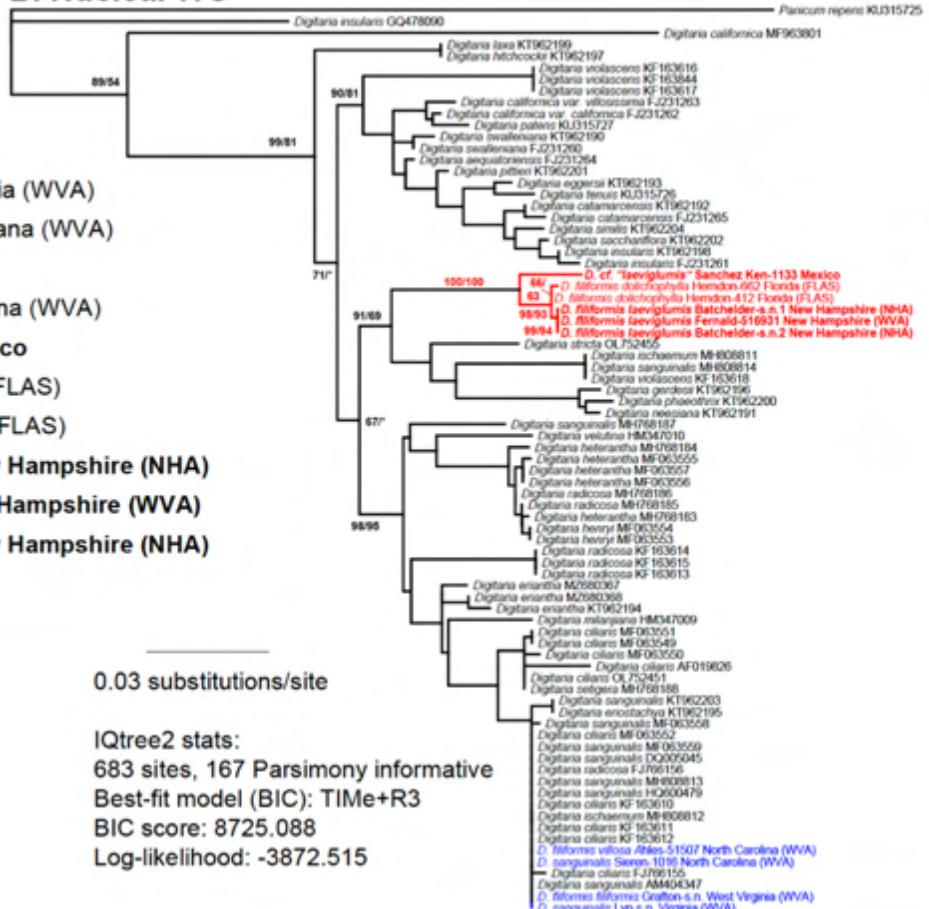
319 SNPs, 223 Parsimony informative

Best-fit model (BIC): K3P+ASC

BIC score: 3285.69

Log-likelihood: -1582.3116

B. Nuclear ITS



Digitaria filiformis complex results

Digitaria dolichophylla,
D. leaviglumis, and
D. 'laeviglumis' from MX will all be
recognized at the species level.

D. laeviglumis moves from GH to GX

What about *D. 'laeviglumis'* from
Venezuela?



Courtesy of VEN

Southwest Texas Red Oaks Project

- ▶ **Ray Mims, John Saltiel** – U.S. Botanical Gardens
- ▶ **Andrew Hipp, Murphy Westwood, Amy Byrne, Marlene Hahn** – Morton Arboretum
- ▶ **Adam Black**, Bartlett
- ▶ **Michael Eason** – San Antonio Botanical Garden
- ▶ **Emily Griswold** – U.C. Davis
- ▶ **Philip Schulze** – Lady Bird Johnson Wildflower Center
- ▶ **Elizabeth Thomas** – Polly Hill Arboretum
- ▶ **Zarah Wiley** – Arborist



Southwest Texas Red Oaks Project

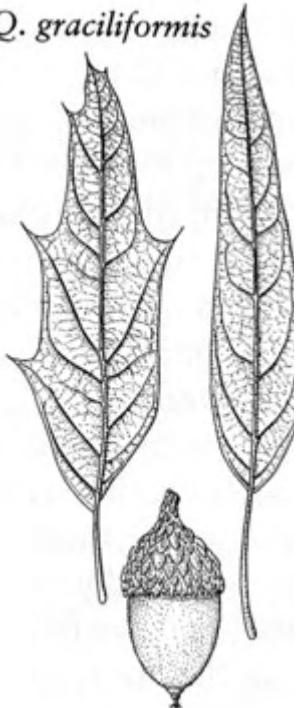
Delineation of species and determine appropriate conservation ranks.

Two collecting trips to Texas (May and Aug 2021) to gather molecular and herbarium vouchers (Hipp's Lab, Morton Arboretum)

The hunt of *Quercus tardifolia*

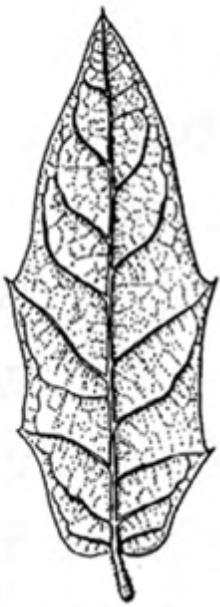


Q. graciliformis



G1

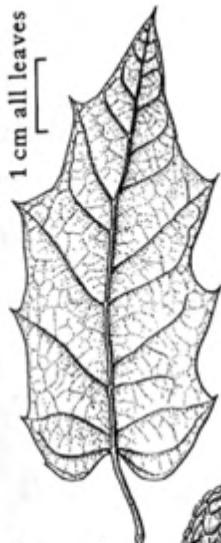
?



Q. emoryi

G5

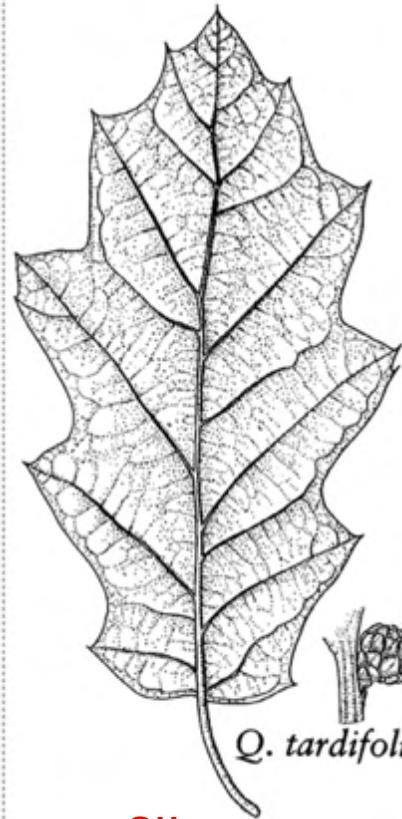
1 cm all leaves



Q. robusta

G1

?



Q. tardifolia

GH

?



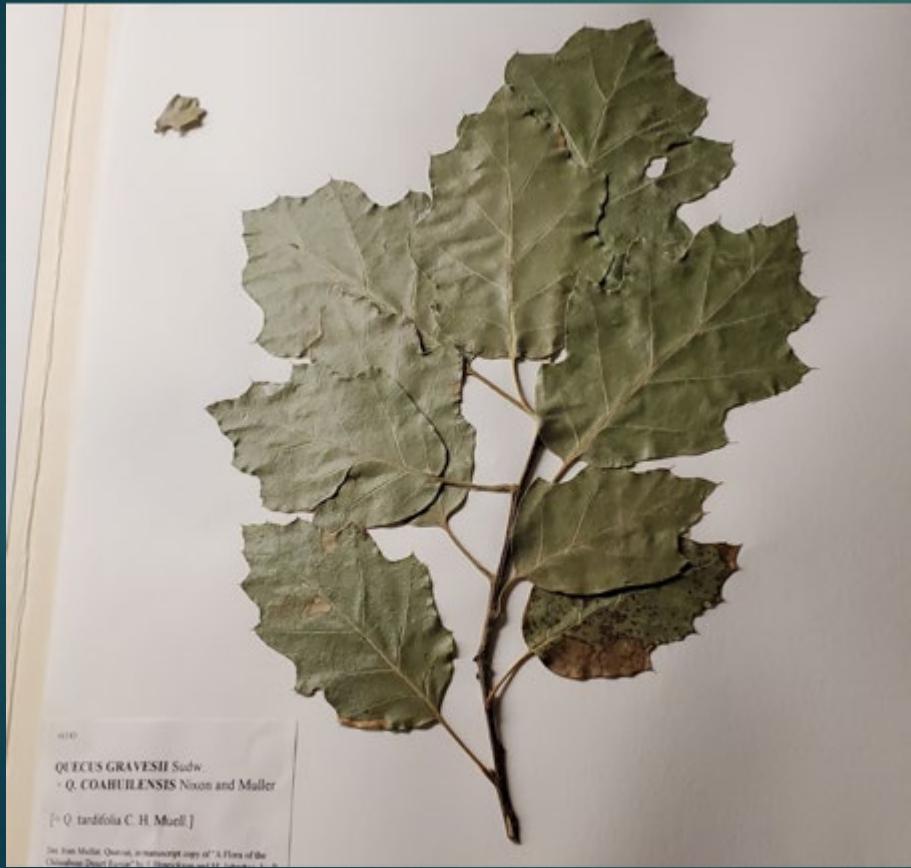
G5

Q. gravesii

1 cm all fruits

Quercus tardifolia – GH

Last known collection 2011 (M. Powell)





Quercus tardifolia C. Muller

Holotype: Boot Canyon, 3 July 1933 (ILL)

ITU: B

Courtesy ILL Herbarium

May 2022:
Weeklong expedition into Big Bend National Park



Boot Canyon





Future work

- ▶ Complete OKO identification
- ▶ Identify *in situ* conservation actions (ensure long-term viability)
 - ▶ (site protection, invasive species control, management needs, etc.)
- ▶ Identify *ex situ* conservation actions
 - ▶ (Seed banked, living collections, etc.)
- ▶ Publish and disseminate

In Conclusion.....

- So much left to do
- Extinction is more common than previously documented
- 65 taxa (51 sp., 14 infraspecific taxa)
- Global Single-site Endemics need prioritized conservation attention
- *Ex situ & in situ* conservation is critical
- Taxa are slipping through the cracks
- We all need to work more collaboratively
- The stakes are too high!



Acknowledgements

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- Marion Renault – New York Times/The New Republic
- Susan Milius – Science News Magazine
- Matt Candeias – In Defense of Plants





Trillium georgianum S.B. Farmer
Photo by Jim Fowler

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