Botany

Part 4: Plant ID Tools and Resources

NC Master Naturalist

Matt Jones
Extension Agent – Horticulture
North Carolina Cooperative Extension
Chatham County Center

NC STATE EXTENSION

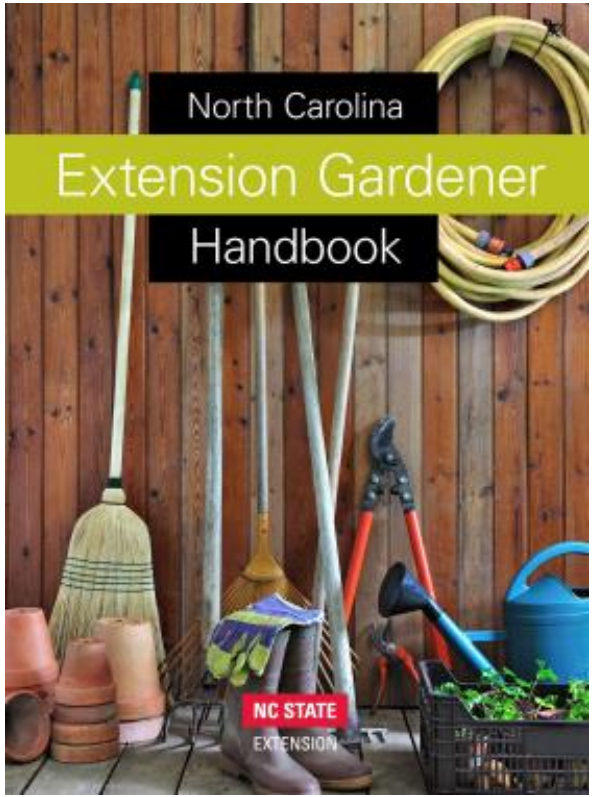
NC Extension Gardener Handbook

go.ncsu.edu/eg-handbook

Free Online!

Chapter 3 – Botany

go.ncsu.edu/eg2botany

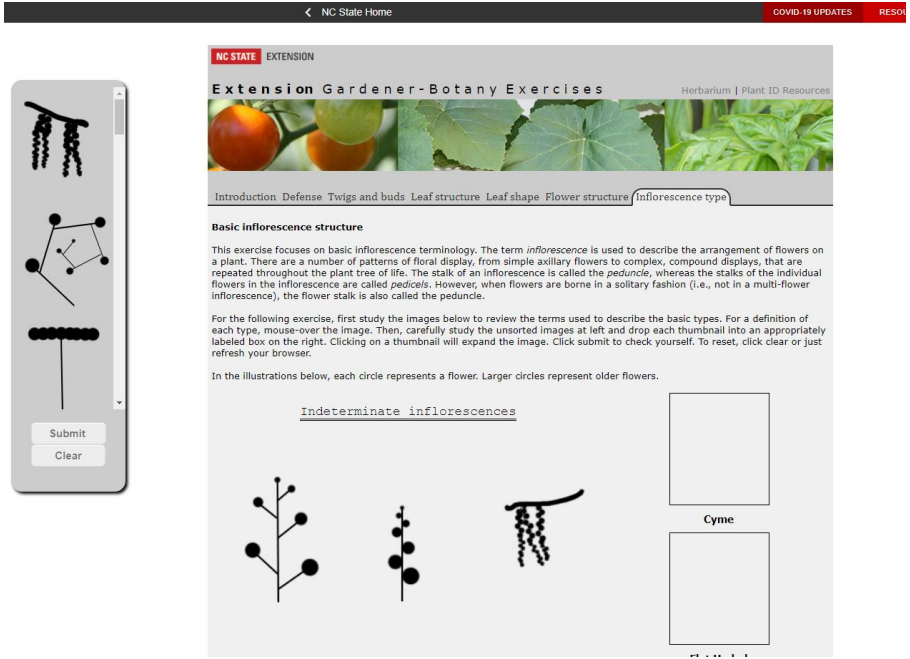


Printed Textbook – UNC Press ($60)

NC STATE Extension Master Gardener

Recommended Resources

Learning Botany



Extension Gardener Botany Exercises

Dr. Alexander Krings

NC State Herbarium

https://go.ncsu.edu/eg-botany-exercises

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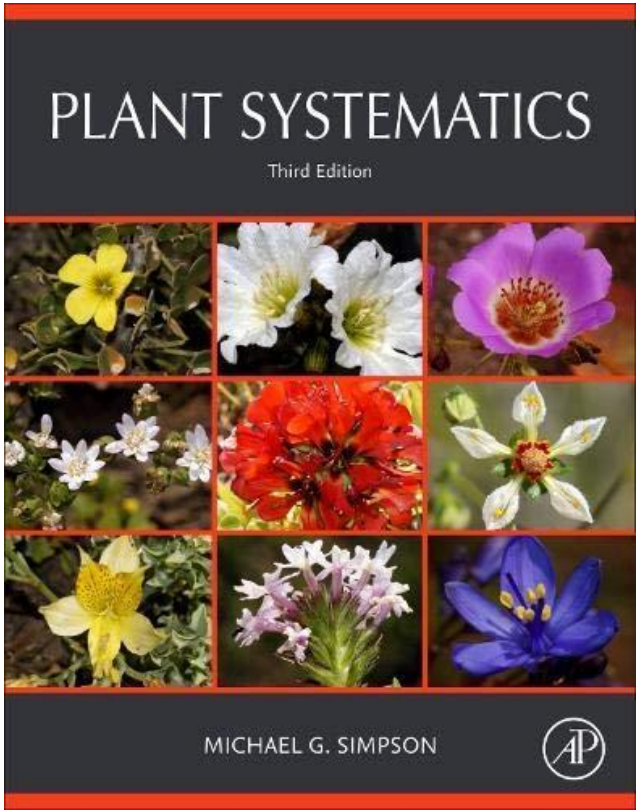


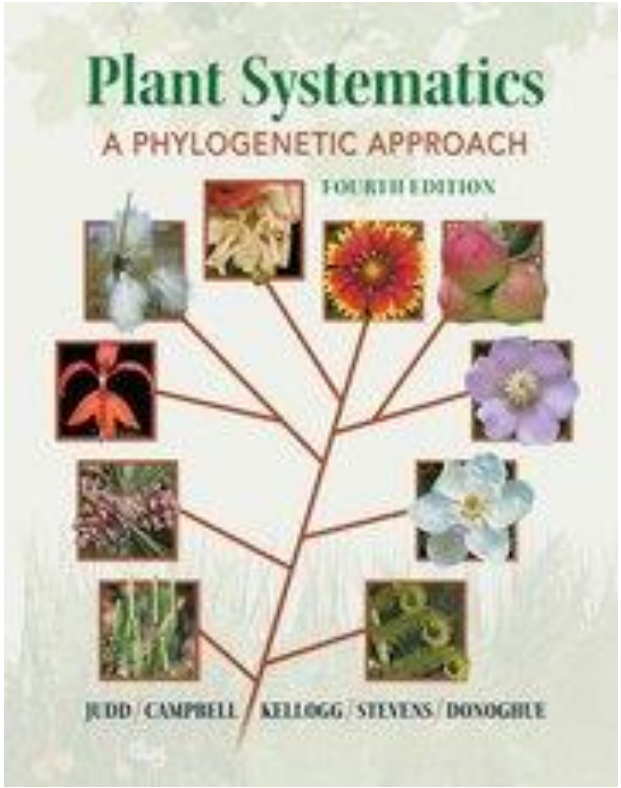
Recommended Resources

Technical References

Plant Systematics (3rd Ed.)

Michael G. Simpson

Academic Press (2020)



Recommended Resources

Technical References

Plant Systematics: A Phylogenetic Approach (4th Ed.)

Walter S. Judd, Christopher S. Campbell, Elizabeth A. Kellogg, Peter F. Stevens, Michael J. Donoghue

Sinauer/Oxford University Press (2018)

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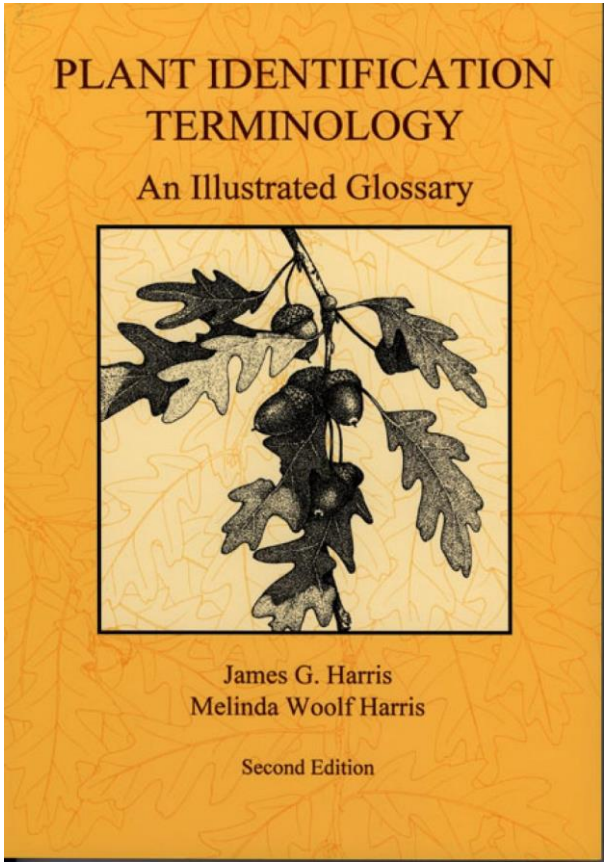

Recommended Resources

Technical References

Plant Identification Terminology: An Illustrated Glossary

James G. Harris & Melinda Wolf Harris

Spring Lake Press (2001)

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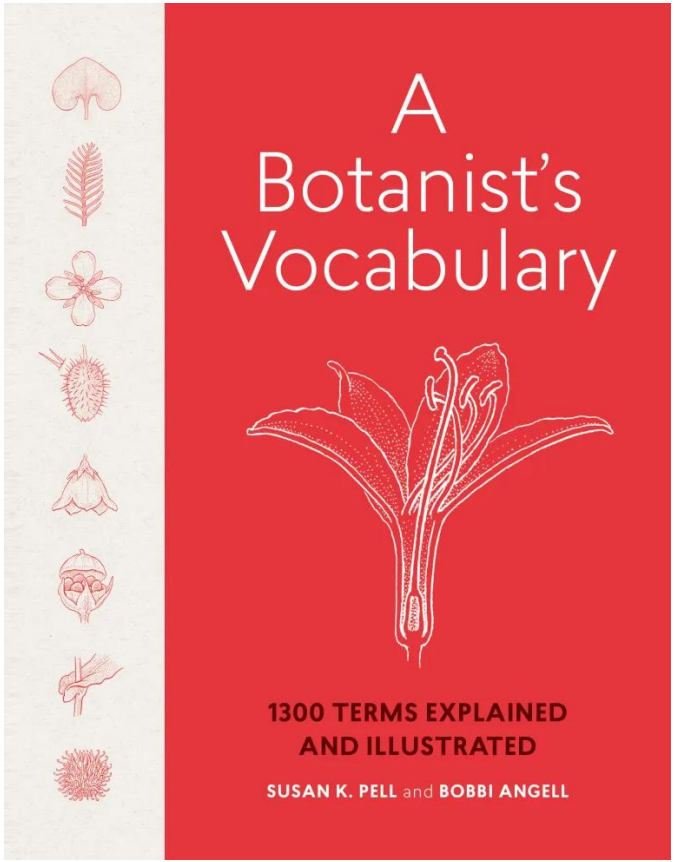


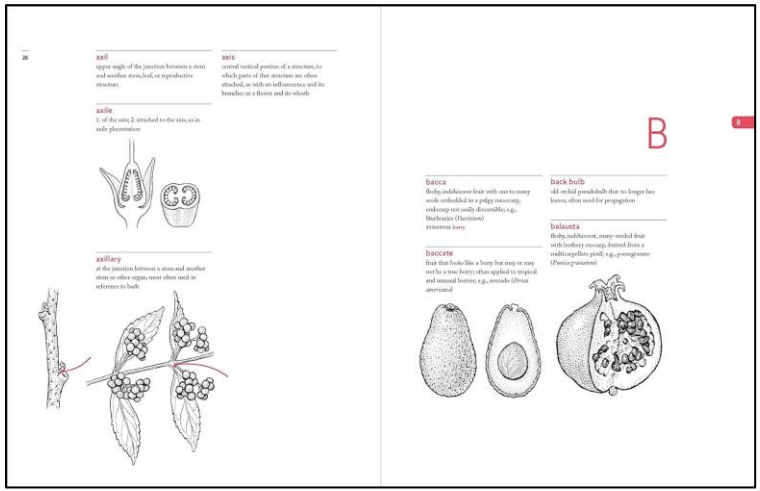
Recommended Resources

Technical References

A Botanist's Vocabulary

Susan K. Pell and Bobbi Agnell

Timber Press (2016)



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Recommended Resources

Terminology & Online Glossaries

Missouri Botanical Garden

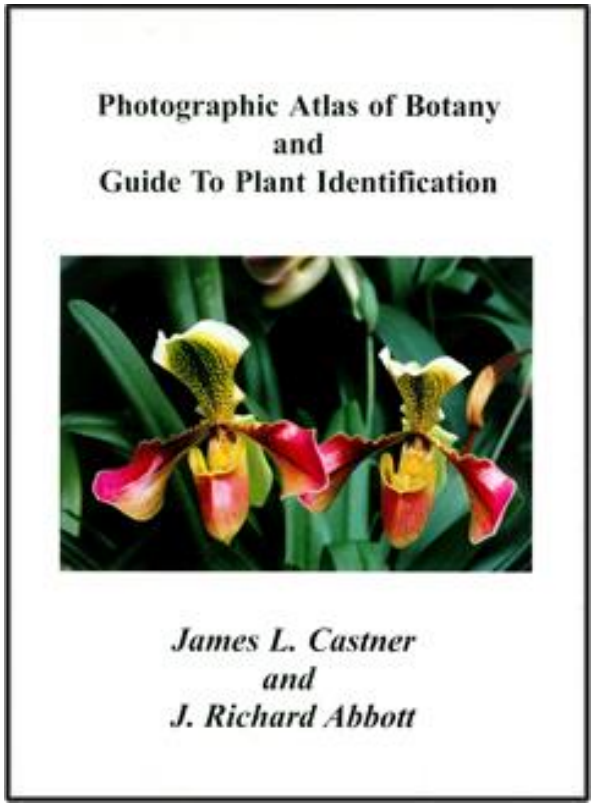
APG Glossary

go.ncsu.edu/apg-glossary

Morton Arboretum

Glossary

go.ncsu.edu/morton-glossary



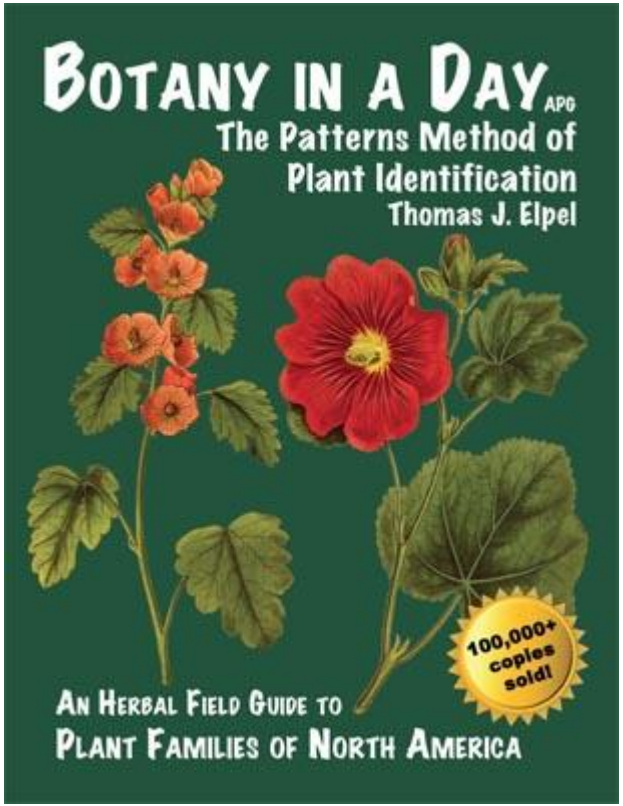
Recommended Resources

Learning Plant Families

Photographic Atlas of Botany and Guide to Plant Identification

James L. Castner and J. Richard Abbott

Feline Press (2004)



Recommended Resources

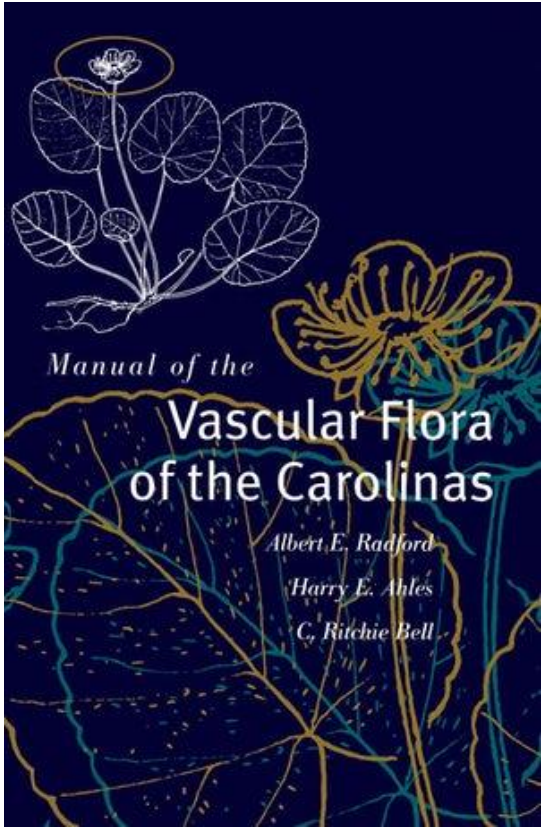
Learning Plant Families

Botany in a Day

The Patterns Method of Plant Identification (6th. Ed.)

Thomas J. Epel

HOPS Press (2013)



Recommended Resources

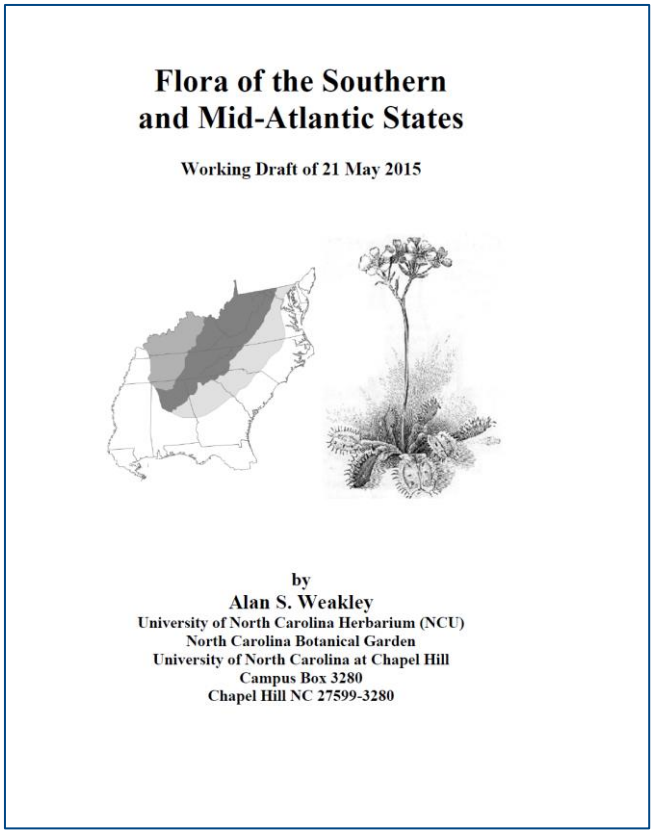
Floras

Manual of the Vascular Flora of the Carolinas

Albert E. Radford, Harry E. Ahles, and C. Ritchie Bell

UNC Press (1968)

NORTH CAROLINA BOTANICAL GARDEN



Recommended Resources

Floras

Flora of the Southern and Mid-Atlantic States

Alan S. Weakley

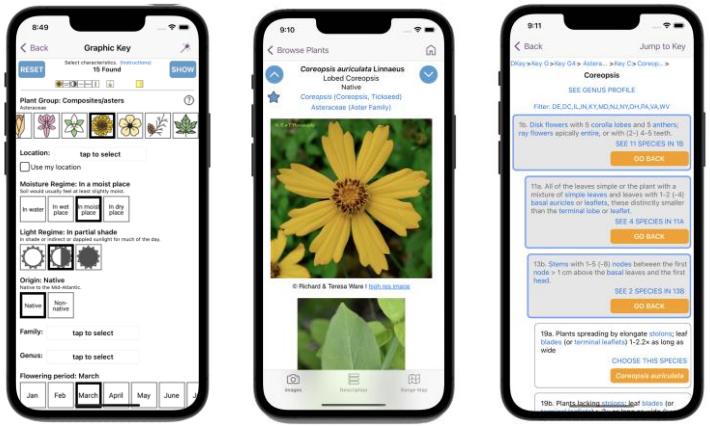
UNC Herbarium (hardcopies not published yet)

Draft Versions Available (PDF)

https://ncbg.unc.edu/research/unc-herbarium/floras/

Variants with just taxa by state are also available (smaller PDFs)

NORTH CAROLINA BOTANICAL GARDEN



Recommended Resources

Floras

FloraQuest

Alan S. Weakley

UNC Herbarium, NC Botanical Garden

High Country Apps, LLC

Flora of the Southern and Mid-Atlantic States in online (free) and smartphone app ($20) formats.

https://ncbg.unc.edu/research/unc-herbarium/flora-apps/

https://floraquest.org/

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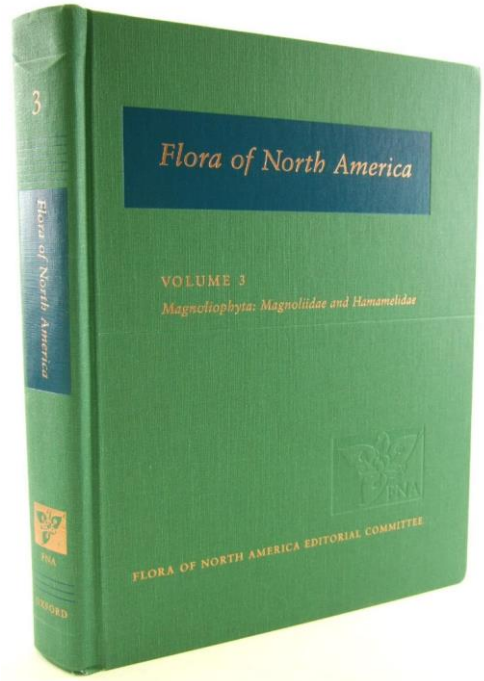
Recommended Resources

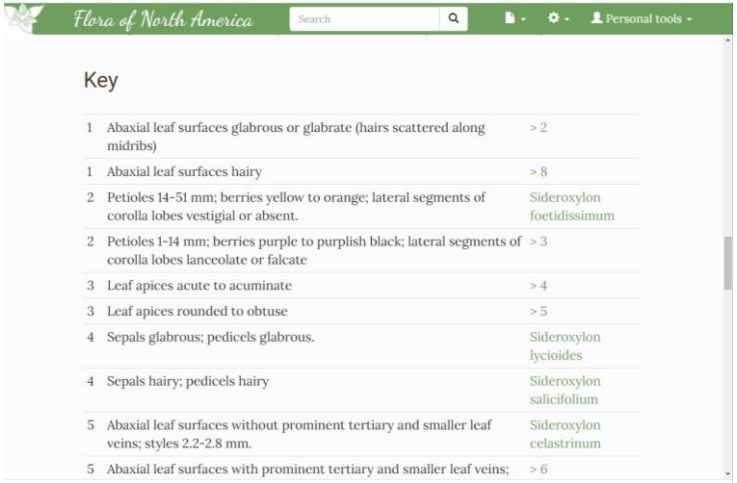
Floras



Flora of North America North of Mexico

Flora of North America Editorial Committee, eds. 1993+

http://beta.floranorthamerica.org/Main_Page



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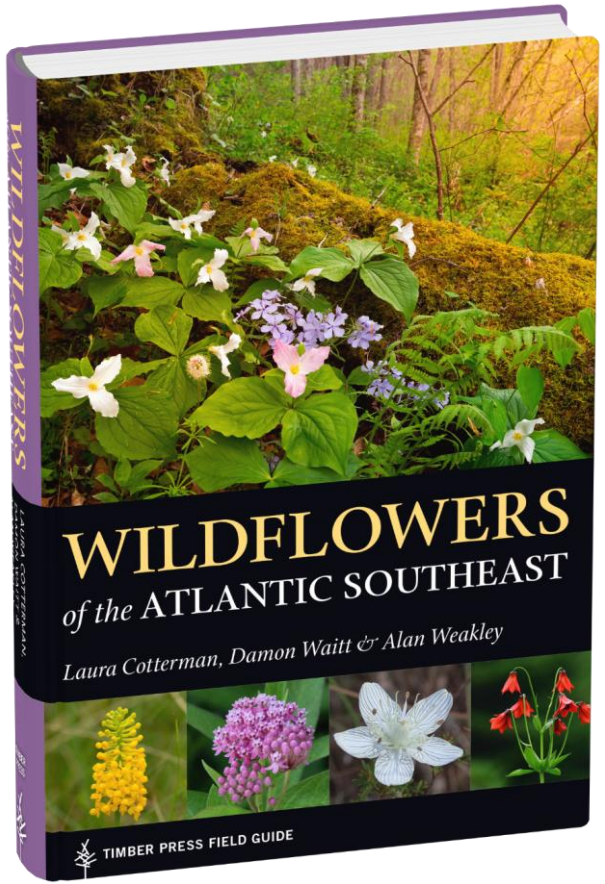


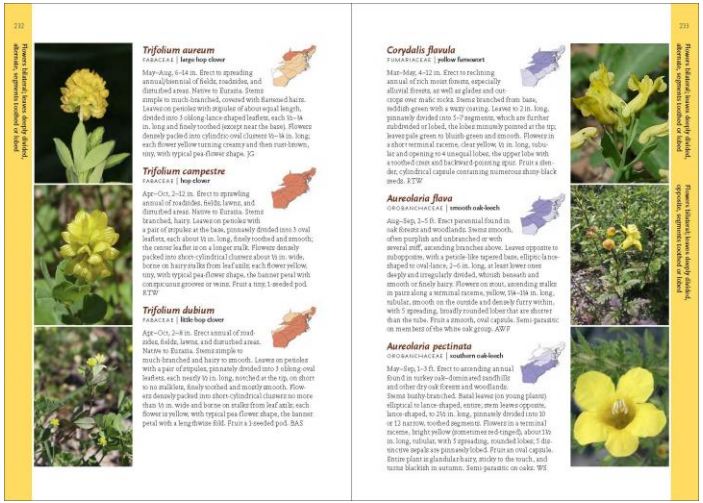
Recommended Resources

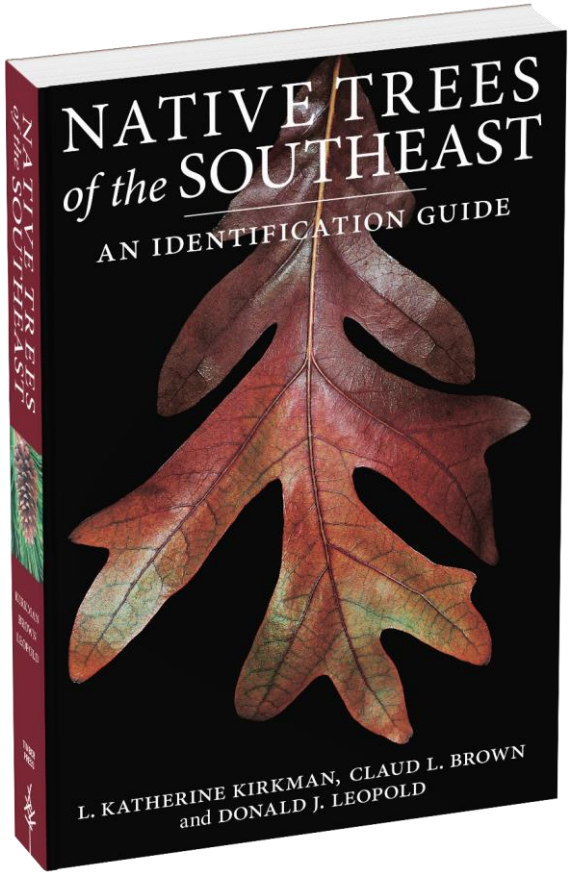
Identification Guides

Wildflowers of the Atlantic Southeast

Laura Cotterman, Damon Waitt, & Alan Weakley

Timber Press (2019)





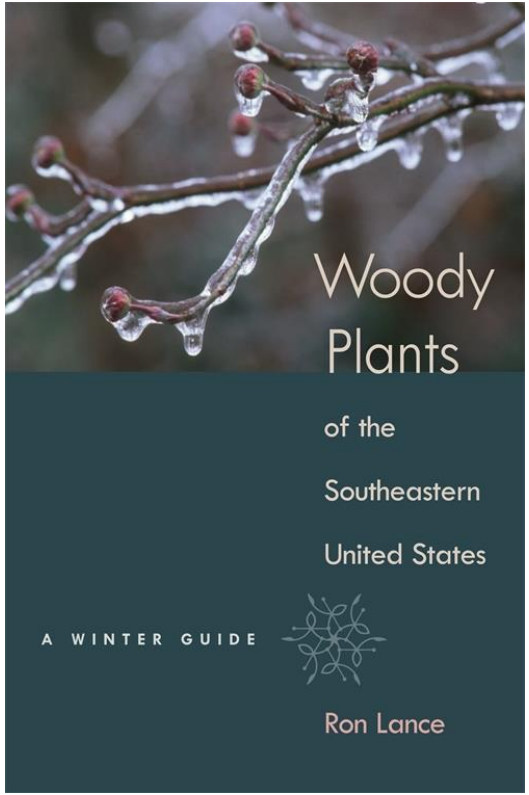
Recommended Resources

Identification Guides

Native Trees of the Southeast: An Identification Guide

L. Katherine Kirkman, Claud L. Brown, & Donald J. Leopold

Timber Press (2007)



Recommended Resources

Identification Guides & Keys

Woody Plants of the Southeastern United States: A Winter Guide

Ron Lance

University of Georgia Press (2004)

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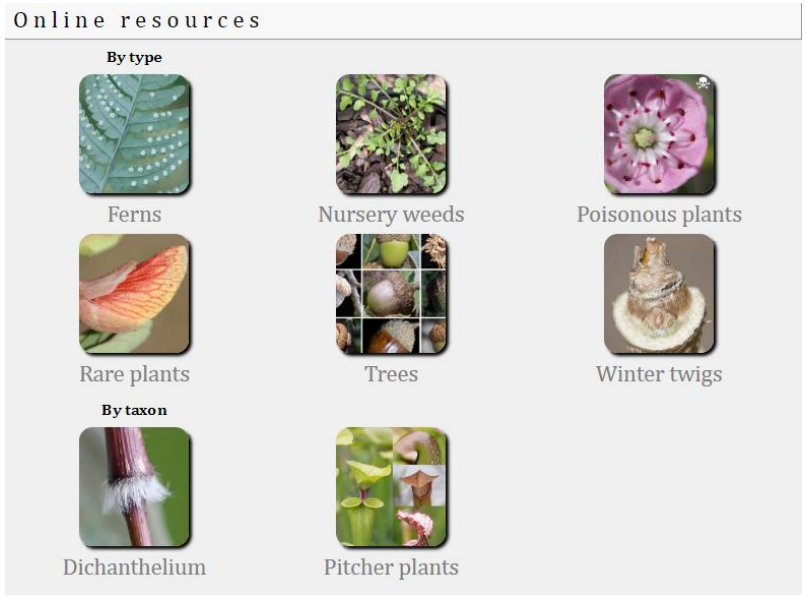
NC State Herbarium

Dichotomous Keys and ID Tools

Google: NCSU Botanist's Little Helper

Dr. Alexander Krings
Assoc. Prof. of Plant Biology
Director, NC State University Vascular Plant
https://herbarium.ncsu.edu/



go.ncsu.edu/botanistlittlehelper

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NC State Herbarium Dichotomous Keys and ID Tools

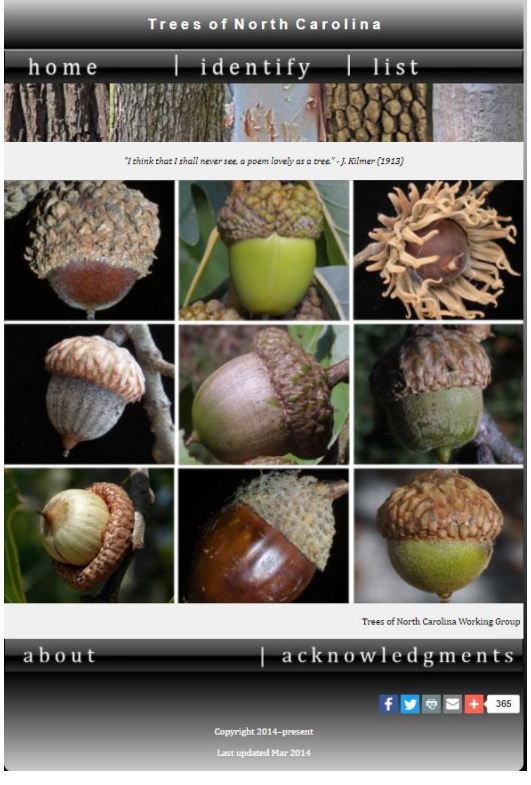
Common Ferns of North Carolina

go.ncsu.edu/fernid

NC STATE EXTENSION

NC State Herbarium Dichotomous Keys and ID Tools

Trees of North Carolina



go.ncsu.edu/nctreeid

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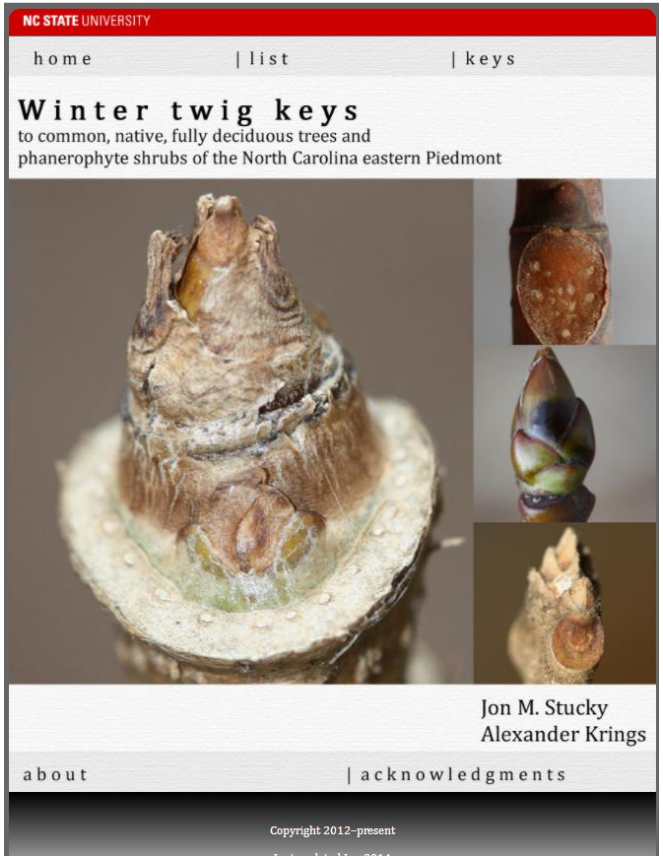
NC State Herbarium Dichotomous Keys and ID Tools



Winter Twig Keys

go.ncsu.edu/wintertwigid

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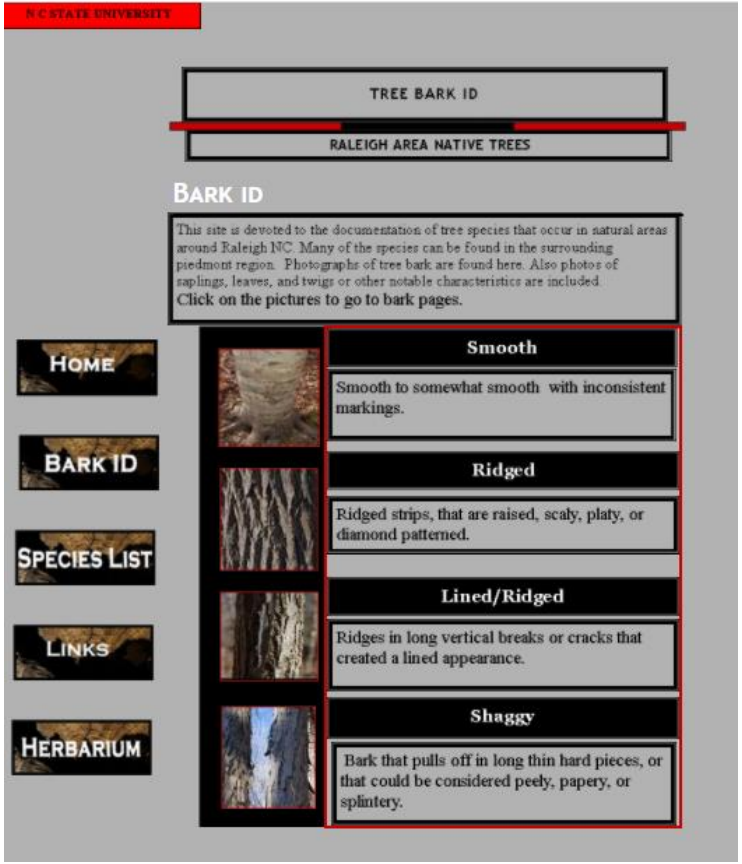
NC State Herbarium Dichotomous Keys and ID Tools



Tree Bark ID

go.ncsu.edu/bark-id

NC STATE EXTENSION

Identification of Common Trees of North Carolina

go.ncsu.edu/nctrees

NC STATE UNIVERSITY

College of Natural Resources

Dr. Stephanie Jeffries
Assoc. Teaching Professor
College of Natural Resources

Dendrology Tree ID Videos

go.ncsu.edu/dendro_videos

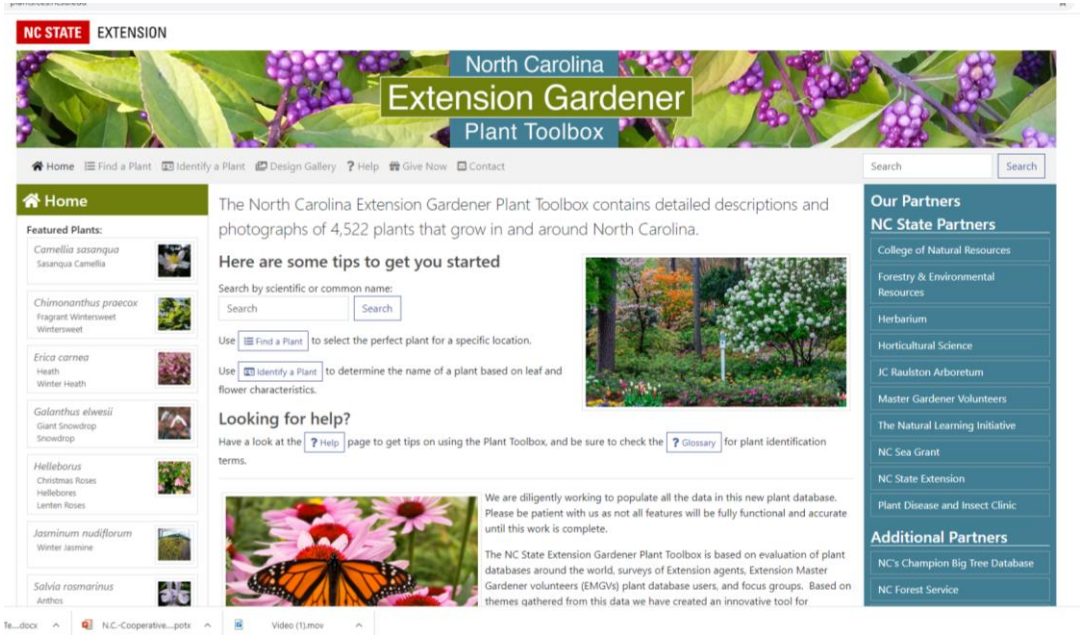
NC STATE EXTENSION

Want to learn more about growing specific plants?

Extension Gardener

Plant Toolbox

plants.ces.ncsu.edu/



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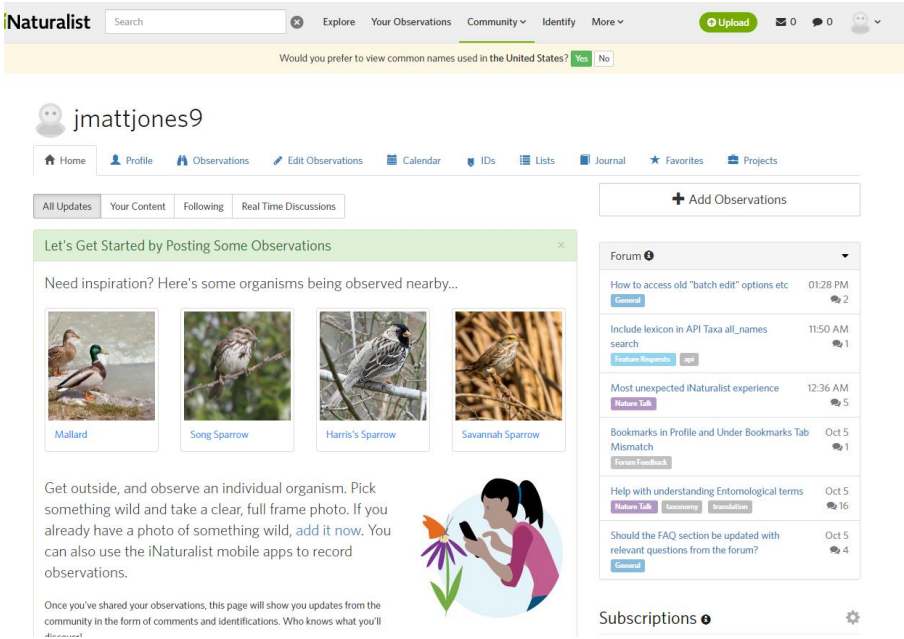
Analytical Identification

Visual Comparison

iNaturalist

CALIFORNIA ACADEMY OF SCIENCES NATIONAL GEOGRAPHIC

- Submit photos for experts to ID
- Record your own observations
- Everyone should try it!
- Use as a tool, not a prosthesis.



inaturalist.org

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What about the phone apps?

- A tool, not a prosthesis!
- Can be accurate to genus
- Some characters not easily photographed
- Depends on photo quality

N.C. A&T STATE UNIVERSITY

NC STATE UNIVERSITY

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Schmidt et al: Analysis of the Accuracy of Photo-Based Plant Identification Applications
Arboriculture and Urban Forestry 48(1): January 2022

Accuracy of ID Apps - Trees

	Genus identification			Species identification		
App	**Combined**	**Bark**	**Leaf**	**Combined**	**Bark**	**Leaf**
PictureThis	81.36%	65.45%	97.27%	67.84%	51.82%	83.86%
iNaturalist	70.23%	48.18%	92.27%	50.68%	31.82%	69.55%
Plant Identification	63.86%	40.00%	87.73%	44.09%	25.00%	63.18%
PlantNet	60.00%	34.55%	85.45%	36.36%	17.27%	55.45%
LeafSnap	59.09%	32.27%	85.91%	35.11%	14.77%	55.45%
PlantSnap	36.59%	1.36%	71.82%	20.45%	0.00%	40.91%
PictureThis*	81.55%	65.75%	97.27%	67.54%	52.05%	82.95%
Plant Identification*	71.50%	49.16%	90.19%	49.36%	30.73%	64.95%
	Genus suggestions			**Species suggestions**		
App	**Combined**	**Bark**	**Leaf**	**Combined**	**Bark**	**Leaf**
PictureThis	81.36%	65.45%	97.27%	67.84%	52.27%	84.32%
iNaturalist	89.55%	79.55%	99.55%	83.41%	70.91%	95.91%
Plant Identification	66.59%	41.36%	91.82%	50.23%	27.27%	73.18%
PlantNet	88.41%	79.55%	97.27%	70.68%	54.55%	86.82%
LeafSnap	88.86%	79.55%	98.18%	72.73%	56.82%	88.64%
PlantSnap	46.36%	2.27%	90.45%	39.55%	0.45%	78.64%
PictureThis*	81.55%	65.75%	97.27%	68.00%	52.51%	83.41%
Plant Identification*	74.55%	50.84%	94.39%	56.23%	33.52%	75.23%

Thanks!

matt_jones@ncsu.edu