

What's Growing On?

BASTROP COUNTY MASTER GARDENER ASSOCIATION

December 2024

Build Your Own Plant Database

By Howard Nemerov

Do you want a free, personalized list of plants that will grow better and attract more pollinators? Build your own using science-based online resources from the comfort of your own home!

There's nothing wrong with books

Books are a starting point, and some may become valuable references that you return to again and again. Texas native plant books can fall short when trying to compile a list of *local* native plants that will perform best in *your* garden. For example, I read a book discussing Texas native plants used by native butterflies for larval hosting. It was helpful but insufficient for two main reasons:

- The authors discussed only 100 plants out of thousands.
- A good portion of their suggested plants are not native to my county, making them less likely to perform well here.¹

Not to derogate the research and hard work it takes to publish a book; authors deserve compensation for their time, effort, and expertise. Publisher's expectations and budget, space limitations, and the need to focus subject matter all require omitting information that may be valuable to you. This article teaches you to do what authors charge for while creating a more comprehensive and relevant list to create a vigorous landscape and pollinator haven in your yard.

The best plants are those native to your county

Growing plants that are native to your county are most likely to perform well for you because:

- They have evolved to handle local climate and soil conditions.
- They often need little to no irrigation or fertilizer once established.
- Local pollinator insects have coevolved to recognize these plants as food and shelter.

With these benefits in mind, this article will help you choose those low-maintenance "winners" that empower you to create an appealing landscape.

(Note: This article includes embedded links to help you follow workflow; some links have been

Inside this issue:

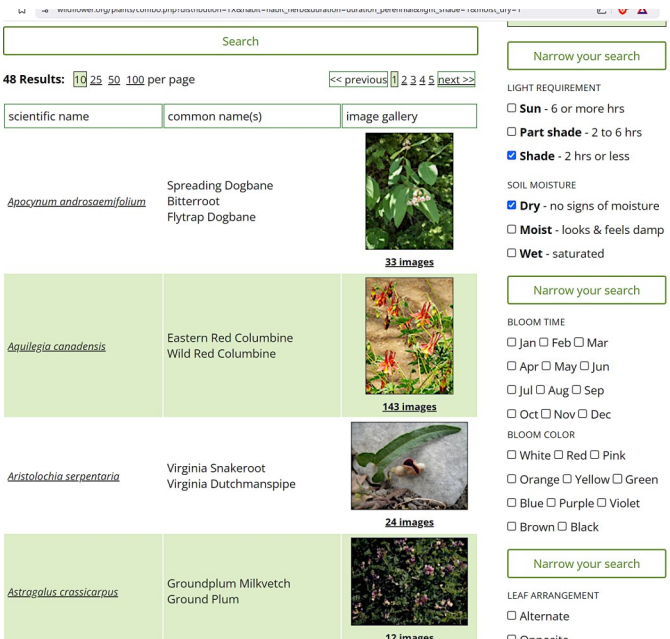
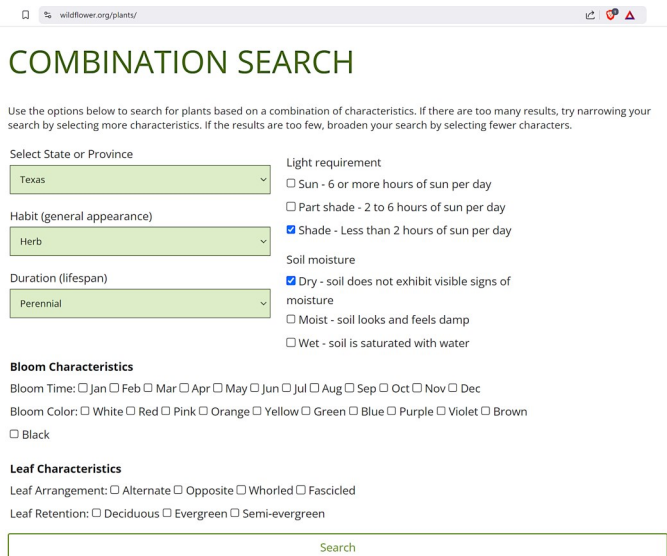
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shortened for readability. Additional references that don't directly address this process follow as end-notes.)

Starting your search with online databases

Let's say you want to find hardy Texas native perennials for beds beneath the high shade of established trees: understory plants that don't visually detract from stately trunks of mature trees. First, navigate to Lady Bird Johnson Wildflower Center's native plant database at <https://www.wildflower.org/plants>. Notice that you can select criteria below "Combination Search" to focus your search (right). Select for plants native to Texas ("Select State or Province" dropdown window) that are herbs ("Habit"), which in this case means plants that don't form persisting woody stems like deciduous

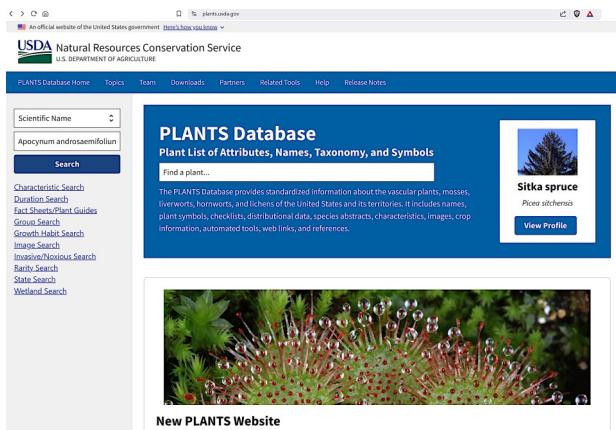


shrubs. Select "perennial" ("Duration") because you want plants that grow back from their roots each spring. Also select for plants that handle shade ("Light requirement") and dry soil ("Soil moisture"), because those are usually tough, low-maintenance plants.

Clicking the "Search" box yields about 50 possible plants (left). That may seem like too many, explaining why authors get paid to winnow down raw data into manageable, book-sized compilations. If you want to winnow it down yourself, this page also affords another opportunity to select bloom time, color, and leaf characteristics.

Your next step is to determine which of these plants are native

to your county. For that, navigate to the USDA Plants Database at <https://plants.usda.gov/>. For each plant on your Wildflower Center search results, copy and paste the botanical name into the search box in the upper left of the USDA database.



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In this search,

New Website Features

Check out our website, which features project slideshows, a new photo gallery section, and an events calendar to check out upcoming activities. Find news articles and our newsletters. <https://txmg.org/bastropcounty/>

President's Message

by Terri Pierce

Thank You!!!



I want to take a moment to express my gratitude. It has been a pleasure serving as your BCMGA President this past year. I have no hesitancy in feeling confident that we will only become better under Chris Toth's leadership. It has been a pleasure working with every one of you. What a talented and energetic group of volunteers we have. Many of you have contributed to my growth and the organization's growth. A lot has been accomplished this year thanks to many. Some of the highlights include:

- Ongoing expansion at Bob Bryant with our gardening guru, Rudy Zuniga. He's dedication and talent are like no others.
- Our first annual Summerfest at Bob Bryant, including the tomato growing contest, the brainchild of Gail Smith! Tomatoes provided 458 lbs. donated to the Bastrop Food Bank and the Soup Kitchen.
- Start of our new project, the Children's Garden at Bob Bryant. Thanks to Debbie Mikel and Marcia Erickson for making this happen.
- Special thanks to Howard Nemerov for all the work he puts in seed starting and growing plants for the plant sale. He also provides us with this newsletter.
- Record breaking number of 24 intern graduates. This was also led by Debbie Mikel. Her dedication does not go unnoticed and is very appreciated.
- Our first ever Pollinator Extravaganza, led by our leader at the Cedar Creek Butterfly Garden, Marianna Hobbs. Her dedication cannot be matched.

These are only some of our activities and hard-working volunteers. It would take pages to list everyone that contributed to our great year. Thank you to each of you. I wish you all a very Merry Christmas and a Happy New Year!

Your 2024 BCMGA President,

Terri Pierce



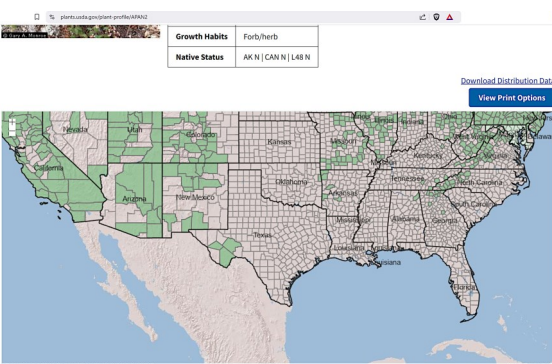
Volunteering

Master Gardeners volunteer in the community to teach others about horticulture. We follow the research-based recommendations of Texas A&M AgriLife Extension. Members who complete 50 hours of volunteer service in the year after training earn the designation "Texas Master Gardener." We use our title only when engaged in Texas A&M AgriLife Extension activities.

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USDA takes you to an intermediate page with various scientific names, often containing old taxonomic names since plants can be reclassified over time. All you need to do is click on the hyperlink for your plant's name (right).

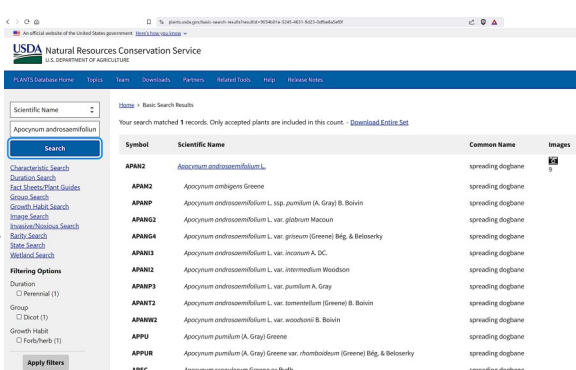
USDA shows that *Apocynum androsaemifolium* is native to Texas (and other states). On the map's left is a zoom bar. If



your mouse has a scroll wheel, rolling it forward while your cursor hovers over the map expands the map until county details appear. After zooming in, we see that *Apocynum androsaemifolium* is native to Southwest Texas (left).

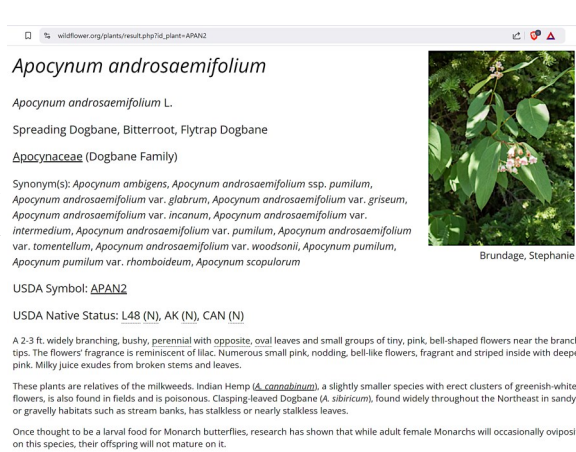
[Useful hint: If you zoom in close enough, the map displays county names.] Repeat the above USDA search until you find plants native to your county.

Once you find a plant native to your county, returning to the Wildflower website and click on the plant's hyperlink to learn more about the plant, helping you decide if it fits in your landscape plan (right). Each name is a hyperlink to a description of that plant's care and culture. Clicking on the *Apocynum androsaemifolium* link takes you to its page (<https://t.ly/9m5WS>). Most pages include a general description, plant characteristics, and other criteria like bloom color and growing conditions (e.g., water and light requirements). Farther down, many pages include ecological benefits such as what type of pollinators are attracted to these flowers. There may be relevant pollinator information lower on the page under "Value to Beneficial Insects." Wildflower Center mentions this species is an adult food source (nectar) for Monarch butterflies.



the map expands the map until county details appear. After zooming in, we see that *Apocynum androsaemifolium* is native to Southwest Texas (left).

[Useful hint: If you zoom in close enough, the map displays county names.] Repeat the above USDA search until you find plants native to your county.



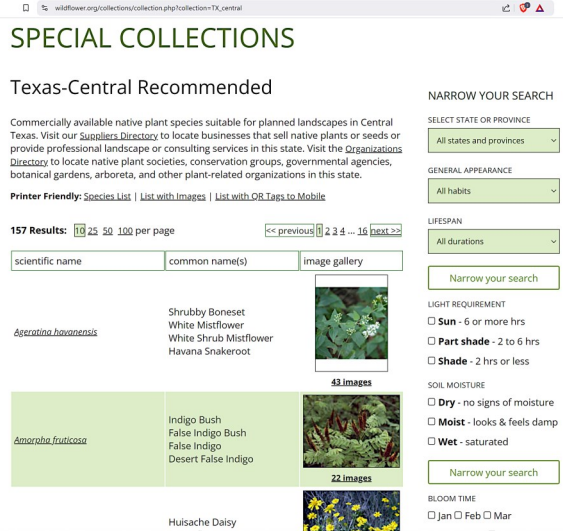
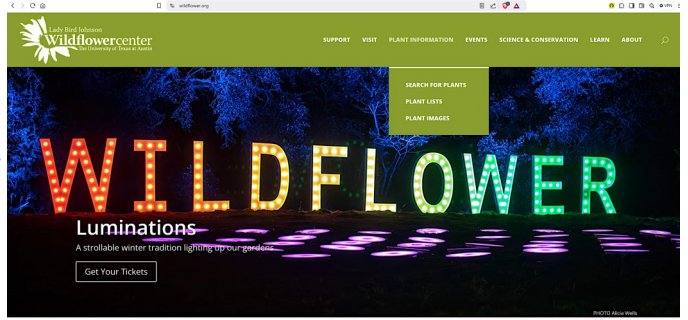
All of this information helps you decide if the plant will suit your garden conditions, enabling you to save time and move on to another candidate. In this example, Wildflower Center notes under "Conditions Comments" that this species "spreads so rapidly from creeping underground stems that it should not be used in small garden settings." Look for comments like this when examining a species for suitability, as aggressive spreaders may be useful for creating soil-holding ground cover for stabilizing a slope, but not desirable if you want a species-diverse area.

As you find species native to your county, record each in a table. Spreadsheet and word processing software can be helpful organizing tools. Populating this list is your first step in the process. I usually include columns for botanical name, the link to Wildflower Center's page for this species, and bloom period. The reason I record the botanical name is that plants often have many "common" names, and some of these names get used for many species. Plants have unique botanical names, helping you locate the plant you want when shopping.

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A quick way to start building pollinator plant lists

Lady Bird Johnson Wildflower Center offers lists for various pollinators. From their homepage, hover your cursor over “Plant Information” to produce a dropdown list that includes “Plant Lists” (right). Click on that to navigate to the “Plant Lists & Collections” page (<https://t.ly/gz4Mk>). At the top of the page is the section “Recommended Species by State.”



Texas is a huge state with many climate and soil zones, each with its own list of native plants adapted to those conditions, so it's fortunate that there are links to six Texas zones (e.g., East, Central, North-Central) to help narrow your search. Since I live in Central Texas, I selected “Texas-Central Recommended” (left) for explanation purposes (<https://t.ly/KlxxvZ>).

your search further by selecting criteria like bloom time and color. You can check the resulting list against the USDA plant database to verify that a plant is native to your county, but these focused lists will save time because these species are more likely suitable for your garden.

Scrolling down the “Plant Lists & Collections” page, there’s a collection of lists entitled “Plants for Central Texas” perhaps because Wildflower Center is located in this region. Here, you could look at specialized lists for Central Texas milkweeds, drought resistant plants, and others (right).

Plants for Central Texas

- [Milkweed Species for Central Texas](#) - Ten asclepiads native to Central Texas.
- [Hill Country Horticulture](#) - Native plants for the Central Texas Hill Country.
- [Sun Garden Plants for Central Texas](#) - Native plants that work well in a full sun garden.
- [Pond Plants for Central Texas](#) - Native plants that work well in water gardens.
- [Dry Shade Plants for Central Texas](#) - Native plants that work well in dry shade.
- [Woodland Plants for Central Texas](#) - Native plants that work well in woodlands.
- [Wetland Plants for Central Texas](#) - Native plants for that work well in riparian areas.
- [Hummingbird Plants for Central Texas](#) - Native plants that attract hummingbirds.
- [Container Garden Plants for Central Texas](#) - Native plants for container gardens.
- [Edible Plants for Central Texas](#) - Native plants for human consumption.
- [Drought Resistant Plants for Central Texas](#) - Native plants that perform well during drought.
- [Riparian Restoration Plants for Central Texas](#) - Woody and herbaceous species for restoring riparian areas.

Plants by Texas Ecoregions

- [Chihuahuan Desert](#)
- [Arizona-New Mexico Mountains](#)
- [High Plains](#)
- [Southwestern Tablelands](#)
- [Central Great Plains](#)
- [Edwards Plateau](#)
- [Cross Timbers](#)
- [Southern Texas Plains](#)
- [Texas Blackland Prairies](#)
- [East Central Texas Plains](#)
- [Western Gulf Coastal Plain](#)
- [South Central Plains](#)



For example, clicking “Drought Resistant Plants for Central Texas” returns a list (left) of “commercially available native plants that perform well during extreme drought” (https://t.ly/oB_pe).

Scrolling farther down the “Plant Lists & Collections” page, you arrive at the “Plants for Pollinators” section. Clicking on “Special Value to Native Bees” returns a list of suitable nectar and larval hosting plants (<https://t.ly/OZ3Wy>). Again, you can cross-reference these plants against the USDA plant database to compile a list of those native to your county. As with other

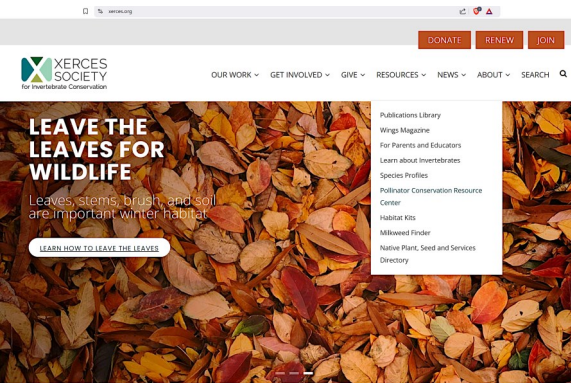
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specialty pages, you can narrow your search by selecting criteria like light requirements, soil moisture, and bloom information (right).

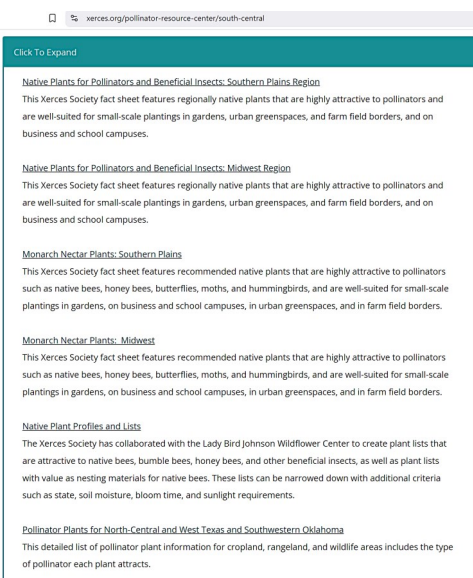
Just keep in mind that when you use somebody else's list, it may not include *all* plants that might work in your garden. It's a balance between how much time you want to save versus looking for "special" plants that may become stars in your garden.

Xerces Society has some useful plant lists, too



The Xerces Society offers lists of pollinator-friendly plants (<https://xerces.org>). Hovering your cursor over "Resources" produces a dropdown list (left) including "Pollinator Conservation Resource Center". Clicking that link brings you to a page containing lists of "region-specific collections of publications, native seed vendors, and other resources to aid in planning, establishing, restoring, and maintaining pollinator habitat" (<https://tinyurl.com/2huhd9zd>).

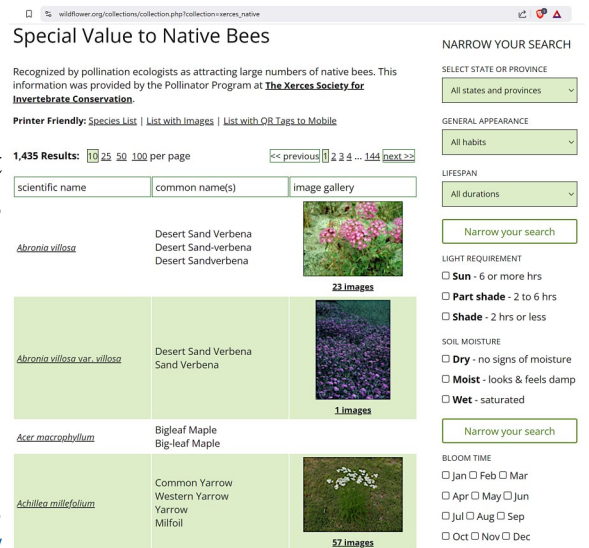
The page includes a map where you can click on the region including most of Texas (right). Clicking there returns their resource page that includes many resources like habitat assessment and native seed and plant suppliers (<https://tinyurl.com/2k57j7c5>).



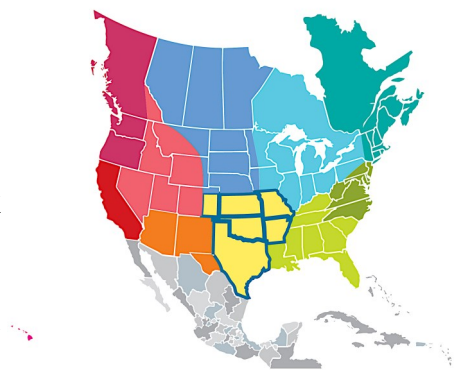
It also includes a "Plant Lists" section. Clicking the blue-green "Click to Expand" box opens links to documents and resources (left). Clicking on "Native Plants for Pollinators and Beneficial Insects: Southern Plains Region" navigates to a page containing the document entitled "Native Plants for Pollinators and Beneficial Insects: Southern Plains Region" (<https://tinyurl.com/5n6bck7y>).

There, you can download a PDF list of nectar plants, organized by criteria like blooming season, water needs, and form (growth habit) to help you create a design with more eye-catching textural diversity (right).

Since this list is for the Southern Plains, you'll need to cross-reference the USDA plant database to determine if a plant is native to your county.



<https://xerces.org/pollinator-resource-center>



Native Plants for Pollinators and Beneficial Insects: Southern Plains Region

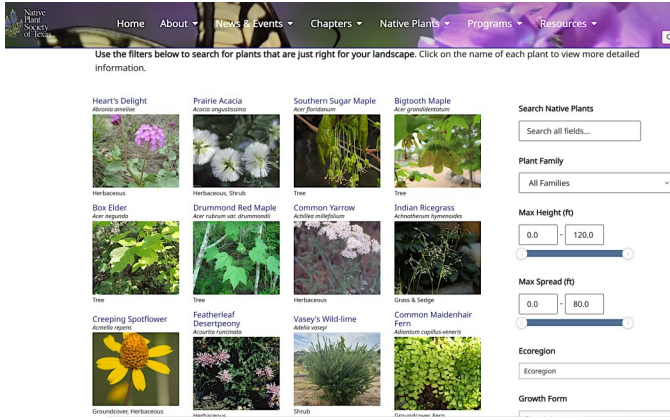


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Because these lists include areas outside Texas, you still need to check with the USDA plant database to ensure a plant is native to your county.

Native Plant Society of Texas plant database

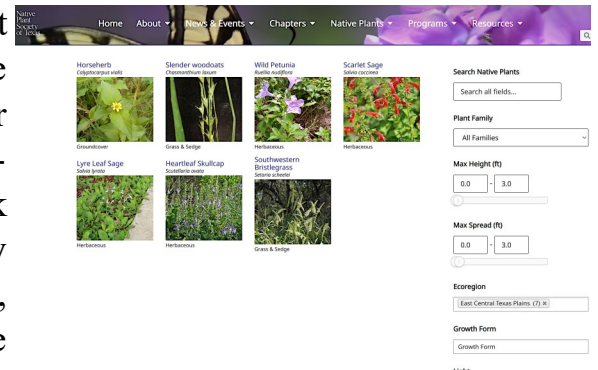


The Native Plant Society of Texas (NPSOT) database is functionally similar to the Wildflower Center's (<https://tinyurl.com/5atuf8hz>). Scroll down to find selection criteria like growth form, light requirement, and water needs in the right column. Follow the same process used with the Wildflower Center to build a list of possible plants, then checking the USDA plant database to select species native to your county. The NPSOT database isn't as extensive as the Wildflower Center's. For example, *Thymophylla tenuiloba* isn't in the NPSOT database, even though it's native from Central Texas to the

coastal regions and Rio Grande Valley.²

On the other hand, lists containing dozens of plants might be overwhelming as you begin this journey. The NPSOT search functions quickly let you develop a short list of great performers.

I performed a search for perennials (“Lifespan” entry in right column) no more than three feet high and wide, that like shade and low moisture levels. I also selected my ecoregion to better focus on plants most likely to do well where I live. NPSOT returned seven possibilities on the main page—all of which happen to be native to my county. They also offer a mixture of flower color and texture, and using all seven could provide all you need for a native shade garden.



[**Note:** To locate your ecoregion, Texas Parks & Wildlife offers a downloadable, county-level ecoregion map.³ To learn more about why this matters, Texas Parks & Wildlife also has a webpage discussing the unique soil and climate conditions of each ecoregion.⁴]

iNaturalist expands native areas beyond artificial county boundaries

The USDA employs the National Plant Data Team to determine which plants are native.⁵ They produce regular updates to better refine species maps, and look for better ways to determine if a plant is native or introduced.⁶ This is an ongoing effort as new findings and research redefine if a species is native and where its natural range occurs.

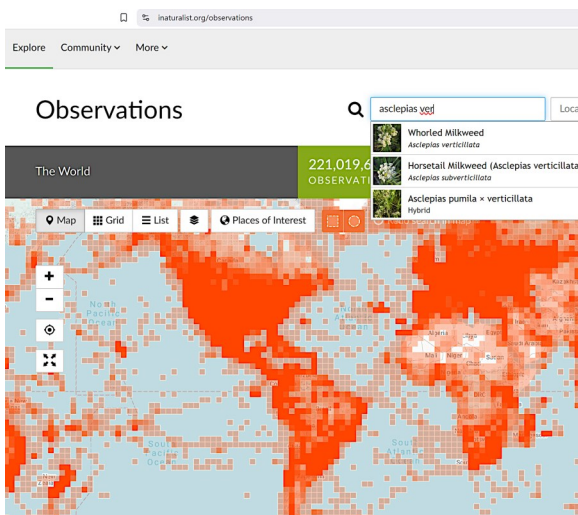
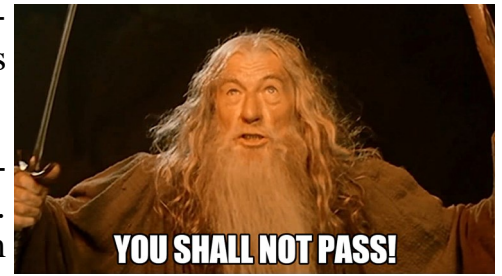
From a plant's perspective, counties are arbitrary lines drawn on a map. For example, if a plant is native to eastern Bastrop County, why can't it also be native to western Lee County? What's to stop wind or animals from transporting seeds across county lines? If the seeds germinate in a new area,

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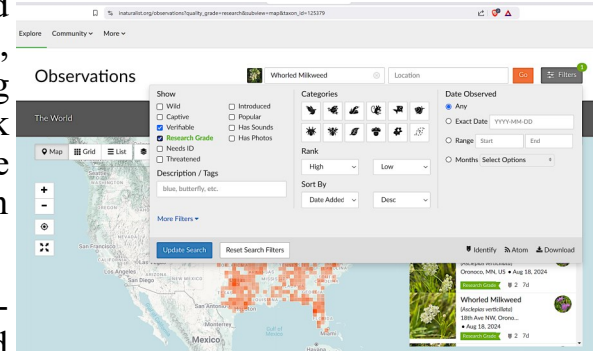
survive in that microclimate, and colonize through natural means, isn't it native? There's no magic force field created by drawing lines on maps.

iNaturalist is a relatively new website overseen by scientists and experts with a broad range of professional and academic experience. iNaturalist relies on citizen scientists posting observations, though that doesn't automatically make something credible because contributors span a broad knowledge spectrum and misidentification can happen. To address this concern, iNaturalist has experienced members who have verified dozens to hundreds of observations of a given species (aka "Top Identifiers"). Combined with professional oversight, iNaturalist has a reputation as a science-based resource and has been cited in numerous peer-reviewed research papers.⁷ As a result, iNaturalist builds a real-time database that's constantly updated, showing where plants grow naturally.

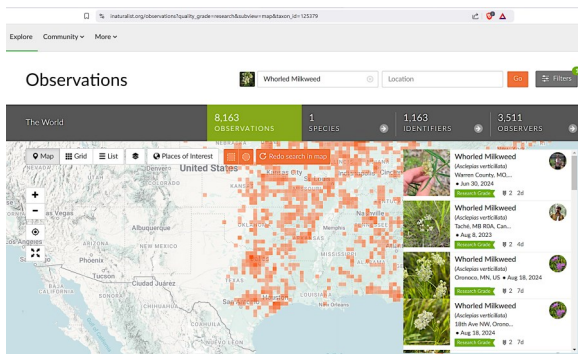


To determine if a species is native where you live, navigate to their Observations page and click on the "Map" option (<https://tinyurl.com/2np8yuk9>). iNaturalist has a useful autofill option that makes it easier to find a species without having to type in the entire name, as shown on the left. However, if you misspell the genus name, autofill offers no suggestions (no spell check function). In the example on the left, I decided to look for *Asclepias verticillata*, a Texas native milkweed (<https://tinyurl.com/32a2hcfs>).

To differentiate between casual, unverified observations, knowledgeable members must confirm that an observation is accurately identified and naturally occurring, earning the label "Research Grade". To ensure you're getting verified results, click on the gray "Filters" button and check the "Research Grade" box. When you click the blue "Update Search" button, iNaturalist displays an updated observation map (right).



(Note: People posting photos of plants in their garden are filtered out of research Grade observations; these get labeled "casual" because they're cultivated and not naturally occurring.)



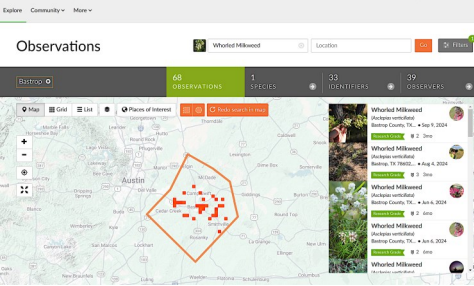
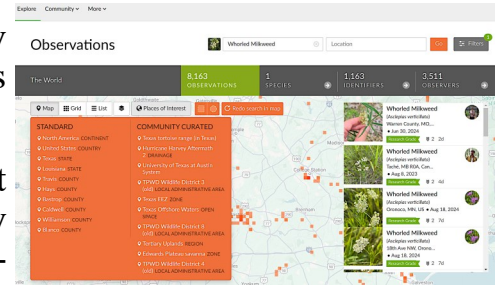
Now you can view all naturally-occurring *Asclepias verticillata* observations reported by members. As with many other sources, you can zoom to your county by using the +/- buttons on the left or using your mouse's scroll wheel.

I recommend zooming in until you see your nearest city names, because iNaturalist has a great feature that enables you

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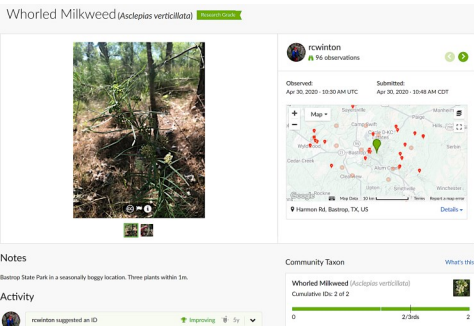
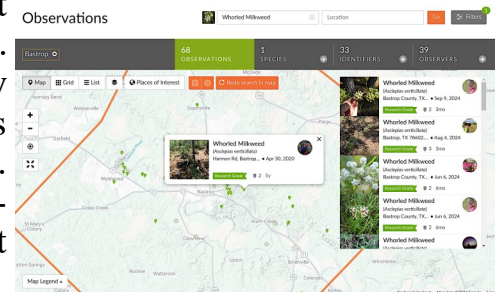
to select your county. If you zoom in enough and click on the gray “Places of interest” button, you should see your county name as shown on the right.

After clicking on your county name in the dropdown list, iNaturalist displays your county outlined in orange, including observations only in your county. As an example, I selected Bastrop County (left) and you can see that *Asclepias verticillata* is native (<https://tinyurl.com/24va6e3w>).



From there, you can zoom in closer to see if there are observations nearby to help determine if the plant will like your garden’s microclimate. For example, if you live in dry, sandy soil but most observations are close to water, this may mean a species isn’t suitable to your garden even though it’s native to your county.

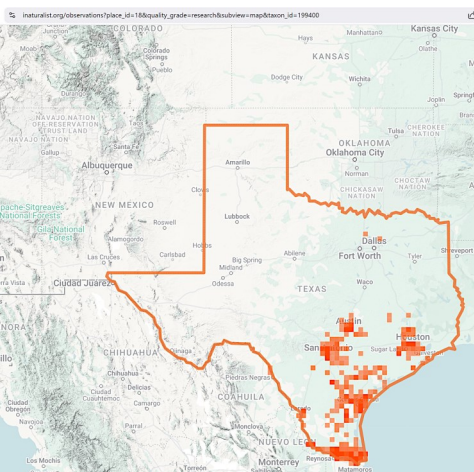
As shown on the right, zooming in close enough turns each observation into a pin that you can click to bring up more information on that observation (right).



Clicking on the species name opens a window specific so you can examine growing conditions for that observation. Photos give hints about the plant’s growing conditions; some contributors add notes about growing conditions where the plant was found. The photo on the left shows *Asclepias verticillata* growing in a woodland setting with some shade. Cross-referencing Wildflower Center’s database entry confirms that its native habitat is woodland, and it grows in sun to part shade.⁸ When designing your plan, placing this species beneath tree canopy with morning sun seems appropriate.

There are caveats—though they are also benefits—even with research-grade observations worth considering:

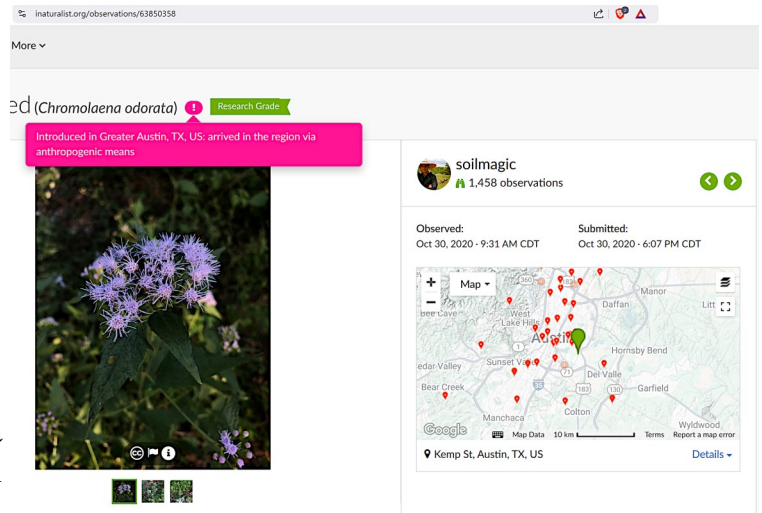
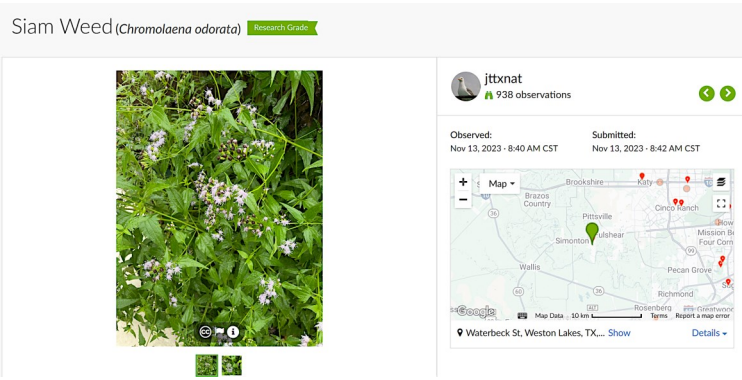
- iNaturalist observations can be non-native *and* research-grade;
- A species native in one part of Texas may not be native statewide.



Chromolaena odorata is an example of the latter. I selected Texas as a “place of interest” and then used the four-arrow icon shown below the +/- buttons to create a full-page view of Texas. The illustration on the left shows research-grade observations of *Chromolaena odorata* from Central to South and Southeast Texas. Below are two randomly selected observations of *Chromolaena odorata*. The first is from the Houston area (left). The second observation is from the Austin area. Notice the pink oval with the white exclamation point? I clicked on that to open a popup that says this species “arrived in the region via anthropogenic means.” (“Anthropogenic” means “resulting from the influence of human beings on nature.”⁹) *Chromolaena odorata* is a Texas native in southern regions, but not elsewhere. This important

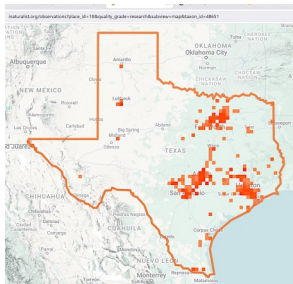
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because non-native means it's been planted outside a natural environment that includes ecological controls to maintain balance and diversity: Plants can become invasive when removed from their natural environment. I've grown *Chromolaena odorata* and can attest that it grew in Central Texas as a root-hardy perennial, and it also spread quickly and grew much taller than literature describes natural behavior and size.

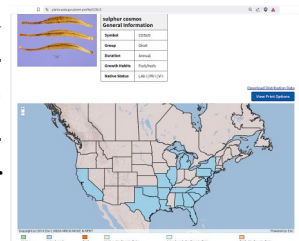


I have replaced it with *Conoclinium coelestinum*, a Texas native throughout its range in the eastern third of the state including Bastrop County.¹⁰

One reason I used these two species in this example is to highlight how misleading common names can be. Both are called “Blue Mistflower.” I bought one from a higher-end nursery in Austin and it turned out to be *Chromolaena odorata*. Even nurseries that are usually reliable make mistakes by relying on common names. I have the true native “Blue Mistflower” now: *Conoclinium coelestinum*. The point here is that knowing taxonomic names ensures you're buying what you want before you have to go through the expense and hassle of eradicating an aggressive non-native.



There are also species on iNaturalist that occur naturally but aren't native to Texas (anthropogenic). *Cosmos sulphureus* has been observed in the wild throughout much of Texas. The map on the left shows how widespread this species is (remember that “research grade” observations are those growing in the wild).¹¹ *Cosmos sulphureus* produces many flowers; almost all of these flowers produce a dozen or more seeds, making it borderline invasive because each plant produces dozens of flowers, too (hundreds of seeds per plant). If you click on any Texas observation, they're all labeled anthropogenic (humans caused this). iNaturalist shows that the native range begins over 50 kilometers (35 miles) south of the US-Mexico border. USDA Plant Database concurs that *Cosmos sulphureus* is “introduced” throughout its U.S. range, another way of saying “exotic and spread here by human activity” (right).



Conclusion

This primer will help you build your garden with native plants suitable to your local climate and soil conditions. As you become more skillful using these resources, it becomes even easier and quicker to create a design using native plants for the most attractive, low-maintenance, and pollinator-friendly garden possible.



(References on page 11)

Endnotes

- ¹ Weber, Jim; Weber, Lynne M.; Wauer, Roland H. Native Host Plants for Texas Butterflies: A Field Guide (Myrna and David K. Langford Books on Working Lands). Texas A&M University Press. Kindle Edition.
- ² “*Thymophylla tenuiloba*.” USDA Plant Database. Accessed December 11, 2024. <https://plants.usda.gov/plant-profile/THTE7>
- ³ “Level III Ecoregions of Texas.” Texas Parks & Wildlife Department. Accessed December 10, 2024. https://tpwd.texas.gov/publications/pwdpubs/media/pwd_mp_e0100_1070z_08.pdf
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Genetic Diversity Among a Species

Text and photo by Howard Nemerov

The picture below highlights how genetic diversity manifests in two Texas Red Oaks (*Quercus buckleyi*). This is our neighbor’s yard across the street from us. I observed both trees getting planted at the same time. While they were planted too close together—remember to plant shade trees at their mature spacing so they can grow into healthy specimens—they also show how two trees of the same age, grown under identical conditions, nevertheless display morphology indicative of genetic variation. I took this photo on March 17, 2024. The tree on the right was already fully leafed out while the tree on the left was still pushing buds.



Genetic diversity is vital to long-term species survival. In this case, it’s likely that the tree on the right may “win” the race to control the canopy, since its spring growth begins earlier and it can branch out before the other tree wakes up. More leaves on a larger crown means more photosynthesis, creating stronger growth and more energy storage in the fall for stronger spring growth.

Only time will tell in this slow-motion survival story.

