

*"I think that I shall never see
A poem lovely as a tree.*

*A tree whose hungry mouth is pressed
Against the earth's sweet flowing breast;*

*A tree that looks at God all day
And lifts her leafy arms to pray;*

*A tree that may in summer wear
A nest of robins in her hair;*

*Upon whose bosom snow has lain;
Who intimately lives with rain.*

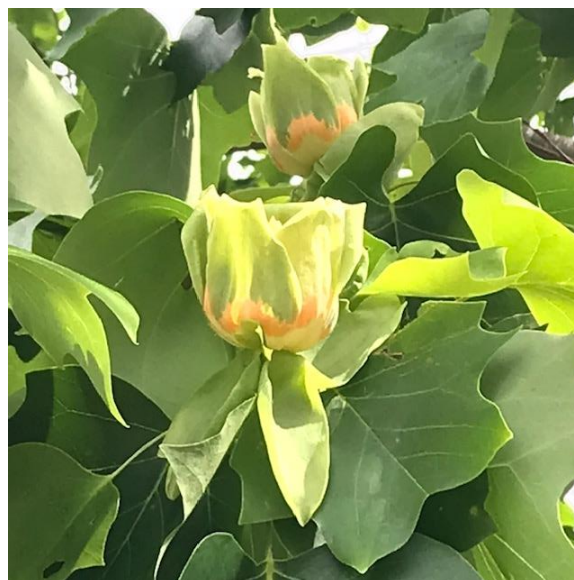
*Poems are made by fools like me,
But only God can make a tree."*

— Joyce Kilmer, "Trees" (1913)

On the first night of bee school every year, I make a point of confiding in my students that Piedmont North Carolina is a terrible place to keep honey bees. We only have one major honey flow, followed by hot, dry summers and unimpressive autumns. The major flow comes early in the year so is often harmed by late frosts, and it doesn't last more than a few weeks. The flow overlaps with the height of swarm season so there is little or no time for colonies to recover from swarming and still make a honey crop.

The Midwest and Deep South are much more lucrative regions for keeping honey bees. For example, according to the USDA's Agricultural Research Service¹, surplus honey production in 2018 was 72 pounds per hive in North Dakota, 73 in Ohio, 73 in Kansas, 83 in Louisiana and 87 in Mississippi. The record for state averages in 2018 was 103 pounds per hive in Hawaii followed by an impressive 92 in Montana. North Carolina? We limped in with a measly 33 pounds per hive, barely better than New Jersey's 31 and Maine's 32. Maybe we

¹ "Honey", National Agricultural Statistics Service (NASS), Agricultural Statistics Board, USDA, March 19, 2020
<https://downloads.usda.library.cornell.edu/usda-esmis/files/hd76s004z/v979vm595/dn39xk32q/hony0320.pdf>



Because tulip poplar trees are so tall, blossoms are not often seen unless they are knocked to the ground by a rainstorm. Notice how the flowers closely resemble the huge bell-like flowers of southern magnolia. Photo courtesy of Daniel Curry-Corcoran.

should make a bumper sticker that says, "North Carolina Beekeepers: At Least We Do Better than New Jersey!"

So why do we bother? Why are North Carolinians so fanatical about honey bees, as evidenced by having the largest [State Beekeepers' Association](#) in the country? I don't know the definitive answer to that question, but I suspect that one reason is, despite only getting around 33 pounds of surplus honey per hive, the 33 pounds we do get is absolutely wonderful!

What do we have to thank for that? According to the book [Beekeeping in the South](#),² North Carolina's surplus honey significantly comes from (in alphabetical order):

1. Asters
2. Blackberry
3. Clethra
4. Gallberry

² Kenneth Hawkins, [Beekeeping in the South](#), American Bee Journal, Hamilton, Illinois, 1920, p. 118.

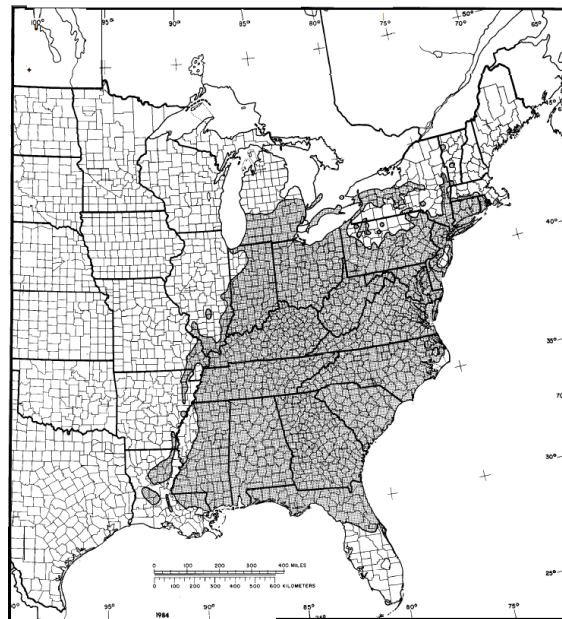
5. Holly
6. Ironwood (White Titi)
7. Sourwood
8. Sweet Bay
9. Tulip Poplar

Asters are a fall plant, blackberries are really nice but not extremely abundant and I had to look up “clethra” (not common around my house). I do like holly but they are a relatively small tree in relatively small numbers. Gallberry, White Titi and Sweet Bay (*Persea borbonia*) are coastal and Sourwood is mountain. All that is left is the plant we all love... tulip poplar!

Despite their name, tulip poplars aren't tulips and they aren't poplars! They are related to magnolias, a fact that becomes obvious when you compare the flowers of the two. Their Latin name, *Liriodendron tulipifera*, literally means “Lily Flower Tree that brings Tulips,” which describes them perfectly!

For those of you who “ain't from around here,” tulip poplars (also known as yellow-poplars and tulip trees) are extremely tall (up to 180 feet!), extremely straight, grow fast and can live for hundreds of years. Unlike many other fast-growing trees, they are strong and not likely to break or split. Tulip poplar lumber is yellow to white with a green tint and is excellent for making furniture. It stains well, is easy to cut and carve, and in our area is much less expensive than other hardwoods.

US Forestry Service Silviculturist Donald Beck³ tells us, “*Yellow-poplar grows throughout the Eastern United States from southern New England, west through southern Ontario and Michigan, south to Louisiana, then east to north-central Florida. It is most abundant and reaches its largest size in the valley of the Ohio River and on the mountain slopes of North Carolina, Tennessee, Kentucky, and West Virginia. The Appalachian Mountains and adjacent Piedmont running south from*



The native range of the tulip poplar tree. From Beck (1990).

Pennsylvania to Georgia contained 75 percent of all yellow-poplar growing stock in 1974....

Yellow-poplars usually produce their first flowers at 15 to 20 years of age and may continue production for 200 years. Flowering occurs from April to June depending on location and weather conditions. The flowering period for each tree varies from 2 to 6 weeks depending on the size and age of the tree and number of flowers per tree....

Yellow-poplar is a prolific seeder, and large crops are produced almost annually. In North Carolina, a 25-cm (10-in) tree produced 750 cones with 7,500 sound seeds, and a 51-cm (20-in) tree produced 3,250 cones with 29,000 sound seeds. A seedfall of 741,000 to 1,482,000/ha (300,000 to 600,000/acre) is not uncommon. Measurement of the 1966 seed crop in 19 southern Appalachian stands showed an average of 3.7 million seeds per hectare (1.5 million/acre).” [NOTE: At roughly 10 seeds per flower, that translates to 150,000 flowers per acre!]

³ Beck, Donald E., "Liriodendron tulipifera L." in *Magnoliaceae*, USDA FS (1990) pp. 406–416.

<http://dendro.cnre.vt.edu/dendrology/USDAFSSilvics/54.pdf>

John Lovell⁴ said, *“The nectar may be seen in both large and small drops on the orange-yellow portions of the petals, on the inner side, which thus serve as both the nectaries and the nectar guides. The time of blooming varies with the conditions of the weather from the last of April to the first of June. When the blossoms are late in opening and the weather is warm and dry, the honey flow is very much heavier than when the bloom is early. Under such conditions there are few if any better honey plants than the tulip tree, and each flower will yield not far from a spoonful of nectar.”*

Frank Pellett⁵ added, *“The possibilities of this source of nectar are not properly appreciated. Since it blooms so early in spring, few colonies of bees are sufficiently strong to gather the crop possible from tulip-poplar. The skilled beekeeper, who can bring his colonies through the winter in good condition, gets large yields of honey from this source.... In many cases the bees build up on tulip-poplar only to become strong after the flow is over. In locations where this tree is common, too much care cannot be taken to get strong colonies early in spring to take advantage of this flow.”*

With regard to tulip poplar’s nectar, USDA’s George Marvin⁶ said, *“To one standing near a tulip tree at the height of the blooming period, when a gentle breeze is stirring the branches, the falling of drops of nectar gives the impression of a light rain. During favorable seasons nectar is present in the tulip tree blossoms in such quantities that wild insects and honeybees cannot carry it away as fast as it is secreted; consequently much nectar is lost....*

The nectar gathered from freshly opened flowers contained from 15.2 to 19.5 per cent sugar. The uncollected nectar became more concentrated the longer it remained in the open flower and by the second day the nectar had a sugar concentration of 35 to 36 per cent. In a



Tulip poplar honey is dark amber, typically with a red tint. The taste is bold and distinctive -- it tastes like... tulip poplar honey! It is not fruity, earthy or bland, nothing like what you've had from the grocery store.

blossom apparently neglected by the bees, nectar was found which had a sugar concentration of 63.9 per cent.... For the 32 blossoms under observation, the total weight of nectar secreted per blossom ranged from 0.4748 to 3.1626 grams, the average being 1.6417 grams. Twenty-two of the blossoms opened in the early morning and yielded nectar having an average weight of 1.687 grams,

⁴ Lovell, John H., Honey Plants of North America, The A.I. Root Co., Medina, Ohio, 1926, pp. 224-225.

⁵ Pellett, Frank C., American Honey Plants, Dadant & Sons, Hamilton, Illinois (1976), pp. 412-414.

⁶ Marvin, George, “Nectar Secretion of the Tulip Tree or Yellow Poplar”, U.S. Bee Culture Laboratory, reprinted in Report of the Maryland State Beekeepers Association: Twenty Fourth Annual Meeting, Baltimore, Maryland (1933), pp. 18-23.

whereas 1.5414 grams was the average total yield for the 10 opening in the afternoon.

Nectar was found in the flower during the first day it was open and the following morning. If this nectar was removed, the blossoms remained practically dry from that time on.

Inasmuch as nectar was present in freshly opened blossoms, 16 large buds that were just unfolding were examined. Quantities of nectar ranging from 0.3466 to 1.5329 grams were already present, the average weight for the 16 buds being 0.8723 gram."

Taking all of these reports into account, it is clear that tulip poplars not only produce a tremendous number of flowers, they yield a huge amount of nectar per flower! So why isn't North Carolina the largest honey-producing region on the planet? E.F. Phillips and George DeMuth⁷ bluntly summarized the problems we face as Piedmont beekeepers:

"One of the difficulties encountered in the tulip-tree region is that practically nothing has been published concerning this plant from the standpoint of the beekeeper and there is little to guide the prospective honey-producer except his own experience. Under such circumstances it is little wonder that so small an amount of honey from this source is now produced. The usual beekeeping practices of the clover region will not serve to bring full results where the tulip-tree is the chief source of honey.... The lack of literature concerning the tulip-tree as a honey-plant is a serious one....

As the tree blooms so early in the spring, there is little time for the bees to get in proper condition for the gathering of the tulip-tree honey-crop. In this region brood-rearing normally begins between February 15 and March 1, although ... it may begin as early as January.... After it is once started it is to the advantage of the bees and of the beekeeper that it progress as rapidly as possible. A failure to have colonies strong at the beginning of the

tulip-tree bloom is the cause of the loss of tons of honey from this source annually."

In my own experience, there are all sorts of things that can go wrong with respect to taking advantage of the tulip poplar nectar flow. A late freeze kills blossoms. An early drought halts their nectar production. Too much rain washes the nectar out of the blossoms. Too little rain dries up the nectar. Even when the weather cooperates, my bees swarm like crazy, halving the workforce needed to collect and process all of that nectar.

All of this means that tulip poplar honey production can be very fickle. Its siren song can dash us upon the proverbial rocks in any number of ways; our love for it can be unrequited. But what is to be done? Nothing, except work toward having a strong and healthy forager workforce and at the same time, try desperately to keep the bees in their boxes by controlling swarming. Then hope for the best and laugh it off when things go sideways. Many times, we are bountifully rewarded for our effort but there are no guarantees in beekeeping! If we are having fun, be satisfied with that as its own reward, and give sincere and humble thanks when we are blessed with even more than that!

Randall Austin is a NC Master Beekeeper who keeps a few honey bee hives in northern Orange County, NC. He can be reached at s.randall.austin@gmail.com.

Note: All previous articles are archived at https://baileybeesupply.com/educational_resources/

Copyright 2020, no reproduction in whole or in part without permission of the author, except for noncommercial, educational purposes.

⁷ Phillips, E. F. and DeMuth, George, [Beekeeping in the Tulip-Tree Region](#), Farmers' Bulletin 1222, USDA, Washington, DC (1922), pp. 7-9.