

Chapter 3

THE WHITE OAK

StandingNation-Human Alliance Bulletin

The Grove of Eden

- 🌳 **TREES provide food for us**, including their:
 - seeds (e.g., over a dozen tree nuts; cacao seed, from which we make chocolate; nutmeg)
 - flowers (e.g., cloves)
 - over two dozen fruits we can eat fresh from the trees
 - berries used as critical spices (e.g., black, white, and green pepper and allspice)
 - sap (e.g., maple syrup)
 - even their leaves (e.g., bay leaves)
 - bark (e.g., cinnamon).
- 🌳 **TREES provide food for the animals that we consume as food.**
- 🌳 **TREES provide food for living beings we don't eat as food, but which contribute to the biodiversity and balance of life on our planet:** bacteria, fungi, and other members of the animal kingdom: worms, arachnids, insects, amphibians, reptiles, birds, and mammals.

- ✘ Acorns are very nutritious, offering healthy levels of carbohydrates, protein, and fiber. “[A]corns appear to be higher in caloric content per unit weight than cereal grains, a reliable source of vitamin C and starch, and high in magnesium, calcium and phosphorus.¹” Plus, they have a wonderful rich, nutty taste.²
- ✘ Acorns may constitute 25% of a deer’s diet in fall.
- ✘ Acorns were an important food source for many Native Americans, especially for the Eastern Woodlands Native Peoples, before and after the advent of corn crops about 1,000 years ago. Acorns are one of the more easily stored and carried foods. They were dried and then cracked to access the nutmeat, which was ground or pounded into flour. After the flour was leached to remove the bitter and toxic (in large amounts) tannic acid (compared to red oaks, white oaks produce acorns with little tannin), it was then mixed with cornmeal to make used to make bread or puddings. Acorns were also enjoyed in soups and boiled for their oil.
- ✘ “Acorns were valuable as food for pigs, and land was often measured out in terms of the number of swine its oak woods could support, a practice known as ‘pannage’.”³

¹ Dawn Starin, “Is Reintroducing Acorns into the Human Diet a Nutty Idea?” *Scientific American*, May 16, 2014, <https://www.scientificamerican.com/article/is-reintroducing-acorns-into-the-human-diet-a-nutty-idea/> (accessed 2/23/21).

² Janice Stillman et al., “How to Prepare and Cook Acorns: A Step-by-Step Guide to Preparing and Cooking with Acorns,” *The Old Farmer’s Almanac* <https://www.almanac.com/how-prepare-and-cook-acorns> (accessed 9/21/20).

³ Jane Gifford, *The Wisdom of Trees: Mystery, Magic, and Medicine* by (New York: Sterling Publishing Company, Inc., 2001), p. ???.

- ✦ Because of its unrivaled strength, oak, in Viking times, and specifically white oak in colonial times, was important in shipbuilding.
- ✦ One of the most popular oak trees in the U.S. is the Angel Oak (a Southern Live Oak (*Quercus virginiana*) [on the former estate of Justus Angel] on Johns Island near Charleston, South Carolina. Believed to be 400 to 500 years old, the tree is over 65 feet high, measures 28 feet in circumference, and “produces shade that covers 17,200 square feet”⁴ The tree is believed to be the oldest oak east of the Mississippi River.
- ✦ In 2004, we chose the oak as the national tree of the United States.

⁴ Coleen Perilloux Landry, Live Oak Society, Louisiana Garden Club Federation, Inc. <http://www.lgcfinc.org/uploads/1/5/1/2/15124054/001-500.pdf> (accessed 2/24/20).

Tourists' Testimonials

*When the oak is felled the whole forest echoes with its fall, but a hundred acorns are sown in silence by an unnoticed breeze.*⁵

—Thomas Carlyle (1795-1881)

*“Think of the fierce energy concentrated in an acorn! You bury it in the ground, and it explodes into an oak! . . .”*⁶

—George Bernard Shaw (1856-1950)

*“The creation of a thousand forests is in one acorn . . .”*⁷

—Ralph Waldo Emerson (1803 – 1882)

Tree-Tripping

Taste what a treat you've been missing out on!

Acorns contain bitter-tasting tannins, so you must prepare, treat, and cook the nuts before you eat them. *The Old Farmer's Almanac* provides thorough directions for each of the five steps taken to prepare acorns to safely enjoy as an energy source:

1. Harvest the acorns
2. Wash the acorns
3. Leach the acorn meats
4. Dry the acorn meats
5. Roast the acorn meats.

⁵ Thomas Carlyle, quoted in “A New Way of Writing English History,” Art. II, *The London Quarterly Review*, Vol.50, April, 1878, p. 316 by John Telford and Benjamin Aquila Barber, J.A. Sharp, (Google eBook)

⁶ George Bernard Shaw, *The Vegetarian Diet According to Shaw*, (1918) , quoted in “Writings and Quotes on Vegetarianism,” *International Vegetarian Union*, <https://ivu.org/history/shaw/vegetarianism.html> (accessed 2/28/21).

⁷ Ralph Waldo Emerson, “History” *Essays: First Series* (Boston: James Munroe and Company, 1841).

You'll find instructions on how to grind acorns for flour as well as recipes calling for acorn meats and flour on *The Old Farmer's Almanac* blog post "How to Prepare and Cook Acorns: A Step-by-Step Guide to Preparing and Cooking with Acorns" at: <https://www.almanac.com/how-prepare-and-cook-acorns>.

Tree Dreams

- 🔗 Is there a special tree from your youth of which you do not know the species? Could you identify it now with the help of your memory and tree reference materials?
- 🔗 Do any of your memories contain a tree as witness to a human event in which you participated?
- 🔗 Have you ever had the experience of using a tree to "ground" you—either by touching it (e.g., leaning against the tree's trunk) or visually seeking the shape of a particular tree's crown or trunk when you have been experiencing stress? Don't jump to quickly to deny. Think about what trees you see out the window where you most commonly work.

When I am on my computer, the crown of my neighbor's maple tree three doors down—whose leaves have just begun changing this week at the very tiptop—or on my phone in my workspace, the sight of the solid trunk of the sycamore less than 20 feet from my front window or the fling of the branches of the small ginkgo in the middle of my front yard calms me. These trees are what my eyes search out when I am in thought.

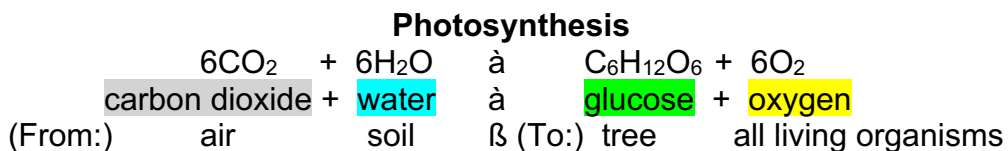
🔗 What trees are out of your windows or visible from an outdoor place where you sit whose shape you know by heart?

Tree's Big Idea: **PHOTOSYNTHESIS**

Photosynthesis is the process responsible for life as we know it on earth. We can live without food for more than three weeks. We can live without water for about a week. After just six minutes of oxygen deprivation, a human brain begins to die.

Oxygen has just one source. It is a byproduct of photosynthesis. Trees, shrubs, grasses and rainforests produce half of the oxygen on earth (marine plants—phytoplankton—produce the other half). It's been calculated that a human, needing to breath about 9.5 tons of air a year—of which oxygen makes up 23 percent by mass—uses seven or eight trees' worth of oxygen a year.⁸

If we only understand only one chemical formula, this might just be the one. Chlorophyll, simply and very eloquently, turns sunlight (solar energy) into chemical energy—by “exciting” an electron, which causes it to release energy—to power the transformation of carbon dioxide (CO₂) and water (H₂O) into glucose (C₆H₁₂O₆), breathable oxygen (6O₂), and water (6H₂O):



⁸ Luis Villazon, “How Many Trees Does It Take to Produce Oxygen for One Person?” *Science Focus: The Home of BBC Science Focus Magazine*” <https://www.sciencefocus.com/planet-earth/how-many-trees-does-it-take-to-produce-oxygen-for-one-person/> (accessed 6/22/19).

As well as producing the oxygen we need to live, photosynthesis removes the carbon dioxide from the air that can kill us. The air we breathe is mostly nitrogen (78.09%), but in addition to nitrogen and the 21% oxygen of our atmosphere, trace amounts of other gases like argon (0.93%) and carbon dioxide (0.04%) are present.

Carbon dioxide is released through natural processes such as respiration and volcanic eruptions. Since the Industrial Revolution began, in circa 1760, carbon dioxide has also been released into the atmosphere through human activities such as burning fossil fuels and deforestation. In this short period of about 300 years—short in relationship to how long photosynthesis has been creating Earth’s atmosphere (between 3.5 and 2.3 billion years ago)—these “human activities have increased atmospheric CO₂ concentrations by more than a third.”⁹

At a higher-than-trace concentration in the air, carbon dioxide leads to an increased respiratory rate, tachycardia, cardiac arrhythmias, and impaired consciousness. Concentrations of carbon dioxide greater than 10% in the air we breathe may cause convulsions, coma, and death.

Trees, and other green plants, through photosynthesis, remove carbon dioxide (CO₂) from the air (as phytoplankton removes it from ocean water) and use it—along with water taken up from the roots and sunlight absorbed by the leaves—to make their food. What is their food? The carbohydrates of glucose and starch, they need to grow. Glucose, along with inorganic salts from the soil, is what the tree uses to build specialized tissues to:

- create more leaves or needles

⁹ “The Causes of Climate Change,” *NASA Global Climate Change: Vital Signs of the Planet* at <https://climate.nasa.gov/causes/> (accessed 6/22/19).

- enlarge its trunk by adding more cells to its xylem layer (aka sapwood)—the part of the trunk that carries water and minerals up the trunk
- develop more roots.

The resulting carbon is stored in leaves, stems, branches, trunks, and roots when and the O of CO₂ is released as oxygen into the air. When a tree is harvested and used as lumber, its ability to sequester carbon is extended, as the carbon is not released until the wood product burns or decomposes.¹⁰

While photosynthesis is the process trees developed to be able to exist, our life's measure—our tick-tock of breaths—is made possible only by photosynthesis.

¹⁰ "Forest Carbon FAQs," USDA United States Department of Agriculture U.S. Forest Service Washington Office of Sustainability & Climate, <https://www.fs.usda.gov/sites/default/files/Forest-Carbon-FAQs.pdf> (accessed 6/22/19).