

## **Lessons from the tree that owns itself: Implications for education**

Michael P. Mueller • Kemily K. Pattillo • Debra B. Mitchell • Rachel A. Luther

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After taking seriously the idea that nature should have human rights argued by Cormac Cullinan in Orion Magazine (January/February 2008), we examined the lessons that could be learned from the tree that owns itself in Athens, Georgia. The point is to engage others in environmental and science education in a critical conversation about how school would have to prepare students to deal with rights for plants, as distinct from sentient animals and inanimate objects. As discussions of rights often neglects the interests and inference rights of non-sentient plants in the school curriculum and these nonhuman species are objectified for human needs, there is very little written about plant rights in science education. This essay is an imagined question of what science education would look like if rights for plants were adopted by humans. We address the idea of rights for the Tree that Owns Itself in Athens, Georgia, United States, and what science educators and their students can and should learn from addressing these rights. We explore rights for plants more specifically through consequentialist and nonconsequentialist reasoning and the nurturing relationship between humans and nonhuman species. We connect with scholars who argue for biocentric pluralism as a guiding philosophy, while using this theory to develop some educational implications of rights for nature within science education respectively.

**Keywords:** animal rights, curriculum, ecojustice, educational philosophy, environmentalism

### **Introduction**

In Athens, Georgia USA, there is a large white oak known as “The Tree that Owns Itself,” and it is sometimes referred to as “the son of the tree that owns itself.” Legend claims that a man (who had enjoyed playing in the tree as a child) deeded the tree and all the land within eight feet of its trunk to itself somewhere around 1820. The tree fell in 1942 and four years later, a tree that grew from one of the acorns of the original tree was planted in the same spot. However, according to the law, the tree is not capable of owning itself since it does not have the legal capacity to accept “the deed” that would have given it that right. Athens as a whole accepts that the tree owns itself, likely due to the fact that it has brought a good deal of publicity to the town; it has been featured on several television shows and in many books and magazine articles. But the idea of a tree actually owning itself does pose interesting education, practitioner, and theory ideas. If this tree were allowed to own itself, if it had that right, what would the implications for education be?

*“And the boy loved the tree ... very much. And the tree was happy”* (Silverstein, 1964, pp. 22-24).



**THE TREE THAT OWNED ITSELF**

**From a photograph taken about 1900, now in Special Collections,  
University of Georgia Library.**

The Original “Tree that Owns Itself” Circa 1900

The widespread acceptance by the town of Athens of the Tree as a property holder is an interesting story as is conveyed in E. Merton Coulter’s (1966) research (also the source of the photo above) and the following rendition of the Tree’s history. The first documented mention of a said deed for the Tree that Owns Itself can be found in August 12, 1890 on the front-page of the

*Athens Banner Weekly*. This *Banner* article paints a poetic picture of the bestower of “the deed,” Colonel William Jackson, climbing the Tree’s branches as a child, finding shelter from rain under them, watching the Tree grow throughout the years and developing such affection for it that in his old age, he desired to protect it from potential future destroyers. Oddly enough, however, there is no such deed today that exists in the courthouse records, and Colonel Jackson who passed away in 1875 in Macon, Georgia, never owned the land on which the Tree is located. Jackson did, however, live near the location of the Tree for three years in 1829 – 1833. This does not coincide with the 1820 date assigned to the deed by the United States Department of Agriculture entitled *Famous Trees* that was issued in 1935, nor does the age that Colonel Jackson was said to have been at the time coincide with the deeding. Despite these discrepancies aforementioned, the living Tree (now the offspring of the original) remains revered by Athens’ and Georgia’s citizens. Subsequently, this reverence is demonstrated through one of several poems that consider the Tree as a representative of freedom, or “more noble and reliable than my fool self...so unchallenged, so favored that even the road curved around it” (Copeland, 1999).

Athens does not simply tolerate the tree, the city has embraced it: a balance has been found for the tree. This is very well for this particular tree, but what about all the other trees in Athens or elsewhere for that matter? Athens is a designated Tree City (more on this idea later in the paper). Why not extend the tree’s rights to “own itself,” to live and thrive without interruption (and we define it further below) to other aspects of nature, to other plants, rocks, rivers, and so forth?—a good question for a science or environmental studies. These questions are tough, though somewhat absurd at first glance, and not new in philosophy (c.f., Abram, 2010). The notion of nature having rights is being discussed in other journals and popular media books. One such article is Cullinan’s (2008), “If Nature Had Rights,” which we will analyze in more depth here (see also Cullinan, 2003). There are very few science teacher educators and scholars who have addressed this topic (e.g., Frisch, Unwin, & Saunders, 2010).

In the next section, we provide a description of Cormac Cullinan’s (2008) essay. Thereafter, we analyze the idea of rights for plants specifically, as opposed to rights for nature, more generally applied to sentient animals and physical environments such as mountaintops. We anticipate this article addresses a significant topic and discussion in science education for the issue of rights for plants, because we suspect that most scholars will have difficulty defending plants and ecosystems beyond animal species. We raise the usual objections, with some nuanced ideas of how to address this scrutiny, and we conclude with some implications for education.

### **If Nature Had Rights**

In “If Nature Had Rights,” Cullinan (2008) tells the tale of an African tribunal that punishes an entire clan when one of its members is found guilty of killing a mother hyena that was still suckling pups. He asks the *Orion Magazine* reader to imagine a world where humans are held to similar standards, that is, those the African clan are held to—where we compensate for global climate change, say, by sacrificing power plants and cars to reduce pollution. Cullinan explains further with a concise summary of Christopher Stone’s article, “Should Trees Have Standing? Toward Legal Rights for Natural Objects” and a description of the legal influence addressed and decided by the United States Supreme Court. Cullinan explains that the resulting US Supreme Court precedent opens the door for an important but limited law which needs to be further modified if it will provide rights for all things in nature, such as trees and other species. Cullinan further points to a 2006 Pennsylvania case where the Tamaqua Borough of Schuylkill County passed a sewage sludge ordinance that “recognizes natural communities and ecosystems within the borough as legal persons for the purposes of enforcing civil rights” (p. 30). This case was the first case of its kind, meaning that citizens now file lawsuits on behalf of the borough. Any

monetary compensation for damages might be used for restoring the borough to its *natural* state. By “natural,” Cullinan means restoring something to its organic reproductive viability. Thus there is a need for science curriculum to be designed for the protection of natural reproduction, which might entail the kinds of experiences considered herein for a city where a tree has rights.

Cullinan’s (2008) argument is interesting, but somewhat limited by the fact that he does not define what is meant by the term “rights” and to what extent these rights should be extended. We will wrestle with this definition of rights in the first part of the essay. In science education, the term is often diluted. Similarly, Cullinan states that it is now past time to limit human rights to prevent humans from excluding “nonhuman members of a community from playing their part” (p. 30). How will the science and environmental education community (we are a part of) respond to this idea? What about teachers and their students? Is it possible to balance Earth in a way, both good for us and flora, by limiting *our* rights? Either way, Cullinan’s ideas will be taken seriously here. The law is changing, and not just in Pennsylvania.

According to Tuhus-Dubrow (2009), approximately 12 cities across the United States have passed measures declaring rights for nature under the law. She also points out that Ecuador protected the rights of its natural systems when it adopted a new constitution in 2008. Translated, it reads in chapter seven titled “Rights for Nature”: a) nature has the right to exist, b) any person can declare the recognition of rights for nature before public institutions, c) restrictive measures can be applied to protect the environment, and, d) all people have a right to benefit from the environment (and the ecology reciprocally from humans) (Republic of Ecuador) (<http://pdba.georgetown.edu/Constitutions/Ecuador/ecuador08.html>). Essentially, it is necessary to consider whether these statements can be justified, as they likely will have global influences. It is important to imagine the implications for science education. Consider how a group of environmentalists, including physicist and environmental activist Vandana Shiva, recently filed a lawsuit through the Constitutional Court of Ecuador against British Petroleum (BP) for the environmental damages resulting from the Deepwater Horizon oil spill in the Gulf of Mexico (<http://upsidedownworld.org/main/ecuador-archives-49/2805-bp-sued-in-ecuador-for-violating-the-rights-of-nature>). In reference to Article 71 of Ecuador’s constitution granting rights for nature, the plaintiffs claim that rights for the sea were violated by the BP oil spill. Said Vandana Shiva, “This morning we filed this lawsuit to defend the rights of nature ... rights everywhere” (n.p.).

## Rights for Nature

The Merriam-Webster Online Dictionary defines “right” as *something to which one has just claim* (2010). By using the singular “one,” we mean anything can have the potential to which it can claim one, not limited to humans, animals and plants, but also soil and rock. For example, Singer (2001) claims animal rights premised on what constitutes “personhood” or subjective life, whereas Taylor (1986) asserts rights for individual organisms premised on inherent moral worth, whereas Sterba (2001) argues for the rights beyond individuals, that of Earth’s entire ecosystems. To reword this definition as it pertains to this argument of rights for nature, we might say for example, nature in and of itself has the potential to justify a claim to *something*. Trees cannot defend themselves in the same way that say, humans can defend themselves through spoken word. However, in the case of the tree, there is a something justified for the sake of the whole ecosystem. That is, all parts of an ecosystem-in-relation-to-others (Thayer-Bacon, 2003) are afforded the potential to remain intact so that nature is intact for the sake of the species and physical environments that rely on the integrated system; for without the system which we are part, there can be no potential for something justified. One way that we can justify a tree’s case

are by exploring the benefits that nature gives species and habitats (i.e., consequentialism). Trees are important for purifying the air and producing oxygen, for example. This justification is good and well for humans and other species relying on the air produced by flora. What is lesser discussed, however, are needs of the tree for water that is free from harmful runoff chemicals, beneficial microorganisms in the soil that protect it from potentially deadly soil borne diseases, air that is free of smog so that the tree thrives, and the presence of birds that eat bugs off the tree to keep it from being overtaken and destroyed. If we follow the reasoning of some scholars (e.g., Taylor, 1986), the tree has inherent moral worth (i.e., nonconsequentialism). Each member of an ecosystem plays a role just as each human plays a role in our larger eco-society. The role that humans play within ecosystems is increasingly researched by ecologists and the idea of “ecological or ecosystem health” has gained considerable traction in the scientific community (see Figure 1).

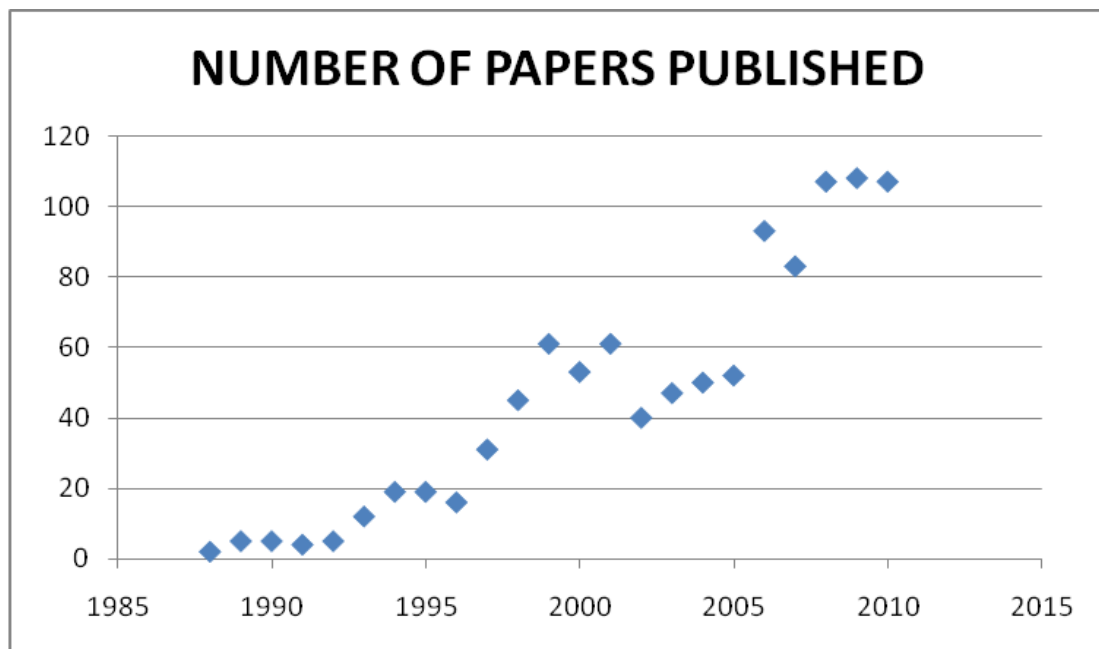


Figure 1. The search phrase “ecosystem health” was used to find how many scientific papers turn up by year. The number has increased from two papers in 1988 to 107 papers in 2010, indicating that there is growing attention or proxy for scientists around the more holistic perspectives of ecosystems as whole individuals or super-organisms.

An argument for the rights of a tree does not hinge on equivalent rights afforded to humans, but each has characteristics that deserve a discussion of rights for educational purposes. While practical rights for nature can be difficult to defend, say, by banning the cutting down of any tree or infringing on the property of human owner rights, we can certainly aim for a more balanced perspective in the schools. Increasingly, science educators are approaching the idea of nurturing nature in a sustainable manner. While sustainability is still a very ambiguous way of referring to the longer-term perspective in education (Jickling & Wals, 2008), We suggest a more particular definition of *sustainability* be equated with what nurtures or cares for the nutrients and

viability of a forest or larger ecosystem to reproduce and survive over the longer-term (culturally or naturally) (estimated range from four to seven generations) (Mueller, 2009).

For example, rather than clear cutting a forest (a practice that leaves the sides of mountains barren for long periods of time), selective harvesting is becoming more commonly practiced. This practice is morally reciprocal of a forester's understandings of the larger ecosystem, learned intergenerationally or through the education one might receive during a forestry program in natural resources. The integration of environmental sciences and ethics through an understanding of the concept of *selection* provides the forester with a reciprocal balance of science and moral philosophy, or the knowledge of how to use some trees for human needs while others are nurtured as keystone species that keep the forest intact. Generally, it is not good practice to cut all trees that are part of a third generation of succession. These integrated ideas serve to create conditions for sustainable logging, where there are smaller impacts on the species that depend on particular forested ecosystems. The ethical considerations needed to do the job of a forester (or anyone who applies science) should always be a part of their science education (whether implicit or explicitly endorsed) and are needed to do their work.

In Europe and North America, in particular, we argue that rights are most often associated with *individuals* (whether these are persons or corporations). For nature, rights are more difficult to apply to individual plants, animals, streams or mountains. It may be easier to say that entire systems have rights, for instance a bee colony rather than individual bees. Thus, we argue with Sterba (2001) that rights for nature should apply to the whole ecosystem instead of the individual animal, *per se* (Singer, 2001; Taylor, 1986). It is difficult to defend that individual trees or a blade of grass or particle of soil should be given the right to remain undisturbed (whether it be from humans or otherwise). One could argue that individuals (animals, plants, and inanimate objects) do not receive the right to remain undisturbed within ecosystems when they are continually disturbed by interactions: the sun, wind, physical and chemical erosion, and so forth. It is absurd to claim rights for nonhuman individuals in ecosystems when humans are as much a part of nature as trees and soil—so these rights are also interactions, as understood within education (Dewey, 1938). Because human rights are not in question for the purposes of this paper and instead we are arguing for what might be determined appropriate and significant for school science curriculum in terms of rights for nature, they do not need to be defended in order to arrive at the rights for a tree. In order to defend rights for nature, we look at the health of an environmental system or systems and assess whether the ecosystem remains healthy while allowing people as many of the benefits that being a part of nature affords, within reason. This means balancing the tensions between cultural and environmental systems within science education (Mueller, 2009). With harmony in mind, rights for nature and trees more specifically may not include such specific rights that they apply in the same way around the world or to individual organisms everywhere. Acknowledging the importance of cultural interpretation, interaction, and affection, rights for plants will be imparted effectively differently. To be clear, we recognize that learning from the Tree that Owns Itself helps us argue that rights for plants include but are not limited to the protection from being cut down, conservation of soil, water, and air quality, or adequate room for a tree's growth, or survival and reproduction. This position resonates with ecosystem health and is defensible when we consider the tree as part of a larger ecosystem (of trees, forest, biome, geography, energy, and so forth). Now let us explore how we arrived at this defensible position for individuals as part of larger ecosystems. While we could argue that ethics committees in the US and abroad have considered genetically modifying plants and the human health issues for a long time now (e.g., Scientists Working Group on BioSafety, 1998), these arguments take us away from the idea of rights for vegetation. Take, however, the Swiss Federal Constitution which helps clarify being ecologically embedded.

*The Swiss Federal Constitution*

The Swiss Federal Constitution has three forms of protection for plants, which include protection of biodiversity, species protection, and the duty of taking plant dignity into consideration when handling them. The term *Würde der Kreatur* (dignity of living beings) refers to the value of the individual organism for its own sake. The Federal Ethics Committee on Non-Human Biotechnology (ECNH, 2008) has been attempting to concretize the meaning of dignity of living beings with regards to plants since its establishment in 1998. The discussion has generally been framed around the ethical questions of whether and why plants should be protected. The main focus shifts to whether plants have inherent worth and therefore should be protected for their own sake. One reason the ECNH supplies for not considering plants inherently valuable is because human life would become too morally demanding and too complicated if plant rights were justified. They claim that ethical positions that demonstrate inherent plant value could question the relativity of higher-weighted moral responsibilities towards humans and animals.

In order to determine if plants should be protected for their own sake, they questioned the possibility of inherent worth of the plant collective (i.e., general plant communities, specific plant communities like meadows, plant communities that interact with microorganisms), the plant species, and individual plants. A majority of the ECNH members voted that collectives do not have inherent worth because it is too difficult to distinguish one community from others. Because diversity is part of nature, any disturbance to a collective would have to be justifiable if collectives are valuable for their own sake. Not all actions made by humans against a collective are negative or meant to harm, though to object, change is morally wrong if it is at the cost of goods worthy of protection. Considering this objection, the ECNH recalls Albert Schweitzer's position that humans should treat nature with restraint rather than arbitrarily. This also applies to individual plants, but only applies contextually to individual cases of possible harm to plants. The majority of ECNH members agreed that *prima facie* we don't hold unrestricted power over plants, so we therefore cannot do with them what we please, no matter the status of plant population health. The members unanimously agreed that restraint should be used when handling plants so as to protect the relationships they have to other members of the natural world, with a majority further agreeing that they should be handled with restraint because of their inherent worth. Restraint in this case refers to handling plants without damaging or destroying them for any reason, limiting their use and exploitation, and providing justification if they are instrumentalized in a way that they lose their ability to reproduce or adapt.

A majority of the ECNH does not consider plant species to have inherent value because it is an abstract classification. A clear majority of the ECNH members think that individual plants have inherent worth because of the biocentric position that plants are valuable because they are alive. Further, the members agree in a non-sentient position that plants can be harmed even if they are not conscious of it. However, approximately half of the ECNH members are not clear on whether plants are sentient beings. Although they do not have a central nervous system, they do adapt developmentally and chemically to unfavorable changes in their environment. In this way they are still able to react to stresses, predators, pathogens, and sensations. The members consider it to be morally relevant that they cannot rule out sentience in plants. A majority of the members consider it necessary to justify disturbing a plant's ability to develop, where some go so far as to say justification is necessary for the disturbance of plant life. In considering individual plants, a majority of the members considered plants to hold lesser moral weight to animals. Plant species, however, carried equal moral weight.

There are several key points to summarize the ethical deliberation over the inherent value of plants. The ECNH concluded that plants should never be harmed arbitrarily. Moral justification is required for the complete instrumentalization of plants at any level (collective, species, individual). Also at any level, plants are to be excluded from absolute ownership, or cannot be handled

entirely based on one's own desires. Nothing contradicts the dignity of genetically modified plants so long as their ability to reproduce and adapt is ensured. However, consideration of conservation for natural relationships should always be considered in genetic modification. Finally, any action that serves in the self-interest of humans is morally justifiable as long as it follows the precautionary principle<sup>1</sup>. Patenting plants is a question of social ethics (or applied justice) and was not considered in this panel.

One scholar, Smith (2008) believes the ECNH idea of plant dignity is a sign that we are no longer capable of distinguishing between serious and trivial ethical concerns. He believes this may result from the ongoing rejection of Judeo-Christian beliefs, or that humans hold a unique moral worth above all other species. He says, once we are no longer of utmost importance, we become morally equivalent to all others. He explains that opponents of the Swiss model argue that it sets the stage for resistance to all forms of plant biotechnology, even if it promises to increase yield. He argues that our concerns over rights for plants is a joke when considering that humans produce more food than we need to feed all people across the planet—yet millions are malnourished and starving. Smith raises objections to plant rights for nature that some science educators are likely to agree with. Yet because rights for plants may not be popular at first does not mean it should not be considered, especially when rights for nature are likely to be addressed within political documents and by community professionals, but are not represented in schools.

One example is the increasing scientific research around biocommunication (e.g., how plants send chemical signals and/or “communicate” with each other) which continues to play a role in the environmental philosophy of rights for nature. Biocommunication is the most basic level of interspecies and intercellular communication (Backster, 2003). Scientist Clive Backster began researching biocommunication when he hooked a plant up to a polygraph machine and noticed a spike in the chart when he thought of burning the plant leaf. Backster ran many similar tests to understand the cellular level of communication between plants and other organisms. He tested one, then other plants, brine shrimp, *Escherichia coli* bacteria, human whole blood, in vitro human white blood cells—all using the GSR component of the polygraph machine—an electroencephalograph. The results were remarkable; when he threatened to boil brine shrimp, the polygraph spiked. In other words, plants were able to communicate on a cellular level with other living things that were being harmed or threatened. He coined this biocommunication *primary perception*. His research showed a distinct relationship between intentions of thought and plant reaction as though the plants could differentiate between what was really thought and not. His plant's cells also responded even when an experimenter was not in the room, or even in the same city or community, meaning that the cells had an instantaneous non-local linkage. Backster's results speculate that all living beings are interconnected and constantly communicating with each other. These results help initiate a conversation for plant sentience—they may be capable of emotion, pain, and pleasure, or they would not respond to threats in the manner that they did. Backster's research correlates with the reactions plants have to disease and so forth, when they send out chemical signals, for example, that alert neighboring plants, something we discuss later. We believe science educators could get excited by these emerging avenues of research for plants, and that these things need to be considered now for curriculum design and choices for education. The dilemma for science educators might involve whether to include ethical philosophy as a focal point for students. Although Aldo Leopold, David Thoreau, Rachel Carson, and other early environmentalists are sometimes represented in schools, most discussions are very superficial. To deepen what teachers and students might analyze, we have to look at whether there is a difference between needs and wants, to offer some further clarity. The idea of needs for plants, animals and ecosystems is being more readily accepted in the sciences—what about *wants*? Is there a difference? How does this influence rights? Wants will be taken up in the next section. The



sticking point might have to do with wants equated with desires which are anthropomorphic, unless one is willing to generally accept that plants have intentions, pain, pleasure and the like. Val Plumwood (2002) argues that it should be the onus of science to disprove that plants have intentions, pain, pleasure and the like—and we agree with this stance.

### **Nature Nurtures Humans (and Vis-à-Vis)**

In the United States, there are state specific icons and symbolism. Along with the state flag, highest geographic point, historical markers, songs and emphasized motto, there are state reptile, insect, fish, marine mammal, flower, shell, and so forth. The Georgia state bird is the Brown Thrasher (*Toxostoma rufum*). State symbolism serves as a way to unify individuals with shared association around particular regional flora and fauna or geologic strata. These icons represent cultural heritage and natural treasures. In Georgia, there was a petition considered to have the state bird changed from the brown thrasher to the chicken. The campaign, *Flip the Birds* ([www.flipthebirds.com](http://www.flipthebirds.com)), argues that the chicken should be the state bird because of its effect on Georgia economy. Indeed, broilers (a type of chicken raised for meat production) account for more than 40% of the total revenue generated in Georgia in addition to the 5% for egg production (<http://www.caed.uga.edu/publications/2009/pdf/AR-09-01.pdf>). Large chicken meat processing companies, Pilgrim's Pride and Tyson have their headquarters in Georgia, and there are chicken trucks everywhere. If the basis for granting a bird state status is premised on which bird has the most economic worth, then we have no problem with this groups' claim. Said a spokesperson for the campaign: —whahas the brown thrasher ever done for Georgia?"

Shocked and appalled by this question, many people who are native to Georgia will argue whether nature even has to provide humans with an obvious economic benefit to be considered significant. What about ecological integrity? The brown thrasher, along with many other bird species, spiders, and frogs, eat insects and balance Georgia ecosystems. Imagine a warm summer night without these species and Georgians suddenly recognize the impact of a world without thrashers; mosquitoes, other insects, along with diseases such as West Nile Virus. There is also the brown thrasher's aesthetic value for many people who have spent time listening to birds chirp and watching them at the feeder—a popular activity for people of all ages. Now consider the economic benefits related to aesthetics and inherent moral worth: people buy bird food, feeders, baths and houses to put in their yards and binoculars and field guides to help them identify birds. Some people plant particular native flowers to attract wildlife like hummingbirds and butterflies. However absurd it seems to defend that thrashers retain the rights to status symbol for Georgians, it is not deemed out of the question to assume that thrashers appeal to the sentiment of a large number of people in Georgia and other US states. But then, keeping this defense in mind, the argument of rights for nature is premised on a perspective of how nature benefits humans and inherent worth for nature becomes much more difficult to defend. A nonconsequentialist appeal of rights for nature is difficult to muster reasonable support without consulting other humans and an anthropocentric tendency within us. Humans are part of the equation, but not necessarily equal (Sterba, 2001). It does not matter whether humans are needed for rights (rights may be deemed teleological). It is natural, then, to grant nature rights if we value our shared situation with trees, animals and rock. If we value our shared situation with trees and so forth, this situation becomes a thing *wanted*, but not necessarily something that we need for longer-term survival and future reproduction. This is essentially the reason for the Tree that Owns Itself: people agree to uphold rights for a tree. But this happens as a collective.

*Collective Nurturing Relationships for Nature: The Tree City Designation*

There is more to this story. There is more to be learned from the Tree that Owns Itself. Athens-Clarke County, Georgia has been designated as a Tree City for approximately ten years. The Tree City USA program is sponsored by the Arbor Day Foundation, the United States Department of Agriculture (USDA) Forest Service, and the National Association of State Foresters with the purpose of providing direction and assistance in the planting of trees and tree maintenance within communities, regardless of size, around the US. In order to become a Tree City a community must meet four standards: the presence of a tree board or department, a tree care ordinance, a community forestry program with a budget of \$2 per capita, and an Arbor Day observance and proclamation. The benefits of being a Tree City extend beyond the establishment of healthy trees to the enhanced wellbeing of its citizens<sup>2</sup>. This is defined in the purpose of the Community Tree Management Ordinance for Athens-Clarke County. Here it is quoted from a USDA report that, —Beyond aesthetics and emotional well-being, trees perform important functions that protect and enhance city dwellers' health and property. Trees literally clean the air by absorbing air pollutants and releasing oxygen. They reduce stormwater runoff and erosion; they temper climate; they can save energy; they even help contribute to a community's economy and way of life" (USDA, 2003, p. 3). The Athens ordinance corresponds by noting, —Large maturing trees are particularly effective in providing these benefits" (Athens-Clarke County, 2005, n.p.). The Arbor Day Foundation outlines other more socially oriented benefits of being a Tree City as enhancing citizen pride and public image, establishing a platform for education and a framework for action, and providing publicity and financial assistance for the community (Arbor Day Foundation, 2010, n.p.). The idea is that trees can be afforded different but equivalent moral considerations in our community.

**Biocentric Pluralism**

While the basis of different characteristics but equal considerations appears to be something like physiological versus intellectual, etc., say, a human can make choices based on the preponderance of evidence and a cheetah runs fast—these premises have been more fully developed by theoreticians (Abram, 2010; Sterba, 2001; Taylor, 1986). Our point is to demonstrate the viability of incorporating these defensible arguments first, and then apply these ideas to what we have learned from the tree that owns itself—for the meaningful purposes of guiding science education.

As articulated, developed and defended within education, biocentric pluralism is a theory that guides how we interpret the balance between cultural and natural systems—fairness applied; that is, justice as it is associated with how the rights for ecosystems is interpreted and integrated (Mitchell & Mueller, 2010; Mueller, 2009; Sterba, 2001). For guiding curriculum decisions within science education proper and the larger educational domain, the following principles are used to decipher the rights for all entities within what might be constituted by ecosystem health.

Biocentric pluralism is an ethical view of James Sterba (2001) that extends Paul Taylor's biocentric individualism in a holistic manner by bringing whole species and whole ecosystems into perspective. The basis of Taylor's perspective is that living individuals have intrinsic value and because of this they should be allowed to complete their life process without harm. Sterba extends this consideration to species and ecosystems by recognizing the role that relationship plays in recognizing moral standing. Although Taylor recognizes the role for the interdependence of all species and the placement of humans within Earth's community, he fails to recognize how to address dilemmas that arise in the course of everyday life among humans and other living

organisms, such as mowing the lawn (e.g., Taylor, 1981). Sterba further develops the conditions for understanding the relationship among humans and other species by outlining four principles as follows: The Principle of Human Defense recognizes that actions required to defend oneself are permissible even if other individuals, species and ecosystems are harmed or destroyed. The Principle of Human Preservation recognizes that actions required for meeting basic needs of humans are permissible even when aggressing against other individuals, species and ecosystems. The Principle of Disproportionality recognizes that actions meeting nonbasic or luxury needs of humans are prohibited when they aggress against the basic needs of individuals, species or ecosystems. Lastly, the Principle of Restitution recognizes that reparation or compensation may be required when the first three principles have been violated (Sterba, 1995, 2001).

To summarize Sterba's view then, an organism, species, or ecosystem has a good of its own if it can be harmed or benefited. To harm this living entity for no good reason would be wrong. According to Sterba, there is no reason to assume that human interests always override the interests of other beings, and it follows that the same fundamental principles of justice that govern human relationships can be extended to relationships among humans and beings other than human. According to this view of biocentric pluralism, moral consideration is centered on life proper and relationships, and not merely on being human as is the case with anthropocentric tendencies, but not limited to, the boundaries of "individuals" as with Taylor's biocentric view. This perspective is used in this essay to make the case that a tree is part of the larger ecosystems.

It could be argued that nature should not be granted rights based on perceived lack of emotions or feeling (i.e., when the caveat is "part from humans"). The basis for this contention is that wild nature does not anthropomorphically want to be left intact or anything for that matter. We do not argue for anthropomorphizing ideas of emotion or feelings within ecosystems, while Abram (2010) clearly demonstrates the possibility of embodied characteristics for ecosystems. What we assert here is that people *are* upholding the larger super-organisms of their community, in terms of rights for them. These rights come with some understandings of the tree's needs. For the sake of argument, let us consider how trees mediate what we learn from them in terms of wants. The aforementioned perspective fails to recognize that trees employ unseen strategies to ensure their reproductive capability and "want" for survival. Wants and needs are somewhat ambiguous on this terrain of argumentation. According to Elizabeth Little, a plant pathologist at the University of Georgia and her colleagues (Meinersmann et al., 2008), plants develop structural formations to defend against invading pathogens. These formations become socially networked. For example, a tree may form tyloses in its xylem vessels to physically block a pathogen from further invading its cells. This is accomplished through communication with parenchyma cells via pits in the xylem vessels when pathogens give way to diseases in plants. More specifically, *Verticillium*, a fungus, causes vascular wilt by plugging up the vascular system of the plant, preventing the plant from transporting water, food, minerals and hormones to its uppermost parts. When the plant detects the pathogen it communicates to cells above the infected site to create a barrier to the fungus. This barrier is formed by outgrowths of parenchyma cells into the lumen which is a tylose (Sun, Rost, & Matthews, 2008) and then communicated to other plants (explained in a moment). Another defense mechanism plants employ is the production of chemicals with antimicrobial properties including phenols. Some of the more recognizable phenols are vitamins C and E, but there are hundreds of others that are not as well known. These phenols act to either kill or slow the growth of the microorganisms infecting the plant system. Sometimes plants form a systemic resistance after a localized infection to contain the amount of damage that the pathogen can inflict. Once the plant recognizes an infection, it can signal the remaining parts to incur subtle changes in gene expression (Heil & Bostock, 2002). The most astounding defense mechanism however, is the *communication* between plants. Scientists have identified that the changes occurring in damaged plants also occur in surrounding non-damaged plants. This is because the

damaged plant emits a chemical signal to its neighbors to warn of the possible harm they may encounter, allowing the susceptible plants to create resistance using the aforementioned plant defense mechanisms (Yi, Heil, Adame-Alvarez, Ballhorn, & Ryu, 2009). All of these natural processes could certainly be considered part of what the plant desires to be healthy and free of interruptions, which counters those who claim nature should not be granted rights based on a lack of wants or desires. But it is at least currently understood that plants do not have cognition and memory like humans and non-human animals, and yet research has shown that they are capable of social interactions by exhibiting kin selection (Murphy & Dudley, 2009). Through root interactions, certain species show increased cooperation and reduced competition when beside similar species. Other studies show that herbivore-damaged plants send chemical signals to attract insect “bodyguards” or predator insects for other bugs doing damage to plants (Kappers et al., 2005). In addition, there has been much exploration into the notion that plants can detect human thought waves, and thus respond to human feelings and prayers, through the use of galvanometers (Backster, 1968; Loehr, 1969). We are moving closer to the root of controversy over whether plants are sentient or not, and despite the possibility of anthropomorphizing plants and other non-sentient things, the discourse is interesting for teachers and students in addition to some other considerations we now address.

Humans can *culturally rationalize* situations—but, do trees need to do that in order to be granted rights? What do trees do that makes trees different from humans? One thing that trees do not do as far as we now know is spiritually consider their ethic for longer-term living. But there is evidence to suggest that when viewed as part of a larger system, a Tree City, or Earth respectively, or as teleological centers of life (Abram, 2010; Taylor, 1986), that life strives to preserve itself and realize its own good in its own unique way. Gaia Theory and other theories support this notion (e.g., Morrison, 1999). But can objectification of the Tree that Owns Itself be conversely studied in a way that embodies its sacredness within the larger biome or ecosystem? Can one stand before the tree and learn something else that emerges when one personalizes it? Taylor (1986) argues that “this progressive development from objective, detached knowledge to the recognition of the individual, and from the recognition of individuality to a full awareness of an organism’s standpoint, is a process of heightening our consciousness of what it means to be an individual living thing” (p. 121). What lessons are learned from standing before the tree?

The Tree is now large enough for an adult to reach only half way around. This Tree in its 66<sup>th</sup> year is a scion of the original that was approximately 400 years old when it toppled. Its stature portrays the reverence it receives: free to grow unimpeded on its own property of earth. The power company has thoughtfully and minimally taken only one branch to clear the power lines and done so in a manner that the shape of the canopy is virtually unchanged. Evidence of extra care such as this caution surrounds the tree. The Tree’s property boundary has clearly been provided its own curb, on one side three feet high to accommodate both the needs of the Tree and the continuance of the road. The boundary is further defined with stone pillars and chains, in the manner of adornment. Along with the pillars are two stone markers, one barely legible with the wear of time and the other bearing the same significant words that tell the story of the Tree.

The road that changes from cobblestone to asphalt here further acknowledges the continuous passage of time in the life of the Tree, as it is diminished to half of its size, requiring vehicles to stop and wait their turn, to pause and revere here. The edge of the Tree’s property is landscaped with groundcover plantings, and the soil beneath its branches is carefully mulched. This care is clear, given that the Tree is proudly claimed by two horticulturist groups who have left their own signs.



—The Son of the Tree that Owns Itself” 2010 (Photo credit: Rachel Luther)

We would be remiss if we did not conclude this section with a brief discussion of custom.

*Customary Rights for Nature*

Raw forms of plants are used in medicine, chemicals, shelter, paper, textiles, religious and ritualistic artifacts and so forth (Howard & Nabanoga, 2007). Their material use provides the livelihood for Aboriginal and traditional people in many countries. Within traditional cultures is embodied and intergenerationally endorsed general plant knowledge and understandings of their

uses and access, wealth, power, and some meanings for the people. Traditional and indigenous people may not have property rights or recognize them as such, but they do recognize principles invoked to regulate access to natural resources within the landscapes that helped them to survive.

Howard and Nabanoga (2007) argue that these principles may not be formal rights within customary or legal codes, but rather the idea of rights to plants are embedded within cultural systems and regulated by customary institutions and norms. As a result, rights are both consciously and unconsciously respected, contested and negotiated. In some traditional and indigenous communities rights to plants are based on social norms and beliefs in gender roles for plant production and use. For example, in some communities, rights to plants are determined by the female perception of their market value, taste and rarity. The gendered social construct of plant resource and landscape management reinforces the rights and obligations around plants, perhaps being one reason why there is little need for overt enforcement of some rights for plants.

The authors question whether rights to/for trees represent a special case in comparison to other types of plant resources because trees have longevity. Though their research shows that traditional and indigenous communities view rights to plants as different to rights for trees, they were not able to determine the difference. Rights to plants are based on knowledge of the plant. Owning, planting, using, or disposing of the tree or any of its parts in terms of rights to trees is generally based on the right to the land upon which the tree is growing. Individuals can gain land rights by planting trees. Howard and Nabanoga (2007) call the right to trees ‘tree tenure,’ and these rights can be held by different people at different times, including four categories of rights holders: the State, social groups, households, and individuals within households. Tree tenure is dependent on the tree species, the location of the tree, whether it was planted or grew naturally, and how the tree is managed. Rights, often informal, are also influenced by cultural or spiritual beliefs and the resources and activities plants provide for such beliefs, or adjusted accordingly.

Throughout time trees have been valued and respected by humans for their aesthetic quali-

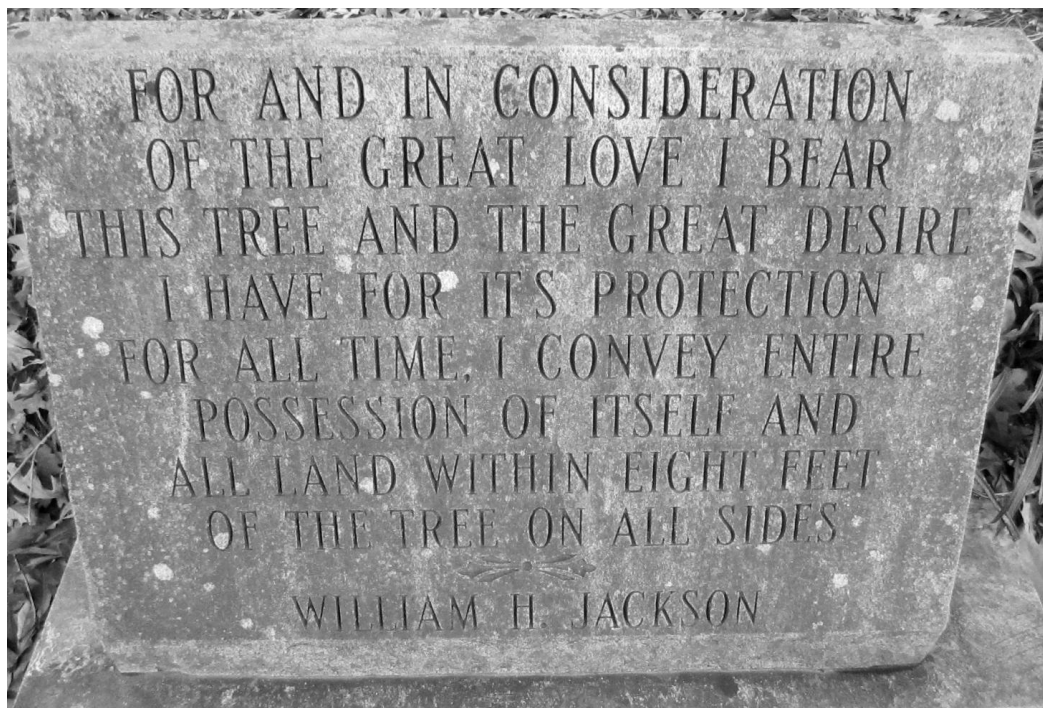


Photo credit: Rachel Luther, 2010, —Stone Marker at the Tree that Owns Itself’

ties and as landmarks of place. Beyond this level of recognition, trees worldwide are considered to be sacred (Altman, 2000). As a result, they are integral elements in various cultures, worldviews, and belief systems. Some of these sacred trees are symbolic, such as the Australian Aboriginal Tree of Life and the Judeo-Christian Tree of Knowledge. Others are actual living trees, such as the Bodhi Tree, a fig tree (now a replacement) under which the Buddha obtained enlightenment at Bodhi Gaya, India; or the Bilyu Sacred Tree, a 3200 year old Lunta fir in Taiwan. Take other examples such as the Giant Sequoias of California and the Angel Oak near Charleston, South Carolina. The concept of sacred rights for nature is evident in the Home Tree of *Avatar* (Cameron, 2009) as well. This sort of recognition as inherently sacred or divine is often only extended to the largest or the oldest. All trees and plants in general, regardless of physical characteristics, if not considered sacred, are at least worthy of respect and moral consideration because of the many life-giving services they provide for humans and other living organisms, and these things are being recognized in most science courses focused on ecology and systems. Trees are considered customary representations of culture, media, and recreation.

### **If We Take Nature's Rights Seriously**

*"...conflicts occur whenever preserving and protecting the good of wild living things involves some cost in terms of human benefit" (Taylor, 1986, p. 256).*

With lessons gleaned from the Tree that Owns Itself, we can now dissect the original argument. Cullinan (2008) asks what we would need to sacrifice for nature to have rights. Our society is currently inundated with information instructing us how to live more green lifestyles, say, saving natural resources and using less energy. Are these small changes enough? Cullinan suggests that more is needed, perhaps virtues. He quotes Stone, author of *—Should Trees Have Standing? Toward Legal Rights for Natural Objects,* who asked his students to imagine a *—radically different law driven consciousness.*" Cullinan supports the idea of an Earth democracy, where the legal system is used to prohibit activities that harm the environment. However, Stone (1988) himself (who argued that granting nature rights means nature counts *jurally* p.11) acknowledges that allowing humans to sue on behalf of plants and animals could bring a flood of litigation to the courts. Correspondingly, we currently have agencies and US laws in place that were implemented with the intention to protect humans over nature. For instance, the US Endangered Species Act of 1973 aims to protect species that are threatened or endangered by protecting the habitat of species with critically low population numbers and punishes those who harm or kill listed species (thus protecting nature as long as human interests are not compromised). Protecting endangered species, many of which become endangered because of the actions of humans, is a noble effort. However, it only accounts for species that have already become at risk of extinction and the Act does not protect insects that cause economic damages to our homes and so forth (e.g., the Eastern Carpenter Bee), which are very good pollinators, even while there is banter around the decline of some North American pollinators (National Research Council, 2007). In addition, the protection of animals, especially the cute and furry ones, is widely publicized while Earth's (loveable) plants are typically not given much consideration. There has been very little talk about the ethics of genetically modified plants in science education, until more recently with genetically modified or ornamental pets (e.g., GloFish®) (Mueller & Zeidler, 2010). While we do not aim to criticize the current laws concerning protecting nature (at least there are some laws!), we do not believe a radically different judicial system has been even remotely achieved; despite it is a reasonable expectation for humans now. As Sterba argues with Taylor (1986) and Singer (2001), we can only expect reasonable demands to be placed on people, as expectations that are too demanding require us to be saints (2001, p. 45). Sainthood is simply

not reasonable or desired for the practical ethics of all people and times. We should however educate our students to bring about a grassroots movement of legal importance. Now we will discuss how education can serve to aspire youth towards this goal of consciousness.

### **Educational Implications**

Now that we have provided both consequentialist and nonconsequentialist interpretations of the tree that has rights, what does it teach us to do as teachers, curriculum designers and researchers?

Noticing and understanding plants around us will help us to know our community in biological and social terms. Perhaps if we can help our students to notice and understand plants in their place, they would have the foundation for making connections that foster ecological awareness and knowledge that will lead to action. However, teachers tend to neglect botany in favor of the more exciting animal or ecology curricula, generally as a result of what may be the biggest obstacle to conveying this knowledge: teachers themselves do not understand or notice the plants around them (Frisch, Unwin, & Saunders, 2010). After some investigation, Frisch, Unwin and Saunders find through several studies that students prefer animals to plants because they move and are more relatable due to cultural interests (cartoons, games, etc.) and students' tendency to anthropomorphize. If cultural interests teach students anything about plants, it is about plants in environments far from their own backyards, like rainforests. The authors use the term —~~plant~~ blindness” to refer to the phenomena of neglect that occurs, in which humans overlook plants because we don't believe they hold meaning or value. We are able to see the plant kingdom, but we cannot attend to it for that reason. Teachers neglect plants in the curriculum due to plant blindness, and as a consequence, students are unable to notice or understand plants in their local communities. Without this knowledge, students struggle to understand the role of plants in their ecosystem, and therefore have very little basis for placing value on plants for their protection.

How can teachers get the education they need in order to see our way through the plant blindness problem? The authors suggest that teachers need plant mentors, from parents to local master gardeners' associations, to help them gain an understanding and appreciation of plants through the observation, planting, growing, and tending of live plants. Another option would be for teachers to create their own schoolyard field guide, which might consist of the names and general natural history traits of organisms within the schoolyard. Teachers are able to incorporate their schoolyard natural areas into their community if they are given ownership over something like creating a field guide, rather than purchasing it or relying on someone else to create it. Teachers can use the field guides to encourage their students to explore their schoolyard and investigate these organisms, helping them gain a sense of appreciation for the plants there.

This all leads to a sense of phenomena (e.g., Abram, 2010). In order to develop and hone this sense, one must not only know about the place they live, but they elicit their experiences and should also have the skills to participate in co-constructing the place. Because all students are rooted in different geographic places, teachers should encourage their students to share their experiences with each other including experiences with plant mentors students may have. This can validate their cultural knowledge and create a sense of community and phenomena within the classroom. Classroom teachers can also include taxonomic keys to teach students plant names and categorization based on characteristics. Comparing and contrasting characteristics allows students to engage in higher levels of skill and comparative expertise, and they are able to attend to plant concepts, further integrating it into their conceptual framework and developing a better understanding of nature. Additionally, when students learn plant names, they are learning plant history. The unique stories behind naming plants could inspire students to look for their plant relatives or investigate the plants near them. Plant names also make the plant more accessible,



making it more meaningful and worthy of understanding and appreciation. Frisch, Unwin and Saunders (2010) suggest that just learning plant names cannot conquer plant blindness, but that their stories should also be an integral part of plant science education. This moves past memorization to an understanding and appreciation for the plant. Once students are able to perceive plants differently, they are better prepared to act or become advocates for them. Some additional suggestions the authors make for teaching students about plants are using a writing template for developing students' botanical understanding of their surroundings, storytelling, adopting a tree, doing a phenological study of a tree (e.g., US National Phenology, <http://www.usanpn.org/>), and creating and tending to a learning or science education garden.

Young learners may find the opportunity to incorporate the knowledge they have gained about their own school campuses into larger collections and presentations of tree knowledge, such as those evident in online community tree maps, provided for in major cities in conjunction with local governments and in conjunction with tree companies, as in Washington DC and New York City (e.g., <http://www.caseytrees.org/>; also see, [http://www.nycgovparks.org/sub\\_your\\_park/trees\\_greenstreets.html](http://www.nycgovparks.org/sub_your_park/trees_greenstreets.html)). As a new initiative of the Tree City USA and Arbor Day Foundation, Tree Campus USA is taking root across many states in the US. This program identifies and documents trees on college campuses, along with their estimated age and health status (<http://www.arborday.org/programs/treeCampusUSA/>). The scientific protocol and methods of collecting data for this program can easily be extended for elementary, middle and high school campuses by incorporating the use of global-positioning technology (GIS units), the understandings of plant growth and health (with local experts), and by planting of more trees (i.e., these materials are usually available from local governments and the Arbor Day Foundation). In relation to climate change, these ideas provide the habitats for environmental monitoring and offer ways in which the community can take some responsibility.

Beyond training students to analyze controversial topics from every aspect, e.g., *socioscientific issues* (Mueller & Zeidler, 2010), the Tree that Owns Itself teaches us that sometimes the best action is inaction. This tree is left virtually undisturbed by humans and yet it thrives, recycling carbon dioxide into oxygen, purifying the environment around it and contributing to the aesthetic value of the downtown area where situated. It is Athens subculture. Incorporating a discussion about the rights of nature allows students to think about their own beliefs and values, bringing a critical shift to the frequently implemented system of memorize and repeat. Such real world discussions could encourage students to be advocates for nature and to actively participate in projects of citizenry. Helping students know how to influence policy and think outside of the classroom will carry them much farther in life than rote memorization (though this is also necessary and has a place in education). The Tree that Owns Itself can also teach students that each living thing, humans, animals, plants, bacteria, and so forth, has an inherent good or "story." One life inhabits a niche that no other life can fill as perfectly as its native counterpart. Humans cannot prevent having any impact on nature, as every living thing has NEEDS that cannot be denied, we can give each *specie moral standing* as pluralistically argued by Sterba (2001, p. 44). It is desirable to consider the basic needs of other species before we proceed with actions that may inflict harm upon those species. Already, science process skills are exercised in almost any course that a student takes. Can the precautionary principle become so practiced by students that they will know how and when to take appropriate and significant actions or exercise humility in the face of scientific uncertainty? In some cases it may be tolerable to harm or destroy other species (such as invasive plants and animals), particularly when it is to meet the basic need of humans—should we at least consider these species before acting? If no one had considered the Tree that Owns Itself when developing the road that runs next to it, the tree would now be reduced to mulch in a flower bed perhaps. Instead, its needs (and possible desires) were considered and people found a way to fulfill their human needs while leaving the

Tree alive. The same might be applied to new neighborhood developments where instead of leveling the entire landscape and then starting over with small trees, some old growth trees are preserved solely for the sake of rights for nature.

It would be interesting to challenge students to actively participate in working towards granting rights to some part of nature in their own town or maybe on their school campus. They might work together to make an appeal to local officials. This project could entail collecting data about related cases (such as the Tree that Owns Itself in Athens), having a group discussion where students argue the potential pros and cons of granting rights to the larger system of choices, and drafting a paper to send to local officials proposing the protection of the selected project with supporting arguments. How might teachers and students discuss the rights of the mountains, where coal mining defaces geography, eliminates biodiversity, and even alters biomes?

What about considering cultural and spiritual customs around plants? Aboriginal beliefs and values, intergenerationally passed on understandings about cultivating plants and medicines? Biocentric pluralism? Perhaps teachers may believe that such a task is not worthy and even impossible given the time constraints they already must meet. It just takes some imagination and some resourcefulness but also an open mind. Having students collect data translates into science teaching objectives, certainly, where students do background research and interview community members, and may even meet reading requirements that are aligned with many state and national science education priorities and standards/ measures of accountability. Educating students about the value of different species satisfies content standards in many science areas and endorses the true focus of the nature of science, namely, ethics cannot be separated from science.

### **Coda**

Is my city a Tree City? Good question for the classroom and one that takes advantage of the points argued within this essay. Equally if not more importantly, we might discuss with our students the importance of considering other wants beyond needs for tree and specie that when integrated holistically within our ecosystems help with meeting many of the consumptive needs driven by an economic market that functions by enclosing these options for some and not others. In this way, perhaps, not argued here, students and their teachers will approach issues of rights in relation to issues of justice—the why they have it and we do not—and work toward more equity. Amazing what lessons might be learned about human rights when students analyze nature rights.

### **Notes**

<sup>1</sup> The precautionary principle (Aslaksen & Myhr, 2007) is the idea that action should not be taken if it can be demonstrated there would be high degrees of vulnerability or potential danger.

<sup>2</sup> Some Tree Cities in conjunction with local tree nurseries and maintenance companies have mapped their community trees online using GPS and have established interactive species lists, enhancing the education of the general public in regards to trees and their ecological health benefits, as well as the increase in property value that trees add to the landscape. Tree City USA has been extended in recent years with Tree Campus, a program that applies the purpose of Tree City specifically to college campuses. This approach of identifying, mapping, and documenting health of trees has also been implemented on the elementary school campuses in Athens-Clarke County as a project of the University of Georgia's Department of Horticulture.

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## Authors

Michael P. Mueller is an environmental philosopher, science educator at the University of Georgia, and activist for youth policy and public school reform. He writes extensively about ecojustice, citizen science, and youth activism. He prepares teachers to think about their responsibility for cultural diversity, biodiversity, natural habitats, and nature's harmony. **Correspondence:** Department of Mathematics and Science Education, University of Georgia, 212 Aderhold Hall, Athens, GA 30602, USA. E-mail: [mmueller@uga.edu](mailto:mmueller@uga.edu)

Kemily K. Pattillo is a secondary science teacher at Newton High School in Covington, Georgia. She engages her students in thinking about more fully about ethical issues within the biological sciences and environmental studies. E-mail: kemilyh@uga.edu

Debra B. Mitchell is a doctoral student at the University of Georgia. Her observations and experiences as an environmental educator and classroom teacher have guided her philosophy, which focuses on why outdoor experiences ought to be part of science education. Her interests include teacher preparation, youth activism, and ecological literacy. E-mail: dbmitchl@uga.edu

Rachel A. Luther is a doctoral student at the University of Georgia. Her research is focused on the significance of increasing marine science education through ideological analysis, curriculum studies, and school policy. E-mail: rachel.luther@gmail.com

### **Bir ağacın kendisinden dersler: Eğitim için olası etkileri**

Cormac Cullinan tarafından Orion Magazinde (Ocak/Şubat 2008) doğa insan haklarına sahip olmalı düşüncesinin tartışılması konusunu dikkate alarak Georgia, Athens'de ağacın kendisinden öğrenilebilir derslerini inceledik. Esas husus hissiz hayvanlar ve cansız objelerden farklı olarak öğrencilerin bitki hakları ile ilgilenmesi hususunda okul tarafından nasıl hazırlanması gerektiği ile ilişkili olarak çevre ve fen eğitiminde hassas bir korumada diğerlerini meşgul etmekte. Haklara ilişkin tartışmalar okul müfredatındaki hissiz bitkilere ilgileri ve çıkarımları göz ardı ettiği ve bu insan olmayan türlerin insana ihtiyaçları nedeniyle nesneleştirildiği için fen eğitiminde bitki hakları ile ilgili yazılan çok az şey var. Bu makale bitki haklarının insanlar tarafından alındığında nelerin olabileceğine ilişkin imgesel bir soru ile ilgilidir. Biz, ağaç için hakların düşüncesini ele alarak fen eğitimcilerinin ve onların öğrencilerinin bu hakları adres göstermekten ne öğrenmeleri gerektiğini ya da ne öğrenebileceklerini ele aldık. İnsan ve insan dışındaki türler arasındaki ilişkileri besleyerek özellikle consequentialist ve nonconsequentialist muhakeme bitki haklarını keşfettik. Biosentrik çoğulculuğu rehber felsefe olarak tartışan âlimleri bağladık ki bu teoriyi fen eğitimi içinde ayrı olarak doğanın haklarının olası bazı eğitsel etkilerini geliştirmek için de kullanırlar.

**Anahtar kelimeler:** Hayvan hakları, müfredat, eko adalet, eğitim felsefesi, çevrecilik