

ZONING PRACTICE

July 2006

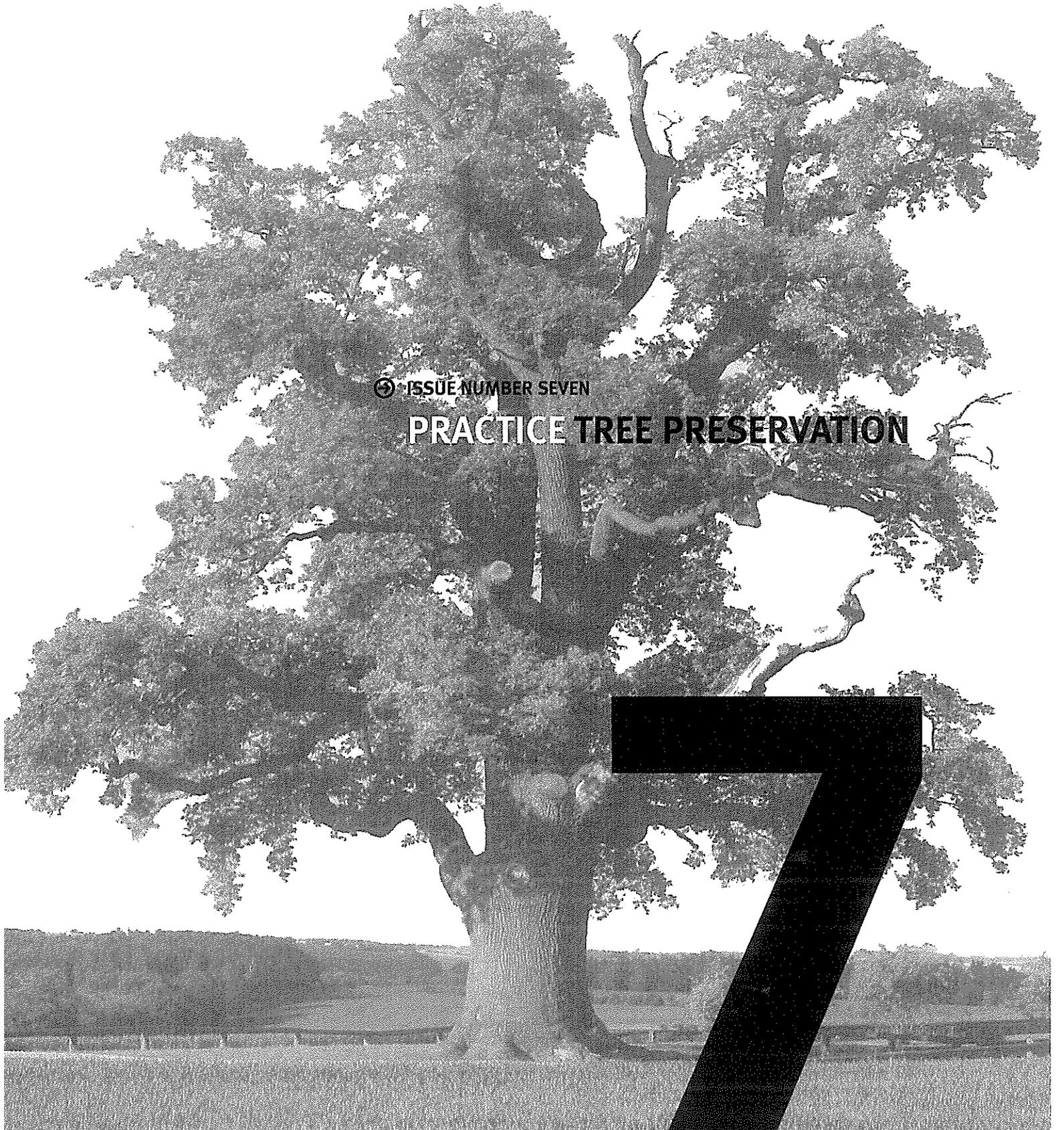
AMERICAN PLANNING ASSOCIATION



25

ISSUE NUMBER SEVEN

PRACTICE TREE PRESERVATION



Got Trees?

By Chris Duerksen, Molly Mowery, and Michele McGlyn

Tree protection legislation has burgeoned at the local level, with hundreds of communities adopting tree conservation ordinances over the last decade.

These regulations have evolved well beyond the first generation of ordinances that focused on preserving large specimen trees into more modern approaches such as requiring the protection of a percentage of the existing tree canopy on a site. Some local governments are even contemplating tying tree protection to a reduction in carbon dioxide emissions from new developments as part of their programs to address global warming and climate change.

This issue of *Zoning Practice* discusses recent trends in local tree protection, including:

- reliable sources that can help communities establish the value of trees and the rationales for protecting them;
- key legal issues and recent court decisions regarding tree protection;
- popular regulatory approaches to saving trees; and
- cutting-edge tree protection programs around the United States.

SETTING THE FOUNDATION: WHY SAVE TREES?

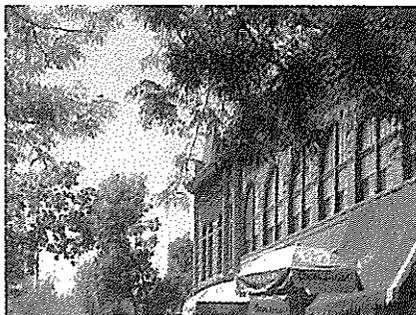
The rationale for saving trees falls into three broad categories: aesthetics and community character, environmental health, and economic benefits. While community officials have been aware of the aesthetic and environmental bene-

fits of tree conservation for many years, only in recent years have they begun to fully appreciate its economic benefits.

Community aesthetics and domestic well-being. Trees and other greenery help shape our view of the built environment in a positive way, making the places where we live, work, and do business more attractive and livable. Trees help provide tranquil spaces and havens from the sun, wind, and noise. They make buildings more “human” in scale, softening hard edges and creating a sense of place and identity. Trees are even adopted as municipal symbols in communities nationwide, reflecting aesthetic values upon which they build a name for themselves. For example, Tallahassee, Florida, is increasingly known as the dogwood capital of the South for its aggressive program of planting dogwoods along streets throughout the city. Annually, dozens of communities compete for the honor of being designated a “Tree City USA” by the National Arbor Day Foundation.

Beyond aesthetics, however, growing evidence suggests that trees may even serve to promote domestic well-being. In *The Experience of Place*, author Tony Hiss writes that in Chicago’s public housing projects the residents of buildings surrounded by green space with trees (vs. barren land) had a stronger sense of community, better relationships with their neighbors, and fewer incidents of domestic violence. Similarly, scholarly works have long documented the ways in which the incorporation of natural features into design can promote wellness and reduce stress.

Environmental health. Trees are a fundamental component of the movement to “green” our infrastructure. Natural green infrastructure, consisting of functioning ecosystems with trees and vegetation, provides many valuable services related to groundwater recharge, stormwater management, pollutant filtration, and soil and water conservation. American Forests, the nation’s oldest nonprofit citizens conservation organization and a pioneer in the science and practice of urban forestry, has developed the Urban Ecosystem Analysis process to study the green infrastructure benefits of a forest canopy. The benefits relate primarily to residential summer energy impacts, air pollution



Clarion Associates

Many communities understand that the value of preserving trees has aesthetic, environmental, community enhancing, and economic benefits for its citizens. New research even suggests trees' effect on the promotion of domestic well-being.

ASK THE AUTHOR JOIN US ONLINE!

From August 21 to September 1, go online to participate in our "Ask the Author" forum, an interactive feature of *Zoning Practice*. The authors will be available to answer questions about this article. Go to the APA website at www.planning.org and follow the links to the Ask the Author section. From there, just submit your questions about the article using an e-mail link. The authors will reply, and *Zoning Practice* will post the answers cumulatively on the website for the benefit of all subscribers. This feature will be available for selected issues of *Zoning Practice* at announced times. After each online discussion is closed, the answers will be saved in an online archive available through the APA *Zoning Practice* web pages.

About the Authors

The authors work for Clarion Associates, a national land-use and real estate consulting firm specializing in community planning, zoning ordinance review, landscape architecture, real estate appraisal, urban design, and historic preservation. Clarion Associates works nationwide with a broad range of private- and public-sector clients. Additional information is at www.clarionassociates.com.

removal, and stormwater management. For example, a 2002 study by the group shows that residents of Atlanta save \$2.8 million annually on their energy bills due to shade from Atlanta's tree canopy. Similarly, in *Economic Value of Forest Ecosystem Services: A Review*, Douglas Krieger shows that the value of 500,000 mature mesquite trees in Tucson, Arizona, is estimated at \$90,000 per year for runoff control and \$1.5 million per year for particulate matter removal. Compare this to the Puget Sound region, where stormwater flow during a heavy rain has increased about 29 percent since 1972, a period during which heavily vegetated areas decreased by 37 percent. Another study by American Forests says that to replace the Sound's lost stormwater retention capacity with reservoirs and other engineered systems will cost the local communities \$2.4 billion plus annual maintenance costs.

Economic benefit. While tree conservation ordinances burden some developers by constraining site plans and imposing additional costs on development, the value added when a community saves trees on a per-site basis significantly outweighs the costs imposed in most instances. According to *Nature Friendly Communities* by Christopher Duerksen and Cara Snyder, new methodologies exist for the assessment of economic benefits that result from regulations such as tree conservation ordinances. Communities around the country are using them to demonstrate the public purpose of saving trees and open space in dollars and cents. In *Trees Make Cents* by Scenic America, author Elizabeth Brabec says growing evidence illustrates that tree-friendly communities can realize substantial economic benefits from their conservation policies. From helping attract and retain employers and employees who value a high quality of life to bringing in tourist dollars

an investment in tree protection can provide measurable payoffs in the short and long term.

Specifically, lots with mature vegetation in a new subdivision command a premium over those that have been denuded and replanted with smaller trees and bushes. Increased property values generally mean more tax revenue for local governments, which offsets the costs of protection. For example, a study of the 4,800 parcels surrounding an

WEB-BASED ENHANCEMENTS

To enhance the reading experience for *Zoning Practice* subscribers, we have provided a list of resources and links to the ordinances featured in this article on the *Zoning Practice* webpages of APA's website. We invite you to check out this enhancement at www.planning.org/ZoningPractice/currentissue.htm.

8,300-acre nature reserve in the rapidly urbanizing oak woodlands in Riverside County, California, determined that a decrease of 10 percent in the distance to the nearest oak stands and to the edge of the permanent open space land resulted in an increase of \$4 million in total home value and an increase of \$16 million in total land value in the community. In short, property closer to the reserve was more valuable.

Additionally, there is substantial growing evidence that trees can add significant monetary value to development projects by making the site more pleasant for consumers. In one survey in Hampton, Virginia, over 80 percent of the respondents said they preferred shopping at a business that had substantial landscaping and mature trees. Perhaps most compelling are the testimonials the National Association of

Home Builders received from developers who grab a market advantage by building environmentally sensitive developments.

KEY LEGAL ISSUES AND RECENT COURT DECISIONS

In general, tree protection ordinances tend to raise the same legal issues as other local land-use controls. Experience shows that they are likely to be challenged primarily on two grounds: due process related to the vagueness of review standards, and takings. Although not challenged as frequently, enabling legislation remains a key drafting consideration for legal defensibility of tree conservation ordinances. Thus, the first step for anyone drafting such an ordinance is to confirm that the regulatory body does, in fact, have the authority to promulgate tree conservation regulations. This authority or enabling legislation is typically derived from specific enabling legislation; environmental protection statutes; planning, zoning, and subdivision laws; and home rule or charter authority.

Due process: standards for permit reviews. Like all reasonable regulations, tree protection regulations must satisfy the due process requirements of the U.S. and state constitutions. To do so, the standards should be clear and understandable so that an average person does not have to guess at what is being required of them. Fairness and regulatory efficiency dictate that local ordinances contain clear standards that result in predictable decisions by staff and review commissions and limit administrative discretion.

Most modern tree protection ordinances require a developer or landowner to obtain a permit before undertaking specified activities such as vegetation clearing or tree removal. Courts are generally quite deferential to local governments when it comes to setting and

applying environmental regulatory standards or design regulations. To illustrate, in *Watson v. City of St. Petersburg* (489 So.2d 138 (Fla. App.1986)), the property owner brought an action challenging the constitutionality of a tree ordinance on the grounds that permit review standards to be applied by the city manager were vague and did not provide guidelines to aid in interpreting key terms. Specifically, the ordinance stated that the permit had to be denied if the tree removal had a “significant adverse impact” on the environment in eight listed areas.

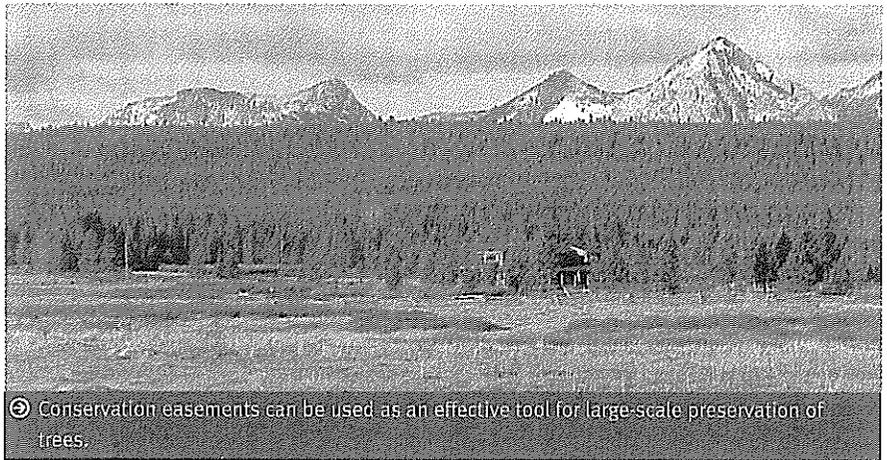
The plaintiff argued that terms such as “significantly” and “substantially” were not definite enough to provide the reliable and consistent application of standards. The court disagreed, however, pointing out that the ordinance contained eight specific grounds for denial, including ground and surface water stabilization, water quality and aquifer recharge, ecological impacts, noise pollution, air movement, air quality, wildlife habitat, and aesthetic degradation. Thus, the relatively vague terms found clear definition and explanation in more detailed criteria for assessing the impacts of removal.

Takings. Taking—a redevelopment measure familiar to almost anyone involved in local land-use planning and regulation—is a shorthand reference to the Fifth Amendment to the U.S. Constitution’s prohibition regarding public use of private property: “nor shall private property be taken for public use without just compensation.” This limitation on federal power is extended to state and local governments through the 14th Amendment. But can a regulation of private property, such as a tree protection ordinance, give rise to a taking? (*Pennsylvania Coal Co. v. Mahon* (260 U.S. 393 (1922)) The answer is that in certain circumstances where a regulation denies an owner of all reasonable economic use of the property or significantly interferes with his distinct, investment-backed expectations, the regulation may be recognized as a taking.

In general, courts have been very supportive of local tree protection ordinances. Rarely do tree protection regulations constitute a taking because a reasonable use of the property typically remains (see *Miller v. Schoene*, 276 U.S. 272 (1928); *Opinion of the Justice*, 69 A. 627 (Me. 1908); *Glisson v. Alachua County, Florida*, 558 So. 2d 1030 (Fla. App. 1 Dist. 1990); *Palm Beach Polo, Inc. v. Village of Wellington*, No. 4D04-2839, (Nov. 23, 2005); *Allingham v. City of Seattle*, 749 P.2d 160 (Wash. 1988)). Nonetheless, the case

law teaches some important lessons regarding potential takings claims:

- Any hint that a tree protection regulatory scheme is being adopted as a substitute for a public acquisition program can be deadly in a legal challenge.
- Inflexible standards, coupled with a lack of administrative relief provisions, are a recipe for judicial intervention. Variance provisions or mitigation options should provide realistic opportunities for development. Incentives such as allowing transfer of development rights or reductions in property taxes might help take the sting out of regulations in extreme cases.



- Local ordinances should contain some sort of procedure to help ascertain when the regulatory impact is close to causing a taking.

TAKINGS IN THE COURTS

The message from the courts in recent years continues to be an encouraging one: Tree protection regulations rarely amount to a “taking.” However, the advancement of several new, sophisticated takings theories for tree protection deserve further discussion. The cases involve exactions, the “whole parcel rule,” and claims of physical occupation.

Condition of approval requiring recorded conservation easement to protect wooded area is not an “exaction.” In one of the more significant tree protection decisions in recent years, *Smith v. Town of Mendon*, (4 N.Y.3d 1 (2004)), New York’s highest court ruled that a condition of site plan approval that required the applicants to deed restrict their property with a conservation easement did not constitute an exaction triggering heightened scrutiny under *Dolan v. City of Tigard* (512 U.S. 374 (1994)). In *Smith*, the plaintiff applicants

owned a 10-acre tract of land for which they sought site plan approval in order to build a single-family house. Much of the Smith family’s land was subject to a protective overlay zoning designed to preserve sensitive natural lands, including woodlands. The Town of Mendon approved the Smiths’ site plan with the condition that they record a conservation easement on their property to put future purchasers on notice that the land within the overlay was restricted from development. The Smiths challenged this condition on the basis that the recording was an unconstitutional exaction of property without compensation, relying on the Supreme Court’s *Dolan* test.

The New York Court of Appeals upheld the trial court’s decision and affirmed the Appellate Division’s ruling that the conservation restriction was not an exaction. The court defined “exactions” as “land-use decisions conditioning approval of development on the dedication of property to public use,” and therefore, determined that *Dolan*’s rough proportionality test did not apply to the Town of Mendon’s condition of approval. The court characterized the condition as a “do-no-harm” use restriction that did not diminish the Smith’s right to exclude the public from their property. The court then analyzed the facts presented under a test for regulatory takings as determined by *Penn Central Transportation Company v. New York City* (438 U.S. 104 (1978)) and found that no taking had occurred. The court reasoned that the deed recording would undeniably advance the protection of the land by placing future owners on notice of the use restrictions and furnish the town with a more effective means of enforcing its regulations. Under the zoning ordinance the town could only issue notice of violations. But under the deed restriction the town could seek

an injunction to enjoin development within the protected area.

The “Whole Parcel Rule” is alive and well in the context of tree protection plans. Key to the defensibility of most tree protection ordinances is the so-called “whole-parcel rule,” which is sometimes misapplied by the courts. Recent decisions affirm that when evaluating economic loss occasioned by land-use regulation, courts must consider the whole parcel owned by the plaintiff and not just the portion subject to the regulation.

In *Coast Range Conifers v. State of Oregon* (339 Or. 136 (2005)), a logging company challenged the denial of a permit request to log timber within an area designated by the state as a bald eagle nesting site. In 1996, the plaintiff company acquired a 40-acre tract of timberland. Two years later, state employees observed two adult bald eagles nesting on the property. Pursuant to a state law that protected the habitat of species listed as endangered by the U.S. government, the plaintiffs were required to submit a plan to the state forester before cutting down any trees on the property. The forester rejected the plaintiff’s plan, which proposed to log within 330 feet of the nest, and recommended that the plaintiffs resubmit a plan that protected a 400-foot buffer around the site (about nine acres). The plaintiffs did so, and the plan was approved.

At the conclusion of the nesting season a few months later, the plaintiffs submitted a new plan to resume logging the remaining nine acres surrounding the eagles’ nest. The forester denied the plan, and the board of forestry upheld that decision. The plaintiffs filed suit against the State of Oregon and its forestry board, alleging that the denial of the plan deprived them of all economically beneficial use of the remaining nine acres of timberland and that the denial amounted to a “taking” under the Oregon and United States constitutions. The state did not dispute the beneficial use claim as applied to the protected area; instead, it contended that the plaintiffs were able to make beneficial use of the other 30 acres of their parcel, which were unaffected by the state’s regulation of the eagle habitat.

On appeal, the Oregon Supreme Court held that both constitutions require a plaintiff to show that there is no remaining economically beneficial use of the land as a whole parcel (i.e., all 40 acres owned, and not just the nine acres affected) as a result of the state’s habitat protection regulations.

Regulations requiring preservation of trees do not give rise to physical occupation

of property to support a per se takings claim.

In recent years, the Court of Appeals for the Federal Circuit has twice heard and rejected per se physical taking claims allegedly arising from regulations and government actions that prevented the harvesting of timber on lands designated as spotted owl habitat (*Seiber v. United States*, 364 F.3d 1356 (Fed. Cir. 2004)) and *Boise Cascade Corporation v. United States*, (296 F. 3d 1339 (Fed. Cir. 2002)). A claim for a physical occupation taking rests on showing that the government has compelled a complete and permanent physical occupation of private land for a public purpose.

Increasingly rare is the modern development code in a progressive community—urban, suburban, and rural alike—that does not have some form of tree or vegetation conservation regulation.

In *Boise*, the court of appeals affirmed the dismissal of Boise Cascade’s takings claims against the U.S. Fish and Wildlife Service. Boise Cascade’s complaint included a claim that a federal injunction that enjoined the cutting of old growth timber in a designated spotted owl habitat resulted in a physical occupation of private property under *Loretto v. Teleprompter Manhattan CATC Corp.* (458 U.S. 419 (1982)). The court ruled that the physical occupation claim (that the owls physically invaded the property) was untenable primarily because the government did not force and could not control the owls’ occupation of the property.

REGULATORY APPROACHES

While surveys conducted in the 1980s revealed that relatively few jurisdictions had tree protection standards on the books, today, increasingly rare is the modern development code in a progressive community—urban, suburban, and rural alike—that does not have some form of tree or vegetation conservation regulation. These new ordinances are increasingly stringent and sophisticated, often protecting smaller trees as well as specimen trees and

large tracts of woodland. They frequently require mitigation either on- or off-site if trees are destroyed during construction or provide for cash-in-lieu payments into a local tree preservation fund. These ordinances are often part of a more comprehensive effort to protect wildlife habitat or scenic vistas and even to counter the impacts of global warming.

Specimen and special tree protection.

Many jurisdictions require permits for the removal or alteration of “special” trees on private property. “Special” is typically defined as those exceeding a certain diameter, size, or other physical parameter. Terms such as “champion” or “monarch” trees may be the operative nomenclature in the local ordinance. Additionally, special trees may be defined to include those with special historical associations (for example, a treaty may have been signed under a tree’s boughs). Some communities maintain registries for large trees, much like lists of landmark buildings. Others rely on identification through surveys required during the site planning process as outlined in the previous section.

Probably the most common approach to protecting special trees is to require protection of all specimens that exceed certain physical specifications. In Austin, Texas, for example, a “protected tree” means “any tree having a trunk circumference of 60 inches or more, measured four and one-half feet above natural grade level.” Other ordinances are similar but use diameter at 4.5 feet above the ground instead of circumference (what is commonly known in the trade as diameter at breast height, or “DBH”).

While trunk size specification is a simple and straightforward way of protecting trees, it can be very imprecise and result in protecting unworthy trees or missing critical ones. Thus, while an oak with a DBH of one foot is not particularly unusual, a dogwood of that size is quite remarkable. To deal with this issue, an increasing number of jurisdictions are establishing variable size specifications depending on the species of the tree. Another protection criterion, although far less common than size, is the tree species itself. Some communities, including Thousand Oaks, California, concentrate their protection efforts on only one species of tree—in this case, oak trees. Tampa, Florida, focuses its specimen tree protection efforts on 12 species, although others can be protected by the parks department upon adoption of appropriate standards. A variation on this approach, which is gaining more adherents, is to protect all native vegetation to the maximum extent possible.

Woodland protection/percent tree cover.

Another technique for delineating which resources to protect focuses less on individual trees and more on entire stands or woodlands. While only a few ordinances written prior to 1990 took this approach, it has become the method of choice in many jurisdictions with comprehensive tree protection programs and often is combined with protections for specimen trees. There are various ways of implementing a percent cover require-

ment. Lake County, Illinois, requires that a flat 70 percent of mature woodlands and 50 percent of young woodlands on a site be protected as open space. Other jurisdictions have adopted a more flexible approach with a sliding scale that takes into consideration the proposed type of development (e.g., residential vs. industrial) and the amount of existing tree cover on a site (where the amount of tree save area is inversely proportional to the amount of site under tree canopy).

Many communities incorporate such techniques into comprehensive protection schemes. For instance, a system could be developed in which a minimum percentage of trees and natural vegetation is preserved, subject to the sliding scale requirements, and supplemented by a requirement that all significant trees over a certain size be preserved.

Distance/buffer requirements. Another common technique used in determining what to protect involves establishing distance or buffer requirements. For example, some communities adopt regulations requiring a buffer zone (e.g., 100 feet) between major roadways and any buildings on adjacent private property. Within the buffer all trees and vegetation must be retained, with certain limited exceptions. Existing trees and vegetation retained

may be counted toward buffer yard landscaping requirements.

Special area and habitat protection. A growing number of communities are focusing their tree and vegetation protection activities on what might be called "special areas": lands with important aesthetic or environmental values that warrant special protection. One of the advantages of this approach is that it is usually easier to garner political support for strong protection measures in areas with unique qualities.

Natural areas such as rivers and coastal zones are targeted for protection in some communities. In Fulton County, Georgia, the Chattahoochee River Corridor Tributary Protection Act requires active tree protection in an area "extending outward 35 horizontal feet from the tops of the banks on both sides of all flowing tributaries of the Chattahoochee River." Disturbed areas within the buffer must be replanted to county standards using indigenous riparian vegetation. In Sanibel, Florida, native vegetation that contributes to beach stability cannot be removed seaward of a coastal construction control line. Strict controls also are placed on vegetation trimming and stump removal. Where undesirable, nonnative species such as Australian pine are removed a revegetation plan must be submitted to reduce soil movement caused by wind or water.

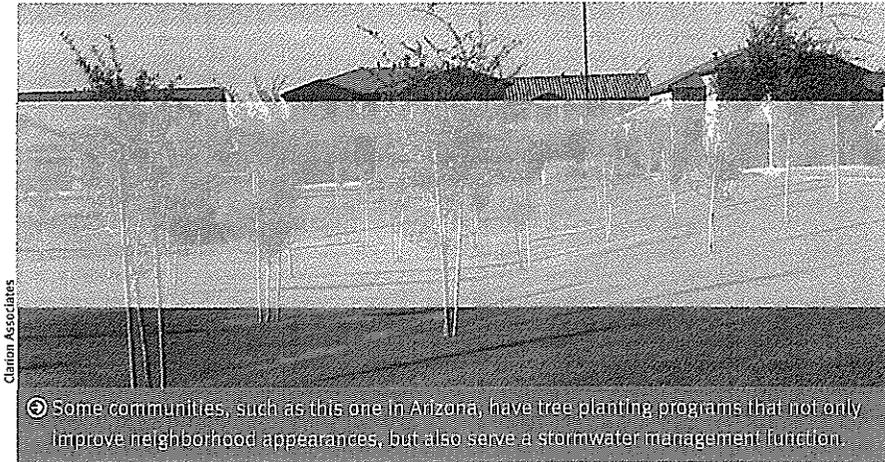
Many states regulate tree preservation by protecting the habitat of endangered species. Numerous cases have come out of the Pacific Northwest in recent years regarding timberland preserved as spotted owl and eagle nesting sites. Habitat protection is one of the most compelling reasons to save trees, especially where the habitat of an endangered species is at issue.

Replacement/mitigation standards. Another increasingly common feature of local

tree preservation laws are provisions requiring on-site replacement of trees removed during development or other mitigation measures such as off-site planting or cash-in-lieu contributions. Most such requirements are based on very specific numerical standards governing the number of trees to be replaced. Fulton County offers specific guidance regarding replacement and mitigation. The quantity of replacement trees must be sufficient to produce a total "site-tree density factor" of no less than 20 units per acre pursuant to administrative guidelines. Detailed standards are provided for transplanting and selecting quality replacement stock. Specimen trees must be replaced by species with potentials for comparable size and quality.

To the extent that these replanting requirements bear some reasonable relationship to the number of trees removed (for example, smaller replacement trees, some of which may die, may be required in greater numbers to compensate for removal of larger trees), they should withstand challenge. However, planners should be careful not to be overly vague about the size and location of the replacement trees. From a practical standpoint, each community should carefully consider what constitutes a rational replacement standard in light of the species involved, specimen size, local survival rate of smaller stock, time required for trees to grow to maturity, and similar considerations. This may vary markedly depending on the region of the country.

Construction protection measures. Most sophisticated local governments have come to realize that designating trees for protection by strong standards is only half the battle. The best standards being implemented by the most sympathetic developer can be undermined in an afternoon of careless construction activities on a site. Bulldozing near a large tree's roots, digging utility trenches, or dumping construction waste close to a tree can result in the de facto removal of a tree that was designated for preservation. The death may be slower, but it can be just as sure. For example, a few years ago, it was a commonly accepted practice to protect a tree by forbidding any construction activities or excavation within its so-called dripline (a vertical line extending from the outermost edge of the tree canopy to the ground). Today, the latest thinking is that this old standard may not be sufficient given the fact that most trees do not have a single large tap root, but rather a large network of



© Some communities, such as this one in Arizona, have tree planting programs that not only improve neighborhood appearances, but also serve a stormwater management function.

smaller, shallower roots that extend far beyond the drip line.

Maintenance after development. Once development is complete, the next step in the tree preservation process is continuing maintenance, ensuring that trees protected by the local ordinance survive and flourish. This may entail replacement of protected trees that die after construction is completed or requiring periodic fertilizing and pruning until their survival is assured. Other ordinances require protected and replacement trees to be maintained in a healthy condition with proper fertilization, pruning, and irrigation as necessary for a prescribed period.

While the number of ordinances that deal with the tail end of the development process is relatively small, more communities are recognizing that modest measures at this point are important supplements. The ordinances that do address this issue are instructive. The requirements of the tree protection ordinance in Columbia, Missouri, are fairly typical:

If any of the trees required to be retained or trees planted as part of the landscaping plan should die within a period of eighteen (18) months after completion of the activities associated with the land disturbance permit, the owner of the property shall replace the trees within six (6) months at a ratio of one-to-one with an approved tree having a minimum diameter of two (2) inches measured at a point one foot above natural grade. Shrubbery or other plantings which die within eighteen (18) months of completion of the activities shall be replaced in kind within six (6) months.

Given the fact that it takes at least one growing season and typically three years or longer for a tree to show signs of stress and die after construction nearby, 18 months would be a minimum replacement period.

EMERGING ISSUES

Tree protection ordinances continue to mature and become more sophisticated as local governments gain experience with their regulations and face new issues and challenges.

Existing single-family homes/lots. In the past, a majority of communities simply exempted development on existing residential lots from having to comply with tree protection regulations. Thus, homeowners of existing houses were not required to seek permits to remove a tree. However, as communities come to recognize the value of trees in existing neighborhoods, more are requiring owners of existing single-family houses to seek

removal permits, especially for larger trees. For example, in its new development code, Franklin, Tennessee, a fast-growing suburb of Nashville, has included strong vegetation protection regulations that make no exemptions for existing lots and houses.

Infill and redevelopment opportunities. Smart growth policies and limited land availability have encouraged many communities to adopt policies to promote infill and redevelopment. This type of development frequently takes place on smaller, constrained lots where strict, inflexible tree preservation regulations could stifle construction. Therefore, savvy communities like Clayton, Missouri, allow removal of trees if development would be unduly thwarted, but require inch-for-inch on- or off-site mitigation or the option of in-lieu payments into a local tree fund.

Carbon budgets. In the face of federal inaction, an increasing number of local governments are taking an active approach to issues of global warming and climate change that involve trees. As trees grow they naturally remove carbon dioxide (CO₂) from the atmosphere through a process called photosynthesis. CO₂ is emitted into the atmosphere through activities such as driving, operating fossil-fuel power plants, heating or cooling a home, etc. While CO₂ has the potential to remain in the atmosphere for years, tree leaves can remove some CO₂ and store the carbon in their biomass. Given this, large-scale tree planting and protection efforts are seen as a legitimate tool for effectively addressing air quality.

Some cities are adopting ambitious tree planting programs. Portland, Oregon, for example, has planted over 750,000 trees and shrubs since 1996. Seattle has committed to restoring 2,500 acres of urban forests by the year 2024. Chicago has taken a slightly different approach by initiating the "Chicago Climate Exchange"—the world's first legally binding, multisectoral, rule-based, and integrated greenhouse gas emission registry, carbon reduction, and trading system. This program holds companies responsible for the amount of carbon emissions they produce and allows these emissions to be offset by other carbon-mitigating projects, including reforestation. For example, in May 2006, an Indiana farm enrolled as an offset provider in the Chicago Climate Exchange. One-third of this 604-acre family-owned farm is dedicated to hardwood trees, including black walnuts. Based on the farm's management practices, tree age, tree density, and other factors, it is estimated that the

farm will remove about 3,400 metric tons of carbon from the atmosphere. This translates into carbon credits, which are currently traded on the exchange system. Those companies that have pledged to reduce their CO₂ emissions, including Ford, American Electric Power, and IBM, now have the ability to partner with this farm and purchase its carbon credits as a means of achieving their CO₂ reduction goals.

The next wave we can expect to see at the local level regarding carbon budgets will draw on precedents from European cities that require any additional carbon dioxide emissions associated with a development project (e.g., from increased traffic) be offset by tree protection or tree planting both on- and off-site.

CONCLUSION

The growing concerns over global warming and climate change, coupled with the increasing evidence of the aesthetic and economic benefits of tree protection, promise to usher in a whole new era of community tree protection efforts. Drawing on practical experience from first- and second-generation ordinances from around the country and with careful attention to legal issues, local governments can craft tree protection ordinances designed for the 21st century that will be effective and fair.

Design concept by Lisa Barton.

VOL. 23, NO. 7

Zoning Practice is a monthly publication of the American Planning Association. Subscriptions are available for \$75 (U.S.) and \$100 (foreign). W. Paul Farmer, FAICP, Executive Director; William R. Klein, AICP, Director of Research.

Zoning Practice (ISSN 1548-0135) is produced at APA. Jim Schwab, AICP, Editor; Michael Davidson, Guest Editor; Julie Von Bergen, Assistant Editor; Lisa Barton, Design and Production.

Copyright ©2006 by American Planning Association, 122 S. Michigan Ave., Suite 1600, Chicago, IL 60603. The American Planning Association also has offices at 1776 Massachusetts Ave., N.W., Washington, D.C. 20036; www.planning.org.

All rights reserved. No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without permission in writing from the American Planning Association.

Printed on recycled paper, including 50-70% recycled fiber and 10% postconsumer waste.

ZONINGPRACTICE
AMERICAN PLANNING ASSOCIATION

122 S. Michigan Ave.
Suite 1600
Chicago, IL 60603

1776 Massachusetts Ave., N.W.
Washington D.C. 20036

NON-PROFIT ORG.
US. POSTAGE
PAID
CHICAGO, IL
PERMIT#4342



*****AUTO**SCH 3-DIGIT 015
058201 Z4I-D July
Roland Bartl AICP
Town of Acton
472 Main St
Acton MA 01720-3995

DO TREES INCREASE
PROPERTY VALUES?

