

# THE VALUE of Nature

massaudubon.org/valueofnature

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## Urban Green Space

The value of green space and trees in cities should not be overlooked. Urban green space provides many ecosystem services, including improved health, and it is important to ensure that our most vulnerable communities have fair access to these benefits.

### ECONOMIC & HEALTH

Marginalized and low-income urban communities are often farther away from green space and more negatively impacted by the urban heat island effect and air pollution.<sup>1</sup>

# 50%

REDUCTION IN INDOOR COARSE PARTICULATE MATTER concentrations observed in one study of roadside street trees' impacts on neighboring houses.<sup>2</sup> Another study found that a single tree lowered concentrations behind it by 15%.<sup>3</sup>

# 670k

INSTANCES OF ACUTE RESPIRATORY SYMPTOMS, AND 850 HUMAN DEATHS, PREVENTED EACH YEAR NATIONWIDE BY TREES' AND FORESTS' ABILITY TO ABSORB AIR POLLUTION, FOR AN ANNUAL VALUE OF \$7 BILLION.<sup>5</sup>

See our Forests fact sheet for more on their benefits.

# 85%

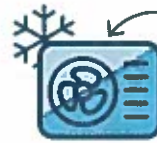
OR 10.5 MILLION GALLONS reduction in surface runoff entering Mashapaug Pond after three years thanks to Providence, RI's use of low impact development (see below for more on LID). The practice also reduced phosphorus pollution, which contributes to algal blooms, by 95%.<sup>4</sup>



Studies show a correlation between the proximity of communities to green space and lower levels of mental illness,<sup>6</sup> in addition

to improved social cohesion.<sup>7</sup> Contact with nature helps children with attention-deficit disorder better manage their symptoms.<sup>8</sup>

# 37%

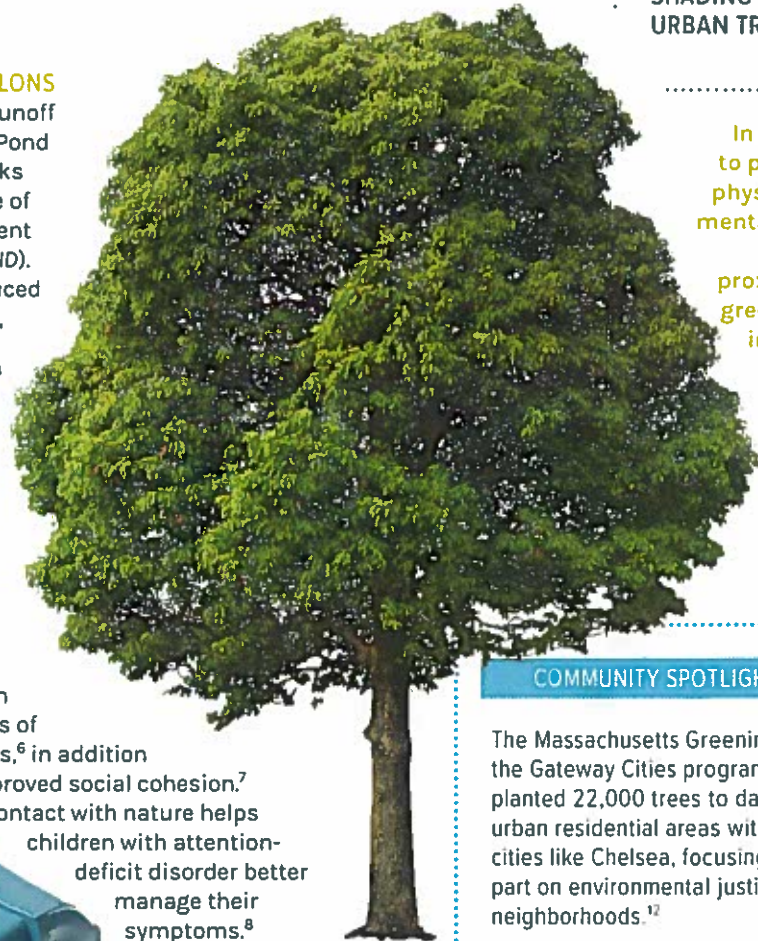


Increase in electricity use for cooling following reduction in tree canopy cover by 30% in Worcester's Greendale neighborhood, prompted by an Asian longhorned beetle infestation.<sup>9</sup>

# 3.06 °C

AVERAGE MODELED DECREASE IN NEAR-SURFACE AIR TEMPERATURE OVER THE ENTIRE CONTIGUOUS U.S., THANKS TO THE SHADING EFFECT OF URBAN TREES.<sup>10</sup>

In addition to providing physical and mental health benefits, proximity to green space increases property values.<sup>11</sup>



### COMMUNITY SPOTLIGHT

The Massachusetts Greening the Gateway Cities program has planted 22,000 trees to date in urban residential areas within cities like Chelsea, focusing in part on environmental justice neighborhoods.<sup>12</sup>

**KEY TERMS:** **Ecosystem Services:** Nature provides countless benefits to people, along with intrinsic values. These components of nature are enjoyed, consumed, or used by humans to support our wellbeing. **Climate Resilience:** The ability of a natural or human community to prepare for and respond to the impacts of climate change.



# Urban Green Space

## CLIMATE RESILIENCE

Taking action in cities is recognized as essential for global climate change resilience,<sup>13</sup> and urban green space can play a key role.

**LOW IMPACT DEVELOPMENT (LID)** works to reduce impervious surfaces through techniques like good site selection and bio-infiltration—mitigating flooding, protecting water quality, and helping maintain a sustainable water supply. LID is increasingly important given the impacts of climate change:

For example, rain gardens allow for increased groundwater recharge and can help reduce vector-borne illnesses, since they prevent standing water that provides ideal conditions for mosquito breeding.<sup>14</sup>

For more see: [massaudubon.org/LIDfactsheets](http://massaudubon.org/LIDfactsheets)



**4x** potential savings increase from avoided extreme weather damage thanks to upfront investments in resilience.<sup>15</sup>

## CARBON CAPTURE & STORAGE



# \$166

### ANNUAL VALUE PER ACRE OF FULLY VEGETATED GREEN INFRASTRUCTURE

expected benefit in reduced CO<sub>2</sub> emissions thanks to NYC's green infrastructure plan to improve local water quality.<sup>16</sup>

## RECREATION & TOURISM



# 1 in 3

Americans in the 100 largest cities live more than a 10-minute walk from a park.<sup>17</sup>

**BOSTON** became the second major city in the U.S. to ensure that all residents have a park within a 10-minute walk from home.<sup>18</sup>

Red fox



## i-TREE

The USDA Forest Service's free i-Tree toolkit allows you to explore the benefits of urban trees on scales including cities and neighborhoods. The "MyTree" tool even helps you analyze a single tree, providing the value in dollars for carbon dioxide sequestered, avoided stormwater runoff, and air pollution removed.<sup>19</sup>

[itreetools.org](http://itreetools.org)

**URBAN GREEN SPACES CAN SERVE AS "STEPPING STONES" THAT INCREASE CONNECTIVITY BETWEEN NATURAL AREAS.**

This is especially important given climate change and resulting shifts in distribution of many plant and animal species.<sup>20</sup>

## Threats

Climate change threatens the health of urban communities, where development is high.



**2.9°F RISE IN TEMP** since 1895



**11" SEA LEVEL RISE** since 1922, as measured in Boston Harbor



**55% STRONGER STORMS** since 1958<sup>21, 22</sup>

While their impacts are often linked, climate change and development in urban areas are particularly intertwined. Climate change will exacerbate health impacts on urban populations, and urban areas with extensive impervious surface and compacted soils will be especially vulnerable to future flooding.<sup>23</sup> In the meantime, development is guaranteed to continue, and remaining urban green spaces and the services they provide are at risk.



See our *Losing Ground* report and community planning resources for ways to reduce development impacts.

These fact sheets were produced as part of the Integrating Ecosystem Services Functions and Values into Land-Use Decision Making in the Narragansett Bay Watershed project.

The Integrating Ecosystem Services Functions and Values into Land-Use Decision Making in the Narragansett Bay Watershed project was supported, in part, under Assistance Agreement No. SE - ODA00252 awarded by the U.S. Environmental Protection Agency (EPA) to Mass Audubon. The Lookout Foundation also provided funding to Mass Audubon. The Narragansett Bay Watershed Economy project was conceived and partially supported by the Coastal Institute at the

University of Rhode Island under the leadership of Dr. Emi Uchida. Additional project partners include the URI Graduate School of Oceanography, the URI Coastal Resources Center, the Natural Capital Project at Stanford University, and the George Perkins Marsh Institute at Clark University. The views expressed in this project are solely those of the authors. It has not been formally reviewed by EPA. Additional information is available at [www.nbeconomy.org](http://www.nbeconomy.org).