The challenges of addressing health care for the very poor and indigent in Florida remains an ongoing, chronic problem. Basic to the economic issues associated with health care for the poor and uninsured are the stressors of human health caused by environmental degradation, which are often accentuated in our metropolitan regions (Dadvand et al., 2012; Frumkin, 2001; Tzoulas et al., 2007).

The University of Florida offers a variety of programs and services to help municipal and county governments in the restoration and management of urban forests and associated natural resources that support human health and well-being. Programs include technical/professional training on tree care and horticulture for urban forestry and park staff, as well as urban lawn, garden and tree care classes for private citizens through the Master Gardener Program and the Florida Friendly Program. Services vary by county but may also include one on one consultation with private citizens and public agencies, and expert assistance with the development of comprehensive urban forest and natural resource management plans.

The societal services provided by healthy and well-managed urban forest are far-reaching and extensively documented (Dwyer et al., 1992; McPherson et al., 1997). More than 40 years of research across a range of disciplines demonstrates a broad array of health and well-being services associated with the interaction of people with nature in cities (Bell et al., 2008; Holbrook, 2009; Jackson, 2012; Kuo, 2003; Kaplan, 1995; Parsons, 1995; ). This research evidence concerning the beneficial aspects of the human response to urban forests has significant implications for cost effective approaches to the maintenance of human health and related reduction of health care costs (St Leger, 2013).

In his landmark study, Ulrich (1984) demonstrated that hospital patients with views of natural scenes, e.g. trees and animals, recovered faster, spent less time in the hospital, required fewer painkillers and had fewer post-operative complications. While studying the health of prison inmates, Moore (1981) found that having cell views of plants and animals lowered the number of prisoner sick calls. In Holland, Maas et al. (2006) reported on the positive relationship between

Robert Northrop, Extension Forester
green open space and self-reported health. Lovasi et al. (2008) found that children living in New York City neighborhoods with more street trees were less likely to have asthma. Donovan et al. (2013) demonstrated that the loss of trees leads to increased mortality related to cardiovascular and lower-respiratory diseases.

Recent investigations in Tampa Florida, by the University of Florida IFAS and the University of South Florida, have demonstrated that the positive benefit/cost implications of urban forests and associated natural resources are substantial. Using the Environmental Benefits Mapping and Analysis Program (BenMAP), developed by the U.S. Environmental Protection Agency, these investigators estimate the health impacts and associated economic benefits occurring when populations experience changes in air quality due to the urban forest. In 2011, reduced health impacts and economic benefits for Hillsborough County amounted to nearly $30 million per year. The City of Tampa experiences a total of $5,240,340 in reduced health impacts and economic benefits per year (Andreu et al. 2013). These health related economic benefits are in addition to the reduction in cooling costs, increased property values, increased tax base, and amelioration of stormwater water quality and flows.

Other Examples of Connections between Urban Forests and Human Health:

- Studies in urban woodlands have found effects of improved immune system response, lowered stress indicators, reduced depression and lower glucose levels in diabetics.
- Increasing tree density, and resulting reduction in air pollution, has been shown to lower the prevalence of asthma attacks.
- Exposure to air pollution has been positively correlated with negative birth outcomes such as preeclampsia, preterm birth and heart defects in newborns. Urban forests have been shown to effectively remove 5 of the 6 criteria air pollutants regulated by the U.S. EPA.
- Bronchitis rates and hospital admissions are highly correlated with air pollution, in particular PM 10. Urban forests have been shown to effectively remove PM 10 from the air.
- Increases in air pollutants such as sulfur dioxide (SO2) can result in increased respiratory-related hospital admissions. Urban forests have been shown to effectively remove SO2 from the air.

Robert Northrop, Extension Forester
Hospital admissions for heat-related illnesses such as dehydration, heat stroke and heat exhaustion increase significantly during heat wave events. These heat-related illnesses are often more pronounced in urban areas due to a lack of shade and cooling effects of vegetation from evapotranspiration.

Green parks and restorative settings are becoming standard features at hospitals and recovery facilities. The experience of nature promotes more rapid and thorough healing.

The considerable body of evidence that demonstrates a positive correlation between human health and interaction with nature in our metropolitan regions emphasizes the need to be vigilant in ensuring that parks and other semi-natural areas can be easily accessed by our citizens. To support these interactions with nature, urban conservation will need to take a more prominent position in our land use decisions and health promotion policy development.

Human response to nature in cities is much richer than aesthetics and beautification, and suggests that higher density living, if properly planned, can be a satisfying and more sustainable alternative to sprawl development. Active planning and design to enhance human health and well-being benefits derived from urban forests can create places that provide better human habitat, reduce government health costs and encourage targeted economic growth.


Robert Northrop, Extension Forester


Robert Northrop, Extension Forester