

# Healthy Habitat, Healthy Life

## *How Living With Nature Promotes Healthy Living*

Whether a person lives in a rural, suburban or urban area, they are part of a natural system. Reduction in natural habitat and systems translates directly to declines in public health and quality of life.

Contact with nature on a regular basis provides stress reduction and improvement in overall sense of wellbeing and hopefulness.<sup>1</sup> It helps alleviate mental fatigue by relaxing and restoring the mind. Within built environments, green spaces are settings for cognitive respite, as they encourage social interaction and de-stressing through exercise or conversation, and provide calming settings. Having quality landscaping and vegetation in and around the places where people work and study is a good investment. Both visual access and being within green space helps to restore the mind's ability to focus and can improve job and school performance, and help alleviate mental stress and illness.



Howard Frumkin and Richard Louv's research on contact with nature suggests that children and adults benefit so much from contact with nature that land conservation can now be viewed as a public health strategy. Nature contact yields surprisingly broad benefits. This contact can occur on a very small scale—plants in the workplace or trees outside the apartment building—or it may occur on a larger scale—a nearby park, a riparian corridor in a city, or a wilderness area.<sup>2</sup>

*Photo courtesy of Radnor Conservancy*

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<sup>1</sup> Marcus, Clare Copper and Marni Barnes. 1999. *Healing Gardens: Therapeutic Benefits and Design Recommendations* (9Trans), New York. John Wiley and Sons.

<sup>2</sup> Howard Frumkin and Richard Louv. 2007. *The powerful link between conserving land and human health*. Essay address to the Land Trust Alliance.

## Nature provides vital health benefits for all people by:

1. *Improving air quality and reducing asthma and pulmonary diseases, particularly in children*
2. *Reducing stress, anxiety and depression*
3. *Enhancing attention*
4. *Increasing the speed of patient recovery*
5. *Inspiring exercise and reducing medical costs*
6. *Promoting neighborhood bonding*
7. *Reducing noise*
8. *Promoting neighborhood bonding and may reduce the incidence of domestic violence*
9. *Helping people with spirituality*
10. *Providing positive Impact for children at play*

### ***Improving air quality and reducing asthma and pulmonary diseases, particularly in children***

There is a direct relationship between habitat and tree cover and air quality in a community. Trees and landscaping improve local and regional air quality by altering atmospheric conditions that reduce temperatures and other microclimatic effects.

Atmospheric pollutants like ozone, particulate matter, nitrogen oxide and sulfur dioxide can induce asthma and a variety of other respiratory problems. A recent study reports a direct correlation over the last twenty years in the rise of CO<sub>2</sub> and the incidence of childhood asthma.<sup>3</sup>

From their research, Gina Lovasi, Ph.D. and colleagues reported that young children who live in city neighborhoods with tree-lined streets are less likely to develop asthma. Estimated asthma rates in preschoolers would fall by 24%-29% for every standard deviation increase in tree density, equivalent to an additional 343 trees/km.<sup>2,4</sup>

### **Reducing stress, anxiety and depression**

Humans find nature engrossing and soothing. Even brief glimpses of natural elements improve brain performance by providing a cognitive break from the complex demands of urban life.<sup>4</sup>

Stress has many negative physiological and mental impacts:

- Stress can lead to depression, schizophrenia, anxiety, exhaustion, and fatigue syndromes.<sup>5</sup>

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<sup>3</sup> Amrita Dosanjh, 2011. Childhood asthma and anthropogenic CO<sub>2</sub> emissions. *J Asthma Allergy*. 2011; 4: 103–105.

<sup>4</sup> Gina Lovasi, Ph.D., (2013) of Columbia University, and colleagues online in the *Journal of Epidemiology and Community Health* estimate of Columbia University, and colleagues online in the *Journal of Epidemiology and Community Health*.

<sup>5</sup> Grahn, P., and U.K. Stigsdotter. 2010. The Relation Between Perceived Sensory Dimensions of Urban Green Space and Stress Restoration. *Landscape and Urban Planning* 94, 3-4: 264-275.

- Stress can occur at any time in life; however, such responses are especially prominent at later age due to physical, psychological, and social changes—for example, in response to chronic disease, disability, death of loved ones, or financial hardship.<sup>6</sup>
- Stress can also negatively affect people’s perceptions of their well-being, including a poor perception of their own mental health.<sup>6</sup>

Regardless of age or culture, humans find nature restorative. Social support enhances immune functions, and promotes better moods. Gardens can encourage this interaction if they are easily accessible. In one study, researchers Marcus and Barnes found that more than two-thirds of people choose a natural setting as a retreat when stressed. In another study, 95% of those interviewed said their mood improved after spending time outside, changing from depressed, stressed, and anxious to more calm and balanced.<sup>7</sup>

Physical activity has been linked to improvements in mental health and stress.<sup>8</sup> Many studies connect urban park use to decreased stress levels and improved moods. In one study, the longer participants stayed in a park, the less stress they exhibited.<sup>9</sup> More than 100 studies have shown that relaxation and stress reduction are significant benefits associated with spending time in green areas.<sup>10</sup>

## Makes You Happy

Zelenski and Nisbet conducted two studies to determine if there is a link between nature and happiness independent from other things that make people feel emotionally connected to life, like family, country, culture, music, and friends. They found that our emotional connection with nature often predicts our happiness regardless of other psychological factors.<sup>11</sup>

Studies like these should motivate people to take a walk in their neighborhood, to look up and see the sun gleam through the dancing leaves and to hear the sounds, smell the fragrances and appreciate the seasonal diversity and colors of nature.

## Enhancing Attention

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<sup>6</sup> Orsega-Smith, E., A.J. Mowen, L.L. Payne, and G. Godbey. 2004. The Interaction of Stress and Park Use on Psycho-Physiological Health in Older Adults. *Journal of Leisure Research* 36, 2: 232-257.

<sup>7</sup> Marcus, Clare Copper and Marni Barnes. 1999. Healing gardens: Therapeutic Benefits and Design Recommendations 9(Trans), New York, John Wiley and Sons.

<sup>8</sup> U.S. Department of Health and Human Services. 1999. *Physical Activity and Health: A Report of the Surgeon General*. Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Atlanta GA, 278 pp.

<sup>9</sup> Hull, R.B., and S.E. Michael. 1995. Nature-Based Recreation, Mood Change, and Stress Restoration. *Leisure Sciences* 17, 1: 1-14.

<sup>10</sup> Davis, J. 2004. *Psychological Benefits of Nature Experiences: An Outline of Research and Theory*. Naropa University.

<sup>11</sup> Zelenski, J. M., & Nisbet, E. K. 2014. Happiness and Feeling Connected The Distinct Role of Nature Relatedness. *Environment and Behavior*, 46(1), 3-23.

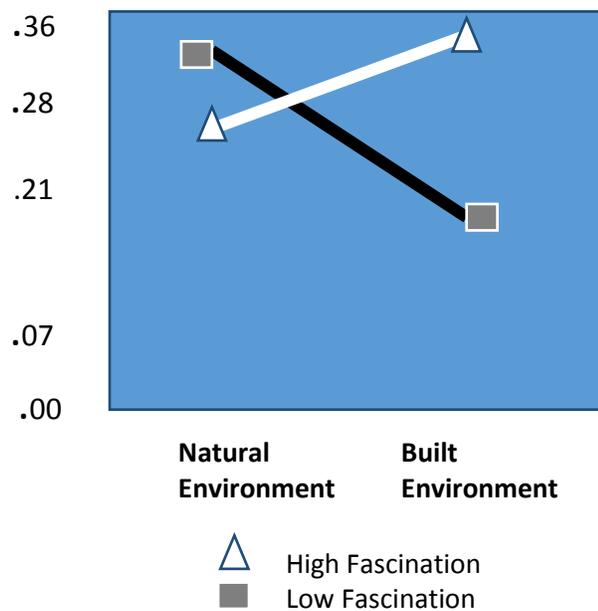
In today's lifestyles and work, we must focus our attention on critical information or tasks. Maintaining that focus by screening out distractions overloads our capacity for conscious attention.<sup>5</sup> Yet, exposure to settings that are visually interesting (having "high fascination") have been found to aid directed attention recovery.<sup>12</sup> Comparing memory retention in people viewing low versus high fascination scenes in built and natural environments, respectively, people viewing natural environments performed significantly better.<sup>11</sup> So, in the case of offices and schools, where one must focus on tasks, the addition of natural features could significantly improve attention and content retention rates.

Encounters with nearby nature help alleviate mental fatigue by relaxing and restoring the mind. Parks, backyards, trails and green spaces are settings for cognitive respite, as they encourage social interaction and de-stressing through exercise or conversation, and provide calming settings. Having quality landscaping and vegetation in and around the places where people work and study is also a good investment.

Both visual access and being within green space helps to restore the mind's ability to focus. This can improve job and school performance, and help alleviate mental stress and illness.<sup>13</sup>

Environmental psychologists Rachel and Stephen Kaplan have demonstrated that contact with nature restores attention and promotes recovery from mental fatigue and the restoration of mental focus (Kaplan & Kaplan, 1989; Kaplan, 1995). They attribute these beneficial qualities to the sense of fascination, of being immersed "in a whole other world," and to other influences of the natural world.<sup>14</sup>

### Memory scores, comparing fascination and nature/built conditions<sup>11</sup>



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<sup>12</sup> Berto, R., M.R. Baroni, A. Zainaghi, and S. Bettella. 2010. An Exploratory Study of the Effect of High and Low Fascination Environments on Attentional Fatigue. *Journal of Environmental Psychology* 30, 4: 494-500.

<sup>13</sup> Wolf, K.L., and K. Flora 2010. *Mental Health and Function - A Literature Review*. In: *Green Cities: Good Health* ([www.greenhealth.washington.edu](http://www.greenhealth.washington.edu)). College of the Environment, University of Washington.

<sup>14</sup> Kaplan, R. 1993. Urban Forestry and the Workplace. In: P.H. Gobster (ed.), *Managing Urban and High-Use Recreation Settings*. International Symposium on Society and Natural Resources. USDA Forest Service, St. Paul, MN, pp. 41-45.

## Speed of patient recovery

In addition to the psychological benefits, reducing stress and anxiety has concrete physical benefits. This is nicely demonstrated in a study of patients who underwent gallbladder surgery. Half had a view of nature and half had a view of a wall. The half with the nature view tolerated pain better, slept better, reported less stress, and spent less time in the hospital.<sup>15</sup>

## Exercise and reduced medical costs

Gardens offer a desired destination that prompts people to walk there and motivates people to explore once there.<sup>16</sup> Being in contact with nature, motivates people to exercise and appears to boost the benefits of exercise. Engaging in gardening is a great physical activity. A gardener can burn over 160 calories in four hours. Exposure to nature not only makes you feel better emotionally, but physically as well, by increasing the production of stress hormones within 3-4 minutes of a person's contact with nature.<sup>17</sup> Greenery encourages exercise and is a more restorative environment than indoor settings, with a greater positive effect on mental health.<sup>18</sup>

Researchers in England found that joggers who exercise in a natural green setting with trees, foliage and landscape views feel more restored and less anxious, angry and depressed than people who burn the same amount of calories in gyms or other built settings. Research continues into what is being called "green exercise."<sup>19</sup> Green spaces provide necessary places and opportunities for physical activity. Exercise improves cognitive function, learning, and memory. This is important because, apart from the physical benefits, even mild exercise elevates mood.<sup>20</sup>

Outdoor activities can help alleviate symptoms of Alzheimer's, dementia, stress, and depression and can improve cognitive function in those recently diagnosed with breast cancer.<sup>19,20,21</sup> Symptoms of ADD in children can be reduced through activity in green settings, thus "green time" can act as an effective supplement to traditional medicinal and behavioral treatments.<sup>21</sup>

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<sup>15</sup> Roger Ulrich, 1984. View through a window may influence recovery from surgery. *Science* 224 420-21

<sup>16</sup> IBID.

<sup>17</sup> Bowler, D.E., Buyung-Ali, L.M., Knight, T.M., & Pullin, A.S. (2010). A systematic review of evidence for the added benefits to health of exposure to natural environments. *BMC Public Health*, 10, 456.

<sup>18</sup> van Praag, H., B.R. Christie, T.J. Sejnowski, and F.H. Gage. 1999. Running Enhances Neurogenesis, Learning, and Long-Term Potentiation in Mice. *Proceedings of the National Academy of Sciences of the U.S.A.* 96, 23: 13427-431.

<sup>19</sup> Frumkin, Howard, and Louv, Richard. The Powerful link between land and preserving human health. *Land Trust Alliance Special Anniversary Report*. 2007.

<sup>20</sup> Pretty, J., R. Hine, and J. Peacock. 2006. Green Exercise: The Benefits of Activities in Green Places. *Biologist* 53, 3: 143-48.

<sup>21</sup> Taylor, A.F., and F.E. Kuo. 2009. Children with Attention Deficits Concentrate Better After Walk in the Park. *Journal of Attention Disorders* 12, 5: 402-09.

Depression also occurs at any age and can be helped through improved social connections (to decrease the feeling of isolation) and exercise, both of which are promoted by having nearby green outdoor spaces. In one study, 71% of people found a reduction in depression after going on an outdoor walk versus a 45% reduction by those who went on an indoor walk.<sup>22</sup> Another study investigated major depression disorder (MDD) and found that an exercise program can be just as effective as antidepressants in reducing depression among patients.<sup>23</sup> The value of green spaces in encouraging exercise is relevant to treating depression symptoms.

Play and exercise are an important part of child and adult development and brain function. As children, play can help develop cognitive thinking and reasoning abilities.<sup>24</sup> Later in life, exercise likewise helps increase and maintain the brain's cognitive capacity.<sup>25</sup> Researchers have found that exercise boosts the growth of new nerve cells and improves learning and memory in adult mice.<sup>26</sup>

A recent study of over 20,000 people found that the average medical claims for middle-aged, least-fit men were about 36 percent higher (\$5,134) than the average spent a year for most-fit men (\$3,227). The most-fit males saved \$1,857 in medical costs per year. The average medical claims for least-fit women were 40 per cent higher (\$4,565) than the most-fit (\$2,755). The most-fit females saved \$1,810 in medical costs per year.<sup>27</sup>

## Neighborhood bonding

People love to live in places that are welcoming, have many social offerings and lots of greenery and aesthetics.<sup>28</sup> Green spaces that provide the shade of a large tree, encourage social contact by serving as informal meeting places and sites for group and shared activities.<sup>29</sup> Green spaces can serve as a sort of nature therapy, as people experiencing difficulties can find empowerment, respite from stresses, and personal involvement in environmental stewardship.<sup>30</sup> As a result, the

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<sup>22</sup> Anon. 2007. *Ecotherapy: The Green Agenda for Mental Health*. Mind: For better mental health, London, 36 pp.

<sup>23</sup> Blumenthal, J.A., M.A. Babyak, K.A. Moore, W.E. Craighead, S. Herman, P. Khatri, R. Waugh, M.A. Napolitano, L.M. Forman, M. Appelbaum, D.P. Uurali, and K.R. Krishnan. 1999. Effects of Exercise Training on Older Patients with Major Depression. *Archives of Internal Medicine* 159, 19: 2349-356.

<sup>24</sup> Kirkby, M. 1989. Nature as refuge in children's environments. *Children's Environments Quarterly* 6:7-12.

<sup>25</sup> van Praag, H., B.R. Christie, T.J. Sejnowski, and F.H. Gage. 1999. Running Enhances Neurogenesis, Learning, and Long-Term Potentiation in Mice. *Proceedings of the National Academy of Sciences of the U.S.A.* 96, 23: 13427-431.

<sup>26</sup> Colcombe, S., and A.F. Kramer. 2003. Fitness Effects on the Cognitive Function of Older Adults: A Meta-Analytic Study. *Psychological Science* 14, 2: 125-130.

<sup>27</sup> Holohan, E. (2012). Fitness in middle age lowers medical costs later: study. *HealthDay News*. <http://consumer.healthday.com/fitness-information-14/gum-health-news-253/fitness-in-middle-age-lowers-medical-costs-later-study-664646>.

<sup>28</sup> John. S and James L. Knight Foundation and Gallup. Inc. 2011. *Soul of the Community Study*.

<sup>29</sup> Health Council of the Netherlands. 2004. *Nature and Health: The Influence of Nature on Social, Psychological and Physical Well-Being*. Health Council of the Netherlands and RMNO, The Hague.

<sup>30</sup> Burls, A. 2007. People and Green Spaces: Promoting Public Health and Mental Well-Being Through Ecotherapy. *Journal of Public Mental Health* 6, 3: 24-39.

mental health of individuals may also remain positive due to a decreased chance of depression and feelings of isolation and increased self-esteem. Effective social support networks have been found to restore feelings of personal control and self-esteem by buffering the effects of stress and poor health.<sup>31 32</sup> Useable and safely-accessible gardens or green spaces not only foster a sense of community, but also provide psychological benefits.<sup>33</sup> Green spaces, in close proximity to homes, encourage exercise, which can improve mental health.<sup>34</sup> Studies indicate that having views of nearby nature and living within green spaces can improve worker productivity,<sup>35</sup> reduce stress,<sup>36</sup> and improve school performance.<sup>37</sup>

## Spirituality

For many people, being in nature and interacting with the natural world, brings a sense of peace, tranquility, and feelings of connectedness - with self, others and a higher power. Nature is also fundamentally linked to our human spirituality. Out in nature, we feel how we are connected to entities beyond ourselves and understand our interdependencies with other living beings. Nature also prompts us to reflect on the ever-changing nature of existence and what might lie beyond it. Nature provides a space in which we can connect spiritually both with ourselves and outside ourselves.<sup>38 39</sup>

## Positive Impact on children at play

In today's fast paced society, children have less opportunity to be outdoors, both in terms of time and space.<sup>16</sup> Some schools provide nature experiences as part of a class, recess, or special activity, recognizing the potentially-significant effects on learning and mental health.

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<sup>31</sup> Krause, N., and B.A. Shaw. 2000. Giving Social Support to Others, Socioeconomic Status, and Changes in Self-Esteem in Late Life. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences* 55, 6: S323.

<sup>32</sup> Krause, N. 1987. Life Stress, Social Support, and Self-Esteem in An Elderly Population. *Psychology and Aging* 2, 4: 349-356.

<sup>33</sup> Maller, C.J., C. Henderson-Wilson, and M. Townsend. 2009. Rediscovering Nature in Everyday Settings: Or How to Create Healthy Environments and Healthy People. *Ecohealth* 6, 4: 553-56.

<sup>34</sup> Bell, S., V. Hamilton, et al. 2008. *Greenspace and Quality of Life: A Critical Literature Review*. Greenspace Scotland, Edinburgh, 75 pp.

<sup>35</sup> Krause, N. 1987. Life Stress, Social Support, and Self-Esteem in An Elderly Population. *Psychology and Aging* 2, 4: 349-356.

<sup>36</sup> Kaplan, R. 1993. Urban Forestry and the Workplace. In: P.H. Gobster (ed.), *Managing Urban and High-Use Recreation Settings*. International Symposium on Society and Natural Resources. USDA Forest Service, St. Paul, MN, pp. 41-45.

<sup>37</sup> Wells, N.M. 2000. At Home with Nature: Effects of "Greenness" on Children's Cognitive Functioning. *Environment and Behavior* 32, 6: 775-795.

<sup>38</sup> R.E. Chenow, and P.H. Gobster. 1990. The nature ecology of aesthetic experience in the landscape. *Landscape Journal* 9: 1-18

<sup>39</sup> Marcus, Clare Copper and Marni Barnes. 1999. *Healing Gardens: Therapeutic Benefits and Design Recommendations* (9Trans), New York, John Wiley and Sons.

Richard Louv discussed how contact with nature relates to children at play.<sup>40</sup>

- Playtime—especially unstructured, imaginative, exploratory play—is increasingly-recognized as an essential component of wholesome child development.
- Play in natural settings seems to offer special benefits. For one, children are more physically active when they are outside—very significant at a time of sedentary lifestyles and epidemic overweight.
- Children with attention-deficit disorder have fewer symptoms and an enhanced ability to focus after outdoor activities such as camping and fishing when compared with indoor activities, such as doing homework and playing video games.
- Anthropologists, psychologists and others have described the special role of nature in children’s developing imagination and sense of place.
- Among older children, exposure to nature encourages exploration and building activities, which can improve problem-solving abilities, ability to respond to changing contexts, as well as participation in group decision-making. Younger children often use outdoor settings having plants, stones, and sticks as props for imaginative play, which is key to social and cognitive development.<sup>41</sup>
- One study of children’s play found that a cluster of shrubs was the most popular place to play on an elementary schoolyard because it could be transformed into many imaginary places: a house, spaceship, etc.<sup>42</sup>
- Nature experiences are important for encouraging imagination and creativity, cognitive and intellectual development, and social relationships.<sup>43 44</sup>

Frumkin and Louv’s essay goes on to explain that adults, too, seem to benefit from “recess” in natural settings.

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<sup>40</sup> Howard Frumkin and Richard Louv. 2007. The powerful link between conserving land and human health. Essay addresses to the Land Trust Alliance.

<sup>41</sup> Heerwagen, J. 2009. Biophilia, health, and well-being. In: Campbell, L., and A. Wiesen (eds.), *Restorative Commons: Creating Health and Well-Being Through Urban Landscapes*. Gen. Tech. Rep. NRS-P-39. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station.

<sup>42</sup> Kirkby, M. 1989. Nature As Refuge in Children’s Environments. *Children’s Environments Quarterly* 6, 1: 7-12.

<sup>43</sup> Heerwagen, J.H., and G.H. Orians. 2002. The ecological world of children. In: Kahn, P.H.J., and S.R. Kellert (eds.), *Children and Nature: Psychological, Sociocultural, and Evolutionary Investigations*. MIT Press, Cambridge MA, pp. 29-64.

<sup>44</sup> Kahn Jr., P.H., and S.R. Kellert. 2002. *Children and Nature: Psychological, Sociocultural, and Evolutionary Investigations*. MIT Press, Cambridge MA.

The following indicators can be used to track and a healthy place.

- The percentage of canopy covering the site. 60% canopy cover is the goal.
- The vegetation layers present on the site are in place --canopy, understory, shrubs, grasses and wildflowers. All 5 layers being the goal.
- The percentage of the site cover by native species is over 60%.
- The number of different native plant species present on the property. Having more than 25 species is the goal.
- The beauty and color present in each season (spring, summer, fall and winter).
- Pollinator gardens in place.
- Beautiful plants that create a special “wow” factor.
- Turf grass only used to cover play areas and walking paths.
- Flowers with long bloom times and awesome blossoms.
- Vegetable and cutting gardens.
- Relaxation gardens.
- Water features.

## Healthy Life Style

1. Create a relaxation garden and spend time there every day to relax, meditate, and enjoy the scents, sights and sounds of nature. Relax in the shade if you can.
2. Do some gardening, plants some seeds, pick up sticks, cut or deadhead a few flowers or shrubs and enjoy being outdoors every day for at least 20 minutes or more. Gardening for four hours burns 160 calories.
3. Exercise indoors if you must, but exercise outdoors boosts your performance and makes it more enjoyable. Do calisthenics, Tai chi or yoga in a special place in your own yard. Exercise outside under a porch if it's raining. Listen to the rain.
4. Walk for 30 minutes every day in the morning or at night on a trail or along a tree lined street. Make an effort to talk to your neighbors.
5. Grow your won cutting flowers, vegetables or herbs.
6. Put in a bird feeder or bird house in your yard and count the different species of birds and learn their names.
7. Create a pollinator garden and identify the butterflies in your yard and learn their names.
8. Plan your next garden activity.
9. Play outdoor games with the family.
10. Observe the shapes of clouds.
11. Listen to the sound of evening silence.
12. Watch the stars and learn their names.
13. Learn the scientific or common names of your favorite plants.
14. Measure the growth of the trees you planted.
15. Create a water feature and observe and listen to the sounds the water makes.