

November 30, 2022

Graduate School of Agricultural and Life Sciences, University of Tokyo

Sekisui House, Ltd.

The University of Tokyo and Sekisui House Launch Joint Research on Biodiversity and Health World's First Research into Relationship between Rich-in-Biodiversity Garden Greenery and Health/Wellbeing

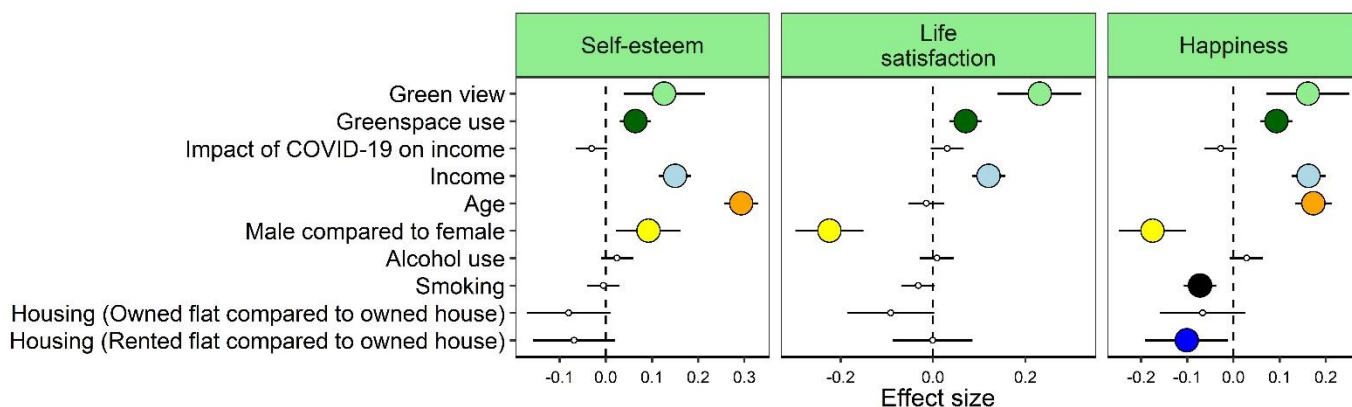
The Graduate School of Agricultural and Life Sciences (GSALS) at the University of Tokyo and Sekisui House, Ltd. will launch a joint research project on biodiversity and human health on December 1, 2022. The project will investigate the benefits that biodiversity and urban natural environments have on human health and wellbeing. This will be the world's first initiative to comprehensively investigate the effects of interacting with the nearby nature of a garden rich in biodiversity on the health of residents and their attitudes and behavior toward nature.



The Laboratory of Conservation Ecology¹, Department of Ecosystem Studies, GSALS at the University of Tokyo conducts research on the conservation of urban biodiversity and the management of ecosystem services (the benefits to human society provided by ecosystems). The Laboratory has been studying the relationship between nature and human health since 2016, and its research indicates that interactions with nature provide can lead to improved human health and wellbeing. However, the question of how these health benefits might vary depending on the quality rather than the quantity of nature has not yet been explored.

In 2020, the Laboratory of Conservation Ecology at the University of Tokyo's GSALS investigated how two means of interacting with nature—the frequency of green space use and viewing greenery from the windows of homes—affect the mental health of urban residents (self-esteem, life satisfaction, happiness, symptoms of depression/anxiety, and loneliness). The results of this research showed that not only people who frequently use green spaces, but also those who live in houses with green view reported better mental health.² This suggests that people can benefit from the psychological effects of nature from within their own homes even if they are not physically present in green spaces.

A.



B.

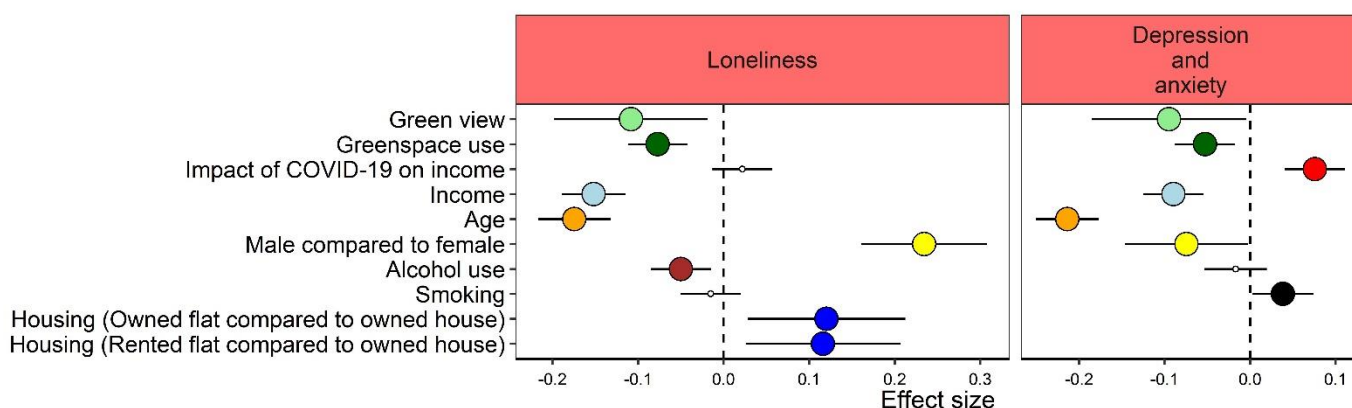


Figure: Factors associated with the mental health of urban residents during the COVID-19 pandemic

The magnitude of positive (right of the dashed line) and negative (left of the dashed line) effects indicates that each factor has a positive or negative relationship with each mental health measures. For example, "green view" is associated with low levels of depression and anxiety symptoms, while "impact of COVID-19 on income" is associated with high levels of such symptoms. Analysis of the results showed that experiencing nature can affect mental health to the same degree as factors such as income that have been traditionally regarded as important to mental health.

Since 2001, Sekisui House has been pursuing the conservation of biodiversity by creating green networks in urban residential districts under its Gohon no Ki Project, a proposal for creating gardens and communities with native tree species of the region concerned. Joint research conducted with the University of the Ryukyus's Kubota Laboratory and Think Nature Inc. since 2019 has revealed that this focus on planting native garden trees in line with the Gohon no Ki Project has increased biodiversity in urban areas (Japan's three major metropolitan areas) where biodiversity has declined significantly.

The new joint research project will combine analytical methods developed by the Laboratory of Conservation Ecology at the University of Tokyo's GSALS with Sekisui House's Gohon no Ki Project to conserve biodiversity in what is the first attempt worldwide to scientifically investigate the effects of biodiverse garden greenery on human health and wellbeing. This research will also aim to demonstrate the importance from the perspective of biodiversity of creating gardens rich in biodiversity rather than simply "greenery."

The Laboratory of Conservation Ecology at the University of Tokyo's GSALS is conducting research to test five hypotheses regarding the relationship between human health and interactions with nature under the themes of mental health, physical health, cognitive functions, and community health. For the time being, the new joint research project will focus on two hypotheses related to mental health, and one hypothesis related to cognitive

functions. This is, however, a long-term joint research project that will later also look at community health and other themes related to health.

Hypotheses

Theme	Hypothesis	
Mental health	1	People who interact with nature in the garden have fewer negative emotions (depression, anxiety symptoms, stress, etc.) and more positive emotions (quality of life, happiness, etc.).
	2	People who can view nature through their windows have better mental health.
Cognitive functions	3	Interacting with nature in the garden improves cognitive functions.
Community health	4	Interacting with nature in the garden contributes to community health.
Physical health	5	Exercising in natural surroundings offers more health benefits than indoor exercise.

University of Tokyo GSALS Associate Professor Masashi Soga has commented as follows regarding this joint research project.

“People have always turned to nature for relaxation and tranquility, and recent advances in research and technology have made it possible to quantify such intangible health benefits. However, very little is known about the role played by biodiversity in providing these health benefits. If we could shed light on this topic, we may be able to develop the kind of landscape and green space management that supports coexistence with nature because it is desirable from the perspectives of both conserving biodiversity and enhancing human health. This joint research project is a large-scale investigation of how interacting with nature in our gardens, perhaps the most familiar nature to most of us, affects our health and well-being. Garden biodiversity is an area that has been difficult to study up to now, but Sekisui House’s nationwide planting data will enable us to conduct the world’s first comprehensive investigation into the relationship between garden biodiversity and human health, and the way people appreciate and interact with nature. Up until now, discussions on the health benefits of nature have tended to focus on relatively large expanses of greenery such as green spaces and forests, but with this new study, we hope to shed light on the importance of actually ‘living with nature.’ Our research outcomes will hopefully be useful to promoting the conservation of urban biodiversity.”

The University of Tokyo GSALS and Sekisui House aim to contribute to the conservation of urban biodiversity and creation of a nature-positive society by sharing the findings of the investigation of the way in which interactions with nearby nature in urban environments affects people’s mental health and the way they appreciate and interact with nature.

Notes

1. Graduate School of Agricultural and Life Sciences, University of Tokyo Soga Laboratory: <https://www.masashi-soga.com/>
2. A room with a green view: the importance of nearby nature for mental health during the COVID-19 pandemic: <https://esajournals.onlinelibrary.wiley.com/doi/10.1002/eap.2248>
3. Sekisui House biodiversity conservation initiative: https://www.sekisuihouse.co.jp/gohon_sp/
4. Sekisui House’s nature-positive methodology: https://www.sekisuihouse.co.jp/gohon_sp/method/

(Attachment)

- Graduate School of Agricultural and Life Sciences, University of Tokyo

The University of Tokyo's Graduate School of Agricultural and Life Sciences provides a step-by-step, systematic education in applied sciences within the field of agriculture. Through its educational and research activities, it aims to nurture people with the kind of insight, practical abilities, and leadership qualities required to address the needs of global society through social, cultural, and industrial activities.

- Sekisui House's Gohon no Ki Project

The Gohon no Ki Project was launched by Sekisui House in 2001 as an initiative to conserve biodiversity through the eco-friendly landscaping and greening of the gardens of its customers with their cooperation. Based on the concept of planting five locally native trees, three for birds and two for butterflies, and using traditional Japanese satoyama landscape as a model, the Gohon no Ki Project proposes greening gardens and local communities with native tree species suited to the local climate and benevolent to birds, butterflies, and other local fauna. In fiscal 2021, Sekisui House planted 1.01 million trees, bringing the number of trees planted since the Gohon no Ki Project was launched in 2001 to 18.1 million trees (as of January 2022). Since 2019, the company has been working with the University of the Ryukyus' Kubota Laboratory and Think Nature Co., Ltd. to quantitatively evaluate the contribution of network-type greening to urban biodiversity. In 2021, it developed the world's first mechanism for quantitatively evaluating urban biodiversity using big data on tree numbers, species, location data, and ecosystems to determine the effectiveness of biodiversity conservation, publishing it as the "nature-positive methodology."

- Graduate School of Agricultural and Life Sciences, University of Tokyo Soga Laboratory Data

1. Soga et al. (2017) Gardening is beneficial for health: a meta-analysis. *Preventive Medicine Reports*, 5, 92-99.

URL: <https://www.sciencedirect.com/science/article/pii/S2211335516301401>

Overview: A meta-analysis (statistical analysis that combines the results of multiple scientific studies and analyzes whether a certain factor is related to a specific issue) that confirmed that interaction with plants through gardening has positive effects on human health

2. Soga, Gaston (2016) Extinction of experience: the loss of human-nature interactions. *Frontiers in Ecology and the Environment*, 14, 94-101.

URL : <https://esajournals.onlinelibrary.wiley.com/doi/full/10.1002/fee.1225>

Overview: A study showing that human interaction with nature is declining in many developed countries, and that this "extinction of experience" may have serious negative implications for human health and the protection of ecosystems

3. Soga et al. (2020) How can we mitigate against increasing biophobia among children during the extinction of experience? *Biological Conservation*, 242, 108420.

URL: <https://www.sciencedirect.com/science/article/pii/S0006320719309577>

Overview: A study showing that people who interact with nature only infrequently are more likely to show negative reactions (fear, disgust) toward common insects and other invertebrates

■ Application of Sekisui House's Gohon no Ki concept to detached homes



■ Application of Sekisui House's Gohon no Ki concept to a condominium setting



■ Application of Sekisui House's Gohon no Ki concept to community development

