URBAN BIO-CORRIDORS

Eduardo Haene
University of Belgrano, Argentina.

Small private habitats that add nature to the city

COMMITMENTS
2 5

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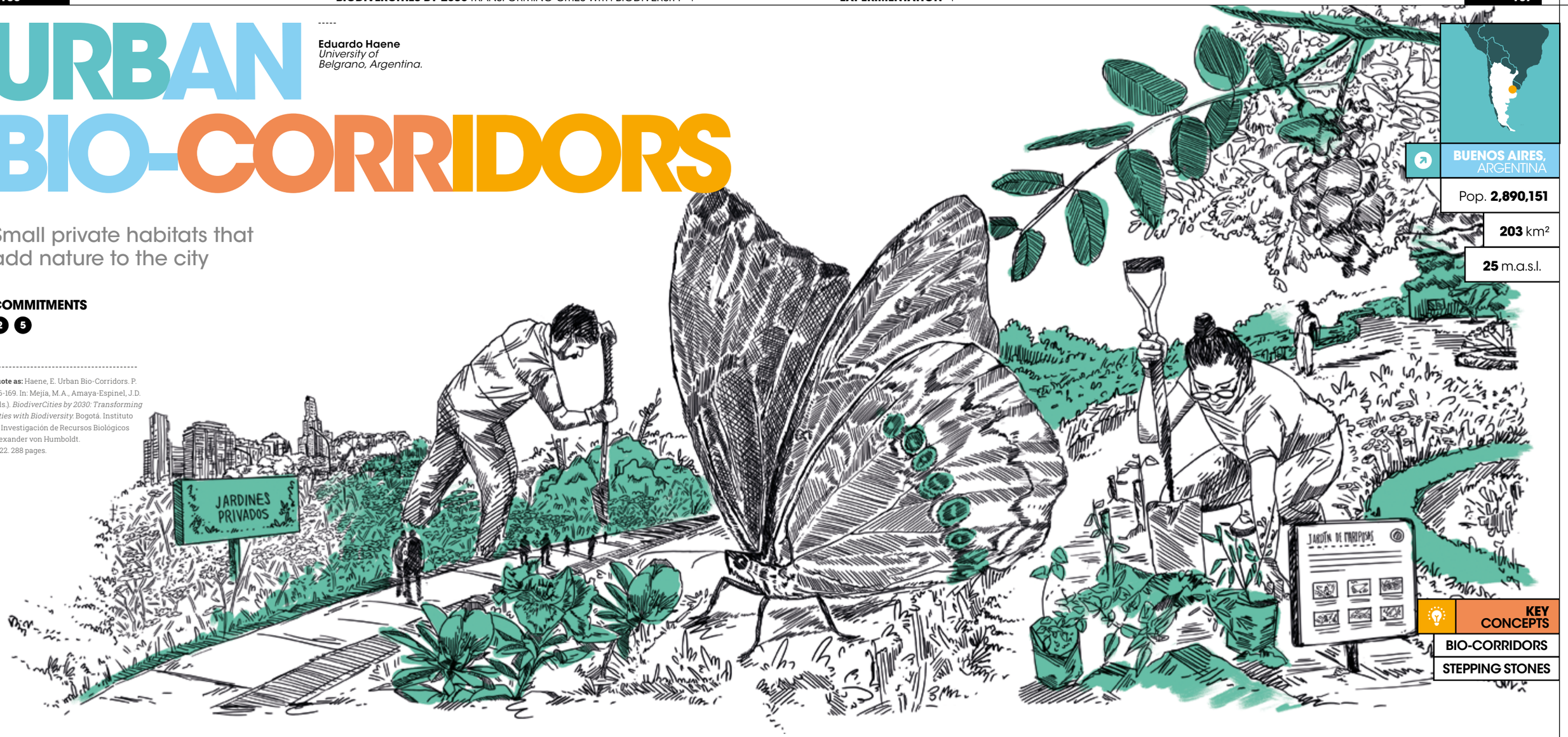

BUENOS AIRES, ARGENTINA
Pop. **2,890,151**
203 km²
25 m.a.s.l.

KEY CONCEPTS
BIO-CORRIDORS
STEPPING STONES

Faced with the reality of environmental degradation in Buenos Aires, a hopeful act arises: citizens with the capacity to change and enrich urban biodiversity. This initiative seeks to increase the amount and heterogeneity of green spaces in the urban landscape and thus, to offer habitat for wildlife in the shape of bio-corridors. This will improve the status of native species and the ecosystem services they provide to the city.

In October 2021, the municipality of Escobar del Gran Buenos Aires hosted the "Flower Festival." The space had eight flower pots containing specimens of plants that provide food for the southern monarch butterfly (*Danaus erippus*). The author, professor Eduardo Haene, professor at the universities of Belgrano and Buenos Aires, had brought a plastic monarch to represent its approach to the flower beds for an open-air lecture he was to give there. However, to everyone's surprise, a real monarch approached, flew in front of the attendees and left eggs on one of the plants. After that, many people came up to ask for seeds of those plant species. Those people left that day with the hope that "planting fauna" by using native plant species is possible.

This re-encounter with nature in the urban space is what is proposed by the **Bio-corridors** program. This initiative considers it possible to add biodiversity to the urban space by enriching the vegetation with native plants of each house or public green area. In this way, the city's wildlife can count on **stepping stones** to maintain its life network. The aim is to recover the city's native flora, guaranteeing the supply of habitats for the arrival of a greater number of wildlife species.

The initiative draws on ecology and conservation biology knowledge to respond to one of the most significant challenges facing cities today: transforming the concept of a green space as an "empty space" to be enhanced with human-designed materials. Instead, it is about interpreting nature's own requirements for connection and diversity. This program also makes the value of articulating the efforts of specialists in the biological sciences with other professionals from various disciplines involved in urban planning evident.

NEW TERRITORIES

In the 2000s, searching for alternatives to integrate biodiversity into urban planning, at the Green Spaces Project Unit of the Buenos Aires City Government we identified **bio-corridors** as an ideal alternative. It was evident that, if the city is a sea of cement, sheet metal, and asphalt, the emergence of "continents" (urban nature reserves), "islands" (parks and squares), and "islets" (gardens, terraces, balconies) could function as a kind of "archipelago" to increase the supply and connection of habitats to promote wildlife.

According to studies of green coverage in Buenos Aires, in 2019, 69% of the area was built, and the rest had green spaces. Private gardens and parks, in particular, occupied 11%, providing about 8 m2 of green space per inhabitant. Combining these spaces with local nature would make it possible to consolidate bio-corridors suitable for increasing populations of species groups such as butterflies and wild birds. Thus, to the extent that bio-corridors are consolidated as a comprehensive strategy in the territory, the urban biodiversity of Buenos Aires will increase.

THE VALUE OF POLLINATORS

Peri-urban belts and orchards within cities are essential in supplying fresh fruits and vegetables with low transportation costs. The action of pollinators increases the reproduction of 87% of flowering plants or angiosperms, and 30% of world food production depends on the activities of pollinating animals. The most significant diversity and abundances of pollinators, like butterflies and bees, live in the wilderness. One of the environmental services of urban bio-corridors is precisely to serve as a habitat for pollinators

Many pollinators nest in urban reserves and other sites with spontaneous vegetation. Bio-corridors achieve a more homogeneous distribution of pollinator refuges in cities and surroundings —and the closer the crop to pollinate, the greater the frequency of visits of these insects.

The production of honey from native stingless bees, comprising the tribe Meliponini, typical of the subtropical and tropical areas of the world, is growing. In South America alone, there are 400 species, and in Argentina, 36. In addition to being efficient pollinators, they produce nutritious honey with medicinal properties. They can be raised in cities without the restrictions of domestic bees due to their sting and the seriousness caused by allergic people. The performance guarantee of native stingless bees is to have a variety of flowers in their environment, and urban biocorridors are the best strategy for this

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KEY LESSONS

- The idea of bio-corridors should arise and be promoted locally. Therefore, it is key to prioritize native plants that are nutritious for butterfly caterpillars and that bear fruit for birds.
- Just as a bio-corridor connects wildlife, these initiatives can lead to the formation of social networks in which individual actions take on a collective dimension.
- Although governmental responses to recover native biodiversity in the city are fundamental and effective in the short term, it will be impossible for this to happen without another group of actors supporting actions in private areas with a significant multiplier effect.

CONSOLIDATION OF BIO-CORRIDORS FROM THE LOCAL LEVEL

BEFORE

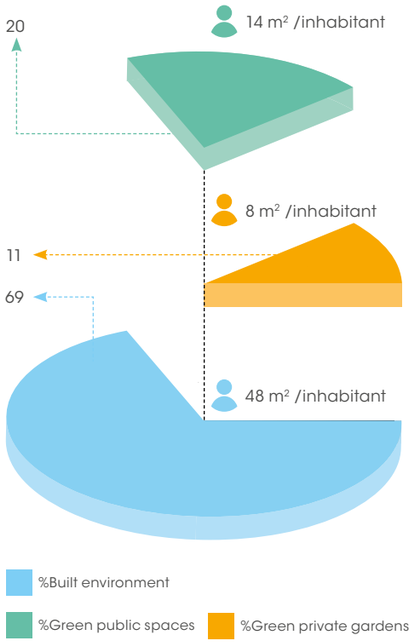
AFTER

System of beds with native plants in the Agronomy Department of the University of Buenos Aires's bio-corridor. On the left, in March 2019; on the right, in November 2019, flowering pampas grasses are observed.

During the 2000s, the most effective native plants for feeding caterpillars of diurnal Lepidoptera and for attracting butterflies and hummingbirds with their flowers were revealed. The response of these groups of wild animals, even in cities, makes it possible to prove in a few months that native plants are linked to wildlife. It is not an imposed fact; it is a personal discovery that encourages questions such as "Where did it come from?" "How did it arrive?" to be asked. Thus begins a process of deduction that allows us to understand nature's functioning as a network. The number of native plant nurseries is reaching a level never before seen in Argentina.

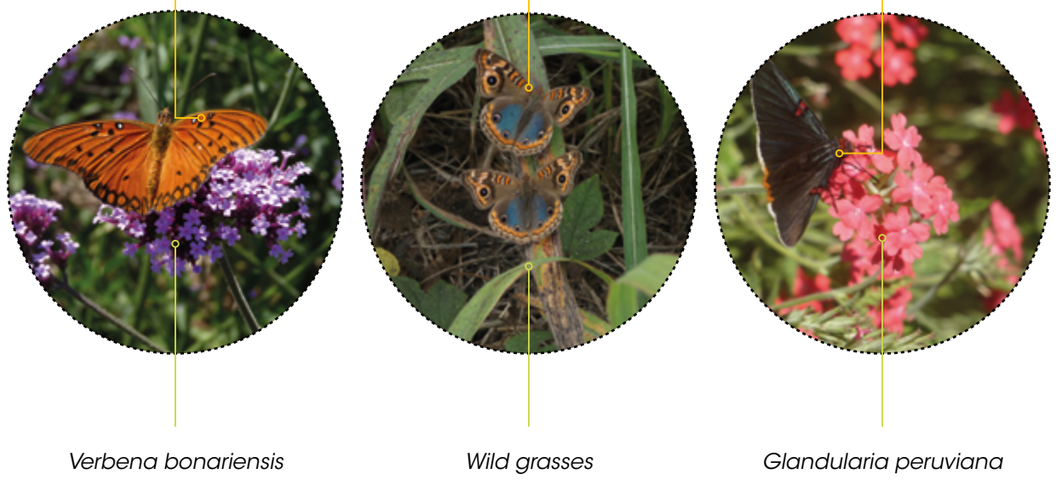
GREEN COVER IN BUENOS AIRES

"Green cover" is defined as the surface occupied by the vegetation perceived from the air. Thus, a sidewalk flowerbed of 4 m^2, with a tree with a crown of 60 m^2, provides 60 m^2 of green cover. It is an easy indicator to monitor and relate to the environmental services provided by urban vegetation.



THE RECONQUEST OF BUTTERFLIES

Photos: Eduardo Haene



The largest butterfly in the Buenos Aires metropolitan region is the so-called "Argentine flag" (Morpho epistrophus), given its characteristic white and light blue tones. However, the destruction of native forests resulting from urbanization - and their local nutritious plants - made this species disappear.

The recovery of plant species in urban reserves and other green spaces in the city since the beginning of the 21st century has gradually favored the presence of adults of this insect on the banks of the La Plata River in the metropolitan region of Buenos Aires. An encouraging sign in this sense is the presence of butterfly caterpillars in 2021 in the Costanera Sur Ecological Reserve and later, in January 2022, of several adults.