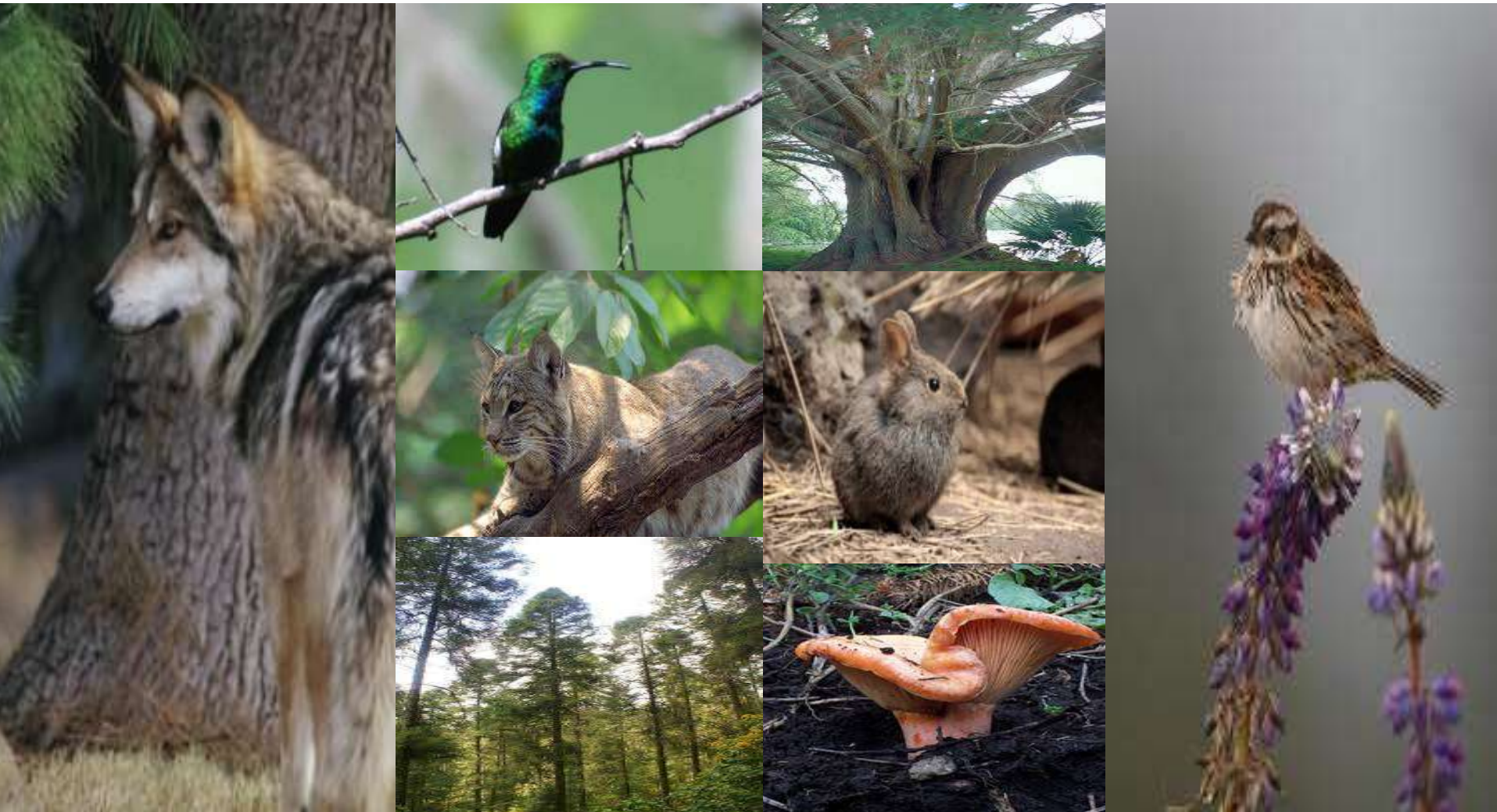


# Biodiversity in Cities

A Biodiversity Exhibition Project Among Leader Cities  
Annex 2: Exhibition Initial Draft





## Biodiversity

Biological diversity - or biodiversity - is the term given to the variety of life on Earth and the natural patterns it forms. The biodiversity we see today is the fruit of billions of years of evolution, shaped by natural processes and, increasingly, by the influence of humans. It forms the web of life of which we are an integral part and upon which we so fully depend.

This diversity is often understood in terms of the wide variety of plants, animals and microorganisms. So far, about 1.75 million species have been identified, mostly small creatures such as insects. Scientists reckon that there are actually about 13 million species, though estimates range from three to 100 million.

Biodiversity also includes genetic differences within each species - for example, between varieties of crops and breeds of livestock. Chromosomes, genes, and DNA-the building blocks of life-determine the uniqueness of each individual and each species.

Yet another aspect of biodiversity is the variety of ecosystems such as those that occur in deserts, forests, wetlands, mountains, lakes, rivers, and agricultural landscapes. In each ecosystem, living creatures, including humans, form a community, interacting with one another and with the air, water, and soil around them.







## Biodiversity in Peril

Species have been disappearing at 50-100 times the natural rate, and this is predicted to rise dramatically. Based on current trends, an estimated 34,000 plant and 5,200 animal species - including one in eight of the world's bird species - face extinction.

While the loss of individual species catches our attention, it is the fragmentation, degradation, and outright loss of forests, wetlands, coral reefs, and other ecosystems that poses the gravest threat to biological diversity.

About 45 per cent of the Earth's original forests are gone, cleared mostly during the past century. Up to 10 per cent of coral have been destroyed, and one third of the remainder face collapse over the next 10 to 20 years. Coastal mangroves, a vital nursery habitat for countless species, are also vulnerable, with half already gone.

Global atmospheric changes, such as ozone depletion and climate change, only add to the stress.. Global warming is already changing habitats and the distribution of species. Scientists warn that even a one-degree increase in the average global temperature, if it comes rapidly, will push many species over the brink. Our food production systems could also be seriously disrupted.

The loss of biodiversity often reduces the productivity of ecosystems, thereby shrinking nature's basket of goods and services, from which we constantly draw. It destabilizes ecosystems, and weakens their ability to deal with natural disasters such as floods, droughts, and hurricanes, and with human-caused stresses, such as pollution and climate change.







## Importance of Conserving Biodiversity

Protecting biodiversity is in our self-interest. Nature's products support such diverse industries as agriculture, cosmetics, pharmaceuticals, pulp and paper, horticulture, construction and waste treatment.

Our personal health, and the health of our economy and human society, depends on the continuous supply of various ecological services that would be extremely costly or impossible to replace.

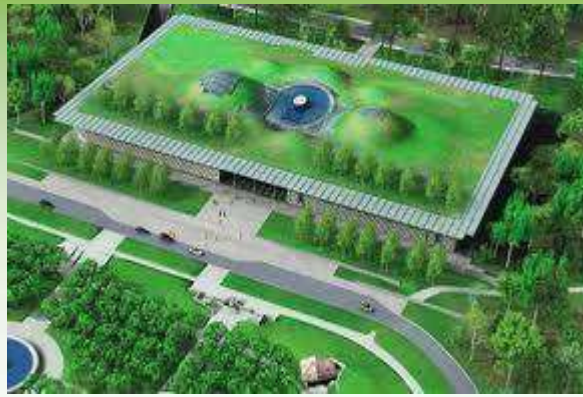
"Goods and Services" provided by ecosystems include:

- Provision of food, fuel and fiber
- Provision of shelter and building materials
- Purification of air and water
- Detoxification and decomposition of wastes
- Stabilization and moderation of the Earth's climate
- Moderation of floods, droughts, temperature extremes and wind
- Generation and renewal of soil fertility, including nutrient cycling
- Pollination of plants, including many crops
- Control of pests and diseases
- Maintenance of genetic resources as key inputs to crop varieties and livestock breeds, medicines, and other products
- Cultural and aesthetic benefits
- Ability to adapt to change

**Biodiversity has also a great cultural, psychological, ethical and spiritual value.**







## Cities and Biodiversity

Cities in particular are home to more than half of the world's population, and are responsible for a disproportionately large ecological footprint, which threatens the health of the planet's ecosystems. At the same time local authorities have a profound potential to affect positive change.

Biodiversity and ecosystems need to be valued and managed as part of cities' infrastructure and integrated into all aspects of local governance including urban planning, financial planning, transportation, trade and economic incentive mechanisms, procurement policies, infrastructure development and service delivery.

In order to promote biodiversity conservation, Cities should:

1. Manage the urban environment to benefit biodiversity
2. Implement strategic city and regional planning to reduce urban sprawl
3. Manage the entire landscape, through an ecosystem approach
4. Manage urban agriculture and nurture supply links to city markets
5. Facilitate sustainable consumption of resources that impact on biodiversity
6. Establish synergistic partnerships with government and the private sector
7. Raise biodiversity awareness and importance amongst the public
8. Supporting global or regional networks of cities and local authorities with

common missions related to biodiversity, such as the ICLEI and IUCN's LAB programs, the ASEAN Working Group on Environmentally Sustainable Cities and others.







## Action Plan of Subnational Governments and Cities for Biodiversity

The Plan of Action on Subnational Governments, Cities and Other Local Authorities for Biodiversity under the Convention on Biological Diversity, adopted at COP 10 in Nagoya, is intended to support Parties, their partners and local authorities in implementing the Strategic Plan for Biodiversity 2011-2020, the Aichi Biodiversity Targets and relevant decisions of the Conference of the Parties., through the following objectives:

- Increase the engagement of subnational governments and local authorities, in support of their Parties, in the successful implementation of national biodiversity strategies and action plans, the Strategic Plan for Biodiversity 2011-2020, the 2020 target and the programs of work under the CBD;
- Improve regional and global coordination and exchange of lessons learned between Parties to the Convention on Biological Diversity, regional and global organizations;
- Identify, enhance and disseminate policy tools, guidelines, and programs that facilitate local action on biodiversity and build the capacity of local authorities to support their national Governments in implementing the Convention on Biological Diversity;
- Develop awareness-raising programs on biodiversity for local residents (including major groups such as business, local administrators, non-governmental organizations, youth and indigenous and local communities) in line with communication, education and public awareness strategies.





Lic. Marcelo Ebrard Casaubon  
Mayor of Mexico City



## Mexico City A Biodiverse Megacity

Mexico City is located in the geographical region called “Basin of Mexico” located in the middle of the American Continent border, between the Neartic and Neotropical bioregions.

The surface of the city is 1, 479 km<sup>2</sup>, 41% urban area, 59% rural area (under conservation status). It is one of the largest cities of the world with 8.8 million inhabitants in the city and around 22 million in its metropolitan area.

Mexico City hosts around the 2% of the total taxonomically classified species of the world: 3,000 species of plants, 350 species of mammals, 316 species of birds and many species of aquatic flora and fauna, from which numerous are endemic to the region.

The main threats to biodiversity are urban area expansion, deforestation for agricultural and livestock activities, air pollution, acid rain, regional and global climate change and the introduction of alien or exotic species.



A very populated and biologically rich city, with considerable challenges and successes.





# Mexico City Fauna and Flora Species



(*Canis lupus baileyi*)

## Mexican Wolf

The rarest subspecies of the gray wolf in North America. Highly endangered due to an intensive eradication campaign. A captive breeding program was initiated for its recovery in the late 1970 s. In 1998, the first captive Mexican wolves were released in the United States and in 2011, a pack of wolves, was released in Sonora, Mexico. Currently, the Mexican wolf population is composed by approximately 350 individuals, 50 of them living in the wild. The Mexico City Zoos have been a key player for the recovery of this subspecies since the inception of the captive breeding recovery program.



(*Romerolagus diazi*)

## Zacatuche or Teporingo

Endemic species from the the Valley of Mexico City. Highly endangered due to habitat fragmentation and illegal hunting. A successful captive breeding colony was initiated at the Chapultepec Zoo in the early 1980 s. In 2004, a second captive colony was developed at Los Coyotes Zoo. Currently, these two zoos from Mexico City have a captive population of more than 200 individuals. The goal of this program is to increase the genetically managed population size for future reintroduction within its historical range.



(*Salix bomplandiana*)

## Ahuejote

Native species from Xochimilco that plays a key role in the local ecosystem as natural anchor for the chinampas. It stems erosion, act as windbreaker and favors the reproduction of aquatic species. Mexico City has developed a major campaign to resolve the phytosanitary problem of this species. More than 75,000 Ahuejotes have been treated and pruned in the Xochimilco area. Efforts have also been conducted in developing techniques to improve the *ex situ* production of this species for reforestation programs.



(*Pittocaulon praecox*)

## Crazy Stick

This native species from the Basin of Mexico is called "crazy tree", because it flowers at the end of the dry season when most other plants are suffering the effects of drought. The rapid growth of Mexico City has led to the decline of 90% of its original distribution range within the area. Mexico City is developing different conservait0on actions for the recovery of this species.



## Xochimilco Rescue



Xochimilco is characterized by the existence of a system of canals, which measure about a total of 170km<sup>2</sup>. These canals, and the small colorful boats that float on them among artificially created land called chinampas are internationally famous. These canals are all of what is left of what used to be a vast lake and canal system that extended over most parts of the Valley of Mexico, restricting cities such as Tenochtitlan (Mexico City) and Xochimilco to small islands. This canal and chinampa system, as a vestige of the area's pre-Hispanic past, has made Xochimilco a World Heritage Site.

In the past two decades, different factors have threatened the Xochimilco ecosystem. The population explosion of Mexico City, has represented a serious threat. Over sixty percent of the area is considered to be seriously deforested and eighty percent of the junipers have the parasitic plant mistletoe. The introduction of exotic species such as carp and tilapia, have been detrimental to the native ecosystem, especially the axolotl, whose eggs they eat. In spite of these environmental issues, 77.9% of the territory is designated as ecological reserve, 15.2% as residential and 4.6% as commercial and industrial.

Mexico City is implementing a major conservation program to rescue the canal system which can be summarized in the following strategic actions: protection and water management, ecological restoration, recreational activities and sports, research monitoring and evaluation, community participation, inter-agency coordination and administration. Currently, the Mexico City Zoological Parks, are participating in the (in the Xochimilco Axolotl Research Group), a non profit group dedicated to the conservation of the Axolotl, and operates two captive breeding colonies of this endangered species.







## The National Canal at Mexico City

### The National Channel: An Oasis in Mexico City

The National Channel is the most important channel built in the pre-Hispanic age. It was a fundamental element for the operation of the three big docks: Calzada de los Lagos de Chalco, Xochimilco and Laguna de México. The National Channel is a historic extension of Lago de Xochimilco and was considered the most important channel of the Mexico basin from the pre-Hispanic age until the first decades of the 20th century.

The National Channel has important historic, cultural and environmental values. Historically, it was used by the Aztecs as communication route for the transportation of goods and the marketing thereof to downtown. In 1880, trying to continue with the lacustrine tradition in the city, President Porfirio Díaz inaugurated a fleet of steam ships which sailed from Xochimilco to downtown. From an environmental point of view, this channel represents an important habitat characterized by its lacustrine scenes, which maintains the biodiversity and the environmental quality, providing environmental services.

"Club de Patos Para el Rescate del Canal Nacional, A.C." is a non-profit Organization of the Civil Society which purpose since 2004 is to rescue and preserve, with the help of civil society volunteers, non-governmental groups, the academic sector, private companies and government institutions, a plot of land of 1.5 km from a total of 8.7 km which forms the channel. The promotion for the integral rescue of the National Channel, environmental education, civil culture and social participation are within its main activities. Each month, Club de Patos convenes and carries out cleaning journeys of the National Channel, as well as other activities fostering the sense of belonging of the channel to the community.

