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The importance of pollinating gardens on the periphery of urban areas in the Sonoran Desert, Mexico

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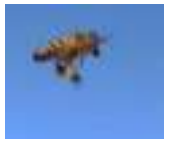
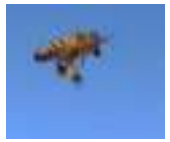
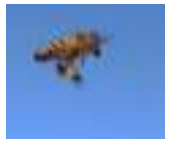
Presentation Items



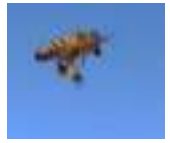
1. *Fundamental aspects related to PG*



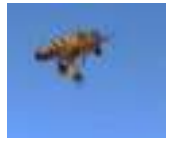
2. *What does the pollination mean ?*



3. *Study region and site*



4. *Observation cases*



5. *Conclusions*

1. Fundamental aspects related to the pollinating garden

Biodiversity Conservation

It is an interface between urban deserts and pristine areas

Pollinator communicates and interconnects the organization of a flower system

Primary production

May include some local crop or a new crop pattern

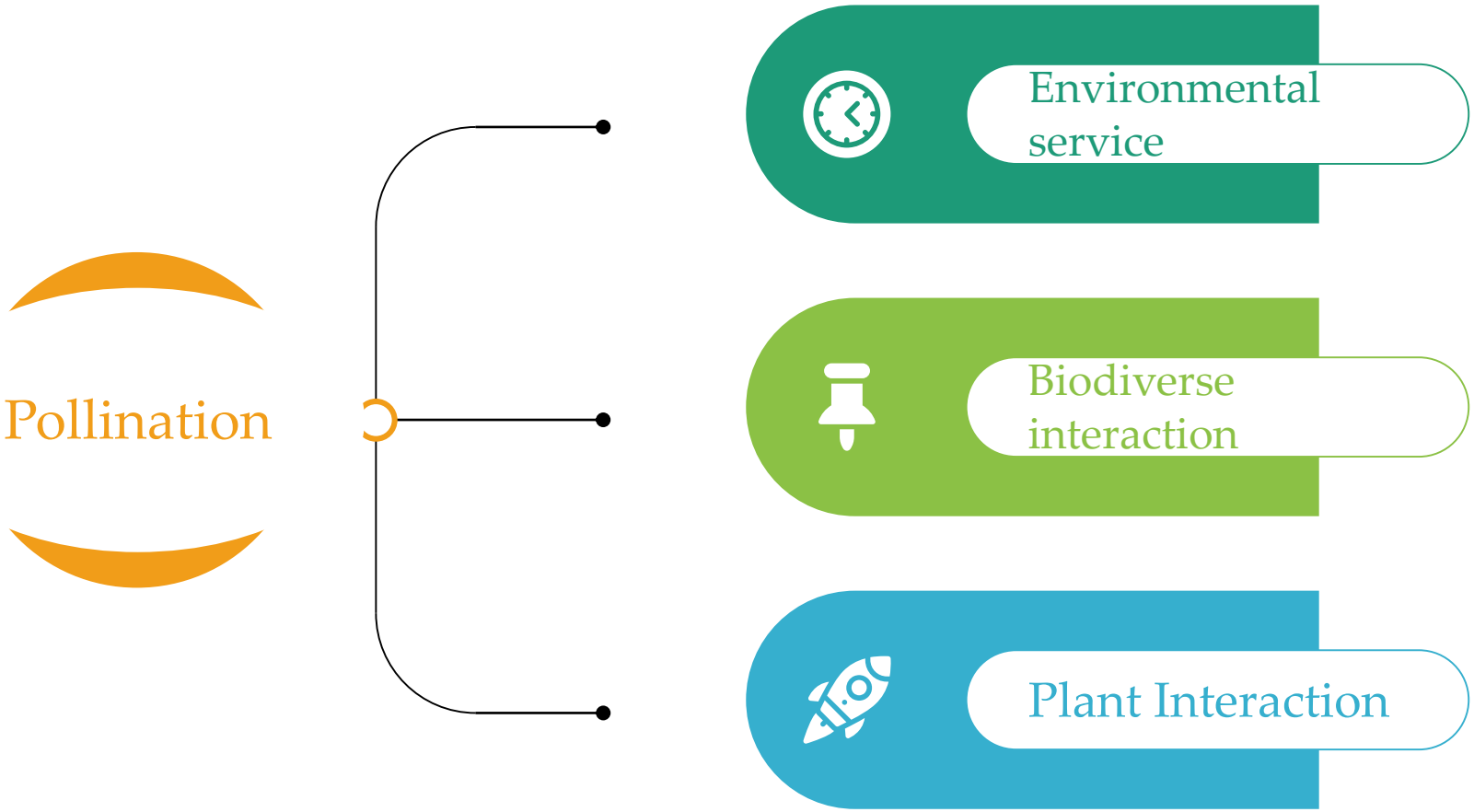
Reduces climate impacts at the local level

Pollinating gardens

Harvest Flight Synapse

Climate Change

2. What does pollination mean?



Main precursor of life

Link between plants and several visitors

Cognitive - neuroanatomical association with organs plants

3. Study region and site

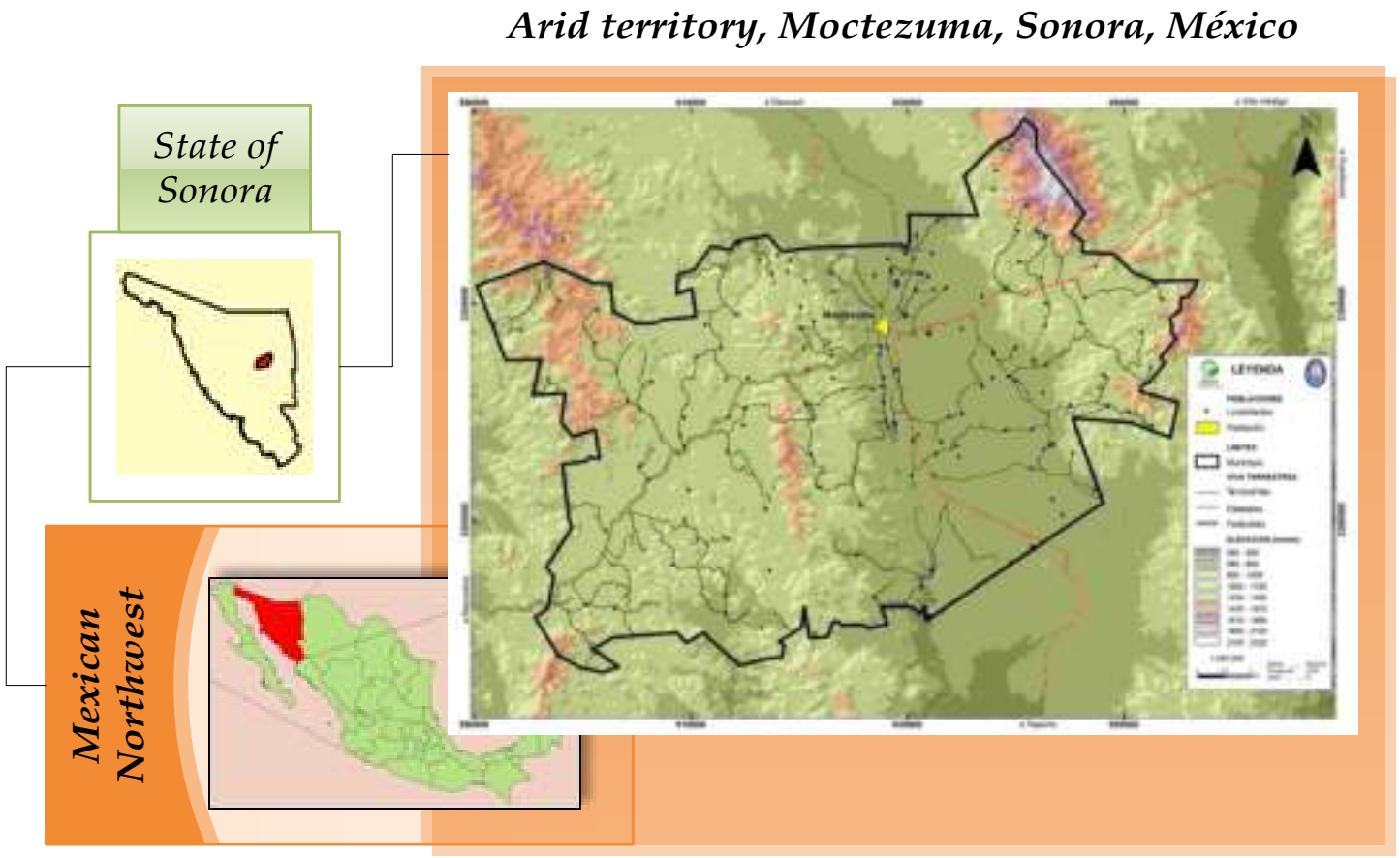
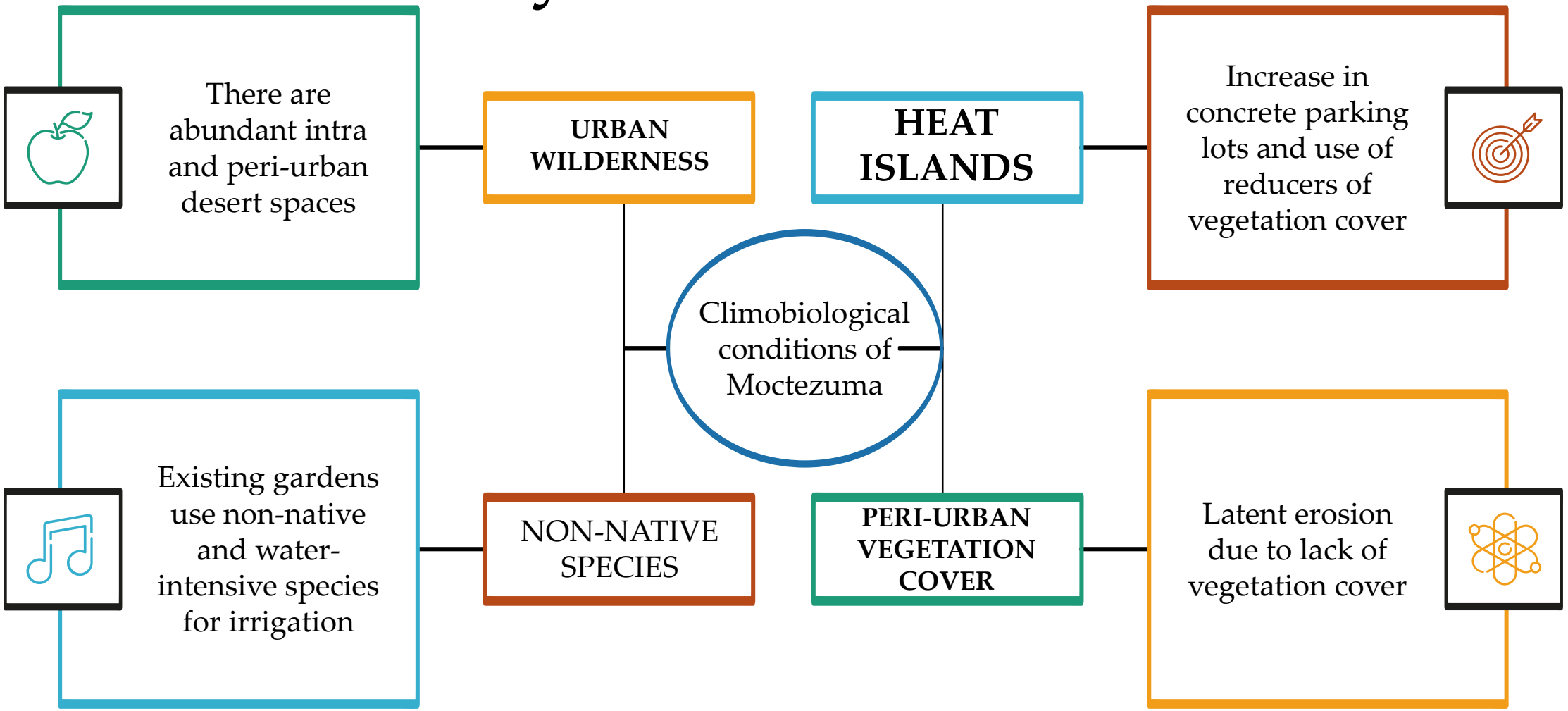


Figure 1. *Location of the Pollinator garden in the arid City of Moctezuma, Sonora, Mexico.*

Characteristics of the periphery of the city of Moctezuma



4. Observation cases in peri-urban pollinating gardens in Moctezuma, Sonora, Mexico

A

Case 1

Pollination of pitayas

Observed character

Harvest Flight Synapse

Specificity

Focused on Hymenoptera (*Apis mellifera*)

B

Case 2

Pollinator garden - base crop

Observed character

Pollination of various species and a crop

Specificity

Reptiles, birds, mammals and several arthropods

Case 1: Pollination of pitayas

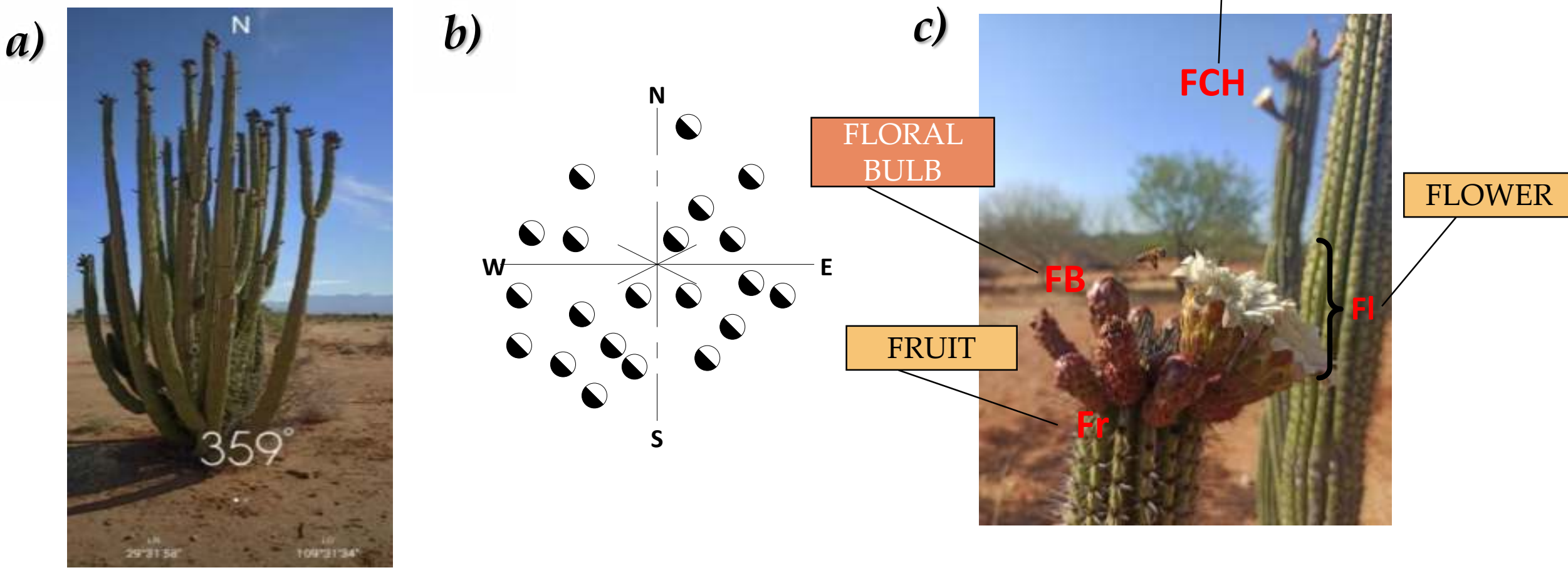


Figure 2. The vegetative architecture by the pitaya cactus in a Cartesian plane. a) With a perspective from the south, shows a specimen. b) This, same is visualized for the identification of the insects (honeybee) HFS from an aerial view. c) Floral structures visited

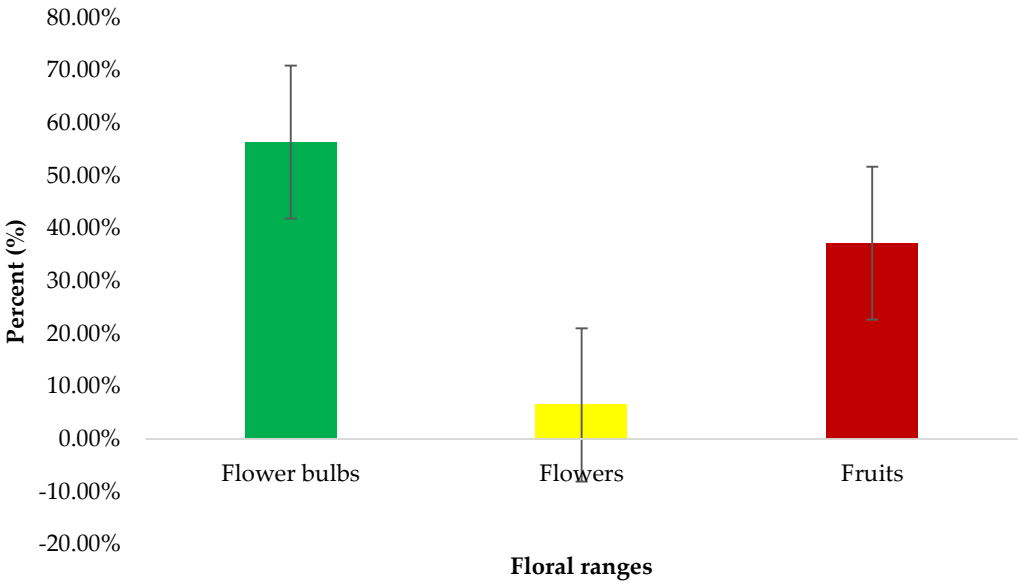


Figure 3. Percentage of floral appendixes present by the total of observed columns

Table 1. Floral range with residence time and priority action developed in the HFS sequence

Stay point	Time (%)	Priority action developed
Vegetative architecture limit of pitaya	1.45	Enter pitaya airspace
Flower range		
Floral bulb	9.88	Close flight of flower stimulation
Flower	72.96	Harvest and pollination [1]
Fruit	9.88	close flight to stimulate maturity [2]
Intercolumn airspace	4.37	Intercolumn flights
Vegetative architecture limit of pitaya	1.45	Exit pitaya airspace and departure flight

[1] Primarily in flowers with a floral scale of 100%
[2] Only in early stages of maturity

Case 2: Pollinator garden – base crop

Figure 4. Change

Case 2: Pollinator garden – base crop

Figure 5. Garden with base crop

Case 2: Pollinator garden – base crop

Figure 6. A) This plant is atended by Apis after sun B) During the morning, alternative species are located in the Pollinator garden

Indicators according to the form of interaction of the Urban Garden

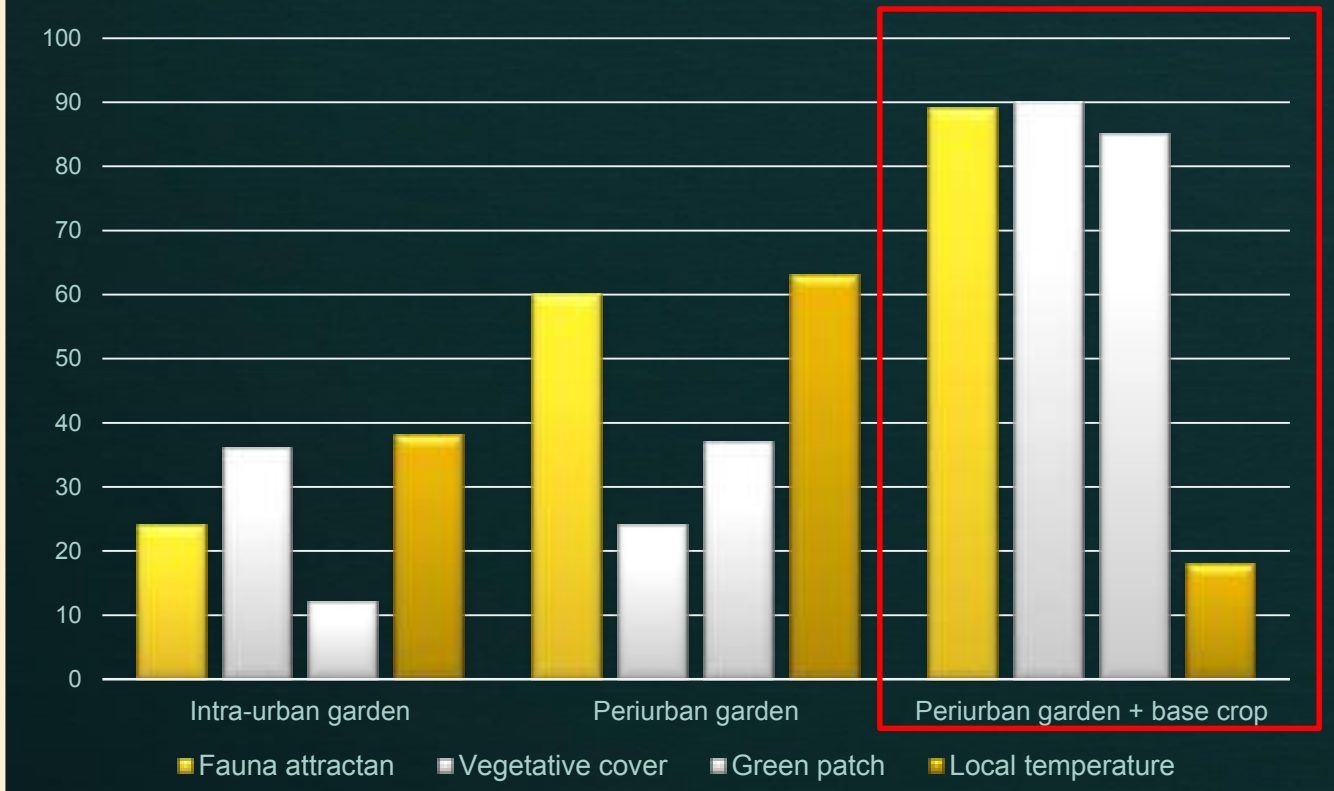


Figure 7. Effects generated at the local level derived from the type of existing garden in Moctezuma, Sonora, Mexico

Intra – urban garden

With the use of non-native vegetation in public areas

Periurban garden

Left on the periphery as part of urban development

Periurban garden + base crop

Propitiated from the circumstances to taking advantage of areas without coverage or in disuse

5. Conclusions

In a pollinating garden, an integrated environmental service is involved because it improves local biodiversity, influences the local climate, reduces erosion and can produce a "synapse" between plants and arthropods.

"Harvest Flight Synapse (HFS)" refers to the way in which a pollinator communicates and interconnects the organization of a flower system through a sequence of flight performed through the space of the vegetative architecture of a plant.

In both cases selected for this arid city in Mexico, peri-urban gardens represent an alternative to maintain the presence of pollinators, a decrease in heat islands and an increase in local biodiversity.

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Photo album

By Héctor T. Mojica