

## Current knowledge of the hydrophytes of Lake Texcoco, a brackish wetland in central Mexico

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### INTRODUCTION & AIM

The floristic studies on the hydrophilous flora of the remnants of Lake Texcoco, State of Mexico (Fig. 1) are scarce or incomplete. The lake's saline waters have created a unique habitat in central Mexico, allowing certain plant species to thrive<sup>1,2</sup>. Lake Texcoco faces significant environmental challenges today, bringing it close to an ecological collapse<sup>3</sup>. However, due to its environmental and social value, it has been declared a Protected Natural Area<sup>4</sup>.

This study aims to compile a list of aquatic plants that inhabit the lake system based on a thorough bibliographic review, providing a reference for future research.

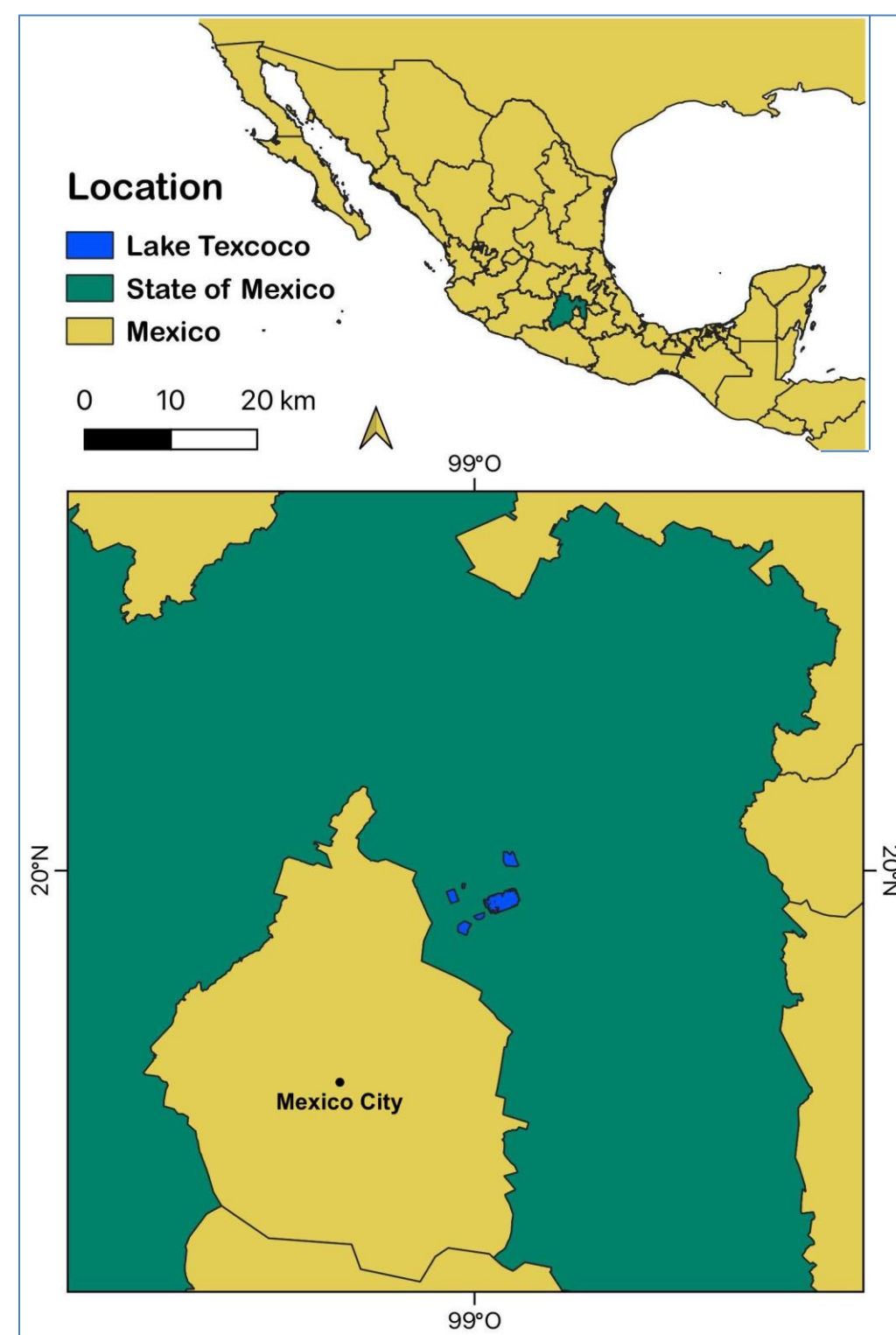


Figure 1. Location of the Lake of Texcoco.

### METHODS

A comprehensive review of the available literature on Lake Texcoco from 1957 to 2022 was conducted. Studies documenting strictly aquatic, subaquatic, and salinity-tolerant plant species were selected and categorized based on their salinity tolerance (halophytes, freshwater species, and salt-tolerant plants). The collected data were analyzed to compile a detailed floristic list and the ecological status of each species (native, introduced and invasive).



Figure 3. *Distichlis spicata* (a–c) and *Suaeda edulis* (d–f), the two representative halophytes from Lake Texcoco. (a) a *D. spicata* grassland; (b) a seedling of *D. spicata* growing on a tequesquite substrate; (c) an exploratory stolon illustrating its vegetative spread. (d) *Suaeda edulis* growing on a floodplain; (e) an individual of *S. edulis* on a brackish floodplain; (f) a close-up of the succulent leaves of *S. edulis* showing its water storage capabilities.

### RESULTS & DISCUSSION

The final list consists of 97 species of vascular plants belonging to 34 families (Table 1). Among these, 40 are strictly hydrophytic, 24 are subaquatic, and 33 are salinity tolerant. Seventy-three species are native, eight of which are endemic to Mexico. Ten introduced species and six showing invasive potential were also recorded (Fig. 2).

Family	Number of species	Family	Number of species	Family	Number of species
Cyperaceae Juss.	14	Plantaginaceae Juss.	2	Brassicaceae Burnett	1
Poaceae Barnhart	13	Salicaceae Mirb.	2	Caryophyllaceae Juss.	1
Asteraceae Bercht. & J.Presl	8	Solanaceae Juss.	2	Ceratothylacaceae Gray.	1
Juncaceae Juss.	7	Salviniaceae Martinov	1	Fabaceae Lindl.	1
Amaranthaceae Jus.	7	Cupressaceae Gray	1	Haloragaceae R.Br.	1
Polygonaceae Juss.	6	Alismataceae Vent.	1	Lythraceae J.St.-Hil.	1
Araceae Juss.	4	Pontederiaceae Kunth	1	Nymphaeaceae Salisb.	1
Ranunculaceae Juss.	4	Ruppiaceae Horan.	1	Phrymaceae Schauer.	1
Aizoaceae Martinov	3	Typhaceae Juss.	1	Portulacaceae Juss.	1
Potamogetonaceae Bercht. & J.Presl	2	Apiaceae Lindl.	1	Urticaceae Juss.	1
Araliaceae Juss.	2	Boraginaceae Juss.	1	Verbenaceae J.St.-Hil.	1
Onagraceae Juss.	2				

Table 1. Floristic list of aquatic, subaquatic and tolerant plants of lake Texcoco, Mexico.

In Lake Texcoco, different soil types and salinity levels vary both spatially and throughout the year and even in cycles of several years. In sites with higher concentrations of salts, only halophyte species can complete their life cycles<sup>5</sup> (Fig. 3).

The presence of introduced species in Lake Texcoco represents a biodiversity problem and is expressed in the water quality, light, nutrients, and dissolved oxygen availability, which limits the permanence of populations of native species<sup>6</sup>.

The number of native and endemic species (82 spp.) is five times greater than the exotic (16 spp.). This fact responds to the brackish condition and the flooding and drought dynamics of the lake, which limits colonization and establishment of non-native species<sup>7</sup>.

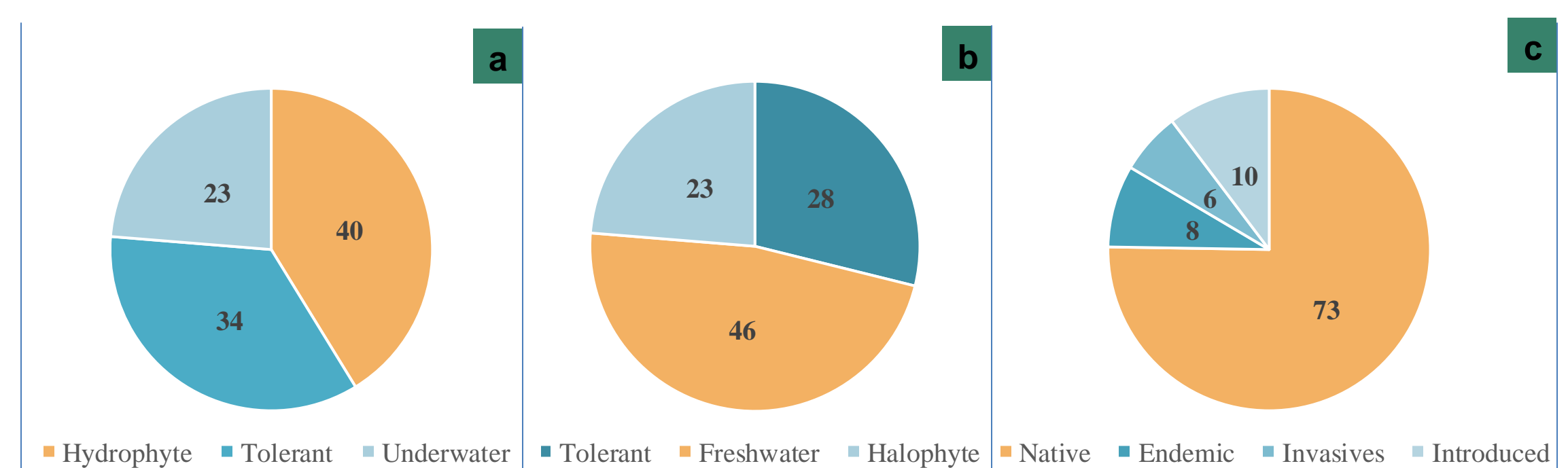


Figure 2. Vascular plants of Lake Texcoco are (a) tolerance to water; (b) tolerant of brackish habitat; and (c) ecological status.

### CONCLUSION

Lake Texcoco is an endangered habitat for aquatic flora in the Basin of Mexico. The high richness of hydrophytic, underwater, and tolerant plant species found in this area can be protected by generating strategies for the specific management and conservation of this salty lake.

### ACKNOWLEDGEMENT & REFERENCES

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