EX SITU STUDIES ON FIVE THREATENED SPECIES IN THE YUCATAN PENINSULA, MEXICO

Roger Orellana,
Nancy Ayora and
Carlos López.
Centro de Investigación Científica de Yucatán.

The Regional Botanic Garden of the "Centro de Investigación Científica de Yucatán" was created at the beginning of 1983. It is situated in the research center campus, in the northern part of Mérida in the state of Yucatán and was established through funding from the National Council of Science and Technology (Mexico).

The main objectives of this tropical Botanic Garden are the diffusion of knowledge about the flora and vegetation of the region, as well as research on some important native plants and ones of economic importance.

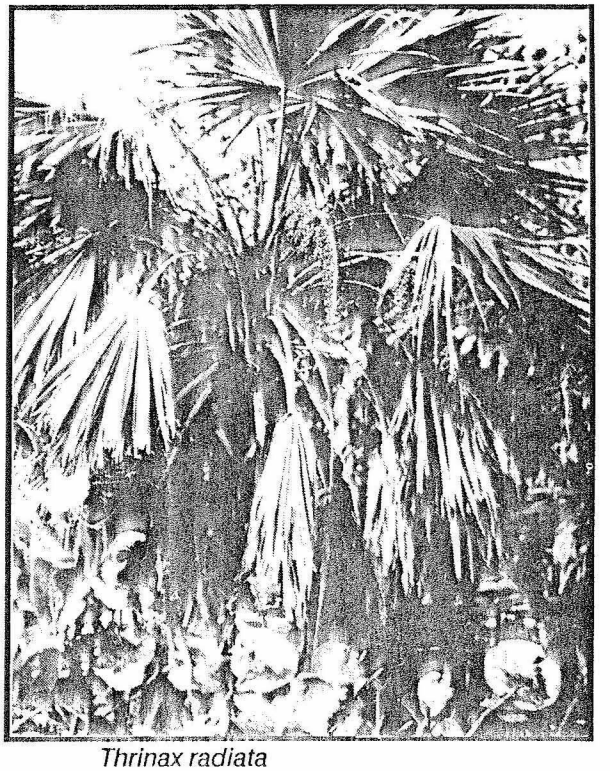
The garden is about 2.5 ha in extent and divided into five sections: 1. Arboretum; 2. Area for special collections (Agavaceae, Cactaceae, Orchid greenhouse, Palmetum, and collections of sand dune scrub flora, aquatics, etc.); 3. Ornamental section; 4. Experimental area; 5. Restricted access reserve area

The work described here was done at the experiment section of the garden from 1983 to 1986. It is presented as an example of research being carried out on some of the threatened plant species in our country.

Beaucarnea pliabilis

Mammilaria gaumeri

Pseudophoenix sargentii



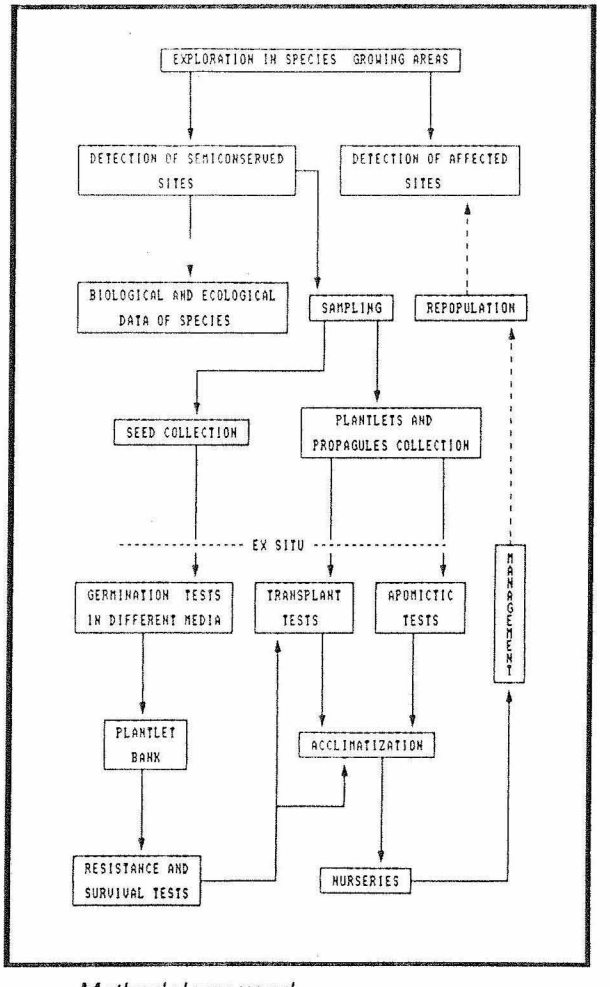
Thrinax radiata

The Mexican tropics have a vast richness of plant species. However, this region is now suffering the serious impact of modern human activities, causing the disappearance of many plant and animal species. The Yucatán Peninsula (see map) is part of this area, having an original flora of about 2,000 species; the most sensitive of which have been principally affected by the following:

(1) recent colonization of natural forests and their clearance; (2) expansion of cattle farming activities; (3) change in traditional agriculture use of the land (i.e. the slash and burn system); (4) pollution.

With these factors in mind we began the study of regionally threatened species, initially with five: *Beaucarnea pliabilis*, (Agavaceae), *Mammilaria gaumeri* (Cactaceae), *Coccothrinax readii, Pseudophoenix sargentii* and *Thrinax radiata* (Palmae). All of them are typical of coastal vegetation in the Yucatán region (sand dunes scrub and thorn forest).

The main goal of this work was to find propagation methods, *ex situ*, appropriately and economically, to obtain enough propagules to eventually re-populate affected areas within an integral conservation program. The methodology used in the research is illustrated in figure 1.

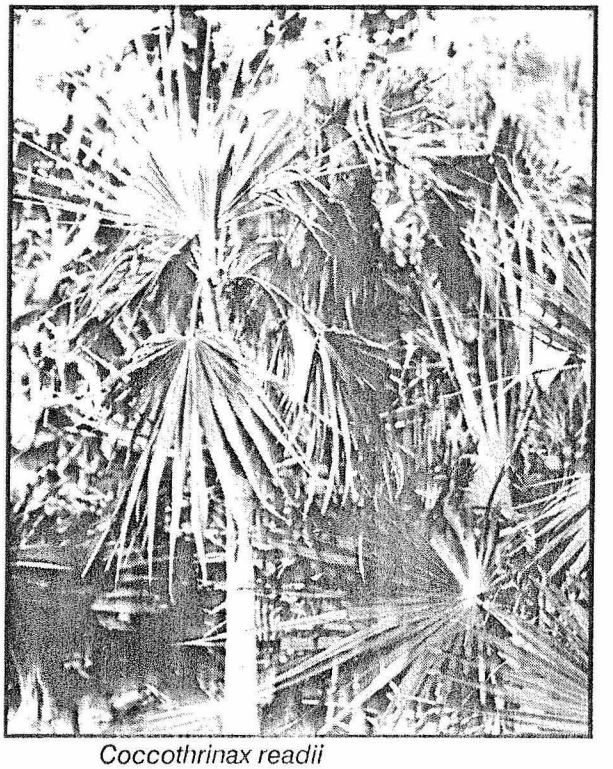


Methodology used

Both conserved and affected areas were located and biological and ecological data of the taxa were recorded there. Seed and propagules samples of the principal ecotypes, representative of the preserved areas, were taken at random.

Germination tests were made in the laboratory, from which resulted a large number of plantlets that were acclimatized and transferred to nurseries. The survivors now constitute a genetic collection in these nurseries, which now contains a large enough number of individuals to form the basis for re-population of some of the slashed or burned areas in the Río Lagartos Flora and Fauna Refuge, recently set aside as a protected area in the north-eastern part of the State of Yucatán. The reintroduction work began in 1987 with plantlets of *Beaucarnea pliabilis*.

Table 1 shows the taxa diagnoses of the research. As shown, *B. pliabilis* and *T. radiata* have the best germination results and survive well on being transplanted from the laboratory to the nurseries; *B. pliabilis* is also easily propagated from cuttings. Although *M. gaumeri* has the highest germination percentage, the young plantlets have difficulty getting established since 80% of them died. *P. sargentii* showed less germination percentage values, but the plantlets are strong after transplantation.



Coccothrinax readii

The study has permitted a view of how it is possible to obtain a genetic bank of plants from the tropics, at low cost, with the condition that an adequate quantitiy of seeds have been collected in the natural environment of the threatened taxa. In the future we are proposing to continue these kind of studies with other species that are, unfortunately, part of a long list of endangered species in the Yucatán Peninsula.

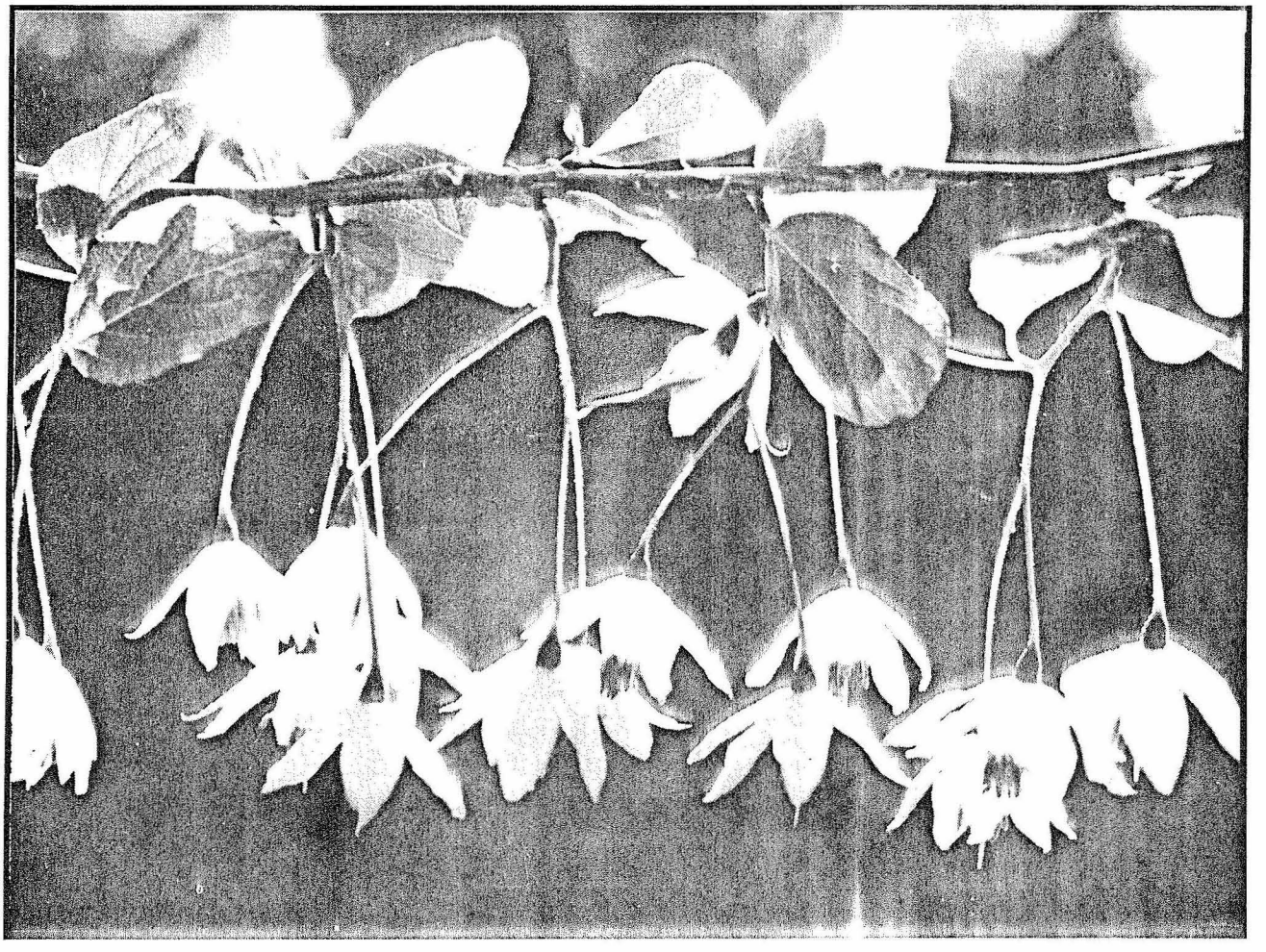
The authors acknowledge Mrs Diane A. Gwynne for her help in translating this paper.

Species	Habitat	Distribution	Causes of Threat	Propagation Methods and Results Transplant Survival (%)		
				seeds	field	lab.
Beaucarnea pliabilis	Thorn forest deciduous & semideciduous dry forest	A narrow band between Celestun and the of Tulum	Extensive cattle raising	80-90	100	100
Mammilaria gaumeri	Thorn forest coastal sand dunes scrub	N & E parts of the Peninsula	Summer seasonal buildings, increasing the number and size of villages and establishment of coconut crops	10-100	70-100	20
Pseudophoenix sargentii	Deciduous dry forest and coastal sand dune scrub	From the N-W to the E part Peninsula	Extensive cattle raising	5	100	100
Thrinax radiata	Deciduous dry forest and coastal sand dune scrub	From Celestun along the coast to Ascension Bay	Summer seasonal buildings, increasing the number and size of villages and establishment of coconut crops	87	13	87
Coccothrinax readii	Deciduous dry forest and coastal sand dune scrub	From Celestun along the coast to Ascension Bay	Summer seasonal buildings, increasing the number and size of villages and establishment of coconut crops	31	13	64

Table 1 : Threatened species propogated in the Yucatán Peninsula

BOTANIC GARDENS CONSERVATION NEWS

MAGAZINE OF THE IUCN BOTANIC GARDENS CONSERVATION SECRETARIAT
VOLUME 1 NUMBER 2 JUNE 1988



- Growing Rare Plants of the Yucatán, Mexico
- Profile of Nanjing Botanical Garden, China
- The survival of Ruizia cordata from Réunion
- Using the ITF for Botanic Garden Records
- Garden in the Woods, Massachusetts