

A STUDY OF REASONS FOR THE ENDANGERED STATUS OF *POTANINIA MONGOLICA* IN ARID DESERT GRASSLANDS OF CHINA

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ABSTRACT

Potania mongolica is an endangered plant species of arid desert grasslands of China. Reasons for its decline and opportunities for its conservation were investigated by studying the plant's distribution, biological characteristics, plant community associations and stress resistance.

KEYWORDS

Desert grassland, *Potania mongolica*, endangered species

INTRODUCTION

The shrub *Potania mongolica* Maxim is a unique species of the *Potania* genus, Rosaceae family, and is distributed in the Hexi Corridor of Gansu Province, mid-western Inner Mongolia and southern part of Mongolia. It is a dominant species in arid desert grasslands and its foliage is palatable to camel, cattle, sheep, donkeys and hares. The distribution of *Potania mongolica* is decreasing and, in order to protect it, the Chinese Government has classified it as a Secondary Protected Plant. The purpose of this study is to determine the reason why *Potania mongolica* has become endangered by studying the plant's distribution, biological characteristics, plant community associations and stress resistance.

METHODS

Potania mongolica was planted at a protected site in the Minqin Desert Botanical Garden, Gansu Province, during 1988. Several physiological parameters related to stress resistance were measured over several years. The natural conditions under which this species grows were also investigated, including plant community types. Comparisons were made of the characteristics of *Potania mongolica* and the shrub *Caryopteris mongolica*.

RESULTS AND DISCUSSION

Potania mongolica occurs in three plant community types:

- (1) *Potania mongolica* + *Nitraria sphaerocarpa* community, among which *Potania mongolica* makes up 87.6%.
- (2) *Potania mongolica* + *Nitraria sphaerocarpa* + *Allium mongolicum* community, among which *Potania mongolica* accounts for 73.7%.
- (3) *Salsola passerina* + *Anabasis brerifolia* + *Potania mongolica* community, where *Potania mongolica* makes up 2.6%.

Measurements of physiological parameters related to stress resistance in green tissue of *Potania mongolica* and *Caryopteris mongolica* revealed differences between the species (Table 1)

The endangerment of *Potania mongolica* is associated with its slow growth, low seed production, and its very small seeds of low viability. These characteristics contribute to poor natural regeneration. Adverse environmental conditions make *Potania mongolica* seed production difficult. Fire wood collection destroys *Potania mongolica* directly and overgrazing also contributes to the species' endangerment.

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Table 1

Physiological parameters related to stress resistance in green tissue of *Potania mongolica* and *Caryopteris mongolica*

Species	Total water (%)	Free water (%)	Bound water (%)	f/b	Water saturation deficit (%)	Threshold water saturation deficit (%)	Water potential (bar)
<i>Potania mongolica</i>	46.9	30.2	16.8	0.55	97.7	89.7	-19.1
<i>Caryopteris mongolica</i>	69.6	47.0	22.6	0.48	13.6	44.6	-12.5
Relative value	-24.6	-16.8	-5.8		84.1	45.1	-6.6

