

# Ecogeographic study and conservation status of the endemic *Oncocyclus Irises* (Iridaceae) of Lebanon

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## Objectives

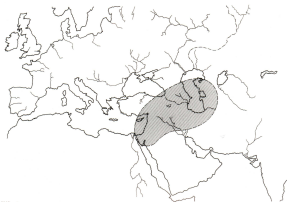
The present project aims at updating the distribution of endemic *Oncocyclus irises* of Lebanon, describing their habitat and associated flora in order to develop appropriate conservation strategies

## *Irises* sect. *Oncocyclus* (Siemss.) Baker

*Oncocyclus irises* are xerophytic species occurring from central Turkey to the Caucasus, south to the Sinai peninsular and east to the Kopet Dag mountains in north eastern Iran.

Botanically, they are defined as rhizomatous bearded irises with arillated seeds and only one flower per stem.

Very little is known about the ecology of this section



## Distribution of *Oncocyclus Irises* (Rix, 1997)

## Update of the current distribution

The historical distribution of the populations was determined based on literature, passport data associated to herbarium specimens as well as contacts with naturalists. These locations were checked in the field during the springs 2002 and 2003.



Source: Geneva herbarium

## Lebanese *Oncocyclus Irises*

*Oncocyclus irises* in Lebanon are represented by four endemic taxa distributed along the Mount Lebanon mountain chain between 1300 m and 2000 m

They are subject to many threats linked to anthropogenic activities: urbanization (mainly due to tourism development), quarrying and grazing.

Taxon	IUCN status
<i>I. cedretii</i> Dinsmore ex Chaudary	Endangered
<i>I. sofarana</i> Foster	Endangered
<i>I. sofarana</i> subsp. <i>kesruwana</i> Dinsmore ex Chaudary	No data
<i>I. westii</i> Dinsmore	Extinct

## IUCN status of Lebanese endemic *Oncocyclus*

## Habitat characterization

The habitats of the six remaining populations have been described. Parameters such as geographical position, slope, exposure and soil type have been recorded for each « sub-site » (defined as an homogenous area based on vegetation and soil) for all populations.



## Habitat preferences allow good drainage:

- A south / south-west exposure
- Rocky slopes (up to 45°)
- Terra rossa soil on a karstic substrate

## Identified pressures on populations habitat

Urbanization (occurrence on all sites) causes habitat loss

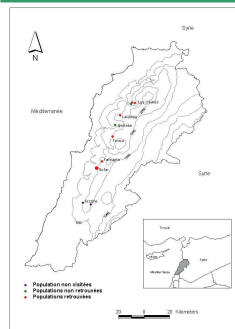
Grazing (occurrence on all sites) has an impact on the reproductive success of the plant as the fruit (capsule) is being eaten at the milking stage

Agriculture (33% occurrence) causes habitat loss even if a shallow ploughing is applied

Quarrying (17% occurrence) causes habitat loss

Ecogeographic survey :  
Historical locations and status after search in the field :  
PC: Presence confirmed  
NF: Not found  
NV: Not visited

Four out of ten visited populations have disappeared mainly due to a loss of habitat caused by urbanization



## Flora characterization

The flora associated to the iris populations was collected during the spring 2002. A total of 161 species in flower were recorded during the collection period.

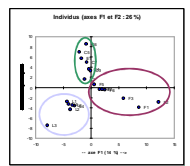


*Geranium libanoticum* a Lebanese endemic species



*Prunus prunastra* a species endemic to rocky habitats

14% of the collected flora are endemic species, which gives a high conservatory value to the sites



Vegetation similarity groupings are based on the altitude, which determines the vegetation stages (transitions at 1500 m and 1800 m)

## Population demography

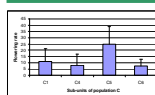
Population demography was followed in three populations representing three different taxa. Parameters such as density, proportion of different life stages, flowering rate, fruit and seed set were recorded in 2002 and 2003 using 1 m x 1 m quadrats placed along 20 m permanent transects.

	Post (1933)	Dinsmore (1934)	Moutouffle (1986)	Tohmé & Tohmé (2001)	Personal communications	Herbarium data	Status 2003	Threats / causes of loss
<b><i>Iris cedretii</i> Dinsm. ex Chaudary</b>								
Towards the Cedars			X	X	X	X	PC	Urbanization, grazing
Between Ehdén and the Cedars			X				PC	Agriculture
Towards Hasroun			X				NF	Agriculture
<b><i>Iris sofarana</i> subsp. <i>sofarana</i> Foster</b>								
Towards Saïar	X		X				PC	Urbanization
Dahr el Baïdar			X	X	X	X	NF	Urbanization
Zahlé / Hazéra			X				NF	Urbanization, grazing
Karîaba	X						NF	Urbanization
Falougha				X		X	PC	Urbanization, grazing, quarrying, insects
<b><i>Iris sofarana</i> subsp. <i>kesruwana</i> Dinsm.</b>								
Sab' el Aawal / Farava	X	X	X	X	X	X	PC	Urbanization, grazing, agriculture
Laïlouq			X	X			PC	Urbanization, grazing, quarrying
<b><i>Iris westii</i> Dinsm.</b>								
Tezzine / Lawmat	X	X	X	X	X	X	NV	
Machgarat / Aytami			X				NV	

## References

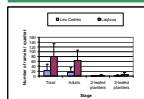
Dinsmore J.E. 1934. *Plantae Postiana et Dinsmoresanae*, vol. 2. Beirut: American University Press.  
Moutouffle P. 1985. *Nouvelle flore du Liban et de la Syrie*. Tome III. Beyrouth: Imprimerie catholique.  
Post G. 1933. *Flora of Syria, Palestine and Sinai*. Vol II Beirut: American University Press.  
Tohmé G., Tohmé H. 2001. *Two thousand and one flowers of Lebanon*. Beirut: Lebanese University Press.

## Within population variation



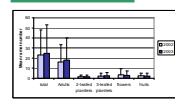
Mean flowering rate/quadrat (1 m<sup>2</sup>) over different sub-units of an *I. cedretii* population

## Between populations variation



Comparison between 2 iris populations of the *sofarana* group: mean number of ramets / 1 m<sup>2</sup> quadrat at different life stages : total ramet number, number of two-leafed seedlings, number of three-leafed seedlings, number of mature plants.

## Temporal variation



Comparison between two consecutive years on an *Iris cedretii* population of the mean ramet number / 1 m<sup>2</sup> quadrat at different life stages (total ramet number, number of two-leafed seedlings, number of three-leafed seedlings, number of mature plants, number of flowering plants and number of fruiting plants).