

# Cytotaxonomical contributions on the Flora of Crete : II

Autor(en): **Phitos, Dimitrios / Kamari, Georgia**

Objekttyp: **Article**

Zeitschrift: **Candollea : journal international de botanique systématique = international journal of systematic botany**

Band (Jahr): **39 (1984)**

Heft 2

PDF erstellt am: **31.05.2024**

Persistenter Link: <https://doi.org/10.5169/seals-879922>

## Nutzungsbedingungen

Die ETH-Bibliothek ist Anbieterin der digitalisierten Zeitschriften. Sie besitzt keine Urheberrechte an den Inhalten der Zeitschriften. Die Rechte liegen in der Regel bei den Herausgebern.

Die auf der Plattform e-periodica veröffentlichten Dokumente stehen für nicht-kommerzielle Zwecke in Lehre und Forschung sowie für die private Nutzung frei zur Verfügung. Einzelne Dateien oder Ausdrucke aus diesem Angebot können zusammen mit diesen Nutzungsbedingungen und den korrekten Herkunftsbezeichnungen weitergegeben werden.

Das Veröffentlichen von Bildern in Print- und Online-Publikationen ist nur mit vorheriger Genehmigung der Rechteinhaber erlaubt. Die systematische Speicherung von Teilen des elektronischen Angebots auf anderen Servern bedarf ebenfalls des schriftlichen Einverständnisses der Rechteinhaber.

## Haftungsausschluss

Alle Angaben erfolgen ohne Gewähr für Vollständigkeit oder Richtigkeit. Es wird keine Haftung übernommen für Schäden durch die Verwendung von Informationen aus diesem Online-Angebot oder durch das Fehlen von Informationen. Dies gilt auch für Inhalte Dritter, die über dieses Angebot zugänglich sind.

# Cytotaxonomical contributions on the Flora of Crete. II

DIMITRIOS PHITOS  
&  
GEORGIA KAMARI

## RÉSUMÉ

PHITOS, D. & G. KAMARI (1984). Contributions cytotaxonomiques à la flore de Crète. II. *Candollea* 39: 447-451. En anglais, résumé français.

La cytotaxonomie des espèces *Lutzia cretica*, *Verbascum spinosum*, *V. arcturus*, *Campanula laciniata*, *Centaurea redempta*, *C. idaea*, *Staelhelina petiolata* et *Allium tardans*, endémiques de la Crète ou de l'aire Cardegeenne plus large est étudiée. Les nombres chromosomiques de *Verbascum arcturus*, *Centaurea idaea* et *Staelhelina petiolata*, sont fournis pour la première fois et les nombres chromosomiques déjà constatés pour les cinq autres espèces sont vérifiés.

## ABSTRACT

PHITOS, D. & G. KAMARI (1984). Cytotaxonomical contributions on the Flora of Crete. II. *Candollea* 39: 447-451. In English, French abstract.

The species *Lutzia cretica*, *Verbascum spinosum*, *V. arcturus*, *Campanula laciniata*, *Centaurea redempta*, *C. idaea*, *Staelhelina petiolata* and *Allium tardans*, endemic of Crete or of the larger Cardaegean area are studied cytotaxonomically. Chromosome numbers for *Verbascum arcturus*, *Centaurea idaea* and *Staelhelina petiolata*, are given for the first time; the already reported chromosome numbers for the remaining five species are verified.

This contribution to the cytotaxonomy of the flora of Crete is the second by the same authors (PHITOS & KAMARI, 1974).

The material examined comes not only from Crete but also from the island of Karpathos and belongs to endemics of the larger South Aegean area, i.e. the region so properly named Cardaegean by GREUTER (1971).

All the plants used for this study were grown in the experimental garden of the Botanical Institute, Patras University, from seeds or bulbs collected from natural populations. The method used for the chromosome study has been described in the previous paper of this series (PHITOS & KAMARI, 1974); only minor modifications have been occasionally adopted.

### 1. *Lutzia cretica* (L.) Greuter & Burdet ( $2n = 16 + 2B$ )

This species, known also as *Alyssoides cretica*, is a distinctive endemic of Crete, Karpathos and other islands of the Cardaegean area. It is a chasmophyte on calcareous cliffs and shows a considerable altitudinal amplitude, occurring along the coast as well as at higher altitudes.

The chromosome number of *Lutzia cretica* is already known ( $2n = 16$ ), being reported (as *Alyssoides cretica*) by CONTANDRIOPOULOS (1969) from plants of Crete and PERSSON (1971) from plants of Astypalea. We examined plants from Karpathos and found also  $2n = 16$ . Two additional B chromosomes were invariably present (Fig. 1a).

### 2. *Verbascum spinosum* L. ( $2n = 26$ )

It is a most characteristic species, endemic of Crete and restricted to Levka Ori. Within the genus *Verbascum* it is taxonomically isolated, placed, alone to a separate subsectio (subsect. *Spinosa*). Its chromosome number  $2n = 26$ , already determined by MONTMOLLIN (1982) is verified (Fig. 1b).



Fig. 1. — Mitotic metaphase plates of: a, *Lutzia cretica*; b, *Verbascum spinosum*; c, *Centaurea redempta*; , *Centaurea idaea*; e, *Staelolina petiolata*.

### 3. *Verbascum arcturus* L. ( $2n = 46$ )

It is a chasmophyte, also endemic of Crete, occurring in most parts of the island and at altitudes of 200-1000 m. Its chromosome number,  $2n = 46$ , is given here for the first time. The length of the chromosomes varies from 0.2 to 0.6  $\mu\text{m}$ .

### 4. *Campanula laciniata* L. ( $2n = 34$ )

This beautiful and taxonomically most interesting species of *Campanula* is an endemic of the South Aegean area.

When its chromosome number was determined for the first time (PHITOS, 1964) it was known from Karpathos, Folegandros, Astypalea and Kardiotissa islands. In the meantime it was also found in Crete (GREUTER, 1973). The specimens examined now come from Karpathos and have the same chromosome number  $2n = 34$  and a similar caryotype as the ones studied previously from Folegandros (PHITOS, 1964).

The taxonomic and biogeographic position of this species have been evaluated not only in the above paper, but also by GREUTER & RECHINGER (1967), RUNEMARK (1969) and GREUTER (1973).

### 5. *Centaurea redempta* Heldr. ( $2n = 20$ )

*C. redempta* belongs to the rich in endemic and vicarious species sectio *Acrocentron*. It is endemic to Western Crete, where it occurs at an altitude of 400-1200 m. The chromosome number  $2n = 20$ , already given by RUNEMARK (1967), is verified here (Fig. 1c). *C. redempta* is closely related to *C. cytherea*, an endemic of the island of Kythira, which also possesses the same chromosome number ( $2n = 20$ ) found in plants from the "locus classicus".

### 6. *Centaurea idaea* Boiss. & Heldr. ( $2n = 16$ )

It is an endemic of Crete distributed in almost every part of the island. It occurs mainly in the mountainous area but it is also found in coastal sites. In addition to the morphological similarities with *C. solstitialis*, the same chromosome number ( $2n = 16$ ), given now for the first time for *C. idaea* (Fig. 1d), underlines the close phylogenetic relation of these two species.

### 7. *Staehelina petiolata* Hilliard & Burtt ( $2n = 34$ )

The genus *Staehelina* is represented in Crete by two chasmophytic species, i.e. *S. petiolata* and *S. fruticosa*. The former is an exclusive endemic of the island, whereas the latter occurs in the larger area of Crete-Karpathos-Kasos-Saria.

Among the five European species of the genus only the chromosome number ( $2n = 30$ ) of *S. dubia* is known, at least to our knowledge. The *S. petiolata* plants examined by us cytologically, were collected from the Theriso area (Kidhonia district) and showed  $2n = 34$  (Fig. 1e), which is a new basic chromosome number ( $x = 17$ ) for this genus.

### 8. *Allium tardans* Greuter & Zahar. ( $2n = 16$ )

*Allium tardans* (sectio *Codonoprasum*) has been described from Crete, where it is widespread over almost all the island at an altitude of 400-800 m (see also STEARN, 1978). In addition, it has recently been found in Karpathos (GREUTER & al., 1983).

MICELI & GARBARI (1979), have done a cytological study on plants of this species from Crete and give a chromosome number  $2n = 16$  and their caryotype. Plants from Karpathos were examined by us and found to possess the same chromosome number (Fig. 2).

A caryotypic comparison of the plants from Karpathos and Crete reveals certain differences, a phenomenon not uncommon among populations of the genus *Allium*. Namely, in the caryotypes from Karpathos all chromosomes are metacentric (m) i.e. no submetacentric (sm) chromosomes are observed. In addition, the pair of SAT chromosomes are the smallest, i.e. the 8th, in the caryotypes of plants from Karpathos, whereas it is the 6rd in the plants from Crete.

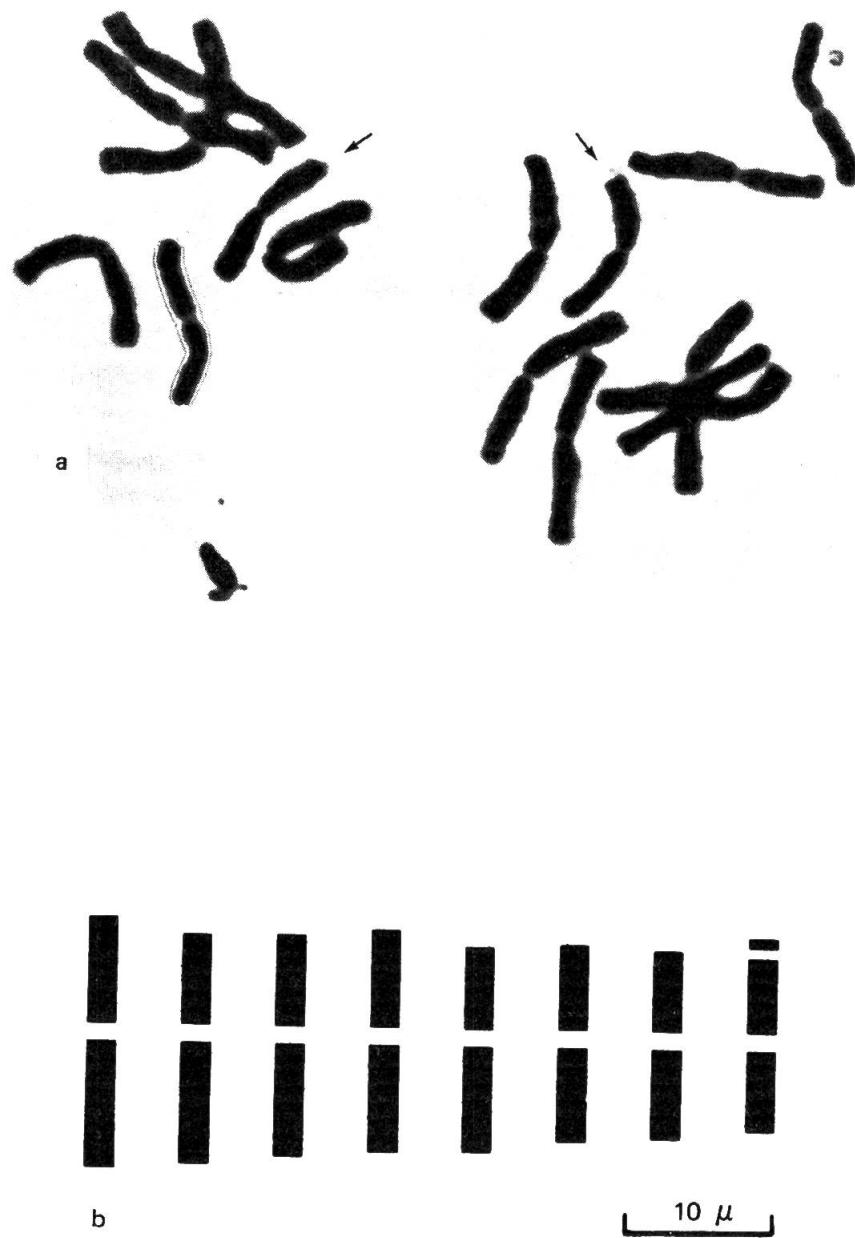


Fig. 2. — Karyotype (a) and idiogram (b) of *Allium tardans* with  $n = 8$  metacentric (m) chromosomes (r-index 1-1.3). The smaller chromosome pair has a small satellite (—).

Taxon	Locality	2n
<i>Lutzia cretica</i> (L.) Greuter & Burdet	KARPATHOS: near Arkasa (leg.: Phitos & Kamari 19229)	16
<i>Verbascum spinosum</i> L.	CRETE: Distr. Kidhonias, Omalos, alt. 1050 m (leg.: Matthäs, 6.10.1983)	26
<i>V. arcturus</i> L.	CRETE: Distr. Kissamos, near Topolia (leg.: Matthäs, 5.10.1983)	46
<i>Campanula laciniata</i> L.	KARPATHOS: near Arkasa (leg.: Phitos & Kamari 19230)	34
<i>Centaurea redempta</i> Heldr.	CRETE: Distr. Hagios Vasilios, Mt. Kryoneritis, alt. 500 m (leg.: Kypriotakis)	20
<i>C. idaea</i> Boiss. & Heldr.	CRETE: Gorge of Samaria, alt. 1120 m (leg.: Matthäs, 6.10.1983)	16
<i>Staehelina petiolata</i> (L.) Hilliard & Burtt	CRETE: Distr. Kidhonias, near Therison (leg.: Matthäs, 9.10.1983)	34
<i>Allium tardans</i> Greuter & Zahar.	KARPATHOS: Mt. Kalilimni, alt. 400 m (leg.: Phitos & Kamari 19118)	16

Table 1. — Chromosome numbers.

## ACKNOWLEDGEMENTS

We express our sincere gratitude to Prof. W. Greuter and Dr. B. Zimmer, who gave us the opportunity to visit Karpathos, where we saw together the biotopes of some of the rarest endemics and collected material used in this study. We also thank Miss U. Matthäs and Mr. Z. Kypriotakis, who kindly offered material from Crete.

## REFERENCES

- CONTANDRIOPoulos, J. (1969). Contribution à l'étude cytotaxinomique des Alyssae Adams de Grèce. *Bull. Soc. Bot. Suisse* 79: 313-334.
- GREUTER, W. (1971). Betrachtungen zur Pflanzengeographie der Südägäis. *Opera Bot.* 30: 49-64.
- GREUTER, W. (1973). Additions to the flora of Crete, 1938-1972. *Ann. Mus. Goulandris* 1: 15-83.
- GREUTER, W. & K. H. RECHINGER (1967). Flora der Insel Kythera, gleichzeitig Beginn einer nomenklatorischen Überprüfung der griechischen Gefäßpflanzenarten. *Boissiera* 13.
- GREUTER, W., R. PLEGER & TH. RAUS (1983). The vascular flora of the Karpathos island group (Dodecanesos, Greece). A preliminary checklist. *Willdenowia* 13: 43-78.
- MICELI, P. & F. GARBARI (1979). Chromosomi et anatomia fogliare die quattro Allium diploidi die Grecia. *Atti Soc. Tosc. Sci. Nat. Mem. ser. B*, 86: 37-51.
- MONTMOLLIN, B. (1982). Etude cytotaxonomique de la flore endémique de la Crète. I. Note préliminaire. *Bull. Neuchat. Sci. Nat.* 105: 65-77.
- PERSSON, J. (1971). Studies in the Aegean flora XIX. Notes on Alyssum and some other genera of Cruciferae. *Bot. Not.* 124: 399-418.
- PHITOS, D. (1964). Beiträge zur Kenntnis der südägäischen Campanula-Arten. *Ber. Deutsch. Bot. Gesel.* 77: 49-54.
- PHITOS, D. & G. KAMARI (1974). Zytotaxonomische Beiträge zur Flora von Kreta I. *Bot. Not.* 127: 302-308.
- RUNEMARK, H. (1967). Studies in the Aegean Flora XII. Cytologic and Morphologic Investigations in Centaurea. *Bot. Not.* 120: 161-176.
- RUNEMARK, H. (1969). Reproductive Drift, a Neglected Principle in Reproductive Biology. *Bot. Not.* 122: 90-129.

