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FLORA OF THE ISLANDS OF KRAPANJ AND PRVIĆ

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On the basis of literature data and my own floristic research, the classification has been made of 362 vascular plant taxa (species and lower intraspecific taxa) from Krapanj and Prvić (two islands of the Šibenik archipelago). On the island of Krapanj 268 taxa were defined and 272 on the island of Prvić. On both islands, a total of 362 taxa were determined (348 species, 8 subspecies, 3 varieties and 3 forms), among 252 genera and 77 families. Analyses of taxonomy, life forms and floral elements were also carried out.

Key words: the island of Krapanj, the island of Prvić, flora, Croatia

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Na temelju literaturnih podataka i vlastitih florističkih istraživanja uvrđene su 362 vaskularne biljke (vrste i niže svojte) za Krapanj i Prvić (dva otoka u šibenskom arhipelagu). Za Krapanj je utvđeno 268 svojti, a za Prvić 272 svojti. Na oba otoka zabilježene su ukupno 362 svojte (348 vrsta, 8 podvrsta, 3 varijeteta i 3 forme) unutar 252 roda i 77 porodica. Izvršena je taksonomska analiza, analiza životnih oblika i flornih elemenata.

Ključne riječi: otoci Krapanj i Prvić, flora, Hrvatska

INTRODUCTION

The islands of Krapanj (0.36 km^2) and Prvić (2.37 km^2) belong to the Šibenik archipelago (Fig. 1). In 1991, 423 people lived on the island of Krapanj, while 544 people inhabited Prvić (Prvić Luka and Šepurina). The population density of the island of Krapanj is satisfactory due to the proximity of dry land.

The two islands lie in the Dinaric direction, from north-west to south-east.

The island of Krapanj is low, its highest spot being 7 m above sea level. The highest spot of the island of Prvić is 79 m above sea level. Krapanj is built of calcites from senon. Prvić is built of dolomites and calcites, and of dolomites around the harbour area in Prvić Luka (MAMUŽIĆ *et al.*, 1966).

As there are no climatological stations on these islands, climatic data for the whole of the Šibenik region in the period 1981–1994 provided by the Weather Service of the Republic of Croatia were used. According to these, the annual average temperature is 15.4 °C; the absolute minimum temperature reaches –8.6 °C and the absolute maximum temperature 39.2 °C. The annual precipitation is 690.1 mm for the period observed.

There is very little cultivable land on the island of Krapanj, mainly gardens. As for the island of Prvić, there are some vegetable fields and vineyards in the central area and gardens in the settlements.

On the island of Krapanj, Aleppo pine trees dominate, driving out the natural holm oak vegetation. On the island of Prvić, neglected cultures turning into grassland prevail.

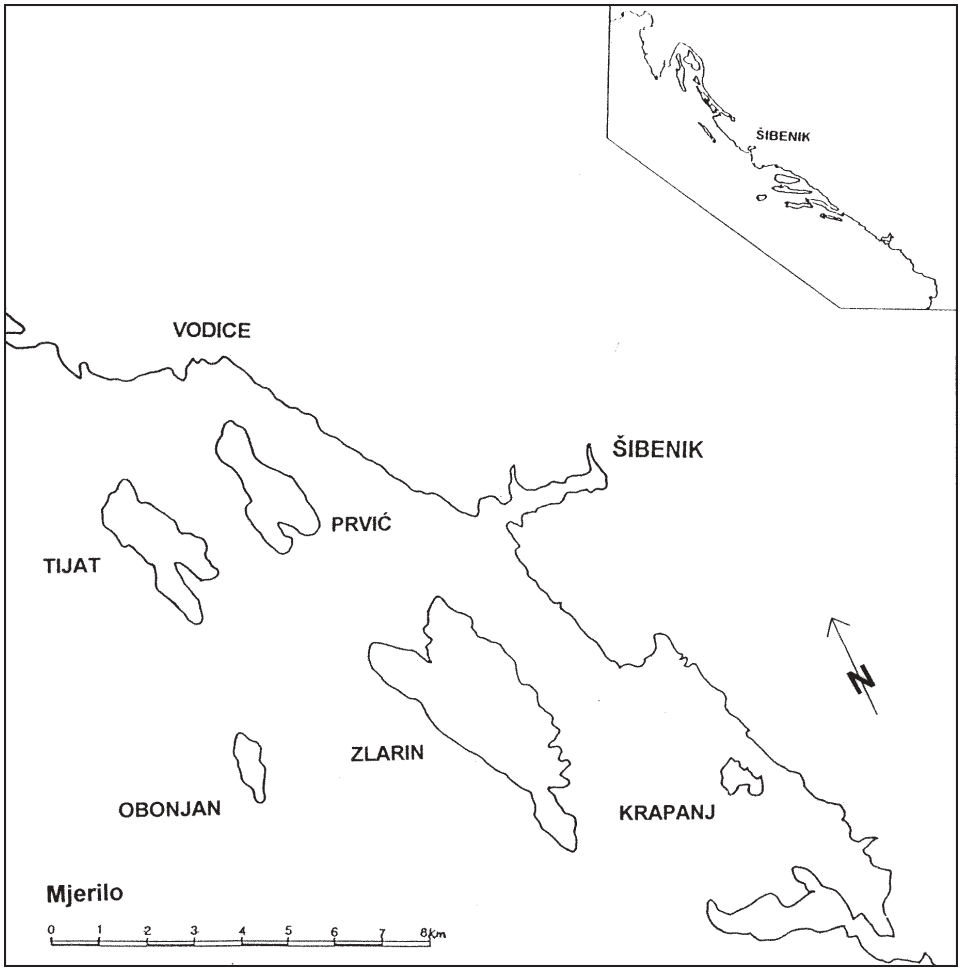

Fig. 1. The geographical position of the islands of Krapanj and Prvić

METHODS

The list of families, genera, species and lower system units is given in alphabetical order and is organised within higher system units.

Nomenclature matches that of PIGNATTI (1982) with the exception of only a few species in which HAYEK (1927–1933), Tutin *et al.* (1964–1980), HORVATIĆ & TRINAJSTIĆ (1967–1981) and TRINAJSTIĆ (1975–1986) are used. The latter are marked with * after the names of the species.

Life forms are interpreted after HORVAT (1949), according to RAUNKIER (1934) and marked by the letters Ch, G, H, P and T preceding the names of the species:

T – *therophyta* Ch – *chamaephyta*
G – *geophyta* P – *phanerophyta*
H – *hemicryptophyta*

Abbreviations for the islands (**K –** Krapanj, **P –** Prvić) are given after the names of the species.

The division of the plants into floral elements and lower categories is done according to HORVATIĆ (1963) and supplemented according to HORVATIĆ *et al.* (1967–1968). Floral element abbreviations within the flora list are given after the names of the islands:

1. MEDITERRANEAN FLORAL ELEMENT
   - A. Circum-Mediterranean plants – CM
   - B. West Mediterranean plants – ZM
   - C. East Mediterranean plants – IM
   - D. Illyrian-Mediterranean plants
     - a) Illyrian South European plants – ILJEU
     - b) Illyrian Adriatic plants:
       1. Illyrian Adriatic endemic plants – ILJAE
       2. Illyrian Apennine plants – ILAP
   - E. Mediterranean Atlantic plants – MA
   - F. European Mediterranean plants – EUM
   - G. Mediterranean Pontic plants – MP

2. ILLYRIAN–BALCANIC FLORAL ELEMENT
   - A. Illyrian–Balcanic endemic plants – IBE

3. SOUTH EUROPEAN FLORAL ELEMENT
   - A. South European Mediterranean plants – JEUM
   - B. South European Pontic plants – JEUP
   - C. South European Atlantic plants – JUEA

4. EUROPEAN FLORAL ELEMENT – EF

5. EURO–ASIATIC FLORAL ELEMENT – EAF

6. CIRCUM–HOLARTIC SPREAD plants – CIRCUMH

7. WIDESPREAD plants – ŠR

8. ANTHROPOCHOROUS – A

The authors are abbreviated as follows in the flora: Vis. – Visiani, P. P. – Pavletić and Pandža.

The habitats are marked with letters (put after the floral element) in the following manner:

a – in holm oak evergreen forest
b – in Aleppo pine forest
c – on rough pasture
d – on rocky ground
f – on cultivated land (fields, gardens, vineyards, flower-gardens)
g – in neglected olive-groves and vineyards
h – in ruderal vegetation
i – beside roads and pathways
k – around old houses and yards
o – on walls
p – in hedges
r – in cracked rocks by the sea
s – in silty spots by the sea
z – in sandy-gravelly spots by the sea

REVIEW OF THE PAST RESEARCH

Small islands of the Croatian littoral region, including Krapanj and Prvić, are floristically very poorly explored. The first floristic data for the island of Krapanj came from VISIANI (1826, 1842–1852) specifying 15 species. In his work »Stirpium dalmaticarum specimen« (1826), Visiani specifies the »*Amarillys lutea*« (=*Sternbergia lutea*). This species is cultivated in Dalmatia (TRINAJSTIĆ, 1983). Visiani records *Pinus sylvestris* L. (1826) but this pine does not grow anywhere in the Dalmatian region (TRINAJSTIĆ, 1983). Accordingly, my floristic research does not confirm this species in the culture of the island of Krapanj.

Visiani records »*Corydalis ochroleuca*« (=*C. acaulis*) for the island of Krapanj. TRINAJSTIĆ (1983) considers it to be *Corydalis acaulis* (Wulfen) Pers. My work confirms *Corydalis acaulis* (Wulfen) Pers., found on the island of Krapanj on graveyard walls.

Diplotaxis erucoides (L.) DC. is registered by PAVLETIĆ & PANDŽA (1994).

So far, 16 species have been registered for the island of Krapanj. As for the island of Prvić, only *Linaria dalmatica* (L.) Miller is recorded (VISIANI, 1826).

RESULTS

Floristic list

POLYPODIOPHYTA

ASPLENIACEAE

H *Asplenium trichomanes* L. – **P –** ŠR; o
H *Ceterach officinarum* DC. – **K, P –** JEUM; k, o

PINOPHYTA

CUPRESSACEAE

P *Cupressus sempervirens* L. – **K, P –** A; b
P *Juniperus macrocarpa* Sibth. et Sm.* – **P –** CM; c
P *J. oxycedrus* L.* – **K, P –** CM; a, c, g
P *J. phoenicea* L. – **P –** CM; c

EPHEDRACEAE

P *Ephedra campylopoda* C. A. Meyer* – **K –** IM; o

PINACEAE

P *Pinus halepensis* Miller – **K, P** (Vis., 1842:200) – CM; b
P *P. sylvestris* L. – **K (**Vis., 1842:199) – A

MAGNOLIOPHYTA – MAGNOLIATAE

AIZOACEAE

Ch *Carpobrotus edulis* (L.) N. E. Br. – **P –** A; z

AMARANTHACEAE

T *Amaranthus albus* L. – **K –** A; i, m
T *A. deflexus* L. – **K –** JEUM; f, h, i
T *A. graecizans* L. – **K** – ŠR; f, h, i, m
T *A. retroflexus* L. – **K, P –** ŠR; f, h, i, m

ANACARDIACEAE

P *Pistacia lentiscus* L. – **K, P –** CM; a, b, c, d, g
P *P. terebinthus* L. – **K, P –** CM; a, c, g

APIACEAE

T *Bupleurum veronense* Turra* – **K –** ILJEU; c
Ch *Crithmum maritimum* L. – **K, P –** MA; r
H *Daucus carota* L. – **K, P –** EAF; g, f
H *Foeniculum vulgare* Miller – **K, P** – CM; f, g, i , p
T *Scandix australis* L. – **P** – CM; i
T *S. pecten-veneris* L. – **K, P –** ŠR; i
T *Tordylium apulum* L. – **K –** CM; g, i
T *T. officinale* L. – **P** – IM; g, i

ARALIACEAE

P *Hedera helix* L. – **P –** EF; o

ARISTOLOCHIACEAE

G *Aristolochia rotunda* L. – **P** – CM; i

ASCLEPIADACEAE

H *Cynanchum adriaticum* Beck* – **P –** ILJAE; c, p

ASTERACEAE

T *Anthemis arvensis* L. – **P –** ŠR; f, i
Ch *Artemisia coerulescens* L. – **K, P –** ILAP; s, z
T *Bidens subalternans* DC.* – **K, P –** A; f, h, i
T *Calendula arvensis* L. – **K, P –** JEUM; f, g
T *Carduus pycnocephalus* L. – **K, P –** CM; i, m
H *Carlina corymbosa* L. – **K, P –** CM; c, g
T *Conyza bonariensis* (L.) Cronq. – **K, P –** JEUM; h, i, m
T *C. canadensis* (L.) Cronq. – **K, P –** A; f, h, i
T *Crupina crupinastrum* (Moris.) Vis. – **P –** JEUM; g
T *Filago vulgaris* Lam.* – **K** – ŠR; c
Ch *Helichrysum italicum* (Roth) G. Don. – **K, P –** CM; c, d, g, r
H *Inula conyza* DC. – **K, P** – JEUP; c
Ch *I. crithmoides* L. – **K, P –** MA; r, s
H *I. viscosa* (L.) Aiton – **K, P –** CM; g, h, r
H *Linosyris vulgaris* Cass. – **P –** JEUP; c
T *Matricaria chamomilla* L. – **K, P –** ŠR; f, i, m
H *Onopordon illyricum* L. – **K –** CM; c
T *Pallenis spinosa* (L.) Cass. – **K, P –** CM; c, g
H *Picnomon acarna* (L.) Cass. – **K –** CM; i
Ch *Senecio cineraria* DC. – **P –** A; m
T *S. vulgaris* L. – **K, P –** ŠR; f, h, i, m
Ch *Tanacetum cinerariifolium* (Trevir.) Schultz-Bip. – **K, P –** ILJAE; c, g

BORAGINACEAE

T *Borago officinalis* L. – **P –** CM; f
T *Buglossoides arvensis* (L.) Johnston – **K, P –** ŠR; g
T *Echium parviflorum* Moench – **P** – CM; i
H *E. vulgare* L. – **K, P –** EF; g, i
T *Heliotropium europaeum* L. – **K, P –** MP; f, h
T *Myosotis ramosissima* Rochel in Schultes – **P –** EAF; i

BRASSICACEAE

Ch *Alyssanthus sinuatus* (Poir.) Trinajstić* – **K, P –** ILJAE; o
T *Alyssum minus* (L.) Rothm. – **K, P –** CM; g, i
H *Arabis hirsuta* (L.) Scop. – **K –** ŠR; c, i
T *Bunias erucago* L. – **K –** JEUM; c
T *Capsella rubella* Reuter – **K, P –** CM; f, i, m

T *Cardamine hirsuta* L. – **K –** ŠR; f
T *Cardaria draba* (L.) Desv. – **K, P –** ŠR; i
T *Clypeola jonthlaspi* L. – **P –** CM; i
T *Diplotaxis erucoides* (L.) DC. – **K –** (P.P., 1994:26) – ZM; h, i
H *D. tenuifolia* (L.) DC. – **K, P** – ŠR; f, h, i
T *Eruca sativa* Miller – **K, P –** JEUM; f, h
Ch *Erysimum cheiri* (L.) Crantz. – **K, P** – A; m
T *Hornungia petraea* (L.) Reichenb. – **P –** ŠR; o
H *Lepidium graminifolium* L. – **K, P** – JEUP; i, m
Ch *Matthiola incana* (L.) R. Br. – **K, P** – A; g, i, m
T *Raphanus landra* Mor. in DC.* – **K, P** – CM; f, i
T *Sisymbrium officinale* (L.) Scop. – **K, P** – ŠR; f, h, i
T *Thlaspi perfoliatum* L. – **K, P** – EAF; f, o

CAMPANULACEAE

T *Campanula erinus* L. – **P –** CM; o
H *C. pyramidalis* L. – **P** – ILJAE; k, o
T *Legousia hybrida* (L.) Delarbre – **K, P** – JUEA; g

CAPRIFOLIACEAE

P *Lonicera implexa* Aiton – **P –** CM; c, g
P *Viburnum tinus* L. – **P –** CM; g, p

CARYOPHYLLACEAE

T *Arenaria leptoclados* (Reichenb.) Guss. – **K** – EAF; o
T *A. serpyllifolia* L. – **K, P –** ŠR; o
T *Cerastium semidecandrum* L. – **P –** JEUP; o
H *Melandrium divaricatum* (Reichenb.) Fenzl.* – **K, P** – JEUM; h, i
H *Petrorhagia saxifraga* (L.) Link – **K –** JEUM; c
T *Polycarpon tetraphyllum* L. – **K –** JEUM; s
T *Sagina maritima* Don. – **K, P** (Vis., 1852:176) – MA; s
H *Silene angustifolia* (Miller) Guss. subsp. *angustifolia** – **K –** JEUM; i
Ch *S. angustifolia* subsp. *reiseri* (K. Maly) Trinajstić* – **P –** JEUM; r
T *S. conica* L. – **P –** EAF; f
T *Spergularia marina* (L.) Griseb. – **K, P** – ŠR; z
T *Stellaria media* (L.) Vill. – **K –** ŠR; h, i, m
T *S. pallida* (Dumort.) Pire – **K, P –** ŠR; f, i, m

CHENOPODIACEAE

Ch *Arthrocnemum glaucum* (Del.) Ung. Sternb. – **K, P** – JEUM; r
T *Atriplex hastata* L.* – **K, P –** ŠR; z
H *Beta maritima* L.* (=*B. vulgaris* L. subsp. *maritima* (L.) Argangeli) – **K, P –** MA; r, z
T *Chenopodium album* L. – **K, P –** ŠR; f, h, i, m
T *Ch. murale* L. – **K, P** – ŠR; h, i, m
T *Ch. vulvaria* L. – **K –** JEUM; f
Ch *Halimione portulacoides* (L.) Aellen – **K, P** – ŠR; s

Ch *Salicornia fruticosa* L.* (=*Sarcocornia fruticosa* (L.) A. J. Schott.) – **K –** JEUM; s
T *Salsola kali* L. – **K** (Vis., 1842:243–244) – ŠR; s
T *S. soda* L. – **K, P** – JEUP; s
T *Suaeda maritima* (L.) Dumort. – **K –** ŠR; s

CICHORIACEAE

G *Aetheorrhiza bulbosa* (L.) Cass. (Vis., as *Crepis bulbosa* Cassin, 1847:118) – **K –** CM .
H *Chondrilla juncea* L. – **K, P** – EAF; g, i
H *Cichorium intybus* L. – **K –** ŠR; g, i
T *Crepis dioscoridis* L. – **K –** IM; i
T *C. rubra* L. – **K –** IM; c
T *C. sancta* (L.) Babcoock – **K, P –** IM; c, i
T *C. zacintha* (L.) Babcoock (=*Zacintha verrucosa* Gaertner) – **K –** CM; i
H *Helminthia echioides* (L.) Gaertner* – **K –** CM; h, i
H *Hieracium pilosella* L.* – **P –** EAF; g
H *H. tommasinii* Reichenb., fil.* – **K, P –** IBE; c, o
H *Lactuca serriola* L. – **K, P** – ŠR; f, i
H *L. viminea* (L.) Presl. – **K –** JEUP; i
G *Leontodon tuberosus* L. – **P –** CM; c
H *Picris hieracioides* L. – **K, P** – EAF; g, i, m
H *Reichardia picroides* (L.) Roth – **K, P –** CM; r
T *Rhagadiolus stellatus* (L.) Willd. – **K –** CM; f
H *Scolymus hispanicus* L. – **P –** CM; i
H *Scorzonera laciniata* L.* (=*Podospermum resedifolium* (L.) DC.) – **K, P** – ŠR; g
H *Sonchus arvensis* L. – **P –** ŠR; i
T *S. asper* (L.) Hill. – **K, P –** CM; f, i
T *S. oleraceus* L. – **K, P –** ŠR; f, h, i
H *Tragopogon porrifolius* L. – **K, P –** CM; c
T *Urospermum picroides* (L.) Schmidt – **K, P –** CM; i

CISTACEAE

P *Cistus incanus* L. – **P –** CM; g
Ch *Fumana ericoides* (Cav.) Gand. – **K, P –** CM; c, g
Ch *F. thymifolia* (L.) Spach – **K –** CM; c,

CONVOLVULACEAE

G *Convolvulus arvensis* L. – **K, P** – ŠR; f, m
H *C. elegantissimus* Miller – **K, P –** IM; m

CRASSULACEAE

Ch *Sedum ochroleucum* Chaix.* (= *S. anopetalum* DC.) – **K, P** – JEUM; o
Ch *S. sexangulare* L. – **K –** EF; o

CUCURBITACEAE

T *Ecballium elaterium* (L.) A. Richard – **K –** CM; h, i

DIPSACACEAE

H *Cephalaria leucantha* (L.) Roemer et Schultes – **P –** CM; i

ERICACEAE

P *Arbutus unedo* L. – **P –** CM; c, p

EUPHORBIACEAE

Ch *Andrachne telephioides* L. – **P –** CM; o
T *Euphorbia chamaesyce* L. – **K –** JEUM; f
Ch *E. fragifera* Jan. – **P –** ILJAE; c, d, i
T *E. helioscopia* L. – **K, P** – ŠR; f, h, m
T *E. peplus* L. – **K, P** – ŠR; f
Ch *E. pinea* L. – **K** (Vis., 1852:226–227) – CM; r
T *E. segetalis* L. – **K, P** – CM; h
T *Mercurialis annua* L. – **K, P –** ŠR; f

FABACEAE

H *Anthyllis rubicunda* Wendel * – **K, P –** ILJAE; c
Ch *Argyrolobium zannonii* (Turra) P. W. Ball – **P –** ZM; c
T *Astragalus sesameus* L. – **K –** CM; i
T *Coronilla cretica* L. – **K, P –** IM; i
P *C. emeroides* Boiss. et Spruner* – **K, P –** IM; a, c, g
T *C. scorpioides* (L.) Koch – **K, P –** CM; g
Ch *Dorycnium hirsutum* (L.) Ser. – **K –** CM; r
H *Hippocrepis comosa* L. – **K –** JEUM; c
T *H. unisiliquosa* L. – **P –** CM; c
T *Lathyrus aphaca* L. – **K, P –** JEUM; c
T *L. cicera* L. – **K, P –** CM; g
H *L. latifolius* L. – **P –** JEUM; g
T *L. ochrus* (L.) DC. – **P –** CM; g
T *L. setifolius* L. – **P –** MP; c
T *L. sphaericus* Retz. – **P** – JEUM; c
T *Lens nigricans* (Bieb.) Godron – **P –** CM; g
Ch *Lotus cytisoides* L. – **K, P –** CM; r
T *L. edulis* L. – **P –** CM; i
T *L. ortnithopodioides* L. – **P –** CM; i
T *Medicago arabica* (L.) Hudson – **P –** ŠR; i
T *M. coronata* (L.) Bartal. – **P –** CM; c
T *M. hispida* Gaertner – **K –** JEUM; c
T *M. litoralis* Rohde – **K, P –** CM; c
T *M. lupulina* L. – **P –** ŠR; c
T *M. minima* (L.) Bartal. – **K, P –** ŠR; g, i
T *M. orbicularis* (L.) Bartal. – **K, P –** CM; g

T *M. truncatula* Gaertner – **P –** CM; g
T *Pisum arvense* L.* – **P –** A; g
H *Psoralea bituminosa* L. – **K, P –** CM; c
T *Scorpiurus muricatus* L. – **P –** CM; c
T *Securigera securidaca* (L.) Deg. et Doerfler – **K, P –** CM; c
P *Spartium junceum* L. – **K, P –** CM; a, c, i
T *Trifolium angustifolium* L. – **K, P –** CM; c
T *T. campestre* Schreb. – **K, P –** ŠR; c
T *T. resupinatum* L. – **K –** MP; c, i
T *T. scabrum* L. – **K, P –** CM; c
T *T. stellatum* L. – **K, P –** CM; c
T *Trigonella corniculata* (L.) L. – **K, P –** CM; c, g
T *T. monspeliaca* L. – **K, P –** MP; g
H *Vicia cracca* L. – **K –** EAF; c, g
H *V. hybrida* L. – **K, P –** CM; g
T *V. narbonensis* L. – **K, P** – CM; c, g
T *V. peregrina* L. – **P –** JEUM; g
T *V. sativa* L. subsp. *sativa* – **K, P –** ŠR; g
T *V. sativa* L. subsp. *nigra* (L.) Ehrh.* – **P –** ŠR; g

FAGACEAE

P *Quercus ilex* L. – **K, P –** CM; a, b

FUMARIACEAE

H *Corydalis acaulis* (Wulfen) Pers. – **K –** (Vis., as *Corydalis ochroleuca* 1852:97) – ILJAE; k
T *Fumaria officinalis* L. – **K, P –** ŠR; f, i
T *F. parviflora* Lam. – **K, P –** JEUM; f, i

GENTIANACEAE

T *Centaurium erythraea* Rafin – **K –** ŠR; c, g

GERANIACEAE

T *Erodium ciconium* (L.) L. Her. – **K –** MP; i, m
T *E. cicutarium* (L.) L. Her. – **P –** ŠR; i, m
T *E. malacoides* (L.) L. Her. – **K, P –** CM; c, i
T *Geranium molle* L. – **K, P –** ŠR; g
T *G. purpureum* Vill. – **K, P –** JEUM ; o
T *G. rotundifolium* L. – **K, P –** EAF; o

HYPERICACEAE

H *Hypericum veronense* Schrank* (= *H. perforatum* L. subsp. *veronense* (Schrank) Frohlich) – **K, P –** JEUM; c, g

LAMIACEAE

T *Ajuga chamaepitys* (L.) Schreb. – **P –** CM; g
Ch *Calamintha nepeta* (L.) Savi – **P –** JEUP; c, g, i, p
T *Lamium amplexicaule* L. – **K, P –** EAF; f

Ch *Micromeria juliana* (L.) Benham. – **P –** CM; c
Ch *Origanum heracleoticum* L. – **P** – IM; i
Ch *Salvia officinalis* L. – **K, P –** ILJAE; c, d
H *S. sclarea* L. – **P –** JEUM; i
H *S. verbenaca* L. – **K, P –** MA; c
Ch *Satureja montana* L. – **P –** ILJAE; c, d, i
Ch *Teucrium chamaedrys* L. – **P –** JEUP; a
Ch *T. flavum* L. – **K** – CM; a, b
Ch *T. polium* L. – **K, P –** MP; c, d

LAURACEAE

P *Laurus nobilis* L. – **P –** CM; c, g

LINACEAE

H *Linum bienne* Miller – **P –** MA; g, i
T *L. strictum* L. – **P –** CM; g

MALVACEAE

H *Alcea rosea* L. – **K, P –** A; g
H *Lavatera arborea* L. – **K, P –** EUM; h, r
T *Malva nicaeensis* All. – **K –** CM; i, m
H *M. sylvestris* L. – **K, P –** ŠR; i, m

MORACEAE

P *Ficus carica* L. – **K, P** – CM; f, o

MYRTACEAE

P *Myrtus communis* L. – **K, P –** CM; a, b, p

NYCTAGINACEAE

G *Mirabilis jalapa* L. – **K –** A; f, m

OLEACEAE

P *Fraxinus ornus* L. – **K, P –** JEUM; a
P *Olea europaea* L.* – **K, P –** A
P *O. sylvestris* L.* – **P –** CM; c, g, p
P *Phillyrea media* L.* – **K, P –** CM; a, b

OXALIDACEAE

G *Oxalis deppei* Lodd.* – **K, P –** A; i

PAPAVERACEAE

H *Glaucium flavum* Crantz. – **K, P –** MA; z
T *Papaver rhoeas* L. – **K, P –** ŠR: f

PLANTAGINACEAE

T *Plantago afra* L.* – **K –** CM; i
T *P. coronopus* L. subsp. *coronopus* – **K –** MP; s
H *P. lanceolata* L. var. *lanceolata** – **K, P –** ŠR; f, i, m
H *P. lanceolata* var. *lanuginosa* M. et K.* – **K –** ŠR: i

PLUMBAGINACEAE

H *Limonium cancellatum* (Bernh.) O. Kuntze – **K, P –** ILJAE; r
H *L. serotinum* (Reichenb.) Pignatti – **K, P –** CM; s
Ch *Plumbago europaea* L. – **K, P –** CM; i, p

POLYGONACEAE

T *Bilderdykia convolvulus* (L.) Dumort.* (=*Fallopia convolvulus* (L.) Holub) – **K –** ŠR; f
T *Polygonum aviculare* L. – **K, P –** ŠR; i, m
H *Rumex pulcher* L. – **K, P** – JEUP; f, h, i

PORTULACACEAE

T *Portulaca oleracea* L. – **K, P –** ŠR; f

PRIMULACEAE

T *Anagallis arvensis* L. – **K, P –** ŠR; f, g, i, m
T *A. foemina* Miller – **P –** ŠR; f, m
T *Asterolinum linum-stellatum* (L.) Duby – **P –** CM; c

PUNICACEAE

P *Punica granatum* L. – **P –** A; m

RANUNCULACEAE

P *Clematis flammula* L. – **K, P –** CM; a, b, p
T *Nigella damascena* L. – **K, P** – CM; g
T *Ranunculus muricatus* L. – **P –** CM; h

RESEDACEAE

T *Reseda lutea* L. – **P –** ŠR; f
T *R. phyteuma* L. – **P –** JEUM; f

RHAMNACEAE

P *Frangula rupestris* (Scop.) Schur – **P –** ILJAE; g
P *Paliurus spina-christi* Miller – **K, P –** ILJEU; p

ROSACEAE

H *Agrimonia eupatoria* L. – **P –** CIRCUMH; i
P *Crataegus monogyna* Jacq. – **P –** EAF; p
H *Potentilla recta* L. – **K –** EAF; c
P *Prunus mahaleb* L. – **P** – JEUP; p
P *P. spinosa* L. var. *dasyphylla* Schur* – **K –** EAF; p
P *Rubus dalmatinus* Tratt. ex Focke* – **K, P –** ILAP; c, g, p
H *Sanguisorba muricata* (Spach) Gremli* – **K, P –** JEUM; c
P *Sorbus domestica* L. – **K, P** – CM; a, g

RUBIACEAE

T *Crucianella latifolia* L. – **K –** CM; g
T *Galium aparine* L. – **K, P –** ŠR; f, g, p

T *G. murale* (L.) All. – **P –** CM; g
P *Rubia peregrina* L. – **K, P –** CM; a, b
T *Sherardia arvensis* L. – **P –** ŠR; i, o
T *Valantia muralis* L. – **K, P –** CM; o

SANTALACEAE

P *Osyris alba* L. – **K, P** – CM; a, i, p

SAXIFRAGACEAE

T *Saxifraga tridactylites* L. – **P –** ŠR; d, o

SCROPHULARIACEAE

H *Antirrhinum majus* L. – **K, P –** A; k, m
T *Cymbalaria muralis* Gaertner, Meyer et Schreb. – **K, P –** JEUM; k
H *Linaria dalmatica* (L.) Miller (Vis., 1978:76) – **P –** ILJEU
T *L. simplex* (Willd.) DC. – **P –** CM; i
T *Misopates orontium* (L.) Rafin – **K, P –** EAF; f
T *Verbascum orientale* (L.) All.* (= *Celsia orientalis* L.) – **K –** IM; h
H *V. sinuatum* L. – **P –** CM; i
T *Veronica arvensis* L. – **K, P –** EAF; f
T *V. cymbalaria* Bod. – **K, P –** JEUM; i
T *V. hederifolia* L. – **K, P –** ŠR; g, i, k
T *V. persica* Poiret – **K –** ŠR; f

SIMAROUBACEAE

P *Ailanthus altissima* (Miller) Swingle – **K –** A; i, m

SOLANACEAE

H *Hyoscyamus albus* L. – **K –** CM; k
T *Lycopersicon esculentum* Miller – **K, P –** A; h
T *Solanum nigrum* L. – **K, P –** ŠR; f, h, i, m

THELYGONACEAE

T *Thelygonum cynocrambe* L. – **K, P –** JEUM; g

ULMACEAE

P *Celtis australis* L. – **K, P –** JEUM; i, m, p

URTICACEAE

H *Parietaria judaica* L.* (= *P. diffusa* Mert. et Koch) – **K, P –** JEUM; i, k, m, o
T *Urtica urens* L. – **K –** ŠR; f

VALERIANACEAE

T *Valerianella discoidea* (L.) Loisel. – **P –** CM; c, i
T *V. echinata* (L.) Lam. et DC. – **P –** CM; i

VERBENACEAE

P *Vitex agnus-castus* L. – **K, P –** CM; r, z

VIOLACEAE

T *Viola kitaibeliana* Schultes – **P –** CM; f
H *V. odorata* L. – **K –** EF; g, i

VITACEAE

P *Vitis vinifera* L. – **K, P –** A; g

ZYGOPHYLLACEAE

T *Tribulus terrestris* L. – **K, P** – JEUM; f, i, m

MAGNOLIOPHYTA – LILIATAE

AGAVACEAE

H *Agave americana* L. – **P –** A; m, r

AMARYLLIDACEAE

G *Sternbergia lutea* (L.) Ker-Gawl. (Vis., as *Amaryllis lutea,*1978:61) – **K –** A

ARACEAE

G *Arum italicum* Miller – **K, P –** MA; g, i

CYPERACEAE

H *Carex extensa* Good. – **K** (Vis., 1852:348) – MA; c
G *C. flacca* Schreb. – **K, P –** ŠR; c
H *C. hallerana* Asso – **K –** JEUM; c
H *Schoenus nigricans* L. – **P –** ŠR; r

DIOSCOREACEAE

G *Tamus communis* L. – **K –** JEUM; g, i

IRIDACEAE

G *Gladiolus illyricus* Koch – **K –** JEUM; c
G *Iris germanica* L. – **K, P –** A; i

JUNCACEAE

H *Juncus acutus* L. – **K, P –** MA; s
G *J. maritimus* Lam. – **K –** ŠR; s

JUNCAGINACEAE

G *Triglochin bulbosum* L. subsp. *barrelieri* (Loisel.) Rouy (Vis., as *Triglochin barrelieri* Loisel., 1842:192) – **K –** CM.

LILIACEAE

G *Allium commutatum* Guss. – **K, P –** CM; r
G *A. roseum* L. – **K, P –** CM; g
G *A. subhirsutum* L. – **K, P –** CM; a, b
G *Asparagus acutifolius* L. – **K, P –** CM; a, b, g, r
G *Asphodeline lutea* (L.) Reichenb. – **K –** IM; c
H *Asphodelus fistulosus* L. – **K –** CM; i
G *Lilium candidum* L. – **P** – A; g, i

G *Muscari comosum* (L.) Miller * – **K, P** – JEUM; g
G *M. neglectum* Guss. – **K, P –** CM; c, g
G *Ornithogalum refractum* Kit. – **P –** JEUM; f, g
G *O. umbellatum* L. – **K –** JEUM; c, g
G *Ruscus aculeatus* L. – **K –** MP; a
P *Smilax aspera* L. – **K, P –** CM; a, b, c, d, o, p, r

ORCHIDACEAE

G *Anacamptis pyramidalis* (L.) L. C. Rich (Vis., as *Orchis pyramidalis* L., 1842:173–174) – **K –** EF
G *Ophrys bertolonii* Moretti – **P –** JEUM; c
G *O. sphegodes* Miller subsp. *atrata* (Lindl.) E. Meyer – **P –** EUM; c, g
G *Orchis provincialis* Balb. – **K** (Vis., 1842:167) – CM
G *O. quadripunctata* Cyr. – **K** (Vis. as *O. hostii* Trattinn., 1842:168–169) – IM
G *O. tridentata* Scop. – **P –** JEUM; c

POACEAE

G *Arundo donax* L. – **K, P –** CM; m
T *Avena barbata* Potter – **K, P –** JEUM; c, i
T *Brachypodium distachyum* (L.) Beauv. – **K –** CM; g, i
H *B. retusum* (Pers.) Beauv. * – **K, P –** CM; a, b, c, d, g, i
T *Briza maxima* L. f. *maxima* – **K –** CM; c
T *B. maxima* L. f. *rubra* Aschers. et Graebn.* – **K, P –** CM; c
T *Bromus hordeaceus* L. – **K –** ŠR; c, i
T *B. madritensis* L. – **K, P –** MA; g, o
T *B. sterilis* L. – **K, P –** ŠR; g, i
T *Catapodium marinum* (L.) Hubbard – **K** (Vis., as *Triticum loliaceum* Sm., 1842:94) – MA; z
H *Cynodon dactylon* (L.) Pers. – **K, P –** ŠR; f, g, i, m
T *Cynosurus echinatus* L. – **K, P –** JEUM; c, i
H *Dactylis hispanica* Roth – **K, P –** CM; c, g, i
T *Desmazeria rigida* (L.) Tutin * – **K, P –** MA; c
H *Dichanthium ischaemum* (L.) Roberty * – **K –** JEUM, i
G *Elymus pycnanthus* (Gordon) Melderis * – **K, P –** CM; r
T *Eragrostis cilianensis* (Ball.) Hubbard * – **K –** ŠR; f, i
H *Helictotrichon convolutum* (C. Presl) Henrard – **P –** ZM; c, i
T *Hordeum leporinum* Link – **K, P –** CM; h, i
T *Lagurus ovatus* L. – **K, P –** CM; c
H *Lolium perenne* L. – **K, P –** EF; i, m
T *L. rigidum* Gaudin – **P –** CM; i
T *L. temulentum* L. – **K –** ŠR; f
T *Lophochloa cristata* (L.) Hyl. – **K –** ŠR; g, i
H *Melica ciliata* L. – **K –** MP; c, d, i
Ch *Oryzopsis miliacea* (L.) Benth. et Hooker – **K –** CM; i
T *Parapholis incurva* (L.) Hubbard – **K, P** (Vis., as *Rottbollia incurva* L., 1842:88–89) – MA; s

T *Phleum echinatum* Host – **P –** CM; f
T *Poa bulbosa* L. subsp. *bulbosa* – **P –** EAF; o
T *P. bulbosa* L. subsp. *bulbosa* f. *vivipara* Koel.* – **P –** EAF; o
T *P. infirma* H. B. K. – **K, P –** CM; g, i
H *Puccinellia festuceformis* (Host) Parl. * – **K –** MP; s
T *Setaria verticillata* (L.) Beauv. – **K, P –** ŠR; f, i
T *S. viridis* (L.) Beauv. – **K –** ŠR; f
G *Sorghum halepense* (L.) Pers. – **K –** ŠR; f
H *Stipa bromoides* (L.) Doerfler – **K –** CM; c, g, i
T *Vulpia ciliata* (Danth.) Link – **K –** JEUM; c, i

ANALYSIS OF THE FLORA

1. Taxonomic analysis

The autochthonous and anthropochorous flora on the islands of Krapanj and Prvić, numbering 362 species and lower taxon units, has been subjected to taxonomic analysis, as given in the table (Tab. 1).

Table 1. Taxonomic analysis

	Family	Genus	Species	Subsp.	Variety et Forms
Polypodiophyta	1	2	2	–	–
Pinophyta	3	4	7	–	–
Magnoliophyta:					
– Magnoliatae	62	196	276	5	3
– Liliatae	11	50	63	3	3
	77	**252**	**348**	**8**	**6**

2. Ecological analysis

Numerical representation of life forms, as well as the percentage shares in the 362 autochthonous and anthropochorous taxa, is given in table (Tab. 2).

Table 2. Life forms

LIFE FORMS	NUMBER OF TAXA	%
THEROPHYTA (T)	175	48.34
HEMICRYPTOPHYTA (H)	79	21.83
PHANEROPHYTA (P)	40	11.05
CHAMAEPHYTA (Ch)	34	9.39
GEOPHYTA (G)	34	9.39
Total	**362**	**100.00**

3. Phytogeographical analysis

An analysis of the floral elements is shown in the figure (Fig. 2).

1. Mediterranean floral element (181 species, 50.00 %)
2. Illyrian–Balcanic floral element (1 species, 0.28 %)
3. South–European floral element (59 species, 16.30 %)
4. European floral element (6 species, 1.66%)
5. Euro–Asiatic floral element (18 species, 4.97 %)
6. Circum–holarctic plants (1 species, 0.28 %)
7. Widespread plants (73 species, 20.16 %)
8. Anthropochorous (23 species, 6.35 %)

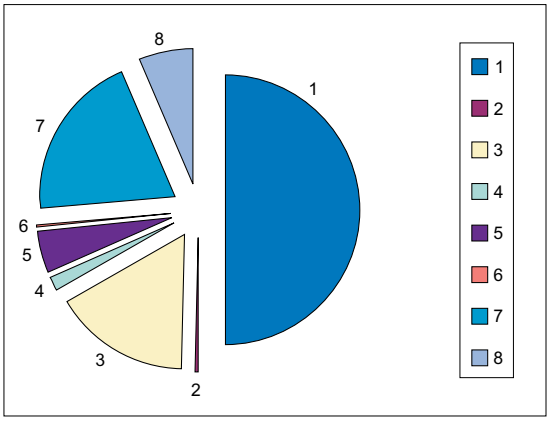

Fig. 2. Spectrum of floral elements in the flora of the islands of Krapanj and Prvić

DISCUSSION AND CONCLUSION

In the floristic literature concerning the flora of the island of Krapanj, Visiani adduces 15 species; additionally, *Diplotaxis erucoides* (L.) DC. is given by PAVLETIĆ & PANDŽA (1994).

During floristic research, the following seven species recorded by Visiani were not confirmed: *Aetheorhiza bulbosa* (L.) Cass.; *Anacamptis pyramidalis* (L.) L.; *Orchis provincialis* Balb.; *O. quadripunctata* Cyr.; *Pinus sylvestris* L.; *Sternbergia lutea* (L.) Ker.-Gawl.; *Triglochin bulbosum* L. subsp. *barrelieri* (Loisel.) Rouy and *Linaria dalmatica* (L.) Miller for Prvić.

During the two-year research work, in the anthropochorous wild flowers of the two islands, 362 taxa were recorded, out of which 268 taxa relate to Krapanj and 272 to Prvić.

Out of the total number, 178 species appear on both islands, 90 species only on the island of Krapanj and 94 only on the island of Prvić. From the phytogeographi-

cal standpoint, the Mediterrranean floral element is the most frequent (181 species, 50.00 %), especially from the Circum-Mediterranean plant group (124 species, 34.25 %). Widespread plants (73 species, 20.16 %) are in the second place, followed by the South European floral element (59 species, 16.30 %).

From the phytogeographical standpoint, Illyrian Adriatic endemic plants (11 species) are the most important.

The strong anthropogenic influence is the result of anthropochorous plant species. Especially interesting is *Bidens subalternans* DC. which adapted to Krapanj and Prvić (specifically, Prvić Luka and Šepurina) and occurs on weed-ruderal habitats, as well as *Diplotaxis erucoides* (L.) DC, a West Mediterranean species registered for the first time in the Šibenik area (PAVLETIĆ, Zi., 1987). On the island of Krapanj, this species spreads within the weed-ruderal vegetation.

Within the spectrum of life forms (Tab. 2) *therophytes* are dominant (175 species, 48.34 %), clearly pointing to the Mediterranean character of the flora of these islands.

Generally speaking, a considerable number of plant species is represented in a small area, which is explicable by the diversity of habitats and the good population density.

REFERENCES

HAYEK, A., 1927–1933: Prodromus florae Peninsulae Balkanicae, **1–3**, Berlin-Dahlem.

HORVAT, I., 1949: Nauka o biljnim zajednicama. Nakladni zavod Hrvatske. Zagreb.

HORVATIĆ, S., 1963: Vegetacijska karta otoka Paga s općim pregledom vegetacijskih jedinica Hrvatskog primorja. Prir. Istr. Jugosl. Akad. 33. Acta Biol. **4.**

HORVATIĆ, S., ILIJANIĆ, LJ. & MARKOVIĆ, LJ., 1967/68: Biljni pokrov okolice Senja. Senjski zbornik **3**: 298–322.

HORVATIĆ, S. & TRINAJSTIĆ, I., 1967–1981: Analitička flora Jugoslavije 1. Zagreb.

MAMUŽIĆ, R., BOROVIĆ, I. & KOROLIJA, B., 1966: Tumač geološke karte SFRJ, List Šibenik 1:100 000. Institut za geološka istraživanja, Zagreb.

PAVLETIĆ, ZI., 1987: *Diplotaxis erucoides* (L.) DC. nova adventivna vrsta u flori Hrvatske. Glasnik Prir. Muz. Beograd B (12): 16–18.

PAVLETIĆ, ZI. & PANDŽA, M., 1994: *Diplotaxis erucoides* (L.) DC. (*Brassicaceae*) u Hrvatskoj flori. Fragm. Phytom. et Herbol. 22/1–2:25–28.

PIGNATTI, S., 1982: Flora d'Italia, **1–3**. Edagricole. Bologna.

RAUNKIER, C., 1934: The life forms of Plants and Statistical Plant Geography. Clarendon Press, Oxford.

TRINAJSTIĆ, I., (ed.),1975–1986: Analitička flora Jugoslavije 2. Zagreb.

TRINAJSTIĆ, I., 1983: Visianijev »Stirpium dalmaticarum specimen« preteča djela Flora Dalmatica. Povremena izdanja Muzeja grada Šibenika **10**, 119–135.

TUTIN, T. G. *et al*. (eds.), 1964–1980: Flora Europaea **1–5**. University Press. Cambridge.

VISIANI, R., 1826: Stirpium dalmaticarum specimen. Patavii. Prijevod J. Radić – Ogled dalmatinskog bilja. Čakavski sabor, Split 1978.

VISIANI, R., 1842–1852: Flora Dalmatica, **1–3**. Lipsiae.

SAŽETAK

Flora otoka Krapnja i Prvića

M. Pandža

Za Krapanj (0,36 km^2) i Prvić (2,37 km^2) zabilježena su 362 taksona autohtone i antropokorne flore (348 vrsta i nižih sistematskih jedinica) u okviru 252 roda i 77 porodica. Za Krapanj je utvrđeno 268 taksona, a za Prvić 272 taksona. Od ukupnog broja vrsta 178 raste na oba otoka dok je 90 zabilježeno samo za Krapanj, a 94 samo za Prvić.

Vrstama su najbogatije porodice *Fabaceae* (45 vrsta, 12,43 %) i *Poaceae* (37 vrsta, 10,22 %) što ukazuje na antropokorni karakter vegetacije.

Od 362 vrste njih 181 (50,00 %) pripada skupinama mediteranskog flornog elementa među kojima su najbrojnije cirkummediteranske biljke (124 vrste, 34,25 %).

U spektru životnih oblika dominiraju terofiti (175 vrste, 48,34 %) što ukazuje na mediteranski karakter flore ovih otoka.

Veliko relativno bogatstvo flore (u odnosu na površinu) na Krapnju može se objasniti zastupljenošću različitih staništa i brojnošću pučanstva.