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## ***Iris adriatica* (Iridaceae), a New Species from Dalmatia (Croatia)**

By

Božena MITIĆ \*)

With 2 Figures

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### Summary

MITIĆ B. 2002. *Iris adriatica* (Iridaceae), a new species from Dalmatia (Croatia). – *Phyton* (Horn, Austria) 42 (2): 305–314, 2 figures. – English with German summary.

*Iris adriatica* TRINAJSTIĆ ex MITIĆ (Iridaceae), a new species from central Dalmatia (Croatia) is described and illustrated. Its affinities with the related species *I. pseudopumila*, *I. pumila* and *I. attica* are briefly discussed. The main characteristics of *I. adriatica* are: a dwarf stem [1–3 (5) cm long], gentle and narrow leaves longer than the stem, greenish spathes with wide scarious margins as long as or a bit longer than the hypanthial tube, solitary yellow or violet flowers overtopping the leaves, elliptical trigonous capsules (2–3 cm long), with elliptical dark brownish seeds and the chromosome number of  $2n = 16$ .

### Zusammenfassung

MITIĆ B. 2002. *Iris adriatica* (Iridaceae), eine neue Art aus Dalmatien (Kroatien). – *Phyton* (Horn, Austria) 42(2): 305–314, 2 Abbildungen. – Englisch mit deutscher Zusammenfassung.

*Iris adriatica* TRINAJSTIĆ ex MITIĆ (Iridaceae), eine neue Art von den mitteldadratischen Küstengebieten in Dalmatien (Kroatien), wird beschrieben und illustriert. Die Beziehungen zwischen *Iris adriatica* und den verwandten *I. pseudopumila*, *I. attica* und *I. pumila* werden kurz diskutiert. Die wichtigsten Merkmale von *I. adriatica* sind ihre Zwergwüchsigkeit, die dünnen, schmalen Blätter die länger als der Schaft sind, die grünlichen Spathen, die gleichlang oder wenig länger als die

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\*) Dr. Božena MITIĆ, Department of Botany, Faculty of Science, University of Zagreb, Marulićev trg 20/II, HR-10 000 Zagreb, Croatia; e-mail: [bozena@croatia.botanic.hr](mailto:bozena@croatia.botanic.hr)

Hypanthium-Röhre sind und einen breiten häutigen Rand aufweisen, die einzeln stehenden, gelben oder violetten Blüten, die ellipsoidisch-dreikantigen Fruchtkapseln, die ellipsoidischen und dunkelbraunen Samen, sowie die diploide Chromosomenzahl von  $2n = 16$ .

### Historical Review

In the region of central and southern Europe, we can find several species of dwarf bearded irises, belonging to the subgenus *Iris* series *Pumilae* G.H.M. LAWR. (LAWRENCE 1953). One of them, from the Mediterranean region, is *Iris pseudopumila* TINEO (TINEO 1827, PIGNATTI 1982). According to several recent authors (MITRA 1956, RANDOLPH & MITRA 1959, WEBB & CHATER 1980, MATHEW 1981) and Flora Europaea Database (FED – <http://www.rbge.org.uk/forms/fe.html>) it is subendemic and distributed only in two regions in Italy (in Sicily, with its locus classicus – Palermo, and on Mt. Gargano), and in Croatian central Dalmatia.

Dwarf bearded irises from the region of central Dalmatia (the surroundings of Zadar and Šibenik towns) first were noticed by VISIANI 1826, 1842. He described them under the name *I. pumila* L., although he noticed some differences from the typical *I. pumila* species. After him, older authors ascribed this dwarf irises to the species *I. pumila* (for example SCHLOSSER & VUKOTINOVIĆ 1869) or *Iris chamaeiris* BERTOL. (for example BAKER 1892, ASCHERSON & GRAEBNER 1906). Later, chromosome analyses showed that the somatic chromosome number for *I. pumila* is  $2n = 32$  and for *I. chamaeiris*  $2n = 40$  (BOLKHOVSKIKH & al. 1969, WEBB & CHATER 1980, SCHULZE 1988). On the other hand, Croatian dwarf irises have the somatic number of chromosomes  $2n = 16$ , as does *I. pseudopumila* from Italy, but with some differences in chromosome morphology (MITRA 1956, RANDOLPH & MITRA 1959, TRINAJSTIĆ & al. 1980, BAČANI 1981). Although RANDOLPH & RECHINGER 1954 warned that the Dalmatian iris is taxonomically unclear, recent authors have mostly agreed that the plants from Dalmatia are the same as those from Italy (WEBB & CHATER 1980, MATHEW 1981, MITIĆ 2000).

However, the specificity of Croatian plants was noticed by TRINAJSTIĆ & al. 1980 and BAČANI 1981. They pointed out certain karyological features of the central Dalmatian iris and gave it a new name *Iris adriatica* TRINAJSTIĆ (TRINAJSTIĆ & al. 1980). But, according to GREUTER & al. 2000, Art. 37.1., this name was not validly published.

In 1998 I started my research on the dwarf irises of central Dalmatia and related taxa (especially *I. pumila*, *I. pseudopumila* and *I. attica* – so called *I. pumila* complex). Comparative morphological research of the *I. pumila* complex was carried out on live material, donated by Dr. Franz SPETA (from his own collection) and on herbarium material (ZA, ZAHO, LJU, WU, W and PAD – abbreviations according to HOLMGREN & al. 1990). In addition, live material from all the central Dalmatian localities of dwarf

irises known to date was investigated. Such materials as well as material from the SPETA collection are still being cultivated in the Botanical Garden in Zagreb.

Results of comparative morphological research in the *I. pumila* complex (Table 1), especially in Croatian and Italian dwarf irises under the name *I. pseudopumila* have proved that irises from central Dalmatia are morphologically less than half the size in most features than the typical Italian *I. pseudopumila*. Since their morphological features are stable in cultivation and because of the differences in chromosome morphology, Croatian dwarf iris has to be separated from *I. pseudopumila* and described as a new species, narrowly endemic to Croatia. In honour of Professor Ivo TRINAJSTIĆ, who first gave a new name to the Croatian dwarf iris, the name of the new Croatian iris will be *Iris adriatica* TRINAJSTIĆ ex MITIĆ.

*Iris adriatica* TRINAJSTIĆ ex MITIĆ, spec. nova

Syn.: *Iris adriatica* TRINAJSTIĆ, IV. Simp. Biosist., Book of Summaries: 25 (1980), nom. inval. (sine indicatione typi et sine diagnosi latina).

*Iris pseudopumila* sensu WEBB & CHATER, Fl. Europ. 5: 90 (1980); sensu Mathew, The Iris: 32 (1981); sensu MITIĆ, Flora Croatica 3: 161 (2000), non TINEO 1827.

*Iris pumila* sensu VISIANI, Stirp. Dalm. Spec.: 38 (1826); sensu VISIANI, Fl. Dalm. 1: 115-116 (1842), sensu SCHLOSSER & VUKOTINOVIĆ, Fl. Croat.: 1069 (1869), non L. 1753.

*Iris chamaeiris* sensu BAKER, The Irideae: 27-28 (1892); sensu ASCHERSON & GRAEBNER, Syn. Mitteleurop. Fl. 3: 472 (1906), non BERTOL. 1837.

Holotypus: Croatia: Dalmatia: Šibenik (Njivice, mons Smričnjak); 43°45'09" N / 15°52'41" E cca. 100 m.n.m.; 16.3. 2002.; leg. M. MILOVIĆ, M. RADNIĆ et M. et B. MITIĆ; det. B. MITIĆ; no. 113 (ZA) (Fig. 1). – Isotypi: K, WU, PAD.

Diagnosis: Planta nana, rhizomatosa. Caule, sine flore, 1-3(5) cm alto. Foliis tenuibus, singulis falcatis, (3)5-8(10) cm longis, 0.5-0.9 cm latis. Foliis hieme emortuis. Floribus singulis, magnis, folia superantibus. Spathis viridescens, margine scarioso latiore, sub anthesi insigniter inflatis, tubo hypanthii aequilongis vel longioribus. Hypanthio 4-7 cm longo. Perigonio flavo vel rarius violaceo suffuso vel violaceo. Foliis externis perigonii barbatis. Capsula triangulari ellipsoidea, 2-3 cm alta, in maturitate straminea, semina parva ellipsoidea, atrofusca, multa. Chromosomatum numerus  $2n = 16$  (MITRA 1956, RANDOLPH & MITRA 1959, TRINAJSTIĆ & al. 1980, BAČANI 1981). Floret martio usque ad aprillem.

*Iris adriatica* planta tenuior quam *I. pseudopumila* et ab ea, hypanthio excepto, dimensionibus omnium elementorum morphologicorum dimidio minoribus differt.



Fig. 1. *Iris adriatica*, Holotypus (ZA). Right flower and floral parts above yellow, left flower violet.

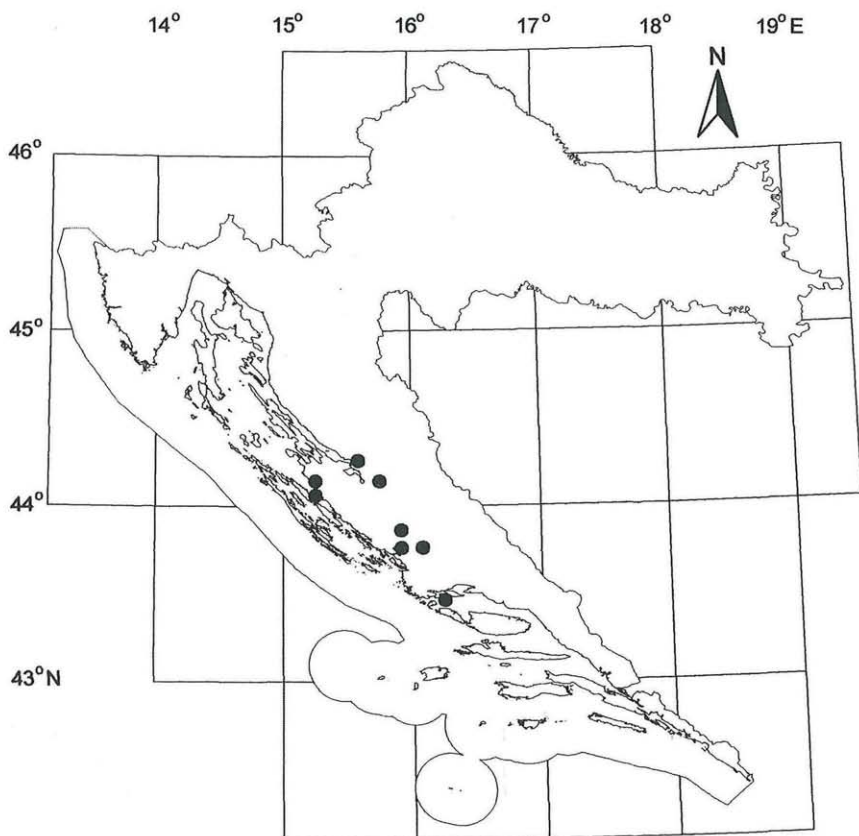


Fig. 2. The distribution of *I. adriatica* in Croatia.

**Habitatio:** *Iris adriatica* species illyrico-adriatica stenoëndemica, limitata tantum ad regionem centralem Dalmaticam Croatiae in vicinitate civitatum Zadar, Šibenik, Drniš et Unešić, et in insulis Čiovo et Kornati (Fig. 2). In pascuis rupestribus mediterraneis et submediterraneis ass. Stipo-Salvietum officinalis HORVATÍĆ 1958 et Festuco-Koelerietum splendentis HORVATÍĆ 1963.

**Description:** Plant dwarf, with rhizome. Stem, without flower, 1–3 (–5) cm long. Leaves (3–)5–8(–10) cm long and 0.5–0.9 cm wide, gentle, narrow, sometimes falcate. Usually leafless during the winter. Flowers solitary, relatively large, overtopping the leaves. Spathes greenish with wide scarious margins, slightly keeled during the flowering time, as long as or a bit longer than the hypanthial tube. Hypanthial tube 4–7 cm long. Perigonium often yellow or sometimes suffused with violet or just violet. Outer perigonium falls with beard of multicellular hairs. Capsules elliptical tri-

Table 1.

The main character differences within the *I. pumila* complex (ST – length of the stem without flower; L – shape and proportions of leaves; F – size and colour of flowers; SP – shape and size of spathes; H – length of the hypanthial tube; C – shape and size of capsules; S – shape and size of seeds; 2n – somatic chromosome number).

| Feature   | <i>I. pumila</i>                                                                               | <i>I. attica</i>                                                                                        | <i>I. pseudopumila</i>                                                         | <i>I. adriatica</i>                                                              |
|-----------|------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| <b>ST</b> | 0.5–1(1.5) cm                                                                                  | 0.3–0.5(1) cm                                                                                           | 3(7)–9(12) cm                                                                  | 1–3(5) cm                                                                        |
| <b>L</b>  | straight or very slightly falcate; 8–12(15) × 0.5–1(1.7) cm                                    | gentle, strongly falcate; (3)4–8 × (0.3)0.5–0.7 (0.9) cm                                                | straight or sometimes slightly falcate; 9–17 (20) × (0.7)1.3–2.5(3.5) cm       | gentle, straight, only sometimes falcate; (3)5–8 (10) × 0.5–0.9 cm               |
| <b>F</b>  | solitary, yellow, blue or purple, sometimes darker suffused; 5–7(8) cm in diameter;            | solitary, yellow, sometimes suffused with brown or violet or rarely purpurviolet; (3)4–5 cm in diameter | solitary, yellow, blue or purple, sometimes bicoloured; 6–8(10) cm in diameter | yellow or sometimes suffused with violet or just violet; 5–7(8) cm in diameter   |
| <b>SP</b> | greenish, scarious above, rounded or slightly keeled on the back, scarious above; 5–10 cm long | greenish, with scarious margins, rounded on the back, very rarely slightly keeled; 3–5 cm long          | greenish, scarious above, slightly rounded on the back; 10–12 cm long          | greenish with wide scarious margins, slightly keeled on the back; 4–7(8) cm long |
| <b>H</b>  | (5)6–9(10) cm                                                                                  | 5–7 cm                                                                                                  | 5–7(8) cm                                                                      | 4–7 cm long                                                                      |
| <b>C</b>  | inverse egg-shaped trigonous; 4–6 cm                                                           | inverse egg-shaped trigonous; 3–5 cm                                                                    | spindle-shaped; (3)4–6 cm                                                      | elliptical trigonous; 2–3 cm                                                     |
| <b>S</b>  | eggshaped rounded, pale brown; 4–7 mm                                                          | eggshaped rounded, pale brown; 4–6 mm                                                                   | eggshaped rounded, pale brown; 4–7 mm                                          | small, elliptical, dark brownish; 3–4 mm                                         |
| <b>2n</b> | 32                                                                                             | 16                                                                                                      | 16                                                                             | 16                                                                               |

gonous, 2–3 cm long, in mature phase straw coloured. Containing several little, elliptical, dark brownish seeds. Chromosome number  $2n = 16$  (MITRA 1956, RANDOLPH & MITRA 1959, TRINAJSTIĆ & al. 1980, BAČANI 1981). Flowering in March and April.

Discussion of characteristics: Comparison with other species from the *I. pumila* complex (Table 1) showed up that all species are dwarf, with more or less green spathes and solitary flowers, coloured by a yellow, violet, purple or a combination of those colours. *I. pumila* is the only tetraploid in the complex. The other three diploid species have several dif-



ferences in their morphology, except for the dimensions of the hypanthial tube, the size of which is similar in all three species. *I. pseudopumila* is the largest diploid and also the largest in the whole complex, with the biggest stem, leaves, spathes and flowers. Those features are the smallest in *I. attica*, although sometimes it seems to be like *I. adriatica*. But, *I. adriatica* has a longer stem (which is sometimes almost lacking in *I. attica*), mostly straight leaves compared to strongly falcate leaves of *I. attica* and a larger diameter of flower. Furthermore, spathes of *I. attica* are more rounded than those of *I. adriatica* slightly keeled during the flowering time, capsules of *I. attica* are larger and inverse eggshaped trigonous and of *I. adriatica* they are more elliptical trigonous and smaller. Also, the seeds of *I. attica* are bigger and pale brown unlike the smaller, dark brownish seeds of *I. adriatica*.

*I. adriatica*, often mistaken for *I. pseudopumila*, differs from it in that the morphological dimensions of the plant (length of the stem, shape and size of leaves, shape and size of spathes, capsules and seeds), except for the dimensions of the hypanthial tube, are less than half the size (Table 1). *I. pseudopumila* has much larger stems, leaves and spathes and also flowers with a bigger diameter. Its larger, spindle-shaped capsules contain larger pale brown seeds, compared to smaller, elliptical trigonous capsules with smaller, dark brownish seeds of *I. adriatica*.

Also, some differences between *I. pseudopumila* and *I. adriatica* were recorded in their chromosome morphology. The first chromosome pair in *I. pseudopumila* is metacentric, the remaining pairs are acrocentric and satellites are on the second, third (in some individuals only), sixth and eighth chromosome pair (MITRA 1956, RANDOLPH & MITRA 1959). The first chromosomes pair in *I. adriatica* is submetacentric and the remaining chromosomes are subteloentric or acrocentric, with satellites on the second, third and seventh chromosome pair (MITRA 1956, BAČANI 1981).

Habitat: *Iris adriatica* is an Illyrian-Adriatic stenoendemic species, limited to central Dalmatian Croatia – the surroundings of the towns of Zadar, Šibenik, Drniš and Unešić, and the Čiovo and Kornati islands (Fig. 2). It grows in mediterranean and sub-mediterranean meadows within the Stipo-Salvietum officinalis HORVATÍĆ 1958 and Festuco-Koelerietum splendentis HORVATÍĆ 1963 associations.

Populations are not numerous, relatively poor in individuals, the population from the locus classicus excepted. Some populations disappeared during the observation period (for example in the surroundings of Zadar) and others are decreasing (for example the Čiovo population). The most probable reason for the decrease of populations of Adriatic dwarf irises is the natural succession of vegetation (progress of shrubs after regress of utilization). The vitality of the plants in cultivation posed us with a problem, that after two or three seasons it usually started to decline.

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## References

- ASCHEERSON P. & GRAEBNER P. 1906. Synopsis der mitteleuropäischen Flora 3 (3/Lief. 42-43): 321-480. - Leipzig.
- BAČANI Lj. 1981. Citotaksonomska istraživanja patuljaste perunike *Iris adriatica* TRINAJSTIĆ. - Manuscript. - Faculty of Science, Zagreb.
- BAKER J. G. 1892. *The Irideae*. - London and New York.
- BERTOLONI A. 1837. *Flora Italica* 3. - Bononiae.
- BOLKHOVSKIKH Z., GRIF V., MATVEJEVA T. & ZAKHARYEVA O. 1969. Chromosome numbers of flowering plants. - Nauka, Leningrad.
- GREUTER W., MCNEILL J., BARRIE F. R., BURDET H. M., DEMOULIN V., FILGUERIAS T. S., NICOLSON D. H., SILVA P. C., SKOG J. E., TREHANE P., TURLAND N. J. & HAWKSWORTH D. L. 2000. International code of botanical nomenclature (Saint Louis Code) adopted by the Sixteenth International Botanical Congress St. Louis, Missouri, July-August 1999. - *Regnum vegetabile* 138: 1-474.
- HOLMGREN P. K., HOLMGREN N. H. & BARNETT L. C. (Eds.) 1990. *Index Herbariorum*. Part I: The Herbaria of the world, 8<sup>th</sup> ed. - New York Botanical Garden, Bronx, New York. - *Regnum vegetabile* 120.
- HORVAT IČ S. 1958. Tipološko rasčlanjenje primorske vegetacije gariga i borovih šuma. - *Acta bot. croat.* 17: 7-79.
- 1963. Vegetacijska karta otoka Paga s općim pregledom vegetacijskih jedinica hrvatskog Primorja. - *Acta Biol.* 4, Prirodosl. Istraž. Jugoslav. Akad. Znan. 33. - Zagreb.
- LAWRENCE G. H. M. 1953. A reclassification of the genus *Iris*. - *Gentes Herbarum* 8: 346-371.
- LINNÉ C. 1753. *Species Plantarum*, ed. 1. - Holmiae.



- MATHEW B. 1981. The *Iris*. – B. T. Batsford Ltd., London.
- MITIĆ B. 2000. *Iridaceae*. – In: NIKOLIĆ T. (Ed.), Flora Croatica (Index Florae Croatiaecae), pars 3. – Nat. Croat. 9, suppl. 1: 159–161.
- MITRA J. 1956. Karyotype analysis of bearded *Iris*. – Bot. Gaz. 117: 265–292.
- PIGNATTI S. 1982. Flora d'Italia 3. – Edagricole, Bologna.
- RANDOLPH L. F. & MITRA J. 1959. Karyotypes of *Iris pumila* and related species. – Amer. Jour. Bot. 46: 93–102.
- & RECHINGER K. H. 1954. Die geographische Verbreitung einiger europäischer und mediterraner *Iris*-Arten. – Verh. zool.-bot. Ges. Wien 94: 82–96.
- SCHLOSSER J. C. & VUKOTINOVIĆ Lj. 1869. Flora Croatica. – Zagrabiae.
- SCHULZE W. 1988. Wild-*Iris* für den Garten. – Bibliogr. Mitt. Universitätsbibl. Jena 48, Beih. zu: SCHULZE W. & VOGT H., Liliifloren. Internationale Auswahlbibliographie 1898–1986.
- TINEO V. 1827. Catalogus Plantarum Horti Regii Panormitani. – Panormi.
- TRINAJSTIĆ I., PAPEŠ D., LOVAŠEN-EBERHARDT Ž. & BAČANI Lj. 1980. Biosistematska i kariološka istraživanja roda *Iris* L. (*Iridaceae*) u flori Jugoslavije. – IV Simpozij biosistematičara Jugoslavije, Rezime referata, p. 25. – Đerdap.
- VISIANI R. 1826. Stirpium Dalmaticarum Specimen. – Patavii.
- 1842. Flora Dalmatica 1. – Lipsiae.
- WEBB D. A. & CHATER A. O. 1980. *Iris* L. – In: TUTIN T. G., HEYWOOD V. H., BURGESS N. A., MOORE D. M. & WEBB D. A. (Eds.), Flora Europaea 5: 87–92. – Univ. Press, Cambridge.

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