

Linzer biol. Beitr.	25/2	1189-1204	31.12.1993
---------------------	------	-----------	------------

The Genus *Iris* L. in Latium (Central Italy): General Remarks on the Morphological and Karyological Differentiation as well as on the Ecological Adaptation and Flowering Periods

M. COLASANTE & W. SAUER

Abstract: Hitherto in Latium (western Central Italy) thirteen native and one naturalized species of the genus *Iris* have been recorded; they belong to three subgenera. Besides *I. pallida* ($2n = 24$) the other species of the subgen. *Iris* are regarded to be allopolyploids with $2n = 40$ (*I. lutescens*, *I. relictata*, *I. sabina*, *I. setina*) or $2n = \pm 44$ (*I. germanica*, *I. albicans*, *I. florentina*). Different chromosome numbers, mainly $2n = \pm 34$ and derived ones have been found in species of the subgen. *Limmiris* (*I. pseudacorus*, *I. graminea*, *I. japonica*, *I. foetidissima* [$2n = 40!$]) and subgen. *Xiphium* (*I. xiphium*). Origin and morphological differentiation of the allopolyploids of subgen. *Iris* as well as peculiarities of flowering periods and the protection of sword flag habitats in Latium/Italy are discussed.

In Latium the genus *Iris* is represented by a relatively high number of species (Table 1; cf. BERTOLONI 1833, PARLATORE 1858, FIORI 1926, ZANGHERI 1976, PIGNATTI 1982, ANZALONE 1984, COLASANTE & ALTAMURA 1984, 1986, MORALDO & al. 1990). Among other things particularly the special geographic situation of Central Italy (for Latium see GARZANTI 1988: 20% costal plains, 54% hilly and 26% mountainous country) might have favored a wide range of ecologically differentiated habitats (niches). The general distribution of the related *Iris* species treated here not only demonstrates obviously different strategies during the phylogeny of local species (endemics), but also the species with wider areas point out the biogeographic importance of this region for the survival during the colder periods of the Pleistocene, and an interesting niching of these species (MONTELUCCI 1976/77).

Although relatively less material is available in the herbaria, we undertake - including also our still unpublished field data - an attempt to apply a general overlook of the genus *Iris* in Latium. To judge the affiliation to certain vegetation communities or belts of the proved habitats cited in the maps (Fig. 2-4), generally we refer to the publications of FENAROLI 1970 for the real and to TOMASELLI 1970 for the potential vegetation of Italy.

We gratefully acknowledge the loan or the possibility for examination of herbarium specimens from the collections of B = Botanischer Garten und Botanisches Museum Berlin-Dahlem; BM = British Museum (Natural History), London; CAM = St. John's College, Cambridge; FI = Herbarium Universitatis Florentinae, Istituto Botanico, Firenze; G = Conservatoire et Jardin botaniques, Genève; GZU = Institut für Botanik der Universität, Graz; K = The Herbarium, Royal Botanic Garden, Kew, Richmond, Surrey; KL = Landesmuseum für Kärnten, Klagenfurt; IB = Institut für Systematische Botanik und Geobotanik der Universität, Innsbruck; OXF = FIELDING-DRUCE Herbarium, Dept. of Botany, Oxford; PERU = Istituto Interfacoltà di Botanica dell'Università di Perugia; RO = Istituto Botanico della Università, Roma; TSB = Istituto ed Orto dell'Università, Trieste; W = Naturhistorisches Museum, Abt. Botanik, Wien; WU = Botanisches Institut der Universität Wien; Z = Botanisches Institut der Universität, Zürich; ZT = Institut für Spezielle Botanik E.T.H., Zürich. -- Fieldwork and sojourn in Great Britain (COLASANTE) and Italy (SAUER) have been granted or financed by (Consiglio Nazionale delle Ricerche, C.N.R.); the supports are grateful acknowledged.

To access the right ideas of the striking biological consequences, already mentioned above, it seems to be necessary also to put into consideration the general distribution (known areas) of the species in question. - According to RANDOLPH & RECHINGER 1954, RANDOLPH 1959, VAN NES 1967, MATHEW 1981 and still unpublished own results (Fig. 1) the subgenera *Iris* and *Xiphium* own areas in the Mediterranean and Near East until West-Himalaya and in southern Central and East-Europe, whereby the subgen. *Xiphium* is restricted to the more arid regions of West and Central Mediterranean (cf. RICCI 1966). The largest area, however, owns the subgen. *Limniris* (incl. Sect. *Limniris*). In general this subgenus is represented in the temperate and warmtemperate/northern subtropic zones of the whole Holarctis, while the sect. *Lophiris* (= *Evansia*) originally is centered in subtropical and warm-temperate East-Asia and temperate North America. In Latium autochthonous endemics of the subgen. *Iris* sect. *Iris* settle either in the region of mediterranean and/or joining submediterranean-colline for-

mations (*I. setina*) and mediterranean-montane communities (*I. relictata*) or exclusively in submediterranean-(sub)montane areas (*I. sabina*; Fig. 2 and 7). — The above mentioned vegetation belts also put up west-mediterranean taxa, like *I. xiphium* of the subgen. *Xiphium* (Fig. 4) and westeuropean-atlantic-mediterranean species, like *I. foetidissima* of the subgen. *Limniris*, ser. *Foetidissimae* (Fig. 3) as well as northwest and central mediterranean biotypes of calcareous rocks mainly of the colline belt, like *I. lutescens* (subgen. *Iris*; Fig. 2); to this subgenus belong also the most frequent species *I. germanica* s.l. and *I. pallida* s.l. Their origin, however, still is uncertain. Except of some (perhaps, synanthropic) outposts in western North Africa, East Spain/Balearic Islands and Palestine/Near East the main area of *I. germanica* s.l. is centered on Central Mediterranean and Balkan peninsula (see fig. 2, left). - For *I. pallida* s.l. also a wide distribution is recorded from (the more western) parts of Balkan peninsula. There and in the Southern Alps and North Italy this complex might have split up into several yet badly known taxa, like *I. cengialti* AMBROSI or the more eastern *I. illyrica* TOMMAS. as well as in different (mostly local) taxa, which are interpreted as cultivars of *I. pallida* s.str. So *I. × sambucina* L. (e.g. Tor Tre Teste, Roma), and *I. × squalens* L., are said to be hybrids between *I. variegata* L. and *I. pallida* (WEBB & CHARTER 1980, PIGNATTI 1982). Like anywhere also in Latium *I. germanica* and *I. pallida* are grown also as ornamental plants, or often the latter one is cultivated for commercial purpose too; the known distribution of *I. germanica* complex has to be characterized by MEUSEL & al. 1965 as synanthropic. In Latium *I. germanica* is found in ± small populations around settlements, in cultivated fields, public gardens, and along road sides until up to the lower temperate/montane (or even subalpine) vegetation belts (fig 7). Particularly they are present near Viterbo, Mt. Soratte (cf. LATTANZI et al. 1981), St. Oreste, in the eastern neighboring of Rome, Tivoli, Mt. Lauzo, Viadotto Rovinano etc¹. - In similar habitats the very near related *I. albicans* and especially *I. florentina*², which ought to

¹The populations of cultivated and naturalized *I. germanica*, *I. florentina*, *I. albicans*, and *I. pallida* are more widely spread in Latium in respect to the records in our map (fig. 2); very often they have been unnoticed, therefore they are underrepresented in herbaria.

²MATHEW 1981 points out the near relationship of this white-flowering plant to *Iris germanica* by the combination "*I. germanica* 'Florentina'". But in this paper we use the binome *I. florentina*, according to most floras.

have originated from the Arabian Peninsula (cf. MEUSEL 1965, PIGNATTI 1982 a.o.), are grown even in higher elevations. In Latium *I. florentina* generally seems to prefer habitats of lower altitude, in the mediterranean and submediterranean region. - Similar behavior could be noted also for the different cultivars of the *I. pallida* group (Fig. 2 and 7).

The recorded species of the subgen. *Limniris* (Fig. 3) are adapted to sub-mediterranean thermophile deciduous broad-leaved forests or partly also to related man made formations. *I. graminea* (ser. *Spuriae*), covers an area from South Europe (North Spain to the Balkan Peninsula), and to South Russia (SUESSENGUTH 1939). - *I. pseudacorus* (ser. *Laevigatae*) represents a marshland species. With regard to its affiliation to elements of the so called "azonal" vegetation types (ELLENBERG 1978). - *I. pseudacorus* takes most of Europe (except the extreme North), West Asia, and Northwest Africa (cf. MEUSEL & al. 1965; Fig. 3, right). - Finally, in Latium the East Asiatic *I. japonica* (sect. *Lophiris*) has been naturalized here and there, e.g. in Furbara (cultivated), leg. LUSINA 1930 in sched. (RO) and in Riano (Rome). Recent comparative morphological and karyological studies have resulted a better insight into the subtle differentiation within the species of the subgen. *Iris* in Latium. E.g. certain connections between the length of pedicels and branching of the flowering stem, number of flowers per inflorescence have been found to be important characters (Fig. 5, for further details see COLASANTE 1986, 1988). These findings also coincide very well with the related karyological and palynological data (COLASANTE 1989, COLASANTE et al. 1989). Accordingly we assume that the very variable group of *Iris* subgen. *Iris* with $2n = 40$ chromosomes, namely *I. lutescens* s.l., *I. relictata*, *I. sabina*, and *I. setina*, might be derived from elder allopolyploids, perhaps, they might have originated by earlier hybridization between species of the Balcanic-Southeast Alpine *I. pallida* stock ($2n = 24$) and the old Central Mediterranean stock of *I. pseudopumila* TINEO ($2n = 16$): $24 + 16 \rightarrow 40$ (Fig. 5). With the only exception of *I. setina* the intermediate status of the allopolyploids even is resembled by the related life forms (Fig. 5 and 8). - As pointed out above these species (as well as *I. marsica* RICCI & COLASANTE 1973 of the Abruzzi³) demonstrate very clearly differences in

³ *Iris marsica* RICCI & COLASANTE 1973 represents an endemic species of the near Abruzzi. Its habitats are centered in a very small area in the mediterrane-montane beech-forest belt at about 1500 m. According to our present knowledge true *I. marsica* doesn't enter Latium.

their ecological behavior, which reveals not only a clear preference for colonizing certain altitudinal belts and/or certain plant associations (see above and Fig. 5), but also physiological/genetical differences are articulated, perhaps, in different but very stable flowering periods.

Further still badly understood taxa exist within these allopolyploids (COLASANTE & RICCI 1975, COLASANTE & VOSA 1987). Some populations from the frontier between the provinces Abruzzi and Latium (Monti Ernici) approach morphologically *I. marsica* (DE PERSIIS 1987), but lacking sufficient material their taxonomic status has not yet been confirmed by biosystematic analysis. For this reason here we have not yet enclosed *I. marsica* among the *Iris* taxa of Latium (cf. Table 1 and Fig. 2: "(M)").

In Central Italy some species of sword flags are characterized by relatively long flowering periods (see Fig. 6 and 7), obviously caused by an extent vertical distribution, like *I. germanica* complex (late February until early May), *I. pallida* s.l. (late April until late June/July; Fig. 7) or by special ecological conditions of marsh habititat, like *I. pseudacorus* (April - May/June) and *I. foetidissima* (\pm April - June; Fig. 6). In contrast with them, but excepting *I. lutescens*⁴, the allopolyploid species of subgen. *Iris* sect. *Iris* with $2n = 40$ (*I. setina*, *I. sabina*, *I. relicta*) are characterized by relatively short flowering periods; they might be \pm controlled genetically, because they keep them even under the changed conditions of experimental cultivation in the garden. - Finally the bulbous *I. xiphium* (subgen. *Xiphium*) resembles to other mediterranean species, which flower mainly from April until early May.

Unfortunately the *Iris* habitats also in Latium become more and more endangered by uncontrolled recultivation and devastation as well as by the enormously increasing environmental pollution. Therefore an effective protection and preservation of the related biotops or the mountainous biosphere

⁴ There exist other still bad known *Iris* populations, which are not reported here in detail, because at the present moment their taxonomic status still is uncertain: Near Rieti, *Mt. Corno (leg. VISONÀ); *Lago di Monterosi (leg. COLASANTE); *Mt. Autore (leg. CAPINERI, COLASANTE, PAVESI); near Vallepietra (leg. VACCARI); *Mt. Sant'Angelo (leg. MARCHI); *Mt. Scalambra (leg. VISONÀ); *Piani di Rascino (leg. TAMMARO); Mt. Felino (leg. MORALDO & COLASANTE); Mt. Faggeto (leg. ROSSI & COLASANTE); Mt. Lauzo (leg. MINUTILLO); Rupi di Palinuro (leg. MORALDO); Mt. Petrella (leg. ROSSI & MINUTILLO); Mt. Pellecchia (leg. LANZARA), Mt. Lubone (leg. MAZZOCCHI). - The plants marked by asterisks (*) have the chromosome number $2n=40$ (v. COLASANTE 1986-1988), for the plants of Mt. Trisulti see COLASANTE & al. 1989. - These plants follow the same flowering rhythm of those allopolyploids with similar macromorphic and ecological characters.

in general is required urgently to save the still rich and very differentiated *Iris* taxa of Latium. Sweeping measures should be taken against the unregulated expansion of villages (present risk for *I. setina*) and the still increasing excessive tourism. In present time further dangers threaten by uncontrolled repopulating of wild animals and too intense care for huntable game, e.g. wild boars frequently destroy *Iris* rhizomes with their strong tasks (present risk for *I. relicta*, Monte delle Fate).

Zusammenfassung

In Latium sind die Schwertlilien durch ± 13 autochthone Arten oder Artgruppen/Aggregat der Gattung *Iris* und 1 Taxon der mit ihr nahe verwandten kleinen Gattung *Gynandris* vertreten. -- Die speziell in Latium lebenden *Iris*-Arten verteilen sich auf 3 Subgenera, die recht unterschiedliche Verbreitungs-Schwerpunkte aufweisen: Von der Untergattung *Limniris* sind drei autochthone Arten (*I. foetidissima*, $2n = 40$; *I. graminea*, $2n = 34$; *I. pseudacorus*, $2n = 32, 34$) und ein Neophyt, *I. japonica* aus Ostasien ($2n = 28, 34, 36, 54$), vertreten; die kleine, \pm westmediterrane Untergattung *Xiphium* wird im Gebiet nur durch *I. xiphium* ($2n = 34$) repräsentiert. -- Von der Untergattung *Iris* lassen sich die Arten mit $2n = 40$ Chromosomen (*I. lutescens*, *I. relicta*, *I. sabina*, *I. setina*) wohl als autochthone Allopolyploide deuten. Sie dürften sich aus älteren Vorläufern des *I. pallida*-Komplexes ($2n = 24$) und aus ebenfalls frühen Vertretern der ost- und zentralmediterranen *I. attica-pseudopumila*-Gruppe ($2n = 16$) herausgebildet haben: $24 + 16 \rightarrow 40$. Dagegen besitzt im Gebiet der wohl ebenfalls allopolyploide *I. germanica*-Komplex ($2n = \pm 44$) synanthrope Verbreitung. -- Die meisten der weiter verbreiteteten Arten, die sich von der Küstenebene bis in die (obere) montane Stufe angesiedelt haben, lassen heute - abgesehen von *I. graminea* ($2n = 34$) und *I. foetidissima*, ($2n = 40$) - eine ökologische Anpassung an \pm offene, jedoch seltener an submediterrane (Busch)wälder oder entsprechende anthropogene Formationen erkennen. Endemiten, wie *I. relicta*, *I. sabina*, *I. setina*, sind \pm stenöke Gebirgssippen. -- Relativ lange Blütezeiten bestimmter Arten rühren wohl von ihrer weiten Verbreitung bzw. von ihrer Präsenz in nahezu allen möglichen Höhenstufen her; die kurzen Blütezeiten mittelitalienischer, allopolyploider Endemiten dagegen könnten im Hinblick auf langjährige Beobachtungen in der Gartenkultur möglicherweise sogar \pm genetisch kontrolliert sein. -- Die gegenwärtige Gefährdung dieser Arten und mögliche Maßnahmen zu ihrem Schutze werden diskutiert.

References

- ANZALONE B. (1984): Prodromo della flora Romana. — Quaderno Lazionatura N. 5. - Roma.
- BERTOLONI A. (1833): Flora Italiana. — Bononiae.
- COLASANTE M. (1986): Genus *Iris* L. subgenus *Iris* section *Iris*: Osservazioni tassonomiche in *Iris* a $2n = 40$ cromosomi. — Giorn. Bot. Ital. 120(1-2), Suppl. 2: 74.
- COLASANTE M. (1988): Ibridi anfidiploidi di *Iris* barbatae spontanee a $2n = 40$ presenti in Italia. — Giorn. Bot. Ital. 122, Suppl. 1: 52.
- COLASANTE M. (1989): Alcune osservazioni sulle *Iris* barbatae spontanee e la loro determinazione in specie. — Boll. Soc. Ital. Iris, Firenze 28: 39-45.
- COLASANTE M. & ALTAMURA L. (1984): Distribuzione delle *Iris* spontanee e naturalizzate nel Lazio. Studi sul territorio. — Ann. Bot. (Roma), Suppl. 2: 69-80.
- COLASANTE M. & ALTAMURA L. (1986): Distribuzione delle *Iris* spontanee e naturalizzate in Umbria e Abruzzo-Molise. Note aggiuntive per il Lazio. Studi sul Territorio. — Ann. Bot. (Roma) 44, Suppl. 4: 125-135.
- COLASANTE M., DIFFORD M. & VOSA C.G. (1989): Scanning electron microscopy of some critical Bearded *Iris* pollen: preliminary observations. — Webbia 43(2): 339-350.
- COLASANTE M. & RICCI I. (1975): *Iris germanica* L. e *Iris marsica* RICCI & COLASANTE: separazione delle due specie. — Ann. Bot. (Roma) 34: 1-9.
- COLASANTE M. & VOSA C. (1987): The genus *Iris* L.: a short synthesis of some taxonomic problems. — Ann. Bot. (Roma) 45: 217-238.
- DE PERSIIS G. (1987): Due itinerari sugli Ernici: in fiore qui. — Gardenia 38: 100-105.
- ELLENBERG H. (1978). Vegetation Mitteleuropas mit den Alpen in ökologischer Sicht. 2. Aufl. — Stuttgart.
- FENAROLI L. (1970): Note illustrative della carta della vegetazione reale d'Italia. — Minist. Agric. e Foresta. Collana verde 28. Roma.
- FIORI A. (1926): Nuova Flora Analitica d'Italia. Vol. 1. — Firenze (reprint Bologna 1969).
- GARZANTI (1988): La nuova enciclopedia geografica GARZANTI, ed. per gli anni '90. — Milano.

- LATTANZI E. & LEPORATTI GREGORIO M.L. (1981): Contributo alla conoscenza della flora del Monte Soratte (Lazio). — *Ann. Bot. (Roma)* 39(2): 197-225.
- MATHEW B. (1981): *The Iris*. — London.
- MEUSEL H., JÄGER E. & WEINERT E. (1965): Vergleichende Chorologie der zentral-europäischen Flora. Vol. 1, — Text und Atlas. Jena.
- MONTELUCCI G. (1976/77): Lineamenti della vegetazione del Lazio. — *Ann. Bot. (Roma)* 35/36: 2-107.
- MORALDO B., MINUTILLO F. & ROSSI W. (1990): Flora del Lazio meridionale (Ricerche ecologiche, floristiche e faunistiche sulla fascia costiera mediterranea italiana. II. — *Acc. Naz. Lincei* 264: 219-292.
- PARLATORE F. (1858): *Flora italiana*. Vol. 3. — Firenze.
- PIGNATTI S. (1982): *Flora d'Italia*. Vol. 3 — Bologna.
- RANDOLPH L.F. (edit.). (1959): *Garden Irises*. — St. Louis, Missouri.
- RANDOLPH L.F. & RECHINGER K.H. (1954): Die geographische Verbreitung einiger europäischer und mediterraner *Iris* Arten. — *Verh. Zool.-Bot. Ges. Wien* 94: 82-96.
- RICCI I. (1958): Su una *Iris* raccolta a M. Trevi (M. Lepini) e l'*Iris suavolens* TERRACCIANO N. — *Ann. Bot. (Roma)* 24(1): 1-7.
- RICCI I. (1966): Distribuzione geografica e cariologia di *Iris xiphium* L. Segnalazione di una nuova stazione in Italia. — *Ann. Bot. (Roma)* 28(3): 667-674.
- RICCI I. & COLASANTE, M. (1973): *Iris marsica* nova species. — *Ann. Bot. (Roma)* 32: 217-235.
- SUESSENGUTH K. (1939): *Iris* L. — In: HEGI, G. *Illustrierte Flora von Mittel-Europa*. Vol. 2. 2. Aufl. München - Berlin.
- TERRACCIANO N. (1891): Intorno ad alcune piante della flora di Terr di Lavoro. — *Atti R. A^m Sc. Mat.-Fis. Nat.*, Append. 4(2): 2-7.
- TERRACCIANO N. (1899): Intorno ad alcune specie d'Iridi che crescono naturalmente nel mezzogiorno d'Italia. — *Atti R. Istit. d'Incor. Napoli* 1(5): 1-13.
- TOMASELLI R. (1970): Note illustrative della carta della vegetazione naturale potenziale d'Italia (prima approssimazione). — *Minist. Agric. e Foreste. Collana verde* 27. Roma.
- VAN NES H. (1967): *IRIS im Garten*. — München, Basel, Wien.

WEBB D.A. & CHATER A.O. (1980): *Iris* L. — In: TUTIN T.G., HEYWOOD V.H., BURGESS N.A., MOORE D.M., VALENTINE D.H., WALTERS S.M. & D.A. WEBB. *Flora Europaea*, Vol. 5. Cambridge, London, New York, New Rochelle, Melbourne, Sydney.

ZANGHERI, P. (1976): *Flora Italiana*. Vol. 1. — Padova.

Addresses of the authors: Prof. Dr. Maretta COLASANTE,
Dipartimento di Biologia Vegetale, Università degli Studi
di Roma "La Sapienza", Città Universitaria, I-00100
Roma, Italy.

Prof. Dr. Wilhelm SAUER,
Universität Tübingen, Institut für Biologie I, Spezielle
Botanik, Auf der Morgenstelle 1, D-72076 Tübingen 1,
Germany.

Table 1. Synopsis of the spontaneous and synanthropic (naturalized) *Iris* entities of Latium, Central Italy, in general according to the proposal of MATHEW 1981. The species listed below are rhizomatous except the bulbiferous *I. xiphium*. The general distribution of the treated subgenera and sections is presented in Fig. 1. - Parentheses sign either species uncertainty recorded for the area of Latium, or recently naturalized taxa.

Genus *Iris* L.

(1) Subgen. *Iris*

Sect. *Iris*

<i>I. germanica</i> L., s.l.	2n = 44	synanthropic, S Europe, SE Central Europe
<i>I. albicans</i> LANGE	2n = 44	synanthropic, Mediterranean, Near East
<i>I. florentina</i> L.	2n = 44	synanthropic, Mediterranean, Near East
<i>I. pallida</i> LAM.	2n = 24	synanthropic, Balkan Peninsula, Southeast Alps
<i>I. lutescens</i> LAM., s.l.	2n = 40	Northwest and Central Mediterranean
<i>I. relicta</i> COLASANTE	2n = 40	endemic of Central Italy
<i>I. sabina</i> TERR.	2n = 40	endemic of Central Italy
<i>I. setina</i> COLASANTE	2n = 40	endemic of Central Italy
(<i>I. marsica</i> RICCI & COLASANTE	2n = 40	endemic of Abruzzi)

(2) Subgen. *Limniris* (TAUSCH) SPACH

Sect. *Limniris*

Ser. *Laevigatae* (DIELS) LAWRENCE

I. pseudacorus L. 2n = 32, 34 Europe, SW Asia, NW Africa

Ser. *Spuriae* (DIELS) LAWRENCE

I. graminea L. 2n = 34 South Europe to South Russia

Ser. *Foetidissimae* (DIELS) MATHEW

I. foetidissima L. 2n = 40 Atlantic W Europe up to Scotland, humid Central Mediterranean

(Sect. *Lophiris* (TAUSCH) TAUSCH - "Evansia" *Iris*)

(*I. japonica* THUNB. 2n = 28, 34,
36, 54 Japan, Central China)

(3) Subgen. *Xiphium* (MILLER) SPACH

I. xiphium L. 2n = 34 W Mediterranean

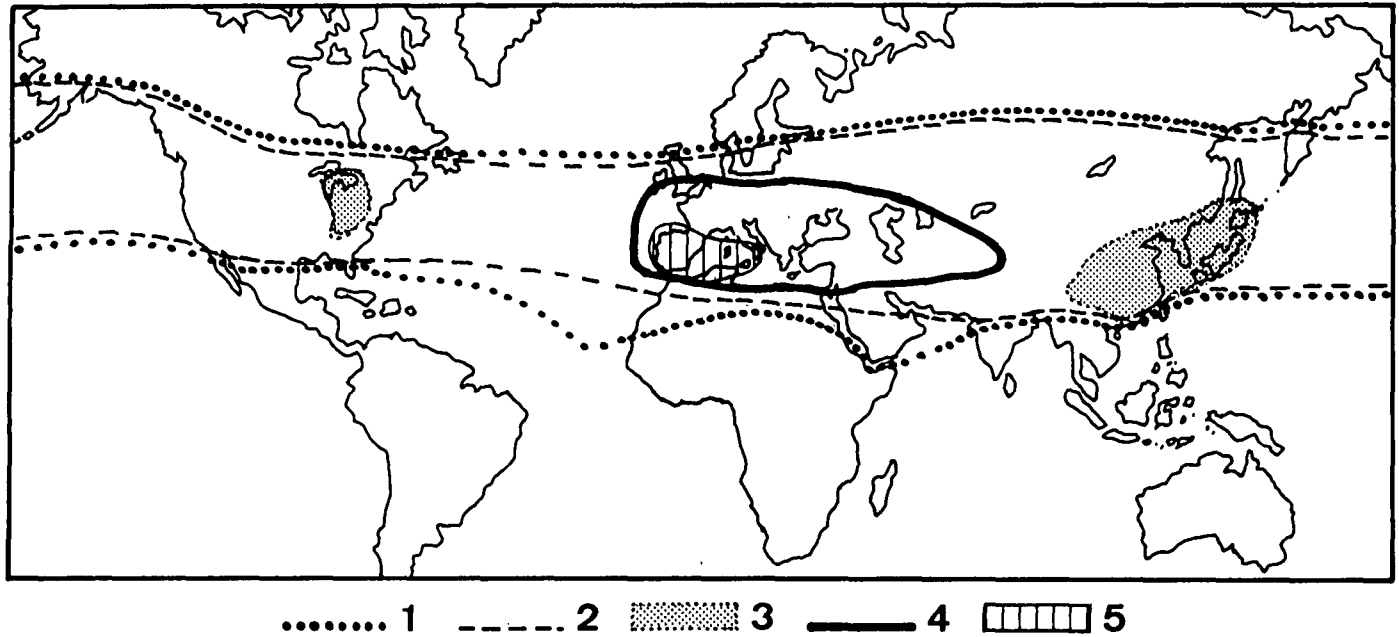


Fig. 1. Generalized distribution of the genus *Iris* (1), and the treated subgenera: 2 = subgen. *Limniris* with sect. *Limniris*, and 3 = sect. *Lophiris*; - 4 = subgen. *Iris* sect. *Iris*; - 5 = subgen. *Xiphium*. - (According to RANDOLPH 1959, MEUSEL et al. 1965, RICCI 1966, VAN NES 1967, MATHEW 1981).

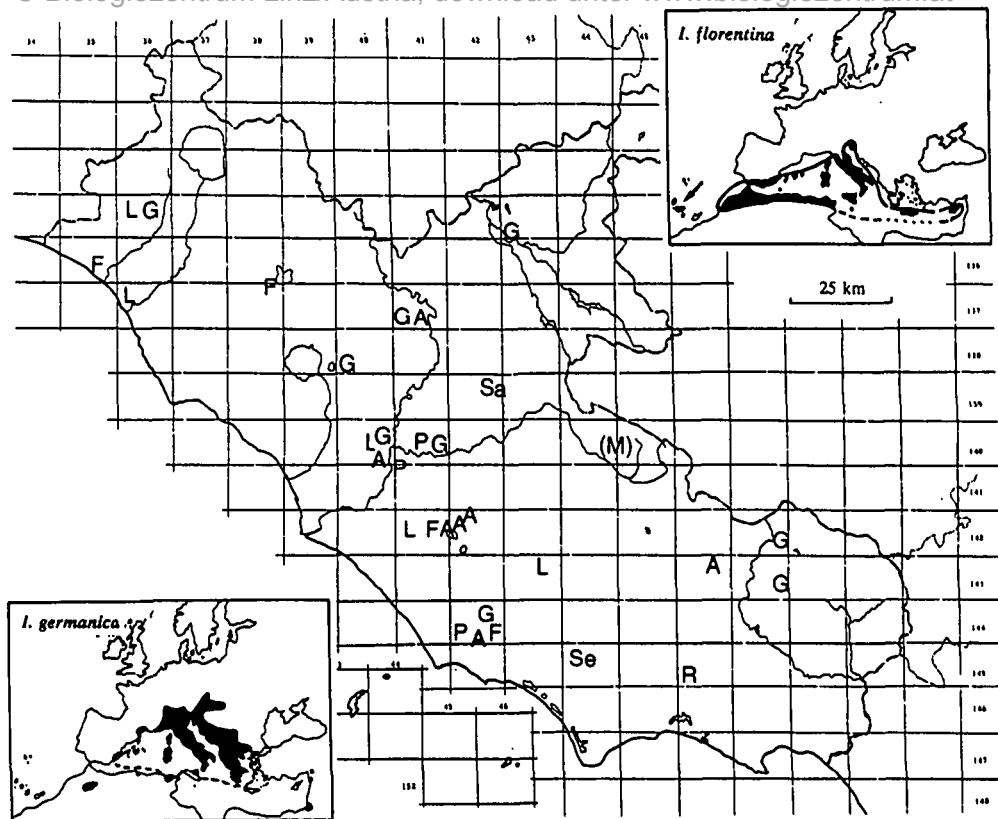


Fig. 2. Distribution of subgen. *Iris* sect. *Iris* in Latium: $2n=24$: P = *I. pallida* s.l. -- $2n=40$: L = *I. lutescens* s.l.; R = *I. relicta*; Sa = *I. sabina*; Se = *I. setina*; (M) = taxa similar to *I. marsica* (for further information see footnote 5). -- $2n=44$: A = *I. albicans*; F = *I. florentina*; G = *I. germanica* s.l. -- General distribution of *I. germanica* (left) and *I. florentina* (right), with synanthropic habitats (arrow) in the Canary Islands (according to MEUSEL & al. 1965).

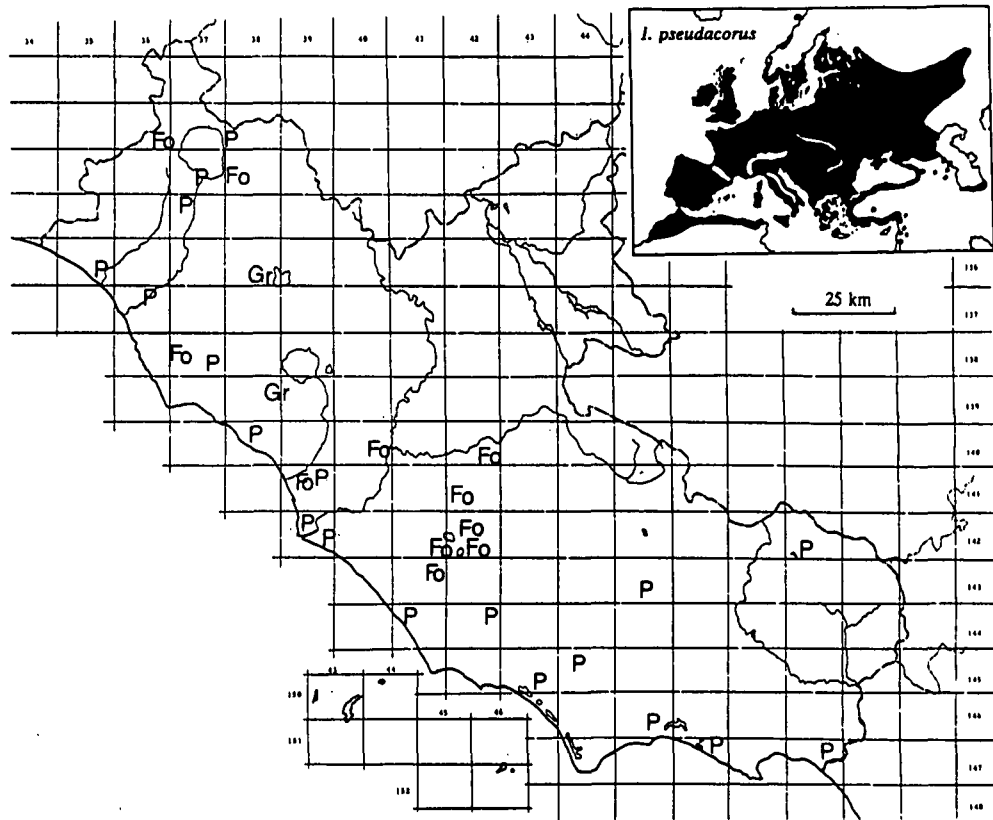


Fig. 3: Distribution of subgen. *Limniris* Sect. *Limniris* in Latium, Ser. *Spuriae*: Gr = *I. graminea* (2n=34); - ser. *Foetidissimae*: Fo = *I. foetidissima* (2n = 40); - ser. *Laevigatae*: P = *I. pseudacorus* (2n= 32, 34), right the general distribution (according to MEUSEL & al. 1965).

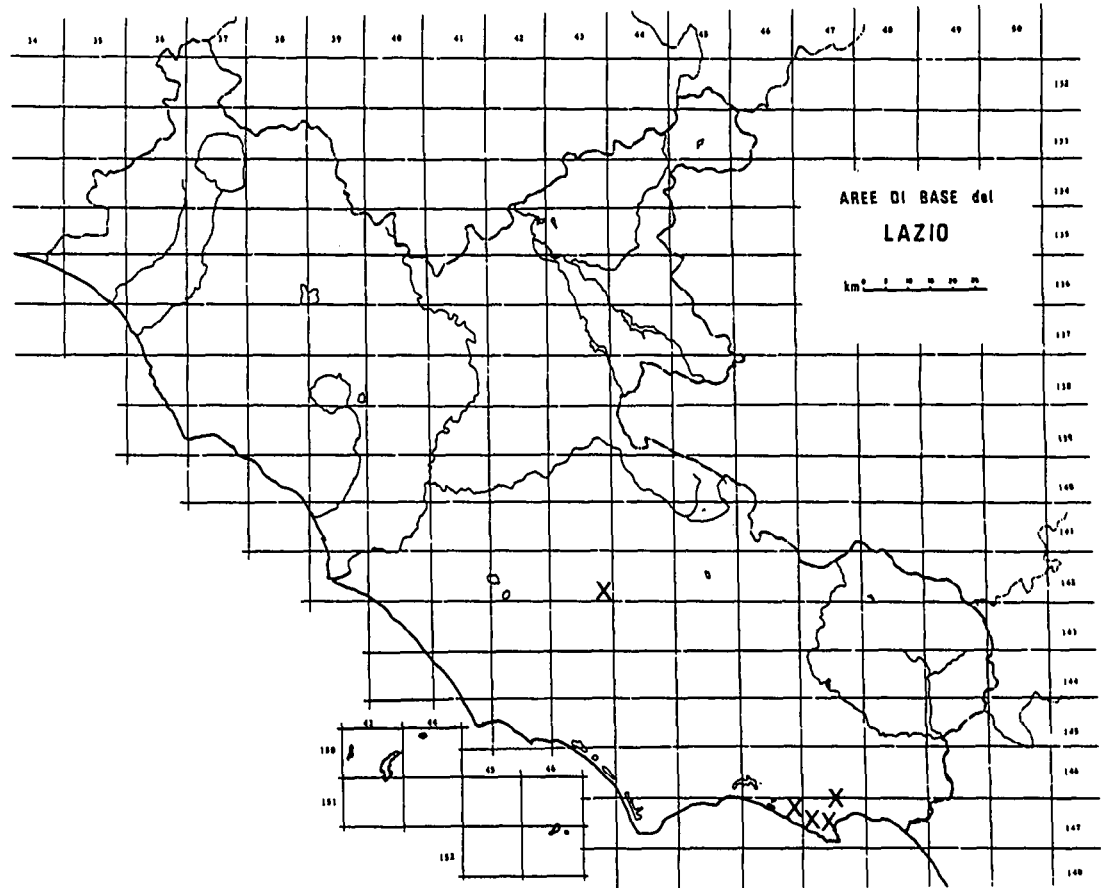


Fig. 4: Distribution of subgen. *Xiphium* in Latium: X = *I. xiphium* (2n=34).

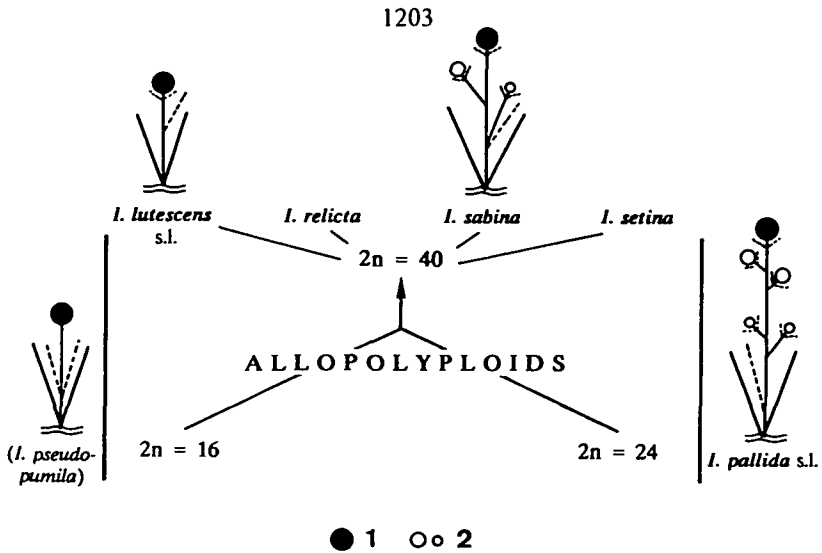


Fig. 5: Subgen. *Iris* sect. *Iris*: Morphological (above) and probable karyological differentiation (bottom) of allopolyloid taxa with $2n = 40$. The schematic figures of the related "life forms" refer to the specific kind of ramification. - *I. pseudopumila* (South Italy and Sicily) is lacking in Latium. - 1 = flower, 2 = buds of different age (small circles = younger buds).

Systematic groups	February	March	April	May	June	July
	winter		spring			summer
subgen. <i>Limniris</i>						
sect. <i>Limniris</i>						
ser. <i>Spuriae</i>				-----	-----	
ser. <i>Foetidissimae</i>			-----	-----	-----	
ser. <i>Laevigatae</i>			-----	-----		
subgen. <i>Xiphium</i>			-----			
subgen. <i>Iris</i>						
sect. <i>Iris</i>	-----	-----	-----	-----	-----	

Fig. 6: Flowering periods of the Irises of Latium. - The thick horizontal bars refer to the main flowering times, the joining broken bars indicate the most frequent extremes. - For further explanation see also text.

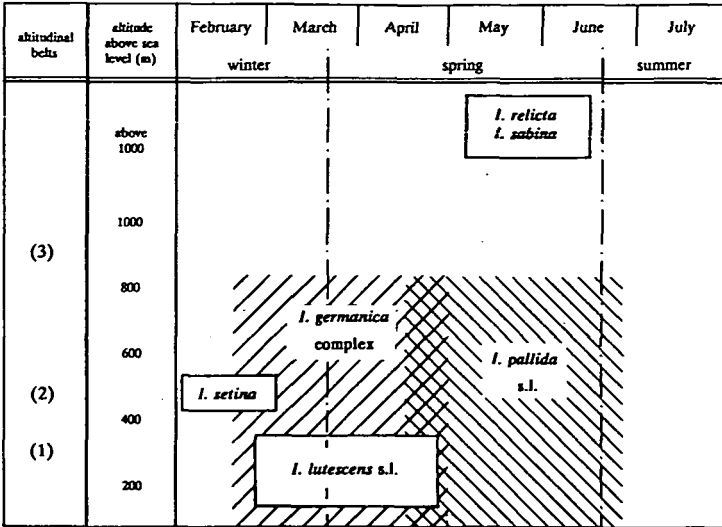
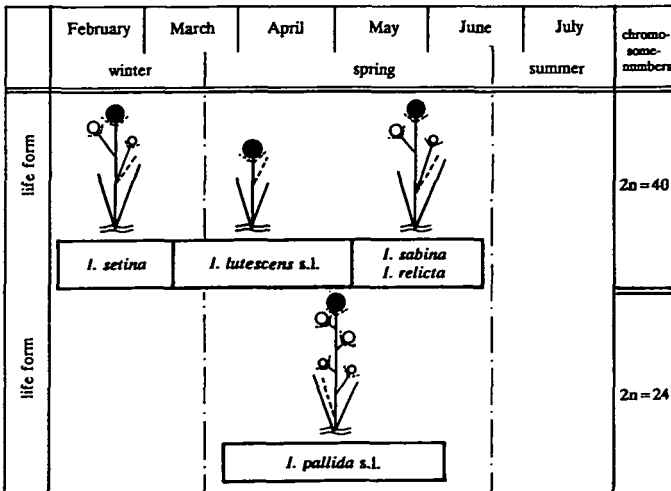


Fig. 7: Main flowering periods of the Bearded Irises (subgen. *Iris* sect. *Iris*) of Latium in connection with their vertical distribution. Favoured distribution belts of endemic species are (1) from about sea level up to 300-400 m (*I. lutescens*); (2) between ± 400 and 500 m (*I. setina*), and (3) up to about 1000 m and more (*I. relicta*, *I. sabina* cf. TERRACCIANO 1891, 1899, RICCI 1958, and also *I. marsica* of the Abruzzi).



● 1 ○ 2

Fig. 8: Possible phylogenetic pathway of the Bearded Irises of Latium presented on the base of characteristic life forms, chromosome numbers, and, perhaps, specific flowering periods.