I-I5

Distribution and synecology of Adriatic insular Filicales

Mladen RAC and Andrija Zelimir LOVRIC

Rudjer Boskovic Institute, 41000 Zagreb (Yugoslavia)

RESUME : Répartition et synécologie des fougères insulaires adriatiques. La flore des Filicales (Polypodiaceae s.lat.) de l'Archipel adriatique (21 taxons) est assez pauvre parmi les îles méditerranéennes. Près de 14 taxons indiqués par les flores classiques, on y a récemment recensé 7 fougères supplémentaires : Asplenium csikii, Ceterach javorkeanum, Pteris cretica, Dryopteris pallida, D. borreri, Polypodium interjectum et Pteridium tauricum dont la synécologie est également étudiée.

INTRODUCTION. So far existed any special survey on the Adristic insular ferns, except someones on the endemic Phyllitis hybrids. The general flores covering this archipelago till now documented there only the presence of 14 insular species of true ferns or Filicales (Polypodiscese s.lst.), and their nomenclature is mostly after the Mediterranean fern list of GREUTER (1985) : Asplenium trichomanes L.: widespread in the cliffs (Asplenietes). A. ruta-muraria L.: frequent in insular cliffs (Asplenietes). A. petrarchae (Guer.) DC.: coastal cliffs, Centaureo-Campanulion Hic. Ceterach officinarum DC.: coastal cliffs, Centaureo-Campanulion. Cheilanthes pteridioides (Rchb.)Chr.: walls, Parietarietalia Br.-Bl. Ch. persica (Bory) Matt.: SE Adristic, Ephedro-Cysthoselinetum Lov. Adiantum capillus-veneris L.: frequent in caves, Adiantion Br.-Bl. Anogramma leptophylla (L.) Link.: SE isles, Homalothecio-Polypodion. Asplenium onopteris L.: widespread in maquis, Quercion ilicis Br.-Bl. Polystichum setiferum (Forsk.)Moore: N isles, Vitici-Quercetum Lov. Polypodium australe Fée: S isles, Homalothecio-Polypodion R.Mart. Phyllitis hybrida (Milde)Chr.: endemic, N isles (ecology few known). Ph. sagittata (DC.) Guin. & Heyw.: N isles, Adianto-Phyllitidetum Hic. Ph. scolopendrium L.: N isles only, Castaneo-Quercetum (Anic) Lov.

The ancient indications on Asplenium adiantum-nigrum, Dryopteris filix-mas, Polypodium vulgare, Polystichum lobatum and Pteridium aquilinum s.s. in these islands recently were not confirmed nor ecologically expectable, being probably the Mid-European extrapolations confused with other vicarious taxa.

RESULTS. The recent detailed prospections of the Adristic insular ferns in the field added 7 other taxa so far unknown in this archipelago, whose vouchers are now deposed in the Herbarium ADRZ: Asplenium csikii, Ceterach javorkeanum, Dryopteris borreri, D. pallida, Polypodium interjectum, Pteridium tauricum et Pteris cretica. Their synecology and communities were studied, too.

1. Asplenium csikii Deg.& Kümm. is chiefly a SE European fern, recently registered in the major insular mounts of Cres, Krk, Brač and Pelješac, mostly on their apical cliffs within the alliance Edraianthion Lak.

2. Ceterach javorkeanum (Vida) Sóo (Asplenium ceterach ssp. bivalens Greut. et al.) is also a SE European fern of the Balkans and Pannonia that is recently registered in the Adristic insular mounts (Cres, Krk, Brač, Pelješac, etc.), chiefly in the apical cliffs of Edraianthion, together with Asplenium csikii. Contrary to this, the typical Ceterach officinarum DC.s.s. is a Mediterranean fern that is in Adristic islands mostly restricted to their warmest coastal cliffs.

3. Dryopteris borreri (Newm.) Ober. is rare in this archipelago and restricted to the northernmost islands Krk and Cres only, where it grows in the wet valley carrwoods within Vitici-Quercetum pedunculiflorae Lov.

4. Dr. pallida (Bory) Chr. is there also rare and registered only in the Dalmatian insular peaks of Brač and Pelješac, growing mostly in montane screes of Geranietum dalmatici Lak. et al.

5. Polypodium interjectum Shiv. in this archipelago is rare and restricted to the northernmost islands Cres and Krk, growing in the acide flysch substrata within the chestnut woods of Castaneo-Quercetum pubescentis (Anic) Lov.

6. Pteridium tauricum Grosg. (Pt. aquilinum ssp. brevipes Vuljf) occurs sporadically on the acide insular flysch woods e. g. in Castaneo-Quercetum of N islands, and within the Pistacio-Quercetum brachyphyllae Quez. et al. of the SE ones.

7. Pteris cretica L. occur only as naturalized in old walls (Kentrantho-Parietarion R. Mart.) of SE Adristic isles.

Concerning the ecology of Phyllitis hybrida, it occurs chiefly in coastal rockwoods of Alterno-Fraxinetum argenteae Lov. By the 21 known taxa, the fern flora of Adristic Archipelago is poorer than in the most other Mediterranean islands.

Reference: Greuter, W. (ed.), 1985: Med-Checklist 1. Pteridophyta. OPTIMA, XXII + 32 p., Genève & Berlin.

I-I6

Botanical peculiarities of stormy mounts in N.E. Adriatic Islands

Andrija Zelimir LOVRIC and Mladen RAC

Rudjer Boskovic Institute, 41000 Zagreb (Yugoslavia)

RESUME : Singularités botaniques des monts orageux des îles adristiques septentrionales. Les îles dalmates méridionales plus élevées dépassant 500m ont un étagement altitudinal comparable à celui de la Dalmatie continentale. Par contre, les sommets orageux des îles nord-est (surtout Krk) sont marqués par une végétation spéciale de Cotonesstro-Pinetum, Pilosello-Festucetum fallacis, Festuco-Stipetum, Myosotido-Galanthetum, Minuartio - Daphneetum alpinae et Micromerio-Onosmetum crosticae.

INTRODUCTION. The peaks of the higher Adristic islands overpassing 500m include an apical vegetation different from their lowlands and coasts: Krk (569m), Cres (650), Lošinj (588), Brač (778) and Hvar (623). This altitudinal zoning of the southern Dalmatian islands is mostly comparable to this one of the Dalmatian mainlands, with next apical communities (LOVRIC 1975) : xeric deciduous woods of Seslerio-Ostryetum Horv., windswept ridge pinewoods of Pinetum dalmaticae Horv., degraded deciduous scrub of Frangulo-Cersetum mahaleb Pold., then various secondary grasslands e.g. Satureio-Edraianthetum Horv., Festucetum illyricae-valesiacae Rit., Carici-Seslerietum interruptae Horv., and Campanulo-Moltkietum petraeae Hic. in apical cliffy crags. An exception was the few studied apical vegetation in stormy N isles.

RESULTS. The recent studies evidently documented that the windswept mounts of northernmost Adristic islands overexposed to strong Bora gusts (NE wind) have an apical vegetation divergent from the Dalmatian mainlands. A most peculiar montane flora and communities, including even the subalpine belds and sinkhole snowfields, and cliffs with numerous endemics and disjunct relicts, occur especially in very stormy Mt Obzova Gora of Krk island. Despite its modest height of 569m only, this ridge is overexposed to the strongest hurricane winds of Adristic with maximal gusts to 180-210 km/h, frosts to -18°C and winter snow cover. Thus it includes the paleoendemic communities of Pleistocene glacial affinity, and an intersting subalpine and oromediterranean flora: Ostrya carpinifolia ssp. corsica Rouy, Acer velutinum Boiss, Cersus cupaniana (Guss.) M.G., Amelanchier cretica Pers., Daphne alpina L., Anthyllis montana L., Minuartia capillacea Graeb., Festuca rubra ssp. fallax Thuil., Myosotis speluncicola Schott, Valeriana montana L., Fritillaria montana Hpe., Arabis hornungiana Schur., Cymbalaria pallida (Ten.) Watt, being absent in other Dalmatian islands, but also the endemics Pinus nigra ssp. crostica Lov., Onosma crostica M.G., Campanula staubii Uech., Micromeria kerneri Murb., Asperula rigens M.G., Sedum dinaricum M.G., etc. The most peculiar communities are (presence symbols: I = 1-20% sites...V = 80-100% ones):

1. Cotonesstro-Pinetum nigrae Horv., rocky ridge pinewoods.

2. Pilosello-Festucetum fallacis (Mort.) Lov., acide grassland in stormy flysch: Festuca fallax V, Pilosella officinarum V, Asperula scabra V, Potentilla tommasiniana IV, Seseli nitidum III.

3. Festuco-Stipetum eriocaulis Lov., calcareous montane grasslands of Krk, Prvic and Biokovo: Festuca lepidosa V, Stipa eriocaulis V, Bupleurum veronense V, Eryngium dalmaticum IV, Colchicum kochii III, Ornithogalum gussonei IV and Centaurea huteri III.

4. Minuartio-Daphneetum alpinae Lov. is a local community of the barren stony ridges in Mt Obzova only, eroded by strongest hurricanes: Daphne alpina IV, Minuartia capillacea V, Asperula rigens V, Thymus malyi IV, Anthyllis montana III, Edraianthus hercegovinus II.

5. Myosotido-Galanthetum nivalis Lov., is a peculiar local chionophilic community of Obzova, in its insular snowfiels within the karst sinkholes and shady NE cliff-ledges, covered by snow for 3-5 months: Galanthus nivalis s.l.IV, Myosotis speluncicola III, Fritillaria montana IV, Valeriana montana III, Muscari kerneri V.

6. Micromerio-Onosmetum crosticae Lov., stormy and sunny montane cliffs of Krk and Velebit: Onosma crostica V, Alyssoides sinuata V, Micromeria kerneri IV, Campanula staubii IV, Sedum dinaricum V, Cysthoselinum tomentosum III, Aethionema thomasiana IV, and lichens Blastenia cretacea IV and Heppia adristica III.

7. Cetarscho-Cymbalarietum pallidae Lov., cool and shady NE cliffs in Mt Obzova and Lika highland: Ceterach javorkeanum V, Cymbalaria pallida IV, Arabis hornungiana IV, Sedum purpureum III, Asplenium csikii IV, then the lichens Verrucaria dinarica IV and Caloplaca likensis II, and the moss Pseudoleskea catenulata III.

By these 7 communities, Mt Obzova differs from all other isles.

Reference
Lovric, A.Z. 1975, Bora storms and biocoenoses of Senj archipelago. Botanical Institute Univ. Zagreb, no. YUAA - 9975, 54 p.

I