

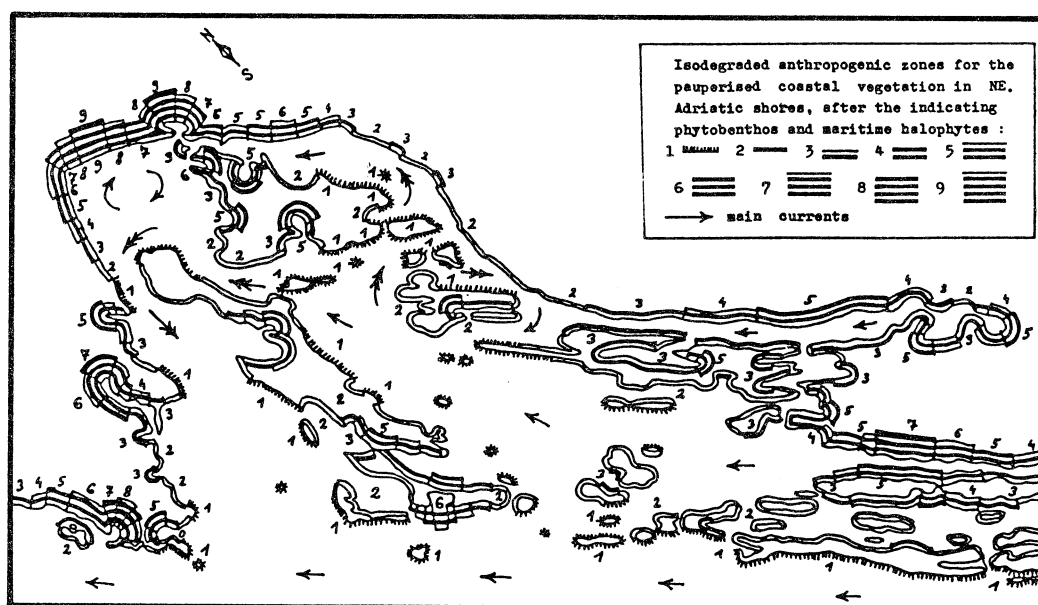
## INDICATING ECOZONATION OF THE DEGRADED VEGETATION IN NE. ADRIATIC

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**Abstract.** After the gradual disappearing and deviations in the phytobenthos and maritime halophytes along the degraded shores, one developed in NE. Adriatic a combined statistical method for the definition and mapping of 9 isodegraded zones, from the most natural shores of external isles to the very degraded ones of the internal channels and harbour areas.

**Résumé :** Ecozonation indicatrice de la dégradation végétale en Adriatique nord-est. D'après les déviations et la disparition graduelle du phytobenthos et des halophytes maritimes aux côtes dégradées, on a développé une méthode synthétique originelle pour la définition statistique et la cartographie de 9 zones isodegradées. Phytosindications usées: disparition des phytocoenoses sensibles nitrophobes et prédominance graduelle de celles tolérantes rudérales, disparition des espèces pérennantes et prédominance de celles annuelles, disparition des rhodophytes, phéophytes et plumbaginacées et leur remplacement par chlorophytes, cyanophytes et chenopodiacées, ascension des skiophytes circalittoraux en eaux troubles et une décadence générale de la diversité floristique des côtes dégradées.

The clean and natural seashores of external islands, and the degraded and polluted ones at the internal channels and harbour areas across the NE. Adriatic present a number of the conspicuous differences and deviations in the marine phytobenthos and maritime halophytic vegetation, both offering the useful indications for a biological distinction of the degradation degrees. Previously one



compiled after these indications a provisional qualitative map of this aquatory including 5 approximative degradation degrees (Lovric 1977), but recently one developed there an original combined method for a finer statistical distinction and mapping up to 9 isodegraded zones of the benthic and halophytic vegetation along the seashores. As the indicating variables, one applied the next deviations and syndromes in the littoral vegetation: a gradual disappearing of the sensitive nitrophobe phytocenoses and predominating of the resisting ruderal ones; then a disparition of the perennial species and a successive predominance of the annuals both in algae and halophytes; a gradual rarifying of Rhodophyta, Phaeophyta, and Plumbaginaceae and their replacing by the invading Chlorophyta, Cyanophyta, and Chenopodiaceae; an ascending of the circalittoral skiophytes in the turbid waters, and a general decrease of the floristic diversity at the degraded shores. The main distinctive vegetational characteristics of the proposed degradation zones as established in Adriatic, may be the next ones, including also the limiting resistences of the main algal and halophytic communities.

1. **The purest zone:** maximal diversity, luxuriant vegetation. Communities: Neogoniolitho-Lithophylletum tortuosi, Cystoseiretum amentaceae, Goniolitho-Lithophylletum trochantri, Codio-Corallinetum squamatae, Ephedro-Cyathoselinetum.

2. **Almost natural:** rich vegetation but decreasing diversity; Posidonietum oceanicae, Cystoseiretum spinosae, Cystoseiretum spicatae-fimbriatae, Valonio-Lithophylletum ercegovicii, Crodelio-Halimedetum platydiscae, Aurinio-Astragaletum dalmatici, Aurinio-Brassicetum frutescentis.

3. **Seminaural:** no Posidonia nor calcifying formations, rarifying perennials, first ruderals appear; Cystoseiretum crinitae, Lamprothamnio-Coleogetum zosteracei, Plantagini-Limonietum anfracti, Limonio-Goniolimnetum dalmatici, Arthrocnemetum glauci, Artemisio-Salsoletum ponticae, Plantagini-Thymelaetum.

4. **Intermediate:** modest diversity, predominating annuals, rarer Rhodophyta and Phaeophyta; Corallino-Lithothamnetum lenormandii, Hildenbrandtietum prototypi, Udoteo-Peyssonellietum squamariae, Batrachio-Potamogetum siculi, Juncetum maritimo-acuti, Arthrocnemetum fruticosi, Plantagini-Limonietum cancel-

5. **Semidegraded:** predominating ruderals, Chlorophyta and Chenopodiaceae, ascending skiophytes; Cystoseiretum barbatae, Zosterelletum noltii, Fucetum virsoidis, Ceramio-Corallinetum, Dictyopterretum, Bangio-Ulothricetum, Euphorbio-Glaucietum, Salicornietum europeae, Limonio-Artemisietum coerulescentis.

6. **Degraded:** very scarce diversity, even the resisting ruderals, Chlorophyta and Chenopodiaceae rarified; Cystoseiretum myriophylloides, Pterocladio-Ulvetum rigidae, Scytosipho-Enteromorphetum compressae, Coleogeto-Zannichellietum, Bolboschoenetum, Lavateretum, Cynodonti-Plantaginetum coronopi, Juncoscorzoneretum candollei.

7. **Overdegraded:** Cyanophyta and diatoms predominating, scarce macrovegetation; Enteromorphetum prolifero-intestinalis, Chaetomoppho-Valonietum aegagrophilae, Erigero-Xanthietum.

8. **Devastated:** any macrovegetation, even the cyanophyta and diatoms rarified; Microcoleion chthonoplastis.

9. **Destroyed:** azoic shores with only bacteria, but any other vegetation.