GRADIENT MAPPING OF THE SURF EXPOSITION BY INDICATING PHYTOMETERS

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A b s t r a c t. One developed in Adriatic a combined statistical method for the gradient mapping to 9 isodynamical zones of the surf exposition in seashores, after some petrurbations in marine and maritime halophytic vegetation. The maximal average surf is so indicated for NE.isles exposed to the Bora storms, then in the pelagic islets of central Adriatic and open mainlands at SE.Adriatic.

R é s u m é : Cartographie du gradient de ressac par phytomètres indicateurs. D'après plusieurs déviations et perturbations de la végétation benthique et halophile maritime, on a développé en Adriatique une méthode statistique combinée offrant la cartographie de 9 zones isodynamiques du ressac des vagues. L' hydrodynamique maximale y est ainsi indiquée aux îles nord-est battues par les orages de bora (NE), puis aux îlots pélagiques de l'Adriatique central et au littoral ouvert de l'Adriatique sud-est. Indications usées: phytocoenoses resistantes spécialisées, prédominance des cyanophytes endolithes, abondance des algues calcifiées et des halophytes lignifiés, ceinture azoïque médiolittorale, descente des espèces superficielles aux fonds infralittoraux, ascensions des halophytes maritimes et des cyanophytes supralittoraux etc.

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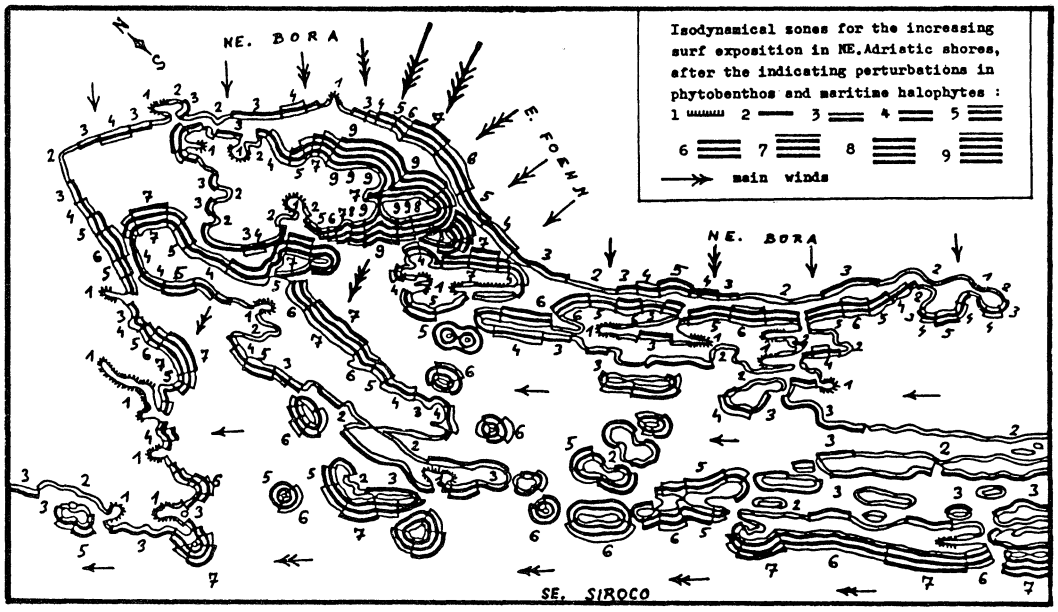
One developed in E.Adriatic an original synthetic method for the fine statistical distinction and mapping of the isodynamical zones for the average surf exposition, by a combination of indicating perturbations and syndromes in the phytobenthos and maritime halophytes: presence of specialised resisting and sensitive communities; gradual disappearing of seagrasses, soft algae, herbaceous halophytes and epilithic cyanophyta and replacing by calcified algae, lignified halophytes,



endolithic Cyanophyta; descending the surface algae across an extended infralittoral fringe, appearance of an azoic mediolittoral belt, and ascending both the supralittoral cyanophyta and the maritime halophytes upwards, habit deformation, etc. One indicates the optimal exposition degrees for some dominating communities.

1° The **calmest**: salt-marsh halophytes and specific phytobenthos of the stagnant basins; Chaetomorpho-Valonietum aegagrophilae, Bolboschoenetum.

2° Rather **calm**: subnormal phytobenthos, appearing seagrasses; Zosterelletum noltii, Cystoseiretum myriophylloidis, Enteromorpho-Ruppietum rostellatae, Salicornietum europeae.

3° Almost **sheltered**: abundant seagrasses, almost epilithic Cyanophyta to 1m in supralittoral, predominating herbaceous halophytes to 5m up; Zosteretum marinae, Enteromorphetum prolifero-intestinalis, Batrachio-Potamogetum siculi, Peucedano-Molinietum litoralis, Schoeno-Plantaginetum maritimae, Seslerio--Putorietum calabricae.

4. **Intermediate**: luxuriant seagrasses, abundant cystoseirae, cyanophyta to 2m, halophytes to 5m; Posidonietum, Cystoseiretum barbatae, Dictyopteretum, Udoteo-Peyssonnellietum, Fucetum virsoidis, Salicornietum venetae, Plantagini-Limonietum cancellati, Drypetum jacquinianae.

5. **Semiexposed**: decreasing seagrasses, luxuriant cystoseirae, increased calcifying, appearance of endolithic cyanophyta (to 3m up) and lignified halophytes (to 20m); Cymodoceetum, Zosterelletum hornemanii, Hildenbrandtietum, Sargasso-Cystoseiretum, Scytosipho-Enteromorphetum compressae, Agrostidetum maritimae, Euphorbietum dendroidis, Phagnalo-Centaureetum ragusinae, Fibigio-Cerinthetum tristis, Plantagini-Limonietum anfracti.

6. **Well exposed**: any seagrasses, infralittoral fringe to 3m down with extended calcifying, cyanophyta to 5m up, halophytes to 20m; Ceramio-Corallinetum, Arbacio-Lithophylletum incrustantis, Corallino-Lithothamnietum lenormandi, Crodelio-Halimedetum platydiscae, Agropyretum mediterraneae, Arthrocnemetum glauci, Campanulo-Centaureetum dalmaticae, Plantagini-Thymelaetum hirsutae, Limonio-Goniolimonetum dalmatici, Ephedro-Cyathoselinetum palmoidis.

7. **Overexposed**: rarified soft algae and epilithic cyanophyta, luxuriant calcifying both medio- and infralittoral, fringe extended to 5m, cyanophyta to 8m up, halophytes to 100m; Neogoniolitho-Lithophylletum tortuosi, Nemalio - Laurencietum papillosae, Peyssonnellietum rosae-marinae, Cystoseiretum spicatae, Cystoseiretum adriaticae-corniculatae, Lavatero-Cappsretum ovatae, Helichryso-Artemisietum canescentis, Ephedro-Juniperetum lyciae.

8. **Very stormy**: scarce mediolittoral algae, fringe to 9m down, predominating endolithic cyanophyta (to 12m up) and lignified halophytes to 200 m up; Cystoseiretum amentaceae, Pylaiello-Cystoseiretum, Goniolitho-Lithophylletum trochantri, Valonio-Lithophylletum ercegovicii, Drypido-Peltarietum crassifoliae, Aurinio-Brassicetum frutescentis, Obiono graecae-Suaedetum pruinosae.

9. Extreme **hurricanic**: any soft algae nor herbaceous halophytes, fringe to 15m down, azoic mediolittoral, powerful infralittoral calcifying, supralittoral cyanophyta up to 20m, maritime halophytes even to 450 m upwards; Catenelletum repentis, Codio-Corallinetum squamatae, Aurinio-Astragaletum dalmatici, Artemisio-Salsoletum ponticae, Hedraiantho-Leucanthemetum platylepidis.