



ELSEVIER

Ecological Indicators 5 (2005) 213–230

ECOLOGICAL
INDICATORS

This article is also available online at:
www.elsevier.com/locate/ecolind

Descriptors of *Posidonia oceanica* meadows: Use and application

C. Pergent-Martini^a, V. Leoni^{a,*}, V. Pasqualini^a, G.D. Ardizzone^b, E. Balestri^c,
R. Bedini^d, A. Belluscio^b, T. Belsher^e, J. Borg^f, C.F. Boudouresque^g, S. Boumaza^h,
J.M. Bouquegneauⁱ, M.C. Buia^j, S. Calvo^k, J. Cebrian^l, E. Charbonnel^g, F. Cinelli^c,
A. Cossu^m, G. Di Maida^k, B. Duralⁿ, P. Francour^o, S. Gobertⁱ, G. Lepointⁱ,
A. Meinesz^o, H. Molenaar^o, H.M. Mansour^p, P. Panayotidis^q, A. Peirano^r,
G. Pergent^a, L. Piazzzi^c, M. Pirrotta^k, G. Relini^s, J. Romero^t, J.L. Sanchez-Lizaso^u,
R. Semroud^h, P. Shembri^f, A. Shili^v, A. Tomasello^k, B. Velimirov^w

^aEquipe Ecosystèmes Littoraux, Faculty of Sciences, University of Corsica, BP 52, 20250 Corte, France

^bDepartment of Animal and Human Biology, University of Rome "La sapienza", 32, 00185, Rome, Italy

^cDipartimento di Scienze dell'Uomo e dell'Ambiente, Università di Pisa, Via A. Volta 6, 56126 Pisa, Italy

^dIstituto di Biologia ed Ecologia Marina di Piombino, piazza Bovio 3-4, 57025 Piombino, Italy

^eIfremer, Station de Sète, Av. Jean Monnet, BP 171, 34203 Sète Cedex, France

^fDepartment of Biology, Faculty of Sciences, University of Malta, Msida, Malta

^gGIS Posidonie-Université de la Méditerranée, Luminy, Case 901, 13288 Marseille cedex9, France

^hInstitut des Sciences de la Mer et de l'Aménagement du Littoral, B.P. 54, Sidi Fredj 42321, Alger, Algeria

ⁱLaboratoire d'Océanologie, Université de Liège, Sart-Tilman, B6, 4000 Liège, Belgique

^jStazione Zoologica 'Anton Dohrn' di Napoli; Benthic Ecology Laboratory, P.ta S. Pietro, I-80077 Ischia, Italy

^kDipartimento di ingegneria idraulica ed applicazioni ambientali, University of Palermo, 90128 Palermo, Italy

^lMarine Environmental Sciences Consortium, Dauphin Island Sea Lab., PO Box 369-370, AL 36528 USA

^mDipartimento di botanica ed Ecologia vegetale, Università di Sassari, Via Muroni 25, 07100 Sassari, Italy

ⁿEge University, Faculty of Science, Department Biology, Izmir, Turkey

^oLaboratoire d'Environnement Marin Littoral, Université de Nice, 06108 Nice, Cedex 02, France

^pFaculty of science, Université d'Alexandrie, Alexandrie, Egypte

^qNational Center of Marine research, 16 604 Athens, Greece

^rENEA-Marine Environment Research Center, PO Box 224, 19100 La Spezia, Italy

^sIstituto di Zoologia, Università di Genova, Via Balbi 5, 16126 Genova, Italy

^tDepartament d'Ecologia, Universitat de Barcelona, diagonal 645, 08028 Barcelona, Spain

^uDepartamento de Ciencias Ambientales, Universidad de Alicante, Ap. 99, 03080, Alicante, Spain

^vUniversité de Tunis, 103 Av 20 Mars, Le Bardo, 2000 Tunis, Tunisie

^wInstitute of Medical Biology, University of Vienna, 1090 Vienna, Austria

Accepted 23 February 2005

* Corresponding author. Tel.: +33 4 95 45 00 75; fax: +33 4 95 46 24 41.

E-mail address: leoni@univ-corse.fr (V. Leoni).

Abstract

The conservation of the coastal marine environment requires the possession of information that enables the global quality of the environment to be evaluated reliably and relatively quickly. The use of biological indicators is often an appropriate method. Seagrasses in general, and *Posidonia oceanica* meadows in particular, are considered to be appropriate for biomonitoring because of their wide distribution, reasonable size, sedentary habit, easy collection and abundance and sensitivity to modifications of littoral zone. Reasoned management, on the scale of the whole Mediterranean basin, requires standardized methods of study, to be applied by both researchers and administrators, enabling comparable results to be obtained. This paper synthesises the existing methods applied to monitor *P. oceanica* meadows, identifies the most suitable techniques and suggests future research directions. From the results of a questionnaire, distributed to all the identified laboratories working on this topic, a list of the most commonly used descriptors was drawn up, together with the related research techniques (e.g. standardization, interest and limits, valuation of the results). It seems that the techniques used to study meadows are rather similar, but rarely identical, even though the various teams often refer to previously published works. This paper shows the interest of a practical guide that describes, in a standardized way, the most useful techniques enabling *P. oceanica* meadows to be used as an environmental descriptor. Indeed, it constitutes the first stage in the process.

© 2005 Elsevier Ltd. All rights reserved.

Keywords: *Posidonia oceanica*; Mediterranean sea; Bioindicator; Standardized methods; Advantages; Limits
