

# **Diving Parks:** **The new instrument for the sustainable protection of the marine environment**

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## **Abstract**

*The aim of this paper is to present an overview regarding the major problem of the degradation of the marine environment due to human-originated overexploitation of its natural resources, mainly as this is observed in the Mediterranean Sea.*

*After an examination of the already applied measure of the Marine Protected Areas (MPAs) and their inherent deficiencies, as such have been observed, proposed herewith is the institution of a network of diving parks as a new and supplementary protective environmental instrument.*

*Presented herein are the characteristics of this new institution, its initial enactment by Hellenic legislation, as well as further institutional propositions for its final and best possible materialization in action.*

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1. **Introduction: The deteriorating sea. The Mediterranean at the spear-head of the problem.**
2. It would not be, we believe, an exaggeration in supporting that the sea, (just as all nature in general), during the last 60-70 years, has suffered a greater destruction triggered by human intervention than that which has been caused during all the preceding millennia of man's existence on Earth.
3. Particularly in the "enclosed" Mediterranean Sea (Mesogeios), whose coastlines have been continuously and since early antiquity hosting dense and highly active human populations, the above mentioned problems are much more acute than in other seas (López Ornat, 2006). For this reason, for the further development of this paper, the Mediterranean shall be used as our main frame of reference, although this does not mean that any conclusions drawn do not equally apply to the other marine areas of the planet.
4. Even though it is a semi-enclosed sea basin with low natural productivity (low concentrations of nutrients – oligotrophic), the Mediterranean sea is, nonetheless, identified, in terms of biodiversity, as one of the richest seas in the world, with about 10,000 recorded species of marine flora and fauna, and a high percentage of endemism (Panagiotidis, 2004).

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5. However, in recent decades the Mediterranean coastal ecosystems have been increasingly under intensive pressure from fishing, industrial and other human activities, resulting in dramatic reduction of fish stocks, as these are being recorded in more and more regions, as well as in the degradation or even the collapse of marine ecosystems, thereby marine biodiversity being directly endangered.
6. More specifically, industrial and urban waste, agricultural fertilizers and eutrophication, intense overfishing, oil spills, unplanned residential development along the coastline, mass tourism and, finally, the inadvertent introduction (invasion) of allochthonous (alien) species into the Mediterranean ecosystem, inevitably exert great pressure on the natural environment (*European Environment Agency, 2005 & Boero, 2007*) and have already caused large coastal zones to be rendered essentially lifeless.
7. For these reasons, it is absolutely essential, while the situation is still reversible, that drastic measures be taken aiming at, on one hand, the protection of marine ecosystems from further degradation and, on the other hand, the rejuvenation, restoration and conservation of marine biodiversity.
8. Already countries, but also, at a supranational level, international organizations and associations, with the support and guidance of the scientific community, have adopted and implement substantial measures for the protection and conservation of the marine environment and the rationalization of its exploitation.
9. **Marine Protected Areas – MPAs.**
10. One of the most important *in situ* measures established and implemented internationally (especially in the past two decades) for the protection and sustainable management of fishing resources and marine biodiversity, is the designation of marine areas as Marine Protected Areas (MPAs) or otherwise as “marine parks”.
11. According to their international definition, such regions are:
12. “any area of the littoral or subtidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law **or other effective means** to protect part or all of the enclosed environment” (IUCN).
13. The goal of MPAs is to protect and conserve the biological diversity and, at the same time, the productivity of marine habitats, both aspects being equally important and decisive for the health of the wider ecosystem. (*Kelleher, 1999*).
14. In the 21 countries which border the Mediterranean sea, there are today 75 marine protected areas, while studies for a further 30 are at a planning stage (*Dalias et al., 2007*).
15. **Inherent deficiencies of traditional MPAs. The new findings and scientific trends.**
16. The important and necessary measure of MPAs does not yet cover a satisfactory percentage of marine areas neither in the Mediterranean nor in the rest of the planet, since, according to scientists and international environmental organizations, for the effective and efficient protection of the marine environment, a percentage of 10% to 15% of the world seas will have to be placed under protection instead of less than 1%, that is protected at present (*Kelleher, 1999, & Dalias et al., 2007*).

17. The more rapid and adequate expansion of MPAs, as well as the effectiveness of existing ones, is encumbered by a number of technical, social as well as economic factors.
18. In fact, MPAs are, in most cases, large marine areas that are difficult to manage and safeguard, with restrictions on human activities within their boundaries especially on fishing, in a way that considerably affects local or broader multidimensional interests, diminishing traditional wealth-producing exploitations (*Jones, 2006*).
19. At the same time, a disproportionately large number of financial as well as of scarce expert human resources are required to support and sustain the operation of these areas. Such resources are affordable by the budgets of very few countries, especially under the current international economic conditions (*Emerton et al., 2005 & López Ornat, 2006*).
20. It is already officially reported that many Mediterranean MPAs are deprived of sufficient means for their proper management, which makes it impossible to implement effective measures of conservation (*Dalias et al., 2007*).
21. Thus, we have reached a point where scientists seriously begin to wonder: ‘Can marine “protected” areas be effective?’
22. This is the verbatim title of an article by Jameson et al. in *Marine Pollution Bulletin* (2002, 44, pp. 1177-1183), where, inter alia and with a number of references to Kelleher et al. (1995), Alder (1996), McClanahan (1999), Hockings et al. (2000), Ehler et al. (2002), and many others, as well as reference to specific documented examples, the inefficiency of MPAs, which are under threat, is implicit and it is pointed out that they risk being considered as “**paper parks**”, especially because their operation is exclusively cost-oriented, without any business criteria, perception of competition, business planning, and, therefore without any provision for sustainability, resulting in the consequent inability to secure a steady and definite supply of operating resources or to implement the legal and regulatory measures envisaged for their protection.
23. In conclusion, the same writer, as, inter alia, Spergel & Moye (2004) in their article “Financing Marine Conservation, A menu of options”, (*WWF, Center for Conservation Finance*), states that only by applying rational business management criteria, which will ensure their profitable (and therefore sustainable) operation, shall marine protected areas become effective in the protection of the environment, yielding “return to society”, according to their designated purpose.
24. Kelleher (1999) aptly points out that, in addition, one of the factors preventing the establishment of new, effective MPAs is the persistent fear of scientists that they do not yet have sufficient information on the areas to be protected, and concludes that the elusive desire for the creation of the “perfect MPA” is, eventually, more detrimental since it prevents the creation of the actual MPA, which can assuredly, by its own operation, provide scientists with the information and documentation they seek and become ecologically justified.
25. Kelleher concludes that the present trend regarding MPAs is, inter alia, more private sector standards but also increased involvement of local communities and NGOs with an absolute need to achieve financial independence and viability by generating their

own income while breaking away from government subsidies (also *Spergel et al., 2004*).

**26. Does size matter?**

27. While questioning the operational methodology of marine protected areas, Halpern (2003) radically challenges also the size itself of marine protected areas.
28. So, on the basis of the results of 89 separate studies, he concludes that what is, after all, important for the effectiveness of marine protected areas in terms of increasing four of the most important biological indicators (biodiversity, density, total biomass and average per capita size of marine fauna and flora), is not the size, since even a small marine area, adequately protected, will yield the same rates of rejuvenation and growth, so that, in addition to the larger protected areas, small parks will provide the optimal marine environment protection result (also *Francour et al., 2001*)
29. The same writer (*Halpern, 2002*), on the basis of 112 independent measurements in 80 marine parks, reports that the beneficial results of protection become apparent very soon, already within the first years of its implementation.

**30. Marine parks Network: The new marine environmental instrument.**

31. In light of the above conclusions and in order to achieve the optimisation of marine environmental protection, it seems that, in addition to large-scale and large surface national marine parks, it is advisable and indeed necessary to create a network of small and easily managed and safeguarded protected areas with any form of extracting activity strictly prohibited, (no-take parks), which will form small “pockets” (reserves) for regeneration, reproduction and dispersion of marine biodiversity (cf. *Markatos, 1987*, as well as *Francour et al., 2001*).
32. Presently with the rapid growth on an international level of recreational diving, which is an activity fully compatible with the protection and conservation of the submarine environment (within the limits of the latter’s carrying capacity), and the spread of this particular activity literally across all strata of society, we are now in view of the possibility to achieve the sustainability of small protected areas so long as their operation is combined with recreational diving in them.
33. In this way, through the revenues from the tickets of visiting divers, the small protected areas ensure their sustainability and independence from state subsidies, thus making feasible and economically viable the creation of National networks of small marine protected areas, which (networks) have already been described as an effective environmental instrument (*Roberts et al., 2000, Gallacher-Freymuth, 2002, Spergel et al., 2004, López Ornat, 2006, Alban et al., 2006*).
34. A concrete and exceptionally successful example of this new scientific direction is the now internationally known marine park of the Medes Islands in Estartit, Catalonia, a model MPA, small in area (0,932 km<sup>2</sup>), with a core zone fully accessible to diving, which, thanks to the preference of scuba divers from around the world (50,000 dives per annum today after a restrictive scientific intervention, [*López Ornat, 2006*], and 75,000 previously [*Francour et al., 2001*]) and its consequent beneficial effect on the growth of the local economy, has achieved autonomous economic viability and a high level of

protection as well as the consent and cooperation of the local community, all of which have resulted in the spectacular, literally incredible, rejuvenation and increase of marine biodiversity, total biomass and average size of individual species (*Francour et al., 2001*).

35. Another similarly successful example of a small marine area, accessible to scuba divers, which is, at the same time, included in the framework of a major MPA, is the islet La Gabinière, located inside the broader national marine park of Port-Cros in southern France. Other such examples are the small-sized parks of St. Lucia with an area of 0,026 km<sup>2</sup> and of Las Cruces, in Chile, with an area of 0,044 km<sup>2</sup> (*Halpern, 2003*).
36. Considering all of the above scientific findings and trends, it is obvious that, through the combination of the concept of a small-sized marine protected area (MPA) and its attractiveness to divers, which ensures financial and therefore institutional sustainability, **has emerged a new hybrid: the Diving Park, which, in its form as part of a larger modular network of diving parks, is a new, separate instrument for the effective protection of the marine environment: The Diving Parks Network.**
37. Diving Parks can be defined as small-scale protected (no-take) marine areas, suitable for recreational diving in terms of location and underwater formation, marked with buoys, closed to any intervention or activity other than recreational diving, seabed observation and scientific research, mainly closed to any form of fishing, which are sustainable and financially viable through the revenues from the tickets of their visitors (*Koutsis, 2006*), and, also, independent from the existence or not of wider national MPAs in their region.
38. The creation of diving parks does not necessarily presuppose the concession of littoral or any other land area (though there are cases, when it would be advisable to include such areas, e.g. rock islands, within a complete system of protection and sustainability of the diving park), so as to virtually eliminate any environmental interventions.
39. The operation of a diving park does not negate the communal character of the marine area where it is located, since no person is excluded from entering it: Restrictions on its use, common for all, are simply applied, (entrance fee, obligation to comply with the park's rules and regulations), just as it happens with most other communal areas of organized accessibility (e.g. terrestrial parks, archaeological sites, etc) (*Georgiadis - Stathopoulos, 2004*). These protective and administrative restrictions are certainly justified legally and constitutionally, since they are imposed for the sake of the public interest and the superior benefit to the national economy and, mainly, the effective protection of the environment (for Greece, article 24 of the Constitution and article 970 of the Civil Code).
- 40. The Greek example: diving parks as enacted statute.**
41. The specific name "diving park", in the sense described hereabove, is a Hellenic innovation as it does not seem to appear so far in international bibliography (*Anagnostou, 2008*), and is found for the first time in the Greek law and specifically in Law 3409/2005 "On Recreational Diving", which, consistent with the above findings and directions of science and in conjunction with Law 2971/2001 "On Shoreline", provides (article 13) for the possibility of designating and allocating separate marine

areas, independent from the national marine protected areas, for the creation of diving parks both by public as well as municipal, private or joint ventures and, also, by NGOs.

42. This enables the creation of a broad National System – Network of small and effectively and sustainably protected areas, in the form of financially independent and viable diving parks, the size of which can range from as little as 2 km<sup>2</sup> (*Francour et al., 2001*) and which allow for flexible experimentation under any form of public, private or joint venture and management, that is, the mobilisation of the full range of political, social and financial forces. As a result of this activity, there will be feedback with empirical data for further scientific justification and optimisation of the practices followed, as requested by science (*Kelleher, 1999*).
43. An important innovation of the Greek Law on diving parks is that its provision for their establishment through state concessions of marine areas, also differentiates the form and the effectiveness of the protection provided to the environment. This is so because, in addition to the enforcement of legal prohibitions and the safeguarding by the competent authorities (the Hellenic Coast Guard, in this case), which, as is well known, are not always adequate, the concession agreement creates private rights, which are protected not only in court but also immediately in situ in the concessionaire's own right and by his own force and safeguarding, according to the provisions of the Civil Code.
44. The same Greek Law (article 11, section 1, paragraph 2) provides, for the first time, for the creation, in collaboration with the Hellenic Ministry of Culture, of underwater museums, that is, diving parks inside designated marine archaeological areas, which, although still encountering the hesitancy of the marine archaeological authorities, are without doubt a one-way street to the projection and the effective protection of underwater antiquities that are now virtually unknown and, on the whole, unguarded.
- 45. The general institutional issues arising in relation to Diving Parks.**
46. Apart from its above general provision, Greek Law 3409/2005 provides for the issue of an executive decision by the Minister for the Environment, which shall determine the supporting documentation and the specific terms and conditions that are necessary for the establishment and further operation of diving parks in general. Following that, the Law provides for the issue of individual joint decisions by the same Minister and the Minister for Mercantile Marine who is supervising recreational diving (Law 3409/2005, article 1), for the final designation of each particular diving park.
47. To date (May 2008), the aforesaid general Ministerial Decision has not been issued. The reason, apart from the usual slowness of the state machine, is obviously the fact that, prior to prescribing the terms for the creation and operation of diving parks, an interdisciplinary study of the whole issue is required, as well as, eventually, a political decision on a number of questions such as:
  48. – What is the appropriate size of a diving park from an institutional point of view? Is zoning, applying specific restrictions and allowing specific activities, necessary? What should the duration of a diving park be?
  49. – How many diving parks should be established in the country, and with what spatial distribution? Should there be a restriction on their number or could the parks be

- established anywhere (universal siting), provided the consent of local communities is ensured and given their zero nuisance effect?
50. – Which legal form should the entities, that are candidates for the establishment and management of the diving parks, have? What guarantees should they provide and what are the necessary requirements for their selection?
  51. – Is it or is it not advisable to seek the participation or, at least, the consent of local communal authorities in the creation and the operation of diving parks?
  52. – Which criteria should be used to determine the compensation payable to the State for the concession? Also, correspondingly, should the determination of the entrance fee be at the disposal of the park's manager or should it be controlled in order to safeguard the communal character of the sea without, at the same time, endangering the financial viability and sustainability of the park?
  53. – Which Authority should supervise private-sector diving parks, based on what criteria and to what extent?
  54. – Will there be any central planning and, more importantly, central control of the diving parks' network and who should be in charge of it?
  55. In Greece various interesting opinions on these questions were expressed at the one-day meeting organised by the Scuba Diving Club "TETHYS" on Feb. 2<sup>nd</sup>, 2008 and are still being voiced in the related web site ([www.scubadive.gr](http://www.scubadive.gr)).
  56. We believe the following positions can be supported:
    57. ***De lege ferenda.***
    58. In view of the said findings and assumptions, the size of diving parks should be limited concerning their minimum possible surface as well as the maximum one. In the first case, in order to ensure the park's attractiveness (minimum number of dive routes) and therefore visitor traffic and sustainability. In the second case, in order to avoid the risk of too large an area being committed but also to avoid the risk of jeopardizing the park's easy manageability and guarding (avoidance of excessive protection at the expense of real protection). Reasonable limits could be from between 1 to 4 square kilometres.
    59. Having in mind the diving parks' limited size and the absolute prohibition of any extracting activity or other intervention therein, any zoning imposed by law within their boundaries does not seem to be necessary; on the contrary, it is deemed expedient to leave this (e.g. dive routes, free diving routes, transparent bottom boats routes etc.) to the discretion of each individual management entity.
    60. However, safety zones should be provided for along the perimeter of the park, both close as well as at a distance. The first perimetric zone is necessary in order to discourage neighbouring fishing as well as to allow the controlled traffic of the park's vessels and their access to the mooring buoys (anchoring should not be allowed within diving parks in order to protect both the seabed and the divers). In a second perimetric zone limited fishing could be permitted, preferably to local coastal fishermen, in compensation for the fishing ban inside the park.

61. As for their duration, one can argue that diving parks are permanent, just like MPAs (*Ballantine, 2006*) (once a park, always a park). In fact, parks are a widely applied measure of national importance, which requires an array of regulations as well as of works and investments in situ. Furthermore, it is imperative that the park be perpetually protected and also that it provides cumulative and unbroken flow of empirical environmental data. Therefore a marine park cannot be exhausted in a simple periodical seabed fallowing. Of course, for legal, economic and political reasons, concession contracts must have a time limit, but this should relate only to the succession of the management bodies and not to the very existence of the diving park itself.
62. In regards to the duration of concession contracts it is obvious that, considering the time it takes for a park to reach maturity that will make it attractive to divers, such contracts should have a minimum duration of ten years and a maximum of 25-30, so as to be attractive to investment.
63. As regards to the total number of diving parks at a national level, and given the minimal disturbance that they entail, as well as their highly supportive role in protecting the environment, one could adopt the option of universal siting (i.e. no restriction on choice of site), provided that each time local communities consent and there are not any specific factors that render their establishment unsuitable (e.g. areas of permanent hazardous pollution, maritime passageways, etc.).
64. The limits, however, seem to be imposed by the need for safeguarding the unimpeded common use of the wider marine space. So, given the small size of diving parks (and subject to the lack of any specific scientific documentation to date), one could recommend as socially, economically and environmentally optimal, the number of 2 to 4 diving parks per coastal prefecture.
65. Again in regard to their siting, diving parks could and probably should be established also within the boundaries of already existing broader National Marine Protected Areas and especially in zones where recreational diving is permitted (as, for instance, is already the case with Port Cros, Medes, etc). This is in order, on the one hand, to reinforce the protection of National Marine Parks with the added privately-funded protection of the diving parks and, on the other hand, to provide the neighbouring local communities with compensatory financial gains and opportunities in return for the restrictions imposed on the fishing exploitation of the National Parks.
66. After all, diving parks are, for the same reasons, fully compatible with NATURA regions or other such special protective regimes, always in zones where recreational diving and mild tourist activity (ecotourism etc) are permitted.
67. As regards the legal form of the entities that shall establish and manage the diving parks and in view of the lack of previous experience from such parks (as well as the rather negative experience from existing National Marine Parks), it is considered advisable to try all possible forms of management, whether public, municipal, private or in the form of joint ventures.
68. The most appropriate form seems to be that of a legal entity with widely spread shareholding, governed by private law, with shareholders coming from the local business community, especially from those involved in the wider tourist sector. A guaranteed minority participation should be awarded free of charge to the local municipalities together with a right to appoint a representative to the park's board of directors.



69. Such a scheme ensures on the one hand the active participation and discipline, in regards to the park's protection, of the local private forces, and on the other hand the unambiguous and continual exact and prompt update of the local community with reference to the park's management and operation.
70. A private law governed entity allows, in parallel, with its rational management, the deterrence of problems arising out of local provenance, that is, the relaxation of guarding in favour of local residents that are connected to the park's administration. This constitutes a grave risk to the success of the parks, as institutions based on principles, which do not allow for exceptions that could directly undermine the social discipline regarding the park's protection (claim for "equality in illegality").
71. In all cases, even as in the case of Public or Municipal parks, it is recommended that the management is assigned to an entity that can function according to private sector rules, since experience has shown and science accepts, as already discussed, that this is the only way to ensure the financial independence and viability and therefore, the sustainable conservation, guarding and protection of the diving park.
72. Because the basic function of the diving parks is the protection of the environment along with environmental education and awareness but, parallelly, also the economic and social development of the region where it is located, and since the diving park itself seems to be a moderate profitability investment, it should be supported by the state. A first token of this support can be the setting of a low concession fee for the marine area (which will also make it feasible for a low visitors' entrance fee to be fixed), but also the provision of National and European grants.
73. Regarding the diving park's entrance fee, it is also recommended that this should be left to the discretion of its management and to the laws of the free market. This provides the business incentive for the creation of diving parks that will be as attractive as possible, that is, effectively protected and more "lively". It also provides a rationalising self-control on the prices, which, if too high, will steer the public to diving areas outside the park or to other more competitive diving parks that do offer a lower entrance fee.
74. An alternative approach would be the invitation of tenders by the state agency responsible for the management of sea waters (the Ministry of Economy and Finance, in the case of Greece), whereby the bidding entities could be obliged to commit themselves to a prefixed ticket price such as, for example, in the case of assignment of rights of use of frequencies by the Hellenic Telecommunications and Post Commission (ETT).
75. State monitoring of the establishment and function of a diving park according to the terms and conditions of the law and of the specific ministerial decision providing for its establishment, should be carried out by expert diving personnel with the necessary scientific education and should not be left to the usual surface marine policing. Consequently, it is either necessary to create a special branch in the competent policing Authorities (the Coast Guard), or this specific task should be assigned to specialised applied science state agencies, such as, in the case of Greece, the Hellenic Centre for Marine Research (HCMR). It is self-evident that State monitoring refers to the protection of the environment and to the watching over of the concessionaire to hold to

the contractual terms and the law, particularly in relation to the effectiveness of private guarding and protection of the park from third parties (“guarding the guardians”).

76. This last option, or even the establishment of a special State Agency, is almost a one-way street to the broader, at a National level, planning and monitoring of the entire network of diving parks, since, at this level, these particular functions constitute a major Administrative and scientific issue, which goes beyond simple policing and pertain to matters such as the centralised collection and processing of scientific data about and from the diving parks, as well as the collaboration with similar foreign and international institutions, especially European, and other foreign networks.
77. This is because the uncomplicated repeatability and management of diving parks can and should lead to the creation of, at least, a Mediterranean network of such parks, which seems to be the only realistic and immediately applicable institution that can arrest the destruction and save the failing Mediterranean.

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