National Strategy and Action Plan for the Conservation of the Mediterranean Monk Seal in Greece, 2009-2015

Athens, 2009

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1. Goal

The long-term goal of the strategy is:
"**to assure the recovery and long-term viability of Mediterranean monk seals in Hellenic seas"**

2. Rationale for the 2009-2015 Conservation Strategy and Action Plan

In spite of its poor conservation status, it is still possible to save the Mediterranean monk seal.

Monachus monachus continues to be fully entitled to its *Critically Endangered* Red List category, just like it was declared by IUCN more than 13 years ago. The species' overall trend is still negative, and there are no clear signs of its recovery anywhere in the Mediterranean. However, against expectations, small breeding groups of seals still exist in Greece, thereby providing a reason for hope. The roadmap for the species' recovery – outlined here – is quite clear; legal provisions could not be more favourable; ecological and veterinary knowledge, although incomplete, is substantive and helpful; threats are well identified, and the measures to address them straightforward.

So why is it so difficult to pull Mediterranean monk seals from the brink of extinction, and push them towards their recovery? Difficulties lie in the fact that any effort to conserve the marine environment and its biodiversity, and in particular Mediterranean monk seals that can be so easily identified as a symbol of such conservation action, can only be driven by values. Protecting Mediterranean monk seals and their habitat in the territory under its sovereignty is an obligation that Greece has explicitly committed to, on the basis of a large number of national, regional, European and international legal instruments. However, a monk seal future will be secured in Greece only if a significant portion of Hellenic civil society will attribute to the seals the value they deserve, and if saving monk seals from extinction will be seen as the epitome of reversing the devastating trend of loss of naturalness which is plaguing the Mediterranean, Greece included. Unfortunately we are far from this condition, because most of the general public appears to be indifferent to the plight of the monk seal and oblivious of the many problems plaguing its habitat. Therein lays the main challenge that this Strategy must address.

Yet, there is one more value to be added to a desirable engagement of the Hellenic nation in monk seal conservation. Protecting monk seals in Greece greatly transcends the nation's horizons. As the species' decline progresses within the Mediterranean, with the complete disappearance of breeding groups from the western Mediterranean and Black Sea, the burden of monk seal conservation becomes increasingly the sole responsibility of a handful of countries in the Eastern Mediterranean. Of these, Greece is the nation which still contains most of monk seal habitat and the highest number of monk seals. Here, scattered across remote and less disturbed locations of the country's highly fragmented coastlines, monk

seals continue to attest their ability to reproduce. Because the greatest number of remaining Mediterranean monk seals is now in Greek territorial waters, protecting the species in Greece is by far the single most important measure that can be achieved at the global level to reverse the current downward trend of the species over its entire range within the Mediterranean basin, and to save it from extinction.

The "New Strategy" is built on the foundations laid by the "1996 Strategy", capitalising on its achievements and learning from its weaknesses and failures. Most of the conservation tools and means identified in the "1996 Strategy" are conserved in this document, but rearranged in the light of progress achieved in the various fields with the accumulated experience. Considering the critically endangered status of the species, unlike in the "1996 Strategy" neither captive breeding nor translocation are contemplated here. The main difference between the two strategies lies in method. To provide an easier means to assess future achievements, the new strategy is articulated in goals, objectives and actions, all linked together into a framework which is loosely inspired to the Logical Framework Approach. The Strategy contemplates one long-term policy goal, defines four objectives to be met to attain the goal, and identifies the actions that are recommended to meet the objectives. Actions are described in an Action Plan and listed in tabular format in the Implementation Schedule, where indicators of achievement and are also suggested.

3. Objectives

In order to attain the strategic goal, the following four objectives are identified, to be reached by 2015:

Objective 1. Monk seal conservation is established as a national priority.
Objective 2. Knowledge of monk seal ecology and biology important for the conservation of the species is secured.
Objective 3. Areas containing monk seal critical breeding habitat in Greece are identified, legally protected and organised into a functional network of protected areas in which monk seal numbers are stable or increasing.
Objective 4. Monk seal conservation measures are legally adopted and effectively implemented throughout national waters, so that threats are diminished and monk seal populations and habitat nation-wide are not lost.

3.1. Rationale for the objectives

The Strategy is articulated over a seven-year period, and a number of mutually reinforcing objectives are devised to reach the goal. This reflects the fact that monk seals are affected by a plurality of different threats, and therefore simultaneously addressing all the threats during the stated period sounds like the most effective strategic decision. However, even from within such a pluralistic

frame of mind it is important to avoid losing sight of the fact that single threats have a disproportionate importance relative to the others. For example, eliminating the deliberate killing of seals by fishermen might make by itself a tremendous difference, perhaps to the point of bringing about a reversal of the declining trend, all other factors being unchanged. Such considerations are of a fundamental importance when neither the available resources nor the available time are infinite.

To be effective, the Strategy will have to implement monk seal conservation actions targeting the Hellenic society principally at two different levels: local and national. Actions at these levels will have to be coordinated, to be mutually reinforcing.

At the **local level**, the areas identified as containing monk seal breeding habitat, i.e., where pupping still regularly occurs, provide a unique opportunity for the establishment of "cells of excellence" where the various indicated activities are implemented through a virtuous blend of community participation, the application of solid science, wise governance, mutual trust and economic vision. Such important areas for monk seals should be singled out as demonstration cases - where monk seal strongholds can be strengthened, seal groups maintained and made to grow, local communities made to become stewards of the marine environment and of monk seals as its flagship – and used to propagate within Greece, and elsewhere where monk seals still occur, a winning recipe for the species' stewardship. Models of such cases, albeit still imperfect, already exist (e.g., Karpathos), and should be vigorously improved, with full institutional support, and replicated elsewhere. Ideally, the leading role in such processes should gradually migrate from specialised, centrally-based NGOs (such as MOm) to local constituencies, tightly connected with the local realities but still operating within rigorous conservation, governance and ethical standards (this may take a long time). This would leave to centrally-based NGOs the equally important functions of strategic coordination and support. Locals should react to the current degrade of their marine territories, which is under everyone's eyes, by deciding to take the matters in their own hands and act. If the impetus for action comes from inside, limiting outside contributions to support, facilitation, connectivity and capacity building, expectancy of success will be vastly increased. Economic incentives deriving from a wiser stewardship of the marine environment – e.g., the creation of MPAs to protect fish stocks **and** local economies **and** monk seals - must carry rapid, clear and indisputable advantages to the local communities. The burden of coexisting with monk seals and protecting them should not solely rest on the shoulders of the local communities.

At the **national level**, several directions should be followed at the same time. First, saving the monk seal from extinction must symbolise the championing of a national effort, involving everyone, to restore the Greek marine environment to its pristine status. The sea and coastal area are among Greece's most important natural asset, with relevant economic implications (e.g., tourism). The marine environment in Greece is generally considered to be in good status compared to the rest of the Mediterranean, however this is due to a relatively low population pressure

(compared to European averages) over a very long coastline, rather than to deliberate stewardship. Quite to the contrary, Greece's attitude towards its marine environment (outside of the narrow circle of the conservation community) is characterised by institutional nonchalance combined with callousness by individual users, who appear to be taking the marine environment's goods and services for granted in spite of generalised mistreatment. In fact, signs of degradation (e.g., overfishing, coastal mismanagement, pollution, biodiversity loss) are already quite visible in an increasing number of locations, although insufficiently perceived by the public perhaps under the effect of a "shifting baselines" syndrome. The political advantages of saving Mediterranean monk seals, as well as the political costs of letting them become extinct, have not been fully grasped by the relevant sectors of the Hellenic society. Decision makers in Greece should be challenged by civil society through carefully designed campaigns by concerned NGOs, so that embarrassment from neglecting effective monk seal conservation action becomes unbearable, while acclaim for making concrete progress becomes for them a significant political asset. The Greek NGO community, and MOm in particular, has already achieved substantial progress in this direction; efforts must be continued with renewed energy. To this end, the appropriate legislative and institutional framework must be structured in order to ensure the effective implementation of conservation measures. A monk seal conservation strategy and its implementation must be established nationally, as well as at the European and international levels, as a best practice example, and solidly integrated within the wider strategy for the conservation of the marine environment in Greece. Ideally, the monk seal should become the symbol of a renewed effort towards marine conservation in Greece. This condition urgently needs to be reversed if Greece is to continue capitalising on its marine environment as one of its fundamental natural assets. Second, knowledge of monk seal ecology and biology, important for conservation actions, must be secured. Such knowledge may not be essential to monk seal recovery in the immediate: as argued above, extremely urgent management measures such as halting the persistence of deliberate seal killings hardly needs new scientific knowledge. However, a continued refinement of knowledge through monitoring activities and research programmes, in conjunction with appropriate management actions, will greatly strengthen and speed such recovery. Third, nation-wide conservation measures to address and mitigate threats through the regulation of human presence and of potentially harmful activities must be legally adopted and effectively implemented at the national level.

3.2. Explanatory comments of the single objectives

Objective 1. Monk seal conservation is established as a national priority.

The value of conserving Mediterranean monk seals in Greece must be fully appreciated and embraced by the nation at all levels of civil society. The imperative of conserving *M. monachus* in Hellenic national waters must be clearly adopted as a national priority and become the overarching goal of a number of specific actions. The fact that monk seals still exist in Greek waters, and mostly

there, should be seized as a rare opportunity for a display of excellence and best practice to be solidly integrated within a wider strategy for the conservation of the marine environment in Greece and in the wider Mediterranean at large at the national, regional, European and international levels, so that monk seals become the symbol of a renewed effort towards marine conservation in Greece. To this end, a number of conditions will have to be satisfied.

First, the appropriate legislative and institutional framework will have to be structured in such a way as to ensure effective implementation of monk seal conservation measures, and legislative gaps must be remedied. To facilitate the process, new legislation should include the formal establishment of a national *Monk Seal Conservation Commission*, mandated to oversee national monk seal conservation efforts, including the integration of monk seal conservation efforts into national policy for marine conservation, and the review and renewal of species-specific legislation granting adequate protection of monk seals and their ecosystem (inclusive of habitat, prey, and ecological relationships with human activities).

Second, considering that informing and educating the public is fundamental to ensuring widespread acceptance and collaboration, enforcement of laws relevant to monk seal conservation (e.g., against direct monk seal killings) will be complemented by a vigorous action of involvement and awareness of all relevant levels of the Hellenic society, and stakeholders disseminated across the small coastal communities in Greece, particularly where monk seal breeding habitat occurs. This will include envisaging a number of initiatives, such as the creation of a NGO Task Force for awareness, the engagement of professional PR support, the production of video material for the wider public, and the conduction of awareness campaigns targeting specific sectors of society. For example, awareness actions targeting tourists in locations known to host breeding monk seals, which may include fundraising through adoption programmes, will exert bottom-up pressure on the local communities (where monk seal killings still occur) which may greatly support the change of attitude in favour of monk seal conservation.

Third, the substantive conservation experience accumulated in Greece across the years should be disseminated within Mediterranean monk seal range states – with a special priority to be conferred on Turkey, Cyprus, Libya and Albania, given these countries' likely contiguity with Greek monk seals - to advance the species' conservation throughout its range, and to promote its recovery.

Objective 2. Knowledge of monk seal ecology and biology important for the conservation of the species is secured.

Nowhere is it more obvious than in the case of monk seal conservation in Greece that lack of action cannot rest on the excuse that scientific knowledge is still insufficient. We have previously argued that in this phase of Mediterranean monk seal conservation the actions that have greatest priority and urgency are management actions (e.g., stopping deliberate killing) that do not need substantial knowledge progress for their effective implementation. Nevertheless, basic

knowledge of monk seal ecology and biology, still unavailable due to the particularly cryptic nature of monk seals and to the inaccessible environment in which they live, must be collected in parallel to management and conservation actions because it will significantly support the attainment of the strategic goal. Efforts should follow four main tracks:

a) The national inventory of sites where monk seal breeding still regularly occurs must be completed as soon as possible. Areas of fundamental conservation importance for monk seals, where significant pup production occurs, such as the recently-discovered location on the island of Gyaros (on the doorsteps of Athens), may still be existing out there without anyone knowing it. The knowledge of monk seal presence and distribution in the country must be complete if this Strategy is to reach the desired results.

b) Methods for determining monk seal population size and trends in a given area (in this case, Greece) are still very crude and unable to provide the desired information with acceptable levels of accuracy. True, this is in large part due to the nature of the animals and to legitimate concerns that obtaining such data may involve risky invasiveness in critical habitat (i.e., caves), as well as inacceptable levels of disturbance. Nevertheless a concerted effort among world-wide specialists in marine mammal population ecology, including monk seal experts, should be stimulated to provide indications and guidelines for rapid and safe means of regularly measuring population sizes and trends, thus assessing the species' conditions with the frequency needed for conservation purposes.

c) The advancement of knowledge of monk seal ecology and biology relevant to conservation (e.g., individual seals' dispersal and home range patterns, monk seal population structure in Greece, feeding behaviour, ecology and trophodynamics, reproductive ecology and physiology) should continue as opportunities arise for the conservation ecologists active in the field, and will accrue to the current body of knowledge significantly supporting conservation decisions.

d) Finally, the socio-economic implications of monk seal conservation in Greece should be investigated, based on the consideration that a better understanding of the effect of human activities and of people's attitudes towards monk seals will provide ammunition for the improvement of conservation strategies. Studies quantifying economic advantages and disadvantages deriving from monk seal presence in a given area should also be conducted.

Objective 3. Areas containing monk seal critical breeding habitat in Greece are identified, legally protected and organised into a functional network of protected areas in which monk seal numbers are stable or increasing.

To meet Objective 3, three orders of actions will have to be implemented: a) conferring protected status upon all areas containing monk seal critical breeding habitat in Greece, b) ensuring that all monk seal specially protected areas are effectively managed, and c) linking together all monk seal specially protected areas into a functional network of MPAs.

a) Although highly desirable from the conservation standpoint, it is currently impossible to ensure that the entire Hellenic coastline where monk seals occur be afforded adequate protection against anthropogenic threats. A triage approach is therefore needed. Areas known to be of highest importance for monk seal survival, because they still host individuals that regularly breed, must be afforded better protection than what has been achieved so far. Many of such areas are still pervasively subjected to overfishing and intense human interference, perhaps even blasted by illegal dynamite fishing as well as legal military exercise bombing. Breeding and resting caves can still be entered by anyone at will, if physically possible even with motor vessels. The persistence of seals in such conditions of extreme disturbance is extraordinary, but cannot be assumed to last indefinitely. Key areas identified in the past (i.e. marine and coastal habitat containing feeding grounds and breeding sites such as caves and beaches), as well as new areas identified through actions implemented to reach *Objective 2,* must be legally protected as a matter of extreme urgency. This will be a daunting task, considering that in decades of efforts the Greek State managed so far to establish a very small number of them, a meagre percentage of the total needed (the lack of protection in the Ionian Sea is perhaps the most unfortunate example of this); however it will be a fundamentally important task, and a litmus test of whether Greece seriously intends to conserve its monk seals.

b) Protected areas for monk seals must be effectively managed through enforcement, regular monitoring, and active participation and full involvement of the local populations most affected by the protection measures. Zoning should be envisaged in such areas to reduce risk of monk seal by-catch. To ensure that monk seal numbers in important conservation areas are stable or increasing, first of all it will be necessary to intervene on the primary causes of mortality through continued monitoring, investigating the causes of mortality, and devising specific threat-abating measures. As already argued, consensus building at the local level and the diffused recognition of the values of protecting monk seals and their habitat are essential prerequisites of the conservation effectiveness of protected areas designation and management. To this end, the full participation of local and other stakeholders is essential. This will include what may be considered the most difficult and delicate task of the entire strategy: conquering the heart of the locals (i.e. the people who coexist with the seals) to the cause of monk seal conservation. Locals (concerned residents, members of the fishing community, tourism industry practitioners, local authorities, and NGOs) must become convinced that protecting the monk seal is not only an obligation, but also, and most importantly, to their own advantage; damages which may occur to small-scale fishing from net depredation by monk seals must be dwarfed by far greater advantages deriving to residents by the complex of factors linked to a healthy marine environment, which is symbolised by the presence of the seals in the area. Once this is obtained, most other tasks will be downhill.

c) Finally, linking all areas into a national network (both ecological and operational), within the framework of the *Natura 2000* Network, will add further strength and stability to the system. There is growing evidence of the importance of biological

connectivity and resilience in the face of climate change and habitat degradation. In this sense, MPA networks are viewed as increasingly valuable conservation tools, by facilitating integrated marine management through ecological, social and economical benefits.

Objective 4. Monk seal conservation measures are legally adopted and effectively implemented throughout national waters, so that threats are diminished and monk seal populations and critical habitat nation-wide are not lost.

A recent map showing the geographic distribution of monk seal sightings throughout the Hellenic coasts strikingly demonstrates how widely distributed the species is in the area. This consideration, coupled with the knowledge that the total seal population in Greece is estimated to be of < 220 individuals, strengthens the conviction that monk seals in Greece range widely, and that their habitat is widely diffused rather than concentrated in a few hotspots. While the importance of carefully protecting such hotspots (i.e., important monk seal breeding areas) must not be underestimated, it is equally important to act in all other areas where monk seals are known or likely to occur. In these areas monk seal conservation activities can only be performed at lower intensities than will be possible in the most important areas, however relevant actions can still be performed, also through learning from the experience acquired in breeding sites.

Such activities should include the continued monitoring of seal presence and mortality, and the enforcement of laws and enactment of all possible measures to reduce threats to monk seals (e.g., human-induced mortality with a particular emphasis to deliberate killings; disturbance, by-catch and other seal-fishery interactions; pollution; and destruction of habitat by military exercises, particularly within relevant distance from known breeding sites). A general, much-needed improvement and rationalisation of fisheries management at the national level, ensuring the sustainability of the activities (such as it is envisaged by the Marine Strategy Framework Directive of the EU and more in detail by the "MOFI" Action Plan), can only bring substantial advantages to monk seal conservation. Overfishing and illegal fishing practices (e.g., with explosives) deriving from lack of a solid management, lack of enforcement, and insufficient regulations, which negatively affect monk seals by reducing prey availability and increasing competition (and hostility leading to direct kills), will be addressed through adequate management provisions, as part of Greece's European obligations. Lastly, a contingency plan should be in place for exceptional or unusual mortality events, and to deal with large-scale pollution disasters (e.g., oil or chemical spills). Finally, the effects of global warming (e.g., sea level rise) should be closely monitored and their actual and potential consequences to monk seal conservation (e.g., availability of breeding habitat in caves) should be assessed.

4. The Action Plan

The four objectives will be met through the implementation of a number of actions to be conducted between 2009 and 2015, listed below. The actions are also listed

in a tabular form, which also provides a set of indicators necessary for evaluating the achievements of the Action Plan. In the case of more complex actions, these are subdivided into different components.

4.1. Actions related to Objective 1: Monk seal conservation is established as a national priority:

1A **Formulation of New Legislation - Establishment of a National Monk Seal Conservation Commission**

A new national law on monk seal conservation in Greece is adopted, inspired by the goal, objectives and actions contained in the "New Strategy". In particular, the new law should provide for the establishment of a *National Monk Seal Conservation Commission* (MSCC) having the mandate of monitoring and coordinating monk seal conservation efforts in Greece and of facilitating its integration into the wider national marine conservation policy. Terms of Reference for the MSCC are to be included in the law's text detailing roles, composition, functioning procedures, and funding. Monk seal conservation efforts are integrated with similar international efforts by other marine conservation and management instruments and organisations (e.g., UNEP MAP, ACCOBAMS, EU Bird and Habitat Directives, General Fisheries Commission for the Mediterranean), thereby framing monk seal conservation within the broader concern of conserving Mediterranean marine ecosystems. Most importantly, monk seal conservation is fully integrated within the national Marine Conservation Strategy which Greece will develop and implement on the bases of modalities and times defined in the EU Marine Framework Strategy Directive. Species-relevant criteria and guidelines on habitat protection, research, monitoring, rescue and rehabilitation activities are incorporated into the new legislation. Furthermore, measures for the mitigation of the seal-fisheries conflict (as proposed in the "MOFI" Action Plan) are also incorporated into the new legislation. The MSCC may propose further revisions to the existing legislation relevant to the species' conservation and recommend modifications as deemed necessary. Action 1A is a prerequisite to the implementation of most actions proposed to meet Objective 4.

1B **Implementation of Nationwide Public Awareness Activities**

A vigorous, coordinated programme of awareness and education campaigns is conducted at the national level in Greece by an *ad hoc* task force created by NGOs and other concerned stakeholders, in consultation with the MSCC, with the goal of providing high and widespread public visibility to the imperative need of conserving monk seals and their habitat. Specific target groups will be selected, including the general public, the schools (teachers and students), the political community and public servants, the law enforcers, and the industry connected with the use of the sea (e.g., fisheries, shipping, tourism).

1C **Providing Expertise at the International Level**

Greece provides expert support to monk seal conservation throughout the species' range at the international level, wherever monk seals and/or their critical suitable habitat are still present. The present Strategy and Action Plan are disseminated

widely throughout other Mediterranean monk seal range states, and the Greek experience in implementing a conservation strategy for the species is shared with all the relevant bodies (e.g., the EU and international environmental conventions) with the view of advancing the species' conservation throughout its range and promoting its recovery.

4.2. Actions related to Objective 2: Knowledge of monk seal ecology and biology important for the conservation of the species is secured:

2A **Creation of Nation-wide Monk Seal Breeding Sites Inventory**

A nation-wide inventory of monk seal breeding sites (e.g., caves) is completed, and all locations where monk seal breeding is known to currently occur are identified, so that adequate conservation action and monitoring can be extended to the entirety of the species' remaining breeding habitat in Greece.

2B **Monitor Monk Seal Status**

Regular population assessments and monitoring, essential for evaluating the status of the population and determining the efficiency of recovery actions, is conducted throughout the species range. This will be done by improving capabilities of generating nationwide population estimates and trends through field surveys techniques, remote monitoring of breeding caves, the continued implementation of the national information network "RINT" (including the creation of local networks within the main monk seal breeding areas), and will include monitoring of impacts from new activities which may be implemented in the future, and from a changing environment (i.e. climate change), as they develop.

2C **Study Key Aspects of Monk Seal Ecology and Biology**

Assemble relevant scientific data on monk seal ecology and biology, such as dispersion, home range, population structure, genetic variability, reproductive biology, feeding ecology and behaviour, complementing existing data with original research, as needed for conservation purposes.

2D **Study Key Socio-economic Aspects of Monk Seal Conservation**

Investigate socio-economic aspects of monk seal conservation, including studies of the local attitudes towards monk seals, to describe the baseline on public perception (values) on monk seals, and studies quantifying economic advantages and negative impacts deriving from monk seal presence in an area.

4.3. Actions related to Objective 3: Areas containing monk seal critical breeding habitat in Greece are identified, legally protected and organised into a functional network of protected areas in which monk seal numbers are stable or increasing:

3A **Designation of Monk Seal Breeding Areas as Protected**

All areas containing monk seal actively used breeding habitat (see 2A) are formally designated protected areas, are included in the *Natura 2000* Network, and considered in the national strategy developed and implemented within the framework of the EU Marine Framework Strategy Directive.

3B **Effectively Manage Monk Seal Protected Areas**

Formally established monk seal protected areas are effectively managed. This will include providing all areas with a management body, endowed with sufficient powers as well as means and human resources to prevent and/or control activities likely to be contrary to the aims of the protected area. Specific actions include:

(1) Appropriate zoning of MPA is established and enforced, with strict no-take zones separated from zones where regulated fishing can occur, providing, insofar as it is possible, privileges to local fishermen.

(2) Conservation measures are established within MPAs, and are demonstrably effective, to manage human activities affecting survivorship, habitat loss and prey depletion of monk seals. In particular, interactions with fishing activities are managed, illegal fishing activities are combated, and measures are in place to control entanglement and other sources of human-caused mortality or stress (e.g., direct damage, habitat destruction and prey depletion deriving from overfishing; dynamite fishing; disturbance to seals in their critical habitat; habitat degradation through coastal development, pollution, and climate change).

(3) Creative experimental mechanisms (e.g., insurance against gear damages, tax breaks to fishermen operating in monk seal MPAs, incentives of various nature to fishing communities related to the conservations status of monk seals) are introduced to mitigate fishermen's hostility towards monk seals deriving from damages caused by the seals to their activities.

(4) Considering that effectiveness of measures addressing threats will be significantly improved if a local consensus-based conservation climate is achieved, awareness and education campaigns are conducted in each of the MPAs, targeting the local general public, the fishing community, the school system (teachers and students), the local authorities, tourist operators, the clergy and other stakeholders. Awareness and education campaigns are also conducted targeting tourists in locations in or near monk seal MPAs. Attitudes should be measured at the beginning and at end of the campaign (e.g., Willingness To Pay) to assess effectiveness of actions.

(5) Create a model for local participatory mechanisms in communities affected by monk seal protected areas, by selecting at least one of these MPAs, deemed to be responsive to such programme, to be used as a natural laboratory of monk seal–human coexistence. The idea is to create a clearly advantageous "package" for the selected community, which however may be implemented only if no dead seals are found in the area. Actions will include the active involvement and participation of local people in conservation activities (e.g., RINT, monitoring, rescue, care and release, guarding and enforcement, awareness actions); awareness of the economic advantages for areas hosting monk seal populations (e.g., as tourist attraction, see 3B.4; fishing facilitation, see 3B.1); incentive to changes in fishing activities with gear that is less dangerous to seals; promoting reduction of fishing effort through the creation of economically more attractive and environmentally friendly jobs (e.g., responsible ecotourism). Utilising such tools, local stewardship is created, through the formation of local conservation leaders/advocates, who enjoy the trust of the local fishermen and facilitate cultural transition to a more benevolent approach to monk seals.

(6) Compliance monitoring is regularly and adequately performed, to ensure that MPAs regulations (including combating illegal and destructive activities such as dynamite fishing and nocturnal spear gun fishing) are effectively enforced.
(7) Monitoring of monk seal population status is regularly performed within MPAs through the development of local branches of RINT. In addition, monitoring is performed of seal population numbers and trends on a regular basis (including cave monitoring) possibly through a cooperative effort between seal specialists and MPA staff, using state-of-the-art techniques to ensure minimal-to-no invasiveness into the seal habitat. Catalogues of seals based on artificially or naturally tagged animals are created for each MPA and are regularly maintained. Mortality events are investigated thoroughly whenever they occur.
(8) Environmental monitoring is regularly performed to provide the necessary data to assess the status of local fish stocks, of marine pollution and of habitat degradation and to be used in the development of measures to improve the status of the environment of the MPAs.
(9) MPA-specific contingency plans are prepared and implemented to respond to oil spills, mass monk seal mortality events and other disasters.

3C **Establish a Functional Network of Monk Seal MPAs**

All monk seal protected areas are linked together into a functional network of MPAs. MPA managers and main stakeholders are invited to meet regularly to exchange views and share experiences. Inventoried key areas are linked together into a "national network" of monk seal conservation areas. Monk seal catalogues from different areas (see 3B.7) are compared to detect matching of individuals and understand patterns of dispersal/exchange among areas. Local stakeholders are encouraged to meet regularly at the national level to exchange information and to communicate amongst them. Thereby a national community of monk seal conservation practitioners is developed under the coordination of the MSCC.

4.4. Actions related to Objective 4: Monk seal conservation measures are legally adopted and effectively implemented throughout national waters, so that threats are diminished and monk seal populations and critical habitat nation-wide are not lost:

4A **Implement Nation-wide Monk Seal Conservation Measures**

Ensure that conservation measures provided for by revised national legislation (see 1A) are implemented to address and mitigate threats (disturbance, pollution, destruction of habitat) through the regulation of potentially harmful human activities, such as shipping and military exercises, particularly within relevant distance from known breeding sites. In addition, all monk seal breeding caves listed in the national inventory (see 2A) are formally declared no-entry protected areas.

4B **Mitigate Monk Seal Human-induced Mortality**

Overall human-induced seal mortality is mitigated by addressing negative fishery interactions through the introduction of creative compensation schemes (experimented in 3B.3), awareness campaigns targeting fishing communities,

environmental education targeting the fishermen's children, and enforcement of existing fisheries legislation. In particular:
(1) "MOFI"'s Action Plan to mitigate seal-fishery interactions is implemented;
(2) No-take fishing zones (NTZ) are created specifically to protect fish stocks from overexploitation and to replenish stocks to support fisheries and ecosystem health; and
(3) Support is provided to aquaculture facilities to deal with monk seal depredation, through methods that will not harm the seals.

4C **Mitigate Human-induced Degradation of Monk Seal Habitat**
Overall human-induced habitat degradation is mitigated through stricter environmental standards for industrial and agricultural activities affecting runoff and discharge in the relevant catchment areas.

4D **Continuation of Operation of RINT**
The National Information Network ("RINT"), as well as rescue and rehabilitation activities continue to operate on a nation-wide basis and are strengthened.

4E **Develop National Contingency Plan for Monk Seal Emergencies**
A national contingency plan to deal with exceptional or unusual monk seal mortality events is established and is readily operational.

5. Revision of the Strategy

A mid-term assessment of the implementation of the Strategy and Action Plan should be performed in 2012, to assess up-to-date attainment of objectives within the Strategy's timeframe and to identify, if needed, moderate adjustments. A comprehensive review of the Strategy's accomplishments and failures, based on the indicators presented in the Implementation Table, with a consideration for potential actions to be taken beyond 2015, will be conducted in 2015. If objectives are met, a future strategy might shift focus on locations outside critical breeding habitat to enhance the opportunity for monk seals to repopulate their former range.

6. Implementation Plan

Objective 1. Monk seal conservation is established as a national priority			
action	**sub-action**	**indicators of achievement**	**notes**
1A Formulation of New Legislation - Establishment of National Monk Seal Conservation Commission	1A.1. A *Monk Seal Conservation Commission* (MSCC) is established with the mandate to monitor and coordinate monk seal conservation efforts.	• MSCC officially established • MSCC Terms of Reference officially adopted	
	1A.2. Monk seal conservation efforts integrated with similar efforts by other national and international marine conservation and management instruments and organisations	• Monk seal conservation integrated within the relevant national policies	
	1A.3. Monk seal conservation is fully integrated within the national marine conservation strategy which Greece will develop and implement on the basis of the EU Marine Framework Strategy Directive.	• Monk seal conservation included within national Marine Conservation Strategy legislation	
	1A.4. Species-relevant criteria and guidelines on habitat protection, research, monitoring, rescue and rehabilitation activities are legislatively established.	• Criteria and guidelines adopted by MSCC • Criteria and guidelines incorporated in legislation	
	1A.5. Measures for the mitigation of seal-fisheries conflicts (as proposed in the "MOFI" Action Plan) legislatively established.	• "MOFI" Action Plan is adopted by State authorities • "MOFI" Action Plan policy measures legislated	
	1A.6. The MSCC revises the existing legislation relevant to monk seal conservation and recommends modifications as deemed necessary.	• Proposed amendments by MSCC adopted and legislated	
1B Implementation of Nationwide Public Awareness Activities	1B.1. A coordinated programme of awareness and education campaigns at the national level is designed in consultation with the MSCC.	• Design of awareness and education campaigns completed with clear target groups, goals and timetable • MSCC, key NGOs and stakeholders involved in the campaigns' design	
	1B.2. Specific campaigns for each target group, including the general public, the schools (teachers and students), the political community and public servants, the law enforcers, and the industry connected with the use of the sea (e.g., fisheries, shipping, tourism) are implemented at the national level.	• Number of key target groups involved in the campaigns • Awareness on the need for monk seal conservation increased in all target groups • Monk seal conservation is established nationally as priority	
	1B.3. Evaluation of the campaigns' effectiveness at regular intervals	• Develop target group specific indexes of campaigns' success • Evaluation of campaigns conducted regularly • Campaigns goals and timetable adjusted appropriately based on evaluations	
1C Providing Expertise at the International Level	1C.1. Greece provides expert support to monk seal conservation throughout the species' range at the international level.	• Participation in international conferences • Provision of consultancy to other countries	
	1C.2. Conservation Strategy and Action Plan disseminated widely throughout other Mediterranean monk seal range states.	Number of countries/bodies Strategy disseminated to	

Objective 2. Knowledge of monk seal ecology and biology important for the conservation of the species is secured			
action	**sub-action**	**indicators of achievement**	**notes**
2A Creation of Nation-wide Monk Seal Breeding Sites Inventory	2A.1. A nation-wide survey of monk seal breeding sites is completed,	• Percent of coastline surveyed for monk seal breeding sites.	
	2A.2. All locations where monk seal breeding is known to currently occur are identified and mapped . Spatial modelling methods are applied to develop inventory.	• Inventory of monk seal breeding caves completed.	
2B Monitor Monk Seal Status	2B.1. Establish regular monitoring and population assessments within monk seal MPAs,	• Number of monk seal MPAs with permanent monitoring programs operational. • Reports of monitoring results regularly published • Population monitoring completed over entire country every 3 years (i.e 2012, 2015).	
	2B.2. Improve capabilities of generating nationwide population estimates and trends, and introduce and adopt standardised or compatible sighting and population assessment method throughout the country.	• Variability of population estimates significantly decreased between 2009 and 2015.	
	2B.3. Continue and expand remote monitoring of breeding caves, to extract highly conservation-relevant data on pup production and survival.	• Permanent remote monitoring installations increased. • Reports of monitoring results regularly published	Activity must be done with the greatest care to avoid any element of invasiveness and negative impact on seals.
	2B.4. Continue and improve nationwide operation of RINT, and create local networks within monk seal MPAs.	• Regular monitoring programmes in place. o Reports of RINT results regularly published. o Nation-wide, effort-corrected monk seal distribution and abundance map completed by 2015.	This action to be coordinated and mutually reinforced with similar actions detailed under Objectives 3 and 4.
	2B.5. Monitor impact of new activities which may be implemented in the future (e.g., fisheries, transportation) and environmental changes as they develop, in cooperation with relevant Greek and international marine science institutions and organisations (e.g., FRI, HCMR, CIESM).	• Regular monitoring programmes in place. • Reports of monitoring results regularly published.	Elements to be monitored include, amongst a) future activities: new fisheries, shipping; b) environmental changes: sea temperature changes, sea level changes and how these may affect breeding caves, changes in fish species assemblages through increases of alien immigrants.
2C Study Key Aspects of Monk Seal Ecology and Biology	2C.1. Investigate dispersion and individual home ranges.	• All released rehabilitated seals are equipped with telemetry devices • Utilise Photo-ID catalogue within Greece and with neighbouring countries. • Studies conducted and publications produced.	
	2C.2. Investigate aspects of monk seal population structure and genetic variability relevant to conservation.	• Tissue samples for genetic analyses collected in all occasions, and stored in monk seal tissue bank. • Genetic analyses performed across widest geographical range, within and outside Greece, to describe population and genetic structure. • Studies conducted and publications produced.	
	2C.3. Investigate aspects of monk seal reproductive biology relevant to conservation.	• Tissue samples for reproductive biology analyses collected in all occasions and stored in monk seal tissue bank. • Studies conducted and publications produced.	

Objective 2. Knowledge of monk seal ecology and biology important for the conservation of the species is secured (continued)			
action	**sub-action**	**indicators of achievement**	**notes**
	2C.4. Investigate monk seal feeding ecology and trophodynamics relevant to conservation	• Feeding habits and diet of monk seals in Greece, and their temporal/spatial variability, thoroughly investigated through stomach content analyses, stable isotopes analyses and through behavioural and anecdotal observations.. • Studies conducted and publications produced.	
	2C.5. Investigate monk seal behaviour relevant to conservation.	• Utilise remote monitoring data • Studies conducted and publications produced.	
2D Study Key Socio-economic Aspects of Monk Seal Conservation	2D.1. Investigate the local attitudes towards monk seals, to describe the baseline on public perception (values) on monk seals,	• Establish variates to quantify local attitudes to compare across space and time. • Studies conducted and publications produced.	
	2D.2. Investigate and quantify economic advantages and negative impacts deriving from monk seal presence in an area.	• Studies conducted and publications produced.	

Objective 3. Areas containing monk seal critical breeding habitat in Greece are identified, legally protected and organised into a functional network of protected areas in which monk seal numbers are stable or increasing			
action	**sub-action**	**indicators of achievement**	**notes**
3A Declaration of Monk Seal Breeding Areas as Protected	3A.1. All areas containing monk seal actively used breeding habitat are formally declared protected areas,	• Number of monk seal key breeding areas established as MPAs	
	3A.2. All areas containing monk seal actively used breeding habitat are included in the *Natura 2000* Network and Strategy for the EU Marine Framework Strategy Directive.	• Number of monk seal key breeding areas included in *Natura 2000* Network	
3B Effectively Manage Monk Seal Protected Areas	3B.1. Establish Management Bodies, with sufficient powers, as well as, means and human resources for all monk seal protected areas .	• Number of monk seal MPAs with established Management Bodies • Number of Management Bodies with sufficient recourses.	
	3B.2. Appropriate zoning of MPAs is established.	• Number of MPAs with detail zoning system legislatively established	
3B Effectively Manage Monk Seal Protected Areas	3B.3. Conservation measures are established within MPAs, and are demonstrably effective, to manage human activities	• Number of MPAs with adopted management plans • Number of management plans actively implemented • Periodic assessments of management plans' effectiveness	
	3B.4. Introduce creative experimental mechanisms to mitigate damages to fishermen caused by monk seals.	• Number of MPAs with measures to mitigate seal-fishery conflict • Decrease of fishermen's negative attitude within MPAs • Decrease of monk seal deliberate killings within MPAs	See Zabel A., Holm-Müller K. 2008. Conservation performance payments for carnivore conservation in Sweden. Conservation Biology 22(2):247–251. DOI: 10.1111/j.1523-1739.2008.00898.x
	3B.5. Awareness and education campaigns are conducted in each of the MPAs, targeting key groups and stakeholders.	• Number of key stakeholders within MPAs targeted by awareness campaigns • Increase community involvement in monk seal conservation and MPA protection • Awareness index (eg., willingness-to-pay, WTP) significantly increased between 2009 and 2015 within MPAs • Decrease of monk seal deliberate killings within MPAs • WTP of tourists significantly increased between 2009 and 2015.	
	3B.6. Develop one MPA as a model system of monk seal–human coexistence, where a clearly advantageous "package" of measures for the selected community is designed	• Increase community involvement in monk seal conservation and MPA protection • Decrease of fishermen's negative attitude within MPAs • Benefits for local communities generated within MPAs.	

Objective 3. Areas containing monk seal critical breeding habitat in Greece are identified, legally protected and organised into a functional network of protected areas in which monk seal numbers are stable or increasing (continued)			
action	**sub-action**	**indicators of achievement**	**notes**
3B Effectively Manage Monk Seal Protected Areas	3B.7. MPAs regulations are consistently and adequately enforced.	• Number of MPAs with established guarding system • Decrease of illegal activities within MPAs.	
	3B.8. Establish permanent monk seal population monitoring mechanisms within MPAs, through the development of local branches of RINT, cave monitoring and mortality events investigation.	• Number of MPAs with monk seal monitoring system established and operational • Number of MPAs with local RINT branches operational • Status of monk seal populations within MPAs regularly reported	
	3B.9. Establish regular environmental monitoring mechanisms to assess the status of local fish stocks, of marine pollution and of habitat degradation.	• Number of MPAs with environmental monitoring system established and operational • Status of key environmental parameters within MPAs regularly reported	
	3B.10. MPA-specific contingency plans are prepared and implemented to respond to oil spills, mass monk seal mortality events and other disasters.	• Number of MPAs with adopted contingency plans • Number of emergency cases where contingency plans were utilised	
3C Establish a Functional Network of Monk Seal MPAs	3C.1. All monk seal protected areas are linked together into a functional network of MPAs.	• Monk seal MPAs cooperate in terms of planning, actions, and personnel • Status of monk seals within MPAs improves	
	3C.2. Under the coordination of the MSCC, monk seal MPA managers develop relevant plans of action for the species for each MPA	• Monk seal action plans within MPAs developed and approved by MSCC	
	3C.3. Under the coordination of the MSCC, MPA managers and local stakeholders meet regularly to exchange views and share experiences	• A national community of monk seal conservation practitioners is developed under the coordination of the MSCC.	

Objective 4. Monk seal conservation measures are legally adopted and effectively implemented throughout national waters, so that threats are diminished and monk seal populations and critical habitat nation-wide are not lost			
action	**sub-action**	**indicators of achievement**	**notes**
4A Implement Nation-wide Monk Seal Conservation Measures	4A.1. All monk seal breeding caves listed in the national inventory (see 2A.1) are formally declared no-entry protected areas.	• Number of breeding caves declared as no-entry areas	
	4A.2. Conservation measures to address and mitigate threats and regulate human activities are implemented to protect monk seal habitat outside of MPAs	• Key threats addressed by nationwide conservation measures • Number of areas where additional conservation measures are implemented	Conservation activities are applied to a less intensive scale to monk seal habitat outside of MPAs
4B Mitigate Monk Seal Human-induced Mortality	4B.1. MOFI's Action Plan is implemented.	• MOFI Action Plan adopted by relevant authorities • Number of MOFI Action Plan proposals implemented	
	4B.2. No Take fishing zones (NTZ) are created to protect fish stocks.	• Number of NTZ established • Status of fish stocks improves within NTZ and surrounding areas	Specifically provided for in: European Commission. 2003. Council Regulation concerning management measures for the sustainable exploitation of fishery resources in the Mediterranean Sea and amending Regulations (EC) No 2847/93 and (EC) No 973/2001. Report of the Commission of the European Communities. 39 p.
	4B.3. Support aquaculture facilities to deal with monk seal depredation	• Number of aquaculture facilities adoption proper anti-predation measures	Acoustic deterrents to keep monk seals away from aquaculture nets are illegal.
4C Mitigate Human-induced Degradation of Monk Seal Habitat	4C.1. Strict environmental standards for industrial and agricultural activities affecting monk seal habitat are established	• Status of monk seal habitat is improved in terms of pollution	
4D Continuation of Operation of RINT	4D.1. The National Rescue and Information Network ("RINT") continues to operate on a nation-wide basis and is strengthened.	• RINT membership improves in size and in communication quality/frequency	
	4D.1. Rescue and rehabilitation activities continue on a nation-wide basis both in situ and in a central state-of-the-art Rehabilitation facility.	• Rescue operations are readily available throughout • Time of rescue response improves • Percentage of animals rescued and released remains high and if possible improves • New Rehabilitation facility built and operational	This action and similar area-specific actions (Objective 3) are coordinated and mutually reinforced.
4E Develop National Contingency Plan for Monk Seal Emergencies	4E.1. A national contingency plan to deal with exceptional or unusual monk seal mortality events is established and is readily operational.	• National contingency plan adopted by relevant state authorities • Contingency plan readily operational in terms of resources (i.e. infrastructure, trained personnel, financing) • Number of times contingency planed used in such cases	This action and similar area-specific actions (Objective 3) are coordinated and mutually reinforced.

Monk Seal & Fisheries

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"Mitigating the Conflict in Greek Seas"

Fisheries Research Institute

PREFECTURE
OF MAGNESIA

National Strategy and Action Plan for the Conservation of the Mediterranean Monk Seal in Greece, 2009 – 2015

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