
**MEDITERRANEAN ACTION PLAN (MAP)
REGIONAL MARINE POLLUTION EMERGENCY RESPONSE CENTRE FOR THE
MEDITERRANEAN SEA (REMPEC)**

Fifteenth Meeting of the Focal Points of the Regional Marine
Pollution Emergency Response Centre for the
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Agenda Item 5: Introduction of non-indigenous species by shipping activities

Draft updated Action Plan concerning species introductions and invasive species in the Mediterranean Sea

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Note by the Secretariat

This document presents the draft updated Action Plan concerning species introductions and invasive species in the Mediterranean Sea, as prepared by SPA/RAC and agreed upon by the Sixteenth Meeting of SPA/BD Focal Points (Malta, 22-24 May 2023).

Background

1 The draft updated Action Plan concerning species introductions and invasive species in the Mediterranean Sea, hereinafter referred to as the draft updated NIS Action Plan, was prepared by the Regional Activity Centre for Specially Protected Areas (SPA/RAC) and agreed upon by the Sixteenth Meeting of Specially Protected Areas and Biological Diversity (SPA/BD) Focal Points (Malta, 22-24 May 2023), pursuant to the Programme of Work and Budget for 2022-2023 of the Mediterranean Action Plan (MAP) of the United Nations Environment Programme (UNEP), adopted by the Twenty-second Ordinary Meeting of the Contracting Parties to the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (“the Barcelona Convention”) and its Protocols (Antalya, Türkiye, 7-10 December 2021).

2 The draft updated NIS Action Plan is presented in the **Appendix** to the present document.

Action requested by the Meeting

3 **The Meeting is invited to take note** of the information provided in the present document.

Appendix

**Draft updated Action Plan concerning species introductions and invasive species in the
Mediterranean Sea**

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I. Introduction

1. In 1975, 16 Mediterranean countries and the European Community adopted the Mediterranean Action Plan (MAP), the first-ever Regional Seas Programme under UN Environment's umbrella. In 1976 these Parties adopted the Convention for the Protection of the Mediterranean Sea Against Pollution (Barcelona Convention). Seven Protocols addressing specific aspects of Mediterranean environmental conservation complete the MAP legal framework.

2. Currently, MAP has been adopted by 21 countries bordering the Mediterranean Sea, and the European Union. The Contracting Parties to the Barcelona Convention give priority to the conservation of the marine environment and to the components of its biological diversity. This has been confirmed on several occasions, particularly by the adopting (Barcelona, 1995) of the new Protocol concerning specially protected areas and biological diversity in the Mediterranean (SPA/BD Protocol) and of its Annexes. The SPA/BD Protocol invites the Contracting Parties to take "all appropriate measures to regulate the intentional or non-intentional introduction of non-indigenous or genetically modified species into the wild and prohibit those that may have harmful impacts on the ecosystems, habitats or species" (Article 13.1). For established alien species, the SPA/BD Protocol stipulates that "the Parties shall endeavour to implement all possible measures to eradicate species that have already been introduced when, after scientific assessment, it appears that such species cause or are likely to cause damage to ecosystems, habitats or species" (Article 13.2).

3. To that effect, the Contracting Parties adopted in 2003 the first Regional Action Plan concerning species introductions and invasive species in the Mediterranean Sea, which was further updated in 2017. The main objective of the 2017 NIS Action Plan was to promote the development of coordinated efforts and management measures throughout the Mediterranean region in order to prevent as appropriate, minimise and limit, monitor, and control marine biological invasions and their impacts on biodiversity, human health, and ecosystem services, through a series of actions to be carried out between 2017 and 2020. Coinciding with the adoption of the Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria (IMAP), which aims to assess the status of the Mediterranean sea and coast as a basis for enhanced action, the focus of the 2017 Action Plan was to strengthen the capacity, and the institutional and legislative framework of Mediterranean countries so that they can deal with issues of alien species, conduct baseline studies and establish monitoring programmes, foster regional co-operation and data sharing infrastructure and produce guidelines and other necessary technical documentation; goals which have been achieved to a large extent.

4. As our baseline knowledge and understanding of marine bioinvasions has been increasing and the regulatory and institutional framework to combat NIS are continuously developing, the post-2020 international and regional policy framework is moving towards more concrete actions for the management of pathways and the drastic reduction in invasive alien species populations and their impacts.

5. The first draft of the Post-2020 Global Biodiversity Framework (GBF) addresses alien species with Target 6: Manage pathways for the introduction of invasive alien species, preventing, or reducing their rate of introduction and establishment by at least 50 per cent, and control or eradicate invasive alien species to eliminate or reduce their impacts, focusing on priority species and priority sites.

6. Similar stipulations are reflected in the Draft Post-2020 Strategic Action Programme for the Conservation of Biodiversity and Sustainable Management of Natural Resources in the Mediterranean Region" (Post-2020 SAPBIO), which aims to reduce the threats to biodiversity by alien species with its Target 1.2 on alien invasive species, by sharing databases and controlling introduction pathways and impacts in the most vulnerable areas. Furthermore, it stipulates that "Invasive alien species and pathways must be regularly identified in all countries, listing priority species to be controlled or eradicated".

7. The EU Biodiversity Strategy for 2030, calls for an enhanced implementation of NIS-relevant legislation aiming to minimise, and where possible eliminate, the introduction and establishment of alien species in the EU environment. One of the Strategy's key commitments is the management of established invasive alien species and a 50% reduction in the number of Red List species they threaten (EC, 2020)

8. The Mediterranean Sea, with about 1000 alien species reported in its waters up to now, is one of the most invaded ecosystems in the world. The trend of new introductions of alien species, which exhibited a steep increase after the mid-1990s, shows no sign of decline and is moreover accompanied by an accelerating rate of spread and establishment in the last decade, with almost seventy percent of the species being considered established (Zenetos & Galanidi, 2020; Zenetos et al., 2022a). Some of these species have become invasive with serious negative impacts on biodiversity, human health, and ecosystem services. The main pathways by which human actions have introduced alien invasive species into the Mediterranean Sea are shipping (by means of ballast waters and hull fouling), corridors, aquaculture, trade in live marine organisms (aquarium trade and live food trade) and others (e.g. fishing activities and aquarium exhibits).

9. Elaborating and implementing action plans to confront the threats to biological diversity is an effective way of guiding, coordinating and stepping up the efforts made by the Mediterranean countries to safeguard the region's natural heritage. In the 2022-2027 period, significant actions for the management of shipping vectors are planned within the framework of the Ballast Water Management Strategy for the Mediterranean Sea and its Action Plan. The present NIS Action Plan takes this into consideration with complementary actions addressing the remaining important pathways, as well as a focus on the impacts of priority invasive species on priority native species and habitats, in line with existing regional and international policies; it will be adapted and updated, if necessary, to reflect the latest policies on invasive species and new data available.

10. The actions advocated by the present Action Plan are to be carried out over a five-year period, starting from when the Action Plan is adopted by the Contracting Parties. At the end of this period, SPA/RAC will prepare a report on the progress so far made in implementing the advocated actions and will submit it to the National Focal Points for SPAs, who will make follow-up suggestions to the Parties.

11. Considering the world-wide scope of the issue of alien species introduction, it is important that the implementation of the present Action Plan be done in consultation and collaboration with the initiatives undertaken in this field in other regions and/or by other international organisations.

II. Objectives of the Action Plan

12. The main objective of the present Action Plan is to promote the development of coordinated efforts and management measures throughout the Mediterranean region in order to make progress towards Good Environmental Status in relation to non-indigenous species. These efforts can be organized along two main axes corresponding to the two main operational objectives of the Ecosystem Approach (EcAp) and IMAP with respect to Ecological Objective 2 (EO2) and Common Indicator 6 (CI6).

13. Operational objective 2.1 requires that “Introduction and spread of NIS linked to human activities are minimised, in particular for potential IAS” and addresses trends in temporal occurrence, spatial distribution, and abundance of NIS, as well as preventative measures for introduction and spread. Here, the main goals of the Action Plan for the next five years should be:

- Continuing to support the implementation of IMAP and the operationalization of its indicators
- Developing a regional early-warning system within the framework of MAMIAS
- Continuing to elaborate guidelines and technical documentation
- Strengthening the institutional and legislative framework for pathway management, allowing for synergies with the Mediterranean BWM Strategy (2022-2027)
- Supporting the implementation of the Mediterranean BWM Strategy (2022-2027), through technical cooperation and capacity building activities
- Promoting voluntary codes of conduct for pathways where a mandatory legal framework is not yet in place

Operational objective 2.2 states that “The impact of non-indigenous, particularly invasive species, on ecosystems is limited” and requires prioritization and impact quantification that can be achieved in a three-step process of:

- Risk assessment and prioritization with an emphasis on prevention and mitigation.
- Identification of invasive population levels that elicit unacceptable effects
- Elaborating and executing rapid response plans and management plans for the most invasive NIS

III. Priorities

1. At National level

14. Considering the lack of the data and knowledge necessary for impact and risk assessments, horizon scanning, and the implementation of management actions for prevention, control and eradication, priority at national level should be given to:

- Conducting regular NIS monitoring as specified in their monitoring programmes
- Supporting the regional Digital Data infrastructure by providing updated baselines and any other new information to MAMIAS and by submitting yearly monitoring data to the IMAP Info System
- Focusing on invasive species impacts through systematic prioritization, risk assessment and targeted species impact research
- Performing data-based assessments of the NIS introduction and spread risks associated with the aquaculture, ornamental trade and live food trade sectors
- Elaborating an early warning system and rapid response plans
- Developing training and raising awareness programmes on risks, legal issues, best practices, and management actions for prevention and mitigation of impacts.
- Ratify and implement the BMW convention and enact the BMW strategy for the Mediterranean and its Action Plan

2. At Regional level

15. Considering the existing progress in monitoring and baseline information and the activities planned under the BWM Action Plan concerning ballast water and fouling management, priority at the regional level should be given to:

- Further develop criteria for the identification and prioritization of pathways based on international standards and assess their economic impact
- Further refinement of IMAP targets and development of impact related aspects of CI6 indicator
- Supporting cooperation at international level and ensuring harmonization with related policies
- Activating the updated version of MAMIAS and developing an early warning system
- Co-ordinating the application of risk assessment methodologies for priority species
- Training and capacity building for status assessments of the aquaculture, ornamental trade and live food trade sectors
- Training as needed and co-ordination of targeted NIS impact studies
- Support the implementation of the Ballast Water Management Strategy for the Mediterranean and its Action Plan, in cooperation with REMPEC

IV. Actions required to attain the objectives of the Action Plan

1. At National level

a. IMAP implementation

- Consolidate/implement IMAP compliant monitoring programmes (if not already in place) and adapt as necessary as new data emerges and IMAP refinement progresses;
- Regularly update the national baselines, informed by national monitoring, research projects and the literature.
- Endeavour to increase the level of confidence in pathways and vectors of introduction and spread and refine relevant baseline information to support the BWM Action Plan.

b. Prioritisation and planning

- Conduct Horizon Scanning for existing NIS and potential future introductions at the national level in order to compile priority lists of high-risk species and to inform an early warning system. High-risk species should be prioritized for spatial distribution and abundance monitoring.
- Perform risk assessments of priority species following well established protocols and taking into account the potential for management
- Quantify and map impacts of priority species at the national level by employing CIMPAL. Such analysis allows the identification of hotspots of highly impacted areas, and augments the prioritization of sites, pathways and species for management actions.
- Perform risk analysis and status assessments of sectors (aquaculture operations, ornamental trade and live food trade)
- Conduct Environmental Impact Assessments before actions on pathways that could increase NIS

c. Initiate and support research on NIS impacts

- Focused impact studies (field and laboratory experiments, modelling studies) for priority species to identify acceptable abundance levels

d. Support the regional Digital Data Infrastructure

- Regularly submit monitoring data to the IMAP Info System, following the designated procedures and Data Standards
- Support MAMIAS with updated baselines, pathway information, results of impact studies and any other new information.

e. Legislation

16. Those Contracting Parties which have not yet enacted national legislation for controlling the introduction of marine species must do so as quickly as possible. All the Contracting Parties are strongly recommended to take the necessary steps to express in their national laws the provisions of the pertinent international treaties, especially the IMO Convention on the management of ballast waters, and guidelines and codes adopted on the subject within the context of international organisations.

f. Institutional framework

- Set up reporting mechanisms for NIS sightings, especially among actors and stakeholder groups most likely to first notice new species introductions (e.g. fishers, divers, aquaculture operators, border officials, etc.). Disseminate information about species anticipated to arrive in the near future. Provide links of this early warning system to the regional MAMIAS system and cooperate with the concerned authorities in neighbouring states regarding new NIS detections;
- Elaborate rapid response and management plans for invasive NIS, including eradication or population control measures as appropriate; it is important that such plans are specific with clear procedures, jurisdictions and resource allocation;
- Conduct research on methods to mitigate invasions through existing pathways.
- Develop and disseminate best practice guidelines and codes of conduct for pathways not already covered by the BWM Action Plan
- Strengthen and where necessary set up systems to control the intentional import and export of alien marine species;
- Promote citizen science programmes for data collection;
- Undertake awareness raising activities for targeted stakeholder groups and the general public.

2. At Regional level

a. IMAP implementation/refinement and operationalization of its indicators

17. Evaluation of CI6 is currently based on operational objective 2.1 (“Invasive non-indigenous species introductions are minimized”), addressing trends in abundance, temporal occurrence and spatial distribution of NIS, notably in risk areas; however due to the lack of suitable data, significant progress has only been made in assessing trends in temporal occurrence. With national monitoring programmes being increasingly implemented and making data available, further elaboration of CI6 elements will be possible, more specifically:

- Setting reference conditions and threshold values for trends in temporal occurrence, in collaboration with other Regional Seas Conventions and the EU
- Elaborating methodologies and quantitative targets for trends in spatial distribution
- Elaborate quantitative targets for trends in abundance, in conjunction with operational objective 2.2 (“The impact of non-indigenous, particularly invasive species on ecosystems is limited) and its state target “Abundance of NIS introduced by human activities reduced to levels giving no detectable impact.
- Elaborate scales of aggregation for CI6 assessment and integration with other Ecological Objectives and Common Indicators
- Furthermore, develop an early warning system within MAMIAS and link with national early warning systems.

Finally, liaise with REMPEC on monitoring and data collection in ports and baseline surveys in ports to ensure integration with IMAP monitoring programs.

b.Implementation of the BWM Strategy (2022-2027)

18. SPA/RAC is already committed in its PoW for 2024-2025 to provide assistance to Contracting Parties to implement target measures to control and manage ships' ballast water and biofouling in order to minimize the transfer of invasive aquatic species, as an active participant in the implementation of the BWM Strategy. This can be achieved through:

- Participation in the regional online BWM Working Group, established and coordinated in cooperation with REMPEC, to drive the process towards harmonization of BWM measures in the region;
- Liaising with REMPEC regarding monitoring and data collection at ports and port baseline surveys to ensure integration with IMAP monitoring programmes.
- Assisting, with data and methodological approaches, in developing and implementing port risk assessments and a comprehensive Regional Procedure for the Granting of Exemptions under the BWM Convention as stipulated in the BWM Action Plan;
- Co-ordinating, together with REMPEC, the preliminary activities to address the threat of biofouling on ships and provide assistance to Contracting Parties in implementing them, as stipulated in the BWM Action Plan (i.e., organize a regional workshop, conduct National Status Assessments and national strategies and action plans to manage biofouling)

c.Training and Capacity Building

- Produce an updated guide for risk analysis to assess NIS impacts. Organise a training session focusing on the application of risk analysis, risk assessment for priority species and for pathways and environmental impact assessments and co-ordinate the systematic application of region-wide agreed methodologies. Considering that a regional risk assessment of key ports in the Mediterranean Sea as well as National Status Assessments for biofouling are planned to be undertaken within the framework of the BWM Action plan, the focus should be on species, as well as risk analyses of other contributing pathways, most notably corridors, aquaculture, the ornamental trade and live food trade. Collaborate with Contracting Parties on data requirements and availability and with REMPEC to support ballast and biofouling management with NIS related data.
- Provide guidance and training as needed for experimental field studies and modelling studies and translating results into policy targets, co-ordinate pilot studies for specific NIS in order to elucidate their density-impact relationships.

d.Public education and awareness

19. With particular focus on stakeholders and decision-makers, prepare and circulate guidelines with best practices for activities and sectors that exert strong pressure as vectors of introduction and particularly spread of NIS

V. Regional Coordination

20. Regional coordination of the implementation of the present Action Plan will be guaranteed by the Mediterranean Action Plan's (MAP) Secretariat through the Regional Activity Centre for Specially Protected Areas. The main functions of the coordinating structure shall consist in:

- taking in hand the implementation of those actions required at regional level to attain the present Action Plan's objectives (Section C.2 above);
- insofar as its means permit, assisting the Contracting Parties in implementing the actions required at national level to attain the present Action Plan's objectives (Section C.1 above);
- regularly reporting to the National Focal Points for SPAs about the implementation of the present Action Plan, and preparing a report on the progress made in reaching its objectives at the end of the 5-year implementation period;
- collaborating with the concerned organisations and endeavouring to ensure that the Mediterranean region is involved in the pertinent international and/or regional initiatives;
- promoting exchanges among Mediterranean specialists.

VI. Participation in the Implementation

21. Implementing the present Action Plan is the province of the national authorities of the Contracting Parties. The concerned international organisations and/or NGOs, laboratories and any organisation or body are invited to join in the work necessary for implementing the Action Plan. At their ordinary meetings, the Contracting Parties may, at the suggestion of the meeting of National Focal Points for SPAs, grant the status of «Action Plan Partner» to any organization or laboratory which so requests, and which carries out, or supports (financially or otherwise) the carrying out of concrete actions (conservation, research, etc.) likely to facilitate the implementation of the present Action Plan, taking into account the priorities contained therein.

22. In addition to collaborating and coordinating with the Secretariats of the relevant Conventions, SPA/RAC should invite other MAP components and RACs to join and contribute to the implementation of the present Action Plan, in particular REMPEC and INFO/RAC. It will set up a mechanism for regular dialogue between the participating organisations and, where necessary, organise meetings to this effect.

VII. Implementation timetable

Action (* in tandem with the BWM Action Plan)	Deadline	Responsible
1. establish a working group nominated by Contracting Parties to Further develop criteria for the identification and prioritization of pathways based on international standards and assess their economic impact	2024	SPA/RAC & Contracting Parties
2. Consolidate/implement IMAP compliant monitoring programmes	2024	Contracting Parties
3. Increase the level of confidence in pathways and vectors of introduction and spread	2024	Contracting Parties
4. Prepare and circulate guidelines with best practices for activities and sectors that exert strong pressure as vectors of introduction	2024	SPA/RAC
5. Produce an updated guide for risk analysis to assess NIS impacts	2024	SPA/RAC
6. Organise a training session for risk assessment of species and pathways	2024	SPA/RAC
7. Develop and adopt a regional protocol for sampling of ballast water for purposes of Port State Control*	2024	REMPEC & SPA/RAC
8. Develop a regional protocol for port baseline surveys *	2024	REMPEC& SPA/RAC
9. Review and adapt the IMAP Guidance Fact Sheet for CI 6 under EO 2 to ensure integration of data in the IMAP Info System*	2024	REMPEC& SPA/RAC
10. Develop and adopt a regional protocol for port risk assessment *	2024	REMPEC& SPA/RAC
11. Undertake a regional risk assessment of key ports in the Mediterranean Sea *	2025	REMPEC& SPA/RAC
12. Develop, adopt, and implement a comprehensive Regional Procedure for the Granting of Exemptions under the BWM Convention *	2025-2028	REMPEC& SPA/RAC
13. Develop an early warning system in the framework of MAMIAS	2025	SPA/RAC
14. Conduct Horizon Scanning for existing NIS and potential future introductions taking into consideration the increased risk of establishment of IAS due to climate change	2025	Contracting Parties
15. Perform risk assessments of priority species	2025	Contracting Parties
16. Map impacts of priority species with CIMPAL	2025	SPA/RAC, Contracting Parties
17. Workshop to initiate biofouling-related activities in the region *	2024	REMPEC& SPA/RAC
18. Undertake National Status Assessments of Biofouling *	2025	Contracting Parties
19. Develop national strategies and action plans to manage biofouling *	2025-2028	Contracting Parties
20. Perform risk analysis and status assessment of aquaculture, ornamental trade and live food trade sectors	2026	Contracting Parties
21. Set up a mechanism to promote and coordinate the actions listed in section C.1.6. (Institutional framework)	2025	Contracting Parties
22. Launch the procedures for enacting or strengthening national legislation governing the control of alien species introduction	2026	Contracting Parties
23. Develop national early warning and reporting systems	2026	Contracting Parties

24. Elaborate rapid response and management plans for invasive NIS	2026	Contracting Parties
25. Preparation of material for public education and awareness	2025-2028	SPA/RAC, Contracting Parties
26. Develop programmes to raise the awareness of the general public and target groups, including decision-makers, concerning the risks associated with species introduction and disseminate best practice guidelines	2028	Contracting Parties
27. Strengthen and where necessary set up systems to control the intentional import and export of alien marine species	2027	Contracting Parties
28. Support the regional Digital Data Infrastructure as set out in section C.1.4	2024-2028 (annually)	Contracting Parties
29. IMAP CI6 target refinement, setting of thresholds, further indicator development regarding impacts	2024-2028	SPA/RAC
30. Organise a symposium every 3 years	From 2024	SPA/RAC