

Format for the Periodic Review of the SPAMIs

SPAMI Name: Cabo de Gata-Níjar

SECTION I: CRITERIA WHICH ARE MANDATORY FOR THE INCLUSION OF AN AREA IN THE SPAMI LIST

(Art. 8.2. of the Protocol and General Principles and C and D of Annex I)

In each question, crossed references to the Annotated Format (AF) are given.

1. CONSERVATION STATUS

1.1. Does the SPAMI fulfill one of the criteria related to Mediterranean interest as presented in Protocol's (Annex I section B para. 2), strictly maintain the status of populations of its protected species (those in Annex II to the Protocol), the status of its habitats and no adverse significant changes in the functioning of its ecosystems? (Article 8.2.) (See 3.4. and 4 in the AF)

In case of "no", indicate the reasons that have motivated the deficiencies, their relative seriousness and, if possible, the date in which they are expected to be overcome.

YES

Confirmed by monitoring programs carried out during the last years

1.2 If "yes", are the objectives, set out in the original SPAMI application for designation, actively pursued?

YES

2. LEGAL STATUS

2.1. Does the area maintains or has improved its legal protection status from the date of the previous report? (A-e and C-2, Annex I). See 7.1.2 in the AF

YES.

In Cabo de Gata-Níjar there are new provisions in the following texts: Law 42/2007 of Natural Heritage and Biodiversity, Decree 37/2008 for Cabo de Gata-Níjar management Plan, and 15/2011 for speeding administrative procedures

2.2. Does the legal declaration of this area consider the conservation

of natural values as the primary objective? (A-a and D1 in Annex I).
See 7.1.3 in the AF

YES

2.3. Are competencies and responsibilities clearly defined in the texts governing the area? (D4 Annex I). See 7.4.3 in the AF

YES

2.4. Are external influences/threats been taken into account in the legal framework of the SPAMI? Does the legal text clearly establish coordination means between land and sea authorities? (D4 Annex I, Art.7.4. in the Protocol).

YES

In case there is no sea within the SPAMI, this question would be non-applicant.
See 7.4.3. in the AF

Indicate measures that have been adopted to address these influences/threats. In case of any "no" answer, indicate the reasons that have motivated the deficiencies and, if possible, the date in which they are expected to be overcome.

- Recovery of Andalusia "Matorrales arborescentes de Ziziphus; cod. Habitat 5220" (*Maitenus senegalensis* and *Ziziphus lotus* habitats)
 - Restoration of coastal habitats in Almeria province
 - *Caretta caretta* nesting program in Cabo de Gata-Níjar SPAMI
 - New facilities: Endangered species in Carboneras
 - New facilities: botanical garden of Rodalquilar (Andalusia's Botanical Garden Network).
 - European Charter of Sustainable Tourism area since 2008
 - Water treatment
 - Monitoring and surveillance of the coast
 - Monitoring of alien species
 - LIFE+ *Posidonia* project with the aim to enhance de conservation of *Posidonia oceanica* prairies in the Mediterranean Andalusia coast. The project started in 2011 and lasted to 2014 within 6 SACs (Special Areas of Conservation). Among the actions undertaken: cartography of sea bottoms, surveillance, ecological mooring, artificial reefs, and environmental educational material.
- Self-protection plan for oil spills.

3. MANAGEMENT METHODS (General principles D Annex 1)

3.1. Does the area have the same or an improved management body/authority as when the SPAMI was established and/or last evaluated?

Existence of a management body with sufficient powers (Art. 7.2.d, 7.2.f).
D6 - Annex I: "To be included in the SPAMI List, a protected area must have 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". See 8.1. in the AF

YES

The management structure of the SPAMI is similar to the one already present in the moment of declaration. Furthermore, the following texts were issued:

- Act for the declaration of several SCAs of the Natura2000 network in Andalusia (Decreto 493/2012, de 25 de septiembre, por el que se declaran determinados Lugares de Importancia Comunitaria como Zonas de Especial Conservación de la Red Ecológica Europea Natura 2000 en la Comunidad Autónoma de Andalucía).
- Order that regulates the marine reserve of Cabo de Gata-Níjar and defines its uses. (Orden ARM/1744/2011, de 15 de julio, por la que se regula la Reserva Marina de Cabo de Gata-Níjar y se definen su delimitación y usos permitidos.)

3.2. Is the management plan in force?

Has the management plan been officially adopted? (D7 Annex I). See 8.2.1, 8.2.2. in the AF

YES

- Decree 37/2008 approving a new management Plan of Cabo de Gata-Níjar Natural Park.

3.3. Does the management plan address the requirements set out in article 7 of the Protocol and Section 8.2.3 of the Annotated Format?

More details useful for the evaluation of the management plan are addressed in question 7.1 of this questionnaire.

YES

In case of any "no" answer, indicate the reasons that have motivated the deficiencies and, if possible, the date in which they are expected to be overcome.

4. AVAILABILITY OF RESOURCES AND INFORMATION

4.1. Is there basic equipment, human and financial resources ensured to the management body?

(Art. 7.2.d, 7.2.f. D6 in Annex I: "To be included in the SPAMI List, a protected area must have 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"). See 9.1, 9.2. in the AF

YES

There are some improvements, as the remote surveillance system in place from 2013.

4.2. Does the area have a monitoring program?

(D8 - Annex I: "The program should include the identification and monitoring of a certain number of significant parameters for the area in question, in order to allow the assessment of the state and evolution of the area, as well as the effectiveness of protection and management measures implemented, so that they may be adapted if need be"). See 9.3.3. in the AF

YES

The main elements covered by the monitoring program in the terrestrial part of the SPAMI are:

Concerning the marine and terrestrial environment, an important monitoring program is in place (see Annex 1)

If yes, what are the monitoring parameters and the management objectives being addressed by these parameters?

4.3 Is there a feedback mechanism that establishes an explicit link between the monitoring results and the management objectives, and which allows adaptation of protection and management measures?

In case of any "no" answer, indicate the reasons that have motivated the deficiencies, their relative seriousness, and the date in which they are expected to be overcome.

YES

The management plan links the indicator system and the review of the legal documents, therefore a mechanism that links the monitoring results with the protection and management of the area.

Furthermore, the scientific committee established for LIFE+ *Posidonia* Project (2011-2014) proposed additional conservation measures based on the results of the monitoring program.

5. THREATS AND SURROUNDING CONTEXT

5.1 Assess the level of threats within the site to the ecological, biological, aesthetic and cultural values of the area (B4.a Annex I).
See 5.1. consider also 3.5.2.b, 6.3 & 6.4. in the AF

In particular:

Unregulated exploitation of natural resources
(e.g. sand mining, water, timber, living resources) See 5.1.1. in the AF
(SCORE: 0 means "very serious threats"; 3 means "no threats")

3

Serious threats to habitats and species (e.g. disturbance, desiccation, pollution, poaching, introduced alien species) See 5.1.2. in the AF
(SCORE: 0 means "very serious threats"; 3 means "no threats")

3

Increase of human presence (e.g. tourism, boats, building, immigration...) See 5.1.3. in AF
(SCORE: 0 means "very serious threats"; 3 means "no threats")

2

The increase in tourism although its remains at levels that are not serious threats could in future have an impact if no measures are taken to keep it under control.

Historic and current conflicts between users or user groups See 5.1.4., 6.2. in the AF
(SCORE: 0 means "very serious threats"; 3 mean "no threats"):

2

Awareness raising activities undertaken by the park had as consequence an improved perception of the importance of the SPAMI by the local population.

Please include a prescriptive list of threats that are of concern and are evaluated individually

- Pollution (3)
- Soil degradation (2)
- Alien species (2) the spread of alien species is under control thanks to the continuous monitoring.

5.2 Assess the level of external threats to the ecological, biological, aesthetic and cultural values of the area (B4.a of the Annex I). See 5.2. in the AF

In particular:

Pollution problems from external sources including solid waste and those affecting waters up-current. See 5.2.1. in the AF

(SCORE: 0 means "very serious threats"; 3 means "no threats")

2

Significant impacts on landscapes and on cultural values. See 5.2.2

(SCORE: 0 means "very serious threats"; 3 means "no threats")

2

Expected development of threats upon the surrounding area See 6.1. in the AF

(SCORE: 0 means "very serious threats"; 3 means "no threats")

2

Please include a prescriptive list of external threats that are of concern and are evaluated individually.

- Trawling and recreational fishing (2)
- Land-use change (1)
- Presence of 2 private industrial harbours in Carboneras municipality (limiting with the area), with the risk due to the traffic of boats (2)
- Pollution diffuse due to spills outbound the Natural Area (2)
- Inadequate water treatment outbound the SPAMI, specially during the summer season due to the increase of tourism. (2)

5.3. Is there an integrated coastal management plan or land-use laws in the area limiting or surrounding the SPAMI? (B4.e Annex I). See 5.2.3.

(SCORE: 0 = No / 1 = Yes)

1

From 2005 to 2012 CAMP project was implemented covering the

territories of 8 municipalities and provide framework for consultation and participation for all stakeholders in the integrated coastal zone management of the area.

5.4. Does the management plan for the SPAMI have influence over the governance of the surrounding area? (D5-d Annex I). See 7.4.4. in the AF

(SCORE: 0 = No / 1 = Yes)

1

6. REGULATIONS

6.1. Assess the degree of legal regulations See 7.4.2. in the AF

In particular, within the national framework:

Regulations concerning the strengthening of the application of the other Protocols to the Barcelona Convention, particularly dumping, passage of ships and modification of the soil (*Art. 6b, 6c, 6e in the Protocol, D5-a Annex I*)

(SCORE: 0 = No / 1 = Yes)

1

Regulations on the introduction of any species not indigenous to the specially protected area in question, or of any genetically modified species, (*Art. 6 d in the Protocol, D5-b Annex I*)

(SCORE: 0 = No / 1 = Yes)

1

Regulations concerning the Environmental Impact Assessment for the activities and projects that could significantly affect the protected areas (*Art. 17 in the Protocol*)

(SCORE: 0 = No / 1 = Yes)

1

In particular, within the SPAMI framework:

Regulations for fishing, hunting, taking of animals and harvesting of plants or their destruction, as well as trade with animals, parts of animals, plants, parts of plants, which originate in the area (*Art. 6 g in the Protocol, D5-c Annex I*)

(SCORE: 0 = No / 1 = Yes)

1

Communitarian regulation for the management measures for sustainable use of Mediterranean fishery resources; (Reglamento (CE) 1967/2006 del Consejo, de 21 de diciembre de 2006, relativo a las medidas de gestión para la explotación sostenible de los recursos pesqueros en el mar Mediterráneo.)

EU 1343/2011 of the EU council, December 13th 2011.

7. MANAGEMENT

7.1. Assess the degree of detail of the management plan

(e.g. zoning, regulations for each zone, competencies and responsibilities, governing bodies, management programs as protection, natural resource management, tourism, public use, education, research, monitoring, maintenance, services and concessions....) See 8.2.3. in the AF

(SCORE: 0= No Management Plan / 1= Weak / 2= Adequate / 3= Excellent)

3

7.2. Assess to what extent land ownership is well determined

(Undetermined land tenure regimes and registrations are a common source of conflicts in most protected areas world-wide)

See 7.3. in the AF

(SCORE: 0= Undetermined / 1= Weak / 2= Adequate / 3= Excellent)

3

7.3. Is there a body representing the public, professional and non-governmental sector and the scientific community linked to the management body? (B4b, B4c of the Annex I). See 8.1.2. & 8.1.3

(SCORE: 0 = No / 1 = Yes)

1

Steering Committee (Junta Rectora) of Cabo de Gata-Nijar SPAMI

7.4. Assess the quality of the involvement by the public, and particularly of local communities, in the planning and management of the area (B4.b of the Annex I)

(e.g. adequate planning involves local stakeholders and accommodates within appropriate management regimes a spectrum of possible multiple uses and regulated human activities, within the primary objective of conservation of marine and coastal environments) See 8.1.4. in the AF

(SCORE: 0= No involvement / 1= Low / 2= Adequate / 3= Excellent)

2

7.5. Is the management plan binding for other national/local administrations with competencies in the area? See 8.2.2 in the AF

(SCORE: 0 = No / 1 = Yes)

1

Being issued by Decree (37/2008), the Management Plan is binding for all administrations.

8.**PROTECTION MEASURES****8.1. Assess the degree of enforcement of the protection measures****In particular:**

Are the area boundaries adequately marked on land and, if applicable, adequately marked on the sea? See 8.3.1. in the AF
(SCORE: 0 = No / 1 = Yes)

1

For the terrestrial part there are marks and signs indicating the limits of the protected area.

For the marine environment coastal marks indicate limits of the integral reserves. Outer limits of the marine area follow approximately the 50m isobaths.

Is there any collaboration from other authorities in the protection and surveillance of the area and, if applicable, is there a coastguard service contributing to the marine protection? See 8.3.2. 8.3.3. in AF
(SCORE: 0 = No / 1 = Yes)

1

In addition to the Protected Area rangers, the National rangers, regional fishing inspectors, Guardia civil and municipality police collaborate in the surveillance efforts.

Are third party agencies also empowered to enforce regulations relating to the SPAMI protective measures ?
(SCORE: 0 = No / 1 = Yes)

1

Are there adequate penalties and powers for effective enforcement of regulations and is the field staff empowered to impose sanctions? See 8.3.4. in the AF
(SCORE: 0 = No / 1 = Yes)

1

Has the area established a contingency plan to face accidental pollution or other serious emergencies? (*Art. 7.3. in the Protocol, Recom. 13th Parties Meeting*)
(SCORE: 0 = No / 1 = Yes)

1

In addition to the regional and the provincial relevant emergency plans (forest fire, pollution, etc.) the protected area developed its own emergency plan to face marine pollution (oils spills) and has special equipment available.

All of these emergency plans are part of the national emergency plan.

9. HUMAN RESOURCES

9.1. Adequacy of the human resources available to the management body (*Art.7.2-f in the Protocol, D6 in Annex I*) (e.g. enough number of employees to ensure adequate management and protection of the area)
See 9.1.1. in the AF

Is there a permanent field administrator of the area?

See 9.1.2. in the AF

(SCORE: 0 = No / 1 = Yes)

1

Are there other permanent staffs in the field?

(e.g. technicians, wardens, guides, ...) See 9.1.2. in the AF

(SCORE: 0 = No / 1 = Yes)

1

Local office staff:

Technicians 4

Administrative staff 2

Wardens 7

(in addition to the local office staff, other permanent staff from environmental department in the Andalusian Government are involved in the management and surveillance of the SPAMI area)

9.2. Asses the adequacy of the training level of available staff

(*Art.7.2-f in the Protocol, D6 in Annex I*) (e.g. enough training level to ensure protection of the area). See 9.1.2. in the AF

(SCORE: 0= Very Insufficient / 1= Low / 2= Adequate / 3= Excellent)

2

10. FINANCIAL AND MATERIAL MEANS

10.1. Assess the degree of adequacy of the financial means

Sufficient resources for the development and implementation of the management plan, including e.g. interpretation, education, training, research, surveillance and enforcement of regulations. See 9.2.1. in the AF

(SCORE: 0= Very Insufficient / 1= Low / 2= Adequate / 3= Excellent)

2

10.2. Assess the basic infrastructure (*Art.7.2-f in the Protocol*)

Administrative premises in the site, visitors' facilities (reception centre, trails, signs...), specific information, education and awareness materials
(SCORE: 0= Very Insufficient / 1= Low / 2= Adequate / 3= Excellent)

3

10.3. Assess the equipment.

Guard posts and signs on the main accesses, means to respond to emergencies, marine and terrestrial vehicles, radio and communications equipment. See 9.2.3. in the AF

(SCORE: 0= Very Insufficient / 1= Low / 2= Adequate / 3= Excellent)

2

The available equipment is assessed adequate; however additional navigation vehicles are needed to increase the presence of the staff in the marine area for surveillance and monitoring.

11. INFORMATION AND KNOWLEDGE

11.1. Assess the extent of knowledge about the area and its surrounding zones. (*D3 - Annex I: Considering at least specific maps, habitat distribution, species inventories, and socio-economical factors*)

See 9.3.1. in the AF

(SCORE: 0= Very Insufficient / 1= Low / 2= Adequate / 3= Excellent)

2

11.2. Assess the adequacy of the program for data collection and the monitoring program.

See 9.3.2. in the AF

(SCORE: 0= Inexistent / 1= Insufficient / 2= Adequate / 3= Excellent)

2

12. COOPÉRATION AND NETWORKING

12.1. Are other national or international organizations collaborating with human or financial resources? (*e.g. researchers, experts, volunteers..*).

See 9.1.3. in the AF

(SCORE: 0= No / 1= Weakly / 2= Satisfactory / 3= Excellent)

3

During the last 4 years the SPAMI, together with other sites of Mediterranean Community Interest sites in Andalusia, benefited from the support provided by some funding sources (national and European sources), in particular the LIFE+ *Posidonia* project that provided 3.5 million euros dedicated to monitoring, conservation and information (69.5%

provided by EU).

12.2. Assess the level of cooperation and exchange with other SPAMIs (especially in other nations) (*Art. 8, Art. 21.1, Art. 22.1., Art. 22.3, A.d in Annex I*)

(SCORE: 0= No / 1= Insufficient / 2= Adequate / 3= Excellent)

1

Networking among SPAMI at regional level (Mediterranean) needs to be further developed, RAC/SPA and other relevant organizations (MedPAN, IUCN, WWF, etc.) could play significant role in this context.

COMMENTS by the Technical Advisory Commission

The Cabo de Gata-Nijar Park has a great diversity from both ecological and geological point of view. It is well-managed, with an adequate funding and a highly skilled management team.

In 2013, an emergency plan was developed for the Park providing an additional management tool that allowed to significantly reduce the risks of degradation for the terrestrial and marine parts of the park.

CONCLUSION

From the date of its previous evaluation (2009), the Cabo de Gata-Nijar SPAMI strengthened its legal framework and received further technical means for surveillance.

The marine habitats and species of the area are monitored through an integrated monitoring programme focusing on key habitats and threatened species. Being developed for the whole coasts of Andalucía, the monitoring programme provides a comprehensive picture of the status of habitats and species in the protected area and beyond its boundaries.

The Technical Advisory Committee, based on the available information and the results of the evaluation meetings and visits concluded that the Cabo de Gata-Nijar Park deserves to be on the SPAMI List.


RECOMMENDATIONS

This SPAMI can be a model for other Mediterranean marine and coastal protected areas.

Networking among SPAMI at regional level (Mediterranean) needs to be further developed


SIGNATURES

For National Focal Point :

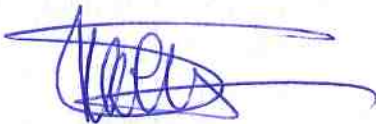

Elena Lonsuegra.

Independent Experts

Chedly RAIS



SPAMI Manager(s)



FLOZINE RESERUE
GSE (GENERAL
SECRETARIAT FOR
FISHERIES) - HDGRAND



EMILIO ROLDÁN
MANAGER OF C-FATA NAT. PARK

(ADDITIONAL PAGES MAY BE ADDED FOR EACH MEMBER'S COMMENTS)

No additional pages added by the members.

SPAMI VALUE-ADDED

Questions		Score obtained	Maximum
5	Threats and surrounding context	18	23
6	Regulations	4	4
7	Management	10	11
8	Protection measures	5	5
9	Human resources	4	5
10	Financial and material means	8	9
11	Information and knowledge	4	6
12	Cooperation and networkings	4	6
TOTAL		57	69

ANNEX I

SPAMI Name: Cabo de Gata-Níjar

4.2. Does the area have a monitoring program?

Terrestrial monitoring:

Terrestrial systems included in the SPAMI are also objects of different monitoring programs under the auspicious of the regional office. Among them we can highlight the following ones:

-Program of surveillance of wildlife in Andalusia is the framework of several works to detecting and monitoring different animal groups in the SPAMI. Aquatic and steppe birds, mammals and reptiles are the main animal groups included in this program. In the SPAMI the most curious (but not the most interesting for conservation purposes) result is the presence for several years of a *Otis tarda* male wandering in the plains north the salt marshes.

-Program for Bonelli's Eagle conservation is also developed in the terrestrial part of the SPAMI. Nesting and perching sites are located every year and reproductive effort and success measured.

-Program for management of invasive and alien species make efforts to eradicate in some natural locations the presence of *Pennisetum setaceum*, a South American grass that colonise degraded environments.

-Finally, Botanic Garden in Natural Areas Network, control different populations of endemic and endangered plant species and survey looking for new data to update the available lists.

Maritime monitoring:

The Sustainable Management Program of the Andalusian Marine Environment, of the the Ministry of Environment and Spatial Planning (CAMOT), of the Government of Andalusia, made monitoring of threatened invertebrate species present in the Cabo de Gata-Níjar SPAMI. The gastropod mollusc *Patella ferruginea*, species listed in the Spanish and Andalusian Catalogs of Endangered Species in category "Endangered" (Royal Decree 139/2011 and Decree 23/2012, respectively) were considered extinct until 2009 in the area (where it is abundant in historical sites) as the only living specimen observed in many years (Moreno, 1992), disappeared that year. However, inventory inspections of the Marine Environment Program, some specimens of the species were found in 2009 and since then monitoring the presence localities is performed. Currently living specimens are known in four locations (the same Cabo de Gata, Genoveses, San Jose and Punta del Bergantín). Monitoring is performed annually in the localities of Cabo de Gata, Genoveses and San José, in the latter growth control is performed with labelled specimens. It is planned to continue this monitoring in future years.

The orange coral *Astroides calycularis* (included in the Spanish and Andalusian Catalogs of Endangered Species as "Vulnerable"), has in the Cabo de Gata-Níjar SPAMI the best populations of

the species in the province of Almería. Once inventoried localities with presence of the species (2006-2011) and selected monitoring stations, monitoring of the species began in 2012. The follow-up, with fixed wall sections, is based on coverage species in the wall and in the study of the colonies falls to the bottom (length and width, weight, volume, percentage of live or dead colonies with visible skeleton, etc.). This monitoring is performed before and after the summer and is designed to obtain data from the presence of the species and the possible impact of divers, since it is performed in an area with diving activity and other control without impact of divers. It is planned to continue this monitoring in future years, with a more detailed analysis of the fixed plots to provide data about growth and recruitment, in addition to information obtained from the colonies falls to the bottom.

In the intertidal of Cabo de Gata-Níjar SPAMI the gastropod mollusc *Dendropoma petraeum* (included in the Spanish and Andalusian Catalogs of Endangered Species as "Vulnerable") is present. Although it is present throughout the bedrock of the eastern coastline of the SPAMI (found in inspections of inventory between 2004 and 2010), the best locations are in the Playazo, in Isleta del Moro and in the same Cabo de Gata, locations where monitoring is conducted annually since 2013. Also are studied infralittoral colonies in the localities of Punta de la Loma Pelada and Cala Tomate since 2013. The method is based on scale photographs taken in the summer period (July -August) which are subsequently treated with image analysis. In each photograph several replicates of 1 x 1 cm in which the diameter of the opening of the shell of each individual are measured. Besides, graphics size frequency can be obtained with great detail of recruitment events of new individuals that are fixed to the colony. This monitoring is designed after a year and a half of monthly monitoring of the Playazo population between 2011 and 2012. It is planned to continue this monitoring in future years.

Among the best known populations in Andalusia of bivalve mollusc *Pinna nobilis* (included in the Spanish and Andalusian Catalogs of Endangered Species as "Vulnerable") are those of the Cabo de Gata-Níjar SPAMI. The Sustainable Management Program of the Andalusian Marine Environment made the monitoring, once the bottoms of the protected area were recognized. In 2009 was established a station of this species in Agua Amarga 15 m depth, where surveys are conducted annually 3 censuses (in three different directions), with a tape of 30 m. In addition, to provide growth data have been marked tens of individuals with labels fixed to the substrate with a rod. For controlled the labelled specimens, since 2011 has been installed a fixed grid covering an area of 30 x 10 m (with grids of 5 x 5 m). The monitoring is done in autumn, time of year with leaf *Posidonia* is shorter and easier to locate de specimens. It is planned to continue this monitoring in future years.

You can find this information in the reports of the Sustainable Management Program of the Andalusian Marine Environment of the years 2008, 2009, 2010, 2011, 2012 and 2013:

http://www.juntadeandalucia.es/medioambiente/site/porta/web/menuitem.7e1cf46ddf59bb227a9e9e205510e1ca/?vgnnextoid=f9e6a9947df29410VgnVCM2000000624e50aRCRD&vgnnextchannel=f51bb2c42f207310VgnVCM2000000624e50aRCRD&lr=lang_es

The information on threatened marine invertebrates species of the Sustainable Management Program of the Andalusian Marine Environment is available on the Environmental Information Network of Andalusia (REDIAM) until 2013:

Catálogo: Avistamientos y varamientos de fauna marina en el litoral de Andalucía (Shapefile):

WMS Especies de fauna marina avistada y varada en el litoral de Andalucía y aguas de influencia (2003 a 2011): Invertebrados marinos

http://www.juntadeandalucia.es/medioambiente/site/rediam/menuitem.04dc44281e5d53cf8ca78ca731525ea0/?vgnnextoid=d6e612b44b5de310VgnVCM2000000624e50aRCRD&vgnnextchannel=4a26fa937370f210VgnVCM1000001325e50aRCRD&vgnnextfmt=rediam&lr=lang_es

More information can be found in the publications:

- Arroyo M.C., Moreno D., Barrajón A., de la Linde A., Remón J.M., De la Rosa J., Fernández-Casado M., Gómez G., Ruiz-Giráldez F., Vivas M.S. y Fernández E. 2011. Trabajos de seguimiento de la lapa ferruginosa *Patella ferruginea* Gmelin, 1791 en Andalucía en el marco de la Estrategia Nacional de Conservación de la especie. *Mediterránea*, Serie de Estudios Biológicos. Época II, Número Especial: 9-46.
- Moreno D. 1992. Presencia de *Patella ferruginea* (Gmelin, 1791) en el Cabo de Gata (Almería, SE España). *Cuadernos de Investigación Biológica, Universidad del País Vasco, Bilbao*, 17: 71.
- Moreno D. 2008. *Dendropoma petraeum* (Monterosato, 1884). En: Barea-Azcón J. M., Ballesteros-Duperón E. y Moreno, D. (Ed.). *Libro Rojo de los Invertebrados de Andalucía*. 4 Tomos. Consejería de Medio Ambiente, Junta de Andalucía, Sevilla: 323-329.
- Moreno D. y Arroyo M.C. 2008. *Patella ferruginea* Gmelin, 1791. En: Barea-Azcón J. M., Ballesteros-Duperón E. y Moreno, D. (Ed.). *Libro Rojo de los Invertebrados de Andalucía*. 4 Tomos. Consejería de Medio Ambiente, Junta de Andalucía, Sevilla: 308-319.
- Moreno D. y Barrajón Domenech A. 2008. *Pinna nobilis* Linnaeus, 1758. En: Barea-Azcón J. M., Ballesteros-Duperón E. y Moreno, D. (Ed.). *Libro Rojo de los Invertebrados de Andalucía*. 4 Tomos. Consejería de Medio Ambiente, Junta de Andalucía, Sevilla: 396-402.
- Moreno D., de la Linde A., Arroyo M.C. y López-González P.J. 2008. *Astroides calycularis* (Pallas, 1766). En: Barea-Azcón J. M., Ballesteros-Duperón E. y Moreno, D. (Ed.). *Libro Rojo de los Invertebrados de Andalucía*. 4 Tomos. Consejería de Medio Ambiente, Junta de Andalucía, Sevilla: 281-287.
- Moreno D., de la Linde A., Remón J.M., De la Rosa J., Arroyo M.C., Fernández-Casado M., Gómez G., Barrajón A., Gordillo I., Nevado J.C. y Barba R. 2007. Programa de Gestión Sostenible de Recursos para la Conservación del Medio Marino Andaluz: Datos preliminares de los censos de especies de invertebrados amenazados. En: Paracuellos M. (Coord. de la Ed.) (Ed.). *Ambientes Mediterráneos. Funcionamiento, biodiversidad y conservación de los ecosistemas mediterráneos*. Colección Medio Ambiente, 2. Instituto de Estudios Almerienses (Diputación de Almería), Almería: 27-48.

The LIFE+ *Posidonia* Andalusia Project (2011-2014), coordinated by the Regional Ministry of Environment, have worked in the monitoring of seagrass meadows and the exotic invasive seaweed *Caulerpa racemosa*. It has established a fixed network of tracking stations for *P. oceanica* called POSIMED Andalusia, integrated into the National Network POSIMED in participating in a coordinated Sustainable Management Program of the Marine Environment Andaluz and volunteer groups. In Cabo de Gata-Níjar SPAMI there are 4 stations: Agua Amarga (POS_8), Las Negras (POS_9) Carnaje (POS_10) and Los Escullos (POS_11). They held annually monitoring in which data descriptors seagrass meadows, such as coverage (with tape and quadrat of 50x50 cm), density, burial, flowers, etc. Furthermore, within this action of the LIFE Project has been made fish (2011), algae and epiphytic on *P. oceanica* (2012) and invertebrate censuses (2013) at the POS_8, POS_9 and POS_11 stations. Moreover, it has made a demographic monitoring of *P. oceanica* in POS_8, POS_9 and POS_11 stations, with marking shoots annually since 2012 for obtain data on mortality and survival. We have also installed sediment traps in 2013 and 2014 at the demographic stations. It is planned to continue this monitoring in future years.

The LIFE+ *Posidonia* Andalusia has established a network of early detection of invasive alien species. In this network have been made underwater transects perpendicular to coast from 30 m depth, in capes, bays and ports, all areas that could be colonized by *Caulerpa racemosa*. In the Cabo de Gata-Níjar SPAMI there have been 11 transects for detection of exotic (between 2011 and 2013). Indeed, during one of the planned transects, the invasive alga *Caulerpa racemosa* was first detected in the Cabo de Gata-Níjar SPAMI, in the integral reserve of Punta Javana (12/04/2012), at 24 m depth. The limited presence of invasive algae in the area (less than 2 m²), allowed to perform a trying experience eradication with an underwater aspirator. To do this, one fixed to the sandy substrate a grid covering 6 m² was installed. In the following winter the species looked like it had almost disappeared, but on subsequent visits to the station in July and December 2013 found that the species was more widespread towards the SW, occupying at least 200 from the original point of 2012. It noted that in 2014 *C. racemosa* was located, outside the network of early detection (by warning of a dive center), in another locality of the SPAMI, Los Escullos, at 7 m depth. In this locality 1 m² of *Caulerpa racemosa* was removed and on a subsequent visit a few survivors specimens were eliminated. They should visit the area again in 2015 to check whether eradication has been completed. Among the species detected in the transects along the Cabo de Gata-Níjar SPAMI have also detected other invasive seaweed (*Asparagopsis taxiformis*), and the coral (*Oculina patagonica*), both previously known in the area.

You can view the information about the studies on *Posidonia oceanica* and *Caulerpa racemosa* in the reports of the Sustainable Management Program of the Andalusian Marine Environment of the years 2008, 2009, 2010, 2011, 2012 and 2013:

http://www.juntadeandalucia.es/medioambiente/site/portalweb/menuitem.7e1cf46ddf59bb227a9ebe205510e1ca/?vgnextoid=f9e6a9947df29410VgnVCM2000000624e50aRCRD&vgnnextchannel=f51bb2c42f207310VgnVCM2000000624e50aRCRD&lr=lang_es

The information of the Sustainable Management Program of the Andalusian Marine Environment about Monitoring Network on *Posidonia oceanica* (POSIMED) is available on the Environmental Information Network of Andalusia (REDIAM), until 2013:

Catálogo: Cartografía de fondos de fanerógamas marinas (Granada y Almería). Proyecto: LIFE+ 09 NAT/ES/000534. Año 2013 (shapefile):

WMS Distribución de fanerógamas marinas en el litoral de Andalucía

http://www.juntadeandalucia.es/medioambiente/site/mediamenuitem.04dc44281e5d53cf8ca78ca731525ea0/?vgnextoid=01a2e8a77d739410VgnVCM1000001325e50aRCRD&vgnnextchannel=cd6f726c4d6af310VgnVCM1000001325e50aRCRD&vgnnextfmt=rediam&lr=lang_es

WMS Caracterización de praderas de fanerógamas marinas del proyecto LIFE+ 09 NAES/000534

http://www.juntadeandalucia.es/medioambiente/site/mediamenuitem.04dc44281e5d53cf8ca78ca731525ea0/?vgnextoid=09f2fcb0d261b410VgnVCM1000001325e50aRCRD&vgnnextchannel=cd6f726c4d6af310VgnVCM1000001325e50aRCRD&vgnnextfmt=rediam&lr=lang_es

Catálogo: Red de Seguimiento del Estado de Conservación de Praderas de Posidonia Oceanica. E 1:10.000. CMAyOT - JA (shapefile):

WMS Distribución de fanerógamas marinas en el litoral de Andalucía (2011, 2012 y 2013)

http://www.juntadeandalucia.es/medioambiente/site/mediamenuitem.04dc44281e5d53cf8ca78ca731525ea0/?vgnextoid=01a2e8a77d739410VgnVCM1000001325e50aRCRD&vgnnextchannel=cd6f726c4d6af310VgnVCM1000001325e50aRCRD&vgnnextfmt=rediam&lr=lang_es

The Information of the Sustainable Management Program of the Andalusian Marine Environment about invasive alien species is available in the Environmental Information Network of Andalusia (REDIAM), until 2013:

Catálogo: Especies exóticas invasoras en el litoral de Andalucía (shapefile):

WMS Especies invasoras marinas (2004 a 2013)

http://www.juntadeandalucia.es/medioambiente/site/mediamenuitem.04dc44281e5d53cf8ca78ca731525ea0/?vgnextoid=6348cf9b6961b410VgnVCM1000001325e50aRCRD&vgnnextchannel=cd6f726c4d6af310VgnVCM1000001325e50aRCRD&vgnnextfmt=rediam&lr=lang_es

More information can be found in the publications:

Moreno Lampreave D. 2009. Gestión sostenible del medio marino en Andalucía: las fanerógamas marinas. *En: Posidonia oceanica*. Redes de seguimiento y estado de conservación en el Mediterráneo español. Instituto de Ecología Litoral, Diputación de Alicante, Ministerio de Medio Ambiente y Medio Rural y Marino, Alicante: 114-128.

Moreno Lampreave D. 2010. Flora y fauna alóctona del medio marino andaluz. *En: Cobos F.J. y Ortega F. (Ed.). Especies exóticas invasoras en Andalucía. Talleres provinciales 2004-2006*. Consejería de Medio Ambiente, Junta de Andalucía, Sevilla: 214-229.

Moreno D. y Guirado J. 2006. Nuevos datos sobre la floración, fructificación y germinación de fanerógamas marinas en Andalucía. *Acta Botanica Malacitana*, 31: 51-72.

The Sustainable Management Program of the Andalusian Marine Environment, of the Regional Ministry of Environment and Spatial Planning (CAMOT) has conducted censuses of seabirds by ship in the Cabo de Gata-Nijar SPAMI in 2008, 2009, 2010 and 2011.

You can find this information in the reports of the Sustainable Management Program of the Andalusian Marine Environment of the years 2008, 2009, 2010, 2011

[en:http://www.juntadeandalucia.es/medioambiente/site/portalweb/menuitem.7e1cf46ddf59bb227a9ebe205510e1ca/?vgnextoid=f9e6a9947df29410VgnVCM2000000624e50aRCRD&vgnnextchannel=f51bb2c42f207310VgnVCM2000000624e50aRCRD&lr=lang_es](http://www.juntadeandalucia.es/medioambiente/site/portalweb/menuitem.7e1cf46ddf59bb227a9ebe205510e1ca/?vgnextoid=f9e6a9947df29410VgnVCM2000000624e50aRCRD&vgnnextchannel=f51bb2c42f207310VgnVCM2000000624e50aRCRD&lr=lang_es)

In 2008 a specific report on seabird monitoring with ship in Andalusia was written, not available on the web:

CMA, 2008. *Campaña de seguimiento de aves marinas en el litoral andaluz desde embarcación*. Apoyo Técnico a la Gestión Sostenible del Medio Marino. Consejería de Medio Ambiente, Junta de Andalucía, 42 pp.

The information of the Sustainable Management Program of the Andalusian Marine Environment about seabirds is available on the Environmental Information Network of Andalusia (REDIAM) until 2013:

Catálogo: Avistamientos y varamientos de fauna marina en el litoral de Andalucía (Shapefile):

WMS Especies de fauna marina avistada y varada en el litoral de Andalucía y aguas de influencia en el periodo 2003 a 2011. Aves marinas

http://www.juntadeandalucia.es/medioambiente/site/mediamenuitem.04dc44281e5d53cf8ca78ca731525ea0/?vgnextoid=a7da3b95b06de310VgnVCM2000000624e50aRCRD&vgnnextchannel=4a26fa937370f210VgnVCM1000001325e50aRCRD&vgnnextfmt=rediam&lr=lang_es

The Emergency Program, Epidemiological Control and Monitoring Wildlife of Andalusia, of the Regional Ministry of Environment and Spatial Planning (CAMOT) has monitored the seabirds *Phalacrocorax aristotelis* and *Larus michahellis* from 1993 to 2014, including control of nesting pairs in the Cabo de Gata-Nijar SPAMI (coast of Cabo de Gata, La Higuera and Cabrera). Monitoring is currently in force and planned for future years.

You can find this information in the reports of the Emergency Program, Epidemiological Control and Monitoring Wildlife of Andalusia for the years 2009, 2010, 2011 and 2012:

http://www.juntadeandalucia.es/medioambiente/site/portalweb/menuitem.7e1cf46ddf59bb227a9ebe205510e1ca/?vgnextoid=f9e6a9947df29410VgnVCM2000000624e50aRCRD&vgnnextchannel=f51bb2c42f207310VgnVCM2000000624e50aRCRD&lr=lang_es

More information can be found in the publications:

Paracuellos, M. y Nevado, J. C. (1995). Nidificación de láridos en la provincia de Almería (SE Ibérico). *Doñana, Acta Vertebrata*, 22: 102-106

Paracuellos, M. y Nevado, J. C. (1997). Nidificación de *Larus cachinnans* en el litoral del Parque Natural Marítimo-Terrestre Cabo de Gata-Nijar (Almería, SE Ibérico). *Investigación y Gestión*, 2: 85-90

Paracuellos, M. y Nevado, J. C. (2003). Nesting seabirds in SE Spain: distribution, numbers and trends in the province of Almería. *Scientia Marina*, 67(Supplement 2): 125-128

The Sustainable Management Program of the Andalusian Marine Environment, of the Regional Ministry of Environment and Spatial Planning (CAMOT), made censuses of cetaceans in the Cabo de Gata-Níjar SPAMI, with plane (2005, 2006, 2007, 2008, 2009, 2010 and 2011) and with boat (2008, 2009, 2010 and 2011).

You can find this information in the reports of the Sustainable Management Program of the Andalusian Marine Environment of the years 2008, 2009, 2010 and 2011:

http://www.juntadeandalucia.es/medioambiente/site/portalweb/menuitem.7e1cf46ddf59bb227a9e9e205510e1ca/?vgnextoid=f9e6a9947df29410VgnVCM2000000624e50aRCRD&vgnnextchannel=f51bb2c42f207310VgnVCM2000000624e50aRCRD&lr=lang_es:

In 2006 a specific report about the cetacean censuses with plane in Andalusia was written, not available on the web:

CMA, 2006. *Informe sobre la II Campaña de Seguimiento Aéreo de Cetáceos en el Litoral Andaluz*. Apoyo Técnico a la Gestión Sostenible del Medio Marino. Consejería de Medio Ambiente, Junta de Andalucía, 38 pp.

Information about cetaceans of the Sustainable Management Program of the Andalusian Marine Environment is available on the Environmental Information Network of Andalusia (REDIAM) until 2011:

Catálogo: Avistamientos y varamientos de fauna marina en el litoral de Andalucía (Shapefile):

WMS Especies de fauna marina avistada y varada en el litoral de Andalucía y aguas de influencia en el periodo 2003 a 2011. Cetáceos

http://www.juntadeandalucia.es/medioambiente/site/rediam/menuitem.04dc44281e5d53cf8ca78ca731525ea0/?vgnextoid=ca793b95b06de310VgnVCM2000000624e50aRCRD&vgnnextchannel=4a26fa937370f210VgnVCM1000001325e50aRCRD&vgnextfmt=rediam&lr=lang_es

The Stranding Attention Network of the Regional Ministry of Environment and Spatial Planning (CAMOT), through the Sustainable Management Program of the Andalusian Marine Environment, started in 2007 and covering the entire coastline of the Cabo de Gata-Níjar SPAMI. Since 2011 attention is made by associates (NGOs).

You can view the information about the Stranding Network in the reports of the Sustainable Management Program of the Andalusian Marine Environment of the years 2008, 2009, 2010, 2011, 2012 and 2013:

http://www.juntadeandalucia.es/medioambiente/site/portalweb/menuitem.7e1cf46ddf59bb227a9e9e205510e1ca/?vgnextoid=f9e6a9947df29410VgnVCM2000000624e50aRCRD&vgnnextchannel=f51bb2c42f207310VgnVCM2000000624e50aRCRD&lr=lang_es

The Information of the Sustainable Management Program of the Andalusian Marine Environment about the Stranding Network is available in the Environmental Information Network of Andalusia (REDIAM), until 2013:

Catálogo: Varamientos y hallazgos de fauna marina en el litoral de Andalucía (Localización de los varamientos de fauna marina (fundamentalmente cetáceos y tortugas marinas) en el litoral andaluz en el periodo 2008-2013. Se incluyen además los hallazgos de ejemplares muertos en el mar). Shape.

The Artificial Reef of Cabo de Gata-Níjar SPAMI was installed by Regional Ministry of Environment in two phases: 1993 and 1994, with a mixed design: a) antitrawling elements, in order to make a passive surveillance against illegal fishing, and b) modules for fish concentration, overlapping, forming nuclei (two in each phase), which aim to provide shelter and protection to marine fauna. The monitoring focuses on the fish fauna with censuses in 1994 and 1995 in the nuclei 3 and 4 (1st phase of 1993), continued in 2005 (Moreno *et al.*, 2006) and 2010 (are held every five years, next is in 2015). In 1995 and 1996 the installation and subsequent collection slatted of concrete covered by marine organisms colonizers. During inspections, checks that all the blocks of nuclei found in the original position, their state (coating and more conspicuous species) and if they have hooked networks. The state of the substrate around and the presence of species of interest (listed species, exotic, etc.) is also observed. In censuses of fish is made a circular path around the nucleus, and once completed, a second circular path by the inner portion is made. In each survey the following data are taken in a plastic splint, following the general method of the "reserve effect" (García-Charlton *et al.*, 2004):

- Locality
- Number of census
- Date and time
- Water temperature at the surface and at the bottom
- Visibility surface (Secchi disk) and bottom
- Fish species observed, noting its abundance classes (1, 2-3, 4-5, 6-10, 11-20, 21-30, 31-50, 51-100, > 100) and length in centimeters.
- Observations, including data on the most important invertebrate species.

Of each nucleus (3 and 4) and in each period (winter and summer) there have been several replicates: three censuses per year, so that means data have been obtained.

To assess the stability of settlement takes into account the percentage of occurrence of species throughout the study according to the following classes of frequency (Ody and Harmelin, 1994): class I (75% -100%), class II (50% -75%), class III (25% -50%) and class IV (0% -25%). It can be concluded that an increase in the heterogeneity of the reef bring more stability in the fish assemblage.

You can find this information in the reports of the Sustainable Management Program of the Andalusian Marine Environment of the year 2010:
http://www.juntadeandalucia.es/medioambiente/site/porta/web/menuitem.7e1cf46ddf59bb227a9ebe205510e1ca/?vgnnextoid=f9e6a9947df29410VgnVCM2000000624e50aRCRD&vgnnextchannel=f51bb2c42f207310VgnVCM2000000624e50aRCRD&lr=lang_es

The Information of the Sustainable Management Program of the Andalusian Marine Environment about the Stranding Network is available in the Environmental Information Network of Andalusia (REDIAM), until 2013:

Catálogo: Seguimiento del Arrecife Artificial del Parque Natural de Cabo de Gata Níjar. Año 1995-2000 (xlsx y pdf).

More information can be found in the publications:

- García-Charton J.A., Pérez-Ruzafa A., Sánchez-Jerez P., Bayle Sempere J., Reñones O. y Moreno D. 2004. Multi-scale spatial heterogeneity, habitat structure, and the effect of marine reserves on Western Mediterranean rocky reef fish assemblages. *Marine Biology*, 144: 161-182.
- Guirado J., Moreno D., Castro Nogueira H., Vicioso L. y Tamayo F. 1997. Gestión de los recursos marinos en el Mediterráneo Occidental: Arrecife Artificial de Cabo de Gata. *En: García Rossell L. y Navarro Flores A. Eds. (Ed.). Recursos Naturales y Medio Ambiente en el Sureste Peninsular*. Instituto de Estudios Almerienses y Ayuntamiento de Cuevas del Almanzora. Trabajos presentados al "Simposio de Recursos Naturales y Medio Ambiente en el Sureste Peninsular. Investigación y Aprovechamiento", Cuevas del Almanzora, Almería (23, 24 y 25 de noviembre de 1994): 147-159.
- Moreno D., Guirado J. y Mendoza R. 2006. El arrecife artificial de Cabo de Gata: una década de gestión activa del medio marino. *En: Ocaña Martín A. y Sánchez Castillo P. (Ed.). Conservación de la biodiversidad y explotación sostenible del medio marino*. Centro Mediterráneo de la Universidad de Granada y Sociedad Granatense de Historia Natural, Granada: 255-293.
- Ody D. y Harmelin J.G. 1994. Influence de l'architecture et de la localisation de récifs artificiels sur leurs peuplements de poissons en Méditerranée. *Cybium*, 18 (1): 57-70.

The Regional Ministry of Environment and Planning (CAMOT), of the Regional Government of Andalusia, has drafted the "Plan of Conservation and Recovery of the species of the marine environment" and is expected approval in 2015. This Plan includes all invertebrates marine cataloged (Royal Decree 139/2011 and Decree 23/2012) living in Andalusia (all present in the Cabo de Gata-Níjar SPAMI: *Patella ferruginea*, *Astroides calycularis*, *Dendropoma petraeum*, *Charonia lampas* and *Pinna nobilis*), and the seagrasses (*Posidonia oceanica*, *Cymodocea nodosa*, *Zostera marina* and *Zostera noltii*), all included in the Spanish and Andalusian Lists of Wildlife in Special Protection Regime, and also present in the Cabo de Gata-Níjar SPAMI.

With the Alboran Project (0066_ALBORÁN_2_E), approved by the "Programa Operativo de Cooperación España Fronteras Exteriores" (POCTEFEX) and cofinanced by the European Regional Development Fund (ERDF), were generated tools (manuals, worksheets, protocols...) for shared management between the two shores of the Alboran Sea (from 2012 to 2014). The Sustainable Management Program of the Andalusian Marine Environment, of the Ministry of Environment and Spatial Planning (CAMOT), of the Regional Government of Andalusia has participated in the monitoring and protection of endangered species (marine invertebrates, turtles and cetaceans) in the Andalusian SPAMI areas of the Alboran Sea, as the Cabo de Gata-Níjar SPAMI.

ANNEX II LIST OF PARTICIPANTS CABO DE GATA-NIJAR SPAMI EVALUATION

March 24th, 2015

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