



Conservation Plan of the “Pseudo - steppe with grasses and annuals of Thero – Brachypodietea”



- **WP T1:** TRANSNATIONAL JOINT STRATEGY AND TOOLS FOR THE BETTER MANAGEMENT OF PRIORITY SPECIES IN NATURA 2000 SITES
- **ACTIVITY T1.1:** DEFINITION OF CONSERVATION GUIDELINES ON SPECIES
- **DELIVERABLE T1.1.2:** CONSERVATION PLAN ON A PRIORITY HABITAT
- **PARTNER:** LEAD PARTNER - REGIONAL NATURAL PARK "DUNE COSTIERE DA TORRE CANNE A TORRE S. LEONARDO"
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1 Introduction

The **LASPEH** project "*Low Adriatic Species and Habitat*" is funded by the INTERREG IPA CBC Italy-Albania-Montenegro 2014-2020 Programme under Priority Axis 3 (Environmental Protection, Risk Management and Carbon Reduction Strategies). The project aims to promote and support the conservation of biodiversity, trying to put a stop to the reduction of species and habitats in the lower Adriatic.

The main objective of the project is to reduce the loss of biodiversity by creating a common strategy to preserve the natural heritage and landscape in the lower Adriatic (Albania, Montenegro, Puglia and Molise) giving priority to the habitats and protected species typical of these eco-regions, threatened by climate change.

The outputs of the LASPEH project, there are:

- Creation of a Common Transactional Strategy for the management of protected species in Natura 2000 sites of interest;
- Elaboration of 6 Conservation Plans in the areas involved;
- Implementation of 6 Concrete Conservation Actions Projects for each habitat/species involved.

The Interim Management Consortium of the Regional Natural Park "Dune costiere da Torre Canne a Torre S. Leonardo" is the Lead Partner of the LASPEH Project, together with:

- Agjencia Kombëtare and Zonave të Mbrojtura (AL)
- Javno preduzeće za nacionalne parkove Crne Gore (ME)
- Ente di Gestione delle Riserve Naturali Regionali Orientate del Litorale Tarantino Orientale (IT)
- Municipality of Ugento (IT)
- Municipality of Guardiaregia (IT)

The Regional Natural Park "Dune Costiere tra Torre Canne e Torre San Leonardo" was established by Regional Law n. 31 of 27 October 2006, with the aim of conserving and recovering the habitats and animal and plant species referred to in Community Directives 79/409/EEC and 92/43/EEC present within it, as well as preserving landscape values and ecological balances, surface and underground hydrogeological.

The delimitation of the Park follows towards the internal areas the course of the "lame", erosive channels that cross the Plain from the plateau of the Murgia up to the sea, and therefore has a jagged perimeter that measures about 55 kilometers.

The importance of the habitats in the Park is also demonstrated by being a Site of Community Importance (SCI) included in the European network of Natura 2000 sites. The SAC "Litorale brindisino" among the various priority habitats present in the Park such as the *Dune Mobili* (*2120), le *Dune costiere con Juniperus spp.* (*2250), la *Vegetazione annua delle linee di deposito*

marine (*1210) e *Lagune costiere* (*1150), tutela anche i *Percorsi substepnici di graminacee e piante annue dei Thero-Brachypodietea* (*6220).

The latter is a priority habitat within the meaning of the Habitats Directive, which with this project will be protected. It should be considered that the intended use of these areas is grazing of sheep and cattle by free-range livestock holdings. And it is precisely the breeding practised over the centuries on these areas that has allowed the presence and preservation of these habitats. From this it follows that today it is necessary to preserve this agricultural practice if we want to preserve the rural landscape linked to pasture and therefore to pseudo-steppe and host species.

Through the drafting of this plan and the choice of concrete actions aimed at the protection of the pseudo-steppe habitat, we intend to start a virtuous path that triggers a process of soil conservation and orientation of farming aimed at safeguarding natural habitats of high landscape value and endangered species of fauna. All to the advantage of the enhancement of products and services obtained from production models able to generate the protection of agro-ecosystems present in the Park area.

Furthermore, one of the priority objectives of the plan is to promote greater opportunities for the participation of public and private bodies in order to ensure proper management of the habitat concerned and the actions to be taken for the conservation of it.

It will be crucial to disseminate, in a capillary manner, the objectives of the plan, aimed at emphasizing the importance of the planned interventions in order to raise awareness of a call to action, and economic actors, agribusiness and the local community to work together to safeguard pseudo-steppe habitat with a long-term planning model.

1.1 Overall Objectives of the plan

The general objective of the Management Plan is the protection of the natural habitat "*Substeppic paths of grasses and annual plants of the Thero-Brachypodietea*" and of the biodiversity related to it.

Overall objectives:

- Geographical and regulatory framework of pseudo-steppe habitat;
- A study of the state of the art of habitat at European level and in particular in the Park area, with reference to the species related to it;
- Sharing and participation of institutions and stakeholders in the choice of the short, medium and long-term action plan;
- Identification of a monitoring system for the selected actions.

Specific objectives:

- Reduce the fragmentation of the pseudo-steppe habitat through the restoration of existing "patches" and their expansion, ensuring ecological continuity and reducing anthropogenic pressures;
- Encouraging extensive traditional grazing as an active management technique for the maintenance of pseudo-steppe habitats;
- Improving the ecosystem potential for supporting the biodiversity of agricultural land adjacent to pseudo-steppe habitats;
- Increase the awareness of the local community on biodiversity issues and in particular on environmental and social services provided by the pseudo-steppe habitat;
- Promote the importance of dairy products obtained from grazing milk or "yellow milk" and start the process of inclusion and affirmation

2 Regulatory Framework

2.1 European legislation

2.1.1 Berne Convention, 1979

The Convention on the Conservation of Wildlife and Natural Habitats, known as the Berne Convention, ratified in Italy in 1981, has as its objectives the conservation of wild flora and fauna and natural habitats and the promotion of cooperation between States. In addition, it shall pay particular attention to endangered and vulnerable species, including migratory species. The Convention includes four annexes: strictly protected plant species (I), strictly protected animal species (II), protected animal species (III), prohibited means and methods of killing, catching or other exploitation (IV). The flora characterizing the habitat "*Substeppic paths of grasses and annual plants of the Thero-Brachypodietea*" is present in Annex I. The parties which have signed the Berne Convention undertake to take all appropriate measures to ensure the conservation of habitats of flora and fauna, and the European Union has adopted the principles and the framework of reference through the Habitats and Birds Directives.

2.1.2 Nature Site 2000 and Directive 92/43/CEE, "Habitat"

The Natura 2000 network is a network of areas for the conservation of biodiversity on the territory of the European Union, established by Article 3 of the Directive, to preserve natural habitats and the wild flora and fauna present in it. In addition, the Park includes the Special Conservation Area, first SCI, established under the Habitats Directive 92/43/EEC.

The main aim of the directive is to preserve biodiversity, taking account of economic, cultural and social aspects, thus contributing to sustainable development which may in some cases take into account the maintenance and promotion of human activities.

Whereas endangered habitats and species form part of the Community's natural heritage and the dangers they present are generally of a cross-border nature; whereas it is necessary to adopt measures at Community level for their conservation, it was therefore considered necessary to define the most

endangered habitats as priorities and to designate certain areas as special areas of conservation in order to create a European ecological network.

The Habitat 6220 **Substeppic paths of grasses and annual plants (Thero-brachypodietea)* is a priority natural habitat, in so far as it forms part of the natural habitat types which are in danger of disappearing in the territory referred to in Article 2 and for whose conservation the Community has a special responsibility because of the importance of their natural distribution area within the territory referred to in Article 2. This habitat is mainly represented by xerophilous grasslands.

This legislation also includes, as a conservation measure, the drafting of Management Plans to be implemented if the planning and management tools on the territory are not sufficient to ensure a management of the site in accordance with the objectives of the directive.

2.2 National legislation

2.2.1 Law n. 394 del 1991: framework law on protected areas (suppl. n. 83 G.U. n.292 del 13.12.1991)

This law lays down the fundamental principles for the establishment and management of protected natural areas, in order to guarantee and promote, in a coordinated way, the conservation and enhancement of the natural heritage of the country. Article 2 defines as natural heritage the physical, geological, geomorphological and biological formations, or groups of them, which have significant natural and environmental value. The framework law provided for the classification of protected natural areas, establishing the official list and regulating its management, and identifying the forms of cooperation between State, Regions and Local Authorities.

2.2.2 D.P.R. 8 september 1997, n. 357 "Regulation implementing Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora".

This Regulation regulates the procedures for the adoption of the measures provided for in Directive 92/43/EEC "Habitat" on the conservation of natural habitats and of wild fauna and flora, for the protection of biodiversity through the conservation of the natural habitats listed in Annex A and of the species of flora and fauna listed in Annexes B, D and E to this Regulation.

In Annex A, section 62 concerning the "Semi-natural dry grasslands and facies covered by bushes", there is the habitat ***6220 Substeppy grasses and annual plants of the Thero-Brachypodietea**. This regulation also regulates the procedure for identifying the Natura 2000 network.

In Italy, on 12 May 2016, the bill was approved on the subject of containing the consumption of built-up land. In particular, this law allows land consumption only in cases where there are no alternatives consisting of the reuse of already urbanised areas and the regeneration of them, recognising the objectives set by the European Union regarding the target of net land consumption of zero to be reached by 2050.

Four are the priority objectives set by the European Union and present in the rules governing the maintenance of land in Good Agricultural and Environmental Conditions (GAEC):

- - Protecting soil from erosion;
- - Maintain soil organic matter level;
- - Maintaining a minimum ecosystem level and preserving habitats¹.

2.3 Regional legislation

2.3.1 Legge regionale n. 19 del 24/07/1997 “Rules for the establishment and management of protected natural areas in the Region of Puglia”

This regional law classifies the regional protected areas according to the different characteristics and destinations:

- a) regional nature parks: they consist of land, river, lake areas, stretches of sea facing the coast, which constitute a homogeneous system identified by the natural assets of the places, the landscape and artistic values of the places and the cultural traditions of the local populations;
- b) regional nature reserves: they consist of land areas, Rivers, lakes or marinas containing one or more naturally relevant species of flora and fauna or presenting one or more ecosystems which are important for biological diversity or for the conservation of genetic resources.

It also establishes a Scientific and Technical Committee with advisory functions and support to the regional policy of protected areas, and identifies the organisation and management of the Authority. The Park of the Coastal Dunes is present in the art. 5 of identification of the areas, letter D of the province of Brindisi n. D4.

2.3.2 Legge regionale n. 31 del 27/10/2006 - Establishment of the Regional Natural Park "Dune Costiere da Torre Canne a Torre S. Leonardo”

With this law have been defined the purposes of the Authority, the perimeter, management, addresses and zoning of the Park, subdividing it into the following areas:

Zone 1 of significant natural, landscape and cultural historical value;

Zone 2 of naturalistic, landscape and/or cultural historical value, strongly characterized by the presence of anthropic activities;

Zones 2A and 2B which, in order to ensure the conservation of the present environmental values and for the protection of the same (Grande River) must be inserted in the adjacent areas to be surrounded, in accordance with Article 32 of the Law of 6 December 1991, n. 394 in agreement with the management body.

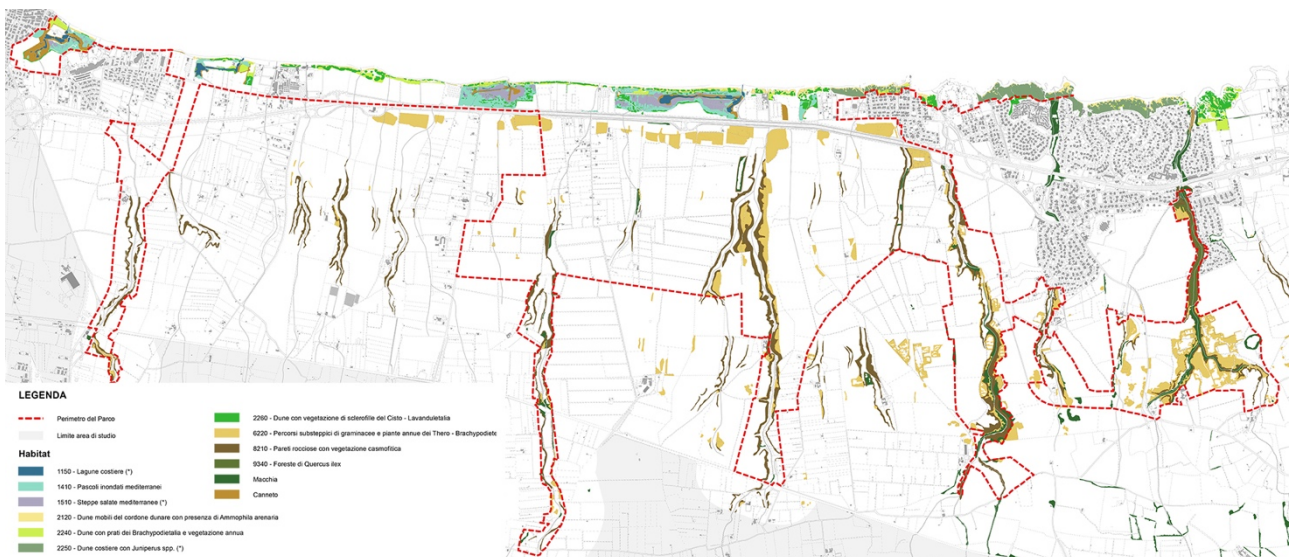
¹ http://www.isprambiente.gov.it/files2019/pubblicazioni/stato-ambiente/annuario-2018/Ricapitolando%20lambiente_WEB_LOW.pdf

3 Context analysis

3.1 Nature and environment

The territory of the Park is part of the *Mediterranean climate* and in particular belongs to the xerothermic region (where the period of dryness corresponds to the summer months), the *thermo-Mediterranean sub-region*, as far as the coastal strip is concerned.

The areas of specific natural interest are located along the coastal strip of the municipalities of Fasano and Ostuni, in particular in the stretch affected by the presence of the regional protected area. The site is complex and articulated and includes a strictly coastal strip with low-cliff areas, some wetlands behind dunes (River Grande, River Piccolo, River Morello), a long dunal cordon, both with herbaceous vegetation and with juniper and sclerophyllis, the forest of Ginepri in the locality of Pilone, the area of pseudo-steppe and gariga, a series of blades in the hinterland that constitute preferential lines of water outflow and areas suitable for the conservation of residual areas of spontaneous vegetation with Mediterranean maquis.



3.1.1 Pseudosteppe area of “Difesa di Malta”

In the locality "Difesa di Malta", in the territory of Fasano, close to the sea, there are a series of undulations of the ground on which there is a semi-natural vegetation, represented by low shrubby thyme scrubs (*Thymus capitatus*) and a pseudo-steppe vegetation.

In the areas of pseudosteppe prevails a perennial graminacea, the *Cymbopogon hirtus* (L.), with marked thermo xerophilous needs, typical of soils poor of humus and with rocky outcrops; in the site is reported the presence of *Serapias orientalis subsp. apulica* (Baumann & Kunkele, 1989), species of orchid included in the National Red List.

3.1.2 Garrigue and pseudosteppe areas of the fossil dunes in the locality “Morelli”

The system of fossil dunes located just beyond the track of SS 379 is characterized by large garrigue areas, in which dominate the shrubby thyme (*Thymus capitatus*) and *Euphorbia spinosa*, and

pseudosteppe, which host splendid blooms of orchids in the spring, including rare and endemic species such as the *Serapias orientalis* and the *Serapias politisii*. This area hosts, among the various species, the *Stipa austroitalica* which, besides determining the name of the habitat "pseudosteppe", is a perennial cespitose plant of the Family of the *Poaceae*, endemic to southern Italy and known with the common name of "Lino delle fate piumoso", collective name that includes all the taxa of the Sectio Stipa, due to the long hairy characteristics that form wavy silver down jackets



This area is characterized by a high biodiversity, in fact, just in the pastures develop more representative endemic species including wild orchids, Ferule, Asfodeli and Graminacee.

3.1.3 Vegetation of the "Lame"

The blades, thanks to their rugged shape, preserve different environments: from the environment of the cultivations, arbored and not, to that of the meadows, pastures and pseudosteppe, the typically Mediterranean environment of the garrigue, characterized by herbaceous plants and sparse shrubs that colonize the outcropping rock, to that of the Mediterranean scrub, from the rocky environment typical of the rock terraces to the woodland, which is increasingly rare.

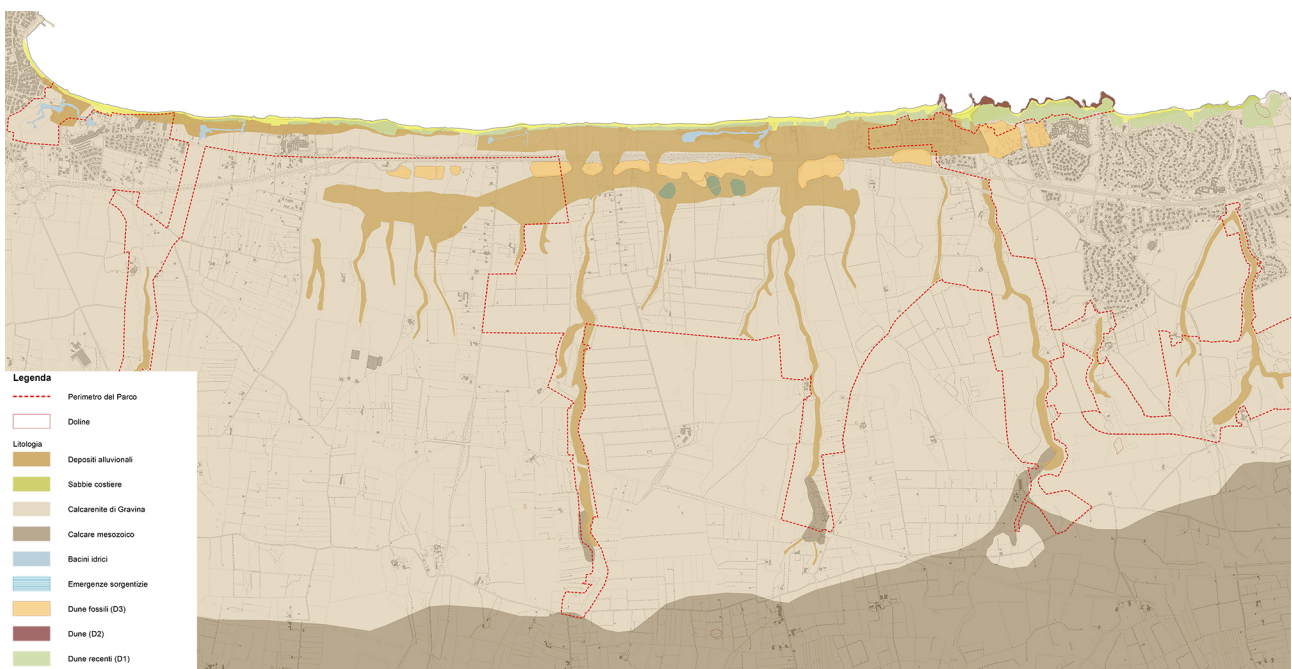
Where the walls have a greater depth than the country floor also occurs the phenomenon of thermal inversion, characterized by a greater permanence of cold air and a greater humidity in the lower layers, due also to the lower insolation of the bottom compared to the surface, microclimatic conditions that favor the development on the bottom of the blade of mesophilic and shamanic species; At times on the bottom of the blade remain temporary pools of water that determine the development of a typical

hygrophilous vegetation and allow the life of a series of animals typical of temporarily submerged environments.

The *Lama di Torre Bianca*, about three kilometres long, is covered by a substeppe herbaceous vegetation and, in limited areas, from gariga to thyme.

The *Lama di Lamacornola* is characterized by a greater depth and the strongly uneven features. These characteristics determine a significant difference between the north-facing wall, more shady and with a cooler microclimate that allows the development, at times, of a high scrub vegetation with oaks and oaks, and the south-facing slope, colonized by a xerophilous vegetation, with dominance of species such as olive, broom and cistus and wide tracts occupied by asphodel prairies. On the bottom of the blade, in its terminal section near the Pylon, there are two monumental roverelle planiziali, interesting presence from a botanical point of view and symptomatic of ecological connections with the inner areas of the territory of Ostuni

The *Lama di Rosa Marina*, also deep and uneven, has several stretches with impenetrable vegetation; the upstream section is covered with a low spot with a strong presence of olive trees, while, proceeding towards the sea, the vegetation evolves towards a high spot, with a greater presence of holm oaks; the last part of the blade is finally characterized by the presence of large specimens of holm oak with high trunk, which narrow between the rock walls, help to maintain a particularly mesophilic microclimate.



4 Biology and habitat status

4.1 Substeppe paths of grasses and annual plants of the Thero-Brachypodietea (biology and state)

This habitat is characterized by small arid grasslands dominated by grasses, on calcareous substrata, with presence of shrubs and bushes. These vegetal formations are due to an arid and warm climate and to a growth on soils poor in nutrients, often calcareous. These non-homogeneous habitats have developed as a result of human activities such as deforestation, fires, pastures, triggering processes of degeneration of vegetation in garrigue or Mediterranean scrub. It usually comes in a mosaic pattern with a wide variety of related habitats, many of which are also included in EEC Directive 92/43. Consequently, a large number of animal species protected by this Directive depend to a greater or lesser extent on this type of habitat.

The Technical Report 2008 13/24 of Habitat 6220* describes very different types of vegetation that differ from each other in terms of ecology, structure, physiognomy and floristic composition. Three main subtypes of this habitat can be distinguished: one of rather hard and perennial short-grass perennial communities, included in *Lygeo-Stipetalia*; another of very dense but highly productive perennial summer dry perennials, created by the intense and continuous zootechnical activity, included in the *Poetalia bulbosae*; and one last of the pioneer and ephemeral annual basophile prairies, included in the *Brachypodietalia (Trachynietalia) distachyae*.

It is important to note that too low grazing intensity will lead to the invasion of scrubs, a reduction in biodiversity and an increase in the risk of fires. **Therefore, grazing (particularly sheep grazing) is essential for the long-term maintenance of this habitat.**

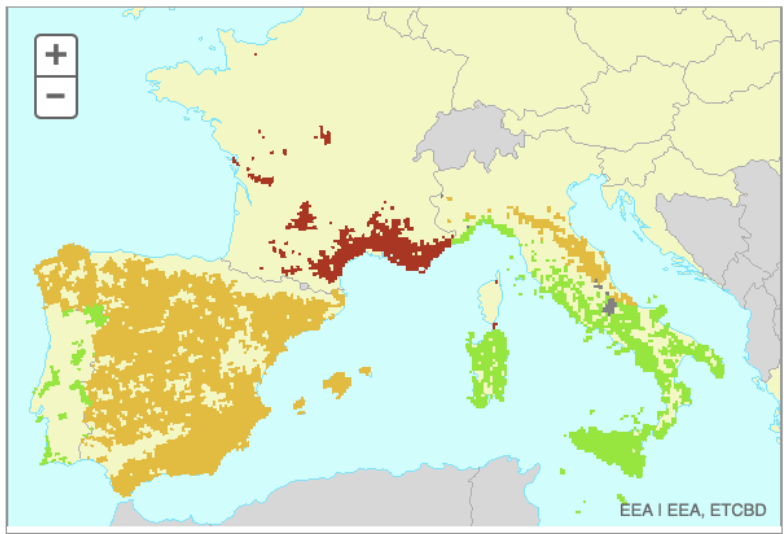
4.1.1 Distribution:

In most of the cases we find this habitat in punctiform and not cartographable areas if not on a scale of extreme detail, often in mosaic with other types of Habitat, especially the 6210.

Due to its dependence on the Mediterranean climate, the habitat occurs only in the Mediterranean states of the European Union: Portugal, Spain, France, Italy, Greece, Cyprus and Malta. Here, it is concentrated from sea level up to medium-altitude mountains (usually below 1,700-1,800 m above sea level); in thermo-recorded climate belts.

The European Environment Agency assesses the conservation status of Natura 2000 sites every six years and analyses the habitat and species conditions against the favourable status described in the Habitats Directive. The following map shows the 2007-2012 evaluations reported by EU Member

States.



- Favourable:** A habitat is in a situation where it is prospering and with good prospects to do so in the future as well
- Unfavourable-Inadequate:** A habitat is in a situation where a change in management or policy is required to return the habitat to favourable status but there is no danger of disappearance in the foreseeable future
- Unfavourable-Bad:** A habitat is in serious danger of disappearing (at least regionally)
- Unknown:** The information available for the habitat type is scarce and does not allow a proper assessment of its conservation status

Sources:
[Conservation Status 2007-2012 - summary](#)
[Conservation status 2007-2012 - experts web viewer](#)

The following data were extracted from the database of the Natura 2000 network, prepared by the European Commission with data updated to 2017. The area has been estimated on the basis of the habitat coverage indicated for each protected site and should only be considered as indicative of the habitat area included in Natura 2000 sites.

Treated data from Member States reports																			
MS	Range (km ²)				Area				Struct & func.	Future prosp.	Overall asses.				Areas from gridded maps(km ²)				
	Surface	% MS	Trend	Ref.	Surface	% MS	Trend	Ref.			Curr. CS	Qualifier	Prev. CS	Nat. of ch.	Range	% MS	Distrib.	% MS	
CY	302	0	0	≈302	53	0.1	0	≈53	FV	FV	FV		XX	b1	N/A	N/A	4200	0.7	
GR	142.20	0	0	142.20	142.20	0.4	0	142.20	FV	XX	FV		FV		N/A	N/A	8500	1.6	
GRb	3963	0.6	0	≈3963	1039.62	2.7	0	≈1039.62	FV	FV	FV		FV		N/A	N/A	29600	5.2	
ES	428851	63.9	0	≈428851	33299.53	84.9	x	≈33299.53	U1	U1	U1	x	XX	c1	N/A	N/A	348100	61.4	
FR	39800	5.9	0	≈39800	354.70	0.9	-	>354.70	U1	U2	U2	-	U1	b1	N/A	N/A	38800	6.8	
IT	168600	25.1	+	≈168600	4346.36	11.1	+	<4346.36	FV	FV	FV		FV		N/A	N/A	129000	22.7	
MT	153	0	0	≈153	136	0.3	0	≈136	FV	FV	FV		U1	b1	N/A	N/A	900	0.2	
PT	29800	4.4	0	≈29800	N/A	N/A	+	<	FV	FV	FV		FV		N/A	N/A	16500	2.9	

Automatic Assessments

EU Biogeographical assessment and proposed corrections																	
MS/EU27	Surface	Range Concl.	Trend	Ref.	Surface	Area Concl.	Trend	Ref.	Struct. func.	Future prosp.	Curr. CS Concl.	Qualifier	Prev. CS Concl.	Nat. of ch.	Target 1		
															Contrib.	Type	
EU27	667648	0	0	≈667648		2GD			2GD	2GD	MTX	x	XX	no	D	=	0/0 EEA-ETC/BD
EU27	671469	0		671469	39229	2GD		39229	2GD	2GD	MTX	x	XX	no	D	=	0/0 EEA-ETC/BD

You do not have permission to add conclusions.



In the Apulia Region, the prairies and xerothermophilous pseudostepps with tall grassy grasses and stony soils, heavily eroded and pioneers and arid slopes, the coasts and the hills above all are widespread. This habitat can evolve towards Mediterranean scrub formations or remain stable in the presence of periodic grazing or fires. The greatest interest, in the case of grazing, is the presence in the clearings between the tall grassy formations of meadows referable to the priority habitat 6220 "Pseudo-steppe paths of grasses and annuals of the Thero-Brachypodietea". Populations of *Stipa austroitalica*, species included in Annex II of Dir. 92/43 / EEC "Habitat Directive" may be locally present in these formations.

4.1.2 Related habitats

As a result of the wide variety of communities included in habitat type 6220 there are many other habitat types associated with or in contact with it. As they all share the same landscapes, their ecological requirements and management needs are also quite similar. The following are the associated habitats included in the Habitats Directive 92/43 / EU.

- *1340: Inland salt meadows. Contact with habitat type 6220 (Lygeo-Stipetalia e Brachypodietalia distachyi).

- ***1510**: Mediterranean salt steppes (Limonietalia). Contact with habitat type 6220 (Lygeo-Stipetalia e Brachypodietalia distachyi).
- ***2240**: Brachypodietalia dune grasslands with annuals. It overlaps with habitat type 6620.
- ***4090**: Endemic oro-Mediterranean heaths with gorse. Contact with habitat type 6220 (Lygeo-Stipetalia e Poetalia bulbosae).
- ***5110**: Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.). Contact with habitat type 6220 (usually Lygeo-Stipetalia).
- ***5220**: Arborescent matorral with Zyziphus. Contact with habitat type 6220 (Lygeo-Stipetalia and Brachypodietalia distachyi). They complement each other for fauna and flora conservation purposes: the former provides shelter for both flora and fauna and the latter, food for wildlife.
- ***5320**: Low formations of Euphorbia close to cliffs. Contact with habitat type 6220 (Lygeo-Stipetalia e Brachypodietalia distachyi). They share ecological and management requirements.
- ***5330**: Thermo-Mediterranean and pre-desert scrub. Contact with habitat type 6220 (Lygeo-Stipetalia e Brachypodietalia distachyi). They complement each other for purposes of conservation of fauna and flora: the former offers shelter to both flora and fauna - facilitation - and the latter, food for wildlife.
- ***5410, *5420, *5430**: Phrygane. Contact with habitat type 6220 (Lygeo-Stipetalia and Brachypodietalia distachyi). They share ecological and management requirements.
- ***6110**: Rupicolous calcareous or basophilic grasslands of the Alysso-Sedion albi. Contact with habitat type 6220 (Lygeo-Stipetalia and Brachypodietalia distachyi).
- ***6210**: Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (*important orchid sites). Contact with habitat type 6220 (Lygeo-Stipetalia, Poetalia bulbosae e Brachypodietalia distachyi).
- ***6310**: Dehesas with evergreen Quercus spp. Evergreen closely connected with the communities of poetalia bulbosae. Their management needs therefore coincide to a large extent.

4.1.3 Related Fauna

Many animal species included in Annexes II or IV to the "Habitats" Directive 92/43 / EEC or the "Birds" Directive 79/499 / EEC depend to a greater or lesser extent but, as far as we know, not exclusively on habitat type 6220.

This is the case of Cervus elaphus corsicanus (Sardinian deer), Ovis ammon musimon (O gemelini) (European mouflon), Testudo hermannii (Hermann's tortoise), Testudo graeca (spurred turtle), Podarcis pytiusensis (Ibiza lizard), the rare Apteromantis aptera (Iberian mantis) (Annexes II and IV), Erinaceus algirus (Algerian hedgehog) and Algyroides marchi (Spanish algyroides) (Annex IV).

The Pardina lynx, the most endangered feline species, the Adalbert eagle (Iberian imperial eagle), Hieraaetus fasciatus (Bonelli's eagle) and even Aegypius monachus (black vulture) depend also to some extent on the bulbous poetals, as they are very positively selected from their most important prey, the European rabbit (Oryctolagus cuniculus), and also provide a high protein forage that allows rabbit females to get pregnant (Villafuerte et al. 1997). Therefore, many efforts are being made to increase the area of Poetalia communities in the habitat of those endangered species (Gonzalez and San Miguel 2004; San Miguel 2007).

Within the territory of relevance of the Coastal Park we find the *Falco naumannii* (lesser kestrel) and *Falco biarmicus* (Lanner falcon), which seem to depend on the habitat type 6220 for their usual prey of invertebrates, and other steppe birds, such as *Otis tarda* (large bustard), *Tetrax Tetrax* (small bustard), *Alectoris graeca* (rocky partridge), *Pterocles orientalis* (black-bellied sandgrouse), *Pterocles alchata* (pointed-tailed sandgrouse), *Burhinus oedinemus* (stone chiurlo), *Pyrrhocorax pyrrhocorax* (pig-beaked gracchio) *Chersophilus duponti* (Dupont’s lark), *Melanocorypha calandra* (Calandra’s lark), lark minor (*Calandrella rufescens*) and other *Alaudidae*.

Linked to the Stipa or Lino delle Fate is the *Melanargia Arge*, species present in the Park, and strongly threatened with extinction at European level, so as to be included in two Annexes (II and IV) of the Habitats Directive. On the Fossil Dunes there is a stable population of *Macaone* and the presence of *Thymelicus acteon*, inserted in the European Red Lists drawn up by the International Union for Conservation of Nature (IUNC), being threatened on a continental scale (NT: *near threatened*, almost at risk).

The actual relationships between these animal species as related to habitat type 6220 and such habitat appear to be very free and variable.

5 Conservation measures in progress

Decision Makers	Date of implementation	Name	Typology (Plan, policy, strategy, action, tool, project, initiative)
Puglia Basin Authority	30/11/2005	Hydrogeological plan (PAI)	Plan
Puglia Region ENEA	2008	Local Action Plan for the fight against drought and desertification in Puglia	
Puglia Region	06/06/2006	Regional Water Protection Plan (PTA)	Plan
Puglia Region	13/10/2011	Regional Coastal Plan	Plan
Puglia Region	02/08/2013	Regional Territorial Landscape Plan (PPTR)	Plan
Province of Brindisi	04/06/2009	Site of Community Interest “Litorale brindisino” (IT 9140002) management plan	Plan
Province of Brindisi	22/02/2012	Provincial Territorial Coordination Plan (PTCP)	Plan
Municipality of Ostuni	1977 Update 1995 Update 2001	The General Regulation Town Plan (PRG)	Plan
Municipality of Fasano	2001	The General Regulation Town Plan (PRG)	Plan

PDC	2013	Regional Natural Park of Coastal Dune territorial Plan	Plan
Province of Brindisi / Municipality of Ostuni	2008	“COLECOMAN: (COLlaborative ECOsystem MANagement)	Project
Province of Brindisi / Municipality of Ostuni	2008	Amjowels (Adriatico Meridionale e Jonio wet lands system)	Project
Municipality of Ostuni / PDC	2009	Nat - PRO (Strategic plans for restoration, protection & eco tourism promotion in Natura 2000 sites)	Project
Gargano National Park / PDC	2019	LIFE Diomedee	Project
Municipality of Ostuni / PDC	2019	Integrated strategic project to strengthen the ecological connection and improve the quality of sustainable tourism use between the Coastal Dune Park and the Archaeological and Natural Park of Santa Maria d'Agnano	Project

6. Analysis of threats and limiting factors for conservation

For this type of habitat, the International Union for Conservation of Nature (IUNC) defines and considers the following threats and pressures:

- A04.01 - Intensive grazing;
- A04.03 - Abandonment of pastoral systems, absence of pasture;
- G01.03.02 - Off-road vehicles;
- G05.01- Excessive trampling;
- I01- Invasive alien species (animals and plants);
- I02 - Problematic indigenous species;
- J03.01- Reduction or prediction of specific habitat characteristics;
- K01.01- Erosion;
- K02- Evolution of biocenosis, succession (including bush advance);
- M01- Changes in abiotic conditions

A04.01 Intensive grazing

Overgrazing is not as great a threat to habitat type 6220 as it is to temperate grasslands. It is less common in Mediterranean ecosystems because of their low productivity and the seasonality of their forage supply. In addition, there is evidence that most Mediterranean pastures are able to sustain high

rates of livestock farming without a reduction in their biodiversity; they are highly resistant due to their long history of human and zootechnical influence (Sternberg et al. 2000, Pardini et al. 2004, Alrababah et al. 2007).

Each subtype of this habitat reacts to overgrazing differently. Indeed, the effect of overgrazing on *Poetalia*'s bulbs is not particularly harmful, as these animals were created and maintained by the grazing of livestock and therefore depend on it. However, overgrazing strongly affects woody vegetation, and in particular its regeneration or recruitment, posing a major threat to dehesa systems (habitat type 6310 Natura 2000). The consequences for the *Lygeo-Stipetalia* communities are different, due to the chamaephyte character of their dominant species (e.g., *Brachypodium retusum*), whose abundance decreases with increasing breeding rates, sometimes resulting in higher levels of species' annual biodiversity (Colas et al. 2002, Muller 2002). The effect of overgrazing on *Brachypodietalia distachyi* communities is generally negative, as they consist mainly of terophytes.

As a general rule, both the intensification of agricultural or pastoral activities in the Mediterranean prairies and their abandonment usually reduce biodiversity levels (Hodgson et al. 2005).

A04.03 Abandonment of pastoral systems, absence of pasture

These habitats are based on traditional management activities and are integrated into the so-called cultural landscapes, without ever constituting the potential vegetation of their area. The abandonment of such traditional activities, such as grazing, thus triggers the reactivation of the natural succession and therefore the replacement of those communities with others.

An almost immediate consequence for the *Bulbosae della Poetalia* (subtype 2), which depend strictly on the intense grazing of the cattle, is their substitution with former prairies: usually pioneer communities dominated by annual perennial species or xerophytes. Those communities, with almost or completely absent *Poa bulbosa* (the indicator species), usually constitute the last stage of replacement of Mediterranean forests and shrubby communities.

They have lower biodiversity levels and drastically fewer legumes and ecotypes of plants selected from livestock and lower forage quality and pastoral value. When the pasture disappears from the communities of *Thero-Brachypodion retusii*, the first effect is an increase of the cover of the *Brachypodium retusum* and a parallel reduction of the biological diversity.

G01.03.02- Off-road vehicles

Due to its geomorphological characteristics, the areas affected by pseudosteppe are often exposed to highly impactful fruition and/or sporting activities. Off-road vehicles, motorcycles, mountain bikes, if they become established practices, can significantly alter the flora and fauna of this habitat.

G05.01- Excessive treading

Similarly, an intensive walking wheat of numerous tourist groups can lead to a significant change or transformation of the plant species present and to an erosion over time of the pseudo-steppe habitat.

I01- Invasive alien species (animals and plants);

In general, this is not a significant threat. However, some invasive alien species, such as *Carpobrotus* sp. *Opuntia ficus-indica*, *Opuntia subulata*, *Sporobolus indicus*, *Paspalum vaginatum* or *Arctotheca calendula*, have been cited in territories related to habitat type 6220.

I02- Problematic indigenous species;

J03.01- Reduction or prediction of specific habitat characteristics

In the 19th century there was a reduction in grazing land in favour of systematic agriculture. At the beginning of the '900 the sheep-farming, except in areas still strong, tends at best to integrate in a subordinate way to the cereal company, when it is not completely excluded; thus, the total area of natural meadows and pastures is further reduced.

The laws on land reclamation and land and agricultural transformation in Apulia, starting from the measures of 1929 up to those of the 1960's, complete the transformation of the agricultural landscape with the disappearance of the ancient posts and the sheep tracks. A new and decisive impulse to the reclamation of the residual marane and mezzane will be had in the period of the post-war reconstruction around the years' 50

The current distribution pattern of these environments is typically mosaic, small steppe islands distributed between intensive crops, this situation has had deleterious repercussions not only in the loss of the pseudosteppe habitat, but also of many species of birds, including the Prairie Hen.

K01.01- Erosione: use of pesticides that increases soil sealing by creating erosion

According to the 2018 Ispra Environmental Data Report, water erosion due to rain causes a land loss of 8.5 t/ha per year in Italy, unlike the European average of 2,46t/ha per year, which associated with an increase in artificial soil cover for anthropic use of 7.65% leads to an increase in habitat vulnerability.

K02- Evolution of biocenosis, succession (including bush advance)

Another consequence is the invasion of woody vegetation following the reactivation of natural succession. This process is faster in the *Lygeo-Stipetalia* communities (subtype 1) and *Brachypodietalia distachyi* (subtype 3) than in the *Poetalia bulbosae* communities (subtype 2). This situation leads to both a reduction in biodiversity and a dramatic increase in the risk of wild fires (Troumbis et al. 2001, Muller 2002). Livestock is therefore increasingly used to create and maintain this habitat in many Mediterranean countries (Etienne 1996, González-Rebollar et al. 1999, Varela et al. 2007, Generalitat Valenciana 2008, Dopazo pers. Comm.).

Finally, the abandonment of traditional activities usually leads to the disappearance of traditional infrastructures that could

Hunting and poaching

Steppe environments are affected throughout Apulia by a strong hunting and poaching pressure addressed mainly to other species such as Hare, Quail and Alaudidi, which however directly or indirectly affect the habitat.

Tourism

The transformation of habitat 6220* into urban areas is a major threat, especially in coastal regions, as it entails the complete and permanent disappearance of natural biodiversity. Tourism also seems to pose a dangerous threat to some areas affected by Habitat 6220 in coastal regions, especially in some Mediterranean islands. On the other hand, it should be noted that grazing significantly increases the tourist value of Mediterranean landscapes (Pardini et al. 2004).

Wildfires

The effect of the fire on the prairies can be negative or positive, depending on the season, the size, temperature, wind and biomass of the fuel. Fire usually benefits herbaceous communities and has therefore traditionally been used for this purpose; in fact, pastoral activities are often linked to forest fires. However, it usually causes soil erosion and degradation and a reduction in biodiversity. This is why many regions are currently cooperating with stakeholders with the aim of using pastures, fire and mechanical treatments correctly to reduce the risk of wildfires.

Pesticidi

Pesticides can increase pasture yields. However, seasonal quality and availability are generally much more important than quantity in the Mediterranean prairies. In addition, pesticides and phytoacids can also have a significant negative impact on the biodiversity of invertebrates and weeds. These may not only be important in themselves but may also be essential not only as food for many other animal species (e.g. birds) but also for ecosystem stability (e.g. bees, dung beetles). These techniques are sometimes applied in relation to the grazing and the need to increase the leguminous species present in the area.

7 Identification of Decision Makers and Stakeholders directly involved in habitat management and SWOT analysis:

Starting from the first period of the project, some targeted participation meetings, a sharing meeting on the general strategy of the Body and on the action plan for the LASPEH Project, were organized. The meetings were structured as follows:

- 22th November 2018
- 08th March 2019
- 15th March 2019
- 22th June 2019
- 04th October 2019

The following bodies and operators were involved in the implementation, participation and sharing phases of the Plan:

#	Organization
1	Municipality of Ostuni – Department of Environment, Ecology and Hygiene
2	Puglia Region: Parks Department
3	Regional Agency for Irrigation and Forestry Activities - ARIF
4	Province of Brindisi – Environment and Ecology Sector
5	GAL Alto Salento 2020
6	GAL Valle d'Itria
7	Italian Confederation of Farmers - CIA
8	Regional Federation of Coldiretti Puglia
9	Confagricoltura Puglia
10	Masseria Fontenuova
11	Azienda Agricola Martucci
12	Masseria Difesa di Malta - Nobile Tradizione Pugliese
13	Masseria Spennata
14	Parco di Mare
15	Azienda Apistica Alveare Bianco
16	Masseria Pezza La Spina
17	Masseria il Frantoio
18	CIHEAM - BARI
19	Coop. Serapia
20	Biosolequo
21	Publiarte sas
22	Vigne di Salamina
23	Il frantoio D'Amico
24	Gruppo Escursionistico Speleologico Ostunese GEOS
25	Soc. Coop. Gaia Tours Environmental
26	ForPlay srl
27	C.B. Quadrifoglio Associazione
28	Slow food Piana degli ulivi monumentali
29	Agronomist Felice Suma
30	Mrs. Pietro Chiatante
31	Agronomist Felice Tanzarella



Swot Analysis

Strengths	Weakness
<ul style="list-style-type: none"> - Good level of naturalistic and landscape protection determined by various planning tools (SIC area conservation plan, PPTR, Park territorial plan) - Good state of conservation of the habitat and contained phenomena of environmental degradation - Federparchi membership - Presence in the Monumental Olive Oil Plain as a rural historical landscape recognized by the Ministry of Agriculture - Planning for the development of sustainable tourism - Presence of typical and quality agricultural and dairy products - Effective fire prevention system - Existence of agreement protocols with regional and local bodies and agencies, voluntary organizations and private owners for the protection of habitats - Presence of a consolidated network between the companies operating in the Park - ECST brand – Phase 1 and 2 - Widespread presence of associations and cooperatives for the enhancement and use of natural and cultural heritage; 	<ul style="list-style-type: none"> - Fragmentation of the habitat due to linear infrastructures and coastal settlements - Habitat loss due to transformation into agricultural land by plowing - Absence of highly attractive "flag" species - Small size and extreme articulation of the perimeter of the Park - Lack of a quality label for agro-food and dairy products - Poor monitoring system due to lack of funds - Poor profitability of traditional livestock activities - Low communicative visibility of agro-pastoral companies in terms of marketing
Opportunities	Threats
<ul style="list-style-type: none"> - High interconnection capacity with environmental continuity systems; - Increasingly tourist demand aimed at ecological and cultural tourism and local traditions; - Increased sensitivity to environmental and cultural resources; - Increased consumer awareness of the quality of local food production; - Participation in calls for proposals under the European Programs for territorial development; - Regional development of ancient itineraries linked to transhumance for slow tourism; - Cooperation with the agro-pastoral activities of the territory for the birth of a typical product linked to the habitat. 	<ul style="list-style-type: none"> - Abandonment of traditional agricultural and livestock practices; - Dissemination of intensive agricultural and zootechnical practices; - Risk of uncontrolled fires; - Damage to the fauna and flora due to excessive anthropic disturbance (use not adequately regulated); - Habitat degradation due to colonization by generalist plant and animal species and the spread of alien species; - Use of pesticides, herbicides and fertilizers (obligation for Xylella); - Possibility of uncontrolled overgrazing; - Climate Changes.

8 Definition of general and specific objectives that guarantee the conservation of the habitat in the short, medium and long term.

Short-term goals	Encourage and incentivize wild grazing to support habitat conservation "Pseudo-steppe paths of grasses and annuals of Thero-Brachypodietea"
	Promotional campaign "Cacio sotto il cielo" (Cheese under the sky)
	Plan sharing meetings with stakeholders
	Action to raise awareness of the local community on biodiversity issues
	Creation of didactic panels to be placed near the habitat
	Training, awareness raising and consultation activities for farmers
Medium-term goals	Typical local product recognition process
	Consortium of agro-pastoral activities
	Interventions for the implementation of eco-friendly agriculture
	Activation of incentives for sustainable businesses
	Review and inclusion of further criteria for obtaining the Park Label
	Implementation of a habitat monitoring system
	Control of tourist fruition
	Fences and panels near the habitat
	In situ conservation interventions: experimental ecological restoration actions
Implementation of a continuous bird monitoring system	
Long-term goals	Extension of the areas protected by the Coastal Dunes Park
	Acquisition of areas affected by the presence of Thero-Brachypodietea
	Creation of a seed bank and an educational nursery
	Non-income contributions for crop change
	Interventions of recovery, restoration and enhancement of traditional infrastructural systems
	Naturalistic recovery of the abandoned historic quarries
Interventions to mitigate anthropogenic impacts	

9 Identification of an integrated action plan for the proper protection and management of the habitat

The goal of this Action Plan is to create a virtuous model capable of generating replicable good practices for other farmers in the area affected by the economic effects deriving from the added value

that these natural productions can generate in terms of eco-systemic services linked to conservation of endangered habitats across Europe.

Within the Park, the only areas that still preserve the habitat "*Pseudo-steppe paths of grasses and annuals of Thero-Brachypodietea*" spared from the practice of plowing, are located within farms with farmhouses that carry out breeding in wild lands.

Only if the pasture guarantees a satisfactory profitability can it be preserved, only if the right value is recognized for the milk, meats and cheeses obtained from this traditional farming practice, then we could guarantee a high level of fauna and flora biodiversity, otherwise these areas will always be at risk of transformation with the tillage or the stone removal aimed to start intensive agricultural models of cereals and vegetables.

Therefore, it will be important to guarantee for the actors involved the maintenance of sustainable agricultural and farming practices from an ecological and economic point of view.

Obiettivi Specifici		Azioni	
OS1	To reduce the fragmentation of the pseudosteppic habitat through the restoration of existing "patches" and their expansion, ensuring ecological continuity and reducing anthropogenic pressures;	A1a	Extension of the areas protected by the Coastal Dunes Park
		A1b	Acquisition of areas affected by the presence of Thero-Brachypodietea
		A1c	Creation of a seed bank and an educational nursery
		A1d	In situ conservation interventions: experimental ecological restoration actions
		A1e	Interventions for the recovery, restoration and enhancement of traditional infrastructure systems
		A1f	Naturalistic recovery of the abandoned historic quarries
		A1g	Interventions to mitigate anthropogenic impacts
OS2	To encourage controlled traditional extensive grazing as an active management technique for maintaining the pseudosteppic habitat	A2a	Typical local product recognition process
		A2b	Consortium of agro-pastoral activities
		A2c	Encourage and incentivize grazing in the wild to support habitat conservation "Pseudo-steppe paths of grasses and annuals of Thero-Brachypodietea"
		A2d	"Cacio Sotto il Cielo" (Cheese Under the Sky) - Project
OS3	To improve the ecosystem potential to support the biodiversity of agricultural land adjacent to pseudo-steppe habitats	A3a	Interventions for the implementation of eco-friendly agriculture
		A3b	Activation of incentives for sustainable businesses
		A3c	Review and inclusion of further criteria for obtaining the Park Label
		A3d	Non-income contributions for crop change
OS4	To increase the awareness of the local	A4a	Meetings to share the Plan with stakeholders
		A4b	Training, awareness raising and consultation activities for farmers

	community on biodiversity issues and in particular on the environmental and social services provided by the pseudosteppic habitat;	A4c	Action to raise awareness of the local community on biodiversity issues
		A4d	Creation of didactic panels to be placed near the habitat
OS5	To increase the knowledge of the state and of the evolutionary dynamics of the habitat and of the species connected to it.	A5a	Implementation of a habitat monitoring system
		A5b	Control of tourist fruition
		A5c	Fences and panels near the habitat
		A5d	Implementation of a continuous bird monitoring system

9.1 Concrete Actions of the Pilot Project

Action A2c – Encourage and incentivize grazing to support the conservation of the habitat “Pseudo-steppe paths of grasses and annuals of Thero-Brachypodietea”	
Specific target	To encourage controlled extensive traditional grazing as an active management technique for maintaining the pseudosteppic habitat.
Description	In order to carry out this action, it will be necessary to improve the relationship of knowledge of the territory and its peculiarities both on the part of the Stakeholders and on the part of the community in general, through awareness-raising and dissemination campaigns of the contents, which will also be linked to the strategy of communication of the project.
Connection with other actions	The action is preparatory to the implementation of the A2b action - Consortium of agro-pastoral activities.
Responsible for implementation	Parco Dune Costiere
Other subject involved	Agro-pastoral farms
Implementation times	5 months
Resources	Laspeh Project
Results	<ul style="list-style-type: none"> • Cognitive interviews of the agro-pastoral companies of the area • Training of agro-pastoral farms on the importance of the pseudosteppic habitat and the correlation with controlled grazing • Raise awareness among shepherds on good practices for the conservation of the pseudo-steppe habitat
Monitoring indicators	Number of companies involved

Action A4c - Action to raise awareness of the local community on biodiversity issues	
Specific target	To increase the awareness of the local community on biodiversity issues and, in particular, on the environmental and social services provided by the pseudo-steppe habitat.
Description	<ul style="list-style-type: none"> • Promote plant and animal species closely related to the pseudosteppic habitat • Focus on biodiversity with training through targeted communication campaigns on the official channels of the project • Raise awareness of the local community as guardian of the reference habitat
Connection with other actions	A1g - Interventions to mitigate anthropogenic impacts
Responsible for implementation	Natural Regional Park of Coastal Dunes ‘from Torre Canne to Torre S. Leonardo’

Other subject involved	Local Community
Implementation times	3 months
Resources	Laspeh Project
Results	<ul style="list-style-type: none"> • Elaboration of photographic and videographic material of the biodiversity (flora and fauna) of the pseudosteppa; • Awareness campaign through the official multimedia channels of the project.
Monitoring indicators	Number of farmers involved

Action A2d – Cacio Sotto il Cielo (Cheese Under the Sky)	
Specific target	To encourage controlled traditional extensive grazing as an active management technique for maintaining the pseudosteppic habitat
Description	<p>External awareness activities (communities, citizens, travelers, customers) carried out through:</p> <ul style="list-style-type: none"> - Telling the history of the area connected to the practice of breeding in the wild, in order to preserve this practice and prevent its abandonment (through posts and news on the website and Facebook); - Description of the characteristics of the “yellow milk”, its added value and the benefits that its consumption entails; - Implementation of 2 thematic events with guided visits to the farm, processing laboratories and grazing areas, focusing attention on the habitats present; - Implementation of a specific information campaign for schools through educational appointments (2 webinars on the online platform)
Connection with other actions	<i>A2c - Encourage and incentivize grazing in the wild aimed at supporting the conservation of this habitat, through awareness raising activities of companies</i>
Responsible for implementation	Natural Regional Park of Coastal Dunes ‘from Torre Canne to Torre S. Leonardo’
Other subject involved	Local Community
Implementation times	3 months
Resources	Laspeh Project
Results	<ul style="list-style-type: none"> • Promote the shared path between experts and stakeholders, to raise awareness of the strengths of pasture products and the properties of yellow milk as a further tool for protecting habitats and biodiversity; • Focus on biodiversity and good land management practices through free grazing;

	<ul style="list-style-type: none"> • Make the community and tourists aware of the products made from pasture that protects biodiversity
Monitoring indicators	Number of people involved

Azione A4d - Creation of didactic panels to be placed near the habitat	
Specific target	To increase the awareness of the local community on biodiversity issues and in particular on the environmental and social services provided by the pseudo-steppe habitat.
Description	<ul style="list-style-type: none"> - Positioning of a 100x70 cm panel made on a d-bond support near the pseudosteppic habitat. <p>Specifically, the topics covered within the panels will be:</p> <ol style="list-style-type: none"> 1. The pseudosteppic habitat: description and importance of the habitat; the flora of conservation interest present (fairy flax, orchids, ...); the faunal species of faunal interest present; 2. Grazing: controlled grazing as a good management practice of the pseudosteppic habitat; the fly sheep of Lecce; the nutritional value of yellow milk; <ul style="list-style-type: none"> - Positioning of a 50x30 panel on the LASPEH project and the habitat near the rest area of the dirt road; <p>100x20 road sign for <i>Masseria La Fonte</i> and small information panel on the history of the farmhouse.</p>
Connection with other actions	<i>Action A4c - Action to raise awareness of the local community on biodiversity issues</i>
Responsible for implementation	Natural Regional Park of Coastal Dunes ‘from Torre Canne to Torre S. Leonardo’
Other subject involved	Local Community
Implementation times	3 months
Resources	Laspeh Project
Results	<ul style="list-style-type: none"> • Increase the visibility of the company directly involved in the management of the habitat, as the only agro-pastoral company within the Park, through the laying of two road signs; • Train and inform the local community on the importance of the pseudo-steppe habitat and the biodiversity related to it through the placement of educational panels along the pseudo-steppe path present in one of the Park's itineraries.
Monitoring indicators	Number of panels inserted

It is important to activate a process of participation with local stakeholders to define together (and in particular with the shepherds of the Park area) the methods of breeding and proper management of the pasture in order to encourage promotion and consumption of cheeses made from grazing animal milk or "yellow milk".

10 Information and awareness-raising measures for stakeholders

It will be necessary to support the consumption of cheese produced with the milk of grazing animals through an appropriate marketing and communication campaign that highlights the importance of "yellow milk", a product rich in carotenoids and obtained only from animals that feed on wild grass which changes with the changing of the seasons and not fed with fodder and feed.

In this process of protection and enhancement of habitats and species at risk, a decisive role is played by communication, in order to explain how much consumer choices can determine, the conservation or not of an agricultural landscape or the disappearance of a habitat, but also to point out the direct link between the production of organic food (milk and cheese produced from sheep raised in the wild) and the enhancement and conservation of habitats and related species.

It will be necessary to create technical forums between stakeholders and meetings with botanical experts, naturalists, ornithologists and nutritionists to make known to stakeholders, the local community and visitors the characteristics of the territory under consideration, the added value linked to the eco-systemic services that such products contain in terms of conservation of plant species present in the pasture and of fauna species that find a trophic source in large grazing areas, as well as the nutritional values that the "yellow milk" contains and the benefits derived from its consumption. The tools useful for achieving these promotion and communication objectives will be:

- the creation of a Social Media campaign to raise awareness among the community and the younger generations on the objectives of the plan and on biodiversity closely related to the habitat;
- the creation of a "Cacio sotto il cielo" (Cheese Under the Sky) campaign to raise awareness in the community on the interconnection between traditional agro-pastoral activities and habitat conservation, through the presentation and promotion of dairy products and nutrients;
- the creation of didactic panels and the production of gadgets (posters, roll-ups, information panels on the biodiversity present within the milk or cheese, natural fiber cotton bags);
- the creation of a program of appointments with free study days at the participating farms with field visits accompanied by experts in the field for the knowledge of the territory, the history and biodiversity of the habitat and surrounding places, of the breeds bred and of the methods of breeding and transformation of milk into cheese with the subsequent tasting of products derived from the milk of animals raised on pasture.

11 Evaluation of the impact of the action plan for the proper protection and management of the habitat

The starting point for a correct assessment of the impacts of the Action Plan will be based on two systematic approaches, one on the analysis of the results through a monitoring plan to define the results achieved, and the other on the flexibility of the Plan through the evaluation in time of strengths

and actions and strategies to be improved, through continuous dialogue with the stakeholders involved in the plan.

The activity of the results analysis phase will be carried out by the Public Body (Park Authority) in collaboration with the stakeholders directly involved in habitat management, with the task of thoroughly examining the results achieved, while the modification of the mitigation and conservation action plan habitat will be evaluated with all the stakeholders and decision makers involved in the action plan.

12 Identification of human and financial resources

The Park Authority of the Coastal Dunes is equipped with two important planning tools, the Park Plan and the Action Plan of Phase 1 and 2 of the ECSt (European Charter of Sustainable Tourism), which respectively take care of the protection of the Park's habitats and the development of Sustainable Tourism.

These planning tools are based on participatory methods involving decision makers and local stakeholders, in order to achieve, on the one hand, a sharing of human resources in the realization of common objectives and actions, and on the other, the implementation of the selected actions. This participation will be the basis for the long-term implementation of the actions included in this Plan. In addition, the Coastal Dunes Park has already entered into memoranda of understanding with ARIF (Regional Agency for Irrigation and Forestry) and the landowners in which the areas of the Park where the pseudo-steppe habitat are located.

In addition, the long-term objectives will be achieved through the participation of the Entity in calls and programs:

- Europeans (Interreg, Life, Med);
- Regional;
- Local (LAG - Local Action Group)

Finally, the Park will adopt some protection, conservation and monitoring measures through its consortium budget.

13 Monitoring plan to verify the effectiveness of the actions

The monitoring plan has a central function in the implementation of the plan. The main objectives of this monitoring are to:

- Evaluate in the short term whether the concrete actions implemented have achieved the desired result;
- Evaluate in the long term whether the objectives and results of the Plan have been achieved;
- Integrate, where appropriate, and improve the Action Plan inserted.

Specific Objectives		Actions		Indicator
OS1	To reduce the fragmentation of the pseudosteppe habitat through the restoration of existing "patches" and their expansion, ensuring ecological continuity and reducing anthropogenic pressures;	A1a	Extension of the areas protected by the Coastal Dunes Park	Areal
		A1b	Acquisition of areas affected by the presence of Thero-Brachypodietea	Sqm
		A1c	Creation of a seed bank and an educational nursery	Creation of seed bank
		A1d	In situ conservation interventions: experimental ecological restoration actions	Number of interventions
		A1e	Interventions for the recovery, restoration and enhancement of traditional infrastructure systems	Dry stone walls, water points, fences, hedges
		A1f	Naturalistic recovery of the abandoned historic quarries	Number of historic quarries recovered
		A1g	Interventions to mitigate anthropogenic impacts	Number of interventions
OS2	To encourage controlled traditional extensive grazing as an active management technique for maintaining the pseudosteppe habitat	A2a	Typical local product recognition process	
		A2b	Consortium of agro-pastoral activities	
		A2c	Encourage and incentivize grazing in the wild to support habitat conservation "Pseudo-steppe paths of grasses and annuals of Thero-Brachypodietea"	Number of companies involved
		A2d	"Cacio Sotto il Cielo" - Project	Number of users involved

OS3	To improve the ecosystem potential to support the biodiversity of agricultural land adjacent to pseudo-steppe habitats	A3a	Interventions for the implementation of eco-friendly agriculture	Number of interventions
		A3b	Activation of incentives for sustainable businesses	Number of interventions
		A3c	Review and inclusion of further criteria for obtaining the Park Label	Number of companies
		A3d	Non-income contributions for crop change	Number of contributions
OS4	To increase the awareness of the local community on biodiversity issues and in particular on the environmental and social services provided by the pseudosteppic habitat;	A4a	Meetings to share the Plan with stakeholders	Number of stakeholders involved
		A4b	Training, awareness raising and consultation activities for farmers	Number of farmers
		A4c	Action to raise awareness of the local community on biodiversity issues	Number of people reached
		A4d	Creation of didactic panels to be placed near the habitat	Numbers of panels installed
OS5	To increase the knowledge of the state and of the evolutionary dynamics of the habitat and of the species connected to it	A5a	Implementation of a habitat ISPRA monitoring system	Monitoring of dimensional and fragmentation parameters
		A5b	Control of tourist fruition	Monitoring of flow
		A5c	Fences and panels near the habitat	Number of interventions
		A5d	Implementation of a continuous bird monitoring system	Camera traps and monitoring campaigns

14 Conclusions

The adoption of the European guidelines, the integration with the ongoing regional plans and measures, the planning of actions in the short, medium and long term together with a monitoring plan, will allow greater protection of the ***Pseudosteppe habitat with grasses and annuals of Thero - Brachypodietea*** and the application of the concrete actions contained therein.

In addition, this document will be adopted by the Park Authority as a planning tool for the protection and conservation of the habitat.

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