



BIO_SOS

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Main Authors:	Laura Candela, ASI and contribution by: Richard M. Lucas (ABERY), Joao P. Honrado (ICETA/CIBIO), Panayotis Dimopoulos (UOI)

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Abstract	<p>The SLA (Service Level Agreement) rules the service provision to end users in terms of quality, timely delivery and adherence to the Service specifications. Before the start of the project, three SLA were signed between the Consortium of partners participating to BIO-SOS (the "Service Provider") and three users (Regione Puglia, Servizio Ecologia, Ufficio Parchi (Italy), Instituto da Conservação da Natureza e Biodiversidade (Portugal), Instituto Nacional de Pesquisas Espaciais (Brazil).</p> <p>Now, after the consolidation of the test sites for testing and ground verification of the methods to be developed in BIO_SOS, two further SLA have been signed with the Countryside Council for Wales (UK) and the Management Body of Stena and Ekvoles Kalama & Acheronta (GR) respectively.</p> <p>This document includes the most up to date version of SLA that will regulate the provision of BIO-SOS services.</p>
Keywords	Service Level Agreement



Signatures

Written by	Responsibility-Company	Date	Signature
Laura Candela	WP2 Task 2.3 responsible, ASI	28-2-2011	
Verified by			
Panayotis Dimopoulos	WP2 Leader, UOI		
Approved by			
Palma Blonda	Coordinator, CNR	28-2-2011	
Maria Petrou	Quality Manager, CERTH	28-2-2011	

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1. Executive summary

BIO-SOS project aims at developing and validating a prototype system for providing a reliable long-term biodiversity monitoring service based upon high spatial resolution remote sensing data, and at embedding monitoring information (changes) in innovative ecological modelling for Natura 2000 site management.

The Bio-SOS project has four test sites in Italy, three in Greece, two in Portugal, two in Wales, one for training and one for validation, one in The Netherlands, one in Amazon (Brazil). Each test site has a “Reference User”: Service Level Agreements are useful to regulate the project service provision related to the test areas.

Before the start of the project, three SLA were signed between the Consortium of partners participating to BIO-SOS (the “Service Provider”) and three users (Regione Puglia, Servizio Ecologia, Ufficio Parchi (Italy), Instituto da Conservação da Natureza e Biodiversidade (Portugal), Instituto Nacional de Pesquisas Espaciais, (Brazil).

Now, after the consolidation of the test sites for testing and ground verification of the methods to be developed in BIO_SOS, two further SLA have been signed with the Countryside Council for Wales (UK) and the Management Body of Stena & Ekvoles Kalama and Acheronta (GR) respectively.

This document summarizes the Service Level Agreement content and contains the directory of all SLAs already established between the BIO-SOS Consortium and the End Users.

2. Introduction

The main aim of the BIO_SOS project is the development of an operational ecological modelling system suitable for effective and timely multi-annual monitoring of Natura 2000 sites and their surrounding areas particularly exposed to different and combined types of pressure. The project will:

- 1) adopt and develop novel operational automatic high spatial resolution (HR), very high spatial resolution (VHR) and hyper-spectral resolution EO data pre-processing and understanding techniques for **land cover** (LC) map and **LC change** (LCC) map generation eligible for use in biodiversity monitoring; (This is tantamount to saying that BIO_SOS is expected to provide improved operational core service products with respect to state-of-the-art satellite-based LC and LCC mapping systems.)
- 2) develop a modelling framework (scenario analysis) for combining EO and in-situ data to support the automatic provision of **biodiversity indicators** and provide a deeper understanding, assessment and prediction of the impacts that human induced pressures may have on biodiversity. (This means that BIO_SOS aims at developing and integrating new and existing models able to evaluate and predict trends in biodiversity issues. This will lead to the development of *new downstream service* production.)

To achieve this, the BIO_SOS project will test the integration of existing and new automatic EO data processing techniques to enable better use of observations over different scales and link that with in-situ information. For this purpose the consortium identified several test sites throughout Europe. To extrapolate from European test cases to a general use, additional areas are considered in an ICPC Country, i.e. Brazil, where Natura 2000 system does not exist, but particularly urgent is the availability of advanced monitoring system for biodiversity protection.

These sites are mainly located in the Mediterranean but also in the Atlantic region. More specifically, four sites are located in Italy, three in Greece, two in Portugal, one site in The Netherlands, and two in Wales. All sites are known for their biodiversity conservation and therefore belong to the European Ecological Network Natura 2000. To distinguish these sites, we assign BIO_SOS site codes presented in the following Table 1.

Table 1 The BIO_SOS test sites

BIO_SOS code	Natura 2000 code		Natura 2000 name
	SCIs /SACs	SPA	
IT1	IT9110008	IT9110039	Valloni e steppe pedegarganiche
IT2	IT9110005	IT9110038	Zone umide della Capitanata-Paludi presso il Golfo di Manfredonia
IT3	IT9120007	IT9120007	Murgia Alta
IT4	IT9150032	IT9150014	Le Cesine
GR1	GR2120001	GR2120005	Ekvoles Kalama
GR2	GR2120002	GR2120006	Elos Kalodiki
GR3	GR2120004		Stena Kalama
NL	NL9801023	NL3009017	Veluwe. Dutch case study concentrates on part N2K, namely Ginkelse and Ederheide, a heathland area and Weekeromse Zand an inland sand dune area
PT1	PTCON0021	PTZPE0037	Rios Sabor e Maças
PT2	PTCON0001	PTZPE0002	Peneda-Gerês
UK	UK0014791 UK0014790		Cors Fochno and Cors Caron
BR			Amazon
			Instituto Nacional De Pesquisa Espaciais (INPE)

BIO_SOS aims at developing an automatic system for the delivery of biodiversity information to users and managers. The main users of BIO_SOS are likely to be the **local /regional managers of the Natura 2000 sites** and **the supervising national and/or regional authorities** with responsibility for reporting to European Commission on the conservation status of species and habitats (Article 17 of the Habitats and Species Directive and Article 12 of the Birds Directive).

Reference users of selected test sites are summarized in the following table.

Table 2 The BIO_SOS reference users

BIO_SOS code	Natura 2000 code		Natura 2000 name	Reference User
	SCIs /SACs	SPA		
IT1	IT9110008	IT9110039	Valloni e steppe pedegarganiche	Regione Puglia, Servizio Ecologia - Ufficio Parchi
IT2	IT9110005	IT9110038	Zone umide della Capitanata-Paludi presso il Golfo di Manfredonia	
IT3	IT9120007	IT9120007	Murgia Alta	
IT4	IT9150032	IT9150014	Le Cesine	
GR1	GR2120001	GR2120005	Ekvoles Kalama	Management Institution of Kalamas-Kalodiki
GR2	GR2120002	GR2120006	Elos Kalodiki	
GR3	GR2120004		Stena Kalama	
NL	NL9801023	NL3009017	Veluwe. Dutch case study concentrates on part N2K, namely Ginkelse and Ederheide, a heathland area and Weekeromse Zand an inland sand dune area	Ministry of Defense for the heathland area Ginkelse and Ederheide, and Geldersch Landschap for the inland sand dune area of Wekeromse Zand
PT1	PTCON0021	PTZPE0037	Rios Sabor e Maças	Instituto da Conservação da Natureza e da Biodiversidade (ICNB)
PT2	PTCON0001	PTZPE0002	Peneda-Gerês	
UK			Cors Fochno and Cors Caron	Countryside Council for Wales
BR			Amazon	Instituto Nacional De Pesquisa Espaciais (INPE)

D2.3 – Objectives and content outline

Within the framework of WP2 entitled User Requirements Completion, three tasks have been allocated. Task 2.3 is related to the Updating of Service Level Agreement between the BIO_SOS Service Providers and the reference users.

A first group of SLAs was signed by the users and the Project Scientific Responsible before the start of the project (ITA, PT, BR). These documents are still valid and they are not changed, because no further user requirements have been expressed.

A new SLA has been signed with the Countryside Council for Wales, UK.

The objective of this report, compiled within the framework of D2.3 of the BIO_SOS project, is to update the Service Level Agreement, providing:

- a) a synthetic description of the SLA document;
- b) the signed SLAs, at the state-of the-art.

The document includes in Appendix 1 a copy of the SLAs as signed between the BIO_SOS Scientific Coordinator and the Reference Users of IT, PT, UK, GR and BR.

The fulfilment of the objective of this task will be completed when also the SLA with NL Users will be signed.

1. SLA Contents

The SLA (Service Level Specification) is the formal expression of the result of the negotiation between user needs and service provider capabilities. So, it defines the respective commitments between a service provider and a service user.

Service Provider is the BIO_SOS consortium Service Users are the Institutional Entities that in each Country are responsible for the Natura 2000 site management.

SLA has to be formally signed by the two parties.

Generally speaking, a SLA is composed of 3 main blocks of contents, outlined in different ways, as follows.

- a) Introduction - introducing lines relevant to the framework in which the project service or product provision takes place, general information relevant to the parties involved in the activities, the application field, etc.
- b) Technical content - specific service/product provision description, specification of services and products, respective commitments (rights and obligations) of the **Service Provider** in terms of quantity, quality standards, time of delivery and adherence to the product/service specifications, performance levels commitments for the service (response time, etc.) and for the products (accuracy, quality), ordering and delivery processes, as well as support services (technical support), and of the **Service user**, the need for user feed back, specification of acceptance criteria, provision of in-situ data, access to user databases, etc.
- c) legal provisions - They define the legal framework governing the agreement and the service provision. Topics addressed: Intellectual Property rights regime; warranty of services and products; liability between the parties to the agreement and towards third parties; settlement of disputes; applicable law; final clauses (amendments, entry into force, duration, withdrawal)

Different service/product portfolio may entail different technical content and scheme of the agreement, and also different legal framework, more or less complex.

The Service Level Agreement will specify the quality, quantity and terms of access for each item of BIO_SOS Portfolio items on selected test sites to be delivered by the service providers to the end-user.

SLA is a committing agreement between parties, and regulates the following aspects:

- Specification of service and products to be delivered
- Performance levels commitments
 - for the service
 - for the products
- Volume and scope of services to be delivered, for each service area
- Delivery processes
- Support services (technical support etc.)
- Target Service Delivery Model

The general contents of BIO_SOS SLA are specified in the following paragraphs.

3.1 The BIO_SOS SLA Template

SERVICE LEVEL AGREEMENT RELATED TO THE BIO_SOS PROJECT

This agreement is concluded between the consortium of partners participating to the BIO_SOS project, hereafter referred to as the Service Provider, represented by its *in pectore* scientific coordinator Dr. Palma Blonda, CNR-ISSIA, and the [user], hereafter referred to as the User, for the duration of 30 months starting from the project kick-off date, for the Natura 2000 sites known as [site name / site specification].

In case of conflict between this Service Level Agreement and the project grant agreement with the EC, the latter will apply.

This Service Level Agreement specifies in transparent and measurable terms the services to be provided, including quality requirements, and the obligations of the Service Provider and of the User respectively.

1. Service description

The BIO_SOS project will provide a prototype system for long-term biodiversity monitoring to be considered for future inclusion in the Management Authority system/procedures for biodiversity monitoring and conservation. The system will be tested on some Natura 2000 sites to provide an example of its functionality and potential.

2. Obligations of the Service Provider

- The Service Provider agrees to provide the User with the service according to the Detailed Service Specifications below.
- The Service Provider agrees to ensure adequate quality control is performed.
- The Service Provider agrees to ensure validation is performed according to the agreed Validation Plan.
- The Service Provider agrees to ensure that needed technical support to the User to fully utilise the service will be provided within reasonable limits.

3. Obligations of the User

- The User agrees to fully participate in the assessment/consolidation of user requirements.
- The User agrees to integrate the service within his operational mandate as far as practically possible.
- The User agrees to fully participate in the assessment of the utility of the service.
- The User will support the validation beyond the utility assessment, e.g. taking part in accuracy assessments.

- In-kind contribution from the user including lobbying support to access third party funding, promotion of service capabilities and utility to collaborating organisations within the same demand sector and operation and maintenance of in-situ data gathering networks and service support infrastructure (e.g. data warehouses).

4. Detailed Service Specifications

The service to be delivered by the Service Provider to the User has the following contents and characteristics.

Products

The prototype system will provide the following updated maps:

- Land cover
- Vegetation map
- Habitat map
- Land cover change map
- Habitat change map
- Specific land cover class transitions (e.g. natural grasslands to cultivated areas).
- Biodiversity indicators such as "Extent and change of habitats of European interest".

The spatial resolution of the maps will range from high (3 m to 30 m) to very high resolution (< 3 m), according to user requirements. This will provide:

- updated full coverage of [...] Natura 2000 sites.
- fine scale mapping of areas exposed to specific pressure (e.g. boundary areas);
- early warning of areas where on-site inspection is required.

Service Area

The areas covered by this service are:

1) *Site id*

Coordinates: ...

Total area: ... ha

Investigation extension

Minimum area: ...

Maximum area: ...

[User information needs related to the site, as textual description]

Other Deliverables

Personnel of the User will receive a three day training on the use of the service

Service Delivery Mode

Web-based or DVD by express mail.

Delivery Schedule and Product Specifications

The products will be delivered within 30 months from the kickoff. The scale will be 1:10000 or better. The projection/reference system will be:...

Target Service Delivery Model

[Outsourced service or User in-house service (the Service Provider performs development and technology transfer/user capacity building in the project and plans for future revenues from maintenance and/or further development of the processing chain).

5. Other terms: NONE

Service Level Agreement signed by:

On behalf of (the Service Provider)

On behalf of .. (the User)

[name and position]

.....

[name and position]

.....

2. Bio-SOS Services and related Users

3.1 The test Sites in Greece

The Greek Natura 2000 sites (test sites) are the following: GR1: EKVOLES KALAMA (Kalamas Delta) (GR2120001); GR2: ELOS KALODIKI (Kalodiki Fen) (GR2120002); GR3: STENA KALAMA (Kalamas Gorge) (GR2120004). All three sites are located in the prefecture of Thesprotia in the administrative region of Epirus (NW Greece) (Figs. 1a, b).

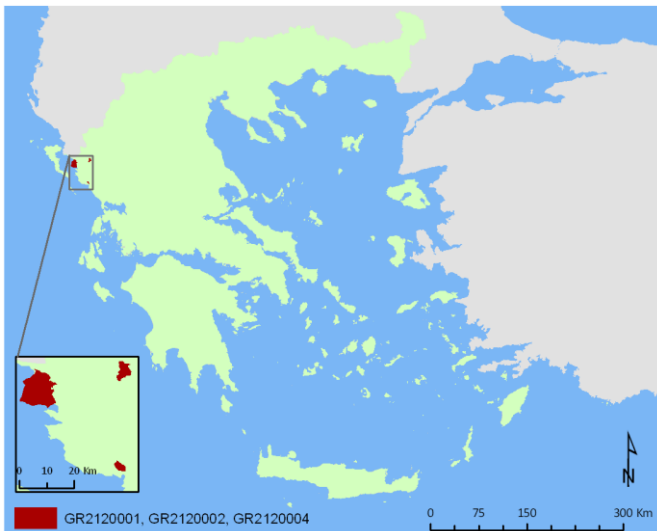


Fig. 1a. Location of Greek test sites.

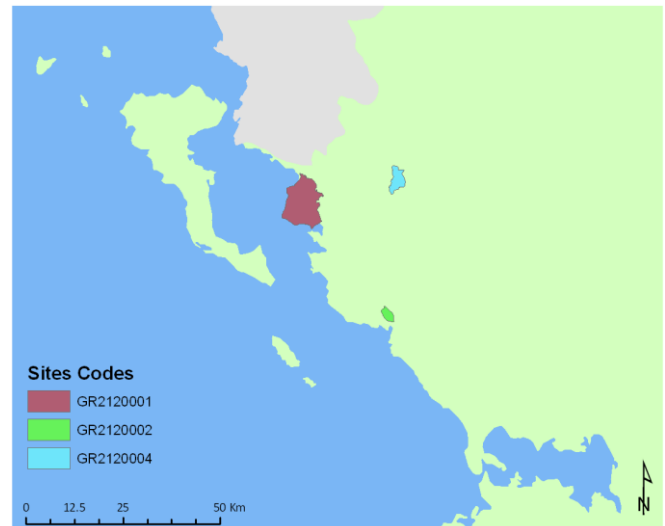


Fig. 1b. Location of Greek test sites (close-up).

Deliverable D2.2 of the project describes the test sites and details the user requirements about them. We recall here the Users' identification and description.

Users

The **Management Institution of Kalamas-Kalodiki** is responsible for the conservation management of the concerned SCI sites in Greece and will be one of the main end users of our results. The management body administratively belongs to the Hellenic Ministry of the Environment and is closely linked to the regional services for the Environmental policy implementation (concerning the conservation management of habitats and species, and water resource management).

3.2 The test Sites in Netherlands

The Dutch study area for Bio-SOS is located within the Natura 2000 site of Veluwe (site codes: NL9801023+ NL3009017) in the Province of Gelderland, and falls under the Habitat Directive as well as the Bird Directive.

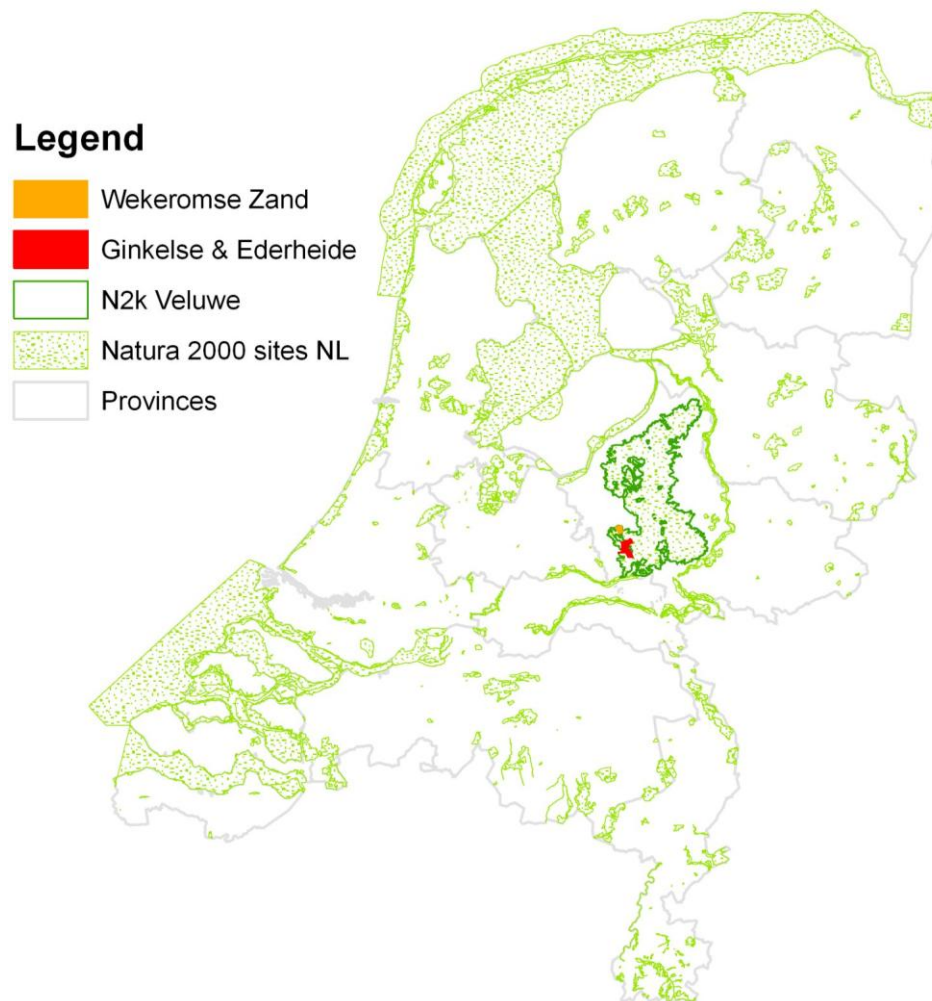


Figure 2 Location of the Dutch study area Ginkelse - Ederheide & Wekeromse Zand within Natura 2000 Veluwe in the centre of the Netherlands

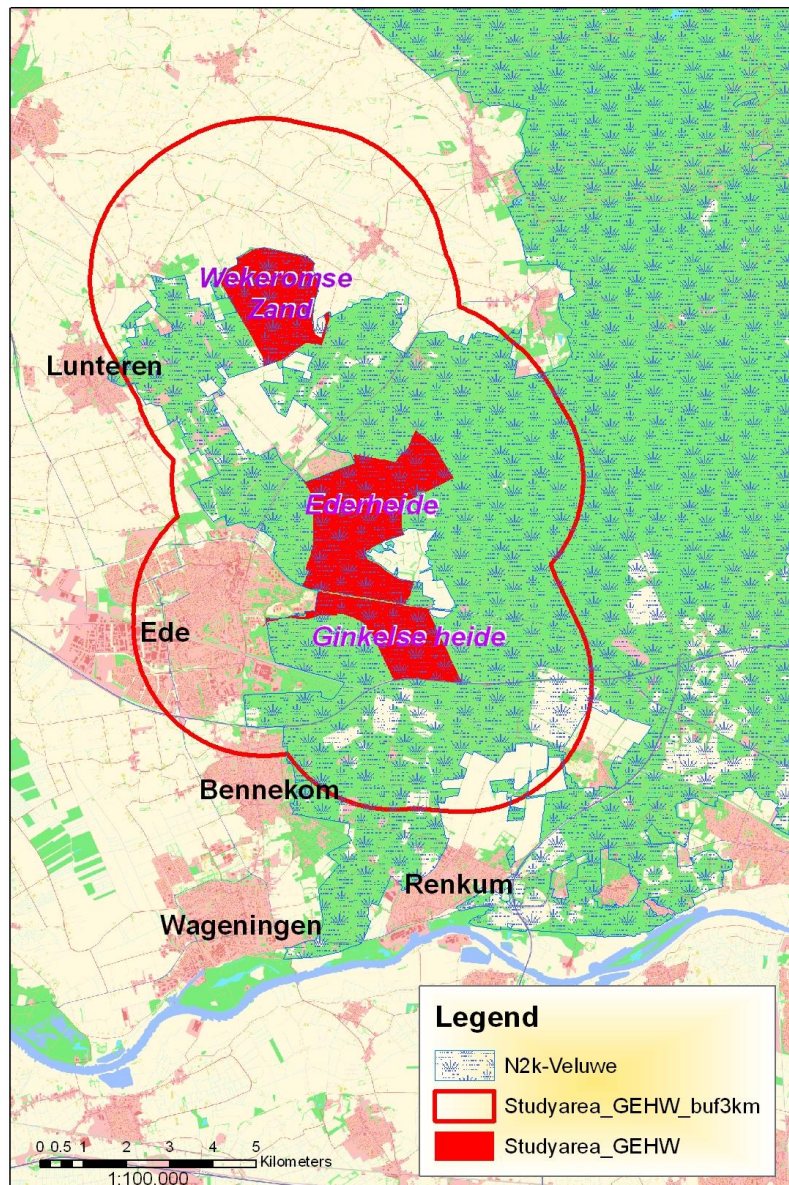


Figure 3 Exact location of the Dutch study area Ginkelse - Ederheide & Wekeromse Zand with a bufferzone (redline) of 3 kilometres

Deliverable D2.2 of the project describes the test sites and details the user requirements about them. We recall here the Users' identification and description.

Users

The Veluwe as a whole (Natura 2000 site NL9801023+ NL3009017) has many different owners, namely: Forestry Services (SBB), Foundation Natural Heritage (Natuurmonumenten), the Dutch Royal family (Domeinen), the Ministry of Waterworks (Rijkswaterstaat), provincial landscape (Geldersch Landschap) and the Ministry of Defense (Defensie vastgoed). For the Dutch case study we will only deal with the latter two, namely the **Ministry of Defense** for the heathland area Ginkelse and Ederheide, and **Geldersch Landschap** for the inland sand dune area of Wekeromse Zand.

3.3 The test Sites in Italy

IT1: Valloni e steppe pedegarganiche IT9110008

The site IT1 is located in the Northeastern part of the Puglia Region (Figure 4), on the south-facing slopes of the Gargano promontory, covering an area of 29800 ha and ranging from 5 m to 644 m a.s.l. The study site is a SCI (IT9110008) and is comprised within the boundaries of the Gargano National Park and the SPA “Promontorio del Gargano” (IT9110039). Vegetation consist mainly (42% of the site area) of Mediterranean steppe grasslands dominated by *Stipa austroitalica*, a priority species according to the Annex II of 43/92/EEC.

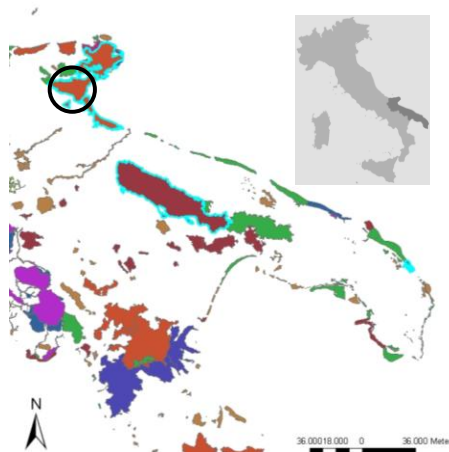


Figure 4 Location map of IT1 within the context of Natura 2000 sites and other protected areas

IT2: Zone umide della Capitanata-Paludi presso il Golfo di Manfredonia IT9110005

The site is located in the Northeastern part of the Puglia Region (Figure 5). This area falls within the boundaries of the Site of Community Interest (SCI) IT 9110005 “Zone umide della Capitanata”, of the Special Protection Area (SPA) IT9110038 “Paludi presso il Golfo di Manfredonia” and of the SPA “Saline di Margherita di Savoia” IT911006. This site is partially enclosed within the Gargano National Park. The SCI and SPA have a surface area of 14.077 and 14.437 ha, respectively.

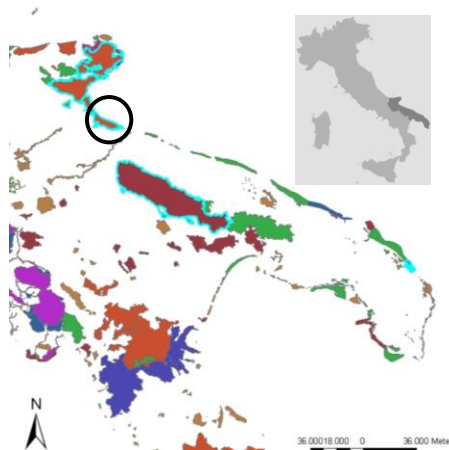


Figure 5 Location map of the IT2 study site within the context of Natura 2000 sites and other protected areas

The site, as with BIOSOS site IT1 (IT9110008), is also classified as a Ramsar site and Important Bird Area (IBA 230M). It is one of the largest components of the Mediterranean wetland system, crucial to support several water bird species during annual migrations.

IT3: Murgia Alta IT9120007

The study site IT3 “Murgia Alta” (SCI/SPA IT9120007) lies in the north-western part of Murge hill, an oblong plateau in the centre of Puglia Region, stretching out NW-SE towards the nearby Basilicata Region (Figure 6).

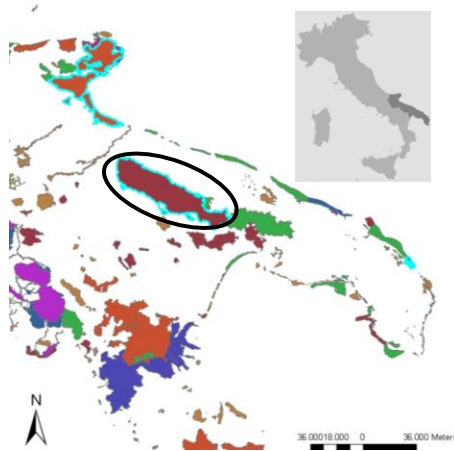


Figure 6 Location map of IT3 within the context of Natura 2000 sites and other protected areas

The site extends over 125,000 ha, ranging from 300 to 679 m a.s.l..The SCI/SPA Murgia Alta includes the National Park of Alta Murgia.

IT4: Le Cesine IT9150032

Le Cesine is located on the Adriatic side of the SE Puglia region (Figure 7).

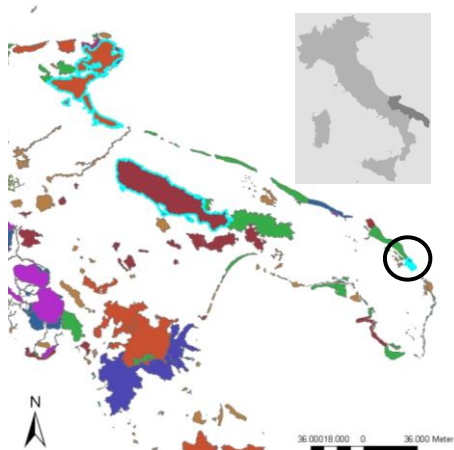


Figure 7 Location map of IT4 within the context of Natura 2000 sites and other protected areas

Le Cesine is a SCI (IT9150032) with a surface area of 2148 ha and a SPA (IT9150014) with a surface area of 647 ha. Le Cesine is one of the oldest protected areas in Puglia, having been declared Ramsar site in 1977 and State Natural Reserve in 1980. The State Natural Reserve covers an area of 348 ha within the municipal district of Vernole (LE). The management body is WWF Italy. Le Cesine is also an Important Bird Area (IBA 146 and 146M).

Deliverable D2.2 of the project describes the test sites and details the user requirements about them. We recall here the Users' identification and description.

Users

The main user is the **Regional authority of Puglia**, which is responsible for compliance with the Habitat and Bird Directives. They have already indicated their monitoring priorities in the SLA and keep in constant contact with the project with regard to focal species selection

For site IT1, they have already indicated a few bird species (i.e. Lesser kestrel (*Falco naumanni*), Lanner falcon (*Falco biarmicus feldeggii*), Egyptian vulture (*Neophron percnopterus*) and Eurasian eagle-owl (*Bubo bubo*)) negatively affected by pressures leading to habitat degradation and perturbation (*sensu* Art, 6, 92/43/EEC Directive) caused both by agriculture intensification/expansion and forest plantations at the expense of natural habitats, as well as industrial expansion.

For site IT2 they are mainly concerned with the degradation of priority habitat types 1150*-Coastal lagoons, 1510*-Mediterranean salt steppes (Limonietalia), as well as both 1420- Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornietea fruticosi*) habitat types, all supporting several wintering water bird species.

For site IT3 they have also indicated a few bird species, i.e. lesser kestrel (*Falco naumanni*), Lanner falcon (*Falco biarmicus feldeggii*), negatively affected by pressures leading to habitat degradation and perturbation (*sensu* Art, 6, 92/43/EEC Directive) caused by agriculture intensification/expansion at the expense of natural habitats.

For site IT4 they are mainly concerned with the degradation of priority habitat type 1150*-Coastal lagoons, as well as of both 1420-Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornietea fruticosi*) habitat types, all supporting several wintering water bird species.

3.4 The test Sites in Portugal

“Rios Sabor e Maçãs” is a river system located in the northeast of mainland Portugal (Figure 8). The main river (Sabor) is a major tributary of the River Douro, and Maçãs is the main tributary of the River Sabor. The site has been designated both as an SCI (PTCON0021; surface area: 33482 ha) and a SPA (PTZPE0037; 50687 ha), with more or less coincident limits (Figure 8). Overall, this study site has a total surface area of 53009 ha. The main landscape change occurring in the near future will be the ongoing construction of a hydroelectric dam that will submerge a large part of the main valley.

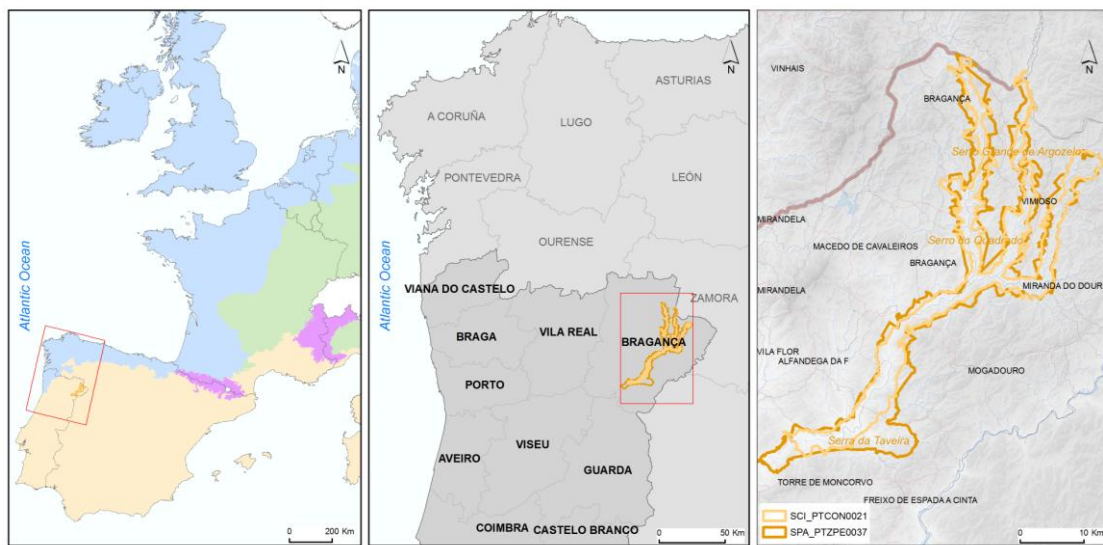


Figure 8 Geographic location and main toponyms of the “Rios Sabor e Maças” study site: in the European biogeographic context (left), in the NW-Iberian context (centre), and in the Northeast of Portugal (right)

“Peneda-Gerês” is a mountainous area located in the northwest corner of mainland Portugal (Figure 9), including a large part of the mountain ranges of Peneda, Soajo, Amarela, Gerês and Larouco. This site includes the only national park in the country (surface area: 69593ha) and it has been designated both as an SCI (PTCON0001; 88845 ha) and a SPA (PTZPE0002; 63438 ha). The limits are not always coincident but the national park is completely included in the SCI. Overall, this study site has a total surface area of 94480 ha. This site is suffering rural abandonment in high elevation areas, and diffuse urban development and invasion by alien plant species in lowland areas.

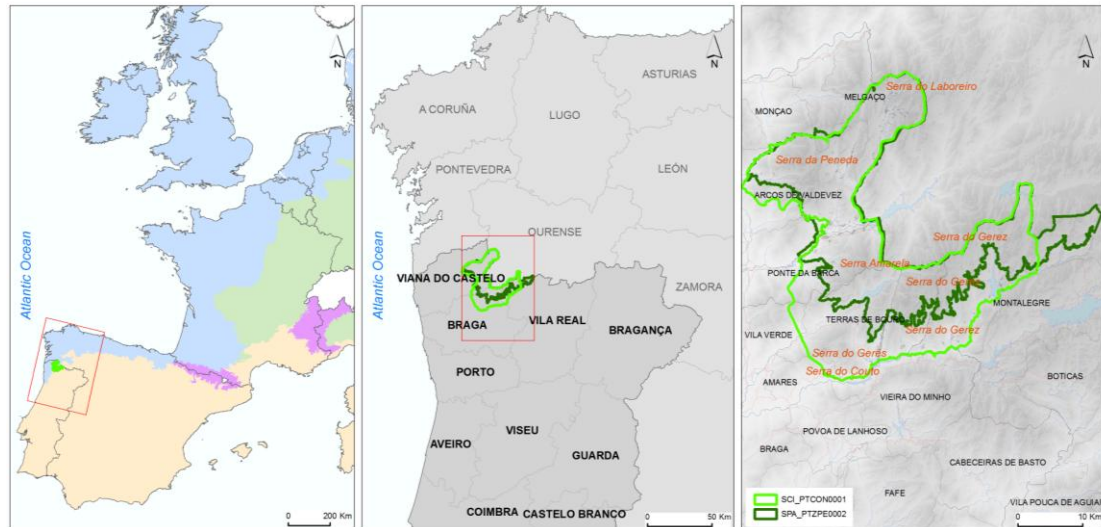


Figure 9 Geographic location and main toponyms of the “Peneda-Gerês” study site: in the European biogeographic context (left), in the NW-Iberian context (centre), and in the Northwest of Portugal (right)

Deliverable D2.2 of the project describes the test sites and details the user requirements about them. We recall here the Users' identification and description.

Users

The main user and manager of the two sites in Portugal is the Instituto da Conservação da Natureza e da Biodiversidade (**ICNB**), which is the national agency for nature protection and biodiversity conservation.

ICNB is involved in the project as an End User. The main challenges for ICNB are related to the early detection of changes on focal habitats emerging from the main current and future pressures of landscape change. Work to be developed within BIO_SOS will therefore emphasize the detection of changes in landscape mosaics, habitats and biodiversity derived from rural abandonment and invasion by alien species in and around the “Peneda-Gerês” site, and from landscape dynamics in “Rios Sabor e Maçãs” (inside and outside the site) promoted by the construction of the hydroelectric dam in the main valley.

3.5 The test Sites in the UK

Cors Fochno is an estuarine mire complex containing the largest uncut area of lowland raised bog in the UK with an active peat forming dome of ~200 ha. The Natura 2000 site is located within the Dyfi catchment, which itself is a UNESCO Biosphere area. A wide range of habitats exist within the catchment (Figure 10), with those surrounding the bog including a 'drying' sandy estuary (Dyfi estuary) with mud and sand flats, sand dunes and saltmarshes; reed swamp, wet woodland, marshy grassland and improved/semi-improved grasslands grazed mainly by cattle and ponies. The estuary itself is part of a large marine Special Area of Conservation (SAC) called Penllyn a'r Sarnau and the estuary and bog together comprise the Dyfi-Cors Fochno RAMSAR site.

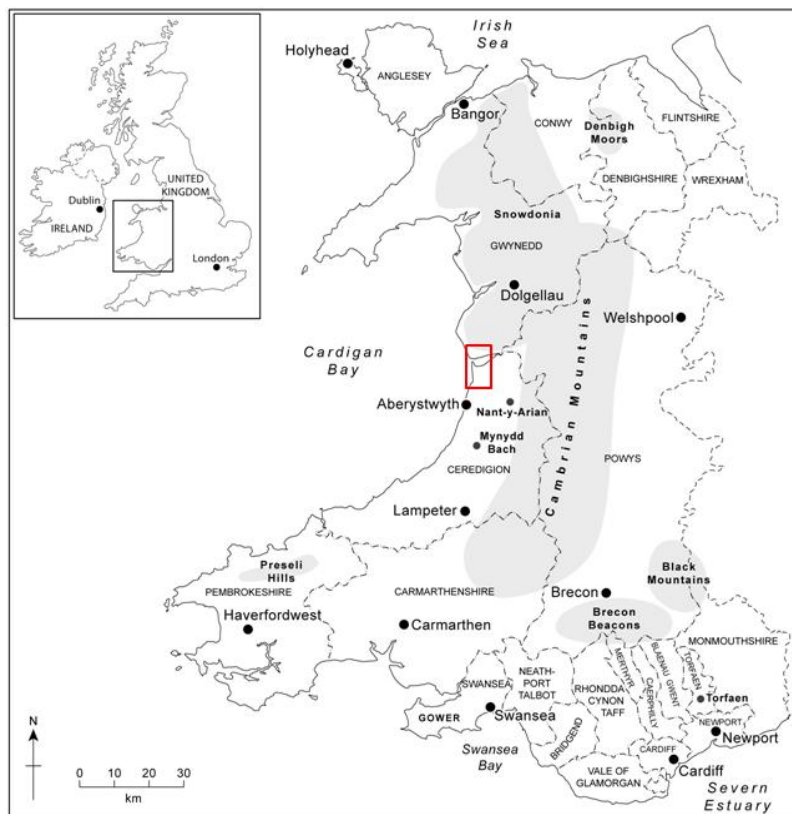


Figure 10 Location map of Cors Fochno, Wales, UK

Deliverable D2.2 describes the test sites and details the user requirements about them. We recall here the Users' identification and description.

An additional area named Cors Caron is of interest for Users. Cors Caron will be considered as a secondary site if time and resources allow.

This sequence of peat domes at Cors Caron (also known as Tregaron Bog) developed on the floodplain of the Afon (River) Teifi in mid-Wales and covers an area of around 330 ha. Cors Caron now represents the most intact surviving example in the UK of a raised bog landscape (macrotope). Cors Caron is a reserve that attracts a reasonable number of visitors, with paths, boardwalks and hides. The area

surrounding is used primarily for agriculture and forestry (primarily coniferous plantations).

Users

Countryside Council for Wales

3.6 The test Sites in the Amazon, Brazil

The Brazilian study area for BIO-SOS is located in the Western part of the Amazon basin and in the Para state of Brazil. The area is located around *Santarém*, which is a town located at the confluence of the Amazon and Tapajós rivers. The site is not a Natura 2000 site and there is no Corine Land Cover map or equivalent for this part of the world. Site BR is the Tapajós National Forest called Flona Tapajós. National Forest is part of the conservation categories defined by the Law 9,985 of 18 July 2000 of the Brazilian Federal Constitution that establishes the National System of Nature Conservation Areas (SNUC). The law stipulates the criteria and norms for the creation, implementation and management of Conservation Areas in Brazil. A Conservation Area is a territorial space with its environmental resources, including waters within its jurisdiction, with special natural characteristics, legally established by public authority for conservation objectives and with defined limits, under a special administrative regime, where appropriate guarantees of protection are in place.

The SNUC separates Conservation Units into two groups: Strict Protection and Sustainable Use areas. The purpose of Strict Protection Areas is nature protection, and only indirect use of their natural resources is permitted, with the exceptions the law itself allows, while the purpose of Sustainable Use Areas is to harmonize nature conservation with the sustainable use of components of its natural resources. Part of this second group, National Forest (Floresta Nacional – Flona) is an area with forest cover of predominantly native species. The principal objective is sustainable multiple use of forest resources and scientific research, in particular methods for the sustainable exploitation of native forests. It is publicly owned and any private properties within the area are compulsorily acquired. Traditional populations inhabiting the area at the time of its creation are able to remain in accordance with the regulations and the management plan.

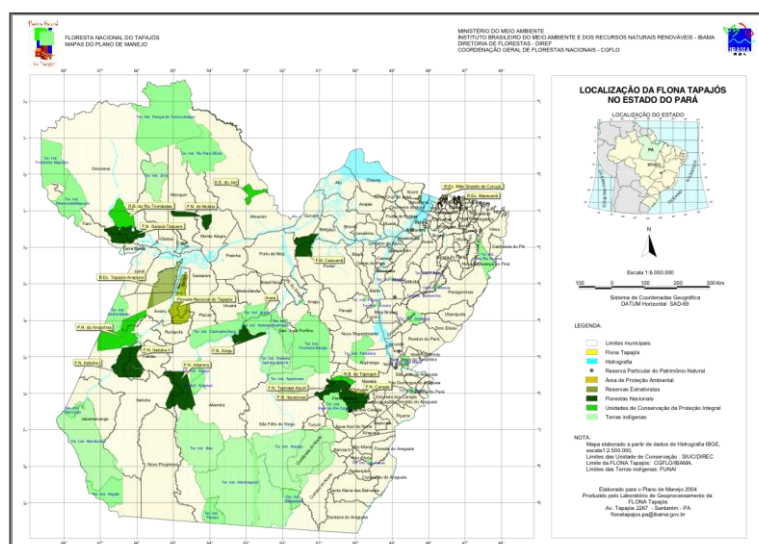


Figure 11: Localization of the Tapajós National Forest in Brazil and in the Para State

The Tapajós National Forest is surrounded by the Tapajós river on its West border and by the Cuiabá-Santarém road (BR-163) on its East side. During the last years,

this road has been instrumental in accelerating deforestation in this region of the Amazon.

The Flona Tapajos has an area of 545.000 hectares and is mainly covered by dense evergreen forest.

Users

The Management Institution of the Tapajos National Forest is the Brazilian Institute of Forest Development.

Deforestation is the main threat of this conservation unit.

The Instituto Nacional De Pesquisa Espaciais (INPE) is also interested in BIO_SOS project. INPE has signed the SLA for Brazilian sites.

Appendix 1 – Signed SLA directory

between the Service Provider

- Consortium of BIO_SOS Partner

Represented by the scientific coordinator Dr. Palma Blonda, CNR-ISSIA

and the following Users:

- Regione Puglia, Servizio Ecologia - Ufficio Parchi, Italy.

Director: Antonio Antonicelli

- Instituto da Conservação da Natureza e da Biodiversidade (ICNB), Portugal

Regional Director: Lagido Domingos

- Instituto Nacional De Pesquisa Espaciais (INPE), Brazil

Head of Amazon Regional Center: Claudio Aparecido de Almeida

- Countryside Council for Wales, UK

Director, Evidence and Advice, CCW: David Parker

- Management Body for Ekvoles & Stena Kalama & Acheronta, GR

President: Theodoros Kominos

SERVICE LEVEL AGREEMENT RELATED TO THE BIO_SOS PROJECT

This agreement is concluded between the consortium of partners participating to the BIO_SOS project, hereafter referred to as the Service Provider, represented by its *in pectore* scientific coordinator Dr. Palma Blonda, CNR-ISSIA, and Regione Puglia, Servizio Ecologia- Ufficio Parchi, hereafter referred to as the User for the duration of 30 months starting from the project kick-off date for some Natura 2000 sites located in Puglia: SPA-SCI Murgia Alta IT9120007, SPA-SCI Valloni e steppe pedegarganiche IT9110008, SPA Paludi presso il Golfo di Manfredonia IT9110038 and SPA Saline di Margherita di Savoia IT911006, SPA Le Cesine IT9150032. The agreement will be applicable only if the project proposal results in a grant agreement with the EC. In case of conflict between this Service Level Agreement and the project grant agreement with the EC, the latter will apply.

This Service Level Agreement specifies in transparent and measurable terms the services to be provided, including quality requirements, and the obligations of the Service Provider and of the User respectively.

1. Service description

BIO_SOS project will provide a prototype system for long-term biodiversity monitoring to be considered for future inclusion in the Management Authority system/procedures for biodiversity monitoring and conservation. The system will be tested on some Natura 2000 sites to provide an example of its functionality and potentiality.

2. Obligations of the Service Provider:

- The Service Provider agrees to provide the User with the service according to the Detailed Service Specifications below.
- The Service Provider agrees to ensure adequate quality control is performed.
- The Service Provider agrees to ensure validation is performed according to the agreed Validation Plan.
- The Service Provider agrees to ensure that needed technical support to the User to fully utilise the service will be provided within reasonable limits.

3. Obligations of the User:

- The User agrees to fully participate in the assessment/consolidation of user requirements.
- The User agrees to integrate the service within his operational mandate as far as practically possible.
- The User agrees to fully participate in the assessment of the utility of the service.
- The User will support the validation beyond the utility assessment, e.g. taking part in accuracy assessments.
- In-kind contribution from the user including lobbying support to access third party funding, promotion of service capabilities and utility to collaborating organisations within the same demand sector and operation and maintenance of in-situ data gathering networks and service support infrastructure (e.g. data warehouses).

4. Detailed Service Specifications

The service to be delivered by the Service Provider to the User has the following contents and characteristics:

Products:

The prototype system will provide the following updated maps and indicators :

- land cover
- vegetation map

- habitat map
- land cover change map
- habitat change map
- specific land cover class transitions (e.g. shrub and forest in arable land or in parking lots, road construction) useful to monitor anthropic pressures on biodiversity/ species, with particular attention to *Falco biarmicus feldeggii*, *Falco Naumannii* (SPA-SCI Murgia Alta IT9120007 and SPA-SCI Valloni e steppe pedegarganiche IT9110008), (SPA Paludi presso il Golfo di Manfredonia IT9110038) SPA Le Cesine IT9150032
- biodiversity indicators such as:
 - o trends in extent of selected habitats
 - o habitat connectivity/fragmentation
 - o additional products as final output of research phase (e.g. trends in invasive species from hyper spectral images on the coast depending on data availability from previous flight campaigns)

Spatial resolution of the maps will range from high (3m to 30m) to very high resolution (< 3m.) according to user requirements. This will provide:

- updated full coverage of the considered Natura 2000 sites;
- fine scale mapping of areas exposed to specific pressure (e.g. boundary areas);
- early warning of areas where on-site inspection is required

Service Area

The areas covered by this service are:

- 1) SPA-SCI Murgia Alta IT9120007 located in a hill area of Regione Puglia and its surrounding

Total extension of the SPA-SCI 1258,89 Km²

Investigation extension

Minimum 200Km² (includes *Falco biarmicus feldeggii* and *Falco naumannii* nesting sites)

Maximum 4000 Km² (includes buffer) interested by specific anthropic pressures, within and outside the site, such as fragmentation due to the transformation of 6210(*)Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (*important orchid sites) and 6220* Pseudo-steppe with grasses and annuals of the Thero-Brachypodietea habitat types into agricultural (cereal crops) areas; illegal mining; soil contamination activities

- 2) SPA-SCI Valloni e steppe pedegarganiche IT9110008, located northeastern area of Regione Puglia

Total extension of the SPA-SCI IT9120007312.02 Km²

Investigation extension

Minimum 100Km² (includes *Falco biarmicus feldeggii* and *Falco naumannii* nesting sites)

Maximum 1000 Km² (includes buffer) interested by specific anthropic pressures, such as fragmentation due to the transformation of 6220* Pseudo-steppe with grasses and annuals of the Thero-Brachypodietea habitat type grassland pasture into agricultural (cereal crops), industrial and transport infrastructure.

- 3) SPA Paludi presso il Golfo di Manfredonia IT9110038 (including SCI Zone umide della Capitanata IT9110005) and SPA Saline di Margherita di Savoia IT911006 (within SCI IT9110005) located northeastern area of Regione Puglia

Total extension of the SPA IT9110038

Investigation extension

Minimum 100 Km² (include whole SPA IT911006)

Maximum1800 Km² (include buffer) interested by specific antropic pressures on fragile ecosystems mainly caused by obliteration due to crop area expansion, agricultural activities (diffuse pollution, water contamination, water withdrawal), hunting and poaching, alien species (fish farming), insect control (mosquitos), main focus on 1150* Coastal lagoons 1510* Mediterranean salt steppes (Limonietalia) habitat types, hosting several wintering water bird species, among which *Botaurus stellaris*, *Aythya nyroca*, *Sterna albifrons*, *Larus genei*, *Larus melanocephalus*, *Phoenicopterus ruber*

4) SPA Le Cesine IT9150032 (includes SCI IT9150014)

Total extension of the SPA IT9150032 810 Km²

Investigation area

Minimum100 Km²

Maximum100 Km² (include buffer) interested by specific both large scale anthropic pressure determining marine erosion, and local scale anthropic pressure due crop area expansion at the expense of seminatural vegetation buffering the main habitat types (1150* Coastal lagoons), agricultural activities (diffuse pollution, water contamination, water withdrawal from illegal wells and consequent groundwater salinisation, pest control).

Other Deliverables

Personnel of the User will receive a 3 day training on the use of the service

Service Delivery Mode

Web-based or DVD by express mail

Delivery Schedule and Product Specifications

The products will be delivered within 30 months from the kickoff. The scale will be 1:10000 or better. The projection/reference system is: WGS 84 UTM 33.

Target Service Delivery Model

[Outsourced service or User in-house service (the Service Provider performs development and technology transfer / user capacity building in the project and plans for future revenues from maintenance and/or further development of the processing chain)]

5. Other terms: ~~NONE~~

Service Level Agreement signed by:

On behalf of ~~the User~~ (Service Provider)

[name and position]

Roberto Blasi
Coordinator of
BIO-SOS
project

On behalf of Apulia Region

Antonello Antonicelli
Director of Ecology Department
Francesca Pace
Director of Parks Office

Via delle Magnolie Z.I. - EX ENAIP -
Modugno - Bari
Telefono: 080 540 4395
Fax: 080 540 6854
E-mail: a.antonicelli@regione.puglia.it
f.pace@regione.puglia.it

SERVICE LEVEL AGREEMENT RELATED TO THE BIO_SOS PROJECT

This agreement is concluded between Instituto de Ciências e Tecnologias Agrárias e Agroalimentares (ICETA), Partner of the BIO_SOS project, and Instituto da Conservação da Natureza e da Biodiversidade (ICNB), hereafter referred to as the User, for the duration of 30 months starting from the project kick-off date, for some Natura 2000 sites located in Northern Portugal: the SPA-SCI Peneda-Gerês (PTZPE0002 and PTCON0001), and the SPA-SCI Rios Sabor e Maças (PTZPE0037 and PTCON0021). The agreement will be applicable only if the project proposal results in a grant agreement with the EC. In case of conflict between this Service Level Agreement and the project grant agreement with the EC, the latter will apply.

This Service Level Agreement specifies in transparent and measurable terms the services to be provided, including quality requirements, and the obligations of the Service Provider and of the User respectively.

1. Service description

BIO_SOS project will provide a prototype system for long-term biodiversity monitoring to be considered for future inclusion in the Management Authority system/procedures for biodiversity monitoring and conservation. The system will be tested on some Natura 2000 sites to provide an example of its functionality and potentiality.

2. Obligations of the Service Provider:

- The Service Provider agrees to provide the User with the service according to the Detailed Service Specifications below.
- The Service Provider agrees to ensure adequate quality control is performed.
- The Service Provider agrees to ensure validation is performed according to the agreed Validation Plan.
- The Service Provider agrees to ensure that needed technical support to the User to fully utilise the service will be provided within reasonable limits.

3. Obligations of the User:

- The User agrees to fully participate in the assessment/consolidation of user requirements.
- The User agrees to integrate the service within his operational mandate as far as practically possible.
- The User agrees to fully participate in the assessment of the utility of the service.
- The User will support the validation beyond the utility assessment, e.g. taking part in accuracy assessments.
- In-kind contribution from the user including lobbying support to access third party funding, promotion of service capabilities and utility to collaborating organisations within the same demand sector and operation and maintenance of in-situ data gathering networks and service support infrastructure (e.g. data warehouses).

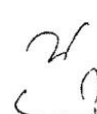
4. Detailed Service Specifications

The service to be delivered by the Service Provider to the User has the following contents and characteristics:

Products:

The prototype system will provide the following updated maps and indicators:

- land cover
- vegetation map
- habitat map
- land cover change map

- 
- habitat change map
 - specific land cover class transitions (e.g. shrub and forest in arable land, forest into heath or grassland) useful to monitor anthropic pressures on biodiversity and on target plant and animal species occurring in the sites
 - biodiversity indicators such as:
 - o trends in extent of selected habitats
 - o habitat connectivity/fragmentation

Spatial resolution of the maps will range from high (3m to 30m) to very high resolution (< 3m) according to user requirements, specific objectives, and target patterns and processes. This will provide:

- updated full coverage of the considered Natura 2000 sites;
- fine scale mapping of areas exposed to specific pressure (e.g. boundary areas);

Service Area

The areas covered by this service are:

- 1) SPA-SCI Peneda-Gerês (PTZPE0002 and PTCON0001), located in NW Portugal

Total extension of the SPA-SCI 88 845 ha (888.45 Km²)

Investigation extension

Minimum 200 Km² [includes areas of mountain rural landscapes and grazing lands suffering abandonment and wind farm construction, and extensive areas of Annex I habitats, namely native oak forests (9230), hay meadows (6510) and heath (4030), including representations of priority habitats 4020*, 6230* and 91E0*, and populations of several species listed in the Annexes of the Habitats and Birds Directives]

Maximum 2000 Km² [besides areas of mountain rural landscapes suffering abandonment and wind farm construction, extensive areas of Annex I habitats (9230, 6510, 4030), representations of priority habitats 4020*, 6230*, 6230* and 91E0*, and populations of more than 50 species listed in the Annexes of the Habitats and Birds Directives, it also includes large wilderness areas in the highest mountains, lowland areas submitted to urban development, tourism, agricultural use, forestry and invasion by alien species, as well as neighbouring areas to the Natura 2000 which enable comparison of trends between Natura 2000 and non-Natura 2000 areas]

- 2) SPA-SCI Rios Sabor e Maçãs (PTZPE0037 and PTCON0021), located in NE Portugal

Total extension of the SPA-SCI 33 476 ha (334.76 Km²)

Investigation extension

Minimum 100 Km² [includes farmland areas in plateaux and agri-pastoral areas of deep valleys suffering abandonment and/or farming specialization, hydroelectric dam construction, extensive areas of Annex I forest habitats (91B0, 92A0, 9330, 9340), representations of priority habitat 91E0* and of relict habitat 5110, as well as populations of several species listed in the Annexes of the Habitats and Birds Directives]

Maximum 1000 Km² [besides farmland areas in plateaux and agri-pastoral areas of deep valleys suffering abandonment and/or farming specialization, hydroelectric dam construction, extensive areas of Annex I forest habitats (91B0, 92A0, 9330, 9340), representations of priority habitat 91E0* and of relict habitat 5110, and populations of more than 40 species listed in the Annexes of the Habitats and Birds Directives, it also includes Natura 2000 areas not suffering the effects of hydroelectric dam construction, as well as neighbouring non-Natura 2000 suffering similar dynamics which enable comparison of trends]

Other Deliverables

Personnel of the User will receive a 3 day training on the use of the service.

Service Delivery Mode

Web-based or DVD by express mail.

Delivery Schedule and Product Specifications

The products will be delivered within 30 months from the kickoff. The scale will be 1:10000 or better. The projection/reference system is: WGS 84 UTM 33.

Target Service Delivery Model

[Outsourced service or User in-house service (the Service Provider performs development and technology transfer / user capacity building in the project and plans for future revenues from maintenance and/or further development of the processing chain)]


5. Other terms: NONE

Service Level Agreement signed by:

On behalf of BIO_SOS (the Service Provider)

Prof. José Luis IGETA Lima,
President of IGETA


On behalf of ICNB (the User)

Dr. Lagido Domingos,
Regional Director of ICNB


SERVICE LEVEL AGREEMENT RELATED TO THE BIO_SOS PROJECT

This agreement is concluded between the consortium of partners participating to the BIO_SOS project, hereafter referred to as the Service Provider, represented by its *in pectore* scientific coordinator Dr. Palma Blonda, CNR-ISSIA, and Instituto Nacional de Pesquisas Espaciais (INPE, Brazil) represented by Claudio Aparicio de Almeida (Head of the Amazon Regional Center), hereafter referred to as the User for the duration of 30 months starting from the project kick-off date for some pilot study site in western Legal Amazon.

The agreement will be applicable only if the project proposal results in a grant agreement with the EC. In case of conflict between this Service Level Agreement and the project grant agreement with the EC, the latter will apply.

This Service Level Agreement specifies in transparent and measurable terms the services to be provided, including quality requirements, and the obligations of the Service Provider and of the User respectively.

1. Service description

BIO_SOS project will provide a prototype system for long-term biodiversity monitoring to be considered for future inclusion in the Management Authority system/procedures for biodiversity monitoring and conservation. The system will be tested on some Natura 2000 sites in Europe to provide an example of its functionality and potentiality. In order to test possibility to apply the system in other types of environments, it will be also tested in the context of the Amazon tropical region of Brazil.

2. Obligations of the Service Provider:

- The Service Provider agrees to provide the User with the service according to the Detailed Service Specifications below.
- The Service Provider agrees to ensure adequate quality control is performed.
- The Service Provider agrees to ensure validation is performed according to the agreed Validation Plan.
- The Service Provider agrees to ensure that needed technical support to the User to fully utilise the service will be provided within reasonable limits.

3. Obligations of the User:

- The User agrees to fully participate in the assessment/consolidation of user requirements.
- The User agrees to fully participate in the assessment of the utility of the service.
- The User will support the validation beyond the utility assessment, e.g. taking part in accuracy assessments.
- In-kind contribution from the user including lobbying support to access third party funding, promotion of service capabilities and utility to collaborating organisations within the same demand sector and operation and maintenance of in-situ data gathering networks and service support infrastructure (e.g. data warehouses).

4. Detailed Service Specifications

The service to be delivered by the Service Provider to the User has the following contents and characteristics:

Products:

The prototype system will provide the following updated maps and indicators :

- land cover map of human-modified areas
- primary forest/human-modified mask



Spatial resolution of the maps will be 30 m according to user requirements.

Service Area

The areas covered by this service are:

Santarem region. The area is defined by the LANDSAT image WRS 227/62:

This test site concentrates a high diversity of land cover situations with a high presence of different small patches of deforestation.

Tucuroi region. The area is defined by the LANDSAT image WRS 224/63:

This area is an important place for agroforestry and has known strong degradation of pasture areas.

Service Delivery Mode

Web-based or DVD by express mail

Delivery Schedule and Product Specifications

The products will be delivered within 30 months from the kickoff. The scale will be 1:10000 or better. The projection/reference system is: WGS 84 UTM 33.

Target Service Delivery Model

[Outsourced service or User in-house service (the Service Provider performs development and technology transfer / user capacity building in the project and plans for future revenues from maintenance and/or further development of the processing chain)]

5. Other terms: NONE

Service Level Agreement signed by:

The Service Provider:



Dr. Palma Blonda
CNR-ISSIA

blonda@ha.issia.cnr.it
Tel.: +39 080 592 9433
Fax: +39 080 592 9460

The Service User:



Claudio Aparecido de Almeida
Head of Amazon Regional Centre, INPE

Trav. Dr. Enéas Pinheiro, S/N
Campus da EMBRAPA Amazônia Oriental
Belém – PA / BRASIL
claudio@dsr.inpe.br
Telephone: +55 91 32041109
Fax: +55 12 39457296

BIO_SOS Service Level Agreement

SERVICE LEVEL AGREEMENT RELATED TO THE BIO_SOS PROJECT

This agreement is concluded between the consortium of partners participating to the BIO_SOS project, hereafter referred to as the Service Provider, represented by its *in pectore* scientific coordinator Dr. Palma Blonda, CNR-ISSIA, and the Countryside Council for Wales (CCW), hereafter referred to as the User, for the duration of 30 months starting from the project kick-off date, for the two Natura 2000 sites known as Borth Bog / *Cors Fochmo* and Tregaron Bog / *Cors Caron*. In case of conflict between this Service Level Agreement and the project grant agreement with the EC, the latter will apply.

This Service Level Agreement specifies in transparent and measurable terms the services to be provided, including quality requirements, and the obligations of the Service Provider and of the User respectively.

1. Service description

BIO_SOS project will provide a prototype system for long-term biodiversity monitoring to be considered for future inclusion in the Management Authority system/procedures for biodiversity monitoring and conservation. The system will be tested on some Natura 2000 sites to provide an example of its functionality and potential.

2. Obligations of the Service Provider:

- The Service Provider agrees to provide the User with the service according to the Detailed Service Specifications below.
- The Service Provider agrees to ensure adequate quality control is performed.
- The Service Provider agrees to ensure validation is performed according to the agreed Validation Plan.
- The Service Provider agrees to ensure that needed technical support to the User to fully utilise the service will be provided within reasonable limits.

3. Obligations of the User:

- The User agrees to fully participate in the assessment/consolidation of user requirements.
- The User agrees to integrate the service within his operational mandate as far as practically possible.
- The User agrees to fully participate in the assessment of the utility of the service.
- The User will support the validation beyond the utility assessment, e.g. taking part in accuracy assessments.
- In-kind contribution from the user including lobbying support to access third party funding, promotion of service capabilities and utility to collaborating organisations within the same demand sector and operation and maintenance of in-situ data gathering networks and service support infrastructure (e.g. data warehouses).

4. Detailed Service Specifications

The service to be delivered by the Service Provider to the User has the following contents and characteristics:

Products:

The prototype system will provide the following updated maps:

- land cover
- vegetation map
- habitat map
- land cover change map
- habitat change map

BIO_SOS Service Level Agreement

- specific land cover class transitions (e.g. active raised bog to degraded raised bog; degraded raised bog \leftrightarrow *Molinia*-dominated grassland; unburnt bog \leftrightarrow burnt bog; degraded raised bog \leftrightarrow agricultural grassland; saltmarsh \leftrightarrow estuarine deposits; fixed dunes \leftrightarrow actively moving sand).

And will provide information that contributes to the monitoring of key indicators including:

- flora (e.g., *Sphagnum fuscum* and *S. imbricatum*, *S. magellanicum*, *S. recurvum*, *S. tenellum* and *S. pulchrum*, *Drosera anglica*, *Myrica gale*, *Eriophorum vaginatum* *Calluna vulgaris* and *Ulex sp*; *Phragmites australis*) and fauna (Rosy marsh moth, jumping spider, mining bee, solitary wasp, hen harrier).
- trends in extent of selected habitats
- habitat connectivity/fragmentation
- additional products as final output of research phase (e.g. trends in invasive species from optical remote sensing images)

The spatial resolution of the maps will range from high (3 m to 30 m) to very high resolution (< 3 m), according to user requirements. This will provide:

- updated full coverage of two (Cors Fochno and Cors Caron) Natura 2000 sites.
- fine scale mapping of areas exposed to specific pressure (e.g. boundary areas);
- early warning of areas where on-site inspection is required

Service Area

The areas covered by this service are:

Cors Fochno (Borth Bog) and Cors Caron (Tregaron Bog). However, Cors Fochno is the primary site and Cors Caron will be considered as a secondary site if time and resources allow.

1) Borth Bog (Cors Fochno) and the Dyfi catchment

Coordinates: 52.3 °N, -4.1 °W; UTM Zone 30 425330 E, 5817220 N

Total area of bog: 650 ha

Investigation extension

Minimum area: Cors Fochno: Raised bog, estuarine complex (saltmarsh, flats, sand dunes and coastal wetlands).

Maximum area: The Dyfi catchment.

Cors Fochno is an estuarine mire complex containing the largest uncut area of lowland raised bog in the UK with an active peat forming dome. The Natura 2000 site is located with the Dyfi catchment, which itself is a UNESCO Biosphere area. A wide range of habitats exist within the catchment, with those surrounding the bog including a 'drying' sandy estuary (Dyfi estuary) with mud and sand flats, sand dunes and saltmarshes; reed swamp, wet woodland, marshy grassland and improved/semi-improved grasslands grazed mainly by cattle and ponies. The estuary itself is part of a large marine Special Area of Conservation (SAC) called Penllyn a'r Sarnau and the estuary and bog together comprise the Dyfi-Cors Fochno RAMSAR site.

The bog is subject to threats and pressures from both human activities and natural changes. Attempts at artificial drainage, notably in the 1960s, have led to shrinkage and subsidence of the peat by up to 2 metres, while the rate of growth is only 1-2 mm a year and not enough to keep up

BIO_SOS Service Level Agreement

with rising sea level. This shrinkage has impacted on the vegetation species composition and dynamics, particularly in the margins and partly because of increased burning under drier conditions. Destruction of the saltmarsh/raised bog transitions has occurred. Encroachment of wet woodland and scrub and natural seeding are also leading to changes in plant community composition. The bog is further affected by the threats posed by human intervention (construction of flood defences, agricultural practices and the combined impacts of shrinking around the margins; sea level rise, and climate change). The site is important as it the largest extent of primary raised bog in the UK and is a rare example of estuarine raised bog. The bog is a refuge for *Sphagnum austinii* (*imbricatum*) and *S. fuscum* and other noteworthy species include *Drosera anglica* (sundew), *Andromeda polifolia* (bog rosemary) and *Rhynchospora fusca* (white beak-sedge), rosy marsh moth (*Coenophila subrosea*) and jumping spider (*Heliophanus dampfi*).

2) Cors Caron (Tregaron Bog) and the Teifi catchment

Coordinates: 52.15 °N, -3.55 °W; UTM Zone 30 462163.4122 E 5777866.0179 N)
Total area of bog: 330 ha.

Investigation extension

Minimum: Cors Caron (Tregaron Bog; 330 ha.): Raised bog
Maximum: The Teifi catchment

Cors Caron represents the most intact surviving example of a raised bog landscape (macrotope) in the UK and is located within the floodplain of the Afon (River) Teifi in mid-Wales. Whilst some species are common to both Cors Caron and Cors Fochno, there is a much lower cover of *Sphagnum* species at Cors Caron and some species (e.g., *Myrica gale*) are absent. Rare species include *Sphagnum balticum* and otter (*Lutra lutra*). The bog is also at a higher elevation but is still considered oceanic although within an upland setting. Cors Caron is currently managed by the Countryside Council for Wales (CCW) and is designated as a Special Area of Conservation (SAC), a Ramsar site and a Special Site of Scientific Interest (SSSI).

In terms of pressures and trends, of primary concern is the vulnerability of the raised bog to changes in the hydrological regime, particularly those caused by intentional drainage. Succession and encroachment (e.g., by woodland, *Molinia caerulea*) can potentially lead to a reduction in the area and function of the raised bog and control is largely through grazing and active management. Invasive species, including *Rhododendron*, also occur, and may lead to a depletion of native plant species. Much of the bog is surrounded by agricultural land and airborne (e.g., nitrogen) deposition or direct fertilisation may favour certain plant species (e.g. *Molinia*) to the detriment of others.

Other Deliverables

Personnel of the User will receive a three day training on the use of the service

Accuracy and standards

For map generation, the target is to achieve an accuracy of 80 % correct in 80 % of cases and repeated mapping every 6 years.

Service Delivery Mode

Web-based or DVD by express mail

Delivery Schedule and Product Specifications

BIO_SOS Service Level Agreement

The products will be delivered within 30 months from the kickoff. The scale will be 1:10000 or better. The projection/reference system is: WGS 84 UTM 33.

Target Service Delivery Model

Target service delivery will consider two models over the next two reporting periods: 1) User (CCW) in-house services deliver both in-situ (ground observations) and remote sensing components, with continuing support from the Service Provider for future improvements in the processing chain, and 2) CCW delivers only the in-situ component and combines this with the acquisition and pre-processing of remote sensing data out-sourced to a Service Provider. The medium-term objective will be to move the remote sensing data collection and pre-processing of as many services as possible in-house (1) as these methods become more standardised and more operationally routine.

5. Other terms: NONE

Service Level Agreement signed by:

On behalf of BIO-SOS

Palma Blonda

Palma Blonda,
Coordinator of BIO-SOS
Primo Ricercatore
CNR-ISSIA
Via Amendola 122/D
70126 BARI
Tel. +39 080 592 9433
Fax. +39 080 592 9460
blonda@ba.issia.cnr.it



On behalf of Countryside Council for Wales

David Parker

Dr David Parker
Director, Evidence and Advice, CCW

CCW
Maes-y-Ffynnon
Penrhosgarnedd
Bangor
Gwynedd
LL57 2DW

SERVICE LEVEL AGREEMENT RELATED TO THE BIO_SOS PROJECT

This agreement is concluded between the Dept. of Environmental and Natural Resources Management, UOI, partner of the BIO_SOS project, hereafter referred to as the Service Provider, represented by the scientific coordinator Prof. Dr. Panayotis Dimopoulos and the Management Body of Stenon & Ekvolon kalama kai Acheronta, represented by its President Theodoros Kominos, hereafter referred to as the User, for the duration of 30 months starting from the project kick-off date, for the following three Greek Natura 2000 sites: EKVOLES KALAMA (Kalamas Delta) (GR2120001); ELOS KALODIKI (Kalodiki Fen) (GR2120002); STENA KALAMA (Kalamas Gorge) (GR2120004). All three sites are located in the prefecture of Thesprotia in the administrative region of Epirus (NW Greece.)

In case of conflict between this Service Level Agreement and the project grant agreement with the EC, the latter will apply.

This Service Level Agreement specifies in transparent and measurable terms the services to be provided, including quality requirements, and the obligations of the Service Provider and of the User respectively.

1. Service description

The BIO_SOS project will provide a prototype system for long-term biodiversity monitoring to be considered for future inclusion in the Management Authority system/procedures for biodiversity monitoring and conservation. The system will be tested on some Natura 2000 sites to provide an example of its functionality and potential.

2. Obligations of the Service Provider

- The Service Provider agrees to provide the User with the service according to the Detailed Service Specifications below.
- The Service Provider agrees to ensure adequate quality control is performed.
- The Service Provider agrees to ensure validation is performed according to the agreed Validation Plan.
- The Service Provider agrees to ensure that needed technical support to the User to fully utilize the service will be provided within reasonable limits.

3. Obligations of the User

- The User agrees to fully participate in the assessment/consolidation of user requirements.
- The User agrees to integrate the service within his operational mandate as far as practically possible.
- The User agrees to fully participate in the assessment of the utility of the service.
- The User will support the validation beyond the utility assessment, e.g. taking part in accuracy assessments.
- In-kind contribution from the user including lobbying support to access third party funding, promotion of service capabilities and utility to collaborating organizations within the same demand sector and operation and maintenance of in-situ data gathering networks and service support infrastructure (e.g. data warehouses).

4. Detailed Service Specifications

The service to be delivered by the Service Provider to the User has the following contents and characteristics.

Products

The prototype system will provide the following updated maps:

- Land cover
- Vegetation map
- Habitat map
- Land cover change map
- Habitat change map
- Specific land cover class transitions (e.g. natural riparian woodlands and scrub to cultivated areas).
- Biodiversity indicators such as:
 - o extent and change of habitats of European interest,
 - o trend in extent of selected habitats
 - o habitat connectivity/fragmentation

The spatial resolution of the maps will range from high (3 m to 30 m) to very high resolution (< 3 m), according to user requirements. This will provide:

- updated full coverage of the considered Natura 2000 sites.
- fine scale mapping of areas exposed to specific pressure (e.g. boundary areas).

Service Area

The areas covered by this service are:

a) Ekvoles Kalama GR2120001

The total surface area of the site is 8481 ha (84.81 km²).

Investigation extent

Minimum 10 km² (including areas of aquatic vegetation, reed and tamarisk thickets, halophytic plant communities, riparian forests and wet meadows with *Juncus* sp. that are typical of the river estuaries and support a high diversity of species. Also habitat types of conservation priority like 1050* coastal lagoons are included).

Maximum 100 km² (including areas of aquatic vegetation, reed and tamarisk thickets, halophytic plant communities, riparian forests and wet meadows with *Juncus* sp. that are typical of the river estuaries and support a high diversity of species. Also habitat types of conservation priority like 1050* coastal lagoons are included).

b) Elos Kalodiki GR2120002

The total surface area of the site is 845 ha (8.45 km²).

Investigation extent

Minimum 1 km² (including the two lakes (one large and one small) present in the site also the fen consists of two proximate peatlands. The study area will include swamp and fen vegetation dominated by graminoids, sedges and forbs, communities of rooted, floating or submerged macrophytes in mesotrophic and eutrophic freshwaters, low herb communities of various habitats with wet-dry, or brackish-fresh

conditions, communities of enriched margins of still or sluggish waters and damp disturbed places, tamarisk woodlands on soils inundated with fresh water, and Mediterranean type scrubland).

Maximum 10 km² (including the two lakes (one large and one small) present in the site also the fen consists of two proximate peatlands. The study area will include swamp and fen vegetation dominated by graminoids, sedges and forbs, communities of rooted, floating or submerged macrophytes in mesotrophic and eutrophic freshwaters, low herb communities of various habitats with wet-dry, or brackish-fresh conditions, communities of enriched margins of still or sluggish waters and damp disturbed places, tamarisk woodlands on soils inundated with fresh water, and Mediterranean type scrubland).

c) Stena Kalama GR2120004

The total surface area of the site is 1867 ha (18.67 km²).

Investigation extent

Minimum 10 km² (including the vegetation of the slopes of Kalamas Gorge that consists of mixed broadleaved deciduous woodland, macchia sclerophyllous vegetation, riparian forest, and stands of *Scirpus holoschoenus* and *Carex* sp. that grow along the river near the water).

Maximum 100 km² (including the vegetation of the slopes of Kalamas Gorge that consists of mixed broadleaved deciduous woodland, macchia sclerophyllous vegetation, riparian forest, and stands of *Scirpus holoschoenus* and *Carex* sp. that grow along the river near the water).

Other Deliverables

Personnel of the User will receive a three-day training on the use of the service.

Service Delivery Mode

Web-based or DVD by express mail.

Delivery Schedule and Product Specifications

The products will be delivered within 30 months from the kickoff (June 2013). The scale will be 1:10000 or better. The projection/reference system will be WGS 84 UTM 33.

Target Service Delivery Model

[Outsourced service or User in-house service (the Service Provider performs development and technology transfer/user capacity building in the project and plans for future revenues from maintenance and/or further development of the processing chain).

5. Other terms: NONE

Service Level Agreement signed by:

On behalf of BIO_SOS (the Service
Provider)



Prof. P. D. Dimopoulos

Scientific Responsible of partner 2 (UOI)

On behalf of Management Body of
Kalamas-Kalodiki (the User)

ΦΟΡΕΑΣ ΔΙΑΧΕΙΡΙΣΗΣ
ΣΤΕΝΩΝ ΚΑΙ ΕΚΒΟΛΩΝ
ΠΟΤΑΜΩΝ

ΑΧΕΡΟΝΤΑ ΚΑΙ ΚΑΛΑΜΑ
ΕΙΡΗΝΗΣ & ΦΙΛΙΑΣ 1 - ΗΓΟΥΜΕΝΙΤΣΑ

ΑΦΜ 999957696, ΔΟΥ ΔΕΦΟΥΣ 156172
ΤΗΛ. 2895021339
Theodoros Kominos
President of the Management Body of Kalamas &
Ekvoles Kalamas & Acheroia

Appendix 2: Acronym list

CBD	Convention of Biological Diversity
CLC	CORINE Land Cover
EBONE	European Biodiversity Observation Network
EEA	European Environmental Agency
EO	Earth Observation
EUNIS	European Nature Information System
GHCs	General Habitat Categories
LC	Land Cover
LCC	Land Cover Change
N2K	Natura 2000
RS imagery	Remote Sensed imagery
SEBI	Streamlining European 2010 Biodiversity Indicators
SLA	Service Level Specification
VHR	Very High Resolution