



# INSPIRE Infrastructure for Spatial Information in Europe

## D2.8.1.9 Data Specification on Protected Sites – Draft Guidelines

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<b>Title</b>	D2.8.1.9 INSPIRE Data Specification <i>Protected Sites</i> – Draft Guidelines
<b>Creator</b>	INSPIRE Thematic Working Group Protected Sites
<b>Date</b>	2008-12-19
<b>Subject</b>	INSPIRE Data Specification for the theme <i>Protected Sites</i>
<b>Publisher</b>	INSPIRE Thematic Working Group Protected Sites
<b>Type</b>	Text
<b>Description</b>	This document describes the INSPIRE Data Specification for the theme <i>Protected Sites</i>
<b>Contributor</b>	Members of the INSPIRE Thematic Working Group Protected Sites
<b>Format</b>	Portable Document Format (pdf)
<b>Source</b>	
<b>Rights</b>	Public
<b>Identifier</b>	INSPIRE_DataSpecification_PS_v2.0.pdf
<b>Language</b>	En
<b>Relation</b>	Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)
<b>Coverage</b>	Project duration

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INSPIRE	Reference: INSPIRE_DataSpecification_PS_v2.0.pdf		
TWG-PS	Data Specification on <i>Protected sites</i>	2008-12-19	Page III

## Foreword

### How to read the document?

This document describes the INSPIRE data specification on *Protected sites* presented by the Thematic Working Group using both natural and conceptual schema language.

In order to provide a quick overview of the INSPIRE data specification process in general and the content of the data specification on *Protected sites* two executive summaries are provided. We highly recommend that managers, decision makers, politicians, and all people new in INSPIRE and/or information modelling should read these parts in first place.

The UML diagrams given in 5.2 offer a rapid way to see the main elements of the specifications and their relationships. The definition of the spatial objects, attributes, and relationships are included in the Feature Catalogue in 5.2.4. People having thematic expertise but not familiar with UML can fully understand the content of the data model focusing on the latter. Users might find especially useful the feature catalogue to check if it contains the data necessary for their applications that they run. The technical details are expected to be in prime interest of those organisations that are/will be responsible for implementation of INSPIRE within the field of *Protected sites*.

The technical provisions and the underlying concepts are often illustrated by examples. Smaller examples are within the body text of the specification, while longer explanatory examples are attached in the annexes.

In order to distinguish the INSPIRE data theme "*Protected sites*" from the protected sites spatial object type the INSPIRE data theme is written in *italics* and capital letter.

Spatial Data Interest Communities and Legally Mandated Organisations are invited to comment on the proposed structure and content of the forthcoming Implementing Rule on Interoperability of Spatial Data Sets and Services. For being able to do so we recommend that they should also read this specification and the questions of the consultation in parallel.

The document will be publicly available as a 'non-paper'. It does not represent an official position of the European Commission, and as such can not be invoked in the context of legal procedures.
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INSPIRE	Reference: INSPIRE_DataSpecification_PS_v2.0.pdf		
TWG-PS	Data Specification on <i>Protected sites</i>	2008-12-19	Page IV

## Interoperability of Spatial Data Sets and Services

### General Executive Summary

The challenges regarding the lack of availability, quality, organisation, accessibility, and sharing of spatial information are common to a large number of policies and activities and are experienced across the various levels of public authority in Europe. In order to solve these problems it is necessary to take measures of coordination between the users and providers of spatial information. The Directive 2007/2/EC of the European Parliament and of the Council adopted on 14 March 2007 aims at establishing an Infrastructure for Spatial Information in the European Community (INSPIRE) for environmental policies, or policies and activities that have an impact on the environment.

INSPIRE will be based on the infrastructures for spatial information that are created and maintained by the Member States. To support the establishment of a European infrastructure, Implementing Rules addressing the following components of the infrastructure are being specified: metadata, interoperability of spatial data themes (as described in Annexes I, II, III of the Directive) and spatial data services, network services and technologies, data and service sharing, and monitoring and reporting procedures.

INSPIRE does not require collection of new data. However, after the period specified in the Directive<sup>1</sup> Member States have to make their data available according to the Implementing Rules.

Interoperability in INSPIRE means the possibility to combine spatial data and services from different sources across the European Community in a consistent way without involving specific efforts of humans or machines. It is important to note that "interoperability" is understood as providing access to spatial data sets through network services, typically via Internet. Interoperability may be achieved by either changing (harmonising) and storing existing data sets or transforming them via services for publication in the INSPIRE infrastructure. It is expected that users will spend less time and efforts on understanding and integrating data when they build their applications based on data delivered within INSPIRE.

In order to benefit from the endeavours of international standardisation bodies and organisations established under international law their standards and technical means have been referenced, whenever possible.

To facilitate the implementation of INSPIRE, it is important that all stakeholders have the opportunity to participate its specification and development. For this reason, the Commission has put in place a consensus building process involving data users, and providers together with representatives of industry, research and government. These stakeholders, organised through Spatial Data Interest Communities (SDIC) and Legally Mandated Organisations (LMO)<sup>2</sup>, have provided reference materials, participated in the user requirement and technical<sup>3</sup> surveys, proposed experts for the Data Specification Drafting Team<sup>4</sup> and Thematic Working Groups<sup>5</sup>, expressed their views on the drafts of the technical documents of the data specification development framework<sup>6</sup> and are invited to comment the draft Implementing Rule on Interoperability of Spatial Data Sets and Services.

The development framework elaborated by the Data Specification Drafting Team aims at keeping the data specifications of the different themes coherent. It summarises the methodology to be used for the data specifications and provides a coherent set of requirements and recommendations to achieve interoperability. The pillars of the framework are four technical documents:

<sup>1</sup> For Annex I data: within two years of the adoption of the corresponding Implementing Rules for newly collected and extensively restructured data and within 5 years for other data in electronic format still in use

<sup>2</sup> Number of SDICs and LMOs on 21/11/2008 was 276 and 162 respectively

<sup>3</sup> Surveys on unique identifiers and usage of the elements of the spatial and temporal schema,

<sup>4</sup> The Data Specification Drafting Team has been composed of experts from Austria, Belgium, Czech Republic, France, Germany, Greece, Italy, Netherlands, Norway, Poland, Switzerland, UK, and the European Environmental Agency

<sup>5</sup> The Thematic Working Groups of Annex I themes have been composed of experts from Belgium, Czech Republic, Denmark, France, Finland, Germany, Hungary, Italy, Netherlands, Norway, Poland, Portugal, Slovenia, Spain, Sweden, Switzerland, UK, the European Commission, and the European Environmental Agency

<sup>6</sup> Four documents describing common principles for data specifications across all spatial data themes. See further details in the text.

INSPIRE	Reference: INSPIRE_DataSpecification_PS_v2.0.pdf		
TWG-PS	Data Specification on <i>Protected sites</i>	2008-12-19	Page V

- The Definition of Annex Themes and Scope<sup>7</sup> describes in greater detail the spatial data themes defined in the Directive, and thus provides a sound starting point for the thematic aspects of the data specification development.
- The Generic Conceptual Model<sup>8</sup> defines the elements necessary for interoperability and data harmonisation including cross-theme issues. It specifies requirements and recommendations with regard to data specification elements of common use, like the spatial and temporal schema, unique identifier management, object referencing, a generic network model, some common code lists, etc. Those requirements of the Generic Conceptual Model that are directly implementable will be included in the Implementing Rule on Interoperability of Spatial Data Sets and Services.
- The Methodology for the Development of Data Specifications<sup>9</sup> defines a repeatable methodology. It describes how to arrive from user requirements to a data specification through a number of steps including use-case development, initial specification development and analysis of analogies and gaps for further specification refinement.
- The “Guidelines for the Encoding of Spatial Data”<sup>10</sup> defines how geographic information can be encoded to enable transfer processes between the systems of the data providers in the Member States. Even though it does not specify a mandatory encoding rule it sets GML (ISO 19136) as the default encoding for INSPIRE.

Based on the data specification development framework, the Thematic Working Groups have created the INSPIRE data specification for each Annex I theme. The data specifications follow the structure of “ISO 19131 Geographic information - Data product specifications” standard. They include the technical documentation of the application schema, the spatial object types with their properties, and other specifics of the spatial data themes using natural language as well as a formal conceptual schema language<sup>11</sup>.

A consolidated model repository, feature concept dictionary, and glossary are being maintained to support the consistent specification development and potential further reuse of specification elements. The consolidated model consists of the harmonised models of the relevant standards from the ISO 19100 series, the INSPIRE Generic Conceptual Model, and the application schemas<sup>12</sup> developed for each spatial data theme. The multilingual INSPIRE Feature Concept Dictionary contains the definition and description of the INSPIRE themes together with the definition of the spatial object types present in the specification. The INSPIRE Glossary defines all the terms (beyond the spatial object types) necessary for understanding the INSPIRE documentation including the terminology of other components (metadata, network services, data sharing, and monitoring).

By listing a number of requirements and making the necessary recommendations, the data specifications enable full system interoperability across the Member States, within the scope of the application areas targeted by the Directive. They are published as technical guidelines and provide the basis for the content of the Implementing Rule on Interoperability of Spatial Data Sets and Services for data themes included in Annex I of the Directive. The Implementing Rule will be extracted from the data specifications keeping in mind short and medium term feasibility as well as cost-benefit considerations. The Implementing Rule will be legally binding for the Member States.

In addition to providing a basis for the interoperability of spatial data in INSPIRE, the data specification development framework and the thematic data specifications can be reused in other environments at local, regional, national and global level contributing to improvements in the coherence and interoperability of data in spatial data infrastructures.

<sup>7</sup> [http://inspire.jrc.ec.europa.eu/reports/ImplementingRules/DataSpecifications/D2.3\\_Definition\\_of\\_Annex\\_Themes\\_and\\_scope\\_v3.0.pdf](http://inspire.jrc.ec.europa.eu/reports/ImplementingRules/DataSpecifications/D2.3_Definition_of_Annex_Themes_and_scope_v3.0.pdf)

<sup>8</sup> [http://inspire.jrc.ec.europa.eu/reports/ImplementingRules/DataSpecifications/D2.5\\_v3.1.pdf](http://inspire.jrc.ec.europa.eu/reports/ImplementingRules/DataSpecifications/D2.5_v3.1.pdf)

<sup>9</sup> [http://inspire.jrc.ec.europa.eu/reports/ImplementingRules/DataSpecifications/D2.6\\_v3.0.pdf](http://inspire.jrc.ec.europa.eu/reports/ImplementingRules/DataSpecifications/D2.6_v3.0.pdf)

<sup>10</sup> [http://inspire.jrc.ec.europa.eu/reports/ImplementingRules/DataSpecifications/D2.7\\_v3.0.pdf](http://inspire.jrc.ec.europa.eu/reports/ImplementingRules/DataSpecifications/D2.7_v3.0.pdf)

<sup>11</sup> UML – Unified Modelling Language

<sup>12</sup> Conceptual models related to specific areas (e.g. INSPIRE themes)

INSPIRE	Reference: INSPIRE_DataSpecification_PS_v2.0.pdf		
TWG-PS	Data Specification on <i>Protected sites</i>	2008-12-19	Page VI

## ***Protected sites***

### **Executive Summary**

The Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 (INSPIRE) sets generic rules for establishing an Infrastructure for Spatial Information in the European Community. As a building block of the infrastructure, provisions on the interoperability of spatial data sets and services are foreseen. The thematic areas affected by the Directive are listed in the Annexes of the Directive.

The INSPIRE theme *Protected sites* is included in Annex I, which means that it is considered as reference data, i.e. data that constitute the spatial frame for linking and/or pointing at other information that belongs to other thematic fields. There are strong interdependencies between this and some Themes listed in Annex III that are still to be developed like Area management/restriction/regulation zones and reporting units; Bio-geographical regions; Habitats and biotopes and Species distribution.

The INSPIRE data specification on *Protected sites* has been prepared following the participative principle of a consensus building process. The stakeholders, based on their registration as a Spatial Data Interest Community (SDIC) or a Legally Mandated Organisation (LMO) had the opportunity to bring forward user requirements and reference materials, propose experts for the specification development, and to participate in the review of the data specifications. The Thematic Working Group responsible for the specification development was composed of experts coming from Germany, United Kingdom, and the European Environment Agency. The specification process took place according to the methodology elaborated for INSPIRE respecting the requirements and the recommendation of the INSPIRE Generic Conceptual Model<sup>13</sup>, which is one of the elements that ensures a coherent approach and cross theme consistency with other themes in the Directive.

The INSPIRE Directive defines a *Protected site* as an “Area designated or managed within a framework of international, Community and Member States' legislation to achieve specific conservation objectives” [Directive 2007/2/EC].

According to the International Union for the Conservation of Nature (IUCN) a protected site is an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.

Within the INSPIRE context, *Protected sites* may be located in a terrestrial or aquatic environment and under either public or private ownership. They may include localities with protection targets defined by different sectors and based on different objectives, especially dedicated to the conservation of nature, the protection and maintenance of biological diversity and of natural resources. *Protected sites* may also apply protection to person-made objects including buildings; pre-historic and historic archaeological sites; other cultural objects, or sites with specific geological, hydrogeological or geomorphological value. The Sites may receive protection due to more than one type of objective, and may have a double or multifarious designation status.

*Protected sites* may differ greatly in their reasons for protection, their designation and their management. A number of specifications for *Protected sites* exist at the national, European and international levels which were taken as reference material, e.g. the Common Database on Designated Areas and the International Union for the Conservation of Nature categories.

Examples of legislation and policies regulating protected sites are:

- the Habitats Directive (1992) (Directive 92/43/EC);
- the Birds Directive (1979) (Directive 79/409/EC);
- the Water Framework Directive (2000) (Directive 2000/60/EEC)
- the World Heritage Convention (1975);
- the Ramsar Convention (1971);
- the Barcelona Convention (1976);
- the Helsinki Convention (1974);
- the OSPAR Convention (1992)

<sup>13</sup> Both the methodology and the Generic Conceptual Model are part of the framework documents prepared by the Data Specification Drafting Team. These documents formed the basis for the data specification work of the Thematic Working Group.

INSPIRE	Reference: INSPIRE_DataSpecification_PS_v2.0.pdf		
TWG-PS	Data Specification on <i>Protected sites</i>	2008-12-19	Page VII

- the national laws of each European country and EU and international sector policies (for example, relating to forests or fisheries).

Based on the reference materials and the user requirements, the Thematic Working Group considered five use cases:

1. Generate European protected sites spatial data report, a Europe-wide application including Natura 2000 sites, for expert users including national and regional government, the European Commission and the European Environment Agency;
2. Naively query and view protected sites, applicable at local, regional and Europe-wide level, for non-expert/public users;
3. Expertly query, view, visualise and analyse of protected sites at local, regional, cross-border levels, to support environmental impact assessment and decision making;
4. Download protected sites data, for expert or semi-expert users;
5. Provide protected sites data according to EU legal obligations and data-flows (EU Member States).

The *Protected sites* model includes five categories of protected sites that can be grouped:

- three types of Sites that are designated under Natura2000 (this includes Habitat Directive and Birds Directive sites): Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Sites of Community Importance (SCI).
- sites designated under international conventions. Sites designated under the Ramsar convention are currently included as the only specific code in this category, but others may be added.
- sites that are nationally designated. The latter sites are grouped together as nationally designated sites, but additionally they have a code attached that is used within the relevant jurisdiction.

The data specification has been based, as far as possible, on existing standards. Apart from ISO standards, the TWG has also used the reference material and the user requirements, the majority of which are expressed through existing legislation as already mentioned. The specification is documented using ICT techniques such as the Unified Modelling Language (UML), Geography Markup Language (GML) and Object Constraint Language (OCL).

The Protected-Site class is the core element of the *Protected sites* model, supported by a class that represents the features for which the site is protected, including habitats and species.

Natura2000 has been used as an input into the INSPIRE *Protected Sites* Data Product Specification. Under Natura2000, Member States are required to update information on Natura2000 sites to the European Commission at least every six years. This part of the reporting process has a number of mandatory attributes. In order to fulfil the objective of allowing Member States to use the INSPIRE model to meet their Natura2000 site reporting requirements, keeping a very simple and easy way for Member States to provide their Protected Areas information, three profiles are included within the *Protected sites* data specification each for a different purpose:

- Simple: A very limited set of fundamental attributes, including geometry, identifier, name and legal foundation date and document reference. Only current Protected sites are included.
- Full: The full model including all attributes and historical as well as current Protected sites, but with most attributes being optional, so values may be omitted.
- Natura2000: The full model with all attributes and historical as well as current Protected Sites and with mandatory attributes required for updating and maintaining of Natura2000 site data by Member States. Member States may use this profile to provide Natura2000 site data.

Additional profiles specific to other purposes may be created by Member States or other European organisations and added to the model. Specific profiles may be updated as a result of decisions and agreements at European level.

In all cases, *Protected sites* have a known location, boundary and area, based on formal, legal or administrative agreements or decisions. Protected site boundaries sometimes are defined relative to cadastral boundaries. They are also often defined relative to natural boundaries, to some other feature, or approximately defined on the basis of the extent of the presence of a particular species or delineated on a map. However, all Protected Sites have distinct boundaries of their own, rather than being defined relative to some other spatial object type. This is because many Member States do not update the Protected site geometries if there are changes to cadastral or natural boundaries.

INSPIRE	Reference: INSPIRE_DataSpecification_PS_v2.0.pdf		
TWG-PS	Data Specification on <i>Protected sites</i>	2008-12-19	Page VIII

As the specification on INSPIRE *Protected sites* is the result of detailed analysis of user requirements and strong consideration of existing initiatives, it is expected that it will also give a solid element of a multi-purpose European spatial data infrastructure.

## Table of contents

<b>1</b>	<b>Scope</b> .....	<b>1</b>
<b>2</b>	<b>Overview</b> .....	<b>1</b>
2.1	Name and acronyms .....	1
2.2	Informal description.....	1
2.3	Normative References .....	2
2.4	Information about the creation of the specification .....	3
2.5	Terms and definitions .....	3
2.6	Symbols and abbreviations .....	3
2.7	Notation of requirements and recommendations.....	3
<b>3</b>	<b>Specification scopes</b> .....	<b>4</b>
<b>4</b>	<b>Identification information</b> .....	<b>4</b>
<b>5</b>	<b>Data content and structure</b> .....	<b>5</b>
5.1	General Description and Requirements.....	5
5.1.1	Narrative description.....	5
5.1.2	Consistency between spatial data sets .....	6
5.1.3	Identifier management .....	6
5.1.4	Modelling of object references.....	6
5.1.5	Geometry representation .....	7
5.1.6	Topology .....	7
5.1.7	Temporality representation .....	7
5.1.8	Protected Site Names.....	8
5.1.9	Habitats and Protected Sites .....	8
5.2	Application Schema Protected Sites.....	8
5.2.1	Modelling Requirements .....	8
5.2.2	UML Stereotypes .....	9
5.2.3	UML Application Schemas.....	10
5.2.4	<i>Protected sites</i> Feature catalogue.....	14
5.2.4.1	Spatial object types .....	15
5.2.4.1.1	OtherProtectedFeature .....	15
5.2.4.1.2	ProtectedFeature .....	15
5.2.4.1.3	ProtectedSite .....	17
5.2.4.1.4	ResponsibleAgency.....	22
5.2.4.2	Data types .....	24
5.2.4.2.1	ActivitiesAndImpactsType .....	24
5.2.4.2.2	FundingSourceType .....	24
5.2.4.2.3	IUCNCategorisationType.....	25
5.2.4.2.4	PercentageAreaCovered .....	25
5.2.4.2.5	SiteManagementPlanType .....	26
5.2.4.3	Enumerations and code lists .....	26
5.2.4.3.1	ActivityIntensityLevel .....	26
5.2.4.3.2	ActivityType .....	27
5.2.4.3.3	DesignationType.....	27
5.2.4.3.4	FundingType.....	28
5.2.4.3.5	GlobalValue .....	28
5.2.4.3.6	IUCNCategory .....	29
5.2.4.3.7	NationalDesignationType .....	30
5.2.4.3.8	NatureOfInfluence .....	30
5.2.4.3.9	Profile.....	30
5.2.4.3.10	ProtectedFeatureType.....	31
5.2.4.3.11	SiteCodeIdentifierScheme.....	31
5.2.5	Provisional Habitats and Biotopes (Annex III) Feature catalogue.....	31
5.2.5.1	Spatial object types .....	32
5.2.5.1.1	Habitat .....	32

5.2.5.2	Enumerations and code lists .....	33
5.2.5.2.1	ConservationStatusType .....	33
5.2.5.2.2	HabitatClass .....	34
5.2.5.2.3	HabitatType .....	36
5.2.5.2.4	RepresentativityType .....	36
5.2.6	Provisional Species Distribution (Annex III) Feature catalogue .....	36
5.2.6.1	Spatial object types .....	37
5.2.6.1.1	SpeciesAggregationUnit .....	37
5.2.6.1.2	SpeciesDistribution .....	37
5.2.6.2	Data types .....	39
5.2.6.2.1	RangeType .....	39
5.2.6.2.2	SpeciesPopulationType .....	40
5.2.6.2.3	UnlistedSpeciesType .....	41
5.2.6.3	Enumerations and code lists .....	41
5.2.6.3.1	IsolationType .....	41
5.2.6.3.2	SpeciesCommonalityType .....	41
5.2.6.3.3	SpeciesGroup .....	41
5.2.6.3.4	SpeciesListingReasonType .....	43
5.2.6.3.5	SpeciesType .....	43
<b>6</b>	<b>Reference systems.....</b>	<b>44</b>
6.1	Spatial reference system.....	44
6.2	Temporal reference system .....	44
<b>7</b>	<b>Data quality .....</b>	<b>44</b>
7.1	Data quality elements.....	44
7.1.1	accuracy.....	45
7.2	Completeness .....	45
7.3	Positional Accuracy.....	45
<b>8</b>	<b>Dataset-level Metadata.....</b>	<b>45</b>
8.1	graphicOverview .....	47
8.2	spatialResolution .....	48
8.3	DQ_CompletenessOmission .....	48
8.4	maintenanceAndUpdateFrequency .....	48
8.5	updateScope .....	48
8.6	featureTypes .....	48
8.7	portrayalCatalogueCitation.....	49
8.8	onLine.....	49
8.9	geographicIdentifier.....	49
8.10	profile.....	50
<b>9</b>	<b>Delivery .....</b>	<b>50</b>
9.1	Delivery medium .....	50
9.2	Encodings.....	50
9.2.1	Encoding for application schema Protected Sites Simple Profile.....	50
9.2.2	Encoding for application schema Protected Sites Full Profile .....	50
9.2.3	Encoding for application schema Protected Sites Natura2000 Profile .....	50
<b>10</b>	<b>Data Capture .....</b>	<b>50</b>
<b>11</b>	<b>Portrayal .....</b>	<b>51</b>
11.1	Layers.....	51
11.1.1	ProtectedSites.....	51
	<b>Bibliography.....</b>	<b>52</b>
	<b>Annex A (normative) Abstract Test Suite .....</b>	<b>53</b>
A.1	Test cases for mandatory conformance requirements for a dataset with this INSPIRE data specification <i>Protected sites</i> .....	53

INSPIRE	Reference: INSPIRE_DataSpecification_PS_v2.0.pdf		
TWG-PS	Data Specification on <i>Protected sites</i>	2008-12-19	Page XI

A.1.1	Data Set Compliance with the Simple Profile .....	53
A.1.2	Data Set Compliance with the Natura2000 Profile .....	54
A.1.3	Data Set Compliance with the Full Profile .....	54
<b>Annex B (normative) Styled Layer Descriptor for Protected Sites.....</b>		<b>56</b>
<b>Annex C (informative) Protected Sites Use Cases .....</b>		<b>59</b>

INSPIRE	Reference: INSPIRE_DataSpecification_PS_v2.0.pdf		
TWG-PS	Data Specification on <i>Protected sites</i>	2008-12-19	Page 1

# 1 Scope

This document specifies a harmonised data specification for the spatial data theme *Protected sites* as defined in Annex I of the INSPIRE Directive.

This data specification provides the basis for the drafting of Implementing Rules according to Article 7 (1) of the INSPIRE Directive [Directive 2007/2/EC]. The entire data specification will be published as implementation guidelines accompanying these Implementing Rules.

## 2 Overview

### 2.1 Name and acronyms

INSPIRE data specification for the theme *Protected sites*

### 2.2 Informal description

#### Definition:

Area designated or managed within a framework of international, Community and Member States' legislation to achieve specific conservation objectives [Directive 2007/2/EC].

#### Description:

According to the International Union for the Conservation of Nature (IUCN) a Protected Site is **an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.**

Within the INSPIRE context, Protected Sites may be located in terrestrial, aquatic and/or marine environments, and may be under either public or private ownership. They may include localities with protection targets defined by different sectors and based on different objectives, especially dedicated to the conservation of nature, the protection and maintenance of biological diversity and of natural resources. Protected sites may also apply protection to person-made objects including buildings; pre-historic and historic archaeological sites; other cultural objects, or sites with specific geological, hydrogeological or geomorphological value. Protected Sites may receive protection due to more than one type of objective, and may have a double or multifarious designation status.

Examples of legislation and policies regulating Protected Sites are:

- the Habitats Directive (1992) (Directive 92/43/EC);
- the Birds Directive (1979) (Directive 79/409/EC);
- the Water Framework Directive (2000) (Directive 2000/60/EEC)
- the World Heritage Convention (1975);
- the Ramsar Convention (1971);
- the Barcelona Convention (1976);
- the Helsinki Convention (1974);
- the OSPAR Convention (1992) and
- the national laws of each European country and EU and international sector policies (for example, relating to forests or fisheries).

This overview description describes a wide range of Protected Sites, but in practise, each Site differs greatly in its reasons for protection, its designation and its management. In addition to this INSPIRE Protected Data Specification, a number of other specifications for Protected Sites exist at the national, European and international levels. Natura2000 is a particularly important specification that has been used as an input into the INSPIRE *Protected sites* Data Specification and is referred to throughout this

INSPIRE	Reference: INSPIRE_DataSpecification_PS_v2.0.pdf		
TWG-PS	Data Specification on <i>Protected sites</i>	2008-12-19	Page 2

document, but a number of other specifications also informed this specification (for example, the Common Database on Designated Areas and the International Union for the Conservation of Nature categories).

This Specification identifies three profiles of Protected Sites, each with a different purpose:

- Simple: A very limited set of fundamental attributes, including geometry, identifier, name and legal foundation date and document reference. Only current Protected Sites are included.
- Full: The full model including all attributes and historical as well as current Protected Sites, but with most attributes being optional, so values may be omitted.
- Natura2000: The full model with all attributes and historical as well as current Protected Sites, and with mandatory attributes required for updating and maintaining of Natura2000 site data by Member States. Member States may use this profile to provide Natura2000 site data.

In all cases, Protected Sites have a known location, boundary and area, based on formal, legal or administrative agreements or decisions. In the INSPIRE context, all Protected Sites have distinct boundaries of their own, rather than being defined relative to some other spatial object type.

## 2.3 Normative References

Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)

Commission Regulation (EC) N° 1205/2008 of 3 December 2008 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards metadata

EN ISO 19107:2005, Geographic Information – Spatial Schema

EN ISO 19108:2005, Geographic Information – Temporal Schema

ISO 19108:2002/Cor 1:2006, Geographic Information – Temporal Schema, Technical Corrigendum 1

EN ISO 19113:2005, Geographic Information – Quality principles

EN ISO 19115:2005, Geographic Information – Metadata

ISO/TS 19138:2006, Geographic Information – Data quality measures

Habitat Directive (1992) (Directive 92/43/EEC)

Birds Directive (1979) (Directive 79/409/EEC)

Water Framework Directive (2000) (Directive 2000/60/EEC)

Ramsar Convention (1971) <http://www.ramsar.org/>

Helsinki Commission (1974) <http://www.helcom.fi/>

OSPAR Convention (1992) <http://www.ospar.org/>

World Heritage Convention (1975) <http://whc.unesco.org>

Barcelona Convention (1976) [http://www.unep.ch/regionalseas/regions/med/t\\_barcel.htm](http://www.unep.ch/regionalseas/regions/med/t_barcel.htm)

Natura2000 [http://ec.europa.eu/environment/nature/natura2000/index\\_en.htm](http://ec.europa.eu/environment/nature/natura2000/index_en.htm)

Common Database on Designated Areas  
[http://dd.eionet.europa.eu/dataset.jsp?mode=view&ds\\_id=2445](http://dd.eionet.europa.eu/dataset.jsp?mode=view&ds_id=2445)

INSPIRE	Reference: INSPIRE_DataSpecification_PS_v2.0.pdf		
TWG-PS	Data Specification on <i>Protected sites</i>	2008-12-19	Page 3

## 2.4 Information about the creation of the specification

Document title: INSPIRE Data Specification *Protected sites*  
Reference date: 2008-12-11  
Responsible party: INSPIRE TWG Protected Sites  
Language: English

## 2.5 Terms and definitions

Terms and definitions necessary for understanding this document are defined in the INSPIRE Glossary <https://inspire-registry.jrc.ec.europa.eu>. In addition the following terms and definitions are used:

### (1) Natura2000

Natura 2000 is a European Union-wide network of nature protection areas established under the 1992 [Habitats Directive](#). The aim of the network is to assure the long-term survival of Europe's most valuable and threatened species and habitats. It is comprised of Special Areas of Conservation (SAC) designated by Member States under the Habitats Directive, and also incorporates Special Protection Areas (SPAs) designated under the 1979 [Birds Directive](#). The establishment of this network of protected areas also fulfils a Community obligation under the UN Convention on Biological Diversity.

### (2) Protected Site

A Protected Site is an area designated or managed within a framework of international, Community and Member States' legislation to achieve specific conservation objectives. Protected Sites and Protected Areas are synonymous.

### (3) Protected Area

Protected Sites and Protected Areas are synonymous.

## 2.6 Symbols and abbreviations

CDDA	Common Database on Designated Areas
EU	European Union
GML	Geographic Markup Language
INSPIRE	Infrastructure for Spatial Information in Europe
IUCN	International Union for the Conservation of Nature
OSPAR	Oslo and Paris Commissions
PS	Protected Site
SDF	Standard Data Form used by Natura2000 to collect Protected Sites data.
SLD	Styled Layer Descriptor
TWG	Thematic Working Group
UML	Unified Modeling Language
UN	United Nations
URI	Unified Resource Identifier

## 2.7 Notation of requirements and recommendations

To make it easier to identify the mandatory requirements and the recommendations for spatial data sets in the text, they are highlighted and numbered.

<b>Requirement 1</b>	Requirements are shown using this style.
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**Recommendation 1** Recommendations are shown using this style.

### 3 Specification scopes

This data specification has only one scope, the general scope.

### 4 Identification information

**Table 1 – Information identifying the INSPIRE data specification *Protected sites***

Title	INSPIRE Data Specification <i>Protected sites</i>
Abstract	<p>Within the INSPIRE context, Protected Sites may be located in terrestrial, aquatic and/or marine environments, and may be under either public or private ownership. They may include localities with protection targets defined by different sectors and based on different objectives, especially dedicated to the conservation of nature, the protection and maintenance of biological diversity and of natural resources. Protected sites may also apply protection to person-made objects including buildings; pre-historic and historic archaeological sites; other cultural objects, or sites with specific geological, hydrogeological or geomorphological value. Protected Sites may receive protection due to more than one type of objective, and may have a double or multifarious designation status.</p> <p>In all cases, Protected Sites have a known location, boundary and area, based on formal, legal or administrative agreements or decisions. In some cases, Protected Site boundaries are defined relative to cadastral boundaries. However, they are also often defined relative to natural boundaries, to some other feature, or sometimes approximately defined on the basis of the extent of the presence of a particular species. However, in the INSPIRE context, all Protected Sites have distinct boundaries of their own, rather than being defined relative to some other spatial object type.</p>
Topic categories	Environment
Geographic description	<p>Protected Sites may exist in any EU Member State, and thus this Data Specification covers the whole of Europe.</p> <p>This INSPIRE Protected Sites Data Specification covers spatial data sets that relate to an area where a Member State has and/or exercises jurisdictional rights, or where no jurisdictional rights exist (that is, in marine areas outside the jurisdiction of a particular Member State).</p> <p>Member States are responsible for the management of data about Protected Sites in their own jurisdiction. Protected Sites do not cross jurisdictional boundaries, although a continuous phenomena may be protected on both sides of a national boundary by the respective countries on either side.</p> <p>Protected Sites may overlap if they are of a different designation, but do not necessarily provide complete and contiguous coverage of an entire Member State.</p>
Purpose	<p>Data products based on the Protected Sites Data Specification are intended to be used for the following purposes:</p> <ol style="list-style-type: none"> <li>1. To generate European spatial data reports.</li> <li>2. To allow the public to query and view information about Protected Sites locally and regionally.</li> <li>3. To allow experts to visualise and analyse Protected Sites locally, regionally, nationally and Europe-wide.</li> <li>4. To allow experts and semi-experts to download data from a single country, a subset of countries or across Europe.</li> </ol>

	5. To allow Member States to meet their Natura2000 reporting obligations. Annex B contains the use cases for the Protected Sites data product.
Spatial representation type	Vector
Spatial resolution	<p>Spatial resolution varies widely across different Protected Sites and is largely dictated by the method of capture and the data source. Protected Sites are normally referenced to existing mapping of the cadastre and natural features, and thus the resolution of the Protected Site depends on the resolution of the underlying data source and the method of capture (often digitisation). Typical scales of capture range from larger than 1:5,000 (accuracy less than +/-1m) to 1:100,000 (accuracy +/-25m), corresponding to the local level and regional level respectively.</p> <p style="border: 1px dashed black; padding: 5px;"><b>Recommendation 1</b> It is recommended that data products complying with the INSPIRE Protected Sites Data Specification contain the highest resolution data at the data source that the Member States can provide, as Protected Sites data may be used at a local level as well as broader scales.</p>
Supplemental information	Protected Sites are subject to a number of legislative requirements. The Natura2000 process is the most relevant of these and has had a significant influence on the model, removing some of the ability to be flexible about the inclusion or exclusion of certain data items.

## 5 Data content and structure

### 5.1 General Description and Requirements

#### 5.1.1 Narrative description

The Protected Sites Data Specification represents Protected Sites in five categories. Firstly, there are three types of Sites that are designated under Natura2000 (this includes Habitat Directive and Birds Directive sites): Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Sites of Community Importance (SCI). Secondly, there are sites designated under international conventions. Sites designated under the Ramsar convention are currently included as the only specific designation type in this category, but others may be added. Finally, there are sites that are nationally designated. The latter sites are grouped together as nationally designated sites, but additionally have a designation code attached that is used within the relevant jurisdiction.

The ProtectedSite class is the heart of the application schema, the most important complementary class containing features for which the Site is protected. Such features may include Habitats and Species. A number of additional classes are also included, all of which describe particular aspects or attributes of the central Protected Site class.

There are interdependencies between the Protected Sites Data Specification and some of the Annex III Data Specifications that are still to be developed. Specifically, the Habitats and Biotopes and Species Distribution themes contain features on which the *Protected sites* theme depends. For this reason, these two themes have been partially modelled in the process of developing this Data Specification. They have been modelled in a way that will allow future development of the themes beyond the requirements of the *Protected sites* theme, but that will support current and future use of the Protected Sites Data Specification. The Area Management/Restriction/Regulation Zones and Reporting Units and Bio-geographical Regions themes in Annex III may also prove relevant to the

INSPIRE	Reference: INSPIRE_DataSpecification_PS_v2.0.pdf		
TWG-PS	Data Specification on <i>Protected sites</i>	2008-12-19	Page 6

Protected Sites Data Specification when they are modelled, but are not addressed in this Specification directly.

Natura2000 is one of the most important Protected Sites initiatives in the European Union. Under Natura2000, Member States are required to update information on Natura2000 sites to the European Commission at least every six years. This part of the reporting process has a number of mandatory attributes. In order to meet the twin objectives of allowing Member States to use the INSPIRE model to meet their Natura2000 site reporting requirements and providing a very simple, easy option for Member States to provide their Protected Sites information to the INSPIRE process, three profiles are included within the INSPIRE Protected Sites Data Specification. Each profile is successively more constrained. All INSPIRE-compliant data sets must use one of these profiles and must specify which is used (see Requirement 1). Additional profiles specific to other purposes may be created by Member States or other European organisations. Specific profiles may be updated as a result of decisions and agreements at European level.

The profiles are as follows:

- **Simple (see Figure 1):** The simple profile contains a very limited set of fundamental attributes, including geometry, identifier, name, designation type, legal foundation date and document reference. Only current Protected Sites are included. The Simple Profile is a subset of the Full Profile and a less constrained subset of the Natura2000 profile.
- **Full (see Figure 2):** The full model including all attributes and historical as well as current Protected Sites, but with most attributes being optional, so values may be omitted.
- **Natura2000 (see Figure 3):** The full model with all attributes and historical as well as current Protected Sites, and with mandatory attributes required for updating and maintaining of Natura2000 site data by Member States. Member States may use this profile to provide Natura2000 site data. The Natura2000 Profile is the same as the Full Profile but applies additional constraints.

**Requirement 1** INSPIRE-compliant Protected Sites data sets are required to use one of the three profiles and to indicate which profile they have used in their data set metadata (see Section 8.10).

## 5.1.2 Consistency between spatial data sets

Some Protected Site boundaries are originally defined in the real world relative to cadastral or natural boundaries. These areas are defined by the approximate location of the presence of a protected object (for example, species or habitat), which may be known to exist up to a natural (most likely) or cadastral feature. However, the INSPIRE Protected Sites Data Specification models Protected Sites as absolute, not relative geometries. This is because many Member States do not update the Protected Site geometries if there are changes to cadastral or natural boundaries.

## 5.1.3 Identifier management

The Protected Sites Data Specification uses the Identifier dataType from the INSPIRE General Conceptual Model. These identifiers include version number, so can be used to track changes to an object. The use of identifiers in combination with dates is described in more detail under 'Temporality Management' below.

An additional identifier called siteCode is also included in the model as an attribute. This attribute may contain the Natura2000 site code in the case of Natura2000 sites, but may also contain the United Nations Environment Programme World Conservation Monitoring Centre identifiers (these are sometimes used for CDDA purposes), or other national identifiers, depending on the site. The accompanying siteCodeScheme attribute specifies the source of the identifier.

## 5.1.4 Modelling of object references

References between classes within the Protected Sites UML model are represented using the objectIdentifier attribute. References to data types are represented using attributes of the relevant

INSPIRE	Reference: INSPIRE_DataSpecification_PS_v2.0.pdf		
TWG-PS	Data Specification on <i>Protected sites</i>	2008-12-19	Page 7

data type. This also applies to references to other INSPIRE data themes (for example, the Geographical Names theme).

External references are represented as URIs or textual citations.

## 5.1.5 Geometry representation

**Requirement 2** All Protected Site geometries in INSPIRE-compliant Protected Sites data sets must be polygons. These may be simple, single polygons and aggregated polygons, as reflected in GM\_MultiSurface in ISO 19107, according to the shape of the actual Protected Site. That is, aggregated polygons are to be used if the Protected Site itself contains disjoint or island polygons. Simple polygon geometries are to be used if the Protected Site itself is a simple polygon.

If a site has multiple designations, different features should be provided for each designation. Protected Sites features may overlap each other, but normally only if they are of different designation types. Usually sites of the same designation type do not overlap.

## 5.1.6 Topology

Topology is not required for geometries to comply with the INSPIRE Protected Sites Data Specification.

## 5.1.7 Temporality representation

The application schema uses the attributes `beginLifespanVersion` and `endLifespanVersion` to record the lifespan of a spatial object. The attribute `beginLifespanVersion` specifies the date and time at which the version of the spatial object was inserted or changed in the spatial data set. The attribute `endLifespanVersion` specifies the date and time at which the version of the spatial object was superseded or retired in the spatial data set. When an attribute or geometry of an object changes, a new version is created repeating all of the attributes of the instance that have not changed, and providing new values for the attributes or geometries that have changed. The `objectIdentifier` attribute is also used in combination with the temporal attributes to retain the link between different versions of the same feature. New versions use the same value for `objectIdentifier.localId` and `objectIdentifier.nameSpace`, but have a new value for `objectIdentifier.version`. In this way, different versions of a single feature can be tracked through time.

The `beginLifespanVersion` and `endLifespanVersion` attributes specify the beginning of the lifespan of the version in the spatial data set itself, which is different from the temporal characteristics of the real-world phenomenon described by the spatial object. This lifespan information, if available, supports mainly two requirements: Firstly, it provides knowledge about the spatial data set content at a specific time; secondly, it provides knowledge about changes to a data set in a specific time frame. The lifespan information should be as detailed as in the data set (i.e., if the lifespan information in the data set includes seconds, the seconds should be represented in data published in INSPIRE) and include time zone information. Changes to the attribute `endLifespanVersion` do not trigger a change in the attribute `beginLifespanVersion`.

**Recommendation 2** If lifecycle information is not maintained as part of the spatial data set, all spatial objects belonging to this data set should provide a void value with a reason of "unknown". This is only permitted in the Simple profile.

In addition to these system dates, the application schema also stores the real world date on which a change to the Protected Site occurs (`legalFoundationDate`). This is independent of anything that happens in any system.

### 5.1.8 Protected Site Names

Names are an essential attribute of Protected Sites, and at least one name is mandatory. The name attribute in the ProtectedSite class uses the GeographicalName data type from the INSPIRE Geographical Names Data Specification. This data type includes a number of attributes that specify the language and pronunciation of the name.

**Recommendation 3** The language of the name should be filled in most cases, except if the data producer does not know the language of the name.

### 5.1.9 Habitats and Protected Sites

Annex 1 of the Habitat Directive specifies a number of habitat types for which a Protected Site may be established and should be protected. These habitats are an important aspect of Protected Sites and are required as part of Natura2000 reporting. Natura2000 reporting also requires that all of the habitats that exist on a Protected Site (whether protected or not) be described as part of the general information about the Site. However, these latter habitats may be described using more general categorisations.

The *Protected sites* application schemas model these two different types of connections using two different associations with the Habitat class from the Habitat and Biotopes theme:

1. The first association is through the ProtectedFeature class, and links a Protected Site with only those habitats that are protected and can be described using the categories in Annex 1 of the Habitats Directive. This association requires that the percentage of the Site covered by each habitat be described, but the total of all of these percentages may not equal 100% because the entire Site may not be covered with protected habitats.
2. The second association is a direct association between ProtectedSite and Habitat, and links a ProtectedSite with any habitats that exist on the Site, whether or not they are protected. These habitats may be fully described using the categories from Annex 1 of the Habitat Directive, but must also be described (and may only be described) using more general habitat classes specified in the Natura2000 Standard Data Form. This may be required in some cases because habitat classes may need to be determined from land cover maps or imagery and the more detailed habit type from Annex 1 of the Habitats Directive is not known. The total of the percentages of all habitats linked to a particular Protected Site through this association must equal 100%.

It is possible that the same habitat will be linked to the same Protected Site through both associations. This may occur in the case of habitats that are protected under Annex 1 of the Habitat Directive. However, this would only occur if both the habitat class and habitat type for a given habitat were known. This is not currently common due to the lack of direct mapping between the general habitat classifications required by the second association and the more specific habitat types used by Annex 1 of the Habitats Directive. It is intended that as the Habitats and Biotopes Theme is developed and Member States work towards providing data that conforms to the models used in that Theme and in the *Protected sites* theme, these two types of habitats will start to be represented in similar ways, and thus the coding systems will merge. In this case, the direct association will only need to store links to habitats that are not protected, and the combination of the links through both associations will then be used to establish the entire set of habitats that exist on a Site.

## 5.2 Application Schema Protected Sites

### 5.2.1 Modelling Requirements

**Requirement 3** Spatial data sets related to the theme *Protected sites* shall be provided using the spatial object types and data types specified in the application schema in this section.

**Requirement 4** Each spatial object shall comply with all constraints specified for its spatial object type or data types used in values of its properties, respectively.

**Recommendation 4** The reason for a void value should be provided where possible using a listed value from the VoidValueReason code list to indicate the reason for the missing value.

The application schema specifies requirements on the properties of each spatial object including its multiplicity, domain of valid values, constraints, etc. All properties have to be reported, if the relevant information is part of the data set. Most properties may be reported as "void" if the data set does not include relevant information. See the Generic Conceptual Model [INSPIRE DS-D2.5] for more details.

## 5.2.2 UML Stereotypes

In the application schemas in this section several stereotypes are used that have been defined as part of a UML profile for use in INSPIRE [INSPIRE DS-D2.5]. These are explained in Table 2 below.

**Table 2 – Stereotypes (adapted from [INSPIRE DS-D2.5])**

Stereotype	Model element	Description
applicationSchema	Package	An INSPIRE application schema according to ISO 19109 and the Generic Conceptual Model.
featureType	Class	A spatial object type.
type	Class	A conceptual, abstract type that is not a spatial object type.
dataType	Class	A structured data type without identity.
union	Class	A structured data type without identity where exactly one of the properties of the type is present in any instance.
enumeration	Class	A fixed list of valid identifiers of named literal values. Attributes of an enumerated type may only take values from this list.
codeList	Class	A flexible enumeration that uses string values for expressing a list of potential values.
placeholder	Class	A class that acts as a placeholder for a class, typically a spatial object type, that will be specified as part of an Annex II or Annex III theme. The class should at least have a definition, but can otherwise have a preliminary or no specification.

voidable	Attribute, association role	<p>If a characteristic of a spatial object is not present in the spatial data set, but may be present or applicable in the real world, the property shall receive this stereotype. If and only if a property receives this stereotype, the value of void may be used as a value of the property which shall imply that the characteristic is not present in the spatial data set, but may be present or applicable in the real world. It is possible to qualify a value of void in the data with a reason using the VoidValueReason type.</p> <p>The VoidValueReason type is a code list, which includes the following pre-defined values:</p> <ul style="list-style-type: none"> <li>- <i>Unknown</i>: The correct value for the specific spatial object is not known to, and not computable by the data provider. However, a correct value may exist. For example when the “elevation of the water body above the sea level” of a certain lake has not been measured, then the reason for a void value of this property would be ‘Unknown’. This value is applied on an object-by-object basis in a spatial data set.</li> <li>- <i>Unpopulated</i>: Same as ‘Unknown’ with the difference that the property is unknown for <u>all</u> spatial objects of that spatial object type within the spatial data set.</li> </ul> <p>NOTE It is expected that additional reasons will be identified in the future, in particular to support reasons / special values in coverage ranges.</p>
lifeCycleInfo	Attribute, association role	If in an application schema a property is considered to be part of the life-cycle information of a spatial object, the property shall receive this stereotype.
version	Association role	If in an application schema an association role ends at a spatial object type, this stereotype denotes that the value of the property is meant to be a specific version of the spatial object, not the spatial object in general.

### 5.2.3 UML Application Schemas

The application schemas contain a central class called ProtectedSite. This contains Protected Sites of all types, possibly including multiple versions (depending on the profile). Different versions of the same site can be differentiated using the objectIdentifier.

In addition to the application schemas for each of the three profiles, provisional application schemas for the two Annex III themes on which the *Protected sites* theme depends are included in this Data Specification. This is because they are essential for the use of the *Protected sites* theme, but they have not yet been fully developed and published as Data Specifications in their own right. When this occurs, they will be removed from this Specification.

Figure 1 – UML class diagram: *Protected sites* Application Schema Simple Profile

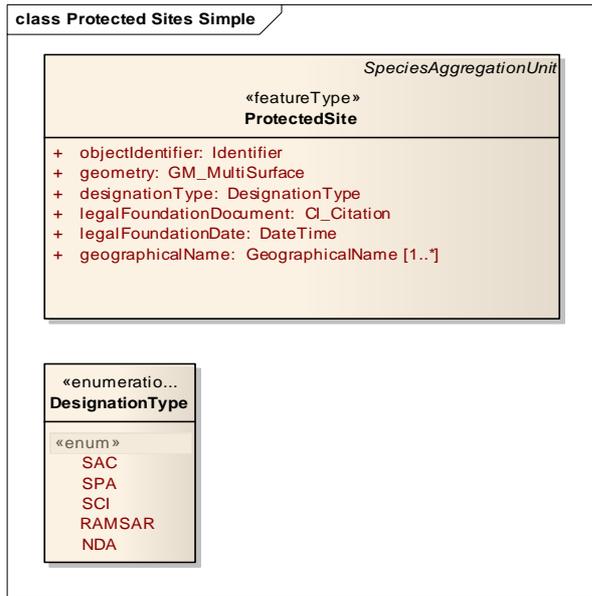


Figure 2 – UML class diagram: *Protected sites* Application Schema Full Profile

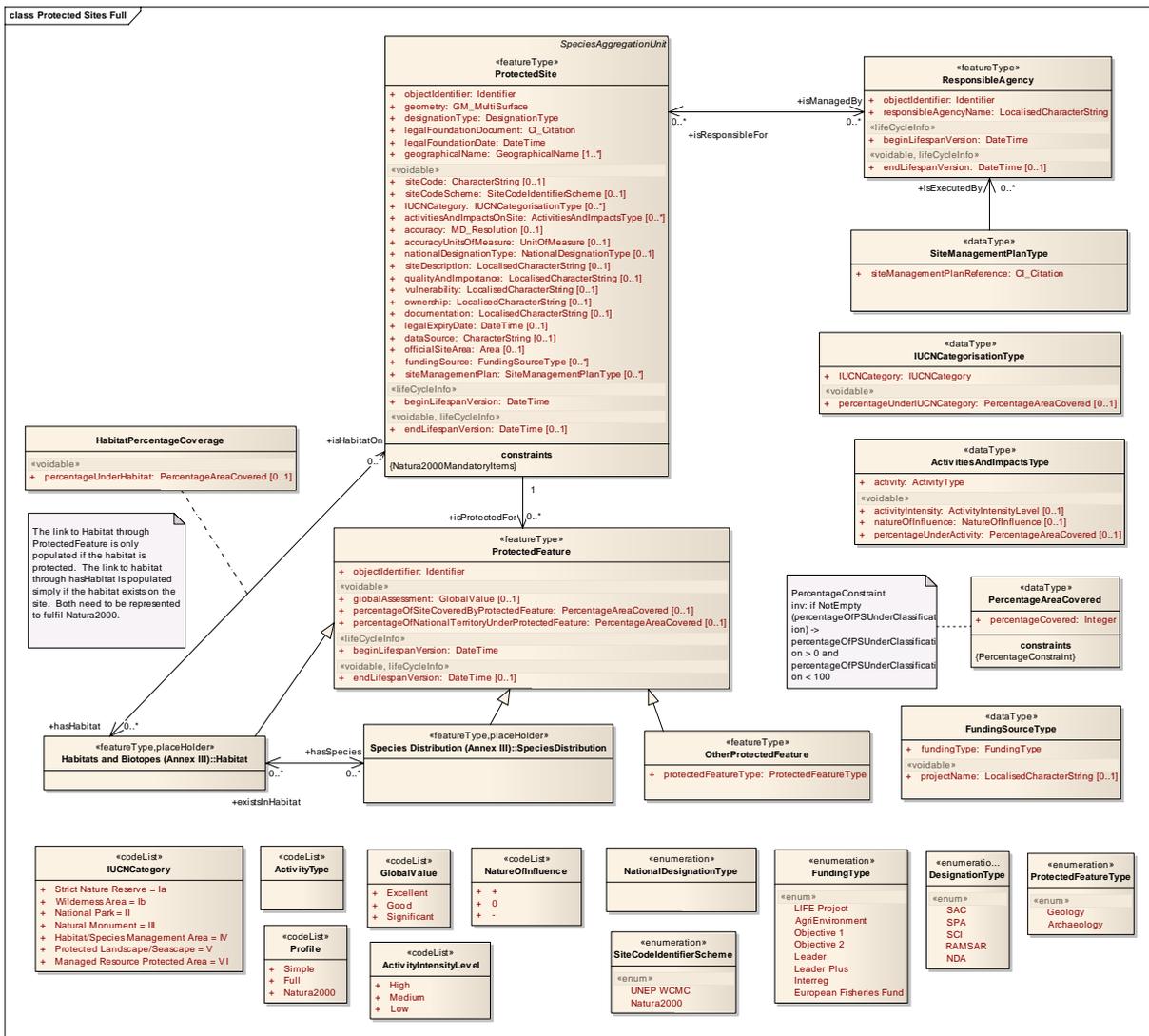
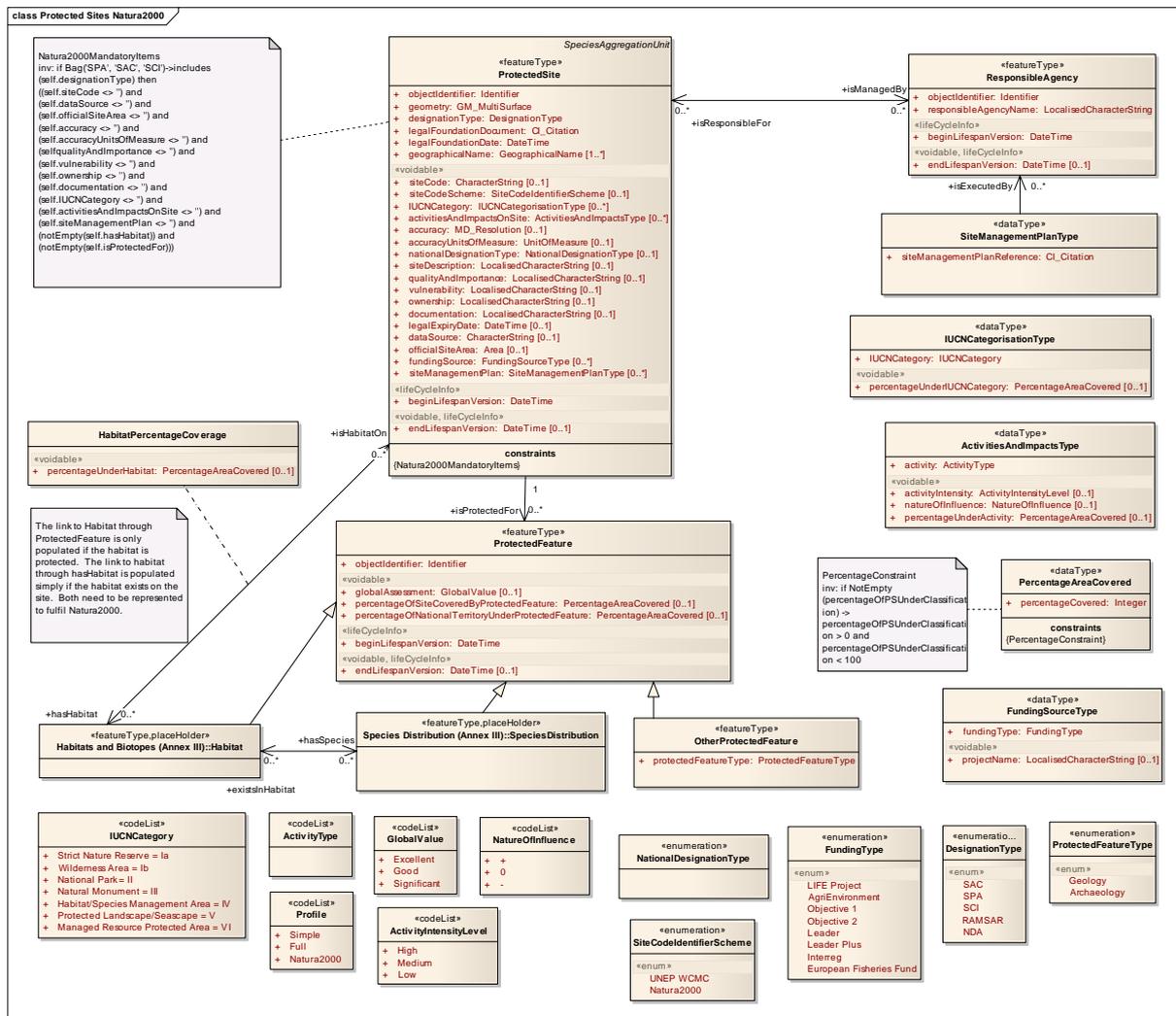
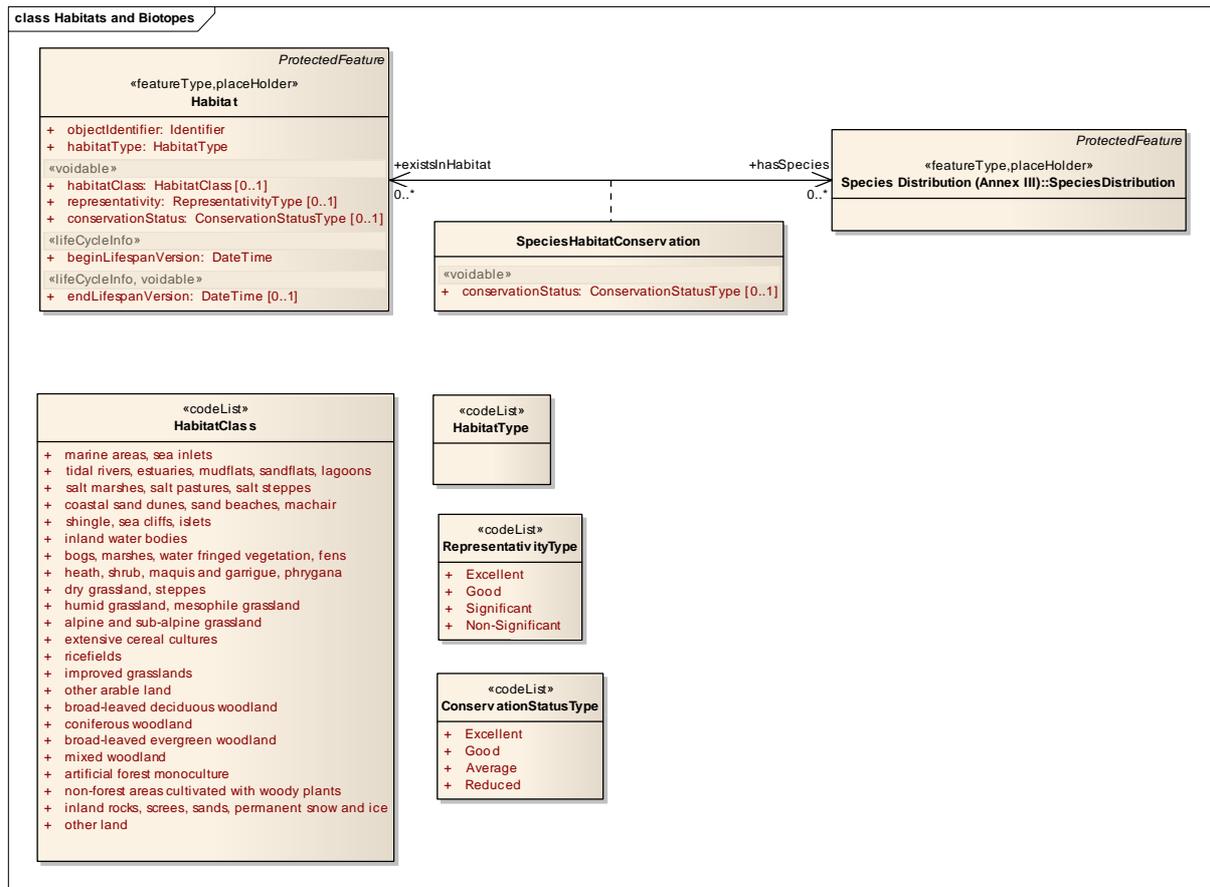


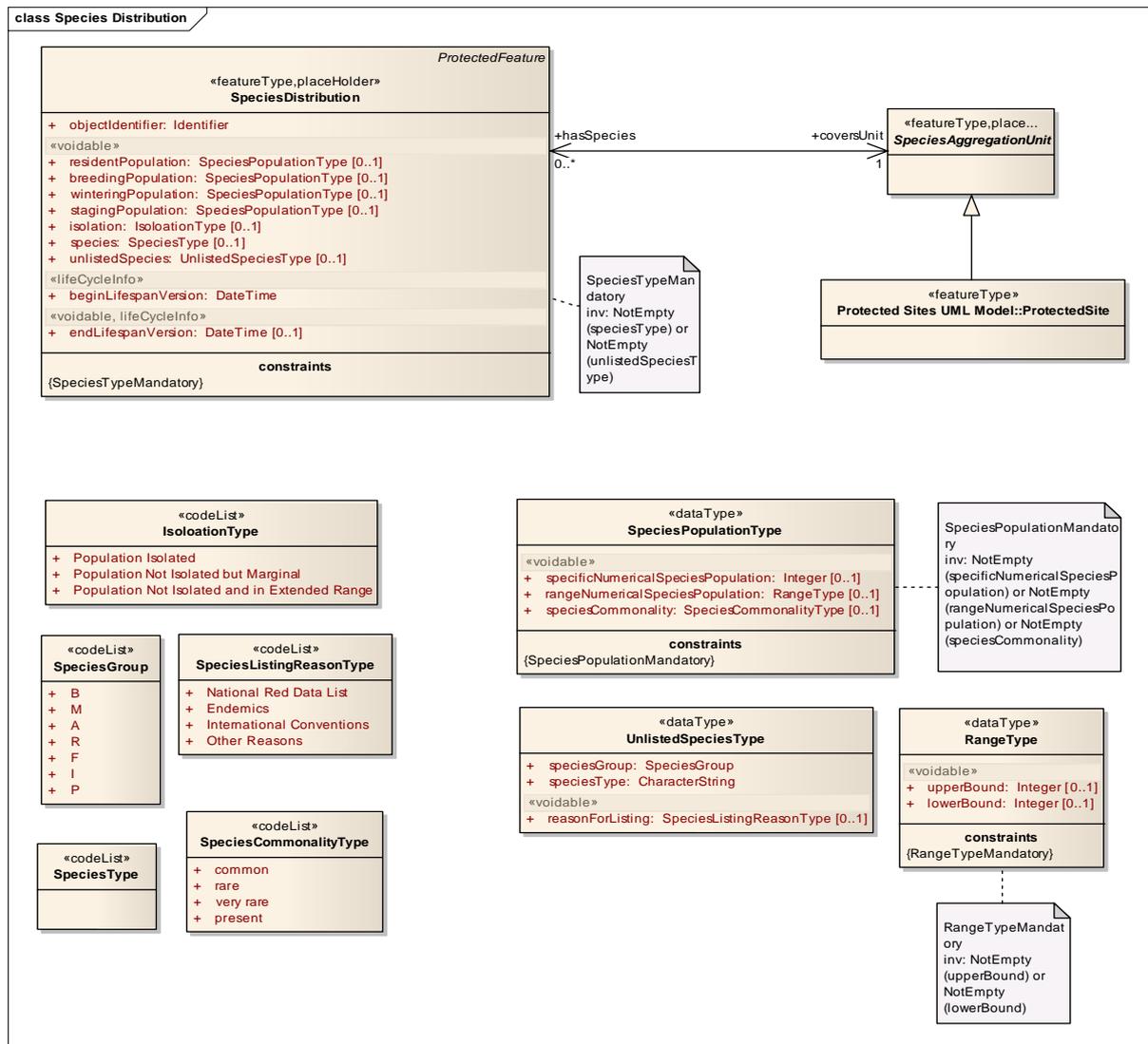
Figure 3 – UML class diagram: Protected sites Application Schema Natura2000 Profile



**Figure 4 – UML class diagram: Habitats and Biotopes Provisional Application Schema**



**Figure 5 – UML class diagram: Species Distribution Application Schema**



## 5.2.4 Protected sites Feature catalogue

**Table 3 – Feature catalogue metadata**

Feature catalogue name	INSPIRE feature catalogue Protected Sites
Scope	<i>Protected sites</i>
Field of application	Environment
Version number	2
Version date	2008-12-11
Definition source	INSPIRE Data product specification Protected Sites

**Table 4 – Types defined in the feature catalogue**

Type Name	Package Name	Stereotypes	Section
ActivitiesAndImpactsType	Protected Sites UML Model	«dataType»	
ActivityIntensityLevel	Protected Sites UML Model	«codeList»	
ActivityType	Protected Sites UML Model	«codeList»	

Type Name	Package Name	Stereotypes	Section
DesignationType	Protected Sites UML Model	«enumeration»	
FundingSourceType	Protected Sites UML Model	«dataType»	
FundingType	Protected Sites UML Model	«enumeration»	
GlobalValue	Protected Sites UML Model	«codeList»	
IUCNCategorisationType	Protected Sites UML Model	«dataType»	
IUCNCategory	Protected Sites UML Model	«codeList»	
NationalDesignationType	Protected Sites UML Model	«enumeration»	
NatureOfInfluence	Protected Sites UML Model	«codeList»	
OtherProtectedFeature	Protected Sites UML Model	«featureType»	
PercentageAreaCovered	Protected Sites UML Model	«dataType»	
Profile	Protected Sites UML Model	«codeList»	
ProtectedFeature	Protected Sites UML Model	«featureType»	
ProtectedFeatureType	Protected Sites UML Model	«enumeration»	
ProtectedSite	Protected Sites UML Model	«featureType»	
ResponsibleAgency	Protected Sites UML Model	«featureType»	
SiteCodeIdentifierScheme	Protected Sites UML Model	«enumeration»	
SiteManagementPlanType	Protected Sites UML Model	«dataType»	
SpeciesDistribution	Species Distribution (Annex III)	«featureType,placeholder»	

#### 5.2.4.1 Spatial object types

##### 5.2.4.1.1 *OtherProtectedFeature*

<b>Class: «featureType» Protected Sites UML Model.OtherProtectedFeature</b>	
Definition:	The protected feature if it is not species or habitat (for example, geological, archaeological or cultural).
Subtype of:	ProtectedFeature
Status:	Proposed
Stereotypes:	«featureType»
<b>Attribute: protectedFeatureType</b>	
Definition:	The type of protected feature.
Value type:	ProtectedFeatureType
Multiplicity:	1
Stereotypes:	

##### 5.2.4.1.2 *ProtectedFeature*

<b>Class: «featureType» Protected Sites UML Model.ProtectedFeature</b>	
Definition:	A feature that appears on the Protected Site for which is was designated as a Protected Site. Such features may include specific habitats, species and potentially geological, archaeological, cultural and other types of features.
Subtype of:	
Status:	Proposed

Stereotypes:	«featureType»
<b>Attribute: objectIdentifier</b>	
Definition:	A unique identifier for the Protected Feature.
Value type:	Identifier
Multiplicity:	1
Stereotypes:	
<b>Attribute: globalAssessment</b>	
Definition:	The value of the Site for conservation of the protected feature (species, habitat, etc) concerned.
Value type:	GlobalValue
Multiplicity:	0..1
Stereotypes:	«voidable»
<b>Attribute: percentageOfSiteCoveredByProtectedFeature</b>	
Definition:	The percentage of the total area of the Protected Site that is covered by the protected feature (habitat, species, etc). Protected features may not cover the entire Protected Site, so these percentages may not add up to 100 for a given Site.
Value type:	PercentageAreaCovered
Multiplicity:	0..1
Stereotypes:	«voidable»
<b>Attribute: percentageOfNationalTerritoryUnderProtectedFeature</b>	
Definition:	The percentage of the total occurrence of the protected feature in the national territory that appears on the Protected Site.
Value type:	PercentageAreaCovered
Multiplicity:	0..1
Stereotypes:	«voidable»
<b>Attribute: beginLifespanVersion</b>	
Definition:	The date that the object was created in the system. A new object is created each time an attribute or geometry is changed, and the beginLifespanVersion stores the date that the new object was created. The identifier data type used by the objectIdentifier attribute includes both a unique numerical identifier (localID) and version number, so any objects created with changed attributes or geometries use the same localID with a new version number. The localID, version number, beginLifespanVersion and endLifespanVersion can all be used in combination to examine the lifecycle of a given object. The beginLifespanVersion and endLifespanVersion can also be used to perform incremental updates. Refer to the full Data Specification for more detail about temporality.
Value type:	DateTime
Multiplicity:	1
Stereotypes:	«lifeCycleInfo»
<b>Attribute: endLifespanVersion</b>	
Definition:	The date that the object was expired in the system. An object is expired only when the attributes or geometry change and a new object with the new attributes and geometry is created. When the new object is created, the preceding object's endLifespanVersion is set to the same value as the new

<p>Value type:      DateTime</p> <p>Multiplicity:    0..1</p> <p>Stereotypes:     «voidable,lifeCycleInfo»</p>	<p>object's beginLifespanVersion. The identifier data type used by the objectIdentifier attribute includes both a unique numerical identifier (localID) and version number, so any objects created with changed attributes or geometries use the same localID with a new version number. The localID, version number, beginLifespanVersion and endLifespanVersion can all be used in combination to examine the lifecycle of a given Protected Area. If the endLifespanVersion is null, this indicates that the object is the current representation of the feature. The beginLifespanVersion and endLifespanVersion can also be used to perform incremental updates. Refer to the full Data Specification for more detail about temporality.</p>
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#### 5.2.4.1.3 ProtectedSite

#### **Class: «featureType» Protected Sites UML Model.ProtectedSite**

<p>Definition:</p> <p>Subtype of:</p> <p>Status:</p> <p>Stereotypes:</p>	<p>An area designated or managed within a framework of international, Community and Member States' legislation to achieve specific conservation objectives. Each Protected Site has a boundary defined through formal, legal or administrative agreements or decisions. The establishment of a Protected Site is normally underpinned by legislation and thus given weight in decisions about land use change and spatial planning. Each Site is normally selected as a representative example of a wider resource and selected through a formal criterion based approach. A Protected Site can be a contiguous extent of land/sea or a collection of discrete areas that together represent a single formal Protected Site.</p> <p>SpeciesDistribution.SpeciesAggregationUnit</p> <p>Proposed</p> <p>«featureType»</p>
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<b>Attribute: objectIdentifier</b>	
<p>Definition:</p> <p>Value type:</p> <p>Multiplicity:</p> <p>Stereotypes:</p>	<p>The unique identifier for the Protected Site.</p> <p>Identifier</p> <p>1</p>

<b>Attribute: siteCode</b>	
<p>Definition:</p> <p>Value type:</p> <p>Multiplicity:</p> <p>Stereotypes:</p>	<p>The site code used by Natura2000 (or in the case of non-Natura2000 sites, by other national or international identification systems). The scheme used for the identifier is contained in the siteCodeScheme attribute.</p> <p>CharacterString</p> <p>0..1</p> <p>«voidable»</p>

<b>Attribute: siteCodeScheme</b>	
<p>Definition:</p> <p>Value type:</p> <p>Multiplicity:</p>	<p>The identification system used for the siteCode attribute. The siteCode may be from Natura2000, from the United Nations Environment Programme World Conservation Monitoring Centre, or from some other identification scheme.</p> <p>SiteCodeIdentifierScheme</p> <p>0..1</p>

Stereotypes:	«voidable»
<b>Attribute: geometry</b>	
Definition:	The geometry defining the boundary of the Protected Site. The geometry may be determined by a wide range of methods, including surveying, digitisation or visual reference to natural features or cadastral boundaries and may be defined by the legal document that creates the protected area. The geometry included in a data set that uses this data model is stored as a fixed geometry by coordinates, not by reference to natural, cadastral or administrative boundaries, although it may originally have been defined from these.
Value type:	GM_MultiSurface
Multiplicity:	1
Stereotypes:	
<b>Attribute: IUCNCategory</b>	
Definition:	The categories of management that exist on the Protected Site, reflecting the rigour of protection and integration with other uses.
Value type:	IUCNCategorisationType
Multiplicity:	0..*
Stereotypes:	«voidable»
<b>Attribute: activitiesAndImpactsOnSite</b>	
Definition:	Impacts resulting from human activities or natural processes that positively or negatively affect the conservation status of the Protected Site. This information is needed to inform evaluation of conservation status of a Protected Site. This includes management activities such as grazing or cutting, land uses such as mineral extraction or transport and natural processes such as disease fluvial erosion.
Value type:	ActivitiesAndImpactsType
Multiplicity:	0..*
Stereotypes:	«voidable»
<b>Attribute: accuracy</b>	
Definition:	The accuracy of the Protected Site geometry. This may be converted from a scale of capture value into a positional accuracy value.
Value type:	MD_Resolution
Multiplicity:	0..1
Stereotypes:	«voidable»
<b>Attribute: accuracyUnitsOfMeasure</b>	
Definition:	The units of measure used to express the accuracy of the Protected Site geometry.
Value type:	UnitOfMeasure
Multiplicity:	0..1
Stereotypes:	«voidable»
<b>Attribute: designationType</b>	
Definition:	The type of Protected Site according to the Natura2000 codes, with the addition of the Nationally Designated Area, which refers to sites not included in Natura2000.
Value type:	DesignationType
Multiplicity:	1

Stereotypes:	
<b>Attribute: nationalDesignationType</b>	
Definition:	The designation for the Protected Site used by the country of origin. This is only populated if designationType is NDA.
Value type:	NationalDesignationType
Multiplicity:	0..1
Stereotypes:	«voidable»
<b>Attribute: siteDescription</b>	
Definition:	A general description of the Site and its characteristics (Natura2000 SDF 4.1).
Value type:	LocalisedCharacterString
Multiplicity:	0..1
Stereotypes:	«voidable»
<b>Attribute: qualityAndImportance</b>	
Definition:	An overall indication of the quality and importance of the Site, in view of the conservation objectives of the various Directives. Item 4.2 on the Natura2000 Standard Data Form
Value type:	LocalisedCharacterString
Multiplicity:	0..1
Stereotypes:	«voidable»
<b>Attribute: vulnerability</b>	
Definition:	The nature and extent of pressures on the Site from human and other influences and the fragility of habitats and ecosystems found there. Item 4.3 on the Natura2000 Standard Data Form
Value type:	LocalisedCharacterString
Multiplicity:	0..1
Stereotypes:	«voidable»
<b>Attribute: ownership</b>	
Definition:	A general description of the Site ownership (private, State, conservation NGO), etc. Item 4.5 on the Natura 2000 Standard Data Form.
Value type:	LocalisedCharacterString
Multiplicity:	0..1
Stereotypes:	«voidable»
<b>Attribute: documentation</b>	
Definition:	References to publications and scientific data concerning the Protected Site. Information entered should be made according to standard conventions for scientific references. Unpublished items or communications referring to the information given in the recording form should be included where ever useful. Item 4.6 on the Natura 2000 Standard Data Form.
Value type:	LocalisedCharacterString
Multiplicity:	0..1
Stereotypes:	«voidable»
<b>Attribute: legalFoundationDocument</b>	

<p>Definition: A URL or text citation referencing the legal act that created the Protected Site.</p> <p>Value type: CI_Citation</p> <p>Multiplicity: 1</p> <p>Stereotypes:</p>
<p><b>Attribute: legalFoundationDate</b></p> <p>Definition: The data that the Protected Site was legally created. This is the date that the real world object was created, not the date that its representation in an information system was created.</p> <p>Value type: DateTime</p> <p>Multiplicity: 1</p> <p>Stereotypes:</p>
<p><b>Attribute: legalExpiryDate</b></p> <p>Definition: The data that the Protected Site was legally destroyed. This is the date that the real world object was destroyed, not the date that its representation in an information system was destroyed or changed.</p> <p>Value type: DateTime</p> <p>Multiplicity: 0..1</p> <p>Stereotypes: «voidable»</p>
<p><b>Attribute: beginLifespanVersion</b></p> <p>Definition: The date that the object that represents the Protected Site was created in the system. A new object is created each time an attribute or geometry is changed, and the beginLifespanVersion stores the date that the new object was created. The identifier data type used by the objectIdentifier attribute includes both a unique numerical identifier (localID) and version number, so any objects created with changed attributes or geometries use the same localID with a new version number. The localID, version number, beginLifespanVersion and endLifespanVersion can all be used in combination to examine the lifecycle of a given Protected Site. The beginLifespanVersion and endLifespanVersion can also be used to perform incremental updates. Refer to the full Data Specification for more detail about temporality.</p> <p>Value type: DateTime</p> <p>Multiplicity: 1</p> <p>Stereotypes: «lifeCycleInfo»</p>
<p><b>Attribute: endLifespanVersion</b></p> <p>Definition: The date that the object that represents the Protected Site was expired in the system. An object is expired only when the attributes or geometry for the Protected Site change and a new object with the new attributes and geometry is created. When the new object is created, the preceding object's endLifespanVersion is set to the same value as the new object's beginLifespanVersion. The identifier data type used by the objectIdentifier attribute includes both a unique numerical identifier (localID) and version number, so any objects created with changed attributes or geometries use the same localID with a new version number. The localID, version number, beginLifespanVersion and endLifespanVersion can all be used in combination to examine the lifecycle of a given Protected Area. If the endLifespanVersion is null, this indicates that the object is the current representation of the Protected Area (whether or not the Protected Site itself has been expired). The beginLifespanVersion and endLifespanVersion can also be used to perform incremental updates. Refer to the full Data Specification for more detail about temporality.</p>

Value type:	DateTime
Multiplicity:	0..1
Stereotypes:	«voidable,lifeCycleInfo»
<b>Attribute: dataSource</b>	
Definition:	The agency or organisation that is responsible for maintaining and providing the data about the Protected Site. This may be represented in the form of the URL or name and address of the organisation.
Value type:	CharacterString
Multiplicity:	0..1
Stereotypes:	«voidable»
<b>Attribute: officialSiteArea</b>	
Definition:	The official, legally documented geographic area for the Protected Site. This may differ from the area determined by calculation on the basis of the stored geometry.
Value type:	Area
Multiplicity:	0..1
Stereotypes:	«voidable»
<b>Attribute: geographicalName</b>	
Definition:	The name of the Protected Site. Several names in different languages may be expressed. It is recommended that the language of the name (part of the GeographicalName data type) be filled where ever possible. This is an essential identifying attribute of a Protected Site.
Value type:	GeographicalName
Multiplicity:	1..*
Stereotypes:	
<b>Attribute: fundingSource</b>	
Definition:	The source(s) of financial support that are being used to implement the management plan on a Protected Site. Funding of management on Protected Sites is critical to securing desired conservation status. The resources are supplied from a variety of sources, ranging from private land owners to European funding schemes.
Value type:	FundingSourceType
Multiplicity:	0..*
Stereotypes:	«voidable»
<b>Attribute: siteManagementPlan</b>	
Definition:	The Site Management Plans that set out practical actions and measures that are needed to ensure that the features for which the site is designated are maintained.
Value type:	SiteManagementPlanType
Multiplicity:	0..*
Stereotypes:	«voidable»
<b>Association role: isManagedBy</b>	
Definition:	The Agency that is responsible (either entirely or in combination with other agencies) for the management of the Protected Site.
Value type:	ResponsibleAgency

Multiplicity:	0..*
Stereotypes:	
<b>Association role: isProtectedFor</b>	
Definition:	The feature or features for which the Site is protected.
Value type:	ProtectedFeature
Multiplicity:	0..*
Stereotypes:	
<b>Association role: hasHabitat</b>	
Definition:	A Habitat that exists on the Protected Site. This association simply indicates that the Habitat exists on the Site, as distinct from Habitats for which the Site is protected, that are linked to the Site through the ProtectedFeature class. Habitats for which the Site is protected may be linked through both the ProtectedFeature class and through this association (refer to Section 5.1.9 of the Data Specification for more detail),
Value type:	Habitats and Biotopes (Annex III)::Habitat
Multiplicity:	0..*
Stereotypes:	
<b>Constraint: Natura2000MandatoryItems</b>	
Natural language:	
OCL:	<pre> inv: if Bag('SPA', 'SAC', 'SCI')-&gt;includes(self.designationType) then ((self.siteCode &lt;&gt; "") and (self.dataSource &lt;&gt; "") and (self.officialSiteArea &lt;&gt; "") and (self.accuracy &lt;&gt; "") and (self.accuracyUnitsOfMeasure &lt;&gt; "") and (self.qualityAndImportance &lt;&gt; "") and (self.vulnerability &lt;&gt; "") and (self.ownership &lt;&gt; "") and (self.documentation &lt;&gt; "") and (self.IUCNCategory &lt;&gt; "") and (self.activitiesAndImpactsOnSite &lt;&gt; "") and (self.siteManagementPlan &lt;&gt; "") and (notEmpty(self.hasHabitat)) and (notEmpty(self.isProtectedFor))) </pre>

#### 5.2.4.1.4 ResponsibleAgency

<b>Class: «featureType» Protected Sites UML Model.ResponsibleAgency</b>	
Definition:	The agency, organisation or body responsible for selecting, describing and designating the Protected Area. Responsibility for establishing a Protected Area allows all interested parties to know who to liaise with over queries or requests for more detailed information on each Area. The responsible body will vary according to the basis of establishment with national governments ultimately responsible for Natura 2000 sites, down to voluntary bodies responsible for local designations or quasi-legislative Protected Areas.
Subtype of:	
Status:	Proposed
Stereotypes:	«featureType»

**Attribute: objectIdentifier**

Definition: A unique identifier for the Responsible Agency.  
Value type: Identifier  
Multiplicity: 1  
Stereotypes:

**Attribute: responsibleAgencyName**

Definition: The name of the agency responsible for managing the Protected Area.  
Value type: LocalisedCharacterString  
Multiplicity: 1  
Stereotypes:

**Attribute: beginLifespanVersion**

Definition: The date that the object was created in the system. A new object is created each time an attribute or geometry is changed, and the beginLifespanVersion stores the date that the new object was created. The identifier data type used by the objectIdentifier attribute includes both a unique numerical identifier (localID) and version number, so any objects created with changed attributes or geometries use the same localID with a new version number. The localID, version number, beginLifespanVersion and endLifespanVersion can all be used in combination to examine the lifecycle of a given object. The beginLifespanVersion and endLifespanVersion can also be used to perform incremental updates. Refer to the full Data Specification for more detail about temporality.

Value type: DateTime  
Multiplicity: 1  
Stereotypes: «lifeCycleInfo»

**Attribute: endLifespanVersion**

Definition: The date that the object was expired in the system. An object is expired only when the attributes or geometry change and a new object with the new attributes and geometry is created. When the new object is created, the preceding object's endLifespanVersion is set to the same value as the new object's beginLifespanVersion. The identifier data type used by the objectIdentifier attribute includes both a unique numerical identifier (localID) and version number, so any objects created with changed attributes or geometries use the same localID with a new version number. The localID, version number, beginLifespanVersion and endLifespanVersion can all be used in combination to examine the lifecycle of a given Protected Area. If the endLifespanVersion is null, this indicates that the object is the current representation of the feature. The beginLifespanVersion and endLifespanVersion can also be used to perform incremental updates. Refer to the full Data Specification for more detail about temporality.

Value type: DateTime  
Multiplicity: 0..1  
Stereotypes: «voidable,lifeCycleInfo»

**Association role: isResponsibleFor**

Definition: The Protected Site that is managed by the Agency.  
Value type: ProtectedSite  
Multiplicity: 0..\*  
Stereotypes:

## 5.2.4.2 Data types

### 5.2.4.2.1 *ActivitiesAndImpactsType*

<b>Class: «dataType» Protected Sites UML Model.ActivitiesAndImpactsType</b>	
Definition:	Impacts resulting from human activities or natural process that positively or negatively affect the conservation status of the Protected Site. Information needed to inform evaluation of conservation status of a Protected Site. This includes management activities such as grazing or cutting, land uses such as mineral extraction or transport and natural processes such as disease fluvial erosion.
Subtype of:	
Status:	Proposed
Stereotypes:	«dataType»
<b>Attribute: activityIntensity</b>	
Definition:	The intensity of the activity's influence on the site.
Value type:	ActivityIntensityLevel
Multiplicity:	0..1
Stereotypes:	«voidable»
<b>Attribute: natureOfInfluence</b>	
Definition:	The nature of the influence of the activity on the site (positive, negative or neutral).
Value type:	NatureOfInfluence
Multiplicity:	0..1
Stereotypes:	«voidable»
<b>Attribute: activity</b>	
Definition:	The activities that occur on the site using the Natura2000 activity types from Appendix E in the Natura 2000 explanatory notes (Standard Data Form Item 6.1).
Value type:	ActivityType
Multiplicity:	1
Stereotypes:	
<b>Attribute: percentageUnderActivity</b>	
Definition:	The percentage of the Protected Site over which the activity occurs.
Value type:	PercentageAreaCovered
Multiplicity:	0..1
Stereotypes:	«voidable»

### 5.2.4.2.2 *FundingSourceType*

<b>Class: «dataType» Protected Sites UML Model.FundingSourceType</b>	
Definition:	The source(s) of financial support that are being used to implement the management plan on a Protected Area. Funding of management on Protected Areas is critical to securing desired conservation status. The resources are supplied from a variety of sources, ranging from private land

owners to European funding schemes.
Subtype of:
Status: Proposed
Stereotypes: «dataType»
<b>Attribute: projectName</b>
Definition: The name and reference to the project that funds management of the Protected Site.
Value type: LocalisedCharacterString
Multiplicity: 0..1
Stereotypes: «voidable»
<b>Attribute: fundingType</b>
Definition: The funding type.
Value type: FundingType
Multiplicity: 1
Stereotypes:

#### 5.2.4.2.3 IUCNCategorisationType

<b>Class: «dataType» Protected Sites UML Model.IUCNCategorisationType</b>
Definition: Categories of management for Protected Areas that reflect the rigour of protection and integration with other uses. Selected from six categories defined by the IUCN to aid understanding of the range of types of protection and recognition that are applied to Protected Areas, ranging from strict areas where access is restricted to areas where sustainable practices are encouraged through integrated land use.
Subtype of:
Status: Proposed
Stereotypes: «dataType»
<b>Attribute: IUCNCategory</b>
Definition: The category covering the specified part of the Protected Area according to the International Union for Conservation of Nature Protected Area Management Categories. Refer to Part II of the Guidelines for Protected Area Management Categories.
Value type: IUCNCategory
Multiplicity: 1
Stereotypes:
<b>Attribute: percentageUnderIUCNCategory</b>
Definition: The percentage of the total Protected Site that is covered by the IUCN Category.
Value type: PercentageAreaCovered
Multiplicity: 0..1
Stereotypes: «voidable»

#### 5.2.4.2.4 PercentageAreaCovered

**Class: «dataType» Protected Sites UML Model.PercentageAreaCovered**

Definition: The percentage of a total area (whether the total Protected Site area or the total national area) covered by a particular species, habitat type or other characteristic. This is used in multiple places.

Subtype of:

Status: Proposed

Stereotypes: «dataType»

**Attribute: percentageCovered**

Definition: The actual percentage covered, relative to a total area as specified by the attribute using the data type.

Value type: Integer

Multiplicity: 1

Stereotypes:

**Constraint: PercentageConstraint**

Natural language:

OCL:           inv:       if           NotEmpty(percentageOfPSUnderClassification)       ->  
                   percentageOfPSUnderClassification > 0 and  
                   percentageOfPSUnderClassification < 100

5.2.4.2.5 *SiteManagementPlanType*

**Class: «dataType» Protected Sites UML Model.SiteManagementPlanType**

Definition: Site Management Plans are descriptions that set out practical actions and measures that are needed to ensure that the features for which the site is designated are maintained.

Subtype of:

Status: Proposed

Stereotypes: «dataType»

**Attribute: siteManagementPlanReference**

Definition: The URL or citation for a document that describes the site management plans.

Value type: CI\_Citation

Multiplicity: 1

Stereotypes:

**Association role: isExecutedBy**

Definition: The Agency that is responsible (either in part or in total) for executing the Site Management Plan.

Value type: ResponsibleAgency

Multiplicity: 0..\*

Stereotypes:

5.2.4.3 Enumerations and code lists

5.2.4.3.1 *ActivityIntensityLevel*

**Class: «codeList» Protected Sites UML Model.ActivityIntensityLevel**

Definition: A code indicating the level of intensity of the activities in and around the site.  
 Status: Proposed  
 Stereotypes: «codeList»

**Value: High**

Definition:  
 Code:

**Value: Medium**

Definition:  
 Code:

**Value: Low**

Definition:  
 Code:

5.2.4.3.2 *ActivityType*

**Class: «codeList» Protected Sites UML Model.ActivityType**

Definition: The Natura2000 activity types from Appendix E in the Natura 2000 explanatory notes (Standard Data Form Item 6.1).  
 Status: Proposed  
 Stereotypes: «codeList»

5.2.4.3.3 *DesignationType*

**Class: «enumeration» Protected Sites UML Model.DesignationType**

Definition: The type of Protected Area according to the Natura2000 codes, with the addition of the Nationally Designated Area, which refers to sites not included in Natura2000 but designated by countries or local authorities within countries. In the case of these local authorities, a local code is also included (see nationalDesignationType).  
 Status: Proposed  
 Stereotypes: «enumeration»

**Value: SAC**

Definition: Special Area of Conservation  
 Code:

**Value: SPA**

Definition: Special Protection Area  
 Code:

**Value: SCI**

Definition: Site of Community Importance  
 Code:

**Value: RAMSAR**

Definition:	Ramsar Convention
Code:	
<b>Value: NDA</b>	
Definition:	Nationally-Designated Area. Further classification may be provided in NationalDesignationType.
Code:	

#### 5.2.4.3.4 *FundingType*

<b>Class: «enumeration» Protected Sites UML Model.FundingType</b>	
Definition:	A list of possible funding types.
Status:	Proposed
Stereotypes:	«enumeration»
<b>Value: LIFE Project</b>	
Definition:	
Code:	
<b>Value: AgriEnvironment</b>	
Definition:	
Code:	
<b>Value: Objective 1</b>	
Definition:	
Code:	
<b>Value: Objective 2</b>	
Definition:	
Code:	
<b>Value: Leader</b>	
Definition:	
Code:	
<b>Value: Leader Plus</b>	
Definition:	
Code:	
<b>Value: Interreg</b>	
Definition:	
Code:	
<b>Value: European Fisheries Fund</b>	
Definition:	
Code:	

#### 5.2.4.3.5 *GlobalValue*

<b>Class: «codeList» Protected Sites UML Model.GlobalValue</b>
--

<p>Definition: A code indicating the global value of the site for conservation purposes.</p> <p>Status: Proposed</p> <p>Stereotypes: «codeList»</p>
<p><b>Value: Excellent</b></p> <p>Definition:</p> <p>Code:</p>
<p><b>Value: Good</b></p> <p>Definition:</p> <p>Code:</p>
<p><b>Value: Significant</b></p> <p>Definition:</p> <p>Code:</p>

#### 5.2.4.3.6 IUCNCategory

<p><b>Class: «codeList» Protected Sites UML Model.IUCNCategory</b></p>
<p>Definition: The classification according to the International Union for Conservation of Nature Protected Area Management Categories. Refer to Part II of the Guidelines for Protected Area Management Categories.</p> <p>Status: Proposed</p> <p>Stereotypes: «codeList»</p>
<p><b>Value: Strict Nature Reserve</b></p> <p>Definition:</p> <p>Code: Ia</p>
<p><b>Value: Wilderness Area</b></p> <p>Definition:</p> <p>Code: Ib</p>
<p><b>Value: National Park</b></p> <p>Definition:</p> <p>Code: II</p>
<p><b>Value: Natural Monument</b></p> <p>Definition:</p> <p>Code: III</p>
<p><b>Value: Habitat/Species Management Area</b></p> <p>Definition:</p> <p>Code: IV</p>
<p><b>Value: Protected Landscape/Seascape</b></p> <p>Definition:</p> <p>Code: V</p>
<p><b>Value: Managed Resource Protected Area</b></p>

Definition:	
Code:	VI

#### 5.2.4.3.7 *NationalDesignationType*

<b>Class: «enumeration» Protected Sites UML Model.NationalDesignationType</b>	
Definition:	The designation for the Protected Area used by the country of origin. This may only be populated if designationType is NDA. The NationalDesignationType uses the CDDA codes for recognised types, but new types may be added using the same system as CDDA, in which the first two characters designate the Member State.
Status:	Proposed
Stereotypes:	«enumeration»

#### 5.2.4.3.8 *NatureOfInfluence*

<b>Class: «codeList» Protected Sites UML Model.NatureOfInfluence</b>	
Definition:	A code indicating the nature of the influence of activities in and around the site.
Status:	Proposed
Stereotypes:	«codeList»
<b>Value: +</b>	
Definition:	Positive influence
Code:	
<b>Value: 0</b>	
Definition:	Neutral Influence
Code:	
<b>Value: -</b>	
Definition:	Negative Influence
Code:	

#### 5.2.4.3.9 *Profile*

<b>Class: «codeList» Protected Sites UML Model.Profile</b>	
Definition:	The profile that a INSPIRE Protected Sites data set complies with, as referenced in the metadata.
Status:	Proposed
Stereotypes:	«codeList»
<b>Value: Simple</b>	
Definition:	The INSPIRE Protected Sites Data Specification Simple Profile.
Code:	
<b>Value: Full</b>	
Definition:	The INSPIRE Protected Sites Data Specification Full Profile.
Code:	

INSPIRE	Reference: INSPIRE_DataSpecification_PS_v2.0.pdf		
TWG-PS	Data Specification on <i>Protected sites</i>	2008-12-19	Page 31

**Value: Natura2000**

Definition: The INSPIRE Protected Sites Data Specification Natura2000 Profile.

Code:

5.2.4.3.10 *ProtectedFeatureType*

**Class: «enumeration» Protected Sites UML Model.ProtectedFeatureType**

Definition: A set of types of reason for protection.

Status: Proposed

Stereotypes: «enumeration»

**Value: Geology**

Definition:

Code:

**Value: Archaeology**

Definition:

Code:

5.2.4.3.11 *SiteCodeIdentifierScheme*

**Class: «enumeration» Protected Sites UML Model.SiteCodeIdentifierScheme**

Definition: The set of possible identification schemes used for the site code for a protected area.

Status: Proposed

Stereotypes: «enumeration»

**Value: UNEP WCMC**

Definition: A site code assigned by the United Nations Environment Programme World Conservation Monitoring Centre

Code:

**Value: Natura2000**

Definition: A site code assigned under Natura2000.

Code:

## 5.2.5 Provisional Habitats and Biotopes (Annex III) Feature catalogue

Table 5 – Feature catalogue metadata

Feature catalogue name	INSPIRE feature catalogue Habitats and Biotopes
Scope	Habitats and Biotopes
Field of application	Environment
Version number	2
Version date	2008-12-11
Definition source	INSPIRE Data product specification Protected Sites

Table 6 – Types defined in the feature catalogue

Type Name	Package Name	Stereotypes	Section
ConservationStatusType	Habitats and Biotopes (Annex III)	«codeList»	

Type Name	Package Name	Stereotypes	Section
Habitat	Habitats and Biotopes (Annex III)	«featureType,placeholder»	
HabitatClass	Habitats and Biotopes (Annex III)	«codeList»	
HabitatType	Habitats and Biotopes (Annex III)	«codeList»	
RepresentativityType	Habitats and Biotopes (Annex III)	«codeList»	

## 5.2.5.1 Spatial object types

### 5.2.5.1.1 *Habitat*

<b>Class: «featureType,placeholder» Habitats and Biotopes (Annex III).Habitat</b>	
Definition:	Geographical areas characterised by specific ecological conditions, processes, structure and (life support) functions that physically support the organisms that live there. Includes terrestrial and aquatic areas distinguished by geographical, abiotic and biotic features, whether entirely natural or semi-natural. This class is a placeholder for a future feature type to be developed in the Habitats and Biotopes Theme in Annex III representing a Habitat. Many other attributes may be added to this class when the theme is properly developed as part of Annex III. Currently, only those attributes needed to support the Protected Sites theme in Annex I are included.
Subtype of:	ProtectedFeature
Status:	Proposed
Stereotypes:	«featureType,placeholder»
<b>Attribute: objectIdentifier</b>	
Definition:	The unique identifier for the Habitat.
Value type:	Identifier
Multiplicity:	1
Stereotypes:	
<b>Attribute: habitatType</b>	
Definition:	The habitat type using the habitat types included in Annex 1 of the Habitat Directive 92/43/EEC.
Value type:	HabitatType
Multiplicity:	1
Stereotypes:	
<b>Attribute: habitatClass</b>	
Definition:	The generic habitat class. The classification is used by Natura2000, item 4.1 of the Standard Data Form. This classification is similar to Habitat Type, but is more general. However, there is no simple mapping from HabitatClass to Habitat Type, and Natura 2000 requires both, so it is retained. Ultimately, however, this duplication should be addressed.
Value type:	HabitatClass
Multiplicity:	0..1
Stereotypes:	«voidable»

**Attribute: representativity**

Definition: The degree to which the habitat is typical of the full range of habitats of its type (as indicated by the habitatType attribute).

Value type: RepresentativityType

Multiplicity: 0..1

Stereotypes: «voidable»

**Attribute: conservationStatus**

Definition: The conservation status of the habitat, expressing a combination of the degree of conservation of the structure, the degree of conservation of the functions and the restoration possibilities.

Value type: ConservationStatusType

Multiplicity: 0..1

Stereotypes: «voidable»

**Attribute: beginLifespanVersion**

Definition: The date that the object that represents the Habitat was created in the system. A new object is created each time an attribute is changed, and the beginLifespanVersion stores the date that the new object was created. The identifier data type used by the objectIdentifier attribute includes both a unique numerical identifier (localID) and version number, so any objects created with changed attributes or geometries use the same localID with a new version number. The localID, version number, beginLifespanVersion and endLifespanVersion can all be used in combination to examine the lifecycle of a given Habitat. The beginLifespanVersion and endLifespanVersion can also be used to perform incremental updates.

Value type: DateTime

Multiplicity: 1

Stereotypes: «lifeCycleInfo»

**Attribute: endLifespanVersion**

Definition: The date that the object that represents the Habitat was expired in the system. An object is expired only when the attributes change and a new object with the new attributes is created. When the new object is created, the preceding object's endLifespanVersion is set to the same value as the new object's beginLifespanVersion. The identifier data type used by the objectIdentifier attribute includes both a unique numerical identifier (localID) and version number, so any objects created with changed attributes or geometries use the same localID with a new version number. The localID, version number, beginLifespanVersion and endLifespanVersion can all be used in combination to examine the lifecycle of a given Habitat. If the endLifespanVersion is null, this indicates that the object is the current representation of the Habitat (whether or not the Habitat itself has been expired). The beginLifespanVersion and endLifespanVersion can also be used to perform incremental updates.

Value type: DateTime

Multiplicity: 0..1

Stereotypes: «lifeCycleInfo,voidable»

5.2.5.2 Enumerations and code lists

5.2.5.2.1 *ConservationStatusType*

**Class: «codeList» Habitats and Biotopes (Annex III).ConservationStatusType**

Definition:	The possible code that may be used to describe the conservation status of the site, expressing a combination of the degree of conservation of the structure, the degree of conservation of the functions and the restoration possibilities.
Status:	Proposed
Stereotypes:	«codeList»
<b>Value: Excellent</b>	
Definition:	
Code:	
<b>Value: Good</b>	
Definition:	
Code:	
<b>Value: Average</b>	
Definition:	
Code:	
<b>Value: Reduced</b>	
Definition:	
Code:	

#### 5.2.5.2.2 *HabitatClass*

<b>Class: «codeList» Habitats and Biotopes (Annex III).HabitatClass</b>	
Definition:	The generic habitat class. The classification is used by Natura2000, item 4.1 of the Standard Data Form. This classification is similar to Habitat Type, but is more general. However, there is no simple mapping from Habitat Class to Habitat Type, and Natura 2000 requires both, so it is retained. Ultimately, however, this duplication should be addressed.
Status:	Proposed
Stereotypes:	«codeList»
<b>Value: marine areas, sea inlets</b>	
Definition:	
Code:	
<b>Value: tidal rivers, estuaries, mudflats, sandflats, lagoons</b>	
Definition:	
Code:	
<b>Value: salt marshes, salt pastures, salt steppes</b>	
Definition:	
Code:	
<b>Value: coastal sand dunes, sand beaches, machair</b>	
Definition:	
Code:	
<b>Value: shingle, sea cliffs, islets</b>	
Definition:	
Code:	
<b>Value: inland water bodies</b>	
Definition:	

Code:
<b>Value: bogs, marshes, water fringed vegetation, fens</b> Definition: Code:
<b>Value: heath, shrub, maquis and garrigue, phrygana</b> Definition: Code:
<b>Value: dry grassland, steppes</b> Definition: Code:
<b>Value: humid grassland, mesophile grassland</b> Definition: Code:
<b>Value: alpine and sub-alpine grassland</b> Definition: Code:
<b>Value: extensive cereal cultures</b> Definition: Code:
<b>Value: ricefields</b> Definition: Code:
<b>Value: improved grasslands</b> Definition: Code:
<b>Value: other arable land</b> Definition: Code:
<b>Value: broad-leaved deciduous woodland</b> Definition: Code:
<b>Value: coniferous woodland</b> Definition: Code:
<b>Value: broad-leaved evergreen woodland</b> Definition: Code:
<b>Value: mixed woodland</b> Definition: Code:
<b>Value: artificial forest monoculture</b> Definition: Code:

**Value: non-forest areas cultivated with woody plants**

Definition:

Code:

**Value: inland rocks, screes, sands, permanent snow and ice**

Definition:

Code:

**Value: other land**

Definition:

Code:

#### 5.2.5.2.3 *HabitatType*

**Class: «codeList» Habitats and Biotopes (Annex III).HabitatType**

Definition: A set of codes to indicate the habitat type using the Natura 2000 habitat types under Annex 1 of the Habitat Directive 92/43/EEC. The code values may be found at:  
<http://converters.eionet.europa.eu/xmlfile/habitats.xml> and  
[http://converters.eionet.europa.eu/xmlfile/habitats\\_per\\_ms\\_and\\_bg.xml](http://converters.eionet.europa.eu/xmlfile/habitats_per_ms_and_bg.xml)

Status: Proposed

Stereotypes: «codeList»

#### 5.2.5.2.4 *RepresentativityType*

**Class: «codeList» Habitats and Biotopes (Annex III).RepresentativityType**

Definition: A code indicating how typical the site is of the habitat type described (for which is it protected).

Status: Proposed

Stereotypes: «codeList»

**Value: Excellent**

Definition:

Code:

**Value: Good**

Definition:

Code:

**Value: Significant**

Definition:

Code:

**Value: Non-Significant**

Definition:

Code:

## 5.2.6 Provisional Species Distribution (Annex III) Feature catalogue

Table 7 – Feature catalogue metadata

Feature catalogue name	INSPIRE feature catalogue Species Distribution
Scope	Species Distribution
Field of application	Environment
Version number	2

Version date	2008-12-11
Definition source	INSPIRE Data product specification Protected Sites

**Table 8 – Types defined in the feature catalogue**

Type Name	Package Name	Stereotypes	Section
IsolationType	Species Distribution (Annex III)	«codeList»	
RangeType	Species Distribution (Annex III)	«dataType»	
SpeciesAggregationUnit	Species Distribution (Annex III)	«featureType,placeholder»	
SpeciesCommonalityType	Species Distribution (Annex III)	«codeList»	
SpeciesDistribution	Species Distribution (Annex III)	«featureType,placeholder»	
SpeciesGroup	Species Distribution (Annex III)	«codeList»	
SpeciesListingReasonType	Species Distribution (Annex III)	«codeList»	
SpeciesPopulationType	Species Distribution (Annex III)	«dataType»	
SpeciesType	Species Distribution (Annex III)	«codeList»	
UnlistedSpeciesType	Species Distribution (Annex III)	«dataType»	

### 5.2.6.1 Spatial object types

#### 5.2.6.1.1 *SpeciesAggregationUnit*

<b>AbstractClass: «featureType» Species Distribution (Annex III).SpeciesAggregationUnit</b>	
Definition:	The aggregation unit over which the species is distributed. This model only includes ProtectedSite as an aggregation unit, but others may be added in the future (for example, administrative units and grid units).
Subtype of:	
Status:	Proposed
Stereotypes:	«featureType»
<b>Association role: hasSpecies</b>	
Definition:	The distribution of species over the particular aggregation unit.
Value type:	Species Distribution (Annex III)::SpeciesDistribution
Multiplicity:	0..*
Stereotypes:	

#### 5.2.6.1.2 *SpeciesDistribution*

<b>Class: «featureType,placeholder» Species Distribution (Annex III).SpeciesDistribution</b>	
Definition:	The geographical distribution of occurrence of animal or plant species aggregated by grid, region, administrative unit or other analytical unit. A placeholder for a feature type in the Annex III Species Distribution theme. Many other attributes may be added to this class when the theme is properly developed as part of Annex III. Currently, only those attributes needed to support the Protected Sites theme in Annex I are included.
Subtype of:	ProtectedFeature
Status:	Proposed
Stereotypes:	«featureType,placeholder»
<b>Attribute: objectIdentifier</b>	

<p>Definition: A unique identifier for the species distribution.</p> <p>Value type: Identifier</p> <p>Multiplicity: 1</p> <p>Stereotypes:</p>
<p><b>Attribute: residentPopulation</b></p> <p>Definition: The population of the species in the aggregation unit. This may be a single number, a range, a lower or upper limit or a character from SpeciesPopulationType.</p> <p>Value type: SpeciesPopulationType</p> <p>Multiplicity: 0..1</p> <p>Stereotypes: «voidable»</p>
<p><b>Attribute: breedingPopulation</b></p> <p>Definition: The population of the species that is breeding in the aggregation unit. This may be a single number, a range, a lower or upper limit or a character from SpeciesPopulationType.</p> <p>Value type: SpeciesPopulationType</p> <p>Multiplicity: 0..1</p> <p>Stereotypes: «voidable»</p>
<p><b>Attribute: winteringPopulation</b></p> <p>Definition: The population of the species that is wintering in the aggregation unit. This may be a single number, a range, a lower or upper limit or a character from SpeciesPopulationType.</p> <p>Value type: SpeciesPopulationType</p> <p>Multiplicity: 0..1</p> <p>Stereotypes: «voidable»</p>
<p><b>Attribute: stagingPopulation</b></p> <p>Definition: The population of the species that is migrating or moulting temporarily in the aggregation unit. This may be a single number, a range, a lower or upper limit or a character from SpeciesPopulationType.</p> <p>Value type: SpeciesPopulationType</p> <p>Multiplicity: 0..1</p> <p>Stereotypes: «voidable»</p>
<p><b>Attribute: isolation</b></p> <p>Definition: The degree of isolation of the population present in the aggregation unit in relation to the natural range of the species.</p> <p>Value type: IsolationType</p> <p>Multiplicity: 0..1</p> <p>Stereotypes: «voidable»</p>
<p><b>Attribute: species</b></p> <p>Definition: The species type using the habitat types from Annex II, III, IV, V of the Habitat Directive and Annex I and reference list for Article 4(2) of the Birds Directive.</p> <p>Value type: SpeciesType</p> <p>Multiplicity: 0..1</p> <p>Stereotypes: «voidable»</p>
<p><b>Attribute: beginLifespanVersion</b></p> <p>Definition: The date that the object that represents the SpeciesDistribution was created in the system. A new object is created each time an attribute is changed, and</p>

<p>the beginLifespanVersion stores the date that the new object was created. The identifier data type used by the objectIdentifier attribute includes both a unique numerical identifier (localID) and version number, so any objects created with changed attributes or geometries use the same localID with a new version number. The localID, version number, beginLifespanVersion and endLifespanVersion can all be used in combination to examine the lifecycle of a given SpeciesDistribution. The beginLifespanVersion and endLifespanVersion can also be used to perform incremental updates.</p> <p>Value type: DateTime          Multiplicity: 1          Stereotypes: «lifeCycleInfo»</p>
<p><b>Attribute: unlistedSpecies</b></p> <p>Definition: The type of species in the aggregation unit, if not included in the Species Type code list.</p> <p>Value type: UnlistedSpeciesType          Multiplicity: 0..1          Stereotypes: «voidable»</p>
<p><b>Attribute: endLifespanVersion</b></p> <p>Definition: The date that the object that represents the SpeciesDistribution was expired in the system. An object is expired only when the attributes change and a new object with the new attributes is created. When the new object is created, the preceding object's endLifespanVersion is set to the same value as the new object's beginLifespanVersion. The identifier data type used by the objectIdentifier attribute includes both a unique numerical identifier (localID) and version number, so any objects created with changed attributes or geometries use the same localID with a new version number. The localID, version number, beginLifespanVersion and endLifespanVersion can all be used in combination to examine the lifecycle of a given SpeciesDistribution. If the endLifespanVersion is null, this indicates that the object is the current representation of the Species Distribution (whether or not the Species Distribution itself has been expired). The beginLifespanVersion and endLifespanVersion can also be used to perform incremental updates.</p> <p>Value type: DateTime          Multiplicity: 0..1          Stereotypes: «voidable,lifeCycleInfo»</p>
<p><b>Association role: coversUnit</b></p> <p>Definition: The unit that the species is distributed over. A number of different types of aggregation unit are possible.</p> <p>Value type: Species Distribution (Annex III)::SpeciesAggregationUnit          Multiplicity: 1          Stereotypes:</p>
<p><b>Constraint: SpeciesTypeMandatory</b></p> <p>Natural language:          OCL: inv: NotEmpty(speciesType) or NotEmpty(unlistedSpeciesType)</p>

## 5.2.6.2 Data types

### 5.2.6.2.1 RangeType

**Class: «dataType» Species Distribution (Annex III).RangeType**

<p>Definition: A data type expressing an upper and lower range.</p> <p>Subtype of:</p> <p>Status: Proposed</p> <p>Stereotypes: «dataType»</p>
<p><b>Attribute: upperBound</b></p> <p>Definition: The upper bound of the range. If the value of this attribute is null and lowerBound is populated, this implies that the value is between the lowerBound and infinity.</p> <p>Value type: Integer</p> <p>Multiplicity: 0..1</p> <p>Stereotypes: «voidable»</p>
<p><b>Attribute: lowerBound</b></p> <p>Definition: The lower bound of the range. If the value of this attribute is null and upperBound is populated, this implies that the value is between the upperBound and zero.</p> <p>Value type: Integer</p> <p>Multiplicity: 0..1</p> <p>Stereotypes: «voidable»</p>
<p><b>Constraint: RangeTypeMandatory</b></p> <p>Natural language:</p> <p>OCL: inv: NotEmpty(upperBound) or NotEmpty(lowerBound)</p>

#### 5.2.6.2.2 *SpeciesPopulationType*

<p><b>Class: «dataType» Species Distribution (Annex III).SpeciesPopulationType</b></p>
<p>Definition: A data type allowing three different ways of expressing the population of a species in an aggregation unit.</p> <p>Subtype of:</p> <p>Status: Proposed</p> <p>Stereotypes: «dataType»</p>
<p><b>Attribute: specificNumericalSpeciesPopulation</b></p> <p>Definition: A species population in which a specific number is known.</p> <p>Value type: Integer</p> <p>Multiplicity: 0..1</p> <p>Stereotypes: «voidable»</p>
<p><b>Attribute: rangeNumericalSpeciesPopulation</b></p> <p>Definition: A range value indicating the species population using upper and lower bounds, only used if the specificNumericalSpeciesPopulation is not known.</p> <p>Value type: RangeType</p> <p>Multiplicity: 0..1</p> <p>Stereotypes: «voidable»</p>
<p><b>Attribute: speciesCommonality</b></p> <p>Definition: A simple code indicating how common or rare the species is in the aggregation unit. This should only be used if a specific numerical or range value is not available.</p> <p>Value type: SpeciesCommonalityType</p>

Multiplicity:	0..1
Stereotypes:	«voidable»
<b>Constraint: SpeciesPopulationMandatory</b>	
Natural language:	
OCL:	inv: NotEmpty(specificNumericalSpeciesPopulation) or NotEmpty(rangeNumericalSpeciesPopulation) or NotEmpty(speciesCommonality)

### 5.2.6.2.3 *UnlistedSpeciesType*

<b>Class: «dataType» Species Distribution (Annex III).UnlistedSpeciesType</b>	
Definition:	A species type that appears in the aggregation unit and must be recorded for some reason, but that is not one of the species types listed in the SpeciesType codelist (from associated Birds and HabitatDirectives). Such unlisted types should not be included simply because they occur, but only if their recording is needed for some reason (for example, if they are protected).
Subtype of:	
Status:	Proposed
Stereotypes:	«dataType»
<b>Attribute: speciesGroup</b>	
Definition:	The broad group within which the species falls.
Value type:	SpeciesGroup
Multiplicity:	1
Stereotypes:	
<b>Attribute: speciesType</b>	
Definition:	The type of species, if not included in the predefined types in SpeciesType.
Value type:	CharacterString
Multiplicity:	1
Stereotypes:	
<b>Attribute: reasonForListing</b>	
Definition:	The motivation for including the species type in the assessment. This may relate to some particular convention or the endemic nature of the population.
Value type:	SpeciesListingReasonType
Multiplicity:	0..1
Stereotypes:	«voidable»

### 5.2.6.3 Enumerations and code lists

#### 5.2.6.3.1 *IsolationType*

<b>Class: «codeList» Species Distribution (Annex III).IsolationType</b>	
Definition:	A set of codes to represent the degree of isolation present in the aggregation unit in relation to the natural range of the species.
Status:	Proposed
Stereotypes:	«codeList»
<b>Value: Population Isolated</b>	
Definition:	

Code:
<b>Value: Population Not Isolated but Marginal</b> Definition: Code:
<b>Value: Population Not Isolated and in Extended Range</b> Definition: Code:

#### 5.2.6.3.2 *SpeciesCommonalityType*

<b>Class: «codeList» Species Distribution (Annex III).SpeciesCommonalityType</b>	
Definition:	A code indicating the commonality of the species in the aggregation unit.
Status:	Proposed
Stereotypes:	«codeList»
<b>Value: common</b> Definition: Code:	
<b>Value: rare</b> Definition: Code:	
<b>Value: very rare</b> Definition: Code:	
<b>Value: present</b> Definition: Code:	

#### 5.2.6.3.3 *SpeciesGroup*

<b>Class: «codeList» Species Distribution (Annex III).SpeciesGroup</b>	
Definition:	A code indicating the broad group within which the species falls.
Status:	Proposed
Stereotypes:	«codeList»
<b>Value: B</b> Definition: Code:	Birds
<b>Value: M</b> Definition: Code:	Mammals
<b>Value: A</b> Definition: Code:	Amphibians
<b>Value: R</b> Definition:	Reptiles

Code:
<b>Value: F</b> Definition: Fishes Code:
<b>Value: I</b> Definition: Invertebrates Code:
<b>Value: P</b> Definition: Plants Code:

#### 5.2.6.3.4 *SpeciesListingReasonType*

<b>Class: «codeList» Species Distribution (Annex III).SpeciesListingReasonType</b>	
Definition:	A code indicating the motivation for including an unlisted species type in the assessment of the species distribution.
Status:	Proposed
Stereotypes:	«codeList»
<b>Value: National Red Data List</b>	
Definition:	
Code:	
<b>Value: Endemics</b>	
Definition:	
Code:	
<b>Value: International Conventions</b>	
Definition:	
Code:	
<b>Value: Other Reasons</b>	
Definition:	
Code:	

#### 5.2.6.3.5 *SpeciesType*

<b>Class: «codeList» Species Distribution (Annex III).SpeciesType</b>	
Definition:	The species type using species from Article 4.1 and 4.2 of the Birds Directive (Council Directive 79/409/EEC) and Annex II of Council Directive 92/43/EEC. A full listing of the species types can be found at <a href="http://converters.eionet.europa.eu/xmlfile/taxonomy.xml">http://converters.eionet.europa.eu/xmlfile/taxonomy.xml</a> .
Status:	Proposed
Stereotypes:	«codeList»

## 6 Reference systems

### 6.1 Spatial reference system

**Requirement 5** For the horizontal component, the European Terrestrial Reference System 1989 (ETRS89) shall be used. This coordinate reference system is linked to the Eurasian tectonic plate. For areas that are not on the stable part of the Eurasian tectonic plate, the International Terrestrial Reference System (ITRS) or other geodetic coordinate reference systems compliant with ITRS shall be used. The parameters of the GRS80 ellipsoid shall be used for the computation of latitude and longitude and for the computation of plane coordinates using a suitable mapping projection.

For the vertical component, the European Vertical Reference System (EVRS) shall be used. Other vertical reference systems may be used in areas that are outside the geographical scope of EVRS.

**Recommendation 5** For the representation of data in plane coordinates in general applications, the following projections should be used:

- Lambert Azimuthal Equal Area (ETRS-LAEA) for spatial analysis and display;
- Lambert Conformal Conic (ETRS-LCC) for conformal pan-European mapping at scales smaller or equal to 1:500,000;
- Transverse Mercator (ETRS-TMzn) for conformal pan-European mapping at scales larger than 1:500,000.

### 6.2 Temporal reference system

**Requirement 6** Date values shall be provided using the Gregorian Calendar. Time values shall be provided either using the Coordinated Universal Time (UTC) or as local time including their time zone as an offset from [UTC](#).

## 7 Data quality

### 7.1 Data quality elements

All required dataset-level data quality elements are included under metadata (Section 8).

Only one feature-level data quality element is included in the Protected Sites Data Specification, as shown in Table 9.

Table 9 – Data quality elements used in the theme *Protected site*

INSPIRE Data Specification Protected Sites Section	Data quality element	Usage
7.1.1	accuracy	feature-level

### 7.1.1 accuracy

Name	Accuracy
Data quality element	ProtectedSite.accuracy
Data quality basic measure	Error indicator
Definition	The accuracy of the Protected Site geometry. This may be converted from a scale of capture value into a positional accuracy value.
Description	Spatial resolution varies widely across different Protected Sites and is largely dictated by the method of capture and the data source. Protected Sites are normally referenced to existing mapping of the cadastre and natural features, and thus the resolution of the Protected Site depends on the resolution of the underlying data source and the method of capture (often digitisation). Typical scales of capture range from larger than 1:5,000 (accuracy less than +/-1m) to 1:100,000 (accuracy +/- 25m), corresponding to the local level and regional level respectively. Accuracy is thus often derived from the scale of capture.
Data quality value type	MD_Resolution
Data quality value structure	The accuracy attribute is supported by the accuracyUnitsOfMeasure attribute that describes the units of the accuracy value.

## 7.2 Completeness

**Recommendation 6** It is recommended that all legally-designated Protected Sites collected by a Member State be included in INSPIRE-compliant data sets provided by that Member State, regardless of size or importance.

**Recommendation 7** INSPIRE-compliant Protected Sites data sets should include all Protected Sites within each Member State, including internationally, nationally, regionally and locally designated Sites.

## 7.3 Positional Accuracy

**Recommendation 8** Protected Site features in INSPIRE-compliant data sets should be provided at the source accuracy where possible.

Some features may be provided at greater accuracy than others, and the model includes an attribute (ProtectedAreas.accuracy) to allow this to be reflected for each feature.

**Recommendation 9** All spatial objects should have a positional accuracy of 100 meters or better.

## 8 Dataset-level Metadata

Metadata can be reported for each individual feature (feature-level metadata) or once for a complete dataset (dataset-level metadata). Feature-level metadata is fully described in the application schema (section 5) and Section 7. This section only specifies dataset-level metadata elements.

Mandatory or conditional metadata elements are specified in Table 11. Optional metadata elements are specified in Table 12.

**Requirement 7** The metadata describing a spatial data set or a spatial data set series related to the theme *Protected sites* shall comprise the metadata elements required by Regulation 1205/2008/EC (implementing Directive 2007/2/EC of the European Parliament and of the Council as regards metadata) for spatial datasets and spatial dataset series (Table ) as well as the theme-specific metadata elements specified in Table .

**Table 10 – Metadata for spatial datasets and spatial dataset series specified in Commission Regulation (EC) No 1205/2008 as regards metadata**

Metadata Regulation Section	Metadata element	Multiplicity	Condition
1.1	Resource title	1	
1.2	Resource abstract	1	
1.3	Resource type	1	
1.4	Resource locator	0..*	Mandatory if a URL is available to obtain more information on the resource, and/or access related services.
1.5	Unique resource identifier	1..*	
1.7	Resource language	0..*	Mandatory if the resource includes textual information.
2.1	Topic category	1..*	
3	Keyword	1..*	
4.1	Geographic bounding box	1..*	
5	Temporal reference	1..*	
6.1	Lineage	1	
6.2	Spatial resolution	0..*	Mandatory for data sets and data set series if an equivalent scale or a resolution distance can be specified.
7	Conformity	1..*	
8.1	Conditions for access and use	1..*	
8.2	Limitations on public access	1..*	
9	Responsible organisation	1..*	
10.1	Metadata point of contact	1..*	
10.2	Metadata date	1	
10.3	Metadata language	1	

**Table 11 – Mandatory and conditional theme-specific metadata for the theme *Protected sites***

INSPIRE Data Specification Protected Sites Section	Metadata element	Multiplicity	Condition
8.2	spatialResolution	1	MD_Resolution may include either a distance or a representative fraction. Element is mandatory in the context of Protected Sites.
8.3	DQ_CompletenessOmission	1	
8.4	maintenanceAndUpdateFrequency	1	
8.8	onLine	1..*	
8.9	geographicIdentifier	1..*	
8.10	profile	1	

**Table 12 – Optional theme-specific metadata for the theme *Protected sites***

INSPIRE Data Specification Protected Sites Section	Metadata element	Multiplicity
8.1	graphicOverview	0..*
8.5	updateScope	0..1
8.6	featureTypes	0..1
8.7	portrayalCatalogueCitation	0..1

**Requirement 8** INSPIRE-compliant Protected Sites data sets must specify the INSPIRE Protected Sites Data Specification and the profile used in the *specification* metadata attribute (as included in the INSPIRE Implementing Rule on Metadata). This is to be expressed by appending ‘: Profile Simple’, ‘: Profile Natura2000’ or ‘: Profile Full’ to the ‘INSPIRE Protected Sites Data Specification’ citation.

## 8.1 *graphicOverview*

Metadata element name	<b>graphicOverview</b>
Definition	Graphic that provides and illustrates the data set (should include a legend for the graphic).
ISO 19115 number and name	48. MD_BrowseGraphic
ISO/TS 19139 path	MD_Metadata.MD_Identification.MD_BrowseGraphic
INSPIRE obligation / condition	Optional
INSPIRE multiplicity	0..*
Data type	AggregatedClass
Domain	fileName, fileDescription, fileType

## 8.2 *spatialResolution*

Metadata element name	<b>spatialResolution</b>
Definition	Level of detail expressed as the scale of a comparable hardcopy map or chart.
ISO 19115 number and name	60. equivalentScale
ISO/TS 19139 path	MD_Metadata.MD_Resolution.equivalentScale
INSPIRE obligation / condition	Mandatory
INSPIRE multiplicity	1
Data type	MD_RepresentativeFraction

## 8.3 *DQ\_CompletenessOmission*

Metadata element name	<b>DQ_CompletenessOmission</b>
Definition	Data absent from the dataset, as described by the scope.
ISO 19115 number and name	110. DQ_CompletenessOmission
ISO/TS 19139 path	MD_Metadata.DQ_DataQuality.DQ_CompletenessOmission
INSPIRE obligation / condition	Mandatory
INSPIRE multiplicity	1
Data type	MD_Resolution
Domain	
Implementing instructions	
Example	
Comment	

## 8.4 *maintenanceAndUpdateFrequency*

Metadata element name	<b>maintenanceAndUpdateFrequency</b>
Definition	Frequency with which changes and additions are made to the resource after the initial resource is completed.
ISO 19115 number and name	143. maintenanceAndUpdateFrequency
ISO/TS 19139 path	MD_Metadata.MD_MaintenanceInformation.maintenanceAndUpdateFrequency
INSPIRE obligation / condition	Mandatory
INSPIRE multiplicity	1
Data type	MD_MaintenanceFrequencyCode
Domain	MD_MaintenanceFrequencyCode

## 8.5 *updateScope*

Metadata element name	<b>updateScope</b>
Definition	Scope of data to which maintenance is applied.
ISO 19115 number and name	146. updateScope
ISO/TS 19139 path	MD_Metadata.MD_MaintenanceInformation.updateScope
INSPIRE obligation / condition	Optional
INSPIRE multiplicity	0..1
Data type	MD_ScopeCode
Comment	Elements indicates the scope of the maintenance of a data set, e.g. if the whole extent of data set is maintained or just a part of it (could be spatially or thematically defined).

## 8.6 *featureTypes*

Metadata element name	featureTypes
Definition	Subset of feature types from cited feature catalogue occurring in dataset.
ISO 19115 number and name	237 featureTypes
ISO/TS 19139 path	MD_Metadata.MD_FeatureCatalogueDescription.featureTypes
INSPIRE obligation / condition	Optional
INSPIRE multiplicity	0..1
Data type	GenericName
Domain	The set of possible feature types in the Protected Sites Data Specification.
Comment	Data sets complying only with the Simple Profile of the Protected Sites Data Specification may only contain the ProtectedSite feature type. The mandatory elements of the class MD_FeatureCatalogueDescription must be used additionally, to keep conformity to ISO 19115.

## 8.7 portrayalCatalogueCitation

Metadata element name	portrayalCatalogueCitation
Definition	Bibliographic reference to the portrayal catalogue cited.
ISO 19115 number and name	269 portrayalCatalogueCitation
ISO/TS 19139 path	MD_Metadata.MD_PortrayalCatalogueReference.portrayalCatalogueCitation
INSPIRE obligation / condition	Optional
INSPIRE multiplicity	0..1
Data type	CI_Citation
Implementing instructions	This is only needed if the default portrayal styles included within the INSPIRE Protected Sites Data Specification are not used.

## 8.8 onLine

Metadata element name	onLine
Definition	Information about online sources from which the resource can be obtained.
ISO 19115 number and name	277 onLine
ISO/TS 19139 path	MD_Metadata.MD_Distribution.MD_DigitalTransferOptions.onLine
INSPIRE obligation / condition	Mandatory
INSPIRE multiplicity	1..*
Data type	CI_OnlineResource

## 8.9 geographicIdentifier

Metadata element name	geographicIdentifier
Definition	Identifier used to represent a geographic area.
ISO 19115 number and name	349 geographicIdentifier
ISO/TS 19139 path	MD_Metadata.MD_Distribution.MD_DigitalTransferOptions.onLine
INSPIRE obligation / condition	Mandatory
INSPIRE multiplicity	1..*
Data type	CI_OnlineResource

## 8.10 profile

Metadata element name	geographicIdentifier
Definition	The profile that the data set complies with.
ISO 19115 number and name	
ISO/TS 19139 path	
INSPIRE obligation / condition	Mandatory
INSPIRE multiplicity	1
Data type	Profile (in INSPIRE Protected Sites Application Schema)

## 9 Delivery

### 9.1 Delivery medium

Data conformant to the INSPIRE Protected Sites Data Specification will be made available through services conformant to the Implementing Rules for Download Services. In these Implementing Rules, two types of Download services are defined:

- 1) a Download service providing access to pre-defined dataset or pre-defined part of a dataset
- 2) a Download service providing direct access to data and streaming data based upon user defined criteria called a filter

### 9.2 Encodings

#### 9.2.1 Encoding for application schema Protected Sites Simple Profile

#### 9.2.2 Encoding for application schema Protected Sites Full Profile

#### 9.2.3 Encoding for application schema Protected Sites Natura2000 Profile

## 10 Data Capture

Member States may capture Protected Sites data using their own processes and according to their own specifications and requirements, provided they can perform the necessary transformations to provide INSPIRE-compliant Protected Sites data to fulfil INSPIRE Directive obligations.

Cross-border requirements	<div style="border: 2px solid black; padding: 5px;"> <p><b>Requirement 9</b> INSPIRE-compliant Protected Sites data sets must include only Protected Sites that do not cross national boundaries as defined in the Eurogeographics EuroBoundaryMap data set. Member States are responsible for providing data only about Protected Sites within their own jurisdiction.</p> </div> <p>Protected Sites that exist on either side of a national border may not necessarily align. This depends on the method and criteria of designation adopted by the Member States concerned.</p>
---------------------------	--

## 11 Portrayal

This clause defines the rules for layers and styles to be used for portrayal of the spatial object types defined for this theme.

**Requirement 10** If an INSPIRE view service supports the portrayal of data related to the theme *Protected sites*, it shall provide the layers specified in this section.

**Requirement 11** If an INSPIRE view service supports the portrayal of data related to the theme *Protected sites*, it shall support all (default and other well-defined) styles specified in this section.

**Requirement 12** If no user-defined style is specified in a portrayal request to an INSPIRE view service, the default style specified in this section shall be used.

### 11.1 Layers

The *Protected sites* theme is represented using a single layer with different styles for features within that layer according to the ProtectedSite.designationType attribute. Each valid designationType code has a different style, except in the case of Special Areas of Conservation (SAC) and Sites of Community Importance (SCI), which share the same style because they represent different names for similar types of Protected Sites.

The XML fragments in this section use the following namespace prefixes:

- sld="http://www.opengis.net/sld" (WMS/SLD 1.1)
- se="http://www.opengis.net/se" (SE 1.1)
- ogc="http://www.opengis.net/ogc" (FE 1.1)

#### 11.1.1 ProtectedSites

<b>Layer Name</b>	<b>ProtectedSites</b>	
Layer Title	Protected Sites	
Content	All features in the ProtectedSite class.	
Keywords		
Default Style	Name	ProtectedSites
	Title	Protected Sites
	Abstract	All Protected Sites features, organised according to designation types: <ul style="list-style-type: none"> <li>▪ SCA: Special Conservation Area (under Natura2000);</li> <li>▪ SCI: Site of Community Importance (under Natura2000);</li> <li>▪ SPA: Special Protection Area (under Natura2000);</li> <li>▪ RAMSAR (under the Ramsar Convention) and</li> <li>▪ NDA: Nationally Designated Area.</li> </ul>
	Symbology	A Styled Layer Descriptor file specifying the default styles for the Protected Sites layer. Graphic depictions of the different styles for each different designation type is as follows: <ul style="list-style-type: none"> <li>▪ SCA and SCI: </li> <li>▪ SPA: </li> <li>▪ RAMSAR: </li> <li>▪ NDA: </li> </ul>
Minimum &	The style is appropriate for all scales, as shown in the SLD code above.	

INSPIRE	Reference: INSPIRE_DataSpecification_PS_v2.0.pdf		
TWG-PS	Data Specification on <i>Protected sites</i>	2008-12-19	Page 52

maximum scales	
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## Bibliography

INSPIRE DS-D2.5, Generic Conceptual Model, v3.0.

INSPIRE DS-D2.6, Methodology for the development of data specifications, v3.0.

INSPIRE DS-D2.7, Guidelines for the encoding of spatial data, v2.0.

VRETANOS, P., 2005, *Web Feature Service Implementation Specification*. Open Geospatial Consortium Specification 04-094.

INSPIRE	Reference: INSPIRE_DataSpecification_PS_v2.0.pdf		
TWG-PS	Data Specification on <i>Protected sites</i>	2008-12-19	Page 53

## Annex A (normative)

### Abstract Test Suite

#### **A.1 Test cases for mandatory conformance requirements for a dataset with this INSPIRE data specification *Protected sites***

The Metadata regulation (Annex B7) [Commission Regulation (EC) N° 1205/2008 of 3 December 2008 (implementing Directive 2007/2/EC of the European Parliament and of the Council as regards metadata)] specifies a mandatory conformity element that can take on of the following values:

1. Conformant (conformant)  
The resource is fully conformant with the cited specification.
2. Not Conformant (notConformant)  
The resource does not conform to the cited specification.
3. Not evaluated (notEvaluated)  
Conformance has not been evaluated.

This conformance clause tests for conformance to the INSPIRE data specification *Protected sites*, **not** to the Implementing Rule/Regulation on *Protected sites* that will be derived from it.

##### **A.1.1 Data Set Compliance with the Simple Profile**

- 1) Test Purpose: Verify that a dataset is conformant with the INSPIRE data specification Protected Sites Simple Profile.
- 2) Test Method: Inspect the data specification and check it against the following requirements:
  - a) That all requirements specified in Section 5 of this document regarding the model and the structure of the data set for the Simple Profile are adhered to.
  - b) That the conceptual structure of the model adheres to the UML model for the Simple Profile in this document.
  - c) That all feature types semantically conform to the definitions provided in the Feature Type Catalogue in Section 5 of this document.
  - d) That any GML application schemas adhere to the schemas for the Simple Profile in Section 9 of this document.
  - e) That the coordinate reference systems specified in Section 6 of this document are used in the way specified.
  - f) That accompanying metadata conforms to the requirements of Section 8 of this document.
- 3) References:
  - a) INSPIRE *Protected sites* Data Specification.
- 4) Test Type: Basic Test

INSPIRE	Reference: INSPIRE_DataSpecification_PS_v2.0.pdf		
TWG-PS	Data Specification on <i>Protected sites</i>	2008-12-19	Page 54

### A.1.2 Data Set Compliance with the Natura2000 Profile

- 1) Test Purpose: Verify that a dataset is conformant with the INSPIRE data specification Protected Sites Natura2000 Profile.
- 2) Test Method: Inspect the data specification and check it against the following requirements:
  - a) That all requirements specified in Section 5 of this document regarding the model and the structure of the data set for the Natura2000 Profile are adhered to.
  - b) That the conceptual structure of the model adheres to the UML model for the Natura2000 Profile in this document.
  - c) That all feature types semantically conform to the definitions provided in the Feature Type Catalogue in Section 5 of this document.
  - d) That any GML application schemas adhere to the schemas for the Natura2000 Profile in Section 9 of this document.
  - e) That the coordinate reference systems specified in Section 6 of this document are used in the way specified.
  - f) That accompanying metadata conforms to the requirements of Section 8 of this document.
- 3) References:
  - a) INSPIRE *Protected sites* Data Specification.
- 4) Test Type: Basic Test

### A.1.3 Data Set Compliance with the Full Profile

- 1) Test Purpose: Verify that a dataset is conformant with the INSPIRE data specification Protected Sites Full Profile.
- 2) Test Method: Inspect the data specification and check it against the following requirements:
  - a) That all requirements specified in Section 5 of this document regarding the model and the structure of the data set for the Full Profile are adhered to.
  - b) That the conceptual structure of the model adheres to the UML model for the Full Profile in this document.
  - c) That all feature types semantically conform to the definitions provided in the Feature Type Catalogue in Section 5 of this document.
  - d) That any GML application schemas adhere to the schemas for the Full Profile in Section 9 of this document.
  - e) That the coordinate reference systems specified in Section 6 of this document are used in the way specified.
  - f) That accompanying metadata conforms to the requirements of Section 8 of this document.
- 3) References:
  - a) INSPIRE *Protected sites* Data Specification.

INSPIRE	Reference: INSPIRE_DataSpecification_PS_v2.0.pdf		
TWG-PS	Data Specification on <i>Protected sites</i>	2008-12-19	Page 55

4) Test Type: Basic Test

## Annex B (normative)

### Styled Layer Descriptor for Protected Sites

```

<?xml version="1.0" encoding="UTF-8"?>
<sld:StyledLayerDescriptor xmlns:sld="http://www.opengis.net/sld" xmlns:java="java"
xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:wfs="http://www.opengis.net/wfs"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:fo="http://www.w3.org/1999/XSL/Format"
xmlns:gml="http://www.opengis.net/gml" xmlns:ogc="http://www.opengis.net/ogc"
xmlns="http://www.opengis.net/sld" xsi:schemaLocation="http://www.opengis.net/sld
http://schemas.opengis.net/sld/1.0.0/StyledLayerDescriptor.xsd" version="1.0.0" xmlns:PS="urn:x-
inspire:specification:ProtectedSites:1.0">
  <sld:NamedLayer>
    <sld:Name>ProtectedSites</sld:Name>
    <sld:UserStyle>
      <sld:Name>ProtectedSites</sld:Name>
      <sld:Title>Protected Sites</sld:Title>
      <sld:IsDefault>1</sld:IsDefault>
      <sld:FeatureTypeStyle>
        <sld:Name>ProtectedSites</sld:Name>
        <sld:Rule>
          <sld:Name>NDA</sld:Name>
          <ogc:Filter>
            <ogc:PropertyIsLike wildCard="*" singleChar="?" escape="\ ">
              <ogc:PropertyName>PS:designationType</ogc:PropertyName>
              <ogc:Literal>NDA</ogc:Literal>
            </ogc:PropertyIsLike>
          </ogc:Filter>
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          <sld:PolygonSymbolizer>
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            </sld:Geometry>
            <sld:Fill>
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              <sld:CssParameter name="fill-opacity">0.5</sld:CssParameter>
            </sld:Fill>
            <sld:Stroke>
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              <sld:CssParameter name="stroke-opacity">1.0</sld:CssParameter>
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          </sld:PolygonSymbolizer>
        </sld:Rule>
        <sld:Rule>
          <sld:Name>RAMSAR</sld:Name>
          <ogc:Filter>
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              <ogc:PropertyName>PS:designationType</ogc:PropertyName>
              <ogc:Literal>RAMSAR</ogc:Literal>
            </ogc:PropertyIsLike>
          </ogc:Filter>
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          <sld:MaxScaleDenominator>3.779527559017324E14</sld:MaxScaleDenominator>
          <sld:PolygonSymbolizer>

```

```

<sld:Geometry>
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</sld:Geometry>
<sld:Fill>
  <sld:GraphicFill>
    <sld:Graphic>
      <sld:ExternalGraphic>
        <OnlineResource xlink:type="simple" xlink:href="file:/ramsar.png"/>
        <sld:Format>image/png</sld:Format>
      </sld:ExternalGraphic>
    </sld:Graphic>
  </sld:GraphicFill>
</sld:Fill>
<sld:Stroke>
  <sld:CssParameter name="stroke">#ffff00</sld:CssParameter>
  <sld:CssParameter name="stroke-opacity">1.0</sld:CssParameter>
  <sld:CssParameter name="stroke-width">1</sld:CssParameter>
</sld:Stroke>
</sld:PolygonSymbolizer>
</sld:Rule>
<sld:Rule>
  <sld:Name>SAC</sld:Name>
  <ogc:Filter>
    <ogc:PropertyIsLike wildCard="*" singleChar="?" escape="\ ">
      <ogc:PropertyName>PS:designationType</ogc:PropertyName>
      <ogc:Literal>SAC</ogc:Literal>
    </ogc:PropertyIsLike>
  </ogc:Filter>
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  <sld:MaxScaleDenominator>3.779527559017324E14</sld:MaxScaleDenominator>
  <sld:PolygonSymbolizer>
    <sld:Geometry>
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    </sld:Geometry>
    <sld:Fill>
      <sld:GraphicFill>
        <sld:Graphic>
          <sld:ExternalGraphic>
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          </sld:ExternalGraphic>
        </sld:Graphic>
      </sld:GraphicFill>
    </sld:Fill>
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      <sld:CssParameter name="stroke-width">1</sld:CssParameter>
    </sld:Stroke>
  </sld:PolygonSymbolizer>
</sld:Rule>
<sld:Rule>
  <sld:Name>SCI</sld:Name>
  <ogc:Filter>
    <ogc:PropertyIsLike wildCard="*" singleChar="?" escape="\ ">
      <ogc:PropertyName>PS:designationType</ogc:PropertyName>
      <ogc:Literal>SCI</ogc:Literal>
    </ogc:PropertyIsLike>
  </ogc:Filter>
  <sld:MinScaleDenominator>0.0</sld:MinScaleDenominator>

```

INSPIRE	Reference: INSPIRE_DataSpecification_PS_v2.0.pdf		
TWG-PS	Data Specification on <i>Protected sites</i>	2008-12-19	Page 58

```

<sld:MaxScaleDenominator>3.779527559017324E14</sld:MaxScaleDenominator>
<sld:PolygonSymbolizer>
  <sld:Geometry>
    <ogc:PropertyName>PS:geometry</ogc:PropertyName>
  </sld:Geometry>
  <sld:Fill>
    <sld:GraphicFill>
      <sld:Graphic>
        <sld:ExternalGraphic>
          <OnlineResource xlink:type="simple" xlink:href="file:/sci.png"/>
          <sld:Format>image/png</sld:Format>
        </sld:ExternalGraphic>
      </sld:Graphic>
    </sld:GraphicFill>
  </sld:Fill>
  <sld:Stroke>
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    <sld:CssParameter name="stroke-width">1</sld:CssParameter>
  </sld:Stroke>
</sld:PolygonSymbolizer>
</sld:Rule>
<sld:Rule>
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  <ogc:Filter>
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      <ogc:PropertyName>PS:designationType</ogc:PropertyName>
      <ogc:Literal>SPA</ogc:Literal>
    </ogc:PropertyIsLike>
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          </sld:ExternalGraphic>
        </sld:Graphic>
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      <sld:CssParameter name="stroke-width">1</sld:CssParameter>
    </sld:Stroke>
  </sld:PolygonSymbolizer>
</sld:Rule>
</sld:FeatureTypeStyle>
</sld:UserStyle>
</sld:NamedLayer>
</sld:StyledLayerDescriptor>

```

## Annex C (informative)

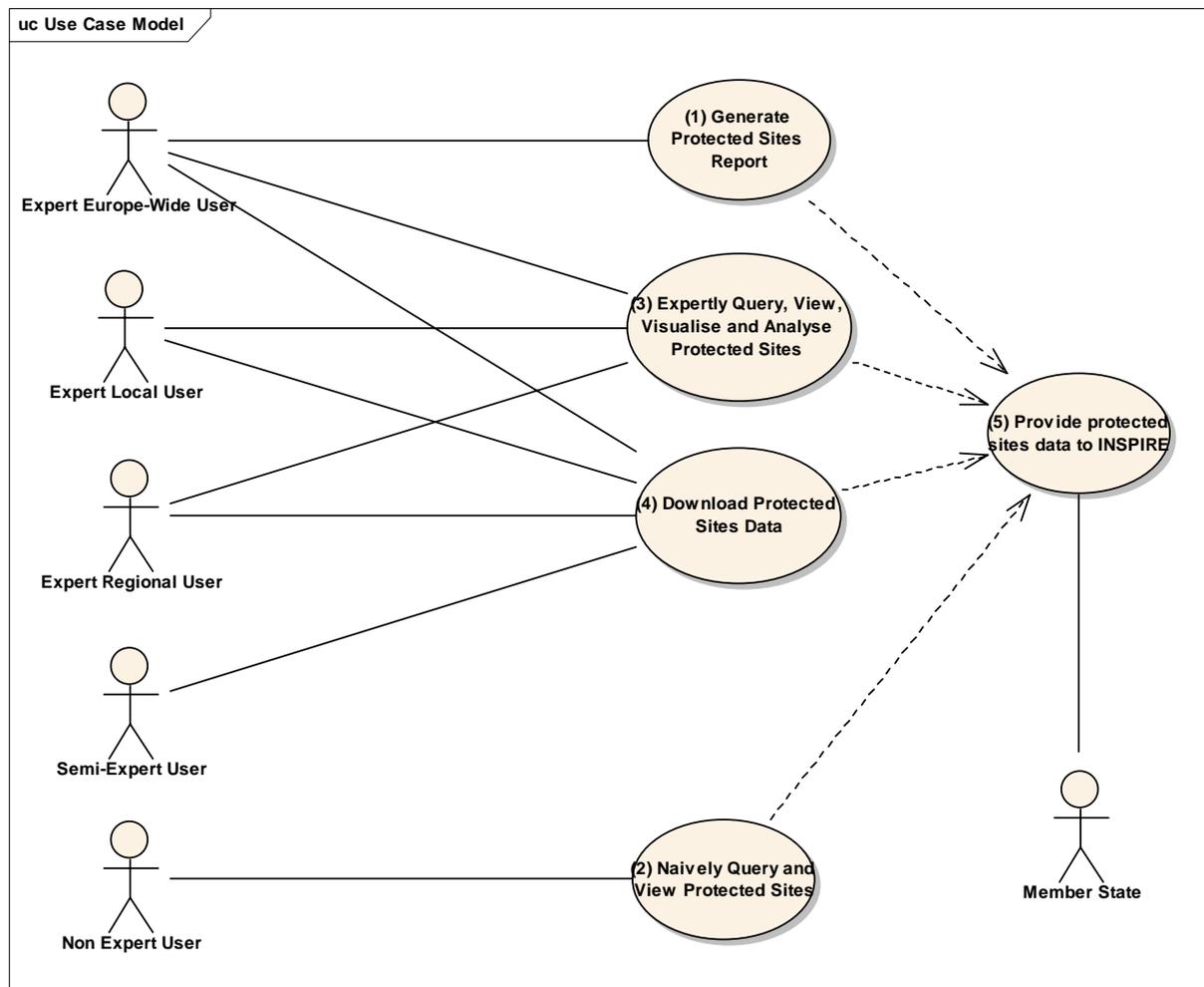
### Protected Sites Use Cases

This annex describes the use cases for the INSPIRE protected sites theme and associated data specification. The first part provides a use case diagram showing the interactions between the five use cases that have been defined and the actors. The remaining parts describe each of the five use cases in turn. The use cases are:

1. Generate European protected sites spatial data report (Europe-wide, including Natura 2000 sites; expert user/regional government including European Commission and European Environment Agency).
2. Naively query and view protected sites (local, regional and Europe-wide; non-expert/public user).
3. Expertly query, view, visualise and analyse protected sites (local, regional, cross-border; to support environmental impact assessment and decision making).
4. Download protected sites data (expert /semi-expert user).
5. Provide protected sites data according to EU legal obligations and dataflows (EU Member State).

The selected use cases are intended to encompass the range of uses of protected sites data, as well as the different scales, user groups and outputs, and to identify any issues of particular relevance for the theme.

#### **UML use case diagram.**



### **Use Case 1: Generate European Protected Sites Spatial Data Report**

The scenario for the Generate European Protected Sites Spatial Data Report is that a European expert user would like to collate all necessary information on protected sites in a GIS-database or application for generating standard overviews and/or tabulations on all protected sites across Europe. The results will contribute to special reporting obligations at the European level (for example, biodiversity indicators, European Commission composite reports under Art. 17 Habitat Directive).

<b>Use Case Description</b>	
Name	Generate European Protected Sites Spatial Data Report
Priority	high
Description	The user analyzes cross-border datasets on protected sites (for example, those created in Use Case 5 up to a European extent by means of a GIS-application to create overview-maps and/or tabulations on protected sites data. The results will be part of special reports of different kinds such as progress in area coverage of protected sites per category in their EU (indicators) and composite assessments of the implementation of the EU Directives at the European or biogeographical level
Pre-condition	Quality controlled protected sites data sets are available to the user in line with INSPIRE specifications and the INSPIRE registry provides all necessary information for standardised access to data. The user has access to the INSPIRE GenerateReport Web Processing Service.
<b>Flow of Events – Basic Path</b>	
Step 1.	The user calls a Web Processing Service, specifying the area of interest. This would commonly encompass all of Europe, but may also be restricted to a particular country or geographical region (using administrative boundaries or boundaries of bio-geographical regions as defined in INSPIRE). The user also selects the reporting items required. The following items are available: *waiting for info from Dirk and Rania
Step 2.	The Web Processing Service generates a report using source data from each of the member states in the selected area or across Europe.
Step 3.	The user receives the report and uses it to determine the status of protected sites across Europe.
Post-condition	The report may be for later comparison of versions. GIS-analyses and resulting data have to be described and stored for later use.
<b>Data source: INSPIRE-Conformant Protected Sites Data Set Provided by Member State</b>	
Description	Report data generated for protected sites to provide summary details across Europe.
Data provider	Each member state or (national) focal point.
Geographic scope	Europe wide, although a smaller area may be selected.
Thematic scope	INSPIRE Annex I 9. Protected Sites.
Scale, resolution	As made applicable by data provider.
Delivery	Textual report and associated geometry information.
Documentation	INSPIRE Protected Sites Data Specification

### **Use Case 2: Naively Query and View Protected Sites**

The scenario for the Naively Query and View Protected Sites use case is that a user would like to find out about protected sites in his or her neighbourhood. It is assumed that the user is aware of and has access to a basic publicly accessible (probably web based) GIS that contains the relevant data. For example, a dog walker may be interested in finding out about the countryside he walks his dog in and how it is protected. In this scenario, the user would use a publicly accessible GIS to zoom/pan to or find, by gazetteer search, the location of interest and display the data on screen.

<b>Use Case Description</b>	
Name	Naively Query and View Protected Sites
Priority	High
Description	The user uses a publicly accessible (probably web based) GIS to zoom/pan to or find, by gazetteer search, the location of interest and display the data on screen.
Pre-condition	Protected sites are available in line with INSPIRE specifications to the user by relevant Web Map Services and Web Feature Services. The user has access to a publicly accessible (probably web based) GIS that displays data using the INSPIRE rules.
<b>Flow of Events – Basic Path</b>	
Step 1.	The user uses the GIS to zoom and/or pan to the area of interest, or selects a particular place, protected site or administrative area name from a list (this list comes from the INSPIRE Geographic Names data set).
Step 2.	The GIS queries the relevant Web Map Service and presents the data in the client application. It also optionally displays contextual information about heritage, land classification and other types of land designations that are related to protected sites (layers can be switched on and off).
Step 3.	The user uses an information tool in the client application to click on a protected sites feature on the map.
Step 4.	The GIS queries the relevant Web Feature Service and presents the attribute data for the selected protected sites feature in the client application. In addition to the attributes, this service may also provide links to related information about ownership of parcels within the protected site, species data and feature condition information..
Post-condition	
<b>Data source: Member State Web Map Service and Web Feature Service on Protected sites</b>	
Description	This use case uses Web Map Services and Web Feature Services from each of the EU member states that serve their protected sites data in the INSPIRE GML map projection parameters (for web map service) and application schema format (for web feature service).
Data provider	Each member state.
Geographic scope	All EU member states, but GIS application selects and displays only a subset of that area, depending on the extents of the current map being viewed. Such a map would normally show a relatively small area for the purposes of a naïve user.
Thematic scope	Protected sites and geographic names.
Scale, resolution	Data is served at the most appropriate scale and resolution. This will vary depending on the scale of the map being viewed, and will be controlled within the parameters of the GIS and the client application.
Delivery	INSPIRE Protected Sites GML Application Schema, graphical map.
Documentation	INSPIRE Protected Sites Data Specification.

### Use Case 3: Expertly Query, View, Visualise and Analyse Protected Sites

The scenario for the Expertly Query, View, Visualise and Analyse Protected Sites use case is that a user needs to ensure that the protected site will not be adversely affected by any proposed land-use change. This is a routine requirement of any agency responsible for administering protected sites systems through formal consultation from other legitimate land use planning agencies. In this scenario, the user would start with a proposal generated by developer and supplied to the user through an agreed consultation process. The user would then use information on protected sites to evaluate the potential impact of the proposed development on the protected site features and purposes. A typical such example could be a consultation on the route of a new gas pipeline across countryside through Environmental Impact Assessment legislation.

Use Case Description	
Name	Expertly Query, View, Visualise and Analyse Protected Sites
Priority	High
Description	The user creates a view of protected sites within the planning proposal area and assesses potential impacts.
Pre-condition	Protected sites are available in line with INSPIRE specifications to the user and INSPIRE registry provides all necessary information for standardised access to data.,The user has access to a client GIS with basic selection tools.
Flow of Events – Basic Path	
Step 1.	<b>Define the scope of the potential impact area:</b> The user is provided with the geographical boundary of the planning proposal, with detail of the proposed infrastructure, construction access routes, storage/disposal areas, construction plant locations and operating details. These details are supplied as digital GIS data, or are digitised from paper maps.
Step 2.	<b>Display protected sites boundaries on scope area:</b> The user downloads <sup>14</sup> protected sites data to his or her local GIS tool and views the relationship between the protected sites and the proposed land use changes, both during and after construction.
Step 3.	<b>Categorise protected features subject to protection:</b> The user identifies the protected features on each site that falls within, or intersects the scope area, optionally distinguishing between habitat types, species and other site related features.
Step 4.	<b>Assess sensitivity of protected features:</b> The user uses specialist advice (either using existing procedures, or in consultation with relevant specialists) to determine the sensitivity of each feature to the type of development proposed (eg. only affected if development crosses the protected site boundary, or affected if disturbance is within 2km of the boundary). The sensitivity depends upon the type of development and includes both construction impacts and operating impacts post-construction.
Step 5.	<b>Categorise potential impacts of development:</b> The user, in consultation with relevant experts, assesses the likely affects of the proposed development (land take; impacts on water, soil and air; etc.) during and after construction).
Step 6.	<b>Assess the spatial extent of development impacts:</b> The user creates boundary information for each of the relevant impacts predicted to arise from the development in his or her own GIS.
Step 7.	<b>Apply constraints check:</b> The user applies a buffer to each protected site that reflects the sensitivity of the site. The outline of the buffer provides the potential impact area on each identified feature on the protected sites and is used in all further assessment of impact. The buffer distance can be several kilometres when groundwater, diffuse pollution or air pollution is involved.

<sup>14</sup> See use case 4.

Use Case Description	
Step 8	<b>Assess overall impact of development on protected sites:</b> The user runs a query to tabulate the overlap between the sensitivity of site features and the anticipated impacts of the development proposal.
Step 9.	<b>Impact assessment:</b> The user identifies conflicts between development and existing protected sites and their features.
Post-condition	The user has an audit trail of the impact assessment for use in contested inquiries to resolve any conflicts.
Data source: INSPIRE-Conformant Protected Sites Data Set Provided by Member State	
Description	This use case uses protected sites data from national sources, often within an organisation. Cross border assessments will require consistent standards of protected site definition in order to maintain a coherent defence case in any planning enquiry.
Data provider	Each member state.
Geographic scope	All EU member states, but with appropriate cross border cooperation where necessary.
Thematic scope	Protected sites.
Scale, resolution	The protected site boundary data will need to be available at the scale relevant to the application. Localised development proposals may use base maps at 1:2,500 or better and legal constraints of conflicting land uses (roads vs nature conservation) may require accurate boundary matching.
Delivery	INSPIRE Protected Sites GML Application Schema.
Documentation	INSPIRE Protected Sites Data Specification.

#### **Use Case 4: Download Protected Sites Data**

The scenario for the Download Protected Sites Data use case is that a user would like to download protected sites data for use on their own systems (a desktop GIS for example). For example, a non-government environmental agency may be interested in using the protected sites data in their own, advanced analysis with their own and other data sets. In this scenario, the user would select the area and feature types of interest and receive the appropriate protected sites feature types in the appropriate area.

<b>Use Case Description</b>	
Name	Download Protected Sites Data
Priority	Medium
Description	The user downloads protected sites data and associated metadata in a selected area and with selected feature types included.
Pre-condition	Protected sites are available in line with INSPIRE specifications to the user and INSPIRE registry provides all necessary information for standardised access to data. The user has access to a client GIS with basic selection tools.
<b>Flow of Events – Basic Path</b>	
Step 1.	The user selects the area of interest graphically on a map (this can be part of a member state, a whole member state or more than one member state) or from a textual list of countries (selecting either one or more than one country).
Step 2.	The user selects the feature types of interest from a list of all of the protected sites feature types (one or more <sup>15</sup> ).
Step 3.	The user invokes the download.
Step 4.	The system calls the relevant Web Feature Services to retrieve the information from the member states <sup>16</sup> .
Step 5.	The response is provided to the user in the GML Application Schema generated from the protected sites package of the INSPIRE data model.
Step 6.	The user handles the response in his or her chosen manner (for example, by saving the GML data returned by the web service/s to the local computer).
Post-condition	The user has a copy of the protected sites data according to his or her geographical and feature type selection saved in the format of the GML application schema generated from the protected sites package of the INSPIRE data model.
<b>Data source: Member State Protected Sites Web Feature Service for each member state</b>	
Description	This use case uses web feature services from each of the EU member states that serve their protected sites data in the INSPIRE GML application schema format.
Data provider	Each member state.
Geographic scope	All EU member states, but user can select only a subset of that area, either a subset of member states, a single member state or only part of a member state. In the latter case, a web feature service filter is required.
Thematic scope	Protected sites. This use case could be expanded to include all themes, as it is generic.
Scale, resolution	Data is provided at the most detailed scale and resolution available. The user may be given the option to select scale and resolution if required.
Delivery	INSPIRE Protected Sites GML Application Schema.

<sup>15</sup> It is not yet clear how many protected sites feature types there will be.

<sup>16</sup> For multiple member states, this may be returned either as a series of separate responses for each member state, or using an amalgamation web service to combine the responses from the web feature service for each member state. The web service architecture is beyond the scope of the current activity, so this aspect is not further detailed here.

INSPIRE	Reference: INSPIRE_DataSpecification_PS_v2.0.pdf		
TWG-PS	Data Specification on <i>Protected sites</i>	2008-12-19	Page 65

Use Case Description	
Documentation	INSPIRE Protected Sites Data Specification.

### **Use Case 5: Provide Protected Sites Data Using INSPIRE Specifications**

The scenario for the Provide Protected Sites Data Using INSPIRE Specifications use case is that a member state or other organisation (for example, the European Environment Agency) is to provide data according to the INSPIRE process. This use case involves data input according to INSPIRE, rather than output/use. All of the other use cases involve INSPIRE data output or use. This use case identifies the different steps that the member state might go through in providing data .

This use case describes a generic process that is envisaged after INSPIRE is implemented. As background material, Appendix A contains use cases describing the current data flows for one particular member state (UK), which contributes data to the European Environment Agency.

<b>Use Case Description</b>	
Name	Provide protected sites data using INSPIRE data model
Priority	High
Description	The user is an EU member state, and prepares and provides its data using the INSPIRE specifications, in the form of a static data set,
Pre-condition	Agreement to reporting data specifications and formats at the European level such as nationally designated areas, Natura 2000 sites, and on data collection cycle and reporting deadlines
<b>Flow of Events – User 1</b>	
Step 1.	Before expiration of a reporting deadline, the user prepares the national data for submission including mapping from the national data to the INSPIRE Protected Sites Data Specification.
Step 2.	The user uploads the national data according to agreed INSPIRE standards. She or he can upload an entire data set, or only a part of that data set, selected by geographical area of protected sites category.
Step 3.	The system generates a quality check report for the uploaded data and determines whether there are any issues. The quality control report assesses issues of match between the different member states' data sets (for example, cross border issues) and compliance with the INSPIRE Data Specification.
Step 4.	The user reviews the quality check report and modifies the data set as required to ensure compliance.
Step 5.	The user uploads the modified national data to the agreed repository
Step 6.	The system generates a quality check report for the second upload.
Step 7.	The user reviews the quality check report and verifies that no further changes are needed (if further changes are required, the flow of events returns to Step 4.
Step 8.	The user provides metadata to the agreed repository
Step 9.	The user publishes the data and metadata according to INSPIRE regulations in multiple, appropriate forms. Such forms are likely to at least include OGC web services for the data served by the member state (most importantly Web Map Service and Web Feature Service), registered with the INSPIRE registry.
Post-condition	The member state's data set is available in line with INSPIRE standards.
<b>Data source: Member State Data Set</b>	
Description	This use case uses data sets from each member state and submits them to an INSPIRE compatible infrastructure.
Data provider	Each EU member state as well as some other related organisations (for example, the European Environmental Agency).
Geographic scope	All EU member states and the pan-European area, or parts thereof.
Thematic scope	Protected sites.

INSPIRE	Reference: INSPIRE_DataSpecification_PS_v2.0.pdf		
TWG-PS	Data Specification on <i>Protected sites</i>	2008-12-19	Page 67

<b>Use Case Description</b>	
Scale, resolution	The highest resolution that the member state can provide.
Delivery	Data is to be delivered in the form of the INSPIRE GML application schema, either directly or through OGC web services.
Documentation	INSPIRE Protected Sites Data Specification, member states data set documentation.

## Appendix A: Use Cases for the Current Data Supply Flow in the UK

The UK currently undergoes an internal process (Use Case A.1) to prepare data for supply to the European Environment Agency, which performs its own process to prepare the data for supply to other parties (Use Case A.2). These uses case illustrate the current process and can be used to gain a more detailed understanding of the changes involved in moving towards the described Use Case 5 for the INSPIRE project.

### **Use Case A.1: Provide UK Protected Sites Data to EEA (Current Workflow)**

This scenario is for the collation of data on Natura 2000 protected sites within member states for submission to Europe. Example is for the United Kingdom where the Joint Nature Conservation Committee (JNCC) staff collate GI data on protected sites from the four country agencies within the UK. This is formerly submitted by the UK Government to the EU Commission as a consolidated data layer with supporting database for incorporation into the European dataset. The GI layers and the database are managed by the EEA and the European Topic Centre for Nature Conservation on behalf of the Commission. Sites under the Habitats Directive (SACs) are treated slightly differently to those protected by the Birds Directive (SPAs) in the manner in which data is packaged for European submission. The user case presented here describes the process by which new sites and amended sites are added to the existing cumulative data layer for reporting through to the EEA. There has been a version of the cumulative data layer since the mid 1990's.

The cumulative data layer contains GI boundaries for all designated SACs and SPAs as a single version showing the original, subsequently amended, boundary with site code<sup>17</sup>, name and source file name. Amended boundaries are extensions or deletions to the original boundary that have been subject to stakeholder consultation and approved by the relevant authority in each member state.

Use Case Description	
Name	Provide UK Protected Sites Data to EEA (Current Workflow)
Priority	High
Description	The user (collating body) receives protected sites data and associated metadata from each country (region) within the Member State and creates a single contribution to the European reporting process.
Pre-condition	The user has access to a client GIS with basic selection tools and contributing countries (regions) provide data to known standards and quality. There are previous versions of the cumulative data layer held by the EEA on behalf of Europe.
Flow of Events – Basic Path for SACs	
Step 1.	The user (collator) requests data on new and amended sites from country agencies in the UK as part of a coordinated exercise to provide a batched update to the EEA (these batches are called tranches and we are now at tranche 36).
Step 2.	The user (agency data owners) provide the protected site boundary as a .shp or equivalent file with site name, site code (UK code supplied by JNCC), paper copy of the site map and a copy of attributes in a the N2K database. For new sites this will involve a new site code number, for existing (amended) sites this will have the same site code number as the original site, but a new source file name.
Step 3.	The JNCC undertake a minimal quality check on the boundary data and UK code are correct, and assumes that each agency has applied geometry and other validation procedures. (The UK agencies have an agreed process for QA).

<sup>17</sup> The site code (UKxxxxxxx) is a unique identifier for each site and provides the link between the GI layer and the N2K database.

<b>Use Case Description</b>	
Step 4.	The JNCC then adds the new site boundaries and attribute data and deletes all old polygons with the same site code from the cumulative data layer and replaces them with amended site data. (The only change in the new cumulative layer is that the site area will have gone up or down for amended sites).
Step 5.	The cumulative layer and the supporting N2K database are then submitted to the EEA for incorporation into the European layer.
Post-condition	The JNCC has a copy of the current cumulative boundary layer and N2K database and the EEA further process this to create the combined European layer.
<b>Flow of Events – Basic Path for SACs</b>	
Step 1.	As above, but site boundaries collected from agencies when approved, not as batches/tranches.
Step 2.	As above
Step 3.	As above
Step 4.	As above...
<b>Data source: Internal systems of each member state</b>	
Description	This use case uses country derived data created according to nationally agreed standards. This data is used in GIS within each user agency and also made available through web-mapping systems <sup>18</sup> and websites.
Data provider	Country (=regional) agencies create and own the data and pass this to Europe through the UK coordinating body, the JNCC.
Geographic scope	Similar process must operate in all EU member states.
Thematic scope	Protected sites. This use case could be expanded to include all themes, as it is generic.
Scale, resolution	Data is provided at the most detailed scale and resolution available at the time of the official site submission to Europe. Subsequent improvements in resolution/accuracy are not captured by the current process. Many of these changes are driven by changes to the base mapping layer (the standard now is to use the Ordnance Survey's detailed Master Map for this purpose). In the UK this is dealt with by publication of both the cumulative data layer (as submitted to Europe) and a dynamic data layer that provides access to up to date boundaries adjusted for current base maps and accuracy.
Delivery	Data files direct to EEA
Documentation	Flow not documented

#### Issues to note:

1. The current process does not allow member states to update the cumulative data layer with the 'accurate' digital boundary available. The only way to make such changes "official" according to the EU is for the member state to resubmit the entire site (with amended paper maps, data forms and supporting database). Once the site has been approved by the relevant authority in the UK the boundary version remains the same on the European cumulative data layer.
2. Updated site boundaries on the cumulative data layer are not easily detectable from using the digital cumulative data layer or the N2K database as there is no version attribute to denote change. This can lead to confusion in use of the data layer by wider users.

<sup>18</sup> Use of UK generated boundary data is restricted by licensing issues imposed by the national mapping agency, Ordnance Survey. Use of boundaries by end-users requires them to be licensed to use OS products. This is a serious constraint on public use.

INSPIRE	Reference: INSPIRE_DataSpecification_PS_v2.0.pdf		
TWG-PS	Data Specification on <i>Protected sites</i>	2008-12-19	Page 70

3. Cross border sites are dealt with through an agreed protocol between the countries; one country takes the lead in defining and providing JNCC with relevant site boundary. This is done in cooperation with the adjoining country to ensure that the site boundaries are defined consistently across the country border.

4. Cross member state boundaries (UK and Eire) are resolved by defining two sites on each side of the international border.

5. Issues arise when the cumulative data layer is used in other GIS systems when geometric standards differ between systems an example include unclosed polygons. This is one reason why the JNCC provide access to two versions of the same data; one is the European standard cumulative data layer, the other is the UK dynamic data layer. The latter is the preferred download by UK users as it integrates better with their current use of base reference mapping.

**Use Case A.2: Provide EEA Protected Sites Data for External Use (Current Workflow)**

Use Case Description	
Name	Provide EEA Protected Sites Data for External Use (Current Workflow)
Priority	High
Description	<p>User 1 views, quality controls, and publishes quality control report on national data officially submitted to European level, on nationally designated areas, or Natura 2000 sites, or Internationally designated sites and their associated metadata, separately. User 1 also downloads, edits and merges national data officially submitted to European level, in each category of the above, establishing the relevant metadata. User 1 also prepares the relevant European data sets for each category for uploading on a specific viewer interface which allows selections of subsets or individual sites (EEA -ETC/BD) now in use case 5, simplified</p> <p>User 2 views, quality controls and publishes the downloadable European data set for each category and the relevant quality control reports. User 2 also uploads the specific viewer interface with the European data sets and their associated metadata (EEA data center).</p> <p>User 3 downloads the versioned European data sets and associated metadata and views and/ or downloads data quality control reports of European data sets per country for each category. User 3 uses the data sets in spatial analyses and / or research and provides data to indicators and assessments (EEA, European Commission, Countries and any others).</p> <p>User 4 views, queries and/ or downloads selected subsets of European protected area datasets and associated metadata. User 4 uses the data sets and provides data to indicators and assessments. (EEA, European Commission, countries and any others).</p> <p>User 5 queries and/or downloads national data officially submitted to European level, on all three categories and their associated metadata as well as quality control reports for the national data officially submitted to the European level, per country and/or category. User 5 uses the data sets and provides data to indicators and assessments (EEA, European Commission, countries and any others).</p>
Pre-condition	Agreement to reporting data specifications and formats at the European level such as nationally designated areas, Natura 2000 sites, also agreement on organisation and content of viewers, and on data collection cycle and reporting deadlines.
Flow of Events – User 1	
Step 1.	After expiration of a reporting deadline, User 1 proceeds with accessing national data officially submitted to European level and performs quality control with regard to compliance with agreed formats which include feature categories.
Step 2.	User 1 prepares a first quality check report per country and provides feedback to data provider.
Step 3.	Data provider may respond with second submission correcting mistakes and other omissions.
Step 4.	User 1 performs quality check on the second national delivery and sends feedback to data provider.
Step 5	User 1 downloads national data into a versioned European database.
Step 6	User 1 edits European database keeping track of changes in metadata according to the quality control report.
Step 7	User 1 delivers versioned European database to User 2.
Step 8	User 1 may respond to feedback from User 2.
Step 9	User 1 may redeliver versioned European database to user 2.

<b>Use Case Description</b>	
Step 10	(optional) User 1 performs the same editing to a non merged national data version.
Step 11	(optional) User 1 delivers edited non merged national report data version to user 2.
Step 12	User 1 transfers the final versioned European data set into the EUNIS format.
Step 13	User 1 delivers the versioned European database in this format to User 2.
<b>Flow of Events – User 2</b>	
Step 1.	User 2 performs quality control to the merged versioned European data set on the basis of previous versions and gives feedback to User 1, which may lead to a second delivery of the European data base.
Step 2.	User 2 publishes the quality check report of the European data set per country and provides feedback to data providers.
Step 3.	User 2 publishes the downloadable European data set (and optionally the edited non merged national data set).
Step 4	User 2 uploads the viewer with the versioned European data set.
Step 5	(optional) User 1 delivers edited non merged national report data version to user 2.
<b>Flow of Events – User 3</b>	
Step 1.	User 3 identifies the downloadable versioned European data sets as published by user 2 <a href="#">EEA - Data - Nationally designated areas (National - CDDA)</a> and <a href="#">EEA - Data - Natura 2000 EUNIS database</a>
Step 2.	User 3 selects the desired category
Step 3.	User 3 invokes downloading of the whole dataset
Step 4	User 3 identifies quality control reports related to the selected category per country <a href="http://cdr.eionet.europa.eu/resultsdataflow">http://cdr.eionet.europa.eu/resultsdataflow</a>
Step 5	User 3 invokes viewing/ downloading of quality control reports, eg <a href="#">NL_CDDA data delivery 2007</a>
<b>Flow of Events – User 4</b>	
Step 1	User views content and query possibilities <a href="#">EUNIS - Welcome to EUNIS Database</a> ,
Step 2	User queries easy search, advanced search, statistics and other features
Step 3	Report is generated and can be downloaded
Post-condition	There are on going discussions between the respective data providers and European Institutions.
<b>Data source: EEA/ ETC-BD/ DC ENV</b>	
Description	This use case uses EEA web services where nationally designated areas data reported annually by countries and the Nature 2000 database and data sets submitted from each of the EU member states to the European Commission, under the habitats Directive
Data provider	Each EU member state as well EEA member and associated country
Geographic scope	All EU member states and the Pan European area, according to the case (category). User can select full coverage of nationally designated areas, as well as a subset of that area, either a subset of member states, a single member state or only part of a member state. In the latter case, a web feature service filter is required.
Thematic scope	Official national data flows which establish European data sets on protected areas. This use case is in the core of operations of the Biodiversity data center, hosted by the EEA following an agreement between EEA, EUROSTAT, DG ENV and JRC. It is also contributing directly to the UN List of protected areas.

INSPIRE	Reference: INSPIRE_DataSpecification_PS_v2.0.pdf		
TWG-PS	Data Specification on <i>Protected sites</i>	2008-12-19	Page 73

Use Case Description	
Scale, resolution	Natura 2000 sites are given at 100.000 scale, Discussions are in progress for CDDA.
Delivery	
Documentation	