European Common database on Nationally Designated Areas (National – CDDA)

2012 – Quality assessment

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Activity 1.2.1.B3

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The European Topic Centre on Biological Diversity (ETC/BD) is a consortium of nine organisations under a Framework Partnership Agreement with the European Environment Agency

AOPK-CR ECNC EPASA ILE-SAS ISPRA JNCC MNHN SLU UBA-V

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Not relevant for public view

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2.1 Introduction

The latest version of the Common Database on Designated Areas (CDDA), version 10 from 2012, covers the entire geographical area of the countries that make up the EEA (including the 7 West Balkan countries that are 'cooperating countries' of the EEA) and includes the full geographical area under the responsibility of European countries as well as other States and Territories related to key initiatives in the European region[1].

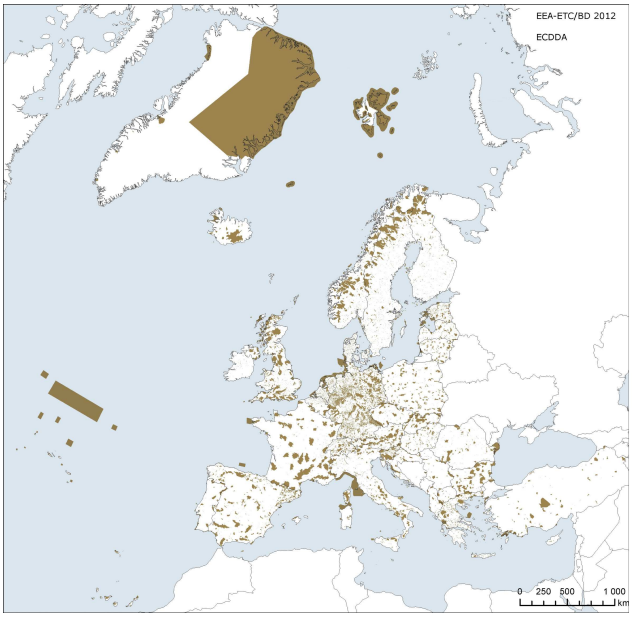

Figure 1: Extent of the ECDDA dataset,

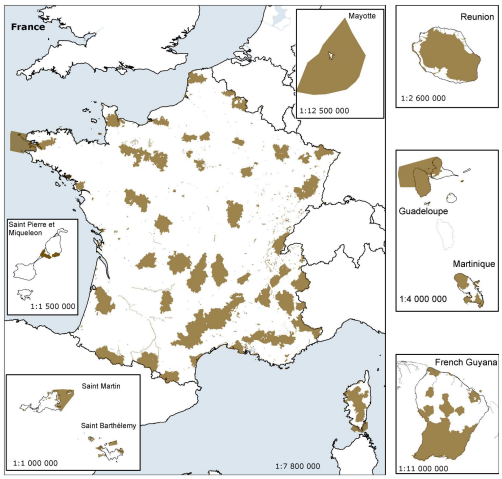

Figure 2: France (metropolitan, Dom-TOM, COM)

The resulting data covers the 39 EEA & EEA cooperating countries as well as Greenland (Denmark) and the French Overseas Departments and Territories[2] and Overseas Collectives[3] (figure 1 and figure 2).

In 2012 for inclusion into version 10 of the ECDDA; 32 countries delivered tabular data (figure 3, & Appendix 1) and 31 countries delivered spatial data (figure 4 & Appendix 2). These datasets were subjected to a series of quality control and quality assurance (QA/AC) checks.

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[1] Memorandum of Cooperation between the EEA and the United Nations environment Programme–World Conservation Monitoring Centre (UNEP-WCMC) (2007).

[2] The *département d'outre-mer et territoires d'outre-mers* (DOM-TOM) of Martinique, Guadeloupe, French Guyana, Mayotte and Reunion (Article 2 point 287 (b) of the Lisbon Treaty)

[3] The *collectivités d'outre-mer* (COM) of Saint Martin (MAF), Saint Barthélemy (BLM) (these islands were formerly part of Guadeloupe but seceded to form a COM –Feb 22 2007) as well as Saint Pierre et Miquelon (SPM)

Once the data passed these tests it was combined with data for those countries that did not submit data in 2012, which was extracted from the previous ECDDA dataset, version 9.

The combined and integrated dataset that is the 2012 ECDDA (version 10) covers 39 countries, and consist of a total of **94 810** records in the tabular database and **86 266** spatial records (see Appendix 3 for more details). With approximately 91% of records having spatial boundaries this reflects the work that countries have been investing into their protected areas network. Of these more than 86 000 boundaries only 2.6% of them are currently restricted from being downloaded. The reasons for this restriction can vary from copyright issue to the sensitive nature of some of the sites.

There are a few significant differences between the last version (version 9) of the ECDDA and the current one. Previously data from the Eastern Europe, Caucasus & Central Asian (EECCA) countries was included in the ECDDA via data received from the WCMC. As this data fell outside the dataflow for the ECDDA it was decided that the WCMC will manage this dataflow and feed it directly into the World Database on Protected Areas via protectedplanet.net. The second significant development is that a number of countries have been reviewing their protected area networks and this has caused a number of changes. Germany after a period of internal review and discussions has removed the designation DE 05 *Naturpark* from their delivery. This change should not be interpreted as a reduction in protection for biodiversity but rather as an improvement in the interpretation of protected areas in Germany specifically those that contribute towards real protection of biodiversity. The previous designation, which was a zone of special planning, fell outside the definition of protected areas that we use for the CDDA; that is *"A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values".* The Netherlands has also reviewed their protected areas network and supplied a comprehensive set of tabular and spatial information. Another trend that is apparent in latest ECDDA dataset is the increased number of marine protected areas. This is perfectly illustrated by the Portuguese delivery where they have added a number of marine protected areas that cover a significant area surrounding the Azores. All the internal reviews and focus on designation of protected areas on land and in the marine environment is most welcome and serves to improve the quality and coverage of the ECDDA.

CDDA version	Number of records tabular	Number of records Spatial
Version 10	**94 810**	**86 266**
Version 9*	120 456	112 274
Version 8*	109 634	101 818

Table 1. Number of tabular and spatial records in version 10

*** previous versions included data from the EECCA countries so the perceived decline in numbers is an artefact of this.**

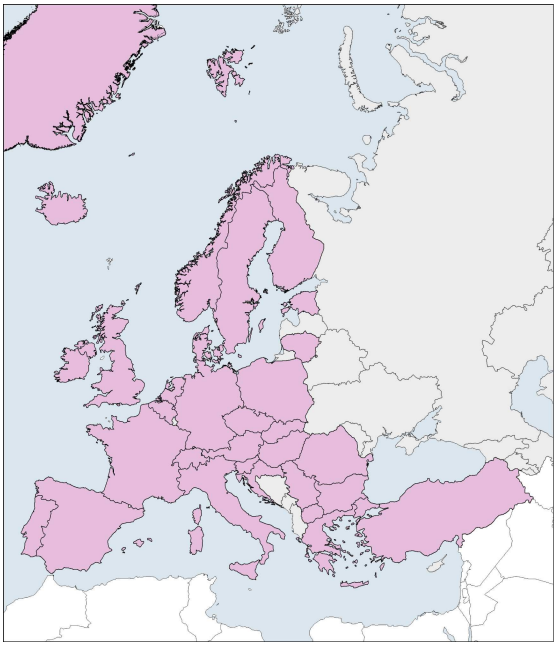

Figure 3: Countries that delivered tabular data.

Figure 4: Countries that delivered spatial data.

2.1 Main Issues

The majority of the data passed the QA/QC tests and was of a good quality. A number of the issues that were identified in the last reporting round were successfully resolved for the 2012 delivery. Those issues that remain, while minor, still result in a considerable extra work load in order to process the data.

The key issue remaining is the **use of identifiers for the spatial data**. In some cases the identifiers used are not globally unique, that is there are several records in the data set with the same identifier, and in other cases the identifier used is not directly linkable to the equivalent field in the tabular data. In these cases it is matter of examining every record and trying to successfully match spatial records with the matching record in the tabular data, for the vast majority of these cases this is a relatively simple task but nonetheless a time consuming one.

The ideal identifier to use for the spatial data set is either the **'SITE_CODE'** (that is the CDDA/WDPA ID) or the **'SITE_CODE_NAT'** (national site code), where this is not possible the 'Site_Name' should be used. If the 'Site_name' is to be used it should be a direct match for that in the tabular data, same character set, same case, same diacritical marks etc.

For the following countries there were a small number of issues regarding their delivery.

Croatia

There was 1 site where the Site_Code in the spatial data was incorrectly typed. While this is a realtively minor issue it could have meant that this site, which is part of the large transboundary Mura-Drava Regional park, would have been excluded from the final product had it not been picked up.

Error in Spatial	Correct Code
3493049	**393049**

Iceland

Iceland used the name of the site as the unique identifier. In the spatial data this name was in Icelandic characters in the tabular data this was in Latin characters e.g. *Hlið* in spatial data and Hlid in the tabular data. This was relatively easily solved and the Icelandic focal point was very helpful in clarifying any issues.

The former Yugoslav Republic of Macedonia

There were 4 sites where the Site_Code in the spatial data was incorrectly typed and inadvertently had the same SITE_CODE as for sites in Finland and Bulgaria.

Error in Saptial	Correct Code
176294	**176924**
176229	**176299**
176259	**176295**
176924	**176294**

Portugal

Portugal submitted 12 files of these 10 files contained unique identifiers which were not possible to automatically link to the tabular dataset. For these it was necessary to manually match the names of the sites in the spatial data to the names of the sites in the tabular data. However the great effort Portugal went to in submitting such an extensive marine network of sites should be recognised and goes a long way to mitigating any manual work needed to include such a comprehensive dataset into the ECDDA.

Poland

There was a significant problem in linking the Polish spatial data to the tabular data. The Polish spatial data used the name of the site as the unique identifier, though this name was often not globally unique, e.g. Jezioro Czarne and for a large number of sites the names in the shapefile were corrupted due to a character recogition issue, e.g. the site called *Mokradła Koło Leśniczówki Łowiska* in the tabular dataset was called '*Mokrad3a Ko3o Leoeniczowki £owiska*' in the shapefile. For the majority of these sites once the nature of the issue was identified it was possible to match the records though this process took an extensive amount of time. There were 22 sites that were not possible to match with 100% confidence. In future the Polish data should use the SITE_CODE as the unique identifier for the spatial data, as this is directly linkable to the tabular database.

Turkey

The principal issue with the Turkish data concerns the difficulty in linking the spatial data to the descriptive data. The unique identifier in the spatial data supplied by Turkey is the site name. In this field the site names are a combination of uppercase and lowercase, contain Turkish diacritical characters, underscores and abbreviations of the designation type at the end of the name e.g. _TKA, _MP. By contrast in the ECDDA database the "Site name" format consists of; the first letter of each word is upper case with the following letters being lower case,

hyphenations, parentheses, some different characters (often lower case versions of the upper case diacritical characters) and the designation types are not at the end of the site name.

The Turkish NFP was very helpful in this regard and even though the spatial data came from a different agency was able to assist in the paring between the names in the spatial dataset and the name in the tabular dataset.

The vast majority of issues relating to the spatial data are due to the SITE_CODE not being used as the unique identifier. The result is a significant amount of additional time spent on behalf of the agency to resolve these issues. Once again **it should be stressed that "SITE_CODE" should be used as the unique identifier.**

2.3 Spatial Validation

The 31 countries that submitted spatial data did so in the form of shape files or personal geodatabases. All the data from these countries was converted to the shapefile format[4] and subjected to a series of spatial QA/QC checks. There were over 2 000 records supplied as points, these were buffered by 20m and merged with the polygon data to have just 1 spatial dataset. This was done for technical reasons to allow the data to be easily integrated into map viewers;

The spatial validation consisted of the following stages:

- 2.3.1 Projection validation
- 2.3.2 Geometry validation
    - 2.3.2.1 Geometry must be valid if not Repair geometry.
    - 2.3.2.2 Multipart polygons must not be present, if so "Dissolve"
- 2.3.3 Geographical and Attribute validation
    - 2.3.3.1 Data must lie within the country extent (terrestrial + marine).
    - 2.3.3.2 Check if coordinates in the database are within the country.
    - 2.3.3.3. Attribute validation, check that each feature has a sitecode, if not link by another field, if not possible check site name and try to link using site name, grid coordinates, area
    - 2.3.3.4 Calculate coordinates for each polygon and compare them to the coordinates as supplied by country.
    - 2.3.3.5 Comparison of the Area, area calculated using GIS and compared to that supplied by the Country.

[4] The rational for using shapefiles over personal geodatabases is that geodatabases are often version specific and in having the data as shapefiles this issue is bypassed. In future following discussion between the ETC/BD, EEA and WCMC the data may ultimately be delivered as personal geodatabases.

2.3.1 Projection validation

All data were checked to ensure they add a projection file. All files passed this first step. The Table in Appendix 4 details the native projection or projections of the data. All the data were transformed to ETRS LAEA 5210 to incorporate them into a European wide projection system.

2.3.2 Geometry validation

2.3.2.1 Geometry must be valid

The rule for this check was that the geometry must be valid. The geometry of all the files was checked using the 'Check Geometry' Tool in Arc GIS 10.0. Where this QA/QC identified errors the 'Repair Geometry' Tool was run in order to repair them. Common geometrical issues were self intersections or incorrect ring ordering.

2.3.2.2 Multipart polygons must not be present:

The rule for this check was that multipart polygons must not be present. After the geometry had been validated all the files were dissolved using the 'Dissolve' command in Arc GIS 10.0. All features were aggregated based on the unique identifier.

2.3.3 Geographical and attribute validation:

2.3.3.1 Data must lie within the member State extent:

The rule for this test was that all data should lie within the terrestrial and marine extent of the country. Due to the differences in the data for borders of countries between what they have available nationally and what is available at the European level a buffer of 5km was created around the country boundaries and the Marine extents[5]. All the data passed this test.

2.3.3.2 Check if coordinates are within the Member State:

The descriptive database contains two fields (LAT, LON) that are used by countries to add coordinate information to the sites. The coordinates as supplied by the countries were converted to a point and a projection (WGS 84) added to the points. The location of these points was checked against the extents of the countries. A small number of sites occurred outside the country extent (Appendix 7) the principal cause of these 'errors' was the latitude and longitude being switched. Where this occurred the coordinates were corrected in a separate field and the test run again.

A number of countries did not supply coordinates for their site, instead they asked that the coordinates be calculated automatically where spatial datasets were provided[6]. The centroid of the polygon was generated so that it would lie inside the polygon feature using the 'Feature to Point' tool in Arc GIS 10

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[5] The boundaries used were generated during the Article 17 process and consist of the National GeoSpatial Agency (NGA) coastline data (global shoreline data, satellite derived high water line data) supplemented by EU Member State data where supplied, the internal boundaries are based on EEA supplied Euroboundary map data, the marine extents are based on the EEZ obtained from the VLIZ (http://www.vliz.be/En/INTRO) which are based on the UN law of the Sea.

[6] These countries denoted this by filling in the value "02" in the filed CDDA_Coordinate_Code in the sites table or via correspondence stating that they wanted the coordinates to be calculated

2.3.3.3 Attribute validation:

All spatial features were checked against the descriptive data to ensure that a unique identifier within the spatial data could be linked to the descriptive data and ultimately to the site code. All countries had unique identifiers in the spatial data that could be linked to the descriptive data base (version 9) and the site code filled, except for the cases mentioned in section 2.1.

2.3.3.4 Calculate coordinates for each polygon and compare them to the coordinates as supplied by country.

The centroid of the polygon was calculated to lie within the polygon. The location of this centroid was compared with the latitude and longitude as described in the descriptive database, where it exists. Four situations were distinguished, where the differences is >5km, >10km, >50km and >100km (Appendix 6 shows a table giving the number of sites per country that fall into these classes).

2.3.3.5 Comparison of the Area: GIS calculated area compared to that supplied by the Member State

The area of the polygons for each site was calculated and compared to the areas in the descriptive database for the same site, where the area was given. Three situations were identified, where the difference was >10%, >50% or >100% (Appendix 7 shows a table giving the number of sites per country that fall into these classes).

2.4. Results

Once the data from the 31 EEA and EEA collaborating countries that delivered in 2012 underwent the QA/QC procedures it was merged into a single polygone feature. The data for those countries that did not submit spatial data in 2012 were extracted from the previous CDDA dataset version 9.

The 2012 ECDDA data set covers 39 countries (Appendix 3) with over 94 000 records in the database and over 86 000 spatial records. As mentioned previously there are still a small number of restrictions on the dissemination of the data. Table 2 highlights the 6 options for data dissemination; this table is extracted from the CDDA Data Dictionary. This field is included in the attributes of the shape files as the field 'CDDA_Disse'. The dissemination code was taken from the field 'CDDA_Dissemination_code' from the table 'sites_boundaries'

Value	Definition
00	Use dissemination instructions provided in metadata for the spatial dataset.
01	Vector data can be published for this feature
02	Public dissemination restricted to presence/absence in European raster dataset.
03	Public dissemination restricted to European scale maps
04	Dissemination to CDDA partner institutions (WCMC and CoE) for their internal use only. Other interested parties should contact national representative.
05	No dissemination by EEA. Interested parties should contact national representative.

Table 2. Dissemination instruction code (CDDA Data dictionary, EEA).

3. Concluding remarks

- The majority of the data delivered under the ECDDA reporting cycle is of a high quality.

- The download of datasets from Reportnet and the merging of datasets into a European one is a time consuming task if carried out manually. It is still hoped that the development of the automated harvesting, merging of datasets and creation of xml-based QA/QC reports as carried out by the EEA for the Natura 2000 dataflow can be used for the ECDDA in the near future, though for this to be realised all datasets needs to have specific data standards.

- The provision of the helpdesk, as well as the initial automatic QA/QC of the data in addition to communication with data providers, where necessary in case of data issues, is considered as being very beneficial in order to assure - or where necessary to improve - the high quality of the ECDDA data flow. In 2012 the helpdesk dealt with approximately 70 emails from 19 countries and facilitated communication with the EEA on a number of issues.

- Over the last 2 years the ECDDA data has been used for the calculation of Indicators (SEBI 07 on nationally protected areas, CSI 008 on designated areas), it was discussed in the 2nd Message of the '10 messages for 2010' as well as being used in the State of the Environment 2010 (SOER 2010) report specifically Part B on Biodiversity in Protected Areas. In addition the ECDDA has been a very important dataset for the forthcoming EEA report on 'Protected Areas'. The ECDDA was the key dataset used in

this report, from the production of statistics, creation of maps, to the detailed analysis of protected areas in Europe.

- With the advert of the Water Framework Directive a number of 'protected sites' are being created such as 'Nitrate vulnerable zones', it needs to be discussed whether these should be covered by the CDDA dataflow or not. There should be a consensus on whether these 'protected areas' fit under the definition of protected areas used for the ECDDA (see Section 2.1). If these WFD 'protected areas' do not match our needs there should be a system whereby they can be uploaded.

- INPSPIRE: Protected Areas is among the data sets covered by Annex I of the Inspire Directive. Over the next year or two the Data Specifications for Protected Areas will become the standard. There needs to be work done by all parties to ensure that the ECDDA data conforms to these data specifications. The EEA is currently working with one country to test these, the outcome of this project will help guide the work of the EEA in this regard.

Appendix 1 32 countries that supplied tabular data for ver. 10

Table listing which countries delivered descriptive data in 2011.

Country	ISO3
Austria	AUT
Belgium	BEL
Bulgaria	BGR
Croatia	HRV
Czech Republic	CZE
Denmark	DNK
Estonia	EST
Finland	FIN
France	FRA
FYROMacedonia	MKD
Germany	DEU
Greece	GRC
Hungary	HUN
Iceland	ISL
Ireland	IRL
Italy	ITA
Kosovo (UNSCR 1244/99)	XKX
Liechtenstein	LIE
Lithuania	LTU
Netherlands	NLD
Norway	NOR
Poland	POL
Portugal	PRT
Romania	ROM
Serbia	RS
Slovakia	SVK
Slovenia	SVN
Spain	ESP
Sweden	SWE
Switzerland	CHE
Turkey	TUR
United Kingdom	GBR

Appendix 2: 31 countries that supplied spatial data for ver. 10

Table listing which countries delivered spatial data in 2012.

Country	ISO3
Austria	AUT
Belgium	BEL
Bulgaria	BGR
Croatia	HRV
Czech Republic	CZE
Denmark	DNK
Estonia	EST
Finland	FIN
France	FRA
FYROMacedonia	MKD
Germany	DEU
Greece	GRC
Hungary	HUN
Iceland	ISL
Ireland	IRL
Italy	ITA
Kosovo (UNSCR 1244/99)	XKX
Liechtenstein	LIE
Lithuania	LTU
Netherlands	NLD
Norway	NOR
Poland	POL
Portugal	PRT
Romania	ROM
Slovakia	SVK
Slovenia	SVN
Spain	ESP
Sweden	SWE
Switzerland	CHE
Turkey	TUR
United Kingdom	GBR

Appendix 3: 39 countries

Table listing which countries make up the 2012 ECDDA and the number of records in the descriptive database and spatial data.

Country	ISO3	No. of records in database	No. of records in GIS
Albania	ALB	796	48
Austria	AUT	1202	1182
Belgium	BEL	1897	1483
Bulgaria	BGR	1003	1003
Bosnia - Herzegovina	BIH	156	33
Switzerland	CHE	5876	4704
Cyprus	CYP	45	21
Czech Republic	CZE	2306	2306
Germany	DEU	15942	15934
Denmark	DNK	2262	1931
Spain	ESP	1557	1555
Estonia	EST	11287	11153
Finland	FIN	9995	9885
France	FRA	1913	1884
United Kingdom	GBR	9120	9093
Greece	GRC	839	773
Croatia	HRV	433	431
Hungary	HUN	272	210
Ireland	IRL	309	155
Iceland	ISL	107	107
Italy	ITA	871	870
Liechtenstein	LIE	41	41
Lithuania	LTU	344	73
Luxembourg	LUX	97	0
Latvia	LVA	704	321
FYROM	MKD	75	56
Malta	MLT	178	178
Montenegro	MNE	37	5
Netherlands	NLD	305	305
Norway	NOR	2881	2829
Poland	POL	2186	1558
Portugal	PRT	224	223
Romania	ROU	978	853
Serbia	SRB	234	25
Slovakia	SVK	1148	1109
Slovenia	SVN	1947	1944
Sweden	SWE	12924	11711
Turkey	TUR	2222	153
Kosovo (UNSCR 1244/99)	XKX	97	121
Total		**94810**	**86266**

Appendix 4

Table of the projection of the spatial data supplied by the Countries in 2012

Country	ISO3	Format	Projection
Austria	AUT	Shapefile	LAM_CC_4730_AUT (GCS MSI)
Belgium	BEL	Shapefile	Belge_Lambert_1972
Bulgaria	BGR	Shapefile	WGS_1984_UTM_Zone_35N
Croatia	HRV	Shapefile	HR_GK_5
Czech Republic	CZE	Shapefile	S-JTSK_Krovak_East_North
Denmark	DNK	Shapefile	Europe ETRS-TM32, ETRS89 datum; 6 deg East to 12 deg East
Estonia	EST	Shapefile	Estonia_1997_Estonia_National_Grid _MI_0
Finland	FIN	Shapefile	ETRS_1989_LAEA
France (metropolitan)	FRA	Shapefile	ETRS_1989_LAEA
Germany	DEU	Shapefile	DHDN_3_Degree_Gauss_Zone_3
Greece	GRC	Shapefile	Greek Grid
Hungary	HUN	Shapefile	GCS_WGS_1984
Kosovo (UNSCR 1244/99)	XKX	Shapefile	_MI_0
Iceland	ISL	Shapefile	ISN_1993_Lambert_1993
Ireland	IRL	Shapefile	ETRS_1989_LAEA
Italy	ITA	Shapefile	WGS_1984_UTM_Zone_32N
Lithuania	LTU	Personal geodatabase	ETRS89-LAEA5210
FYR Macedonia	MKD	Shapefile	GCS_WGS_1984
Netherlands	NLD	Shapefile	RD_New
Norway	NOR	Shapefile	WGS_1984_UTM_Zone_33N
Poland	POL	Shapefile	PUWG-92
Portugal	PRT	Shapefile	WGS84, WGS_1984_UTM_Zone_25N, WGS_1984_UTM_Zone_26N
Romania	ROM	Shapefile	Stereo_70
Spain	ESP	Shapefile	ETRS_1989_UTM_Zone_30N, WGS_1984_UTM_Zone_28N
Slovakia	SVK	Shapefile	S-JTSK_Krovak_East_North
Slovenia	SVN	Shapefile	ETRS_1989_LAEA
Sweden	SWE	Shapefile	GCS_WGS_1984
Switzerland	CHE	Personal geodatabase	CH1903_LV03
Turkey	TUR	Shapefile	GCS_European_1950
United Kingdom	GBR	Personal geodatabase	OSGB_1936_British_National_Grid

France, DOM-TOM, COM			
Guadeloupe*	GLP	Shapefile	WGS84_UTM Zone 20N
Martinique	MTQ	Shapefile	WGS84_UTM Zone 20N
French Guyana	GUF	Shapefile	RGFG95_UTM_Zone_22N
Réunion	REU	Shapefile	RGR92 UTM Zone 405
Mayotte	MYT	Shapefile	WGS 1984 UTM Zone 385
St Pierre et Miquelon	SPM	Shapefile	WGS 1984 UTM Zone 21N

*The data for Guadeloupe includes that for the COM's of Saint Martin (MAF) and Saint Barthélemy (BLM).

All the data was transformed to ETRS LAEA 5210.

Appendix 5

Check if coordinates supplied by countries (in the 2012 tabular data) are within the country.

This is only run on those countries that supplied data in 2012.

Denmark

SITECODE	NAME	LAT	LON	Actual Location
390624	Lejre Kommune	55.638795	55.638795	LAT & LON the same
390635	Næstved Kommune	55.266888	55.266888	LAT & LON the same

Poland:

15 sites have incorrect coordinates, 1 in Germany, 8 in Lithuania, 4in Belarus, 1 in Ukraine and 1 in Russia.

SITECODE	NAME	LAT	LON	Actual Location
116163	Labunie	50.05	23.417	11km inside Ukraine
145183	Stary Przylep	53.1833	14.25	8 km inside Germany
177351	Gnilec	52.85	33.633	Russia
177380	Jalinka	52.2666	23.567	10-20km inside Belarus
177497	Nietupa	52.2	23.783	10-20km inside Belarus
177546	Rezerwat Krajobrazowy	52.3833	23.717	10-20km inside Belarus
337586	*pomnik przyrody*	54.5	23.8	Lithuania
337587	*pomnik przyrody*	54.6	23.11	Lithuania
337588	*pomnik przyrody*	54.6	23.11	Lithuania
337589	*pomnik przyrody*	54.6	23.12	Lithuania
337590	*pomnik przyrody*	54.6	23.12	Lithuania
337591	*pomnik przyrody*	54.14	23.8	Lithuania
337621	*pomnik przyrody*	54.3	23.9	Lithuania
337624	*pomnik przyrody*	54.3	23.9	Lithuania
337627	*pomnik przyrody*	53.46	23.8	7km inside Belarus

Serbia:

2 sites have incorrect coordinates.

SITECODE	NAME	LAT	LON	
16394	Grmija	40.083333	21.21667	Grevena, Greece
328858	Mackov Kamen	20.919048	19.297829	Chad, Lat & Lon swapped

United Kingdom:

13 sites have incorrect coordinates, all occuring within Ireland.

SITECODE	NAME	LAT	LON	Actual Location
87081	GARVROS	54.356111	-8.106111	Ireland
87084	LERGAN	54.179167	-8.030556	Ireland
142810	GARRON PLATEAU	54.038333	-7.633611	Ireland
169663	BALLYBANNAN	53.9625	-5.910556	Ireland
169799	Cwm Clydach, Cydweli	53.501667	-5.854444	Ireland
169945	LIME HILL FARM	54.01	-6.941111	Ireland
174708	River Ithon	53.65883	-6.37316	Ireland
183438	Brynna a Wern Tarw	52.89007	-6.54659	Ireland
183445	Afon Cleddau Dwyreiniol/Eastern Cleddau River	53.25761	-7.93997	Ireland
183446	Afon Cleddau Gorllewinol/Western Cleddau River	53.23338	-8.1656	Ireland
183447	Afon Wysg (Isafonydd)/River Usk (Tributaries)	53.23471	-6.14095	Ireland
183450	Mwyngloddia Wnion a Eglwys Sant Marc	54.1195	-6.84619	Ireland
183452	Afon Llyfni	53.36231	-6.32537	Ireland

Appendix 6

Table highlighting differences in the coordinates from the descriptive data and those calculated by GIS. The table shows the number of sites with a difference of over 5km, over 10km, over 50km & over 100km.

Country	Diff over 5km	Diff over 10km	Diff over 50km	Diff over 100km
AUT	5	3	0	0
BEL	17	10	5	0
BGR	9	6	2	1
CHE	2	1	0	0
DNK	8	1	1	1
ESP	4	1	0	0
EST	5	2	0	0
FIN	7	3	3	3
FRA	73	41	3	2
GBR	171	92	31	18
GRC	23	11	0	0
HUN	5	1	0	0
IRL	2	1	0	0
ISL	2	2	1	0
LTU	9	4	0	0
NLD	12	3	0	0
NOR	49	23	4	2
POL	148	109	55	44
PRT	9	6	2	1
ROU	14	5	5	5
SVK	15	8	0	0
SWE	32	9	1	0
TUR	81	72	27	19
XKX	2	1	0	0

Appendix 7:

Table highlighting differences in the area of the sites comparing the areas as supplied in the tabular data to the GIS derived areas. The table shows the number of sites with a difference in area of over 10%, 50% & over 100%.

Country	>10%	>50%	> 100%
AUT	8	6	6
BEL	40	10	2
BGR	499	432	378
CHE	5	2	2
DEU	717	100	41
DNK	340	109	72
ESP	307	270	263
EST	60	11	5
FIN	76	6	2
FRA	453	188	122
GBR	150	81	58
HRV	2	1	1
HUN	10	5	5
ITA	148	61	38
MKD	1	0	0
NLD	2	1	1
NOR	61	9	3
POL	178	78	43
PRT	1	1	1
ROU	7	1	1
SVK	183	80	52
SVN	15	10	7
TUR	16	13	11
XKX	5	2	2

Appendix 8: Field names of spatial data

Field Name	Description
SITE_CODE	Sitecode of the record
Area_ha	Area of the record in hectares as calculated in GIS
Parent_ISO	ISO 3 digit code as taken from the tabular dataset
ISO3	Parent ISO 3 digit code as taken from the tabular dataset
ODESIGNATE	Name of the designation of the record in the native language, as taken from the 'designations' field in the tabular dataset
SITE_NAME	Name of the record as taken from the tabular dataset
DESIGNATE	Name of the designation of the record in English as taken from the 'designations' field in the tabular dataset
IUCNCAT	IUCN category as taken from the tabular dataset
Year	Year for designation of the record, as taken from the tabular dataset
CDDA_Disse	Dissemination code for the record as taken from the field 'CDDA_Dissemination_Code' from the 'site_boundaries' table.