

Data structure for a central Euro+Med information system

V 1.0

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1 Purpose of this document

The Berlin meeting of the Euro+Med computer working group in July 2001 made clear that the project needs a concept for a future Euro+Med central database, which is to be deployed at the secretariat in Reading and which will serve a potentially high number of information requests on a daily basis over the WWW. This central database needs to be implemented using a database management system, and a user interface (for the secretariat's staff) for data maintenance, data merging, and web publishing has to be programmed.

Currently, three very different database systems are involved in the Euro+Med editing process, each one for its specific task: The Pandora database system is used for data capture at the four data entry centres and it will probably serve as a taxonomic tool for the editing to produce the initial checklist (Seville). Bibmaster will be used to capture the results of taxonomic revisions (Madrid). Finally, a new database was designed to serve as a "backbone" for taxonomic remote editing on the World Wide Web (Berlin).

The computer working group agreed that it would be wise to define a data structure for the future central Euro+Med database now to ensure that all participating databases would be able to export to and import their data from this data structure. The underlying data model should be capable of representing different sources for the same name, mainly because satellite databases can only be linked to the known stable concepts such as the Flora Europaea or Med Checklist. Furthermore, the data structure should be represented as a relational data model to make sure that the final implementation can go ahead using any of the major relational database management platforms (e.g. SQL Server, DB2, Oracle, or PostgreSQL).

Since the remote editor "backbone" was already designed for these requirements, the Computer Working Group asked Berlin to develop and document their data structure so that it can be used as a draft for the central data structure. This development was followed by a two-week email discussion, which confirmed that Madrid and Edinburgh would be capable of converting their data to and from this structure.

This document describes the resulting data structure together with a pdf-file (<http://www.bgbm.org/BioDivInf/projects/Euro+Med/ERv1.pdf>) depicting entities and relations between them as a relational model. An SQL script file to create the database (tables and relational integrity only) automatically on a MS SQL Server system for testing purposes may be obtained from the authors on request (mailto: a.guentsch@bgbm.org).

Note: The model closely follows the Euro+Med specifications as given in the "Guidelines for contributors of initial taxonomic accounts" (http://www.euromed.org.uk/documents/4.6.01_revision_guidelines.pdf). Nevertheless, different taxonomic data requirements were considered in the construction of the model. For example, the accommodation of hybrid formulas, cultivars and type identifications can be appended as a separate table or a series of fields to the *Name* and *NameHistory* tables.

2 Central entities

Name and NameHistory

To preserve the history of the name editing process, names are stored in two tables *Name* and *NameHistory*. The *Name* table contains the set of names currently in use by the

system. The *NameCache* and *FullNameCache* fields contain the Latin names without and including author strings as calculated by a trigger functions according to Euro+Med rules. In addition, these cache fields can be used to capture preliminary (unstructured) name fields if needed. The *NameHistory* table is structured very similar with a few exceptions: The name string fields are not serving as a cache and do not contain results of a trigger. *AuthorTeam* and *BasAuthorTeam* are carrying their respective content as strings and not as a pointer to the author tables. A self-referential pointer (*SuccNameHistId*) links a name to its successor within the editing history. An additional pointer (*CurrentNameId*) gives for every name the name currently in use.

Reference

Euro+Med Checklist versions, authors of taxonomic revisions, and other data sources such as other checklists (e.g. Med Checklist) and floras are represented with the *Reference* table. The linked table *ReferenceType* is used to distinguish several basic types of information sources such as a person or a published CD-ROM.

The distinction between references and bibliographic citations is still under discussion, which will probably lead to an approach providing on the one hand a highly structured entity for nomenclatural citations and on the other hand a much more “tolerant” structure for all other kinds of citations including those currently held in the *Reference* table.

PotTaxon and RelPTaxon

The *PotTaxon* table combines name identifiers with reference identifiers into its primary key. This combination enables the system to preserve statements on taxa as they were given in the original information sources (e.g. status of a name or distribution information). It also allows for the work processes involved in the editing of “taxonomic slices” by experts using the remote editor.

The *RelPTaxon* table is used to connect any two entries of the *PTaxon* table to express arbitrary directed binary relations. This includes taxonomic inclusions (i.e. the classification system), any kind of synonyms, concept relations, basionym and homonym relations (indicated with *RelQualifierFk*). The *ConceptRelTypeFk* field is used to indicate the type of concept relation, if a record represents such a relation between two taxa. Data-level integrity between *RelQualifierFk* and *ConceptRelTypeFk* must be ensured either with trigger functions or at the client level. Holding all kinds of binary relations in a single table provides a convenient and transparent way to query the links from taxa to each other, and it greatly facilitates the implementation of client-sided navigation functions.

3 Factual data

The model links factual data of any kind to the *PotTaxon* table thus providing a means to express different “opinions” for different versions of the checklist on the same name. Occurrence data are kept in an atomised table (*Occurrence*) as specified by the project. All other factual data sets are stored as summaries in the *Fact* table as free text and are distinguished with the *FactTypeFk* pointer to the *FactType* table. As soon as more detailed specifications for these data areas would become available, appropriate data structures could be developed and directly linked to the *PotTaxon* table.

4 Complete list of tables and attributes

Tables are given alphabetically. SQL Server 2000 data types are used, which can easily be converted into any data type used by one of the other major database systems. NVARCHAR fields contain Unicode values up to the length given in the Precision column. NTEXT fields may contain Unicode strings up to an (nearly) arbitrary length. Every primary key is represented with an integer number or a combination of integer numbers if it is constructed with foreign keys pointing to other tables. “Triggers” are little programs stored in the database and performing automatic functions as soon as a defined event (e.g. insert or update) occurs.

Area: The list of Euro+Med area codes including additional territories from Flora Europae and Med-Checklist considered to be outdated or unsuitable. The *Area.Status* field indicates this property.

TableName	Attribute	Type	Description
Area	Areald	int	Primary key
Area	EMCode	char(10)	E+M Area code as given in "Revision Guidelines V1.2" - Geographical Standard
Area	ISOCCode	char(10)	ISO codes as given in "Revision Guidelines V1.2" - Geographical Standard
Area	TDWGCode	char(10)	TDWG codes as given in "Revision Guidelines V1.2" - Geographical Standard
Area	Unit	nvarchar(255)	Area full name
Area	Status	int	Status for Euro+Med project (1=Euro+Med area, 2=outdated)

Author: Taxon author represented with first name(s), last names, and standard abbreviation. Additionally, *Author.LifeSpanString* can indicate when an author lived.

Author	AuthorId	int	Primary key
Author	Short	nvarchar(20)	Abbreviation
Author	FirstName	nvarchar(80)	First names
Author	LastName	nvarchar(80)	Last name
Author	LifeSpanString	nvarchar(50)	String indicating the author's lifespan (e.g. '1723-1780' or '1966-')
Author	Created_When	datetime	Date and time when record was created
Author	Updated_When	datetime	Date and time when record was last updated
Author	Created_Who	nvarchar(255)	Person who created the record
Author	Updated_Who	nvarchar(255)	Person who updated the record last
Author	Notes	ntext	Remarks and notes for the secretariat

AuthorTeam: Representation of “sets” of authors with a unique identifier. The author team string or basonym author string itself will be calculated automatically from a trigger and be stored in the *AuthorTeam.AuthorTeamCache* field which can also be used to capture preliminary author strings.

AuthorTeam	AuthorTeamId	int	Primary key
AuthorTeam	AuthorTeamCache	nvarchar(80)	Complete authorteam string to be constructed by a trigger (inserts/updates on tables Author and AuthorTeamSeq)
AuthorTeam	Created_When	datetime	Date and time when record was created
AuthorTeam	Updated_When	datetime	Date and time when record was last updated
AuthorTeam	Created_Who	nvarchar(255)	Person who created the record
AuthorTeam	Updated_Who	nvarchar(255)	Person who updated the record last
AuthorTeam	Notes	ntext	Remarks and notes for the secretariat

AuthorTeamSeq: A link between the Authors table and the *AuthorTeam* table representing a sorted list of authors within an author team. The *AuthorTeam.Sequence* field represents the position of an author within a team. A client program should make sure that this position is unique within a team.

AuthorTeamSeq	AuthorFk	int	Pointer to Author table and part of this table's primary key
AuthorTeamSeq	AuthorTeamFk	int	Pointer to AuthorTeam table and part of this table's primary key
AuthorTeamSeq	Sequence	int	Number indicating the position of this author within this authorteam. Make sure that sequence is different for different authors in an authorteam.

Bib: Title of a taxonomic book or periodical. If a title was imported from a secondary source the *Bib.Source* field indicates the name of this source. *Bib.SourceId* holds the original identifier of this record.

Bib	BibId	int	Primary key
Bib	FullTitleCache	nvarchar(255)	Book/periodical title without year and authors as generated by a trigger function
Bib	PeriodicalOrBook	char(1)	'P' = Periodical, 'B' = Book
Bib	Title	nvarchar(255)	Full title
Bib	Abbreviation	nvarchar80	Abbreviated title
Bib	Authors	nvarchar(160)	Author string
Bib	BibYear	nvarchar(20)	Year of publication as a string
Bib	Source	nvarchar(20)	Source of this title if any ('BPH', 'TL2')
Bib	SourceId	nvarchar(50)	Original source identifier
Bib	Edition	nvarchar(50)	Edition string (e.g. 'ed.2')
Bib	Series	nvarchar(50)	Series string (e.g. 'ser.2')
Bib	Created_When	datetime	Date and time when record was created
Bib	Updated_When	datetime	Date and time when record was last updated
Bib	Created_Who	nvarchar(255)	Person who created the record
Bib	Updated_Who	nvarchar(255)	Person who updated the record last
Bib	Notes	ntext	Remarks and notes for the secretariat

Citation: A qualifying link between the *Bib* table and tables representing nomenclatural or factual data containing citation details such as volume, page numbers, and citation year. The *Citation.FullReferenceCache* field contains the full reference string, which will be calculated automatically by a trigger.

Citation	CitationId	int	Primary key
Citation	BibFk	int	Pointer to book or journal in the Bib table
Citation	FullReferenceCache	nvarchar(255)	Complete reference string to be constructed by a trigger (inserts/updates on Citation and Bib)
Citation	CitationYear	nvarchar(20)	Citation year as a string (e.g. '1833-1837')
Citation	Volume	nvarchar(20)	Volume as a string (e.g. '33' or 'ser.3, 2')
Citation	Pages	nvarchar(20)	Pages and additional information as a string (e.g. '342', '332 & 333', '389, t. 255')
Citation	ArticleTitle	nvarchar(255)	Title of an article/paper as a subsection of related entry in the Bib table
Citation	ArticleAuthors	nvarchar(160)	Author string for article in the ArticleTitle field (if exists)
Citation	Created_When	datetime	Date and time when record was created
Citation	Updated_When	datetime	Date and time when record was last updated

Citation	Created_Who	nvarchar(255)	Person who created the record
Citation	Updated_Who	nvarchar(255)	Person who updated the record last
Citation	Notes	ntext	Remarks and notes for the secretariat

ConceptRelType: A list of five binary relations, which might appear between taxonomic concepts. The entity is linked to the RelPTaxon table to indicate the type of conceptual relation for records representing relations between taxonomic concepts. Within the Euro+Med project probably only the 'is congruent to' relation will be relevant.

ConceptRelType	ConceptRelTypeId	int	Primary key
ConceptRelType	ConceptRelType	nvarchar(50)	The five basic concept relation types

Fact: One entity holding any fact represented as unstructured text field. *Fact.FactTypeFk* indicates the type of fact (e.g. description), *Fact.ReferenceFk* points to a *Citation* table record to represent literature references.

Fact	FactId	int	Primary key
Fact	NameFk	int	Pointer to PotTaxon table (name part)
Fact	ReferenceFk	int	Pointer to PotTaxon table (reference part)
Fact	Fact	ntext	One fact (karyology, description, growth form, hardiness, ecology, or phenology) as free text
Fact	FactTypeFk	int	Pointer to FactType table
Fact	CitationFk	int	Pointer to Citation table if the fact is cited from literature
Fact	Created_When	datetime	Date and time when record was created
Fact	UpdatedWhen	datetime	Date and time when record was last updated
Fact	Created_Who	nvarchar(255)	Person who created the record
Fact	Updated_When	nvarchar(255)	Person who updated the record last
Fact	Notes	ntext	Remarks and notes for the secretariat

FactType: A list of factual data types as given in the revision guidelines.

FactType	FactTypeId	int	Primary key
FactType	FactType	nvarchar(50)	Fact types as given in "Revision Guidelines V1.2"

Name: Representation of a botanical name (any rank). If a name is corrected, the "original version" is moved to the *NameHistory* table to preserve the editing process transparently. The *Name.NameCache* and *Name.FullNameCache* fields hold the latin name and the full name including author string as calculated from a trigger and may also be used to capture preliminary namestrings.

Name	NameId	int	Primary key
Name	RankFk	int	Pointer to table Rank
Name	NameCache	nvarchar(160)	Complete latin name string to be constructed by a trigger (inserts/updates on name table)
Name	FullNameCache	nvarchar(255)	Complete latin name string including author strings to be constructed by a trigger (inserts/updates on name and author tables)
Name	NamePhrase	nvarchar(160)	e.g. 'sensu Smith'. Is not part of the name itself but used for citations.
Name	SupraGenericName	nvarchar(50)	Namestring for ranks above genus
Name	Genus	nvarchar(50)	Genus name - omit intergeneric hybrid marker for named hybrids, use 'x' for unnamed hybrids (e.g. 'Abies x Pinus')
Name	SpEpi	nvarchar(50)	Species epithet - omit interspecific hybrid marker for named hybrids, use 'x' for unnamed hybrids (e.g. 'carinthiacus x gouanii')

Name	InfSpEpi	nvarchar(50)	Infraspecific epithet
Name	InfGenEpi	nvarchar(50)	Infrageneric epithet
Name	AuthorTeamFk	int	Pointer to authors in the AuthorTeam table
Name	BasAuthorTeamFk	int	Pointer to basionym authors in the AuthorTeam table
Name	IntGenHybFlag	bit	Indication of intergeneric hybrid
Name	IntSpHybFlag	bit	Indication of interspecific hybrid
Name	NomencIcitationFk	int	Pointer to Citation table for nomenclatural citation
Name	Created_When	datetime	Date and time when record was created
Name	Created_Who	nvarchar(255)	Person who created the record
Name	Notes	ntext	Remarks and notes for the secretariat

NameHistory: Older “versions” of a name which were replaced in the editing process. The *Name.SuccNameHistId* field contains a pointer to the next name within this revision history. Consequently, an empty *Name.SuccNameHistId* field indicates that the name is the last one within this sequence. The *Name.CurrentNameFk* field contains a pointer to the name table indicating the name string currently in use by the system.

NameHistory	NameHistId	int	Primary key
NameHistory	SuccNameHistId	int	Pointer to this table indicating a newer (corrected) "version" of the name. SuccNameId = NULL --> this is the latest record of the name within the history table.
NameHistory	CurrentNameFk	int	Pointer to the name table indicating the "version" of the name currently used.
NameHistory	RankFk	int	See Name table
NameHistory	Name	nvarchar(160)	See Name.NameCache. Note that this field must not contain results of a trigger such that the original content is preserved.
NameHistory	FullName	nvarchar(255)	See Name.FullNameCache. Note that this field must not contain results of a trigger such that the original content is preserved.
NameHistory	NamePhrase	nvarchar(160)	e.g. 'sensu Smith'. Is not part of the name itself but used for citations.
NameHistory	SupraGenericName	nvarchar(50)	See Name table
NameHistory	Genus	nvarchar(50)	See Name table
NameHistory	SpEpi	nvarchar(50)	See Name table
NameHistory	InfSpEpi	nvarchar(50)	See Name table
NameHistory	InfGenEpi	nvarchar(50)	See Name table
NameHistory	AuthorTeam	nvarchar(80)	Author team as a string
NameHistory	BasAuthorTeam	nvarchar(80)	Basionym author team as a string
NameHistory	IntGenHybFlag	bit	See Name table
NameHistory	IntSpHybFlag	bit	See Name table
NameHistory	NomencIcitation	nvarchar(160)	Nomenclatural citation as a string
NameHistory	Created_When	datetime	Date and time when record was created
NameHistory	Created_Who	nvarchar(255)	Person who created the record
NameHistory	Notes	ntext	Remarks and notes for the secretariat

OccurrCitation: Linking of a record in the occurrence table to several citation records.

OccurrCitation	NameFk	int	Pointer to Occurrence table and part of this table's primary key
OccurrCitation	ReferenceFk	int	Pointer to Occurrence table and part of this table's primary key
OccurrCitation	AreaFk	int	Pointer to Occurrence table and part of this table's primary key
OccurrCitation	CitationFk	int	Pointer to citation table and part of this table's primary key

Occurrence: Indication of the occurrence of a taxon as specified in the Revision Guidelines by linking an entry within the *PotTaxon* table to the *Area* table. The *OccurrenceCitationFk* field can hold a pointer to an entry in the *Citation* table to represent a literature reference.

Occurrence	NameFk	int	Pointer to PotTaxon table and part of this table's primary key
Occurrence	ReferenceFk	int	Pointer to PotTaxon table and part of this table's primary key
Occurrence	AreaFk	int	Pointer to Area table and part of this table's primary key
Occurrence	Occurrence	char(1)	Occurrence as specified in "Revision Guidelines V1.2"
Occurrence	NativeStatus	char(1)	Native status as specified in "Revision Guidelines V1.2"
Occurrence	IntroducedStatus	char(1)	Introduced status as specified in "Revision Guidelines V1.2"
Occurrence	IntroductionAgency	char(1)	Introduction agency as specified in "Revision Guidelines V1.2"
Occurrence	CultivatedStatus	char(1)	Cultivated status as specified in "Revision Guidelines V1.2"
Occurrence	WorldDistCompl	char(1)	World distribution completeness as specified in "Revision Guidelines V1.2"
Occurrence	Created_When	datetime	Date and time when record was created
Occurrence	Updated_When	datetime	Date and time when record was last updated
Occurrence	Created_Who	nvarchar(255)	Person who created the record
Occurrence	Updated_Who	nvarchar(255)	Person who updated the record last
Occurrence	Notes	ntext	Remarks and notes for the secretariat

PotTaxon: The central entity in the model represents pairs of NameIds and ReferenceIds (*PotTaxon.NameFk* and *PotTaxon.ReferenceFk*). The status of a name and all kind of factual data are linked to this entity instead to the name itself to make sure that versions of the checklist as well as taxonomic revisions and data from floraes such as Med Checklist and the original Flora Europaeae can be held within a single system if needed.

PotTaxon	NameFk	int	Pointer to Name table and part of this table's primary key
PotTaxon	ReferenceFk	int	Pointer to Reference table and part of this table's primary key
PotTaxon	SourceIdentifier	nvarchar(50)	Indication of the original identifier if this potential taxon (name) was imported from a foreign source
PotTaxon	StatusFk	int	Pointer to Status table
PotTaxon	Created_When	datetime	Date and time when record was created
PotTaxon	Updated_When	datetime	Date and time when record was last updated
PotTaxon	Created_Who	nvarchar(255)	Person who created the record
PotTaxon	Updated_Who	nvarchar(255)	Person who updated the record last
PotTaxon	Notes	ntext	Remarks and notes for the secretariat

Rank: Rank linked to every name with the *Name* and *NameHistory* table. Two flags *Rank.EMBasicFlag* and *Rank.EMExtFlag* are used to indicated whether the rank is used by the Euro+Med project (see Revision Guidelines).

Rank	RankId	int	Primary key
Rank	RankAbbrev	nvarchar(10)	Abbreviation (e.g. 'sp.')
Rank	Rank	nvarchar(50)	Full rankname (e.g. 'species')
Rank	HigherRankFk	int	Pointer to next higher rank within this table. May be used for sorting purposes.

Rank	EMBasicFlag	bit	Rank is family, genus, species, or subspecies (see "Revision Guidelines V1.2" - taxonomic concepts)
Rank	EMExtFlag	bit	Rank is family, subfamily, tribe, subtribe, genus, subgenus, series, section, species, subspecies, or species aggregate (see "Revision Guidelines V1.2" - taxonomic concepts)
Rank	EMSynFlag	bit	Ranks which may appear for synonyms or basionyms

Reference: Representation of a printed source of information, an electronic source, or a person, which /who generated or provided a set of potential taxa. For the Euro+Med project, this can be a Flora, the author of a revision, or a version of the checklist. The *Reference.RefTypeFk* points to the *RefType* table indicating the type of reference.

Reference	Referenceld	int	Primary key
Reference	RefTypeFk	int	Pointer to RefType table indicating the nature of a reference (e.g. database)
Reference	RefString	nvarchar(255)	Reference Title (e.g. "Euro+Med database version 1")
Reference	RefShort	nvarchar(40)	Abbreviation of full title (e.g. 'Euro+Med V1')
Reference	RefDetail	nvarchar(255)	Detailed description (e.g. "trial data exported from Pandora for testing purposes")
Reference	RefURL	nvarchar(255)	Full URL ('http://...') if the data source is already accessible on the www
Reference	RefDate	datetime	A date enabling the system to distinguish different "versions" of the same source (important if the source is a person)
Reference	Created_When	datetime	Date and time when record was created
Reference	Updated_When	datetime	Date and time when record was last updated
Reference	Created_Who	nvarchar(255)	Person who created the record
Reference	Updated_Who	nvarchar(255)	Person who updated the record last
Reference	Notes	ntext	Remarks and notes for the secretariat

RefType: Indication of a reference type.

RefType	RefTypeId	int	Primary key
RefType	RefType	nvarchar(50)	Type of a reference (e.g. 'database')

RelPTaxon: Representation of arbitrary binary relations between taxa as stored in the *PotTaxon* table. This includes taxonomic hierarchies, synonymies of any kind, and conceptual relationships if needed. The type of a given relation is indicated with the field *RelPTaxonRelQualifierFk* pointing to the *RelQualifier* table. The *ConceptRelTypeFk* indicates the type of concept relation if the given entry is a conceptual relationship.

RelPTaxon	RelPTaxonId	int	Primary key
RelPTaxon	NameFk1	int	Pointer to 1st potential taxon (name part)
RelPTaxon	ReferenceFk1	int	Pointer to 1st potential taxon (reference part)
RelPTaxon	NameFk2	int	Pointer to 2nd potential taxon (name part)
RelPTaxon	ReferenceFk2	int	Pointer to 2nd potential taxon (reference part)
RelPTaxon	RelQualifierFk	int	Pointer to RelQualifier table indicating the type of relation between the potential taxa involved
RelPTaxon	ConceptRelTypeFk	int	Pointer to ConceptRelType table indicating the relation type if this relation is conceptual
RelPTaxon	Created_When	datetime	Date and time when record was created

RelPTaxon	Updated_When	datetime	Date and time when record was last updated
RelPTaxon	Created_Who	nvarchar(255)	Person who created the record
RelPTaxon	Updated_Who	nvarchar(255)	Person who updated the record last
RelPTaxon	Notes	ntext	Remarks and notes for the secretariat

RelQualifier: A list of relation types as used in the *RelPTaxon* table.

RelQualifier	RelQualifierId	int	Primary key
RelQualifier	RelQualifier	nvarchar(50)	Qualification of relations between two potential taxa stored in RelPtaxon table

Status: A list of stati as used by Euro+Med plus a “provisional” status for taxa not yet edited.

Status	StatusId	int	Primary key
Status	Status	nvarchar(80)	Status as given in "Revision Guidelines V1.2" - Section 6.4

5 Tables containing category data or catalogues

Status

StatusId	Status
0	provisionally accepted
1	accepted
2	synonym
3	doubtful synonym
4	pro parte synonym
5	misapplied name
6	basionym
7	homonym

RelQualifier

RelQualifierId	RelQualifier
1	taxonomic inclusion
2	synonym
3	homonym
4	ortographic variant
9	concept relation

ConceptRelType

ConceptRelTypeId	ConceptRelType
1	is congruent to
2	is included in
3	includes
4	overlaps
5	excludes

RefType

RefTypeId	RefType
1	Literature
2	Database
3	Person
4	Published CD

FactType

FactTypeId	FactType
1	description
2	growth form
3	hardiness
4	ecology
5	phenology
6	karyology
7	illustration
8	identification key to included taxa
9	observation
10	General distribution

Rank

RankId	RankAbbrev	Rank	HigherRankFk	EMBasicFlag	EMExtFlag	EMSynFlag
1	reg.	Regnum		0	0	0
3	subreg.	Subregnum	1	0	0	0
5	phyl.	Phylum	3	0	0	0
7	subphyl.	subphylum	5	0	0	0
8	div.	Divisio	7	0	0	0

9	subdiv.	Subdivisio	8	0	0	0
10	cl.	class	7	0	0	0
13	subcl.	subclassis	10	0	0	0
16	superor.	superordo	13	0	0	0
18	ordo	ordo	16	0	0	0
20	fam.	Familia	18	1	1	1
25	subfam.	Subfamilia	20	0	1	1
30	trib.	Tribus	25	0	1	1
35	subtrib.	Subtribus	30	0	1	1
40	gen.	Genus	20	1	1	1
42	subgen.	Subgenus	40	0	1	1
45	sect.	Sectio	42	0	1	1
47	subsect.	Subsectio	45	0	0	0
50	ser.	Series	47	0	1	1
52	subser.	Subseries	50	0	0	0
58	aggr.	Aggregat	52	0	1	1
60	sp.	Species	58	1	1	1
62	microsp.	Microspeci es	60	0	0	0
65	subsp.	Subspecie s	62	1	1	1
68	convar.	Convarieta s	65	0	0	0
70	var.	Varietas	68	0	0	1
73	subvar.	Subvarieta s	70	0	0	0
80	f.	Forma	73	0	0	1
82	subf.	Subforma	80	0	0	0
84	f.spec.	Forma spec.	82	0	0	0
99	t.infr.	tax.infrasp.	60	0	0	0

Area

Areald	EMCode	ISOCODE	TDWGCode	Unit	Status
0	EM			Euro+Med	1
1	EUR			Europe	1
100	Da	DK	DEN-OO	Denmark with Bornholm	1
102	Fe	FI	FIN-OO	Finland with Ahvenanmaa	1
104	Fa	FA	FOR-OO	Faroe Islands	1
106	Br	UK	GRB-OO	Great Britain	1
108	Is	IS	ICE-OO	Iceland	1
110	Hb			Ireland	1
113	No	NO	NOR-OO	Norway	1
115	Sb	SJ	SVA-OO	Svalbard	1
117	Su	SE	SWE-OO	Sweden	1
119	Au			Austria with Liechtenstein	1
122	Be			Belgium with Luxembourg	1
125	Cz			Former Czechoslovakia	2
127	Ge	DE	GER-OO	Germany	1
129	Hu	HU	HUN-OO	Hungary	1
131	Ho	NL	NET-OO	Netherlands	1
133	Po	PL	POL-OO	Poland	1
135	He	CH	SWI-OO	Switzerland	1
137	Bl	ES	BAL-OO	Baleares	1
139	Co	FR	COR-OO	Corse	1
141	Ga			France	1
145	Lu	PT	POR-OO	Portugal	1
147	Sa	IT	SAR-OO	Sardegna	1
149	Hs			Spain	1
153	Al	AL	ALB-OO	Albania	1

155	Bu	BG	BUL-OO	Bulgaria	1
157	Gr	GR	GRC-OO	Greece	1
159	It			Italy	1
163	Cr	GR	KRI-OO	Kriti with Karpathos, Kasos & Gavdhos	1
165	Rm	RO	ROM-OO	Romania	1
167	Sc	IT	SIC-SI	Sicilia	1
170	Tu(E)	TR	TUE-OO	Turkey-in-Europe	1
172	Ju			Former Yugoslavia	2
181	Uk(K)	UA	KRY-OO	Krym	1
193	Uk	UA		Ukraine	1
196	Ag	DZ	ALG-OO	Algeria	1
198	Eg	EG	EGY-OO	Egypt	1
200	Li	DL	LBY-OO	Libya	1
202	Ma			Morocco	1
206	Tn	TN	TUN-OO	Tunisia	1
210	Az	PT	AZO-OO	Azores	1
389	Ab	AZ		Azerbaijan	1
392	Ar	AM		Armenia	1
393	Ab(A)	AZ	TCS-AZ	Azerbaijan	1
394	Gg	GE		Gruziya	1
395	Ab(N)	AZ	TCS-NA	Nakhichevan	1
396	Ar(N)	AM	TCS-NK	Nagorno- Karabakh	1
399	Cy	CY	CYP-OO	Cyprus	1
401	AE	GR	EAI-OO	East Aegean Is	1
408	Le	LB	LBS-LB	Lebanon	1
413	Sn	EG	SIN-OO	Sinai	1
415	Tu(A)	TR	TUR-OO	Turkey	1
416	Tu	TR		Turkey	1
606	Ar(A)	AM	TCS-AR	Armenia	1
607	Au(A)	AT	AUT-AU	Austria	1
608	Au(L)	LI	AUT-LI	Liechtenstein	1
609	Az(C)	PT		Corvo	1
610	Az(F)	PT		Faial	1
611	Az(G)	PT		Graciosa	1
612	Az(P)	PT		Pico	1
613	Az(S)	PT		Santa Maria	1
614	Az(J)	PT		Sa\$Ho Jorge	1
615	Az(M)	PT		Sa\$Ho Miguel	1
616	Az(T)	PT		Terceira	1
617	Be(B)	BE	BGM-BE	Belgium	1
618	Be(L)	LU	BGM-LU	Luxembourg	1
619	Bl(I)	ES		Ibiza with Formentera	1
620	Bl(M)	ES		Mallorca	1
621	Bl(N)	ES		Menorca	1
622	BH	BA	YUG-BH	Bosnia- Herzegovina	1
623	By	BY	BLR-OO	Belarus	1
624	Ca	ES	CNY-OO	Canary Is.	1
625	Ca(F)	ES		Fuerteventura with Lobos	1
626	Ca(G)	ES		Gomera	1
627	Ca(C)	ES		Gran Canaria	1
628	Ca(H)	ES		Hierro	1
629	Ca(L)	ES		Lanzarote with Graciosa	1
630	Ca(P)	ES		La Palma	1
631	Ca(T)	ES		Tenerife	1
632	Cs	CZ	CZE-CZ	Czech Republic	1
633	Ct	HR	YUG-CR	Croatia	1
635	Es	EE	BLT-ES	Estonia	1
636	GA(C)	UK	FRA-CI	Channel Is.	1
637	Ga(F)	FR	FRA-FR	France	1
638	Ga(M)	MC	FRA-MO	Monaco	1
639	Gg(A)	GE	TCS-AB	Abkhasiya	1
640	Gg(D)	GE	TCS-AD	Adzarya	1
641	Gg(G)	GE	TCS-GR	Gruziya	1
642	Hs(A)	AD	SPA-AN	Andorra	1
643	Hs(G)	GI	SPA-GI	Gibraltar	1
644	Hs(S)	ES	SPA-SP	Spain	1

645	Ir	IL		Israel	1
646	It(I)	IT	ITA-IT	Italy	1
647	It(S)	SM	ITA-SM	San Marino	1
648	It(V)	VA	ITA-VC	Vatican City	1
649	Jo	JO	PAL-JO	Jordan	1
650	Kz	KZ	KAZ-OO	Kazakhstan in Europe	1
651	La	LV	BLT-LA	Latvia	1
652	Lt	LT	BLT-LI	Lithuania	1
653	Ma(S)	ES	MOR-SP	Spanish North African Territories	1
654	Ma(W)	EH	WSA-OO	Western Sahara	1
655	Mc	MK	YUG-MA	Macedonia	1
656	Md	PT	MDR-OO	Madeira	1
657	Md(D)	PT		Desertas	1
658	Md(M)	PT		Madeira	1
659	Md(P)	PT		Porto Santo	1
660	Me	MT	SIC-MA	Malta	1
661	Mo	MD	OKR-MO	Moldova	1
662	Rf	RU		Russian Federation	1
663	Rf(C)	RU	RUC-OO	Central European Russia	1
664	Rf(E)	RU	RUE-OO	Eastern European Russia	1
665	Rf(K)	RU	BLT-KA	Kaliningrad	1
666	Rf(CS)	RU	NCS	North Caucasus	1
667	Rf(N)	RU	RUN-OO	Northern European Russia	1
668	Rf(NW)	RU	RUW-OO	Northwest European Russia	1
669	Rf(A)	RU	WSB-OO	Novaya Zelya & Franz-Joseph	1
670	Rf(S)	RU	RUS-OO	South European Russia	1
671	Sg	PT	SEL-OO	Selvagens	1
672	Sl	SK	CZE-SK	Slovakia	1
673	Sv	SI	YUG-SL	Slovenia	1
674	Sy	SY	LBS-SY	Syria	1
675	Uk(U)	UA	UKR-UK	Ukraine	1
676	Yu	YU		Federal Republic of Yugoslavia	1
677	Yu(K)	YU	YUG-KO	Kosovo	1
678	Yu(M)	YU	YUG-MN	Montenegro	1
679	Yu(S)	YU	YUG-SE	Serbia	1
680	IJ		PAL-IS	Israel-Jordan	2
681	LS			Lebanon-Syria	2
682	Rs			Former USSR	2
683	Si			Sicily with Malta	2
684	Az(L)	PT		Flores	1
685	Hb(E)	IE	IRE-IR	Ireland	1
686	Hb(N)	UK	IRE-NI	Northern Ireland	1
1718	Ma(M)	MA	MOR-MO	Morocco	1
3002	Rs(N)			Russia Northern	2
3003	Rs(B)			Russia Baltic	2
3004	Rs(C)			Russia Central	2
3005	Rs(W)			Russia Southwest	2
3007	Rs(E)			Russia Southeast	2

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