

BIOLOGICAL TAXONOMY DATA STANDARD

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**This standard has been produced through the
Environmental Data Standards Council (EDSC).**

The Environmental Data Standards Council (EDSC) is a partnership among US EPA, States and Tribal partners to promote the efficient sharing of environmental information through the development and adoption of data standards. More information about the EDSC is available at www.envdatastandards.net.

Foreword

The Environmental Data Standards Council (EDSC) identifies, prioritizes, and pursues the creation of data standards for those areas where information exchange standards will provide the most value in achieving environmental results. The Council involves state and federal agencies, tribes and tribal nations in the development of the standards and then provides the draft materials for general review. Business groups, non-governmental organizations, and other interested parties may then provide input and comment for Council consideration and standard finalization. Draft and final standards are available at <http://www.envdatastandards.net>.

1.0 INTRODUCTION

This EDSC standard provides data groupings that are used to describe, identify, name, and classify biological taxonomic information for biota, groups, and viruses. The standard specifies the key data elements necessary to constitute consistent and unambiguous identification of biological organisms of interest to environmental concerns.

1.1 Scope

The purpose of the standard is to ensure uniformity and comparability in the identification of biological organisms in the collection, analysis, and exchange of environmental data.

1.2 Revision History

Date	Version	Description
February 22, 2001	1-19937:1	Initial adoption by the Environmental Data Standards Council.
February 1, 2005	1-19937:2	Revised format
January 6, 2006	EX000018.2	Assignment of a new data standard number.

1.3 References to Other Data Standards

This standard does not reference other data standards to make it complete.

1.4 Terms and Definitions

For the purposes of this document, the following terms and definitions apply.

<u>Term</u>	<u>Definition</u>
Biological Organisms	Biota, groups, and viruses.
Biological Taxonomy	The science that describes, identifies, names and classifies biological organisms based on degrees of similarity purportedly representing evolutionary (phylogenetic relatedness).

Biota	<p>The biological entities that comprise the taxonomic and nomenclatural standard reference known as the Integrated Taxonomic Information System (ITIS).</p> <p>Note: For the purpose of this standard, biota is an ecological term that refers to animals, plants, fungi, and other organisms. Biota, in the EPA biological taxonomy standard, does not refer to viruses (see <i>Pollutants</i> definition).</p>
Integrated Taxonomic Information System (ITIS)	<p>A partnership to create a taxonomic and nomenclatural standard reference for biota that promotes scientific excellence and is fully supported by the world taxonomic community. The database is accessible over the World Wide Web (WWW) at http://www.itis.usda.gov/. ITIS classifications conform to the International Code of Botanical Nomenclature and the International Code of Zoological Nomenclature.</p>
Groups (of biological organisms)	<p>Those biota that are regulated as an aggregate of organisms that are related (e.g., macro-invertebrates, minnows, and total coliforms).</p>
ICTVdB	<p>A database that supports virus classification and nomenclature maintained by the International Committee on Taxonomy of Viruses (ICTV).</p> <p>Note: The ICTVdB provides easy access to records describing an individual virus, as well as providing information on its relatives. It uses a decimal system to number uniquely identified viruses. The user can access the ICTVdB at http://life.anu.edu.au/viruses/ICTVdB/ictvdb.html</p>
Name Context	<p>The context in which the name of a biological entity is used, e.g., Registry Name (the unique name assigned to the data element by the Environmental Data Registry -- EDR).</p> <p>Note: An organism may have more than one name depending on the context in which it is used.</p>

1.5 Implementation

Users are encouraged to use the XML registry housed on the Exchange Network Web site (<http://www.exchangenetwork.net>) to download schema components for the construction of XML schema flows.

1.6 Document Structure

The structure of this document is briefly described below:

- a. Section 2.0 Biological Taxonomy Diagram illustrates the principal data groupings contained within this standard.
- b. Section 3.0 Biological Taxonomy Data Standards Table, provides detailed information on the high level, intermediate and elemental biological taxonomy data groupings. Where applicable, for each level of this data standard a definition, XML tag, note(s), example list of values and format are provided. The format column may include the number of characters for the associated data element, where "A" specifies alphanumeric, "N" designates numeric, and "Graphic" designates a diagram or other graphic related binary object.
- c. Data Element Numbering. For purposes of clarity and to enhance understanding of data grouping hierarchy and relationships, each data group is numerically classified from the primary to the elemental level.
- d. Code and Identifier Metadata: Metadata, defined here as data about data or data elements, that includes their descriptions and/or any needed context setting information required to identify the

origin, conditions of use, interpretation, or understanding the information being exchanged or transferred. (Adapted from ISO/IEC 2382-17:1999 Information Technology Vocabulary—Part 17: Databases 17.06.05 metadata). Based on the business need, additional metadata may be required to sufficiently describe an identifier or a code. A note regarding this additional metadata is included in the notes column for identifier and code elements. Additional metadata for identifiers may include:

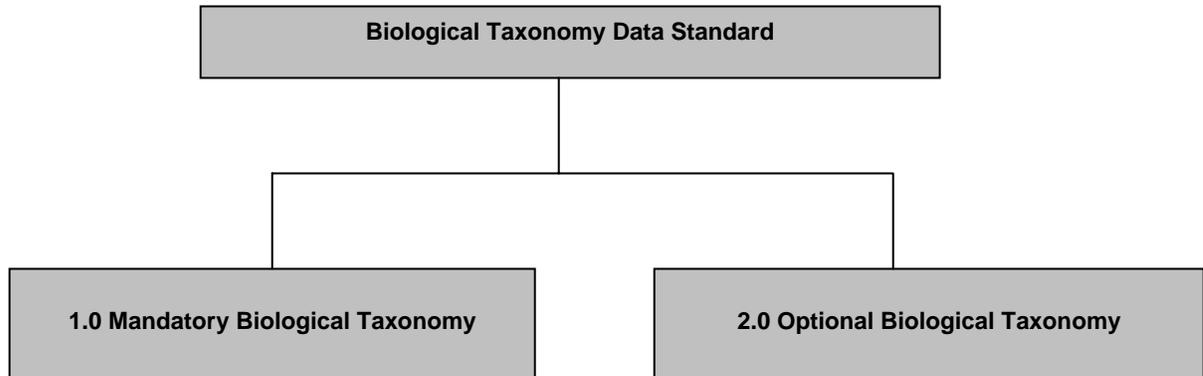
- Identifier Context, which identifies the source or data system that created or defined the identifier

Additional metadata for codes may include:

- Code List Identifier, which is a standardized reference to the context or source of the set of codes
 - Code List Version Identifier, which identifies the particular version of the set of codes.
 - Code List Version Agency Identifier, which identifies the agency responsible for maintaining the set of codes
 - Code List Name, which describes the corresponding name for which the code represents
- e. Appendix A Biological Taxonomy Data Structure Diagram, illustrates the hierarchical classification of the biological taxonomy data standard. This diagram enables business and technical users of this standard to quickly understand its general content and complexity.
- f. Appendix B, lists the references for Biological Taxonomy Data Standard.

2.0 BIOLOGICAL TAXONOMY DIAGRAM

This diagram exhibits the major data groups associated with the Biological Taxonomy Data Standard.



BIOLOGICAL TAXONOMY DATA STANDARDS TABLE

1.0 Mandatory Biological Taxonomy

Definition: A common and consistent way to represent living things.

Relationship: None Identified.

Notes: None.

XML Tag: MandatoryBiologicalTaxonomy

Name	Definition	Notes	Format	XML Tag
1.1.1 ITIS Taxonomic Serial Number	The unique identification number assigned to a distinct biota by the Integrated Taxonomic Information System (ITIS).	EDR DE-ID: 20727:1 Based on the business need, additional metadata may be required to sufficiently describe an identifier. This additional metadata is described in section 1.6.d.	A	ITISTaxonomicSerialNumber
OR				
1.1.2 ICTVdB Taxon Identifier	The unique identification number assigned to a virus by the International Committee on Taxonomy of Viruses (ICTV).	EDR DE-ID: 19986:1 Based on the business need, additional metadata may be required to sufficiently describe an identifier. This additional metadata is described in section 1.6.d.	A	ICTVdBTaxonIdentifier
OR				
1.1.3 EPA Biological Identifier	The unique non-intelligent identification number assigned to a biological entity by the US Environmental Protection Agency (EPA).	EDR DE-ID: 20728:1 Based on the business need, additional metadata may be required to sufficiently describe an identifier. This additional metadata is described in section 1.6.d.	A	EPA Biological Identifier

Name	Definition	Notes	Format	XML Tag
1.2.1 Biological Systematic Name	The name assigned to a biological entity by a classification identification system.	EDR DE-ID: 20729:1 Based on the business need, additional metadata may be required to sufficiently describe an identifier. This additional metadata is described in section 1.6.d.	A	BiologicalSystematicName
OR				
1.2.2 Biological Vernacular Name	The vernacular name associated with an occurrence of a biological entity.	EDR DE-ID: 20744:1 Based on the business need, additional metadata may be required to sufficiently describe an identifier. This additional metadata is described in section 1.6.d.	A	BiologicalVernacularName
OR				
1.2.3 Biological Group Name	The name of a collection of biological entities that are related.	EDR DE-ID: 20897:1 Based on the business need, additional metadata may be required to sufficiently describe an identifier. This additional metadata is described in section 1.6.d.	A	BiologicalGroupname

2.0 Optional Biological Taxonomy

Definition: Additional information to represent living things in a common and consistent way.

Relationship: None Identified.

Note: These are Optional Biological Taxonomy Final Standard Supplemental Standard Data Elements.

XML Tag: OptionalBiologicalTaxonomy

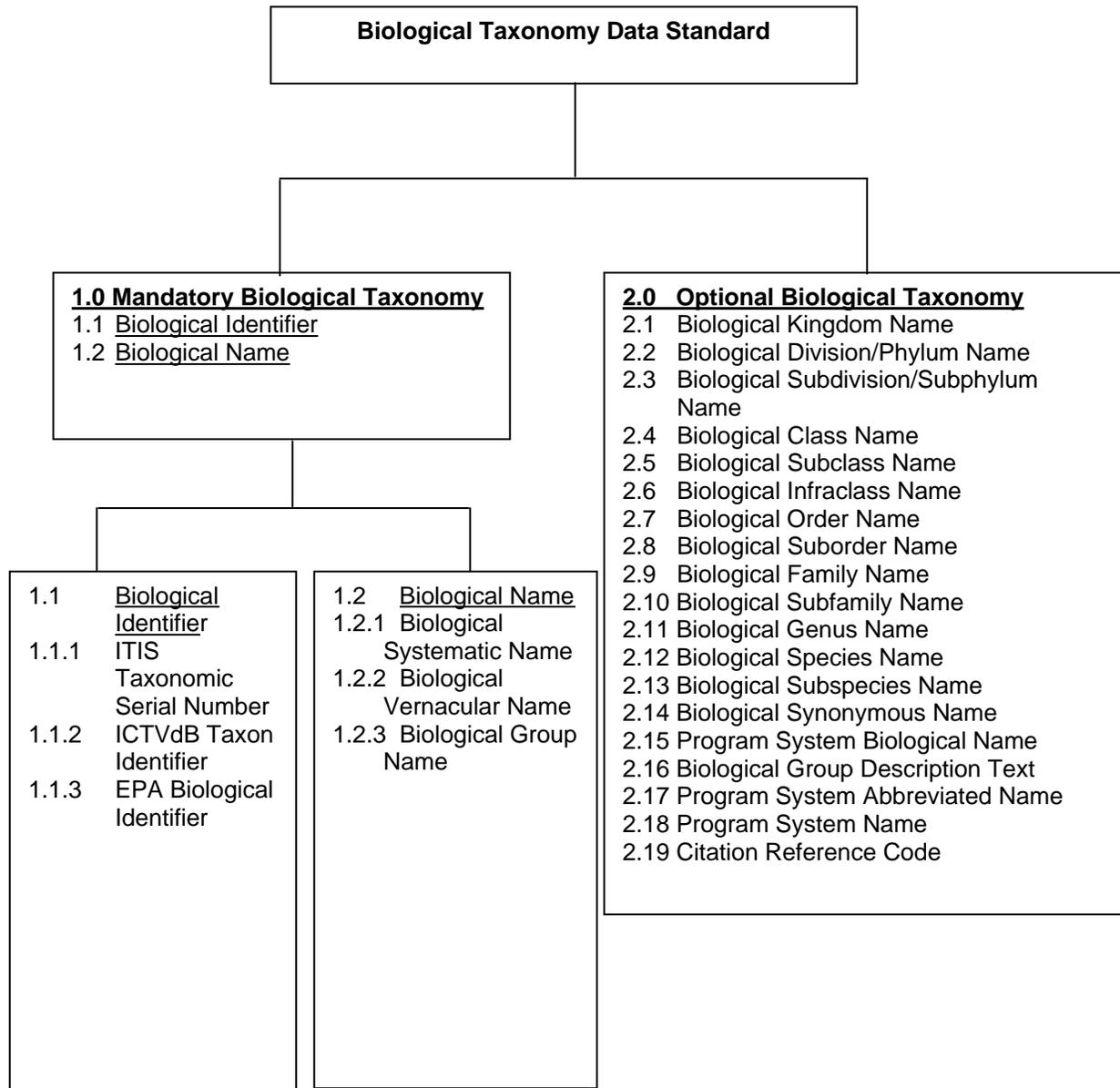
Name	Definition	Notes	Format	XML Tag
2.1 Biological Kingdom Name	The systematic name that represents a biological kingdom.	EDR DE-ID: 20730:1 A biological kingdom is a taxonomic category of the highest rank, grouping together all forms of life having certain fundamental characteristics in common.	A	BiologicalKingdomName
2.2 Biological Division/Phylum Name	The systematic name that represents the biological division/phylum.	EDR DE-ID: 20730:1 A division/phylum is the primary subdivision of a taxonomic kingdom, grouping together all classes of organisms that have the same body plan.	A	BiologicalDivisionPhylumName
2.3 Biological Subdivision/Subphylum Name	The systematic name that represents the biological subdivision/subphylum.	EDR DE-ID: 20732:1 A subdivision/subphylum is a category of related classes within a division/phylum.	A	BiologicalSubdivisionSubphylumName
2.4 Biological Class Name	The systematic name that represents the biological class.	EDR DE-ID: 20733:1 A class is a major subdivision of a phylum or division that usually consists of several orders.	A	BiologicalClassName

Name	Definition	Notes	Format	XML Tag
2.5 Biological Subclass Name	The systematic name that represents the biological subclass.	EDR DE-ID: 20734:1 A subclass is a category of related orders within a class.	A	BiologicalSubclassName
2.6 Biological Infraclass Name	The systematic name that represents the biological Infraclass.	EDR DE-ID: 20735:1 An Infraclass is a category of related classes within a class.	A	BiologicalInfraclassName
2.7 Biological Order Name	The systematic name that represents the biological order.	EDR DE-ID: 20736:1 An order is a major subdivision of a class or subclass that usually consists of several families.	A	BiologicalOrderName
2.8 Biological Suborder Name	The systematic name that represents the biological suborder.	EDR DE-ID: 20737:1 A suborder is a category of related families within an order.	A	BiologicalSuborderName
2.9 Biological Family Name	The systematic name that represents the biological family.	EDR DE-ID: 20738:1 A family is a major subdivision of an order or suborder that usually consists of several genera.	A	BiologicalFamilyName
2.10 Biological Subfamily Name	The systematic name that represents the biological subfamily.	EDR DE-ID: 20739:1 A subfamily is a category of related genera within a family.	A	BiologicalSubfamilyName
2.11 Biological Genus Name	The systematic name that represents the biological genus.	EDR DE-ID: 20740:1 A genus is a major subdivision of a family or subfamily that usually consists of more than one species.	A	BiologicalGenusName

Name	Definition	Notes	Format	XML Tag
2.12 Biological Species Name	The systematic name that represents the biological species.	EDR DE-ID: 20741:1 A species is a major subdivision of a genus or subgenus and is regarded as the basic division of a genus or subgenus. A species is composed of related individuals that resemble one another and are able to breed among themselves, but are not able to breed with members of another species.	A	BiologicalSpeciesName
2.13 Biological Subspecies Name	The systematic name that represents the biological subspecies.	EDR DE-ID: 20742:1 A subspecies is a subdivision within a species.	A	BiologicalSubspeciesName
2.14 Biological Synonymous Name	The name that represents one of two or more names applied to a single biological entity.	EDR DE-ID: 20746:1 Based on the business need, additional metadata may be required to sufficiently describe an identifier. This additional metadata is described in section 1.6.d.	A	BiologicalSynonymName
2.15 Program System Biological Name	The name applied to a biological entity in a program system.	EDR DE-ID: 20748:1 Based on the business need, additional metadata may be required to sufficiently describe an identifier. This additional metadata is described in section 1.6.d.	A	ProgramSystemBiologicalName
2.16 Biological Group Description Text	The text describing the relationship of the biological entities in a group.	EDR DE-ID: 20750:1	A	BiologicalGroupDescriptionText

Name	Definition	Notes	Format	XML Tag
2.17 Program System Abbreviated Name	An abbreviated name that represents the name of an information management system for an environmental program.	EDR DE-ID: 5712:1	A	Program SystemAbbreviatedName
2.18 Program System Name	The name of an information management system for an environmental program.	EDR DE-ID: 5714:1	A	ProgramSystemName
2.19 Citation Reference Code	The code that represents a reference to an official printed copy of an environmental regulation.	EDR DE-ID: 20016:1 Based on the business need, additional metadata may be required to sufficiently describe an identifier. This additional metadata is described in section 1.6.d.	A	CitationReferenceCode

Appendix A
Biological Taxonomy Data Structure Diagram



Appendix B References

1. *Biological Data Profile of Content Standard for Digital Geospatial Metadata*, Federal Geographic Data Committee (FGDC).
2. EPA Directive 2100, Information Resources Management Policy Manual, August 1, 1997.
3. *EPA Environmental Data Registry (EDR)* (<http://www.epa.gov/edr/>).
4. *Integrated Taxonomic Information System (ITIS)*, last updated June 26, 1997. (<http://biology.usgs.gov/cbi/bio-char/itis.html> or <http://www.its.usda.gov/>).
5. *National Biological Information Infrastructure (NBII) Home Page*, (<http://www.nbio.gov/>).
6. *Research School of Biological Sciences, Australian National University, Universal Virus Database (ICTVdB), International Committee on Taxonomy of Viruses (ICTV), Virology Division, International Union of Microbiology.* (<http://life.anu.edu.au/>)
7. *ISO/IEC 2382-17:1999 Information Technology Vocabulary—Part 17: Databases 17.06.05.*