This document is designed to provide information on ITIS data semantics. It describes what is stored, their characteristics, the data requirements of those characteristics, and the relationships between the stored entities.
ITIS Data Model

ITIS Physical Model

- **noun**
  - **taxonomic_units**
    - **described_by**
      - **vernaculars**
      - **taxonomic_unit_types**
    - **established_authority**
      - **taxonomic_units**
      - **taxonomic_unit_types**
    - **provenance**
      - **synonym_links**
      - **other_sources**
      - **publications**
    - **vernaculars**
    - **taxonomic_unit_types**
  - **vern_ref_links**
  - **stripped_author**
  - **taxon_authors_lkp**
  - **reference_links**
    - **nodc_ids**
    - **comments**
      - **tu_comments_links**
  - **longnames**
  - **hierarchy**
  - **taxonomic_units**
    - **superceded_by**
      - **synonym_links**
      - **geographic_div**
      - **jurisdiction**
  - **dictate_the_taxonomy_for**
    - **fix_the_hierarchical_order_of**
    - **set_the_classification_for**

- **verb**
  - **provide serialized TSN hierarchy for**
  - **provide full names for**
  - **provide credibility for**
  - **are associated with**
  - **are documented by**
  - **are commonly named by**

- **adjective**
  - **linked**
  - **appended**
  - **vernacular**
  - **supplied**

- **noun phrase**
  - **are located within**
  - **are grouped hierarchically**
  - **are ID in NODC via**
  - **are documented by**
  - **establishes authority**
  - **provide credibility for**
  - **provide serialized TSN hierarchy for**

- **preposition**
  - **via**
  - **by**
  - **as**
  - **for**

- **coordinate conjunction**
  - **and**
  - **or**

- **sentence**
  - **are located within**
  - **are grouped hierarchically**
  - **are documented by**
  - **establishes authority**
  - **provide credibility for**
  - **provide serialized TSN hierarchy for**
## 1.0 Definitions for the entity taxonomic_units and its elements

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Data Type</th>
<th>Allow Nulls</th>
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</thead>
<tbody>
<tr>
<td>tsn</td>
<td>int</td>
<td></td>
</tr>
<tr>
<td>unit_ind1</td>
<td>char(1)</td>
<td></td>
</tr>
<tr>
<td>unit_name1</td>
<td>char(35)</td>
<td></td>
</tr>
<tr>
<td>unit_ind2</td>
<td>char(1)</td>
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</tr>
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<td>unit_name2</td>
<td>varchar(35)</td>
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<td>unit_ind3</td>
<td>varchar(7)</td>
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</tr>
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<td>varchar(7)</td>
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<td>varchar(35)</td>
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</tr>
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<td></td>
</tr>
<tr>
<td>usage</td>
<td>varchar(12)</td>
<td></td>
</tr>
<tr>
<td>unaccept_reason</td>
<td>varchar(50)</td>
<td></td>
</tr>
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<td>varchar(40)</td>
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<td>completeness_rtn</td>
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</tr>
<tr>
<td>currency_rating</td>
<td>char(7)</td>
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<tr>
<td>phylo_sort_seq</td>
<td>smallint</td>
<td></td>
</tr>
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<td>initial_time_stamp</td>
<td>datetime</td>
<td></td>
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<tr>
<td>parent_tsn</td>
<td>int</td>
<td></td>
</tr>
<tr>
<td>taxon_author_id</td>
<td>int</td>
<td></td>
</tr>
<tr>
<td>hybrid_author_id</td>
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</tr>
<tr>
<td>kingdom_id</td>
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<tr>
<td>rank_id</td>
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<td>update_date</td>
<td>smalldatetime</td>
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</tr>
<tr>
<td>uncertain_prnt_ind</td>
<td>char(3)</td>
<td></td>
</tr>
<tr>
<td>name_usage</td>
<td>varchar(12)</td>
<td></td>
</tr>
<tr>
<td>complete_name</td>
<td>varchar(300)</td>
<td></td>
</tr>
</tbody>
</table>
1.1 taxonomic_units Description
Taxon name and associated attributes for levels of taxonomic hierarchy structure from kingdom to genus; below genus, binomials/polynomials are identified.

```sql
@1 tsn +
  unit_ind1 +
  unit_name1 +
  unit_ind2 +
  unit_name2 +
  unit_ind3 +
  unit_name3 +
  unit_ind4 +
  unit_name4 +
  unnamed_taxon_ind +
  usage +
  unaccept_reason +
  credibility_rtng +
  completeness_rtng +
  currency_rating +
  phylo_sort_sequence +
  initial_time_stamp +
  parent_tsn +
  taxon_author_id +
  hybrid_author_id +
  kingdom_id +
  rank_id +
  update_date +
  uncertain_prnt_ind +
  name_usage +
  complete_name
```

1.2 taxonomic_units Elements

1.2.1 tsn

<table>
<thead>
<tr>
<th>Name</th>
<th>Element Size</th>
<th>Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>tsn</td>
<td></td>
<td>taxonomic_units</td>
</tr>
</tbody>
</table>

Display Picture: Data Type: INT SQL Server Name: tsn

Nullness: NOT NULL UNIQUE

Data Source: SYSTEM GENERATED

Validation Rules: A taxonomic serial number will be assigned for occurrences of Taxonomic Units at each level of the hierarchy through genus and for all polynomial infrageneric Taxonomic Units.

Description: Taxonomic Serial Number. The unique identifier for an occurrence of Taxonomic Units.
1.2.2 unit_ind1
Name: unit_ind1  Element Size: 1  Table: taxonomic_units
Display Picture:  Data Type: CHAR  SQL Server Name: unit_ind1
Nullness: NOT NULL  Values List: 
Data Source: CHOICE LIST
Validation Rules: Applicable to the kingdom Chromista, Fungi and Plantae.
Description: Indicator of an occurrence of a plant hybrid at the generic level.

1.2.3 unit_name1
Name: unit_name1  Element Size: 35  Table: taxonomic_units
Display Picture:  Data Type: CHAR  SQL Server Name:unit_name1
Nullness: NOT NULL  Values List: 
Data Source: CHOICE LIST
Validation Rules: For monomials this will be the only name field entered. For uninomials and polynomials, this field will be used for the first part of the name. The names in this position require the initial letter to be capitalized.
Description: The singular or first part of a scientifically accepted label for an occurrence of Taxonomic Units.

1.2.4 unit_ind2
Name: unit_ind2  Element Size: 1  Table: taxonomic_units
Display Picture:  Data Type: CHAR  SQL Server Name:unit_ind2
Nullness: NULL  Values List: 
Data Source: CHOICE LIST/USER ENTERED
Validation Rules: Applicable to the kingdom Chromista, Fungi and Plantae.
Description: A hybrid indicator positioned between the first and second parts of a binomial or polynomial taxonomic name.

1.2.5 unit_name2
Name: unit_name2  Element Size: 35  Table: taxonomic_units
Display Picture:  Data Type: VARCHAR  SQL Server Name:unit_name2
Nullness: NULL  Values List: 
Data Source: USER ENTERED
Validation Rules: For binomials, this will be the last field populated for the name. For trinomials and quadrinomials, this will be the second position populated.
Description: The second part of a scientifically accepted label for a binomial/polynomial occurrence of Taxonomic Units.

1.2.6 unit_ind3
Name: unit_ind3  Element Size: 7  Table: taxonomic_units
Display Picture:  Data Type: VARCHAR  SQL Server Name:unit_ind3

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Nullness: NULL
Values List:
ssp.
var.
subvar.
f.
subf.
X

Data Source: CHOICE LIST
Validation Rules: All values of this element apply to the kingdoms Chromista, Fungi, and Plantae. The value ssp. also applies to Animalia, Archaea, Bacteria, Protozoa.
Description: A category indicator located within a polynomial taxonomic name.

1.2.7 unit_name3
Name: unit_name3
Display Picture: Data Type: VARCHAR
Nullness: NULL
Data Source: USER ENTERED
Validation Rules: For trinomials this field will be populated with the last part of the taxonomic name. For quadrinomials and hybrid formulas this field will be populated with the third part of the name.
Description: The third portion of a scientifically accepted label for a polynomial occurrence of Taxonomic Units.

1.2.8 unit_ind4
Name: unit_ind4
Display Picture: Data Type: VARCHAR
Nullness: NULL
Data Source: CHOICE LIST
Validation Rules: Applicable to the Plant kingdom.
Description: A category indicator located within a polynomial taxonomic name.

1.2.9 unit_name4
Name: unit_name4
Display Picture: Data Type: VARCHAR
Nullness: NULL
Data Source: USER ENTERED
Validation Rules: This is the final position populated for quadrinomials or hybrid formulas.
Description: The fourth part of a scientifically accepted label for a polynomial occurrence of Taxonomic Units.

1.2.10 unnamed_taxon_ind
Name: unnamed_taxon_ind
Element Size: 1
Table: taxonomic_units

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Display Picture: Data Type: CHAR SQL Server Name: unnamed_taxon_ind
Nullness: NULL Values List:
Y = Unnamed taxon
N = Named taxon

Data Source: CHOICE LIST
Validation Rules: This field will need to be populated only when an occurrence of Taxonomic Units possesses a non-standard name.
Description: Indicator for occurrences of Taxonomic Units whose names represent unnamed taxa and are therefore not standard taxonomic names.

1.2.11 usage
Name: usage Element Size:12 Table: taxonomic_units
Display Picture: Data Type: VARCHAR SQL Server Name: usage
Nullness: NOT NULL Values List:
accepted (Chromista, Fungi, Plantae)
not accepted (Chromista, Fungi, Plantae)
valid (Animalia, Archaea, Bacteria, Protozoa)
invalid (Animalia, Archaea, Bacteria, Protozoa)

Data Source: CHOICE LIST
Validation Rules: Choice lists are dependent upon the values associated with a kingdom.
Description: Current standing of an occurrence of a Taxonomic Unit. Note that the usage column is deprecated and will be removed in the future. This attribute has been replaced by name_usage.

1.2.12 unaccept_reason
Name: unaccept_reason Element Size:50 Table: taxonomic_units
Display Picture: Data Type: VARCHAR SQL Server Name: unaccept_reason
Nullness: NOT NULL Values List:
Chromista, Fungi, and Plantae:
database artifact homonym (illegitimate) horticultural invalidly published, nomen nudum invalidly published, other misapplied orthographic variant (misspelling) other, see comments pro parte rejected name superfluous renaming
Data Source: CHOICE LIST

Validation Rules: This element is required when usage is set to not accepted (Chromista, Fungi, and Plant) or invalid (Animalia, Archaea, Bacteria and Protozoa). Only those reasons for a particular kingdom should be displayed.

Description: The cause for an occurrence of Taxonomic Units being identified as not accepted/invalid under the usage element.

1.2.13 credibility_rtng

Name: credibility_rtng
Display Picture: Data Type: VARCHAR
Nullness: NOT NULL

Table: taxonomic_units
SQL Server Name: credibility_rtng

Values List:
- No review; non-peer reviewed source
- No review; untreated NODC data
- Minimum taxonomic/nomenclature review
- TWG standards met

Data Source: CHOICE LIST
Validation Rules: This element will be populated for all occurrences of the Taxonomic Units
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table. This element is entered by the TWG.
Description: A subjective rating designation as determined by the Taxonomic Work Group reflecting the level of review and the perceived level of accuracy for an occurrence of Taxonomic Units and its associated attributes.

1.2.14 completeness_rtng
Name: completeness_rtng Element Size: 10 Table: taxonomic_units
Display Picture: Data Type: CHAR SQL Server Name: completeness_rtng
Nullness: NULL

Values List: unknown partial complete

Data Source: CHOICE LIST
Validation Rules: This element will be populated for occurrences of the Taxonomic Units table for which the rank is genus or above. Different ratings may occur for different rank levels.
Description: A rating designation reflecting the extent of taxonomic completeness for a group.

1.2.15 currency_rating
Name: currency_rating Element Size: 7 Table: taxonomic_units
Display Picture: Data Type: CHAR SQL Server Name: currency_rating
Nullness: NULL

Values List: unknown

A specific 4 digit year, e.g. 1993

Data Source: USER ENTERED
Validation Rules: This element will be populated for rows within the Taxonomic Units table for which the taxon's rank is genus or above. Different ratings may occur at different rank levels.
Description: A rating designation reflecting the year of revision/source for a group.

1.2.16 phylo_sort_seq
Name: phylo_sort_seq Element Size: Table: taxonomic_units
Display Picture: Data Type: SMALLINT SQL Server Name: phylo_sort_seq
Nullness: NULL

Values List:

Data Source: NOT IN USE
Validation Rules: This field is required for ranks from kingdom to order inclusive.
Description: A sequence for an occurrence of Taxonomic Units with ranks between kingdom and order, inclusive, that will allow output to be displayed in phylogenetic order.

1.2.17 initial_time_stamp
Name: initial_time_stamp Element Size: Table: taxonomic_units
Display Picture: yyyy-mm-dd hh:mm:ss.sss Data Type: DATETIME SQL Server Name: initial_time_stamp

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Nullness: NOT NULL  
Data Source: SYSTEM GENERATED 
Validation Rules:
Description: Date and time at which an occurrence of Taxonomic Units is initially loaded into the ITIS database.

1.2.18 parent_tsn
Name: parent_tsn  
Element Size:  
Table: taxonomic_units 
Display Picture:  
Data Type: INT 
SQL Server Name: parent_tsn 
Nullness: NULL  
Values List:
Data Source: CHOICE LIST 
Validation Rules: Nulls allowed. The parent should previously exist in the database or be concurrently input with the subject Taxonomic Unit record.
Description: Taxonomic Serial Number. The unique identifier for an occurrence of Taxonomic Units. The taxonomic serial number for the direct parent of the subject occurrence of Taxonomic Units.

1.2.19 taxon_author_id
Name: taxon_author_id  
Element Size:  
Table: taxonomic_units 
Display Picture:  
Data Type: INT 
SQL Server Name: taxon_author_id 
Nullness: NULL  
Values List:
Data Source: SYSTEM GENERATED 
Validation Rules: 
Description: A unique identifier for the author(s) of a taxonomic name.

1.2.20 hybrid_author_id
Name: hybrid_author_id  
Element Size:  
Table: taxonomic_units 
Display Picture:  
Data Type: INT 
SQL Server Name: hybrid_author_id 
Nullness: NULL  
Values List:
Data Source: CHOICE LIST/USER ENTERED 
Validation Rules: Applicable to the kingdom Chromista, Fungi, Plantae 
Description: The unique identifier for the author(s) of a taxonomic name which has been identified as the second part of a hybrid formula. For example Agrostis L. X Polypogon Desf.

1.2.21 kingdom_id
Name: kingdom_id  
Element Size:  
Table: taxonomic_units 
Display Picture:  
Data Type: SMALLINT 
SQL Server Name: kingdom_id 
Nullness: NOT NULL  
Values List: 
1 Bacteria 
2 Protozoa
3 Plantae
4 Fungi
5 Animalia
6 Chromista
7 Archaea

Data Source: SYSTEM GENERATED

Validation Rules:
Description: A unique identifier for the highest level of the taxonomic hierarchy structure.

1.2.22 rank_id
Name: rank_id Element Size: Table: taxonomic_units
Display Picture: Data Type: SMALLINT SQL Server Name: rank_id
Nullness: NOT NULL Values List:
Data Source: SYSTEM GENERATED

Validation Rules:
Description: A unique identifier for a specific level within the taxonomic hierarchy.

<table>
<thead>
<tr>
<th>Plantae/Chromista</th>
<th>Animalia</th>
<th>Fungi</th>
<th>Archaea Bacteria/Protozoa</th>
<th>ITIS rank_id</th>
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</thead>
<tbody>
<tr>
<td>Kingdom</td>
<td>Kingdom</td>
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</tr>
<tr>
<td>Subkingdom</td>
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<td>Subkingdom</td>
<td>Subkingdom</td>
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</tr>
<tr>
<td>Infrakingdom</td>
<td>Infrakingdom</td>
<td></td>
<td>Infra Kingdom(Protozoa only)</td>
<td>25</td>
</tr>
<tr>
<td>Superdivision</td>
<td>Superphylum</td>
<td></td>
<td></td>
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</tr>
<tr>
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<td>Phylum</td>
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</tr>
<tr>
<td>Subdivision</td>
<td>Subphylum</td>
<td>Subdivision</td>
<td>Subphylum</td>
<td>40</td>
</tr>
<tr>
<td>Infradivision</td>
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</tr>
<tr>
<td>Parvdivision(Chromista only)</td>
<td>Parvphylum(Protozoa only)</td>
<td></td>
<td></td>
<td>47</td>
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<tr>
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<tr>
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</tr>
<tr>
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<td></td>
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<td>130</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Plantae/Chromista</th>
<th>Animalia</th>
<th>Fungi</th>
<th>Archaea Bacteria/Protozoa</th>
<th>ITIS rank_id</th>
</tr>
</thead>
<tbody>
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<td>Family</td>
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<tr>
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<td>Variety</td>
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<td>Variety</td>
<td>Variety (Protozoa only)</td>
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<tr>
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<td></td>
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</tr>
<tr>
<td>Subvariety</td>
<td>Race</td>
<td>Subvariety</td>
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</tr>
<tr>
<td>Stirp</td>
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</tr>
<tr>
<td>Form</td>
<td>Morph</td>
<td>Form</td>
<td></td>
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<tr>
<td>Aberration</td>
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<td>Subform</td>
<td></td>
<td>Subform</td>
<td></td>
<td>270</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unspecified</td>
<td></td>
<td>300</td>
</tr>
</tbody>
</table>

#### 1.2.23 `update_date`

- **Name:** `update_date`
- **Element Size:**
- **Table:** `taxonomic_units`
- **Display Picture:** `yyyy-mm-dd 00:00:00`
- **Data Type:** `SMALLDATETIME`
- **SQL Server Name:** `update_date`
- **Nullness:** `NOT NULL`
- **Data Source:** `SYSTEM GENERATED`
- **Validation Rules:**
- **Description:** The date on which a record is modified. The purpose of this element is to provide assistance to those downloading data on a periodic basis.

#### 1.2.24 `uncertain_prnt_ind`

- **Name:** `uncertain_prnt_ind`
- **Element Size:** 3
- **Table:** `taxonomic_units`
- **Display Picture:**
- **Data Type:** `CHAR`
- **SQL Server Name:** `uncertain_prnt_ind`
- **Nullness:** `NULL`
- **Values List:**
  - Yes = of uncertain placement
  - No = certain placement

---

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Data Source: CHOICE LIST
Validation Rules: This field is set to true when an occurrence of Taxonomic Units has uncertain placement.
Description: Indicator for occurrences of Taxonomic Units where placement is uncertain.

1.2.25 name_usage
Name: name_usage Element Size: 12 Table: taxonomic_units
Display Picture: Data Type: VARCHAR SQL Server Name: name_usage
Nullness: NOT NULL
Values List:
- accepted (Chromista, Fungi, Plantae)
- not accepted (Chromista, Fungi, Plantae)
- valid (Animalia, Archaea, Bacteria, Protozoa)
- invalid (Animalia, Archaea, Bacteria, Protozoa)

Data Source: CHOICE LIST
Validation Rules: Choice lists are dependent upon the values associated with a kingdom.
Description: Current standing of an occurrence of a Taxonomic Unit. A duplicate of usage element. Note usage values moved to name_usage because “usage” is a SQL reserved word which sometimes causes issues with database code.

1.2.26 complete_name
Name: complete_name Element Size: 300 Table: taxonomic_units
Display Picture: Data Type: VARCHAR SQL Server Name: complete_name
Nullness: NULL
Values List:

Data Source: SYSTEM GENERATED
Validation Rules:
Description: The unit indicators and unit name fields concatenated and trimmed to present entire scientific name, without taxon author. Designed to be helpful when searching for taxa by scientific name.

2.0 Definitions for the entity comments and its elements
2.1 **comments Description**
A mechanism for recording history or detail deemed important for an occurrence(s) of Taxonomic Units.

```sql
@1 comment_id +
commentator +
comment_detail +
comment_time_stamp +
update_date
```

2.2 **comments Elements**

2.2.1 **comment_id**
- Name: `comment_id`
- Element Size: INT
- Table: `comments`
- SQL Server Name: `comment_id`
- Nullness: NOT NULL UNIQUE
- Data Source: SYSTEM GENERATED
- Validation Rules:
- Description: The unique identifier for remarks associated with an occurrence of Taxonomic Units.

2.2.2 **commentator**
- Name: `commentator`
- Element Size: 100
- Table: `comments`
- SQL Server Name: `commentator`
- Nullness: NULL
- Data Source: USER ENTERED
- Validation Rules:
- Description: The name of the person associated with the comment being provided with regard to an occurrence of Taxonomic Units.
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2.2.3 comment_detail
Name: comment_detail  Element Size: 2000  Table: comments
Display Picture:  Data Type: CHAR  SQL Server Name: comment_detail
Nullness: NOT NULL
Data Source: USER ENTERED
Validation Rules:
Description: Remarks providing additional information regarding an occurrence of Taxonomic Units.

2.2.4 comment_time_stamp
Name: comment_time_stamp  Element Size:  Table: comments
Display Picture: yyyy-mm-dd hh:mm:ss.sss  Data Type: DATETIME  SQL Server Name: comment_time_stamp
Nullness: NOT NULL
Data Source: SYSTEM ENTERED
Validation Rules:
Description: The date and time at which a comment associated with an occurrence of Taxonomic Units is entered.

2.2.5 update_date
Name: update_date  Element Size:  Table: comments
Display Picture: yyyy-mm-dd 00:00:00  Data Type: SMALLDATETIME  SQL Server Name: update_date
Nullness: NOT NULL
Data Source: SYSTEM GENERATED
Validation Rules:
Description: The date on which a record is modified. The purpose of this element is to provide assistance to those downloading data on a periodic basis.

3.0 Definitions for the entity experts and its elements
3.1 experts Description
A taxonomist who is the responsible source for an occurrence of Taxonomic Units being recognized by and added to the ITIS database, or for changes being made to an occurrence of Taxonomic Units existing in the ITIS database, or who provides credibility for vernacular names.

@1 expert_id_prefix +
@2 expert_id +
expert +
exp_comment +
update_date

3.2 experts Elements

3.2.1 expert_id_prefix
Name: expert_id_prefix Element Size:3 Table: experts
Display Picture: Data Type: CHAR SQL Server Name: expert_id_prefix
Nullness: NOT NULL Values List: EXP
Data Source: SYSTEM GENERATED
Validation Rules:
Description: A prefix attached to a serial number to identify the record as existing in Experts.

3.2.2 expert_id
Name: expert_id Element Size: Table: experts
Display Picture: Data Type: INT SQL Server Name: expert_id
Nullness: NOT NULL UNIQUE Values List:
Data Source: SYSTEM GENERATED
Validation Rules:
Description: The unique identifier established for a specific expert in the field of taxonomy whose work is being utilized by the ITIS.

3.2.3 expert
Name: expert Element Size:100 Table: experts
Display Picture: Data Type: VARCHAR SQL Server Name: expert
Nullness: NULL Values List:
Data Source: USER ENTERED
Validation Rules:
Description: The name of the taxonomic expert providing credence to the taxonomy, nomenclature or attributes of a Taxonomic Unit’s occurrence for the ITIS.

3.2.4 exp_comment
Name: exp_comment Element Size:500 Table: experts
ITIS Data Model

3.2.5 update_date
Name: update_date  Element Size:  Table: experts
Display Picture: yyyy-mm-dd  Data Type: SMALLDATETIME  SQL Server Name: update_date
Nullness: NULL  Values List:
Data Source: SYSTEM GENERATED
Validation Rules:
Description: The date on which a record is modified. The purpose of this element is to provide assistance to those downloading data on a periodic basis.

4.0 Definitions for the entity geographic_div and its elements

4.1 geographic_div Description
Geographic association for the referenced occurrence in Taxonomic Units.

@1 tsn +
@2 geographic_value +
update_date

4.2 geographic_div Elements

4.2.1 tsn
Name: tsn  Element Size:  Table: geographic_div
Display Picture:  Data Type: INT  SQL Server Name: tsn
Nullness: NOT NULL  Values List:
Data Source: SYSTEM GENERATED
Validation Rules: A taxonomic serial number will be assigned for occurrences of Taxonomic
Units at each level of the hierarchy through genus and for all polynomial infrageneric Taxonomic Units. Half of a two-part key in geographic_div.

Description: Taxonomic Serial Number. The unique identifier for an occurrence of Taxonomic Units.

4.2.2. geographic_value

<table>
<thead>
<tr>
<th>Name: geographic_value</th>
<th>Element Size:</th>
<th>45</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display Picture:</td>
<td>Data Type:</td>
<td>VARCHAR</td>
</tr>
<tr>
<td>Nullness:</td>
<td>SQL Server Name:</td>
<td>geographic_value</td>
</tr>
<tr>
<td></td>
<td>Values List:</td>
<td>North America, Middle America, Caribbean, South America, Europe &amp; Northern Asia (excluding China), Africa, Southern Asia, Australia, Oceania, Antarctica/Southern Ocean, Eastern Atlantic Ocean, Indo-West Pacific, East Pacific</td>
</tr>
</tbody>
</table>

Data Source: CHOICE LIST

Validation Rules: Half of a two-part key in geographic_div.

Description: Label given to a geographic division as identified by the Taxonomic Work Group.

4.2.3 update_date

<table>
<thead>
<tr>
<th>Name: update_date</th>
<th>Element Size:</th>
<th>00:00:00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display Picture:</td>
<td>Data Type:</td>
<td>SMALLDATETIME</td>
</tr>
<tr>
<td>Nullness:</td>
<td>SQL Server Name:</td>
<td>update_date</td>
</tr>
<tr>
<td></td>
<td>Values List:</td>
<td></td>
</tr>
</tbody>
</table>

Data Source: SYSTEM GENERATED

Validation Rules:

Description: The date on which a record is modified. The purpose of this element is to provide assistance to those downloading data on a periodic basis.
5.0 Definitions for the entity jurisdiction and its elements

5.1 jurisdiction Description
Association of a referenced occurrence of Taxonomic Units with one or more US jurisdictional units. Also provides an identification of whether the taxon was native and/or introduced to the unit.

@1 tsn +
@2 jurisdiction_value +
origin +
update_date

5.2 jurisdiction Elements

5.2.1 tsn
Name: tsn
Element Size: Table: jurisdiction
Display Picture: Data Type: INT SQL Server Name: tsn
Nullness: NOT NULL Values List:
Data Source: SYSTEM GENERATED
Validation Rules: A taxonomic serial number will be assigned for occurrences of Taxonomic Units at each level of the hierarchy through genus and for all polynomial infrageneric Taxonomic Units. Half of a two-part key in jurisdiction.
Description: Taxonomic Serial Number. The unique identifier for an occurrence of Taxonomic Units.

5.2.2 jurisdiction_value
Name: jurisdiction_value Element Size: 30 Table: jurisdiction
Display Picture: Data Type: VARCHAR SQL Server Name: jurisdiction_value
Nullness: NOT NULL Values List:
Continental US
Alaska
Hawaii
Central Pacific Territories
Caribbean Territories
5.2.3 origin
Name: origin
Element Size: 19
Table: jurisdiction
Display Picture: Data Type: VARCHAR
Nullness: NULL
SQL Server Name: origin
Values List:
Native
Introduced
Native & Introduced
Incidental

5.2.4 update_date
Name: update_date
Element Size: SMALLDATETIME
Table: jurisdiction
Display Picture: yyyy-mm-dd 00:00:00
Data Type: SMALLDATETIME
Nullness: NULL
SQL Server Name: update_date
Values List:

6.0 Definitions for the entity kingdoms and its elements

6.1 kingdoms Description
The highest rank in the taxonomic hierarchical structure

@1 kingdom_id +

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6.2 **kingdoms Elements**

### 6.2.1 kingdom_id

**Name:** kingdom_id  
**Element Size:**  
**Table:** kingdoms  
**Display Picture:**  
**Data Type:** INT  
**SQL Server Name:** kingdom_id  
**Nullness:** NOT NULL UNIQUE  
**Values List:**  
1. Bacteria  
2. Protozoa  
3. Plantae  
4. Fungi  
5. Animalia  
6. Chromista  
7. Archaea  

**Data Source:** SYSTEM GENERATED  
**Validation Rules:**.  
**Description:** A unique identifier for the highest level of the taxonomic hierarchy structure.

### 6.2.2 kingdom_name

**Name:** kingdom_name  
**Element Size:** 10  
**Table:** kingdoms  
**Display Picture:**  
**Data Type:** CHAR  
**SQL Server Name:** kingdom_name  
**Nullness:** NOT NULL  
**Values List:**  
Bacteria  
Protozoa  
Plantae  
Fungi  
Animalia  
Chromista  
Archaea  

**Data Source:** CHOICE LIST  
**Validation Rules:**.  
**Description:** The label associated with the highest level of the taxonomic hierarchy structure.

### 6.2.3 update_date

**Name:** update_date  
**Element Size:**  
**Table:** kingdoms  
**Display Picture:** yyyy-mm-dd 00:00:00  
**Data Type:** SMALLDATETIME  
**SQL Server Name:** update_date  
**Nullness:** NOT NULL  
**Values List:**  

**Data Source:** SYSTEM GENERATED  
**Validation Rules:**.  
**Description:** The date on which a record is modified. The purpose of this element is to provide assistance to those downloading data on a periodic basis.
7.0 Definitions for the entity nodc_ids and its elements

7.1 nodc_ids Description
A mechanism for maintaining the association between the NODC data applications and the ITIS database to support users’ needs

nodc_id  +
update_date  +
tsn

7.2 nodc_ids Elements

7.2.1 nodc_id
Name: nodc_id  
Element Size: 12  
Table: nodc_ids
Display Picture:  
Data Type: CHAR  
SQL Server Name: nodc_id
Nullness: NULL  
Values List:
Data Source: USER ENTERED
Validation Rules:
Description: An identifier previously assigned to an occurrence of Taxonomic Units by the National Oceanographic Data Center.

7.2.2 update_date
Name: update_date  
Element Size:  
Table: nodc_ids
Display Picture: yyyy-mm-dd 00:00:00  
Data Type: SMALLDATETIME  
SQL Server Name: update_date
Nullness: NULL  
Values List:
Data Source: SYSTEM GENERATED
Validation Rules:
Description: The date on which a record is modified. The purpose of this element is to provide assistance to those downloading data on a periodic basis.

7.2.3 tsn
Name: tsn  
Element Size:  
Table: nodc_ids
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Display Picture: Data Type: INT SQL Server Name: tsn
Nullness: NULL Values List:

Data Source: SYSTEM GENERATED

Validation Rules: A taxonomic serial number will be assigned for occurrences of Taxonomic Units at each level of the hierarchy through genus and for all polynomial infrageneric Taxonomic Units.

Description: Taxonomic Serial Number. The unique identifier for an occurrence of Taxonomic Units.

8.0 Definitions for the entity other_sources and its elements

8.1 other_sources Description
References, other than persons or publications, that are taxonomically significant for additions or changes to occurrences of the Taxonomic_units table and/or associated data, or that provide credibility for vernacular names.

@1 source_id_prefix +
@2 source_id +
source_type +
source +
version +
acquisition_date +
source_comment +
update_date

8.2 other_sources Elements

8.2.1 source_id_prefix
Name: source_id_prefix Element Size:3 Table: other_sources
Display Picture: Data Type: CHAR SQL Server Name:
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8.2.2 source_id
Name: source_id Element Size: Table: other_sources
Display Picture: Data Type: INT SQL Server Name: source_id
Nullness: NOT NULL UNIQUE Values List:
Data Source: SYSTEM GENERATED
Validation Rules:
Description: The unique identifier for a supplier of information, other than a person or publication, lending credence to the establishment of or changes to an occurrence of Taxonomic Units.

8.2.3 source_type
Name: source_type Element Size: 10 Table: other_sources
Display Picture: Data Type: CHAR SQL Server Name: source_type
Nullness: NULL Values List:
Data Source: USER ENTERED
Validation Rules:
Description: The designation of the kind of supplier providing information to the ITIS (other than a person or publication); e.g. database.

8.2.4 source
Name: source Element Size: 64 Table: other_sources
Display Picture: Data Type: VARCHAR SQL Server Name: source
Nullness: NULL Values List:
Data Source: USER ENTERED
Validation Rules:
Description: The name of the supplier of information, other than a person or publication, to the ITIS database. Examples include, among others, Catalogue of the Vascular Plants of Madagascar and Hawaiian Arthropod Checklist Database.

8.2.5 version
Name: version Element Size: 10 Table: other_sources
Display Picture: Data Type: CHAR SQL Server Name: version
Nullness: NULL Values List:
Data Source: USER ENTERED
Validation Rules:
Description: Number, date or other identifying characteristic of the source which indicates the functionality and/or data at a point in time in the life of the system, database, etc.

8.2.6 acquisition_date
Name: acquisition_date Element Size: Table: other_sources
Display Picture: yyyy-mm-dd 00:00:00 Data Type: SMALLDATETIME SQL Server Name: acquisition_date Nullness: NULL Values List: 
Data Source: USER ENTERED Validation Rules: Description: The date on which ITIS acquired the data it is utilizing from a source other than a publication or expert.

8.2.7 source_comment
Name: source_comment Element Size: 500 Table: other_sources
Display Picture: Data Type: VARCHAR SQL Server Name: source_comment Nullness: NULL Values List: 
Data Source: USER ENTERED Validation Rules: Description: Remarks associated with the provider of information to the ITIS (other than a person or publication).

8.2.8 update_date
Name: update_date Element Size: Table: other_sources
Display Picture: yyyy-mm-dd 00:00:00 Data Type: SMALLDATETIME SQL Server Name: update_date Nullness: NULL Values List: 
Data Source: SYSTEM GENERATED Validation Rules: Description: The date on which a record is modified. The purpose of this element is to provide assistance to those downloading data on a periodic basis.
9.0 Definitions for the entity publications and its elements

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Data Type</th>
<th>Allow Nulls</th>
</tr>
</thead>
<tbody>
<tr>
<td>pub_id_prefix</td>
<td>char(3)</td>
<td></td>
</tr>
<tr>
<td>publication_id</td>
<td>int</td>
<td></td>
</tr>
<tr>
<td>reference_author</td>
<td>varchar(100)</td>
<td></td>
</tr>
<tr>
<td>title</td>
<td>varchar(255)</td>
<td></td>
</tr>
<tr>
<td>publication_name</td>
<td>varchar(255)</td>
<td></td>
</tr>
<tr>
<td>listed_pub_date</td>
<td>datetime</td>
<td></td>
</tr>
<tr>
<td>actual_pub_date</td>
<td>datetime</td>
<td></td>
</tr>
<tr>
<td>publisher</td>
<td>varchar(80)</td>
<td></td>
</tr>
<tr>
<td>pub_place</td>
<td>varchar(40)</td>
<td></td>
</tr>
<tr>
<td>isbn</td>
<td>varchar(16)</td>
<td></td>
</tr>
<tr>
<td>issn</td>
<td>varchar(16)</td>
<td></td>
</tr>
<tr>
<td>pages</td>
<td>varchar(15)</td>
<td></td>
</tr>
<tr>
<td>pub_comment</td>
<td>varchar(500)</td>
<td></td>
</tr>
<tr>
<td>update_date</td>
<td>smalldatetime</td>
<td></td>
</tr>
</tbody>
</table>

9.1 publications Description
Printed references that are taxonomically significant for additions or changes to occurrences of the Taxonomic_units table and/or associated data, or that provide credibility for approved vernacular names.

@1 publication_id_prefix +
@2 publication_id +
reference_author +
title +
publication_name +
listed_pub_date +
actual_pub_date +
publisher +
pub_place +
isbn +
issn +
pages +
pub_comment +
update_date
**ITIS Data Model**

### 9.2 publications Elements

#### 9.2.1 publication_id_prefix

<table>
<thead>
<tr>
<th>Name:</th>
<th>publication_id_prefix</th>
<th>Element Size:</th>
<th>3</th>
<th>Table: publications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display Picture:</td>
<td></td>
<td>Data Type:</td>
<td>CHAR</td>
<td>SQL Server Name: publication_id_prefix</td>
</tr>
<tr>
<td>Nullness:</td>
<td>NOT NULL</td>
<td>Data Source:</td>
<td>SYSTEM GENERATED</td>
<td></td>
</tr>
<tr>
<td>Validation Rules:</td>
<td></td>
<td>Description:</td>
<td>A prefix attached to a serial number to associate the record with the Publications table.</td>
<td></td>
</tr>
</tbody>
</table>

#### 9.2.2 publication_id

<table>
<thead>
<tr>
<th>Name:</th>
<th>publication_id</th>
<th>Element Size:</th>
<th>Table: publications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display Picture:</td>
<td></td>
<td>Data Type: INT</td>
<td>SQL Server Name: publication_id</td>
</tr>
<tr>
<td>Nullness:</td>
<td>NOT NULL UNIQUE</td>
<td>Data Source:</td>
<td>SYSTEM GENERATED</td>
</tr>
<tr>
<td>Validation Rules:</td>
<td></td>
<td>Description:</td>
<td>The unique identifier of a printed reference.</td>
</tr>
</tbody>
</table>

#### 9.2.3 reference_author

<table>
<thead>
<tr>
<th>Name:</th>
<th>reference_author</th>
<th>Element Size:</th>
<th>100</th>
<th>Table: publications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display Picture:</td>
<td></td>
<td>Data Type: VARCHAR</td>
<td>SQL Server Name: reference_author</td>
<td></td>
</tr>
<tr>
<td>Nullness:</td>
<td>NULL</td>
<td>Data Source:</td>
<td>USER ENTERED</td>
<td></td>
</tr>
<tr>
<td>Validation Rules:</td>
<td></td>
<td>Description:</td>
<td>Author(s) of a printed reference.</td>
<td></td>
</tr>
</tbody>
</table>

#### 9.2.4 title

<table>
<thead>
<tr>
<th>Name:</th>
<th>title</th>
<th>Element Size:</th>
<th>255</th>
<th>Table: publications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display Picture:</td>
<td></td>
<td>Data Type: VARCHAR</td>
<td>SQL Server Name: title</td>
<td></td>
</tr>
<tr>
<td>Nullness:</td>
<td>NULL</td>
<td>Data Source:</td>
<td>USER ENTERED</td>
<td></td>
</tr>
<tr>
<td>Validation Rules:</td>
<td></td>
<td>Description:</td>
<td>The identifying name given an article contained in a printed reference.</td>
<td></td>
</tr>
</tbody>
</table>

#### 9.2.5 publication_name

<table>
<thead>
<tr>
<th>Name:</th>
<th>publication_name</th>
<th>Element Size:</th>
<th>255</th>
<th>Table: publications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display Picture:</td>
<td></td>
<td>Data Type: VARCHAR</td>
<td>SQL Server Name: publication_name</td>
<td></td>
</tr>
</tbody>
</table>

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Nullness: NULL
Data Source: CHOICE LIST/USER ENTERED
Validation Rules:
Description: The identifying title of the printed reference, including volume and number, if applicable.

9.2.6 listed_pub_date
Name: listed_pub_date      Element Size:              Table: publications
Display Picture: yyyy-mm-dd  Data Type: DATETIME  SQL Server Name: listed_pub_date
hh:mm:ss.sss     Nullness: NULL
Data Source: USER ENTERED
Validation Rules:
Description: The date printed on a journal or other printed reference.

9.2.7 actual_pub_date
Name: actual_pub_date      Element Size:              Table: publications
Display Picture: yyyy-mm-dd  Data Type: DATETIME  SQL Server Name: actual_pub_date
hh:mm:ss.sss     Nullness: NULL
Data Source: USER ENTERED
Validation Rules: This date should be greater than or equal to the listed date if such is populated. In kingdoms Animalia and Protozoa it should also correspond to the date associated with the taxon_author if this is the reference in which the subject taxon is described.
Description: The true date on which a journal or other written reference was published. It may or may not correspond with the publication’s listed date.

9.2.8 publisher
Name: publisher         Element Size: 80         Table: publications
Display Picture:          Data Type: VARCHAR  SQL Server Name: publisher
Nullness: NULL
Data Source: USER ENTERED
Validation Rules:
Description: Producer of a printed reference.

9.2.9 pub_place
Name: pub_place         Element Size: 40         Table: publications
Display Picture:          Data Type: VARCHAR  SQL Server Name: pub_place
Nullness: NULL
Data Source: USER ENTERED
Validation Rules:
Description: Location of the publisher of a printed reference.
9.2.10 **isbn**

Name: isbn Element Size: 16 Table: publications
Display Picture: Data Type: VARCHAR SQL Server Name: isbn
Nullness: NULL Values List:
Data Source: USER ENTERED
Validation Rules:
Description: The ISBN number of a book cited; older publications and some alternatively published books do not have assigned ISBN numbers.

9.2.11 **issn**

Name: issn Element Size: 16 Table: publications
Display Picture: Data Type: VARCHAR SQL Server Name: issn
Nullness: NULL Values List:
Data Source: USER ENTERED
Validation Rules:
Description: The ISSN number of a journal cited; older journals and some alternatively published publications do not have assigned ISSN numbers.

9.2.12 **pages**

Name: pages Element Size: 15 Table: publications
Display Picture: Data Type: VARCHAR SQL Server Name: pages
Nullness: NULL Values List:
Data Source: USER ENTERED
Validation Rules:
Description: Page numbers within a printed reference to which the specific citation refers.

9.2.13 **pub_comment**

Name: pub_comment Element Size: 500 Table: publications
Display Picture: Data Type: VARCHAR SQL Server Name: pub_comment
Nullness: NULL Values List:
Data Source: USER ENTERED
Validation Rules:
Description: Remarks associated with the printed reference cited.

9.2.14 **update_date**

Name: update_date Element Size: Table: publications
Display Picture: yyyy-mm-dd Data Type: SMALLDATETIME SQL Server Name: update_date
00:00:00 Nullness: NULL Values List:
Data Source: SYSTEM GENERATED
Validation Rules:
Description: The date on which a record is modified. The purpose of this element is to provide assistance to those downloading data on a periodic basis.

10.0 Definitions for the entity taxon_authors_lkp and its elements

10.1 taxon_authors_lkp Description
Reference to authors of taxa for all kingdoms.

@1 taxon_author_id +
taxon_author +
update_date +
kingdom_id +
short_author

10.2 publications Elements

10.2.1 taxon_author_id
Name: taxon_author_id Element Size: Table: taxon_authors_lkp
Display Picture: Data Type: INT SQL Server Name: taxon_author_id
Nullness: NOT NULL UNIQUE Values List: SYSTEM GENERATED
Validation Rules: Description: A unique identifier for the author(s) of a taxonomic name.

10.2.2 taxon_author
Name: taxon_author Element Size: 100 Table: taxon_authors_lkp
Display Picture: Data Type: VARCHAR SQL Server Name: taxon_author
Nullness: NOT NULL Values List: CHOICE LIST/USER ENTERED

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Validation Rules: For authorities associated with the kingdoms Animalia and Protozoa the author(s) and the actual date of the publication in which the author(s) first described the taxon are required. For authorities associated with the kingdoms Archaea and Bacteria, the author(s) and the actual date of the publication in which the author(s) first described the taxon and the emending authors with the date of the emendation are required. For authorities associated with the Chromista, Fungi, and Plantae kingdom only author(s) and any emending authors are required. Note: Initially, authors/dates may not be available for all records.

Description: The author(s) associated with the name of a taxon.

10.2.3 update_date
Name: update_date Element Size: Table: taxon_authors_lkp
Display Picture: yyyy-mm-dd Data Type: SMALLDATETIME SQL Server Name: update_date
Nullness: NOT NULL Values List:
Data Source: SYSTEM GENERATED

Validation Rules:
Description: The date on which a record is modified. The purpose of this element is to provide assistance to those downloading data on a periodic basis.

10.2.4 kingdom_id
Name: kingdom_id Element Size: Table: taxon_authors_lkp
Display Picture: Data Type: INT SQL Server Name: kingdom_id
Nullness: NOT NULL Values List:
1 Bacteria
2 Protozoa
3 Plantae
4 Fungi
5 Animalia
6 Chromista
7 Archaea

Data Source: SYSTEM GENERATED
Validation Rules:
Description: A unique identifier for the highest level of the taxonomic hierarchy structure.

10.2.5 short_author
Name: short_author Element Size:100 Table: taxon_authors_lkp
Display Picture: Data Type: VARCHAR SQL Server Name: short_author
Nullness: NULL Values List:

Data Source: SYSTEM GENERATED
Validation Rules:
Description: The author(s) associated with the name of a taxon with parenthesis, commas and periods removed. Designed to be helpful when searching for an author whose name contains a different punctuation for different taxon names.
11.0 Definitions for the entity taxon_unit_types and its elements

11.1 taxon_unit_types Description
Defines the levels associated with the taxonomic hierarchical structure and establishes the rank order for an occurrence of the Taxonomic Units.

@1 kingdom_id +
@2 rank_id +
rank_name +
direct_parent_rank_id +
required_parent_rank_id +
update_date

11.2 taxon_unit_types Elements

11.2.1 kingdom_id
Name: kingdom_id
Element Size: Table: taxon_unit_types
Display Picture: Data Type: INT
Nullness: NOT NULL

Data Source: SYSTEM GENERATED
Validation Rules: Half of a two-part key in taxon_unit_types.
Description: A unique identifier for the highest level of the taxonomic hierarchy structure.

11.2.2 rank_id
Name: rank_id
Element Size: Table: taxon_unit_types

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**11.2.3 rank_name**

- **Name:** rank_name
- **Element Size:** 15
- **Table:** taxon_unit_types
- **Data Type:** CHAR
- **SQL Server Name:** rank_name
- **Nullness:** NOT NULL
- **Data Source:** CHOICE LIST

### Validation Rules:

- Description: The label associated with the specific level of a taxonomic hierarchy.

<table>
<thead>
<tr>
<th>Plant</th>
<th>Animal</th>
<th>Fungi/Chromista</th>
<th>Archaea/Bacteria Protozoa</th>
<th>ITIS rank_id</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kingdom</td>
<td>Kingdom</td>
<td>Kingdom</td>
<td>Kingdom</td>
<td>10</td>
</tr>
<tr>
<td>Subkingdom</td>
<td>Subkingdom</td>
<td>Subkingdom</td>
<td>Subkingdom</td>
<td>20</td>
</tr>
<tr>
<td>Infrakingdom</td>
<td>Infrakingdom</td>
<td>Superphylum</td>
<td></td>
<td>25</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>27</td>
</tr>
<tr>
<td>Division</td>
<td>Phylum</td>
<td>Division</td>
<td>Phylum</td>
<td>30</td>
</tr>
<tr>
<td>Subdivision</td>
<td>Subphylum</td>
<td>Subdivision</td>
<td>Subphylum</td>
<td>40</td>
</tr>
<tr>
<td>Infradivision</td>
<td>Infraphylum</td>
<td></td>
<td></td>
<td>45</td>
</tr>
<tr>
<td>Superclass</td>
<td>Superclass</td>
<td>Superclass (Chromista only)</td>
<td>Superclass</td>
<td>50</td>
</tr>
<tr>
<td>Class</td>
<td>Class</td>
<td>Class</td>
<td>Class</td>
<td>60</td>
</tr>
<tr>
<td>Subclass</td>
<td>Subclass</td>
<td>Subclass</td>
<td>Subclass</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Infraclass</td>
<td>Infraclass</td>
<td>80</td>
</tr>
<tr>
<td>Superorder</td>
<td>Superorder</td>
<td>Superorder</td>
<td>Superorder</td>
<td>90</td>
</tr>
<tr>
<td>Order</td>
<td>Order</td>
<td>Order</td>
<td>Order</td>
<td>100</td>
</tr>
<tr>
<td>Suborder</td>
<td>Suborder</td>
<td>Suborder</td>
<td>Suborder</td>
<td>110</td>
</tr>
<tr>
<td></td>
<td>Infraorder</td>
<td>Infraorder</td>
<td>Infraorder</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>Section</td>
<td></td>
<td></td>
<td>124</td>
</tr>
<tr>
<td></td>
<td>Subsection</td>
<td></td>
<td></td>
<td>126</td>
</tr>
<tr>
<td></td>
<td>Superfamily</td>
<td></td>
<td></td>
<td>130</td>
</tr>
<tr>
<td>Family</td>
<td>Family</td>
<td>Family</td>
<td>Family</td>
<td>140</td>
</tr>
<tr>
<td>Subfamily</td>
<td>Subfamily</td>
<td>Subfamily</td>
<td>Subfamily</td>
<td>150</td>
</tr>
<tr>
<td>Tribe</td>
<td>Tribe</td>
<td>Tribe</td>
<td>Tribe</td>
<td>160</td>
</tr>
</tbody>
</table>
### ITIS Data Model

<table>
<thead>
<tr>
<th>Plant</th>
<th>Animal</th>
<th>Fungi/Chromista</th>
<th>Archaea/Bacteria Protozoa</th>
<th>ITIS rank_id</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subtribe</td>
<td>Subtribe</td>
<td>Subtribe</td>
<td>Subtribe</td>
<td>170</td>
</tr>
<tr>
<td>Genus</td>
<td>Genus</td>
<td>Genus</td>
<td>Genus</td>
<td>180</td>
</tr>
<tr>
<td>Subgenus</td>
<td>Subgenus</td>
<td>Subgenus</td>
<td>Subgenus</td>
<td>190</td>
</tr>
<tr>
<td>Section</td>
<td>Section</td>
<td>Section</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subsection</td>
<td>Subsection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Species</td>
<td>Species</td>
<td>Species</td>
<td>Species</td>
<td>220</td>
</tr>
<tr>
<td>Subspecies</td>
<td>Subspecies</td>
<td>Subspecies</td>
<td>Subspecies</td>
<td>230</td>
</tr>
<tr>
<td>Variety</td>
<td>Variety</td>
<td>Variety</td>
<td>Variety (Protozoa only)</td>
<td>240</td>
</tr>
<tr>
<td>Form</td>
<td></td>
<td></td>
<td></td>
<td>245</td>
</tr>
<tr>
<td>Subvariety</td>
<td>Race</td>
<td>Subvariety</td>
<td></td>
<td>250</td>
</tr>
<tr>
<td>Stirp</td>
<td></td>
<td></td>
<td></td>
<td>255</td>
</tr>
<tr>
<td>Form</td>
<td>Morph</td>
<td>Form</td>
<td></td>
<td>260</td>
</tr>
<tr>
<td>Aberration</td>
<td></td>
<td></td>
<td></td>
<td>265</td>
</tr>
<tr>
<td>Subform</td>
<td>Subform</td>
<td></td>
<td></td>
<td>270</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unspecified</td>
<td>300</td>
</tr>
</tbody>
</table>

#### 11.2.4 dir_parent_rank_id

- **Name:** dir_parent_rank_id  
- **Element Size:**  
- **Table:** taxon_unit_types  
- **Display Picture:**  
- **Data Type:** SMALLINT  
- **SQL Server Name:** dir_parent_rank_id  
- **Nullness:** NOT NULL  
- **Data Source:** CHOICE LIST  
- **Validation Rules:**  
- **Description:** The unique identifier for the rank of the closest parent of an occurrence of Taxonomic Units as defined by the kingdom's rank rules.

#### 11.2.5 req_parent_rank_id

- **Name:** req_parent_rank_id  
- **Element Size:**  
- **Table:** taxon_unit_types  
- **Display Picture:**  
- **Data Type:** SMALLINT  
- **SQL Server Name:** req_parent_rank_id  
- **Nullness:** NOT NULL  
- **Data Source:** CHOICE LIST  
- **Validation Rules:**  
- **Description:** The unique identifier for the closest, required parent of an occurrence of Taxonomic Units as established by the respective kingdom's rank rules.
11.2.6 update_date
Name: update_date  Element Size:  Table: taxon_unit_types
Display Picture: yyyy-mm-dd  Data Type: SMALLDATETIME  SQL Server Name: update_date
Nullness: NOT NULL
Data Source: SYSTEM GENERATED
Validation Rules:
Description: The date on which a record is modified. The purpose of this element is to provide assistance to those downloading data on a periodic basis.

12.0 Definitions for the entity tu_comments_links and its elements

12.1 tu_comments_links Description
An intersection table which provides the means for establishing a many to many relationship between an occurrence of Taxonomic Units and associated Comments.

@1 tsn +
@2 comment_id +
update_date

12.2 tu_comments_links Elements

12.2.1 tsn
Name: tsn  Element Size:  Table: tu_comments_links
Display Picture:  Data Type: INT  SQL Server Name: tsn
Nullness: NOT NULL
Data Source: SYSTEM GENERATED
Validation Rules: A taxonomic serial number will be assigned for occurrences of Taxonomic Units at each level of the hierarchy through genus and for all polynomial infrageneric Taxonomic Units. Half of a two-part key in tu_comments_links.
Description: Taxonomic Serial Number. The unique identifier for an occurrence of Taxonomic Units.
12.2.2 comment_id
Name: comment_id  Element Size:  Table: tu_comments_links
Display Picture:  Data Type: INT  SQL Server Name: comment_id
Nullness: NOT NULL  Values List:
Data Source: SYSTEM GENERATED
Validation Rules: Half of a two-part key in tu_comments_links.
Description: The unique identifier for remarks associated with an occurrence of Taxonomic Units.

12.2.3 update_date
Name: update_date  Element Size:  Table: tu_comments_links
Display Picture: yyyy-mm-dd 00:00:00  Data Type: SMALLDATETIME  SQL Server Name: update_date
Nullness: NOT NULL  Values List:
Data Source: SYSTEM GENERATED
Validation Rules:
Description: The date on which a record is modified. The purpose of this element is to provide assistance to those downloading data on a periodic basis.

13.0 Definitions for the entity synonym_links and its elements

13.1 synonym_links Description
A mechanism to provide the link between an accepted taxonomic name and alternates or predecessors to it.

@1 tsn +
@2 tsn_accepted +
update_date

13.2 synonym_links Elements

13.2.1 tsn
Name: tsn  Element Size:  Table: synonym_links
Display Picture:  Data Type: INT  SQL Server Name: tsn
Nullness: NOT NULL  
Validation Rules: A taxonomic serial number will be assigned for occurrences of Taxonomic Units at each level of the hierarchy through genus and for all polynomial infrageneric Taxonomic Units. Must have usage of invalid or not accepted name Half of a two-part key in synonym_links. Description: Taxonomic Serial Number. The unique identifier for an occurrence of Taxonomic Units.

13.2.2 tsn_accepted  
Name: tsn  
Display Picture:  
Nullness: NOT NULL  
Data Source: USER ENTERED  
Validation Rules: Must have usage of valid or accepted name. Half of a two-part key in synonym_links. Description: The taxonomic serial number assigned to the accepted occurrence of Taxonomic Units to which a synonym is associated.

13.2.3. update_date  
Name: update_date  
Display Picture: yyyy-mm-dd  
Nullness: NOT NULL  
Data Source: SYSTEM GENERATED  
Validation Rules: 
Description: The date on which a record is modified. The purpose of this element is to provide assistance to those downloading data on a periodic basis.

14.0 Definitions for the entity reference_links and its elements
14.1 reference_links Description
An intersection table that provides a link between occurrences of Taxonomic Units and occurrences of publications, experts, or other_sources.

@1 tsn +
@2 doc_id_prefix+
@3 documentation_id +
original_desc_ind +
init_itis_desc_ind +
change_track_id +
vernacular_name +
update_date

14.2 reference_links Elements

14.2.1 tsn
Name: tsn Element Size: Table: reference_links
Display Picture: Data Type: INT SQL Server Name: tsn
Nullness: NOT NULL Values List:
Data Source: SYSTEM GENERATED
Validation Rules: A taxonomic serial number will be assigned for occurrences of Taxonomic Units at each level of the hierarchy through genus and for all polynomial infrageneric Taxonomic Units. Part of a three-part key in reference_links.
Description: Taxonomic Serial Number. The unique identifier for an occurrence of Taxonomic Units.

14.2.2 doc_id_prefix
Name: doc_id_prefix Element Size:3 Table: reference_links
Display Picture: Data Type: CHAR SQL Server Name: doc_id_prefix
doc_id_prefix
Nullness: NOT NULL Values List: EXP, PUB, SRC
Data Source: SYSTEM GENERATED
Validation Rules: Part of a three-part key in reference_links.
Description: A designation affixed to the documentation_id identifying the reference as a publication, expert or other source.

14.2.3 documentation_id
Name: documentation_id Element Size: Table: reference_links
Display Picture: Data Type: INT SQL Server Name: documentation_id
documentation_id
Nullness: NOT NULL Values List:
Data Source: SYSTEM GENERATED
Validation Rules: Part of a three-part key in reference_links.
Description: The serial portion of the identifier created for either the Publications table, the
Experts table or the Other_Sources table used with the documentation_id_prefix to provide the reference link with an instance from the Taxonomic_units table.

14.2.4 original_desc_ind
Name: original_desc_ind  Element Size: 1  Table: reference_links
Display Picture:  Data Type: CHAR  SQL Server Name: original_desc_ind
Nullness: NULL  Values List: If selected, the indicator will be set to true

Data Source: CHOICE LIST
Validation Rules:
Description: Indicator used to identify that this occurrence represents the reference of the original description, when available.

14.2.5. init_itis_desc_ind
Name: init_itis_desc_ind  Element Size: 1  Table: reference_links
Display Picture:  Data Type: CHAR  SQL Server Name: init_itis_desc_ind
Nullness: NULL  Values List: If selected, the indicator will be set to true

Data Source: NOT IN USE
Validation Rules:
Description: Indicator used to identify the reference(s) that serve as the reason for an occurrence of Taxonomic Units being recognized where the original reference is unavailable.

14.2.6. change_track_id
Name: change_track_id  Element Size:  Table: reference_links
Display Picture:  Data Type: INT  SQL Server Name: change_track_id
Nullness: NULL  Values List:

Data Source: NOT IN USE
Validation Rules:
Description: The unique identifier assigned to a change made to an occurrence of Taxonomic Units.

14.2.7 vernacular_name
Name: vernacular_name  Element Size: 80  Table: reference_links
Display Picture:  Data Type: VARCHAR  SQL Server Name: vernacular_name
Nullness: NULL  Values List:

Data Source: NOT IN USE
Validation Rules:
Description: A common name associated with an occurrence of Taxonomic Units.
14.2.8 update_date

Name: update_date  Element Size:  Table: reference_links
Display Picture: yyyy-mm-dd  Data Type: SMALLDATETIME  SQL Server Name: update_date
Nullness: NOT NULL  Values List:

Data Source: SYSTEM GENERATED
Validation Rules:
Description: The date on which a record is modified. The purpose of this element is to provide assistance to those downloading data on a periodic basis.

15.0 Definitions for the entity vernaculars and its elements

15.1 vernaculars Description
Common names associated with an occurrence in Taxonomic Units.

@1 tsn +
vernacular_name +
language +
approved_ind +
update_date +
@2 vern_id

15.2 vernaculars Elements

15.2.1 tsn
Name: tsn  Element Size:  Table: vernaculars
Display Picture:  Data Type: INT  SQL Server Name: tsn
Nullness: NOT NULL  Values List:

Data Source: SYSTEM GENERATED
Validation Rules: A taxonomic serial number will be assigned for occurrences of Taxonomic Units at each level of the hierarchy through genus and for all polynomial infrageneric Taxonomic Units. Half of a two-part key in vernaculars.
Description: Taxonomic Serial Number. The unique identifier for an occurrence of Taxonomic Units.

15.2.2 vernacular_name
Name: vernacular_name Element Size: 80 Table: vernaculars
Display Picture: Data Type: VARCHAR SQL Server Name: vernacular_name
Nullness: NOT NULL
Data Source: USER ENTERED
Validation Rules:
Description: A common name associated with an occurrence of Taxonomic Units.

15.2.3 language
Name: language Element Size: 15 Table: vernaculars
Display Picture: Data Type: VARCHAR SQL Server Name: language
Nullness: NOT NULL
Data Source: CHOICE LIST/USER ENTERED
Validation Rules:
Description: Native language from which the vernacular name originates; e.g. English, French, Spanish, Portuguese, etc.

15.2.4 approved_ind
Name: approved_ind Element Size: 1 Table: vernaculars
Display Picture: Data Type: CHAR SQL Server Name: approved_ind
Nullness: NULL
Data Source: CHOICE LIST
Validation Rules: If the approved_ind is set to true, then the reference identifying the vernacular must be entered.
Description: Designation identifying those vernacular names authorized for use by regulation, statute, etc.

15.2.5 update_date
Name: update_date Element Size: Table: vernaculars
Display Picture: yyyy-mm-dd 00:00:00 Data Type: SMALLDATETIME SQL Server Name: update_date
Nullness: NOT NULL
Data Source: SYSTEM GENERATED
Validation Rules:
Description: The date on which a record is modified. The purpose of this element is to provide assistance to those downloading data on a periodic basis.
15.2.6 vern_id
Name: vern_id Element Size: Table: vernaculars
Display Picture: Data Type: INT SQL Server Name: vern_id
Nullness: NOT NULL UNIQUE Values List:
Data Source: SYSTEM GENERATED
Validation Rules: Half of a two-part key in vernaculars.
Description: The serial portion of the identifier created for a vernacular name associated with an occurrence of a Taxonomic Unit.

16.0 Definitions for the entity vern_ref_links and its elements

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Data Type</th>
<th>Allow Nulls</th>
</tr>
</thead>
<tbody>
<tr>
<td>tsn</td>
<td>int</td>
<td></td>
</tr>
<tr>
<td>doc_id_prefix</td>
<td>char(3)</td>
<td></td>
</tr>
<tr>
<td>documentation_id</td>
<td>int</td>
<td></td>
</tr>
<tr>
<td>update_date</td>
<td>smalldatetime</td>
<td></td>
</tr>
<tr>
<td>vern_id</td>
<td>int</td>
<td></td>
</tr>
</tbody>
</table>

16.1 vern_ref_links Description
An intersection table that provides a link between occurrences of Vernaculars and occurrences of Publications, Experts, or Other_Sources.

@1 tsn +
@2 doc_id_prefix +
@3 documentation_id +
update_date +
@4 vern_id +

16.2 vern_ref_links Elements

16.2.1 tsn
Name: tsn Element Size: Table: vern_ref_links
Display Picture: Data Type: INT SQL Server Name: tsn
Nullness: NOT NULL Values List:
Data Source: SYSTEM GENERATED
Validation Rules: A taxonomic serial number will be assigned for occurrences of Taxonomic Units at each level of the hierarchy through genus and for all polynomial infrageneric Taxonomic Units. Part of a four-part key in vern_ref_links.
Description: Taxonomic Serial Number. The unique identifier for an occurrence of Taxonomic Units.
### 16.2.2 doc_id_prefix

<table>
<thead>
<tr>
<th>Name:</th>
<th>Element Size:</th>
<th>Table:</th>
</tr>
</thead>
<tbody>
<tr>
<td>doc_id_prefix</td>
<td>3</td>
<td>vern_ref_links</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Display Picture:</th>
<th>Data Type:</th>
<th>SQL Server Name:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CHAR</td>
<td>doc_id_prefix</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nullness:</th>
<th>Values List:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOT NULL</td>
<td>EXP, PUB, SRC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data Source:</th>
<th>Validation Rules:</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYSTEM GENERATED</td>
<td>Part of a four-part key in vern_ref_links.</td>
</tr>
</tbody>
</table>

**Description:** A designation affixed to the documentation_id identifying the reference as a publication, expert or other source.

### 16.2.3 documentation_id

<table>
<thead>
<tr>
<th>Name:</th>
<th>Table:</th>
</tr>
</thead>
<tbody>
<tr>
<td>documentation_id</td>
<td>vern_ref_links</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Display Picture:</th>
<th>Data Type:</th>
<th>SQL Server Name:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>INT</td>
<td>documentation_id</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nullness:</th>
<th>Values List:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOT NULL</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data Source:</th>
<th>Validation Rules:</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYSTEM GENERATED</td>
<td>Part of a four-part key in vern_ref_links.</td>
</tr>
</tbody>
</table>

**Description:** Part of a four-part key in vern_ref_links.

**Description:** The serial portion of the identifier created for either the Publications table, the Experts table or the Other_Sources table used with the documentation_id_prefix to provide the reference link with an instance from the vernaculars table.

### 16.2.4 update_date

<table>
<thead>
<tr>
<th>Name:</th>
<th>Table:</th>
</tr>
</thead>
<tbody>
<tr>
<td>update_date</td>
<td>vern_ref_links</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Display Picture:</th>
<th>Data Type:</th>
<th>SQL Server Name:</th>
</tr>
</thead>
<tbody>
<tr>
<td>yyyy-mm-dd 00:00:00</td>
<td>SMALLDATETIME</td>
<td>update_date</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nullness:</th>
<th>Values List:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOT NULL</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data Source:</th>
<th>Validation Rules:</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYSTEM GENERATED</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** The date on which a record is modified. The purpose of this element is to provide assistance to those downloading data on a periodic basis.

### 16.2.5 vern_id

<table>
<thead>
<tr>
<th>Name:</th>
<th>Table:</th>
</tr>
</thead>
<tbody>
<tr>
<td>vern_id</td>
<td>vern_ref_links</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Display Picture:</th>
<th>Data Type:</th>
<th>SQL Server Name:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>INT</td>
<td>vern_id</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nullness:</th>
<th>Values List:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOT NULL</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data Source:</th>
<th>Validation Rules:</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYSTEM GENERATED</td>
<td>Part of a four-part key in vernaculars.</td>
</tr>
</tbody>
</table>

**Description:** The serial portion of the identifier created for a vernacular name associated with an occurrence of a Taxonomic Unit.
17.0 Definitions for the entity longnames and its elements

17.1 longnames Description
A support table that provides a full scientific name without taxon author for Taxonomic Units.

@1 tsn +
completenname

17.2 longnames Elements

17.2.1 tsn
Name: tsn Element Size: Table: longnames
Display Picture: Data Type: INT SQL Server Name: tsn
Nullness: NOT NULL UNIQUE Values List:
Data Source: SYSTEM GENERATED
Validation Rules: A taxonomic serial number will be assigned for occurrences of Taxonomic Units at each level of the hierarchy through genus and for all polynomial infrageneric Taxonomic Units.
Description: Taxonomic Serial Number. The unique identifier for an occurrence of Taxonomic Units.

17.2.2 completename
Name: completename Element Size: 164 Table: longnames
Display Picture: Data Type: VARCHAR SQL Server Name: completename
Nullness: NULL Values List:
Data Source: SYSTEM GENERATED
Validation Rules:
Description: The unit indicators and unit name fields concatenated and trimmed to present entire scientific name, without taxon author. Designed to be helpful when searching for taxa by scientific name.
18.0 Definitions for the entity strippedauthor and its elements

18.1 strippedauthor Description
A support table that provides the author(s) associated with the name of a taxon with parenthesis, commas and periods removed. Designed to be helpful when searching for an author whose name contains a different punctuation for different taxon names.

@1 taxon_author_id +
shortauthor

18.2 strippedauthor Elements

18.2.1 taxon_author_id
Name: taxon_author_id
Element Size: Table: strippedauthor
Display Picture: Data Type: INT SQL Server Name: taxon_author_id
Nullness: NOT NULL UNIQUE Values List:
Data Source: SYSTEM GENERATED
Validation Rules:
Description: A unique identifier for the author(s) of a taxonomic name.

18.2.2 shortauthor
Name: short_author
Element Size: 100 Table: strippedauthor
Display Picture: Data Type: VARCHAR SQL Server Name: short_author
Nullness: NOT NULL Values List:
Data Source: SYSTEM GENERATED
Validation Rules:
Description: The author(s) associated with the name of a taxon with parenthesis, commas and periods removed. Designed to be helpful when searching for an author whose name contains a different punctuation for different taxon names.
19.0 Definitions for the entity hierarchy and its elements

19.1 hierarchy Description
A support table that provides an accepted or valid Taxonomic Units full TSN hierarchy in a single string.

```sql
@1 hierarchy_string +
TSN +
Parent_TSN +
[level] +
ChildrenCount
```

19.2 hierarchy Elements

19.2.1 hierarchy_string
Name: hierarchy_string       Element Size: 300       Table: hierarchy
Display Picture:             Data Type: VARCHAR       SQL Server Name: hierarchy_string
Nullness: NOT NULL UNIQUE    Values List:
Data Source: SYSTEM GENERATED
Validation Rules:
Description: The concatenated TSNs, delimited with a hyphen, which represents the hierarchy from Kingdom to TSN of concern.

19.2.2 TSN
Name: TSN              Element Size:              Table: hierarchy
Display Picture:          Data Type: INT          SQL Server Name: TSN
Nullness: NOT NULL        Values List:
Data Source: SYSTEM GENERATED
Validation Rules: A taxonomic serial number will be assigned for occurrences of Taxonomic Units at each level of the hierarchy through genus and for all polynomial infrageneric Taxonomic Units.
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Description: The TSN for the hierarchy entry. Taxonomic Serial Number. The unique identifier for an occurrence of Taxonomic Units.

19.2.3 Parent_TSN
Name: Parent_TSN  Element Size:  Table: hierarchy
Display Picture:  Data Type: INT  SQL Server Name: Parent_TSN
Nullness: NULL  Values List:
Data Source: SYSTEM GENERATED
Validation Rules:
Description: The direct parent TSN of hierarchy.TSN.

19.2.4 [level]
Name: [level]  Element Size:  Table: hierarchy
Display Picture:  Data Type: INT  SQL Server Name: [level]
Nullness: NOT NULL  Values List:
Data Source: SYSTEM GENERATED
Validation Rules:
Description: The distance down the hierarchy from Kingdom to TSN of concern for the hierarchy entry. For example, TSN 51, Schizomycetes, a Bacteria Class, has a level of 2.

19.2.5 ChildrenCount
Name: ChildrenCount  Element Size:  Table: hierarchy
Display Picture:  Data Type: INT  SQL Server Name: ChildrenCount
Nullness: NOT NULL  Values List:
Data Source: SYSTEM GENERATED
Validation Rules:
Description: The number of total children a particular TSN has, from its direct children to the bottom of the hierarchy.

20.0 Deprecated Tables
There are entities within ITIS which are not currently in use. They are synonym_names and reviews.

20.1 synonym_names Description
Designed to store the TSNs and complete names of not accepted and invalid names, and their corresponding accepted or valid TSNs and complete names. ITIS relies upon the synonym_links table to relate not accepted and invalid names to their accepted and valid names.
20.2 **reviews Description**

Once used for descriptions of evaluations, either periodic or requested, undertaken to add credence to the data supported by the ITIS. ITIS relies upon links to sources (Experts, Publications, and Other Sources) to provide evidence for taxonomic decisions.