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.
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>
</tr>
</thead>
<tbody>
<tr>
<td>tsn</td>
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</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>
<td></td>
</tr>
<tr>
<td>unit_name2</td>
<td>varchar(35)</td>
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</tr>
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</tr>
<tr>
<td>unit_name3</td>
<td>varchar(35)</td>
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</tr>
<tr>
<td>unit_ind4</td>
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<td></td>
</tr>
<tr>
<td>unit_name4</td>
<td>varchar(35)</td>
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<tr>
<td>usage</td>
<td>varchar(12)</td>
<td></td>
</tr>
<tr>
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<td>varchar(50)</td>
<td></td>
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</tr>
<tr>
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<td></td>
</tr>
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<td>datetime</td>
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<td></td>
</tr>
<tr>
<td>hybrid_author_id</td>
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<tr>
<td>rank_id</td>
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<tr>
<td>complete_usage</td>
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</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.

\[
\begin{align*}
\# & \text{tsn} + \\
\text{unit_ind1} + & \\
\text{unit_name1} + & \\
\text{unit_ind2} + & \\
\text{unit_name2} + & \\
\text{unit_ind3} + & \\
\text{unit_name3} + & \\
\text{unit_ind4} + & \\
\text{unit_name4} + & \\
\text{unnamed_taxon_ind} + & \\
\text{usage} + & \\
\text{unaccept_reason} + & \\
\text{credibility_rtng} + & \\
\text{completeness_rtng} + & \\
\text{currency_rating} + & \\
\text{phylo_sort_sequence} + & \\
\text{initial_time_stamp} + & \\
\text{parent_tsn} + & \\
\text{taxon_author_id} + & \\
\text{hybrid_author_id} + & \\
\text{kingdom_id} + & \\
\text{rank_id} + & \\
\text{update_date} + & \\
\text{uncertain_prnt_ind} + & \\
\text{name_usage} + & \\
\text{complete_name} & 
\end{align*}
\]

1.2 **taxonomic_units Elements**

1.2.1 **tsn**

<table>
<thead>
<tr>
<th>Name</th>
<th>Element Size:</th>
<th>Table:</th>
<th>taxonomic_units</th>
</tr>
</thead>
<tbody>
<tr>
<td>tsn</td>
<td>Int</td>
<td></td>
<td>tsn</td>
</tr>
<tr>
<td>Display Picture:</td>
<td>Data Type:</td>
<td>SQL Server Name:</td>
<td>tsn</td>
</tr>
<tr>
<td>Element Size:</td>
<td>NOT NULL UNIQUE</td>
<td>Values List:</td>
<td></td>
</tr>
<tr>
<td>Data Source:</td>
<td>SYSTEM GENERATED</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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.
ITIS Data Model

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: 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
ITIS Data Model

Display Picture: Data Type: VARCHAR SQL Server Name:unit_ind3
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 Element Size: 35 Table: taxonomic_units
Display Picture: Data Type: VARCHAR SQL Server Name:unit_name3
Nullness: NULL
Values List:

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 Element Size: 7 Table: taxonomic_units
Display Picture: Data Type: VARCHAR SQL Server Name:unit_ind4
Nullness: NULL
Values List:
var.
f.

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 Element Size: 35 Table: taxonomic_units
Display Picture: Data Type: VARCHAR SQL Server Name:unit_name4
Nullness: NULL
Values List:

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
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
(illegitimate)
synonym
unspecified in provided data

Animalia, Archaea, Bacteria and Protozoa:
homonym & junior synonym
junior homonym
junior synonym
misapplied
nomen dubium
nomen oblitum
original name/combination
other, see comments
pro parte
subsequent name/combination
unavailable, database artifact
unavailable, incorrect orig. spelling
unavailable, literature misspelling
unavailable, nomen nudum
unavailable, other unavailable, suppressed by ruling
unjustified emendment
unnecessary replacement
unspecified in provided data

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 Element Size: 40 Table: taxonomic_units
Display Picture: Data Type: VARCHAR SQL Server Name: credibility_rtng
Nullness: NOT NULL 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 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 at different rank levels.
Description: A rating designation reflecting whether all known, named, modern species (extant or recently extinct) for that taxon were incorporated into ITIS at the time of review.

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.
ITIS Data Model

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
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
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
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
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.

Tuesday, April 23, 2019
### 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>
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</table>
### ITIS Data Model

<table>
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<th>Plantae/Chromista</th>
<th>Animalia</th>
<th>Fungi</th>
<th>Archaea</th>
<th>Bacteria/Protozoa</th>
<th>ITIS rank_id</th>
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<tr>
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<td>Subsection</td>
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<tr>
<td>Superfamily</td>
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<td>Subsection</td>
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<td>210</td>
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<tr>
<td>Variety</td>
<td>Variety</td>
<td>Variety</td>
<td>Variety (Protozoa only)</td>
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</tr>
<tr>
<td>Form</td>
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<td></td>
<td>245</td>
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<tr>
<td>Subvariety</td>
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<td>Subvariety</td>
<td></td>
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<tr>
<td>Stirp</td>
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<td>255</td>
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</tr>
<tr>
<td>Form</td>
<td>Morph</td>
<td>Form</td>
<td></td>
<td>260</td>
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<tr>
<td>Aberration</td>
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<td>265</td>
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</tr>
<tr>
<td>Subform</td>
<td>Subform</td>
<td></td>
<td></td>
<td>270</td>
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</tr>
<tr>
<td>Unspecified</td>
<td></td>
<td></td>
<td></td>
<td>300</td>
<td></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
- **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.
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

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: System GENERATED

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**

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Data Type</th>
<th>Allow Nulls</th>
</tr>
</thead>
<tbody>
<tr>
<td>comment_id</td>
<td>int</td>
<td></td>
</tr>
<tr>
<td>commentator</td>
<td>varchar(100)</td>
<td></td>
</tr>
<tr>
<td>comment_detail</td>
<td>char(2000)</td>
<td></td>
</tr>
<tr>
<td>comment_time_stamp</td>
<td>datetime</td>
<td></td>
</tr>
<tr>
<td>update_date</td>
<td>smalldatetime</td>
<td></td>
</tr>
</tbody>
</table>

**Name:** comment_id  **Element Size:** Table: comments

**Display Picture:**  **Data Type:** INT

**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**

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Data Type</th>
<th>Allow Nulls</th>
</tr>
</thead>
<tbody>
<tr>
<td>commentator</td>
<td>varchar(100)</td>
<td></td>
</tr>
<tr>
<td>comment_time_stamp</td>
<td>datetime</td>
<td></td>
</tr>
<tr>
<td>update_date</td>
<td>smalldatetime</td>
<td></td>
</tr>
</tbody>
</table>

**Name:** commentator  **Element Size:** 100  **Table:** comments

**Display Picture:**  **Data Type:** VARCHAR

**Nullness:** NOT 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

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Data Type</th>
<th>Allow Nulls</th>
</tr>
</thead>
<tbody>
<tr>
<td>expert_id_prefix</td>
<td>char(3)</td>
<td></td>
</tr>
<tr>
<td>expert_id</td>
<td>int</td>
<td></td>
</tr>
<tr>
<td>expert</td>
<td>varchar(100)</td>
<td></td>
</tr>
<tr>
<td>exp_comment</td>
<td>varchar(500)</td>
<td></td>
</tr>
<tr>
<td>update_date</td>
<td>smalldatetime</td>
<td></td>
</tr>
</tbody>
</table>
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
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3.2.5 `update_date`

<table>
<thead>
<tr>
<th>Name</th>
<th>Element Size</th>
<th>Table</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>update_date</code></td>
<td></td>
<td><code>experts</code></td>
</tr>
</tbody>
</table>

Display Picture: `yyyy-mm-dd 00:00:00`

Data Type: `SMALLDATETIME`
SQL Server Name: `update_date`
Nullness: `NULL`
Values List: `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

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

Display Picture: `INT`
Data Type: `INT`
SQL Server Name: `tsn`
Nullness: `NOT NULL`
Values List: `SYSTEM GENERATED`
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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

Name: geographic_value Element Size:45 Table: geographic_div
Display Picture: Data Type: VARCHAR SQL Server Name: geographic_value
Nullness: NOT NULL Values List:
North America
Middle America
Caribbean
South America
Europe & Northern Asia (excluding China)
Africa
Southern Asia
Australia
Oceania
Antarctica/Southern Ocean
Eastern Atlantic Ocean
Indo-West Pacific
East Pacific

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

Name: update_date Element Size: Table: geographic_div
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.
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: INT
Table: jurisdiction
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. 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
Validation Rules: Continential US
Description: Caribbean Territories
Alaska
Hawaii
Central Pacific Territories
Values List:
Caribbean Territories
**5.2.3 origin**

Name: `origin`  
Element Size: 19  
Table: `jurisdiction`  
Display Picture:  
Data Type: `VARCHAR`  
SQL Server Name: `origin`  
Nullness: NULL  
Values List:  
Native  
Introduced  
Native & Introduced  
Incidental

**5.2.4 update_date**

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

**6.0 Definitions for the entity kingdoms and its elements**

<table>
<thead>
<tr>
<th>kingdom_id</th>
<th>kingdom_name</th>
<th>update_date</th>
</tr>
</thead>
<tbody>
<tr>
<td>int</td>
<td>char(10)</td>
<td>smalldatetime</td>
</tr>
</tbody>
</table>

**6.1 kingdoms Description**

The highest rank in the taxonomic hierarchical structure

@1 kingdom_id +

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kingdom_name +
update_date +

6.2  kingdoms Elements

6.2.1 kingdom_id
Name: kingdom_id  Element Size:  Table: kingdoms
Display Picture:  Data Type: INT  SQL Server Name:
königdom_id
Nullness: NOT NULL UNIQE

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:
königdom_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 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

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Data Type</th>
<th>Allow Nulls</th>
</tr>
</thead>
<tbody>
<tr>
<td>nodc_id</td>
<td>char(12)</td>
<td>✓</td>
</tr>
<tr>
<td>update_date</td>
<td>smalldatetime</td>
<td>✓</td>
</tr>
<tr>
<td>tsn</td>
<td>int</td>
<td>✓</td>
</tr>
</tbody>
</table>

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

```sql
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
- 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: SMALLDATETIME
- Table: nodc_ids
- Display Picture: yyyy-mm-dd 00:00:00
- Data Type: SMALLDATETIME
- SQL Server Name: update_date
- Nullness: 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.

7.2.3 tsn
- Name: tsn
- Element Size: int
- Table: nodc_ids
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
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8.2.2 source_id
Name: source_id
Element Size: 10
Table: other_sources
Display Picture: Data Type: INT
SQL Server Name: source_id
Nullness: NOT NULL UNIQUE
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
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
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
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 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 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 +
publisher +
isbn +
issn +
pages +
pub_comment +
update_date
## 9.2 publications Elements

### 9.2.1 publication_id_prefix

- **Name:** publication_id_prefix
- **Element Size:** 3
- **Table:** publications
- **Display Picture:**
- **Data Type:** CHAR
- **SQL Server Name:** publication_id_prefix
- **Nullness:** NOT NULL
- **Data Source:** SYSTEM GENERATED
- **Validation Rules:**
- **Description:** A prefix attached to a serial number to associate the record with the Publications table.

### 9.2.2 publication_id

- **Name:** publication_id
- **Element Size:**
- **Table:** publications
- **Display Picture:**
- **Data Type:** INT
- **SQL Server Name:** publication_id
- **Nullness:** NOT NULL UNIQUE
- **Data Source:** SYSTEM GENERATED
- **Validation Rules:**
- **Description:** The unique identifier of a printed reference.

### 9.2.3 reference_author

- **Name:** reference_author
- **Element Size:** 100
- **Table:** publications
- **Display Picture:**
- **Data Type:** VARCHAR
- **SQL Server Name:** reference_author
- **Nullness:** NULL
- **Data Source:** USER ENTERED
- **Validation Rules:**
- **Description:** Author(s) of a printed reference.

### 9.2.4 title

- **Name:** title
- **Element Size:** 255
- **Table:** publications
- **Display Picture:**
- **Data Type:** VARCHAR
- **SQL Server Name:** title
- **Nullness:** NULL
- **Data Source:** USER ENTERED
- **Validation Rules:**
- **Description:** The identifying name given an article contained in a printed reference.

### 9.2.5 publication_name

- **Name:** publication_name
- **Element Size:** 255
- **Table:** publications
- **Display Picture:**
- **Data Type:** VARCHAR
- **SQL Server Name:** publication_name
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 hh:mm:ss.sss  Data Type: DATETIME  SQL Server Name: listed_pub_date
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 hh:mm:ss.sss  Data Type: DATETIME  SQL Server Name: actual_pub_date
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

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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 taxon_authors_lkp 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:

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
Data Source: CHOICE LIST/USER ENTERED

Values List:
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: SQL Server Name: update_date
00:00:00 SMALLDATETIME
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: 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

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Data Type</th>
<th>Allow Nulls</th>
</tr>
</thead>
<tbody>
<tr>
<td>kingdom_id</td>
<td>int</td>
<td></td>
</tr>
<tr>
<td>rank_id</td>
<td>smallint</td>
<td></td>
</tr>
<tr>
<td>rank_name</td>
<td>char(15)</td>
<td></td>
</tr>
<tr>
<td>direct_parent_rank_id</td>
<td>smallint</td>
<td></td>
</tr>
<tr>
<td>req_parent_rank_id</td>
<td>smallint</td>
<td></td>
</tr>
<tr>
<td>update_date</td>
<td>smalldatetime</td>
<td></td>
</tr>
</tbody>
</table>

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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Display Picture: Data Type: SMALLINT SQL Server Name: rank_id
Nullness: NOT NULL Values List:

Validation Rules: SYSTEM GENERATED

Description: Half of a two-part key in taxon_unit_types

**11.2.3 rank_name**

Name: rank_name Element Size: 15 Table: taxon_unit_types
Display Picture: Data Type: CHAR SQL Server Name: rank_name
Nullness: NOT NULL Values List:

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 (Chromista only)</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>Infra kingdom</td>
<td>Superphylum</td>
<td></td>
<td>25</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>Infraclass</td>
<td>Infra subclass</td>
<td></td>
<td>Infra subclass</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>Infraorder</td>
<td>Infraorder</td>
<td>Infraorder</td>
<td>Infraorder</td>
<td>120</td>
</tr>
<tr>
<td>Section</td>
<td></td>
<td></td>
<td></td>
<td>124</td>
</tr>
<tr>
<td>Subsection</td>
<td></td>
<td></td>
<td></td>
<td>126</td>
</tr>
<tr>
<td>Superfamily</td>
<td></td>
<td></td>
<td>Superfamily</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>
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<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>200</td>
</tr>
<tr>
<td>Subsection</td>
<td>Subsection</td>
<td>Subsection</td>
<td></td>
<td>210</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></td>
<td></td>
<td>Form</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></td>
<td></td>
<td>Stirp</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></td>
<td></td>
<td>Aberration</td>
<td></td>
<td>265</td>
</tr>
<tr>
<td>Subform</td>
<td>Subform</td>
<td>Subform</td>
<td>Unspecified</td>
<td>270</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 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.

12.0 **Definitions for the entity tu_comments_links and its elements**

### tu_comments_links

<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>comment_id</td>
<td>int</td>
<td></td>
</tr>
<tr>
<td>update_date</td>
<td>smalldatetime</td>
<td></td>
</tr>
</tbody>
</table>

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  
**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  
**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

<table>
<thead>
<tr>
<th>synonym_links</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column Name</td>
</tr>
<tr>
<td>tsn</td>
</tr>
<tr>
<td>tsn_accepted</td>
</tr>
<tr>
<td>update_date</td>
</tr>
</tbody>
</table>

### 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
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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. 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
Element Size: Table: synonym_links
Display Picture: Data Type: INT SQL Server Name: tsn
Nullness: NOT NULL Values List:
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 Element Size: Table: synonym_links
Display Picture: yyyy-mm-dd Data Type: SMALLDATETIME SQL Server Name: update_date
00:00:00 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.
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
### 14.2.3 documentation_id

- **Name:** `documentation_id`
- **Element Size:** 1
- **Table:** `reference_links`
- **Display Picture:**
- **Data Type:** `CHAR`
- **SQL Server Name:** `documentation_id`
- **Nullness:** NOT NULL
- **Values List:**
- **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.

### 14.2.4 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`
- **Values List:**

---

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### 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:** Not specified
- **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 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.

### 15.0 Definitions for the entity vernaculars and its elements

#### vernaculars

<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>False</td>
</tr>
<tr>
<td>vernacular_name</td>
<td>varchar(80)</td>
<td>False</td>
</tr>
<tr>
<td>language</td>
<td>varchar(15)</td>
<td>False</td>
</tr>
<tr>
<td>approved_ind</td>
<td>char(1)</td>
<td>True</td>
</tr>
<tr>
<td>update_date</td>
<td>smalldatetime</td>
<td>False</td>
</tr>
</tbody>
</table>

### 15.1 vernaculars Description

Common names associated with an occurrence in Taxonomic Units.

@1 tsn +
vernacular_name +
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.
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 Values List:
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 Values List:
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 Values List: If selected, the indicator will be set to true.
Data Source: CHOICE LIST
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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 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.

15.2.6 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: Every vernacular_name associated with a TSN is assigned a distinct vern_id.
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 +
16.2 **tern_ref_links Elements**

### 16.2.1 tsn
- **Name:** tsn
- **Element Size:**
- **Table:** tern_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 tern_ref_links.

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

### 16.2.2 doc_id_prefix
- **Name:** doc_id_prefix
- **Element Size:** 3
- **Table:** tern_ref_links
- **Display Picture:**
- **Data Type:** CHAR
- **SQL Server Name:** doc_id_prefix
- **Nullness:** NOT NULL
- **Values List:** EXP, PUB, SRC
- **Data Source:** SYSTEM GENERATED

**Validation Rules:** Part of a four-part key in tern_ref_links.

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

### 16.2.3 documentation_id
- **Name:** documentation_id
- **Element Size:**
- **Table:** tern_ref_links
- **Display Picture:**
- **Data Type:** INT
- **SQL Server Name:** documentation_id
- **Nullness:** NOT NULL
- **Values List:**
- **Data Source:** SYSTEM GENERATED

**Validation Rules:** Part of a four-part key in tern_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
- **Name:** update_date
- **Element Size:**
- **Table:** tern_ref_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.

16.2.5 vern_id
Name: vern_id Element Size: Table: vern_ref_links
Display Picture: Data Type: INT SQL Server Name: vern_id
Nullness: NOT NULL Values List:
Data Source: SYSTEM GENERATED
Validation Rules: Part of a four-part key in vernaculars.
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
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
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

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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.

@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
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
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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.

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

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

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

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
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.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.