Entomological Archive Database Design Document

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Mission and Objectives

The purpose of the Mid-America Entomological database is to maintain and provide information about entomological species for individuals such as researchers, landowners, and outdoor enthusiasts. We also aim to allow researchers to request specimen samples.

The objectives of the Mid-America Entomological database are as follows:
1. Allow staff to add new entomological species to the database.
2. Allow staff to update information on existing entomological species in the database.
3. Allow non-staff users to view stored information on species.
4. Allow staff to tag species to increase searchability by all users.
5. Maintain a complete list of the specimens in the archive collection.
6. Allow researchers to view the list of specimens in the archive collection.
7. Allow researchers to view what specimens are available for loan.
8. Allow researchers to make requests for specimens.
9. Provide info to staff to fulfill specimen requests.

Tables

Species

The Species table tracks information for species that have been previously added to Entomological Archive's collection. This allows patrons using the database to request and access information on species they may be interested in learning more about or loaning from the archive. The Species table holds the binomial name and genus of the species, which together uniquely identifies the species. It also holds a photo of an organism in the species as well as its DNA barcode, which will help with identification.

Classifications

The Classifications table allows for the storage of taxonomic data for species. This facilitates the support of binomial nomenclature within the database and allows for users to search specific taxons for samples or information. Each Classification holds a taxon, which is unique, along with its supertaxon. That supertaxon will also be held as a taxon in another record in the Classifications table.

Species Tags

Species Tags is a linking table used to establish the relationship between the Species and Tags tables. This is useful for users searching for information on certain groups of species within our database that are not necessarily related via taxonomic means. Each species tag holds a genus and a binomial name, which relate it to its species, as well as a tag.

Tags

The Tags table is a validation table meant to store possible tags for the Species Tags table. These tags may include - for example - information regarding a species' home range, what type of life cycle they have, typical size range, and so on. Tags holds only one field, tag. Tags restricts the values of tag in Species Tags to ensure that all tags applied to species are valid.

Samples

The Samples table contains information on individual species samples regarding taxonomy, number of available samples of this group, and sample traits. This table helps form the basis of our database's ability to loan out available specimens.

Enthusiasts

The Enthusiasts table stores data on users of the Entomological Archive. This includes name, email address, phone number, and shipping address. This allows the archive to ship requested specimen users as well as communicate with users if there are any issues completing their request.

Requests

The Requests table establishes a relationship between the Enthusiasts table and the Samples table. This table also serves to store information about all of the requests that the Entomological Archive has fulfilled including links to the client that made the request and the sample that was sent, as well as the date the request was made and whether the request was fulfilled.

Entity Relationship Diagram
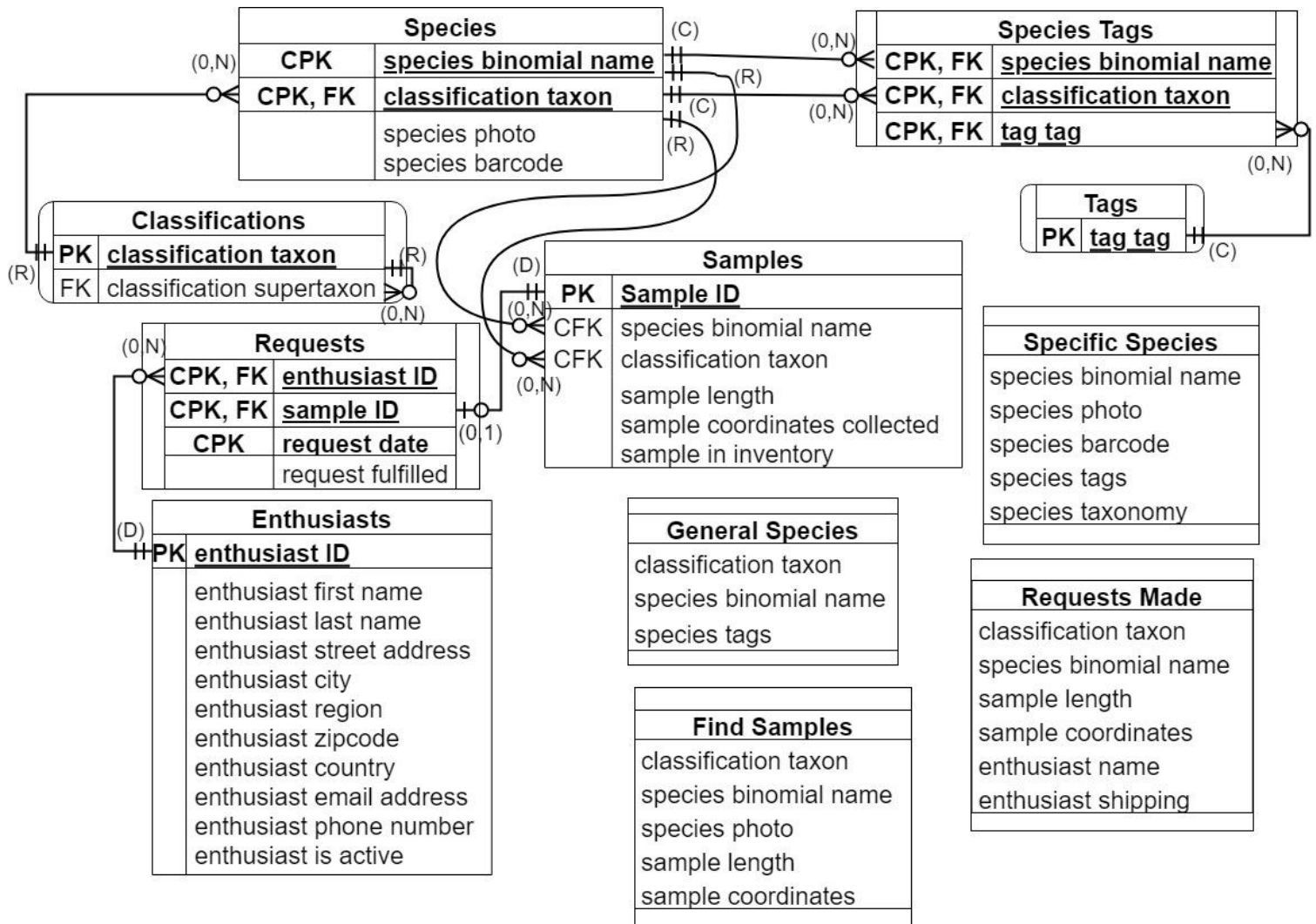
Figure 1. Entity Relationship Diagram.

Relationships

As seen in Figure 1, Classifications has a one to many relationship with itself implemented with one supertaxon to many taxons. Classifications also has a one to many relationship with species implemented with a taxon as a foreign key in each species record. Species also has a one to many relationship with Species Tags, implemented with the taxon and binomial name. Species Tags also has a one to many relationship with Tags, implemented with tag. The Samples table has a many to one relationship with Species implemented with taxon and binomial name. Requests has a one to one relationship with Samples, as each sample can only be sent to one client.

Requests also has a many to one relationship with Enthusiasts as clients can request multiple samples.

Views

General Species

The General Species view allows users to view general information about all species at once. This view facilitates searching, gathering information about all species, and provides an overview of what the Archive has to offer.

Specific Species

The Specific Species view allows users to view all available information about a single species. This view facilitates research into individual species.

Find Samples

The Find Samples View allows users to browse the list of samples that are available for request. This helps to ensure that requests will not be made for any species that are not available in the archive and provides users helpful information when making their request.

Requests Made

The Requests Made view allows Archive staff to view information about requests that have been made. This facilitates sending requests and providing reports when seeking grants for the continuation of the archive.

Business Rules

1. Samples can only be requested if there are at least 5 samples of that species in the archive. So, there must be at least 5 samples related to a single species for any requests for samples of that species to be approved. This will be accounted for in the database and will only show possible samples if there are at least five of the same kind of sample. (Appendix BA)
2. Enthusiasts must provide an email and a full address, but a phone number is not required. So, the enthusiasts email and all address fields cannot be null. The users will be forced to enter an email and address upon creating an account, but will not be required to input a phone number. Additionally, users will be permitted

the option to delete a phone number if they no longer want to include this information in the database. (Appendix BB)

3. All dates must be current or past. So, when a request is made or updated, the request date must be the current date or earlier. A request cannot be made in the future. This feature will be built into the database by ensuring that all values entered must be before the current timestamp.(Appendix BC)

4. Coordinates must exist within the geographic coordinate system. So the north-south coordinate must be between -90 and 90 and the east-west coordinate must be between -180 and 180. This is checked by the database when entered into the system. There is only a valid range of values and the database ensures that invalid entries are not permitted. (Appendix BD)

5. All requests must remain in the database in perpetuity. So, regardless of enthusiast or sample deletions, requests cannot be deleted and must remain uniquely identifiable. Requests also cannot be deleted individually. This will be accounted for in the database by restricting any ability to delete the records or past requests, but there will be a marker for whether or not the request has been fulfilled. (Appendix BE)

6. The taxon each species has must be a genus. This means that the related taxon's supertaxon must not be null. This ensures there is a clear taxonomical line to arthropoda, and therefore that all the insects are related to each other. The database will ensure that each bug has this connection to the phylum arthropoda. (Appendix BF)

7. Every taxon has a supertaxon, except for the phylum arthropoda. Every entomological species falls under the phylum arthropoda, so there is no need to see any further up the taxon tree. However, every other taxon must have a supertaxon since it must lead to arthropoda. This will be used in the database to group different species together. This will help ensure that the taxonomic name will be correct. The database will not allow a bug into the database unless the taxonomy is inputted correctly. (Appendix BG)

8. Each sample must be in the inventory to be loaned out. So, for a request to be made for a sample, that sample must be in the inventory. This will be implemented by only showing the users of the database only the samples that are available to be requested. (Appendix BH)

9. Each sample must be in the inventory to be loaned out. So, for a request to be fulfilled for a sample, that sample must be in inventory. The database will implement this by checking to make sure the sample has not already been used to fulfill another order. (Appendix BI)

Appendix A - Field Specifications:

Appendix AA: Classifications - Supertaxon

GENERAL ELEMENTS
Field Name: supertaxon
Parent Table: classifications
Alias(es):   taxon
Specification Type:
 Unique: _
 Generic: _
 Replica: X
Source Specification: classifications.taxon
Shared By: species, samples, species_tags
Description: The taxonomic classification above the classification in this record.

PHYSICAL ELEMENTS
Data Type: VARCHAR
Length: 64
Decimal Places: none
Character Support:
 Letters (A-Z):   X
 Numbers (0-9):   _
 Keyboard (.,/$#%): _
 Special (©®™Σπ):   _

LOGICAL ELEMENTS
Key Type: Non: X
              Primary: _
              Foreign: _
              Alternate: _
Key Structure: Simple: _
              Composite: _
Uniqueness: Non-unique: X
              Unique: _
Null Support: Nulls OK: X
              No nulls: _
Values Entered By: User: X
              System: _
Required Value: No: X
              Yes: _
Range of Values: Any taxonomic classification or NULL
Edit Rule:
 Enter now, edits allowed: _
 Enter now, edits not allowed: _
 Enter later, edits allowed: X
 Enter later, edits not allowed: _
 Not determined at this time: _

Appendix AB: Classifications - Taxon

GENERAL ELEMENTS
Field Name: taxon
Parent Table: classifications
Alias(es):   supertaxon
Specification Type:
  Unique: X
  Generic: _
  Replica: _
Source Specification:
Shared By: species, samples, species_tags
Description: The classification of a species. Could be a genus, phylum, order, or any single level of taxonomy.

PHYSICAL ELEMENTS
Data Type: VARCHAR
Length: 64
Decimal Places: none
Character Support:
  Letters (A-Z):   X
  Numbers (0-9):   _
  Keyboard (.,/$#%): _
  Special (©®™Σπ):   _

LOGICAL ELEMENTS
Key Type: Non: _
              Primary: X
              Foreign: _
              Alternate: _
Key Structure: Simple: X
              Composite: _
Uniqueness: Non-unique: _
              Unique: X
Null Support: Nulls OK: _
              No nulls: X
Values Entered By: User: X
                System: _
Required Value: No: _
              Yes: X
Range of Values: Any taxonomic classification
Edit Rule:
  Enter now, edits allowed: X
  Enter now, edits not allowed: _
  Enter later, edits allowed: _
  Enter later, edits not allowed: _
  Not determined at this time: _

Appendix AC: Enthusiasts - Enthusiast City

GENERAL ELEMENTS
Field Name: enthusiast_city
Parent Table: enthusiasts
Alias(es):   _
Specification Type:
 Unique: _
 Generic: X
 Replica: _
Source Specification: enthusiasts
Shared By: _
Description: The address city of a stored enthusiast.

PHYSICAL ELEMENTS
Data Type: VARCHAR
Length: 20
Decimal Places: N/A
Character Support:
 Letters (A-Z):   X
 Numbers (0-9):   _
 Keyboard (.,/$#%): X
 Special (©®™Σπ):   _

LOGICAL ELEMENTS
Key Type: Non: X
              Primary: _
              Foreign: _
              Alternate: _
Key Structure: Simple: X
              Composite: _
Uniqueness: Non-unique: X
              Unique: _
Null Support: Nulls OK: _
              No nulls: X
Values Entered By: User: X
              System: _
Required Value: No: _
              Yes: X
Range of Values: All possible combinations of letters & keyboard characters up to a length of 20.
Edit Rule:
 Enter now, edits allowed: X
 Enter now, edits not allowed: _
 Enter later, edits allowed: _
 Enter later, edits not allowed: _
 Not determined at this time: _

Appendix AD: Enthusiasts - Enthusiast Country

GENERAL ELEMENTS
Field Name: enthusiast_country
Parent Table: enthusiasts
Alias(es):   _
Specification Type:
 Unique: _
 Generic: X
 Replica: _
Source Specification: enthusiasts
Shared By: _
Description: The country of a stored enthusiast.

PHYSICAL ELEMENTS
Data Type: VARCHAR
Length: 64
Decimal Places: N/A
Character Support:
 Letters (A-Z):   X
 Numbers (0-9):   _
 Keyboard (.,/$#%): X
 Special (©®™Σπ):   _

LOGICAL ELEMENTS
Key Type: Non: X
              Primary: _
              Foreign: _
              Alternate: _
Key Structure: Simple: X
              Composite: _
Uniqueness: Non-unique: X
              Unique: _
Null Support: Nulls OK: _
              No nulls: X
Values Entered By: User: X
              System: _
Required Value: No: _
              Yes: X
Range of Values: All possible combinations of letters & keyboard characters up to a length of 64.
Edit Rule:
 Enter now, edits allowed: X
 Enter now, edits not allowed: _
 Enter later, edits allowed: _
 Enter later, edits not allowed: _
 Not determined at this time: _

Appendix AE: Enthusiasts - Enthusiast Email Address

GENERAL ELEMENTS
Field Name: enthusiast_email_address
Parent Table: enthusiasts
Alias(es):   _
Specification Type:
 Unique: X
 Generic: _
 Replica: _
Source Specification: enthusiasts
Shared By: _
Description: The email address of a stored enthusiast.

PHYSICAL ELEMENTS
Data Type: VARCHAR
Length: 64
Decimal Places: N/A
Character Support:
 Letters (A-Z):   X
 Numbers (0-9):   X
 Keyboard (.,/$#%): X
 Special (©®™Σπ):   _

LOGICAL ELEMENTS
Key Type: Non: X
           Primary: _
           Foreign: _
           Alternate: _
Key Structure: Simple: X
           Composite: _
Uniqueness: Non-unique: X
           Unique: _
Null Support: Nulls OK: _
           No nulls: X
Values Entered By: User: X
             System: _
Required Value: No: _
             Yes: X
Range of Values: All possible combinations of letters, numbers, & keyboard characters up to a length of 64.
Edit Rule:
 Enter now, edits allowed: X
 Enter now, edits not allowed: _
 Enter later, edits allowed: _
 Enter later, edits not allowed: _
 Not determined at this time: _

Appendix AF: Enthusiasts - Enthusiast First Name

GENERAL ELEMENTS
Field Name: enthusiast_first_name
Parent Table: enthusiasts
Alias(es):   _
Specification Type:
 Unique: _
 Generic: X
 Replica: _
Source Specification: enthusiasts
Shared By: _
Description: The first name of a stored enthusiast.

PHYSICAL ELEMENTS
Data Type: VARCHAR
Length: 20
Decimal Places: N/A
Character Support:
 Letters (A-Z):   X
 Numbers (0-9):   _
 Keyboard (.,/$#%): X
 Special (©®™Σπ):   _

LOGICAL ELEMENTS
Key Type: Non: X
              Primary: _
              Foreign: _
              Alternate: _
Key Structure: Simple: X
              Composite: _
Uniqueness: Non-unique: X
              Unique: _
Null Support: Nulls OK: _
              No nulls: X
Values Entered By: User: X
                System: _
Required Value: No: _
              Yes: X
Range of Values: All possible combinations of letters & keyboard characters up to a length of 20.
Edit Rule:
 Enter now, edits allowed: X
 Enter now, edits not allowed: _
 Enter later, edits allowed: _
 Enter later, edits not allowed: _
 Not determined at this time: _

Appendix AG: Enthusiasts - Enthusiast Last Name

GENERAL ELEMENTS
Field Name: enthusiast_last_name
Parent Table: enthusiasts
Alias(es):   _
Specification Type:
  Unique: _
  Generic: X
  Replica: _
Source Specification: enthusiasts
Shared By: _
Description: The last name of a stored enthusiast.

PHYSICAL ELEMENTS
Data Type: VARCHAR
Length: 20
Decimal Places: N/A
Character Support:
  Letters (A-Z):   X
  Numbers (0-9):   _
  Keyboard (.,/$#%): X
  Special (©®™Σπ):   _

LOGICAL ELEMENTS
Key Type: Non: X
            Primary: _
            Foreign: _
            Alternate: _
Key Structure: Simple: X
            Composite: _
Uniqueness: Non-unique: X
            Unique: _
Null Support: Nulls OK: _
            No nulls: X
Values Entered By: User: X
              System: _
Required Value: No: _
            Yes: X
Range of Values: All possible combinations of letters & keyboard characters up to a length of 20.
Edit Rule:
  Enter now, edits allowed: X
  Enter now, edits not allowed: _
  Enter later, edits allowed: _
  Enter later, edits not allowed: _
  Not determined at this time: _

Appendix AH: Enthusiasts - Enthusiast ID

GENERAL ELEMENTS
Field Name: enthusiast_id
Parent Table: enthusiast
Alias(es):   _
Specification Type:
  Unique: X
  Generic:
  Replica:
Source Specification: enthusiast
Shared By: requests
Description: A unique numerical value to refer to each user

PHYSICAL ELEMENTS
Data Type: INT
Length: default
Decimal Places: none
Character Support:
  Letters (A-Z):   _
  Numbers (0-9):   X
  Keyboard (.,/$#%): _
  Special (©®™Σπ):   _

LOGICAL ELEMENTS
Key Type: Non: _
              Primary: X
              Foreign: _
              Alternate: _
Key Structure: Simple: X
              Composite: _
Uniqueness: Non-unique: _
              Unique: X
Null Support: Nulls OK: _
              No nulls: X
Values Entered By: User: _
              System: X
Required Value: No: _
              Yes: X
Range of Values: default INT max and min
Edit Rule:
  Enter now, edits allowed: _
  Enter now, edits not allowed: X
  Enter later, edits allowed: _
  Enter later, edits not allowed: _
  Not determined at this time: _

Appendix AI: Enthusiasts - Enthusiast Phone Number

GENERAL ELEMENTS
Field Name: enthusiast_phone_number
Parent Table: enthusiasts
Alias(es):   _
Specification Type:
  Unique: _
  Generic: X
  Replica: _
Source Specification: enthusiasts
Shared By: _
Description: The phone number of a stored enthusiast.

PHYSICAL ELEMENTS
Data Type: VARCHAR
Length: 15
Decimal Places: N/A
Character Support:
  Letters (A-Z):   _
  Numbers (0-9):   X
  Keyboard (.,/$#%): X
  Special (©®™Σπ):   _

LOGICAL ELEMENTS
Key Type: Non: X
          Primary: _
          Foreign: _
          Alternate: _
Key Structure: Simple: X
          Composite: _
Uniqueness: Non-unique: _
          Unique: X
Null Support: Nulls OK: X
          No nulls: _
Values Entered By: User: X
            System: _
Required Value: No: X
            Yes: _
Range of Values: All possible combinations of numbers & keyboard characters up to a length of 15.
Edit Rule:
  Enter now, edits allowed: X
  Enter now, edits not allowed: _
  Enter later, edits allowed: _
  Enter later, edits not allowed: _
  Not determined at this time: _

Appendix AJ: Enthusiasts - Enthusiast Region

GENERAL ELEMENTS
Field Name: enthusiast_enthusiast_region
Parent Table: enthusiasts
Alias(es):   _
Specification Type:
  Unique: _
  Generic: X
  Replica: _
Source Specification: enthusiasts
Shared By: _
Description: The region (state, province, etc.) of a stored enthusiast.

PHYSICAL ELEMENTS
Data Type: VARCHAR
Length: 20
Decimal Places: N/A
Character Support:
  Letters (A-Z):   X
  Numbers (0-9):   _
  Keyboard (.,/$#%): X
  Special (©®™Σπ):   _

LOGICAL ELEMENTS
Key Type: Non: X
              Primary: _
              Foreign: _
              Alternate: _
Key Structure: Simple: X
              Composite: _
Uniqueness: Non-unique: X
              Unique: _
Null Support: Nulls OK: _
              No nulls: X
Values Entered By: User: X
              System: _
Required Value: No: _
              Yes: X
Range of Values: All possible combinations of letters & keyboard characters up to a length of 20.
Edit Rule:
  Enter now, edits allowed: X
  Enter now, edits not allowed: _
  Enter later, edits allowed: _
  Enter later, edits not allowed: _
  Not determined at this time: _

Appendix AK: Enthusiasts - Enthusiast Street Address

GENERAL ELEMENTS
Field Name: enthusiast_street_address
Parent Table: enthusiasts
Alias(es):   _
Specification Type:
  Unique: _
  Generic: X
  Replica: _
Source Specification: enthusiasts
Shared By: _
Description: The street address of a stored enthusiast.

PHYSICAL ELEMENTS
Data Type: VARCHAR
Length: 32
Decimal Places: N/A
Character Support:
  Letters (A-Z):   X
  Numbers (0-9):   X
  Keyboard (.,/$#%): X
  Special (©®™Σπ):   X

LOGICAL ELEMENTS
Key Type: Non: X
             Primary: _
             Foreign: _
             Alternate: _
Key Structure: Simple: X
             Composite: _
Uniqueness: Non-unique: X
             Unique: _
Null Support: Nulls OK: _
             No nulls: X
Values Entered By: User: X
             System: _
Required Value: No: _
             Yes: X
Range of Values: All possible combinations of letters, numbers, keyboard, and special characters up to a length of 32.
Edit Rule:
  Enter now, edits allowed: X
  Enter now, edits not allowed: _
  Enter later, edits allowed: _
  Enter later, edits not allowed: _
  Not determined at this time: _

Appendix AL: Enthusiasts - Enthusiast ZIP Code

GENERAL ELEMENTS
Field Name: enthusiast_zipcode
Parent Table: enthusiasts
Alias(es):   _
Specification Type:
 Unique: _
 Generic: X
 Replica: _
Source Specification: enthusiasts
Shared By: _
Description: The ZIP code of a stored enthusiast.

PHYSICAL ELEMENTS
Data Type: INT
Length: N/A
Decimal Places: N/A
Character Support:
 Letters (A-Z):   _
 Numbers (0-9):   X
 Keyboard (.,/$#%): _
 Special (©®™Σπ):   _

LOGICAL ELEMENTS
Key Type: Non: X
              Primary: _
              Foreign: _
              Alternate: _
Key Structure: Simple: X
              Composite: _
Uniqueness: Non-unique: X
              Unique: _
Null Support: Nulls OK: _
              No nulls: X
Values Entered By: User: X
              System: _
Required Value: No: _
              Yes: X
Range of Values: All INT max and min values.
Edit Rule:
 Enter now, edits allowed: X
 Enter now, edits not allowed: _
 Enter later, edits allowed: _
 Enter later, edits not allowed: _
 Not determined at this time: _

Appendix AM: Enthusiasts - Enthusiast Is Active

GENERAL ELEMENTS
Field Name: enthusiast_is_active
Parent Table: Enthusiasts
Alias(es):   _
Specification Type:
  Unique: _
  Generic: X
  Replica: _
Source Specification: _
Shared By: _
Description: Indicator showing whether or not an enthusiast is active.

PHYSICAL ELEMENTS
Data Type: BOOL
Length: N/A
Decimal Places: _
Character Support:
  Letters (A-Z):   _
  Numbers (0-9):   _
  Keyboard (.,/$#%): _
  Special (©®™Σπ):   _

LOGICAL ELEMENTS
Key Type: Non: X
              Primary: _
              Foreign: _
              Alternate: _
Key Structure: Simple: X
              Composite: _
Uniqueness: Non-unique: X
              Unique: _
Null Support: Nulls OK: _
              No nulls: X
Values Entered By: User: X
              System: _
Required Value: No: _
              Yes: X
Range of Values: TRUE or FALSE
Edit Rule:
  Enter now, edits allowed: X
  Enter now, edits not allowed: _
  Enter later, edits allowed: _
  Enter later, edits not allowed: _
  Not determined at this time: _

Appendix AN: Requests - Enthusiast ID

GENERAL ELEMENTS
Field Name: enthusiast_id
Parent Table: enthusiast
Alias(es):   _
Specification Type:
  Unique: X
  Generic:
  Replica:
Source Specification: enthusiast
Shared By: requests
Description: A unique numerical value to refer to each user

PHYSICAL ELEMENTS
Data Type: INT
Length: default
Decimal Places: none
Character Support:
  Letters (A-Z):   _
  Numbers (0-9):   X
  Keyboard (.,/$#%): _
  Special (©®™Σπ):   _

LOGICAL ELEMENTS
Key Type: Non: _
              Primary: X
              Foreign: _
              Alternate: _
Key Structure: Simple: X
              Composite: _
Uniqueness: Non-unique: _
              Unique: X
Null Support: Nulls OK: _
              No nulls: X
Values Entered By: User: _
                System: X
Required Value: No: _
                Yes: X
Range of Values: default INT max and min
Edit Rule:
  Enter now, edits allowed: _
  Enter now, edits not allowed: X
  Enter later, edits allowed: _
  Enter later, edits not allowed: _
  Not determined at this time: _

Appendix AO: Requests - Sample ID

GENERAL ELEMENTS
Field Name: sample_id
Parent Table: requests
Alias(es):   none
Specification Type:
 Unique: _
 Generic: _
 Replica: X
Source Specification: samples.sample_id
Shared By: samples
Description: A unique number to refer to each specimen sample in the collection

PHYSICAL ELEMENTS
Data Type: INT
Length: default
Decimal Places: none
Character Support:
 Letters (A-Z):   _
 Numbers (0-9):   X
 Keyboard (.,/$#%): _
 Special (©®™Σπ):   _

LOGICAL ELEMENTS
Key Type: Non: _
           Primary: X
           Foreign: X
           Alternate: _
Key Structure: Simple: _
           Composite: X
Uniqueness: Non-unique: X
           Unique: _
Null Support: Nulls OK: _
           No nulls: X
Values Entered By: User: X
              System: _
Required Value: No: _
             Yes: X
Range of Values: Values in the samples.sample_id field
Edit Rule:
 Enter now, edits allowed: _
 Enter now, edits not allowed: X
 Enter later, edits allowed: _
 Enter later, edits not allowed: _
 Not determined at this time: _

Appendix AP: Requests - Request Date

GENERAL ELEMENTS
Field Name: request_date
Parent Table: requests
Alias(es):
Specification Type:
  Unique: X
  Generic: _
  Replica: _
Source Specification:
Shared By:
Description: The date on which a request was made by the user.

PHYSICAL ELEMENTS
Data Type: DATETIME
Length: default
Decimal Places: none
Character Support:
  Letters (A-Z):   _
  Numbers (0-9):   X
  Keyboard (.,/$#%): X
  Special (©®™Σπ):   _

LOGICAL ELEMENTS
Key Type: Non: _
              Primary: X
              Foreign: _
              Alternate: _
Key Structure: Simple: _
              Composite: X
Uniqueness: Non-unique: X
              Unique: _
Null Support: Nulls OK: _
              No nulls: X
Values Entered By: User: _
                System: X
Required Value: No: _
                Yes: _
Range of Values: dates and times in the past or present
Edit Rule:
  Enter now, edits allowed: _
  Enter now, edits not allowed: X
  Enter later, edits allowed: _
  Enter later, edits not allowed: _
  Not determined at this time: _

Appendix AQ: Requests - Request Fulfilled

GENERAL ELEMENTS
Field Name: requests_fulfilled
Parent Table: requests
Alias(es):
Specification Type:
  Unique: X
  Generic: _
  Replica: _
Source Specification:
Shared By:
Description: Whether the request has been fulfilled by the archive or not

PHYSICAL ELEMENTS
Data Type: BOOLEAN
Length: 1
Decimal Places: none
Character Support:
  Letters (A-Z):   _
  Numbers (0-9):   X
  Keyboard (.,/$#%): _
  Special (©®™Σπ):   _

LOGICAL ELEMENTS
Key Type: Non: X
              Primary: _
              Foreign: _
              Alternate: _
Key Structure: Simple: _
              Composite: _
Uniqueness: Non-unique: X
              Unique: _
Null Support: Nulls OK: _
          No nulls: X
Values Entered By: User: X
              System: _
Required Value: No: _
              Yes: X
Range of Values: 0, 1, 'false', 'true'
Edit Rule:
  Enter now, edits allowed: X
  Enter now, edits not allowed: _
  Enter later, edits allowed: _
  Enter later, edits not allowed: _
  Not determined at this time: _
NOTES: default value: 0

Appendix AR: Samples - Sample ID

GENERAL ELEMENTS
Field Name: sample_id
Parent Table: requests
Alias(es):   none
Specification Type:
  Unique: _
  Generic: _
  Replica: X
Source Specification: samples.sample_id
Shared By: samples
Description: A unique number to refer to each specimen sample in the collection

PHYSICAL ELEMENTS
Data Type: INT
Length: default
Decimal Places: none
Character Support:
  Letters (A-Z):   _
  Numbers (0-9):   X
  Keyboard (.,/$#%): _
  Special (©®™Σπ):   _

LOGICAL ELEMENTS
Key Type: Non: _
              Primary: X
              Foreign: X
              Alternate: _
Key Structure: Simple: _
              Composite: X
Uniqueness: Non-unique: X
              Unique: _
Null Support: Nulls OK: _
              No nulls: X
Values Entered By: User: X
                System: _
Required Value: No: _
                Yes: X
Range of Values: Values in the samples.sample_id field
Edit Rule:
  Enter now, edits allowed: _
  Enter now, edits not allowed: X
  Enter later, edits allowed: _
  Enter later, edits not allowed: _
  Not determined at this time: _

Appendix AS: Samples - Binomial Name

GENERAL ELEMENTS
Field Name: _ binomial_name
Parent Table: _ samples
Alias(es):none   _
Specification Type:
  Unique: _
  Generic: _
  Replica: X
Source Specification: species.binomial_name
Shared By: _ species_tags, samples, species
Description: _ The reference to the binomial name of the
    species as established in the species table.

PHYSICAL ELEMENTS
Data Type: _ VARCHAR
Length: _ 64
Decimal Places: _ none
Character Support:
  Letters (A-Z):   X
  Numbers (0-9):   _
  Keyboard (.,/$#%): _
  Special (©®™Σπ):   _

LOGICAL ELEMENTS
Key Type: Non: _
              Primary: _
              Foreign: X
              Alternate: _
Key Structure: Simple: X
              Composite: _
Uniqueness: Non-unique: _
              Unique: X
Null Support: Nulls OK: _
              No nulls: X
Values Entered By: User: X
              System: _
Required Value: No: _
              Yes: X
Range of Values: Any of the established binomial names.
Edit Rule:
  Enter now, edits allowed: X
  Enter now, edits not allowed: _
  Enter later, edits allowed: _
  Enter later, edits not allowed: _
  Not determined at this time: _

Appendix AT: Samples - Coordinates Collected

GENERAL ELEMENTS

Field Name: _ coordinates_collected
Parent Table: _ samples
Alias(es):   _ none
Specification Type:
  Unique: X
  Generic: _
  Replica: _
Source Specification: _
Shared By: _
Description: _ The coordinates at which the sample was collected.

PHYSICAL ELEMENTS

Data Type: _ VARCHAR
Length: _ 64
Decimal Places: _ none
Character Support:
  Letters (A-Z):   _
  Numbers (0-9):   X
  Keyboard (.,/$#%): X
  Special (©®™Σπ):   _

LOGICAL ELEMENTS

Key Type: Non: X
              Primary: _
              Foreign: _
              Alternate: _
Key Structure: Simple: _
              Composite: _
Uniqueness: Non-unique: X
              Unique: _
Null Support: Nulls OK: X
              No nulls: _
Values Entered By: User: X
              System: _
Required Value: No: X
              Yes: _
Range of Values: _ The string can contain two decimals that describe the longitude and
  latitude of the sample's collection location.
Edit Rule:
  Enter now, edits allowed: X
  Enter now, edits not allowed: _
  Enter later, edits allowed: _
  Enter later, edits not allowed: _
  Not determined at this time: _

Appendix AU: Samples - Length

GENERAL ELEMENTS
Field Name: _ length
Parent Table: _ samples
Alias(es):   _ none
Specification Type:
  Unique: X
  Generic: _
  Replica: _
Source Specification: _
Shared By: _
Description: _ This is the length of a bug to help distinctify it from others in its species.

PHYSICAL ELEMENTS
Data Type: _ DECIMAL
Length: _ default
Decimal Places: _ 2
Character Support:
  Letters (A-Z):   _
  Numbers (0-9):   X
  Keyboard (.,/$#%): X
  Special (©®™Σπ):   _

LOGICAL ELEMENTS
Key Type: Non: X
              Primary: _
              Foreign: _
              Alternate: _
Key Structure: Simple: _
              Composite: _
Uniqueness: Non-unique: X
              Unique: _
Null Support: Nulls OK: X
              No nulls: _
Values Entered By: User: X
              System: _
Required Value: No: X
              Yes: _
Range of Values: _
Edit Rule:
  Enter now, edits allowed: X
  Enter now, edits not allowed: _
  Enter later, edits allowed: _
  Enter later, edits not allowed: _
  Not determined at this time: _

Appendix AV: Samples - Taxon

GENERAL ELEMENTS

Field Name: _ taxon
Parent Table: _ samples
Alias(es): _ supertaxon
Specification Type:
  Unique: X
  Generic: _
  Replica: _
Source Specification: _ classifications.taxon
Shared By: _ classifications, species tags, species
Description: _ this is the taxon of a species that is used to identify
   the species and closely related relatives.

PHYSICAL ELEMENTS

Data Type: _ VARCHAR
Length: _ 64
Decimal Places: _ none
Character Support:
  Letters (A-Z):   X
  Numbers (0-9):   _
  Keyboard (.,/$#%): _
  Special (©®™Σπ):   _

LOGICAL ELEMENTS

Key Type: Non: _
              Primary: _
              Foreign: X
              Alternate: _
Key Structure: Simple: X
              Composite: _
Uniqueness: Non-unique: X
              Unique: _
Null Support: Nulls OK: _
              No nulls: X
Values Entered By: User: X
              System: _
Required Value: No: _
              Yes: X
Range of Values: _ values within the classifications.taxon field
Edit Rule:
  Enter now, edits allowed: X
  Enter now, edits not allowed: _
  Enter later, edits allowed: _
  Enter later, edits not allowed: _
  Not determined at this time: _

Appendix AW: Samples - In Inventory

GENERAL ELEMENTS

Field Name: in_inventory
Parent Table: Samples
Alias(es):   none
Specification Type:
  Unique: _
  Generic: X
  Replica: _
Source Specification: _
Shared By: _
Description: Data point indicating whether or not a certain sample in the archive is in inventory.

PHYSICAL ELEMENTS

Data Type: BOOL
Length: _
Decimal Places: _
Character Support:
  Letters (A-Z):   _
  Numbers (0-9):   _
  Keyboard (.,/$#%): _
  Special (©®™Σπ):   _

LOGICAL ELEMENTS

Key Type: Non: X
              Primary: _
              Foreign: _
              Alternate: _
Key Structure: Simple: X
              Composite: _
Uniqueness: Non-unique: X
              Unique: _
Null Support: Nulls OK: _
          No nulls: X
Values Entered By: User: _
            System: X
Required Value: No: _
                Yes: X
Range of Values: TRUE or FALSE
Edit Rule:
  Enter now, edits allowed: X
  Enter now, edits not allowed: _
  Enter later, edits allowed: _
  Enter later, edits not allowed: _
  Not determined at this time: _

Appendix AX: Species - Binomial Name

GENERAL ELEMENTS
Field Name: _ binomial_name
Parent Table: _ species
Alias(es):   _ none
Specification Type:
  Unique: X
  Generic: _
  Replica: _
Source Specification: _
Shared By: _ samples, species_tags
Description: _ This is the compound primary key for the species table. Unique identifier for species.

PHYSICAL ELEMENTS
Data Type: _ VARCHAR
Length: _ 64
Decimal Places: _ none
Character Support:
  Letters (A-Z):   X
  Numbers (0-9):   _
  Keyboard (.,/$#%): _
  Special (©®™Σπ):   _

LOGICAL ELEMENTS
Key Type: Non: _
              Primary: X
              Foreign: _
              Alternate: _
Key Structure: Simple: _
              Composite: X
Uniqueness: Non-unique: _
              Unique: X
Null Support: Nulls OK: _
              No nulls: X
Values Entered By: User: X
                System: _
Required Value: No: _
                Yes: X
Range of Values: _ Falls within the list of possible taxon for a species.
Edit Rule:
  Enter now, edits allowed: X
  Enter now, edits not allowed: _
  Enter later, edits allowed: _
  Enter later, edits not allowed: _
  Not determined at this time: _

Appendix AY: Species - Taxon

GENERAL ELEMENTS
Field Name: _ taxon
Parent Table: _ species
Alias(es):   _ supertaxon
Specification Type:
  Unique: X
  Generic: _
  Replica: _
Source Specification: _ classifications.taxon
Shared By: _ classification, samples, species_tags
Description: _ This is a list of the taxon/supertaxon that the specimen all belongs to.

PHYSICAL ELEMENTS
Data Type: _ VARCHAR
Length: _ 64
Decimal Places: _ none
Character Support:
  Letters (A-Z):   X
  Numbers (0-9):   _
  Keyboard (.,/$#%): _
  Special (©®™Σπ):   _

LOGICAL ELEMENTS
Key Type: Non: _
              Primary: X
              Foreign: X
              Alternate: _
Key Structure: Simple: _
              Composite: X
Uniqueness: Non-unique: X
              Unique: _
Null Support: Nulls OK: _
              No nulls: X
Values Entered By: User: X
              System: _
Required Value: No: _
              Yes: X
Range of Values: _ values within classifications.taxon field
Edit Rule:
  Enter now, edits allowed: X
  Enter now, edits not allowed: _
  Enter later, edits allowed: _
  Enter later, edits not allowed: _
  Not determined at this time: _

Appendix AZ: Species - DNA Barcode

GENERAL ELEMENTS
Field Name: _ DNA_barcode
Parent Table: _ species
Alias(es):   _ none
Specification Type:
  Unique: X
  Generic: _
  Replica: _
Source Specification: _
Shared By: _
Description: _ a string of the species's unique DNA barcode represented by a string of the nucleotide bases.

PHYSICAL ELEMENTS
Data Type: _ VARCHAR
Length: _ 64
Decimal Places: _ none
Character Support:
  Letters (A-Z):   X
  Numbers (0-9):   _
  Keyboard (.,/$#%): _
  Special (©®™Σπ):   _

LOGICAL ELEMENTS
Key Type: Non: X
              Primary: _
              Foreign: _
              Alternate: _
Key Structure: Simple: _
              Composite: _
Uniqueness: Non-unique: X
              Unique: _
Null Support: Nulls OK: _
              No nulls: X
Values Entered By: User: X
              System: _
Required Value: No: _
              Yes: X
Range of Values: _ from 0 up to 64 characters of combinations of DNA bases.
Edit Rule:
  Enter now, edits allowed: X
  Enter now, edits not allowed: _
  Enter later, edits allowed: _
  Enter later, edits not allowed: _
  Not determined at this time: _

Appendix AAA: Species - Photo

GENERAL ELEMENTS
Field Name: _ photo
Parent Table: _ species
Alias(es):   _ none
Specification Type:
  Unique: X
  Generic: _
  Replica: _
Source Specification: _
Shared By: _
Description: _ A photo of the species to demonstrate the appearance of the insect.

PHYSICAL ELEMENTS
Data Type: _ IMAGE
Length: _ default
Decimal Places: _ none
Character Support:
  Letters (A-Z):   _
  Numbers (0-9):   _
  Keyboard (.,/$#%): _
  Special (©®™Σπ):   _

LOGICAL ELEMENTS
Key Type: Non: X
              Primary: _
              Foreign: _
              Alternate: _
Key Structure: Simple: _
              Composite: _
Uniqueness: Non-unique: X
              Unique: _
Null Support: Nulls OK: _
              No nulls: X
Values Entered By: User: X
              System: _
Required Value: No: _
              Yes: X
Range of Values: _ Any image of the corresponding insect.
Edit Rule:
  Enter now, edits allowed: X
  Enter now, edits not allowed: _
  Enter later, edits allowed: _
  Enter later, edits not allowed: _
  Not determined at this time: _

Appendix AAB: Species Tag - Binomial Name

GENERAL ELEMENTS
Field Name: binomial_name
Parent Table: species_tags
Alias(es):
Specification Type:
  Unique: _
  Generic: _
  Replica: X
Source Specification: species_binomial_name
Shared By: species, samples
Description: The scientific name of a species that, taken with the genus, is unique to that species.

PHYSICAL ELEMENTS
Data Type: VARCHAR
Length: 64
Decimal Places: none
Character Support:
  Letters (A-Z):   X
  Numbers (0-9):   _
  Keyboard (.,/$#%): _
  Special (©®™Σπ):   _

LOGICAL ELEMENTS
Key Type: Non: _
              Primary: X
              Foreign: X
              Alternate: _
Key Structure: Simple: _
              Composite: X
Uniqueness: Non-unique: X
              Unique: _
Null Support: Nulls OK: _
              No nulls: X
Values Entered By: User: X
              System: _
Required Value: No: _
              Yes: X
Range of Values: values in the species.binomial_name field
Edit Rule:
  Enter now, edits allowed: X
  Enter now, edits not allowed: _
  Enter later, edits allowed: _
  Enter later, edits not allowed: _
  Not determined at this time: _

Appendix AAC: Species Tag - Tag

<u>GENERAL ELEMENTS</u>
Field Name: tag
Parent Table: species tag
Alias(es):   none
Specification Type:
  Unique: _
  Generic: _
  Replica: X
Source Specification: tags.tag
Shared By: tags
Description: Descriptors for entomological species not already included in the species table

<u>PHYSICAL ELEMENTS</u>
Data Type: VARCHAR
Length: 64
Decimal Places: none
Character Support:
  Letters (A-Z):   X
  Numbers (0-9):   X
  Keyboard (.,/$#%): X
  Special (©®™Σπ):   _

<u>LOGICAL ELEMENTS</u>
Key Type: Non: _
              Primary: X
              Foreign: X
              Alternate: _
Key Structure: Simple: _
              Composite: X
Uniqueness: Non-unique: X
              Unique: _
Null Support: Nulls OK: _
              No nulls: X
Values Entered By: User: X
              System: _
Required Value: No: _
                Yes: X
Range of Values: Values in the tags.tag field
Edit Rule:
  Enter now, edits allowed: X
  Enter now, edits not allowed: _
  Enter later, edits allowed: _
  Enter later, edits not allowed: _
  Not determined at this time: _

Appendix AAD: Species Tag - Taxon

GENERAL ELEMENTS

Field Name: taxon
Parent Table: species_tags
Alias(es):   supertaxon
Specification Type:
  Unique: _
  Generic: _
  Replica: X
Source Specification: species.taxon
Shared By: classifications, species, samples
Description: The genus of the species.

PHYSICAL ELEMENTS

Data Type: VARCHAR
Length: 64
Decimal Places: none
Character Support:
  Letters (A-Z):   X
  Numbers (0-9):   _
  Keyboard (.,/$#%): _
  Special (©®™Σπ):   _

LOGICAL ELEMENTS

Key Type: Non: _
              Primary: X
              Foreign: X
              Alternate: _
Key Structure: Simple: _
              Composite: X
Uniqueness: Non-unique: X
              Unique: _
Null Support: Nulls OK: _
              No nulls: X
Values Entered By: User: X
                System: _
Required Value: No: _
              Yes: X
Range of Values: values in the species.taxon field
Edit Rule:
  Enter now, edits allowed: X
  Enter now, edits not allowed: _
  Enter later, edits allowed: _
  Enter later, edits not allowed: _
  Not determined at this time: _

Appendix AAE: Tags - Tag

GENERAL ELEMENTS
Field Name: tag
Parent Table: tags
Alias(es):
Specification Type:
  Unique: X
  Generic: _
  Replica: _
Source Specification:
Shared By: Species Tag
Description: A descriptor related to a species.

PHYSICAL ELEMENTS
Data Type: VARCHAR
Length: 64
Decimal Places: none
Character Support:
  Letters (A-Z):   X
  Numbers (0-9):   X
  Keyboard (.,/$#%): X
  Special (©®™Σπ):   _

LOGICAL ELEMENTS
Key Type: Non: _
              Primary: X
              Foreign: _
              Alternate: _
Key Structure: Simple: X
              Composite: _
Uniqueness: Non-unique: _
              Unique: X
Null Support: Nulls OK: _
              No nulls: X
Values Entered By: User: X
                System: _
Required Value: No: _
              Yes: X
Range of Values: Any
Edit Rule:
  Enter now, edits allowed: X
  Enter now, edits not allowed: _
  Enter later, edits allowed: _
  Enter later, edits not allowed: _
  Not determined at this time: _

Appendix B: Business Rules Specifications

Appendix BA

RULE INFORMATION
Statement: It is our policy that requests can only be requested for a sample if there
are more than 5 of the same species currently in inventory.
Constraint: A request can only be made if there are greater than 5 of the same species in the inventory.
Type: Database Oriented: _
          Application Oriented   X
Category: Field Specific: X
            Relationship Specific: _
Test On: Insert: _
          Delete: _
          Update: X

STRUCTURES AFFECTED
Field Names: Request.request_fulfilled
Table Names: _

FIELD ELEMENTS AFFECTED
Physical Elements: Data Type: _
            Length: _
            Character Support: _
Logical Elements: Key Type: _
            Key Structure: _
            Uniqueness: _
            Null Support: _
            Values Entered By: _
            Range of Values: X
            Edit Rule: _

RELATIONSHIP CHARACTERISTICS AFFECTED
    Deletion rule: _
    Type of participation: _
    Degree of participation: _

ACTION TAKEN
On an update to the request_fulfilled value of a Request record, deny the update if the associated sample has a false for in_inventory.

Appendix BB

RULE INFORMATION
Statement: To allow us to contact enthusiasts regarding requests & information, they must have an email and a full address. A phone number is not required.
Constraint: An enthusiast will not be inserted into the database if they do not input an email and a full address when registering.
Type: Database Oriented: _
        Application Oriented: X
Category: Field Specific: X
        Relationship Specific: _
Test On: Insert: X
        Delete: _
        Update: _

STRUCTURES AFFECTED
Field Names: Enthusiasts.enthusiast_ID
Table Names: _

FIELD ELEMENTS AFFECTED
Physical Elements: Data Type: _
            Length: _
            Character Support: _
Logical Elements: Key Type: _
            Key Structure: _
            Uniqueness: X
            Null Support: _
            Values Entered By: _
            Range of Values: _
            Edit Rule: _

RELATIONSHIP CHARACTERISTICS AFFECTED
    Deletion rule: _
    Type of participation: _
    Degree of participation: _

ACTION TAKEN
When an enthusiast is attempting to be inserted into the database, deny the insertion if an email and/or full address (city, region, ZIP, etc.) are not provided.

Appendix BC

RULE INFORMATION
Statement: _ All dates of requests must be the current or past dates/
Constraint: _ Dates are constrained by being less than the value being the current DATETIME value.
Type: Database Oriented: X
        Application Oriented   _
Category: Field Specific: X
        Relationship Specific: _
Test On: Insert: X
        Delete: _
        Update: _

STRUCTURES AFFECTED
Field Names: _ requests_requestDate
Table Names: _

FIELD ELEMENTS AFFECTED
Physical Elements: Data Type: _
            Length: _
            Character Support: _
Logical Elements: Key Type: _
            Key Structure: _
            Uniqueness: _
            Null Support: _
            Values Entered By: _
            Range of Values: X
            Edit Rule: _

RELATIONSHIP CHARACTERISTICS AFFECTED
    Deletion rule: _
    Type of participation: _
    Degree of participation: _

ACTION TAKEN
On insert, compare the value inserted with the current date and time, if it is less than or equal to the current date and time, then the value is inserted.

Appendix BD

RULE INFORMATION
Statement: _ All coordinates must be a valid coordinate on Earth.
Constraint: _ The coordinates must not have and invlaid special characters, and each value must be valid. This means the north-south value must
        be within -90 to 90 and the east-west value must be within -180 to 180.
Type: Database Oriented: X
        Application Oriented   _
Category: Field Specific: X
        Relationship Specific: _
Test On: Insert: X
        Delete: _
        Update: X

STRUCTURES AFFECTED
Field Names: _ Samples.sorth_coordinates, samples.west_coordinates
Table Names: _

FIELD ELEMENTS AFFECTED
Physical Elements: Data Type: X
            Length: _
            Character Support: X
Logical Elements: Key Type: _
            Key Structure: _
            Uniqueness: _
            Null Support: _
            Values Entered By: _
            Range of Values: _
            Edit Rule: _

RELATIONSHIP CHARACTERISTICS AFFECTED
    Deletion rule: _
    Type of participation: _
    Degree of participation: _

ACTION TAKEN
Added check constraints to check that -90 < north_coordiantes < 90 and -180 < west_coordinate < 180

Appendix BE

RULE INFORMATION
Statement: _ All requests must be stored and never deleted from the database.
Constraint: _ The request records table must not have any deletions to preserve the records.
Type: Database Oriented: X
          Application Oriented   _
Category: Field Specific: _
          Relationship Specific: X
Test On: Insert: _
          Delete: X
          Update: X

STRUCTURES AFFECTED
Field Names: _
Table Names: _ Requests

FIELD ELEMENTS AFFECTED
Physical Elements: Data Type: _
               Length: _
               Character Support: _
Logical Elements: Key Type: _
               Key Structure: _
               Uniqueness: _
               Null Support: _
               Values Entered By: _
               Range of Values: _
               Edit Rule: _

RELATIONSHIP CHARACTERISTICS AFFECTED
    Deletion rule: X
    Type of participation: _
    Degree of participation: _

ACTION TAKEN
Implement a deletion rule on the requests table so as to protect it from deletions.

Appendix BF

RULE INFORMATION
Statement: Scientifically, all species fall directly under a genus. This genus, when combined with its binomial name, uniquely identifies each species. This genus must fall under a family in the taxonomic hierarchy, so it must have a supertaxon.
Constraint: All taxon used as a foreign key in species must have a supertaxon.
Type: Database Oriented: X
          Application Oriented   _
Category: Field Specific: X
          Relationship Specific: _
Test On: Insert: X
          Delete: _
          Update: X

STRUCTURES AFFECTED
Field Names: Species.taxon
Table Names: _

FIELD ELEMENTS AFFECTED
Physical Elements: Data Type: _
          Length: _
          Character Support: _
Logical Elements: Key Type: _
          Key Structure: _
          Uniqueness: _
          Null Support: _
          Values Entered By: _
          Range of Values: X
          Edit Rule: _

RELATIONSHIP CHARACTERISTICS AFFECTED
   Deletion rule: _
   Type of participation: _
   Degree of participation: _

ACTION TAKEN
Added a constraint to check if the taxon being used for the species genus has a supertaxon.

Appendix BG

RULE INFORMATION

Statement: Scientifically, all taxon have a supertaxon except the three domains. However, all entomological species fall under the phylum Arthropoda. So, it is our policy that we track the supertaxons of all taxons in our database except the taxon Arthropoda.

Constraint: The Classifications.supertaxon field cannot be null, except for the singular record where the taxon is Arthropoda.

Type: Database Oriented: X
          Application Oriented   _
Category: Field Specific: X
          Relationship Specific: _
Test On: Insert: X
          Delete: _
          Update: X

STRUCTURES AFFECTED

Field Names: Classifications.taxon
Table Names: _

FIELD ELEMENTS AFFECTED

Physical Elements: Data Type: _
                Length: _
                Character Support: _
Logical Elements: Key Type: _
                Key Structure: _
                Uniqueness: _
                Null Support: X
                Values Entered By: _
                Range of Values: _
                Edit Rule: _

RELATIONSHIP CHARACTERISTICS AFFECTED

  Deletion rule: _
  Type of participation: _
  Degree of participation: _

ACTION TAKEN

Changed null support to 'no nulls allowed' and created a Classifications record for arthropoda with a null supertaxon.

Appendix BH

RULE INFORMATION
Statement: It is our policy that each sample must be in the inventory to be requested.
Constraint: When a new Request record is made, the in_inventory for the related sample must be true.
Type: Database Oriented: _
       Application Oriented   X
Category: Field Specific: _
       Relationship Specific: _
Test On: Insert: X
       Delete: _
       Update: _

STRUCTURES AFFECTED
Field Names: _
Table Names: Request

FIELD ELEMENTS AFFECTED
Physical Elements: Data Type: _
            Length: _
            Character Support: _
Logical Elements: Key Type: _
            Key Structure: _
            Uniqueness: _
            Null Support: _
            Values Entered By: _
            Range of Values: _
            Edit Rule: _

RELATIONSHIP CHARACTERISTICS AFFECTED
    Deletion rule: _
    Type of participation: _
    Degree of participation: _

ACTION TAKEN
When inserting into the Request table, check the in_inventory field of the related Sample record. Deny the insertion if the in_inventory value is false.

Appendix BI

RULE INFORMATION
Statement: It is our policy that requests can only be fulfilled for a sample if that sample is currently in inventory.
Constraint: Updating a request record to request_fulfilled is true is only allowed when the associated sample's in_inventory value is true.
Type: Database Oriented: X
          Application Oriented   _
Category: Field Specific: X
          Relationship Specific: _
Test On: Insert: _
          Delete: _
          Update: X

STRUCTURES AFFECTED
Field Names: Request.request_fulfilled
Table Names: _

FIELD ELEMENTS AFFECTED
Physical Elements: Data Type: _
            Length: _
            Character Support: _
Logical Elements: Key Type: _
            Key Structure: _
            Uniqueness: _
            Null Support: _
            Values Entered By: _
            Range of Values: X
            Edit Rule: _

RELATIONSHIP CHARACTERISTICS AFFECTED
    Deletion rule: _
    Type of participation: _
    Degree of participation: _

ACTION TAKEN
On an update to the request_fulfilled value of a Request record, deny the update if the associated sample has a false for in_inventory.