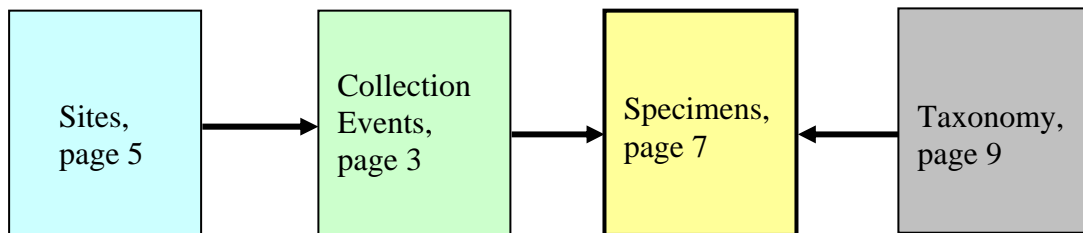


Tutorial for Data Entry

The primary goal of using the ATBI Database is to enter specimen records consisting of taxonomic identifications with numbers of specimens of different life stages (What), Site data (Where), and Collection information (Who, When and How). In order to enter specimen data, taxonomic data must be entered first. Higher taxonomic categories should be entered before lower (i.e., species) categories. Site data and collection information also must be entered before specimen data. Names of collectors, determiners, and other individuals associated with the project can be entered as needed.

This tutorial will help you become familiar with procedures for entering data.

Overview. Information in this database is arranged by Sites, Collection Events, Specimens, and Taxonomy in linked tables and can roughly be pictured as follows:



The arrows represent links between tables and their directions indicate which data need to be present first. For instance, specimen data can only be entered for species already listed with their taxonomy. Each time you want to enter a specimen whose species name is not yet listed, you will be side-tracked to enter corresponding taxonomy. Therefore, taxonomy is best entered before dealing with specimens.

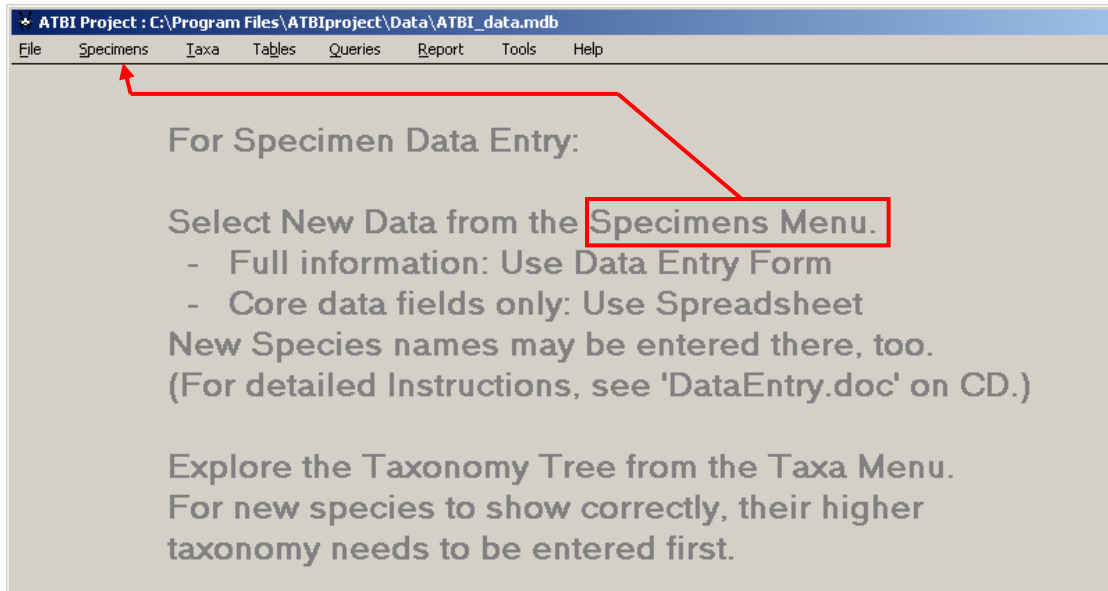
The recommended procedure is to enter collection events, followed by their related specimen data. Collections events already in the database can be selected by their Collector, Date, and SiteCode. For new collection events, Collector and SiteCode need to be either picked from respective lists of available data or entered as new. Collectors are usually spelled as printed on collection labels, while SiteCodes are essentially arbitrary*. For each new site, a SiteCode has to be created, but complete site information including coordinates may be entered at a later point in time, in order to avoid being side-tracked during specimen data entry.

* SiteCodes ...

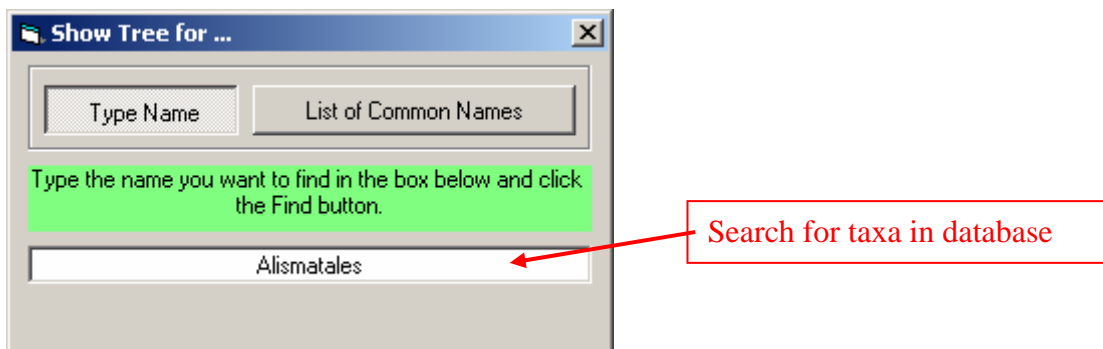
- should be mnemonic, at least to the PI, to facilitate deferred data entry of site detail,
- need to be unique within the database (The interface program ensures that.),
- are strongly recommended to conform with your agency's naming standards (if applicable).

Introduction.

When the program starts, the following message appears on the main screen:



Data stored in the database can be browsed/edited from the Tables and Queries Menus. Taxonomic information is accessible through the Taxa Menu. If you have a large number of species not yet represented in the database, it may be best to enter their taxonomy before entering specimen data. To find out if the database includes taxonomy of group of interest, select "Show Tree for ..." from the Taxa Menu, type species or higher taxon name in the dialog box,



and then click the "Find" button (not captured in the figure), to show its position in the taxonomic tree. From there you can explore associated species, as long as they have been entered in the database. So, if you have specimens for a large number of species not yet in the database, you may want to enter their taxonomy first. However, individual new species can also be added during specimen data entry, as outlined below.

This tutorial is for using the data entry form. For spreadsheet data entry, see the document "DataEntrySpread.doc".

Step 1. Collection Event

NEW SPECIMENS

Collection Sites Specimens Documents Delete! Help

Collection Event Site Specimen Data cont. Document/Image Exit

Traditional Collection Event Enter specimen data AFTER selecting a Collection Event.

Collector(s): Date Retrieved: Site Code: Sample Number / Field Code

ACCole Jr
ALSheldon
AMayor
ATBI volunteers
AVan Gunst & LCollins
BDBurks
BDHeinold
BDHeinold & SLJohnson
BDHeinold, AZimmerman
BDHeinold, Jeff Brown, Jill Brown

5/26/2001
5/27/2001
5/29/2001
5/30/2001
6/6/2001
6/7/2001
6/8/2001
6/9/2001
6/10/2001
6/11/2001

New Collection Event Site:

Specify a Collection Event already entered
by selecting Collector, Date, Site, SampleCode.

OR

Enter a new Collection Event by clicking the button.

Collection Event

Enter/browse/edit Collection, Site, or Specimen data

Selecting “New Data” from the Specimens Menu presents the data entry and browsing form on its first tab which holds collection event information. In the four list boxes on top, pick Collector, Date, Site, and Sample Code (if such a code is in use).

NEW Data

Collection Sites Specimens Documents Delete! Help

Collection Event Site Specimen Data cont. Document/Image Exit

Traditional Collection Event

Collector(s): CRParker CRParker & AMParker CRParker & BMerritt CRParker & CENoseworthy CRParker & DPipes CRParker & GEager CRParker & GSalansky CRParker & HSoehn CRParker & ICStocks CRParker & JCooper

Date Retrieved: 9/28/2000 9/29/2000 6/22/2001 8/14/2001 8/20/2001 3/8/2002

Site Code: ATBI Plot, Albright Grove ATBI Plot, Snakeden Ridge

Sample Number / Field Code: LT17 LT18 MT17 MT18 PT081 PT082 PT083 PT084 PT085 PT086

New Collection Event Edit Site Description: 1-hectare plot situated off Albright Grove loop trail

Date Trap Set: 8 / 1 / 2001 Precision of Date Retrieved

Project: ATBI Pilot Study Collection Notes:

Collection Method: Lindgren Funnel Trap Substrate: Habitat:

Associated Images and Documents

Variant Fields for Collection Events Active Scope: ATBI Pilot Study Voltage Coll 2 Coll 3 Coll 4 Coll 5

Collection Event

Select/view/edit COLLECTION info. --- First pick Collector, then Date, etc. --- For Sample Mode and other options, see Menu.

Pick-lists for key fields

Look for hints on status bar

When picking a Collector, the pick list of Dates for collection events in the database will adjust to your selection.

- Similarly, Sites and Sample codes lists will adjust by selection in boxes to their left. This cascading effect should keep lists short and manageable.
- Options about the listed Collectors are on the Collection Menu.
- The button “New Collection” lets you enter new events.
- The format of entries in the collectors list resembles the way they are printed on specimen labels. New names can be added where you can specify how you want the name to appear.
- Read-only information from existing data is grayed out with a greenish background.
- If that information can be edited, then the “Edit” button next to “New Collection” is enabled.
- However, for corrections of key fields Collector, Date, Site, see Collection Menu.
- The status bar at bottom, gives short hints and tips which vary, as you move the cursor.

Step 2. Site

The second tab is reserved for Site Information. Selection of sites is by SiteCode, and can be done either here or on the previous tab (Collection Event). If you made your selection already, you can skip this tab entirely and continue with Step 3 below.

NEW Data [Collector: ICStocks & JBreeden, 3/26/2001, Site: ATBI Plot, Purchase Knob]

Collection Sites Specimens Documents Delete! Help

Collection Event **Site** Specimen Data cont. Document/Image

Site Information

Short Site Info (for Labels): ATBI Plot, Purchase Knob

Site Codes: ATBI Plot, Cataloochee
ATBI Plot, Purchase Knob **Edit Site**

Site Description: 1-hectare plot in the mixed forest of the "peninsula"

Directions: From I-40 follow Hwy 276 south towards Waynesville for about 2 miles. Take a right on to Hemphill Road and follow it until it dead ends into Purchase Road (gravel). Follow

Site Notes:

Place Name: Purchase Knob

Park: Great Smoky Mountains

Watershed: NC Fringe

State: NC County: Haywood

Elevation (meters): 1402 Feet to Meters

Coordinates:

UTM North: 3940433

UTM East: 313346

Decimal Latitude: 35.59180

Decimal Longitude: 83.06020

Latitude: DD 35 MM 35 SS 30.5

Longitude: DD 83 MM 3 SS 36.7

Click to Edit Coordinates.

Associated Images and Documents Literature References

Sites for collector and date as indicated in title of form on top (from Collection Tab)

Site Information

Coordinates of sample site.

- Read-only information is grayed out, this time with a bluish background.
- The "Edit Site" button is enabled for editing, in case it is a site you entered before.
- A "New Site" button is available only for new collection events (see previous tab).
- In case of a new collection event, the list of all available Sites is presented and their individual details are shown when their SiteCode is selected.
- This list can be restricted to sites you either entered or used before, from the Sites Menu.
- For new sites, all you need is a SiteCode of your choice:

New Site Code

Please Enter Site Code
 In case you want to postpone entering Site details to later, this code should be mnemonic, so you will remember what it refers to.
 Formally, it just needs to be any concise alphanumeric string that is unique within the database.

OK
 Cancel

SnakedenRidge_trapline

New SiteCode is mnemonic

Upon clicking “OK”, a new site with that SiteCode but no other information is created. Automatically, you are put into editing mode, so you can fill more details. However, complete site information can also be added later, and you just need to click “Cancel Site Edit” to proceed without entering any detail for the time being.

Site Information

Short Site Info (for Labels):

Site Description:

Directions:

Site Notes:

Site Codes: **New Site** **Edit Site**

- Silers Trail CPAlexander
- Sinks Canyon
- SM001
- Smokemont
- Smokemont Campground
- Smokemont Loop Trail
- Snail Search Greenbriar
- SnailSearch2002 RFMNT #1
- SnailSearch2002 RFMNT #2
- SnailSearch2002 RFMNT #3
- SnailSearch2002 RFMNT #4
- SnailSearch2002 RFMNT #5
- SnakedenRidge_trapline**

Park: **Great Smoky Mountains**

Accept Site Data
Cancel Site Edit

Elevation (meters): **Feet to Meters**

Coordinates:

UTM North:

UTM East:

Decimal Latitude:

Decimal Longitude:

DD MM SS

Coordinates can be filled from mapping software distributed on the same CD with the database front-end. In that case, you enter SiteCode in the map display program, zoom-in to your collection area from the park map, and get coordinates automatically by clicking on a map that shows sufficient detail to pinpoint your site. Select “New Site from Map” on the Sites Menu to learn more about that.

The Sites Menu is available only from the Sites Tab, when a site needs to be chosen for a new collection event. Sites then always need to be picked from the SiteCodes list. Since those codes tend to be rather cryptic, some assistance may be welcome. Here are several ways:

- To fill the list with only those sites you have entered or those you have used in specimen entry before, select a corresponding option on the Sites Menu such as “List Sites entered by PI”.
- You may search for sites where either the label text or the description data field contains a search string you specify (“Search for Site” on the Menu).
- Jump directly to a SiteCode based on the first letter of the code, and use up- or down arrows to scroll the list.
- This not being a GIS application, you cannot pick a site from the map directly. But you can do that in the accompanying map display program mentioned above: Select “New Site from Map” from the Menu for detailed instructions.

Step 3. Specimen Details

Once a collection event (including site) is specified, data entry is concluded on the Specimen Data Tab. (Additional optional and curatorial data can go on the "... cont." tab. The "Document/Image" Tab is used for displaying related documents, images, and literature abstracts associated with one of the other tabs.)

Most importantly, you need to specify a taxon, and we will discuss several ways to do that. Then, you enter the required data fields Determiner, Preservation, Depository, and specimen counts in the Specimen Description frame at the lower left. In the example below a single adult was found but its sex was not determined. (Otherwise the count "1" would have been placed in the row for either female or male adults.) Double-clicking anywhere inside this frame brings up a dialog to change specimen descriptors and their qualifiers. In this case specimen descriptors are life-stages and their qualifier is sex, but that will depend on the type of organism to be recorded.

NEW Data [Collector: CRParker & ICStocks, 8/14/2001, Site: ATBI Plot, Albright Grove]

Collection Sites Specimens Documents Delete! Help

Collection Event Site Specimen Data cont. Document/Image Reset **Accept** Exit

Either adjust Genus List by selecting Order, Family; or type Genus name to look for --> Find Genus

| All Orders | Family | Genus | Species |
|-----------------------|-----------------------|----------------------|------------|
| Thysanoptera | Molannidae | Chimarra | distinctus |
| Trebouxiophyceae_orde | Odontoceridae | Dolophilodes | major |
| Tremellales | Philopotamidae | Philopotamidae_genus | sisko |
| Tribonematales | Phryganeidae | Wormaldia | species |
| Tribonemophyceae_orde | Polycentropodidae | | |
| Trichoptera | Psychomyiidae | | |
| Tricladida | Rhyacophilidae | | |

Details

Determination By: Year: Specimen ID:

Variant Fields for Specimen Data
Active Scope:

| Specimen Description and Counts | | | Preservation |
|---------------------------------|---------|--------------------------------|--------------------------------------|
| | adult | <input type="text" value="1"/> | <input type="text" value="Alcohol"/> |
| female | adult | <input type="text"/> | Destroyed |
| | larva | <input type="text"/> | Discarded |
| male | adult | <input type="text"/> | Envelope |
| | mmt | <input type="text"/> | Herbarium |
| | prepupa | <input type="text"/> | Herbarium Box |
| | pupa | <input type="text"/> | Herbarium Sheet |
| | | | Microscope Slide |

Identification Certainty: Specimen Depository:

New Specimen Details

Enter/view/edit SPECIMEN DATA. --- Pick Taxon using lists, or by typing the Genus. --- Use Menu for Parasites and options.

Similarly, variant data fields depending on the specific type of organism and/or project can be adjusted to accommodate other needs (see discussion of active "scope" elsewhere). When done, click "Accept" to write data to the database. Entered records will show on the main screen in the

background behind the data entry form. **Entering more records for the same collection event is quick:** Collection information, as well as Determiner, Year, Specimen Depository are retained on screen. Only specimen counts and, if so desired, Record Notes need to be entered. Of course, the species selection has to be adjusted as needed. Also, if you prefer separate specimen records for, say 17 pinned female adults, simply check the option “Write Separate Specimen records with count=1” on the Specimens Menu of the form and enter “17” in the count box for “female adult”. Then, when you click the “Accept” button, the program will write one separate record (with unique SpecimenID) for each of the 17 specimens. (Otherwise, there would be single record with Count=17.) After exiting, those **records are available for browsing/editing/deleting from the Specimens Menu on the main form** (shortcut <Ctrl>+S).

This is the dialog for setting other **specimen descriptors** (typically nouns describing specimens or parts thereof) and qualifiers (typically adjectives serving as attributes of descriptor nouns).

Specimen Descriptions for Order: Trichoptera

First select main descriptors and qualifiers from the lists below.

Qualifier (e.g., Sex)

- <None>
- female
- larval
- male
- nymphal
- subimago

Main Descriptor (e.g., Lifestage)

- immature
- individual
- juvenile
- larva
- leaf
- mmt
- nymph
- prepupa
- pupa

Then click cells in the grid representing meaningful combinations of qualifiers and main descriptors (e.g. female adult, larval exuvium). You can select up to 7 combinations.

| | <None> | female | male | |
|---------|--------|--------------|------------|---------|
| adult | | female adult | male adult | adult |
| larva | | | | larva |
| mmt | | | | mmt |
| prepupa | | | | prepupa |
| pupa | | | | pupa |

Selected Qualifiers make columns in the grid.

Selected Descriptors make rows in the grid.

Click to set or remove meaningful specimen descriptions you want to use.

New items can be added to the lists; but the intention is to keep them standardized, so that after some initial experimental period, the sub-list of descriptors applicable to a specific type of organism becomes fixed.

SpecimenID numbers are generated as random numbers, but can be modified to match existing labels including alphanumeric characters, as long as the ID is unique in the database. Any desired prefix for those IDs can be specified on the Specimens Menu, too.

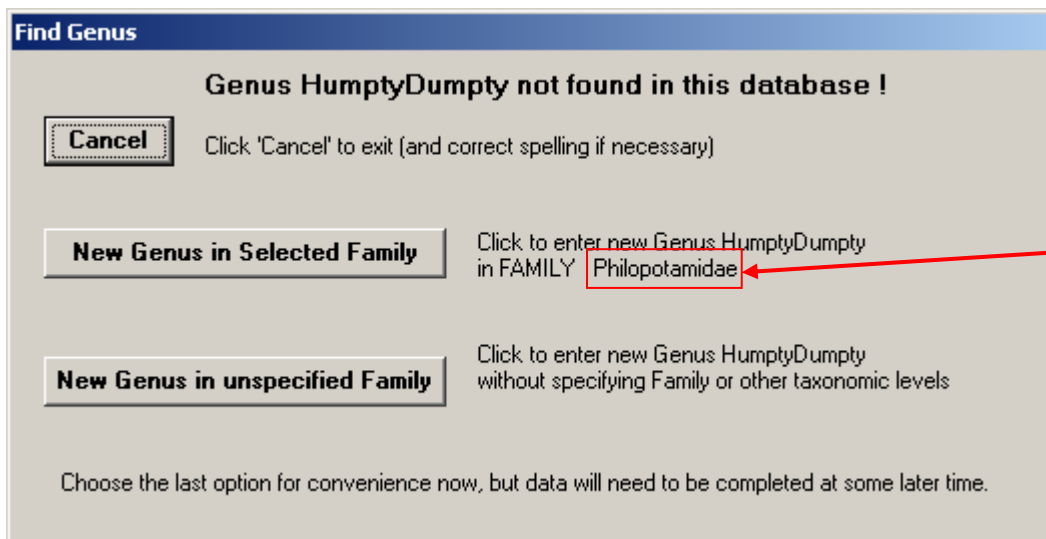
To specify a taxon on the Specimen Tab, you can

- either type in its genus name and click the button “Find Genus”,
- or pick order, family, genus consecutively from provided lists.

The list boxes cascade to show only families within selected order, and only genera within selected family. So, you can then pick your species from a short list within selected genus. “Find Genus” will do same thing, namely adjust the first three lists and highlight the genus, as long as the genus name you are looking for is recorded in the database.

Options for entering **new** families, genera, and species are provided on the Specimens Menu.

Here is a quick way to proceed if “Find Genus” was not successful: Suppose you typed in ‘HumptyDumpty’, you will be presented with a message like this:



You continue by clicking either button:

- Cancel is self-explanatory.
- For “New Genus in Selected Family” to be helpful, the correct family has to be selected in the Family List (and you may have to cancel out and do that before proceeding).
- “New Genus in unspecified Family” means adding your new taxon to a dummy family (without any higher taxonomy) as a temporary placeholder, so you can enter your data now and provide more taxonomic detail at a later point in time. (All taxa entered that way will be found under family node “dummyFamily” in a separate tree structure and can be handled from there as appropriate.)

Formally, in both cases of a new genus, the following form is displayed:

Enter, edit, or review higher classification in taxonomy tables.

- Higher taxonomy boxes are disabled, the genus is what you asked for, and you should type-in your species name. (Subspecies and more species detail on other tabs are optional.)
- Just click “Enter Record”, unless you still want to cancel, and exit the form.

Your new species should now be automatically selected on the Specimen Entry form, as described above.

Regarding synonyms, the database does support synonyms of species names. In order to keep specimen and species counts manageable, all specimens should be recorded under their valid species name. You will be reminded about that if you select a taxon considered a synonym:

Click in YELLOW area to select corresponding valid Species Name.

Updating valid names and synonyms is done on the form shown above and associated specimen data are kept synchronized accordingly.