How To Import Excel Rank Calculator 3.2x Data into Biotics

The bulk of these instructions involve quality control (QC) of your data before and after uploading into Biotics. Some of these steps are more critical than others. Use your best judgment about the QC to perform given your knowledge of the condition of your rank calculator and Biotics data. But keep in mind that **an import could accidentally overwrite data you wanted to keep, and could overwrite any edits another user may have made since you downloaded the data**.

IMPORTANT: Use these instructions to convert to version 3.2 before proceeding with the import steps here. The **Version 3.1x** calculator (including version 3.193) contains a calculation error that should be addressed.

IMPORTANT: These instructions require significant technical abilities to perform. Please ask for assistance if you need it. Or consider using copy and paste to get the data into Biotics. If there is no one in your program to help you, contact kristin_snow@natureserve.org.

The earlier steps require comfort in using Excel and Word. The actual import requires someone with permissions and knowledge to run update SQL on your Biotics database. The final steps of completing and QCing data in Biotics require ability to view and edit in Biotics. The steps can be split among different people as needed.

General advice

- We recommend importing only entire rank calculators; otherwise it would be difficult to keep track of what's been imported and what has not.
- You can combine multiple Rank Calculator files into a single import file as long as they are all of the same geographic level and don't exceed the 2195 record limit. But do not open more than one Calculator file open a time, as it seems to cause issues for Excel. Instead, use a Transfer file as a go between (as explained in page 4 of this document).
- Do NOT unprotect the Calculator files for copying or pasting. That could result in unintentional errors.
- Keep an eye on numeric values, which sometimes reformat to Date in the calculators. (See https://bioticssupport.natureserve.org/support/solutions/articles/206649-rank-calculator-spreadsheet-number-fields-reformatted-to-date for one cause of the problem.)

IMPORT CALCULATOR TABLE DATA

Perform QC of your calculator data

1. Ensure that the data you want to import are for a single geographic level (global, national, or subnational) and ensure that the level is selected on the **Calculator Form** tab, row 4 ("Change to return GRanks, NRanks, or Sranks"). This setting determines whether your calculated ranks begin with G, N, or S and applies to the entire workbook. (If you have data for different geographic levels, each must be in a different calculator file.) (NOTE: Calculated Granks for infraspecies begin with "T"; they must be appended to the Grank of the full species in the *assigned* rank field.)

2. On the **Calculator Table** tab, make sure every record has an Element ID for the correct level, for the correct database.

   a. To upload to **ESR**, all rows must have the **element_subnational_id** in the Element ID column.
      To upload to **EGR**, all rows must have the **element_global_id** in the Element ID column.
      To upload to **ENR**, all rows must have the **element_national_id** in the Element ID column.

   b. Create a working list of these IDs in Biotics.

   c. The calculator does not have UIDs, so you must **ensure that the IDs in the calculator come from the database you will upload to**. Element IDs are NOT the same in different databases.

3. Check in Biotics to make sure none of the elements have been **inactivated or deleted**.

4. Check for and delete **duplicate records** (same Element ID in more than one row) in your dataset.

   a. To check for duplicates in Excel, paste the list of Element IDs into a blank worksheet and choose Data>Remove Duplicates.

   b. If duplicates are found, find the IDs.

      i. Undo Remove Duplicates.

      ii. Assuming that Element ID is in column A, enter the formula =COUNTIF(A:A,A1) in cell B1 and copy it down to all rows.

      iii. Filter column B on values > 1 to show the duplicates.

      iv. In your calculator file, find and review the duplicates to determine which is the correct copy, then **delete the data in the row** for the incorrect copy. Remember to not delete entire rows on the Calculator Table tab; it messes up the formulas.

5. Ensure that any blanks in your rank data are intentional. **Blanks will overwrite existing data** in Biotics, except for the following fields which are for reference or calculator use only and NOT imported: Species or Ecosystem Scientific Name, Type (infrasp for TRank), Elcode, Common Name, Classification, Nation or Subnation (for N- or S-Ranks).

6. Check for line breaks and other **problematic characters** within cells. (You will have another chance to do this in Step A.14 below.)

   a. Copy all data in columns B - AP and paste as text only into Word. Do not copy the header row.

   b. Show paragraph marks and search or scan for paragraph marks within in comments. Paragraph marks should only appear after each row of data; any within a row should be removed before the import.

   c. Search for line breaks and other special characters. The following search term, used with "use wildcards" checked in the Find and Replace dialog box, searches search for line breaks, non-breaking spaces, non-breaking hyphens, em dashes, en dashes, and curly quotes (not necessarily a complete list). Include the square brackets when copying: **[^l^s^~^=^+""'']**

   d. To fix, either: locate the problem characters in Excel and delete or replace there (safer), or make the edits in Word and then carefully copy and paste back into your QC Excel file.

Backup existing Biotics Ranking data and use the backup for additional QC

7. Export data from Biotics using the rank calculator export SQL provided with the calculator (**Export from Biotics5** tab) and the list of element IDs[1] or working list name of the elements you are importing.

8. Paste the results into an Excel file and **save as a backup** of your existing data.

9. Make sure all your existing Biotics data are OK to be overwritten.

   a. Compare this export to the calculator data you will upload and make sure it is ok to overwrite the fields that will be updated. Remember that blanks in the imported fields in the new data will overwrite existing data in Biotics with nulls.

   b. The following fields are for reference or Excel calculator use only and will NOT be imported: Species or Community Scientific Name, Type (infrasp for TRank), Elcode, Common Name, Classification, Nation or Subnation (for N- for S-Ranks).

10. (Optional) Generate a list of which elements have updated or new ranks. (Rank Change Date and the Rank Change grid are populated using the audit log, but you may wish to use this list for QC.)

    a. Use the Excel vlookup function (or other means) to pull the new assigned rank into a new column in the exported Biotics data and compare the new and existing ranks.

    b. Ranks can be compared in a new column using the formula =A1=B1 (adjusting for the correct columns) and copying the formula down to all rows. You can then filter on the column for values=FALSE. This is the list[1] of element IDs for elements **whose Rank has changed or is being entered for the first time**. You can create a working list or create a comma-delimited list[1].

Run the Ranking import

Note: If it is a large upload, you may want to ask other users to hold off on Biotics editing in the impacted tables. In the previous step you backed up any data that will be overwritten, but to be extra safe you might consider running the import toward the beginning of a work day; that way if something goes terribly wrong you can restore your database using the previous nights' backup. (See https://bioticssupport.natureserve.org/support/solutions/articles/63109-backup-schedule.)

11. Before running the upload, **you MUST configure your biotics database** so that REC_LAST_MOD_USER will be set to the custom value provided in the scripts, rather than "BIOTICS_DLINK", using the instructions in **this Solution**. (Be sure to COMMIT after running the insert statement.) This is needed because the scripts that set Rank Change Date and populate the Rank Change grid rely on REC_LAST_MOD_USER ="rank_calc_upload".

The import SQL is generated in Calculator Table columns **BY - CA** for **subnational** upload, **CB - CD** for **global** upload, and **CE - CG** for **national** upload. Only use SQL from the 3 columns for the geographic level of your data.

12. Update the SQL in 1 cell by adding a comma-separated[1] ID list between the parentheses.

    a. The cell is in Row 4 in the appropriate **"SQL for ExR insert + update"** column. That is, cell **CA4** for subnational upload, **CD4** for global upload, or **CG4** for global upload.

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[1] For tools for generating comma-delimited lists, see https://bioticssupport.natureserve.org/support/solutions/articles/202028-excel-macros-for-use-in-formatting-batch-update-spreadsheets (Excel) or https://bioticssupport.natureserve.org/support/solutions/articles/201141-ms-word-macros-for-use-with-biotics (Word). The Excel function does not work with filtered data; i.e. it will list all cells in the range, including any that are not visible in the current filter.

b. Update the cell by inserting, in the parentheses at the end of the statement, a **comma-delimited list[1] of Element IDs for *all* elements to be uploaded**. The SQL checks for missing Element Ranking records and inserts those that are needed.

13. Generate the full import script by copying the SQL from Excel and **pasting into TOAD or SQL+ in the following order**:

    a. Row 4 through the last row of your data in column **"SQL for ExT update"**: column **BY** for subnational, **CB** for global, or **CE** for national.

    b. Rows 3-4 in column **"More ExT SQL"**: column **BZ** for subnational, column **CC** for global, or column **CF** for national.

    c. Row 4 through the last row of your data in column **"SQL for ExR insert + update"**: column **CA** for subnational, **CD** for global, or **CG** for national.

14. In TOAD or SQL+, do a quick scan of the script to check for any line breaks or other issues you may have missed. In TOAD this will likely be obvious as the color of the text will change and the Navigator window will highlight errors. Also, line breaks within a field will cause the statement to wrap onto more than 1 row and will add double quotes to the front and end of the statement.
    You can make fixes directly in TOAD, or fix in the calculator and then repeat the copy/paste step.

15. Save the script for future reference. You may want to paste it on a new tab in the rank calculator.

16. **Run the entire script** in one go. (If you run it in pieces, you'll need to rerun the "set define off;" statement each time. Also, one statement is based on the assumption that it is being run on the same calendar date as the previous statements.)

17. Before committing, you can run QC queries in the same application. This would be a good time to check that REC_LAST_MOD_USER ="rank_calc_upload" for all updated records.

18. **Commit** the changes. (Or rollback and try again.)

19. In Biotics, choose Configuration>Grant/Refresh Database Privileges to clear the application cache (which should be done anytime you make direct SQL modifications). Also clear your browser cache.

20. In Biotics, review the imported data to **add any missing information** and to QC the import.

    a. Create a working list of the records you imported, if you haven't already, and view the data. If you run into oddities or data that have not been updated, try clearing your cache and refreshing.

    b. In each **EST** or **EGT**, QC the changes and fill in this additional information:

        i. If the rank has changed, look at the **RANK CHANGES grid** (in Natural Heritage Status section). A record should have been added as part of the import. Fill in **Reason for Rank Change**, **Authorized By**, and **Rank Change Reference**, if known.

        ii. Add any **references** you used for assigning rank factor ratings to the **Element References** grid, and check the Rank Factors box.

    c. In each **ESR** or **EGR**, QC the changes and fill in any additional information you have that's not available in the calculator: **"Estimate"** fields for rank factors, the **Additional Information** and **Needs** sections, **Internal Notes**.

21. Mark in your import calculator the date that the import was completed and save for future reference. Also mark your original calculator to show which elements have been imported.

22. Done!

IMPORT THREATS ASSESSMENT DATA

IMPORTANT: These steps import only data in columns G-N (highlighted in orange) of the **Threats Data Compiled** tab, using Element ID (column B) to insert into the correct Biotics record. The assumption is that the data in columns D-F (**Calculated and Assigned Overall Threat Impact** and **Impact Adjustment Reasons**) were copied to the Calculator Form (using the "Copy Overall Impact and Adjustment Reasons to Calculator Form button) and stored in the Calculator Table and therefore imported with the Calculator Table import above. If you're unsure if that's true, you may want to compare the values on the two tabs.

QC and Clean up the threats data

1. On the Threats Data Compiled tab, make sure every record has an **Element ID** for the correct geographic level and for the correct database.

2. Check for **duplicates** in Element ID + Threat Description and delete duplicates.

    a. To check for duplicates in Excel, copy your data in column B - Column H (Element ID - Threats Description) and paste into a blank worksheet.

    b. Delete all the middle columns (all except Element ID and Threats Description) and highlight both remaining columns. Choose Data>Remove Duplicates.

    c. If duplicates are found, find them.

        i. Undo Remove Duplicates

        ii. Assuming that Element ID is in column A and Threats Description is in column B, enter the formula =A1&B1 in cell C1 and copy it down to all rows.

        iii. In cell D1, enter the formula =COUNTIF(C:C,C1) and copy it down to all rows.

        iv. Filter column D on values > 1 to show the duplicates.

        v. In your Transfer file, find and review the duplicates to determine which is the correct copy, then delete the row for the incorrect copy.

3. If Threat No. (Category code) appears truncated (decimal removed), first try widening the column. Then try changing the format of the column back to General.

Backup existing Biotics Threats data and use the backup for prep and QC

4. Get a unique list of Element IDs from the Threats Data Compiled tab (paste IDs into a new workbook and use Data>Remove Duplicates) and use this list to export existing threats data from Biotics using the appropriate Threat Assessment Export query on the **Export from Biotics5** tab (column E or G).

5. If there are any query results, there are existing threat assessment data.

    a. Export the data, paste into Excel, and **save as a backup**.

    b. **Compare** the exported data to what you will be importing. **Make sure the exported data can be deleted** based on comparison with the calculator data. The existing Threats Assessment data will be deleted before the new Threats Assessment data are added.

    c. Create a **unique list of the exported element IDs**. This is likely a shorter list than the list you created in Step 4 above. (But it's ok if you use the longer list; records that do not exist will simply be ignored.) This list will be used to delete the data in Step 6 below.

Run the Threats import

6. Update the SQL in 1 cell by adding a comma-separated[1] ID list between the parentheses.

    a. The cell is in Row 3 of the Threats Data Compiled worksheet: cell **O3** for subnational data, **P3** for national, or **Q3** for global.

b.   Update the cell by inserting, in the parentheses at the end of the statement, a **comma-delimited list[1] of Element IDs for *all* elements to be uploaded**. The SQL checks for missing Element Ranking records and inserts those that are needed.

7.   If there are existing threat data, as determined in Step 5 above, copy the list of element IDs generated in that step and paste them in the parentheses in the **Delete statement** in the Threats Data Compiled worksheet (**O4** for subnational data, **P4** for national, or **Q4** for global).

8.   Copy the SQL in the appropriate cell of row 6 (**O6** for subnational data, **P6** for national, or **Q6** for global) and **paste down to all the rows** that have data you want to import.

9.   Handle any **"no known threats"** and **"Unknown/undetermined"** entries, which have a blank Threat Number (column G).

   a.   Filter on records with a blank "Threat No." (column G). If there aren't any, skip to Step 10.

   b.   In your Biotics, run the following query to ensure that d_iucn_threat_category_id=89 for "no known threats" and d_iucn_threat_category_id=90 for "Unknown/undetermined". If not, update the IDs in the next step accordingly.
```
select * from d_iucn_threat_category
where lower(iucn_threat_category_desc) in('no known threats','unknown/undetermined')
```

   c.   In the Excel rows with blank "Threat No.", manually edit the SQL in Column O (subnational). Replace **pklookup('D_IUCN_THREAT_CATEGORY','IUCN_THREAT_CATEGORY_CD=''"&G6&"''')** (row number will vary) with the appropriate d_iucn_threat_category_id (**89** or **90**).

10.   Copy all the SQL statements in the appropriate column (Column **O** for subnational, **P** for global, or **Q** for national). Start with **row 3, but if you *don't* have existing threat data to delete**, **delete the statement in row 4.** Include all rows with data to import. Paste into TOAD or SQL+.

11.   Do a quick scan of the code to check for any line breaks or other issues you may have missed that could break the code. In TOAD this may be obvious as the color of the text will change and the Navigator window will highlight errors. You can make fixes directly in TOAD, or fix in the calculator and then repeat the copy/paste step.

12.   Save the script for future reference. You may want to put it on a new tab in the rank calculator.

13.   **Run the entire script** in one go. (If you run it in pieces, you'll need to rerun the "set define off;" statement each time.)

14.   If you like, run QC queries in the same application.

15.   **Commit** the changes. (Or rollback and try again.)

16.   QC the import. You can create a working list of the records you imported (if you haven't already), and view them in Biotics, or export the imported data and compare to the Excel data. The primary concern is to make sure the codes in Excel were cross-referenced to the correct Biotics domain value. If you run into problems, you can start over by deleting all the threats data again.

17.   Mark in your import calculator the date that the import was completed and save for future reference. Also mark your original calculator to show which elements have been imported.

18.   In Biotics, choose Configuration>Grant/Refresh Database Privileges to clear the application cache (which should be done anytime you make direct SQL modifications). Also clear your browser cache.

19.   Done!

Sample SQL for one ESR

```sql
set define off;


--EST updates
update element_subnational
set rec_last_mod_user='rank_calc_upload', s_rank='S2S3', rounded_s_rank=round_srank('S2S3'),
s_rank_review_date=to_date('2015/02/17','YYYY/MM/DD')
where element_subnational_id=18259;

--Srank_change grid inserts
insert into element_srank_change (element_subnational_id, rank_change_entry_date, previous_rank,
rank_change_com, rec_create_user, new_rank)
select es.element_subnational_id, al.audit_date, alc.old_value, 'Rank calculator upload',
'rank_calc_upload', es.s_rank new_rank
from audit_log al, audit_log_column alc, element_subnational es
where al.audit_log_id = alc.audit_log_id and al.primary_key_id = es.element_subnational_id and
alc.column_name='S_RANK' and al.table_name='ELEMENT_SUBNATIONAL' and
al.user_name='rank_calc_upload' and trunc(al.audit_date) = trunc(sysdate);

--Update rank change date
update element_subnational set s_rank_change_date=sysdate, rec_last_mod_user='rank_calc_upload'
where element_subnational_id in(select al.primary_key_id from audit_log al, audit_log_column alc
where al.audit_log_id = alc.audit_log_id and alc.column_name='S_RANK' and
al.table_name='ELEMENT_SUBNATIONAL' and al.user_name='rank_calc_upload' and trunc(al.audit_date)
= trunc(sysdate));

--ESR inserts
insert into element_subnatl_rank(element_subnational_id,rec_create_user)
select es.element_subnational_id, 'rank_calc_upload'
from element_subnational es, element_subnatl_rank esr
where es.element_subnational_id=esr.element_subnational_id(+)
  and esr.element_subnational_id is null
  and es.element_subnational_id in(18259);

--ESR updates
update element_subnatl_rank
set rec_last_mod_user='rank_calc_upload', s_calculated_rank='S4', s_rank_calculated_date=SysDate,
D_RANKING_SPATIAL_PATTERN_ID=pklookup('D_RANKING_SPATIAL_PATTERN','lower(RANKING_SPATIAL_PATTERN_
DESC)=''large patch'''), D_RANGE_EXTENT_ID=pklookup('D_RANGE_EXTENT','RANGE_EXTENT_CD='''''),
D_AOO_DIRECT_DEFAULT_ID=pklookup('D_AOO_DIRECT_DEFAULT','AOO_DIRECT_DEFAULT_CD=''F'''),
D_AOO_DIRECT_SMALL_ID=pklookup('D_AOO_DIRECT_SMALL','AOO_DIRECT_SMALL_CD='''''),
D_AOO_DIRECT_MATRIX_ID=pklookup('D_AOO_DIRECT_MATRIX','AOO_DIRECT_MATRIX_CD='''''),
D_AOO_4KM_ID=pklookup('D_AOO_4KM','AOO_4KM_CD='''''),
D_AOO_1KM_ID=pklookup('D_AOO_1KM','AOO_1KM_CD='''''),
D_NUMBER_EOS_ID=pklookup('D_NUMBER_EOS','NUMBER_EOS_CD='''''),
D_POP_SIZE_ID=pklookup('D_POP_SIZE','POP_SIZE_CD='''''),
D_NUMBER_GOOD_EOS_ID=pklookup('D_NUMBER_GOOD_EOS','NUMBER_GOOD_EOS_CD='''''),
D_AOO_PERCENT_GOOD_ID=pklookup('D_AOO_PERCENT_GOOD','AOO_PERCENT_GOOD_CD='''''),
D_ENVIRO_SPECIFICITY_ID=pklookup('D_ENVIRO_SPECIFICITY','ENVIRO_SPECIFICITY_CD=''A'''),
D_THREAT_IMPACT_ASSIGNED_ID=pklookup('D_THREAT_IMPACT_ASSIGNED','THREAT_IMPACT_ASSIGNED_CD=''D''
'), D_THREAT_IMPACT_CALC_ID=pklookup('D_THREAT_IMPACT_CALC','THREAT_IMPACT_CALC_CD='''''),
D_INTRIN_VULNERABILITY_ID=pklookup('D_INTRIN_VULNERABILITY','INTRIN_VULNERABILITY_CD=''BC'''),
D_SHORT_TERM_TREND_ID=pklookup('D_SHORT_TERM_TREND','SHORT_TERM_TREND_CD='''''),
D_LONG_TERM_TREND_ID=pklookup('D_LONG_TERM_TREND','LONG_TERM_TREND_CD='''''),
s_rank_adjustment_reasons='European study indicate rapid colonization of scree by plants may
represent decline.', s_rank_reasons=Null, version_author='Rex Crawford',
version_date=to_date('2014/11/03','YYYY/MM/DD'), s_rank_assignment_author='Rex Crawford',
internal_notes=Null, s_range_com=Null, s_area_dist_of_occupancy_com='Comer Hak (NatureServe 2009
M09NAT01HQUS) map 204 sqkm', s_number_eos_com=Null, s_pop_size_com=Null,
s_number_good_eos_com=Null, s_enviro_specificity_com=Null, s_threat_com='no known; uncertain if
increase in area with glacier retreat will be offset with transition to vegetated surface',
s_impact_adjustment_reasons=Null, s_intrinsic_vulnerability_com=Null,
s_short_term_trend_com=Null, s_long_term_trend_com=Null, d_rank_method_used_id=1
where element_subnational_id=18424;

--Delete existing threat assessment data
delete from EL_SUBNATL_THREATS_ASSESS
where element_subnational_id in(18424);

--insert threats assessment data
set define off;
```

```sql
insert into EL_SUBNATL_THREATS_ASSESS
(REC_CREATE_USER,ELEMENT_SUBNATIONAL_ID,D_IUCN_THREAT_CATEGORY_ID,D_THREAT_IMPACT_CALC_ID,
D_IUCN_THREAT_SCOPE_ID, D_IUCN_THREAT_SEVERITY_ID, D_IUCN_THREAT_TIMING_ID,
S_IUCN_THREAT_COMMENTS)
VALUES('rank_calc_upload',9185,pklookup('D_IUCN_THREAT_CATEGORY','IUCN_THREAT_CATEGORY_CD=''4''')
,pklookup('D_THREAT_IMPACT_CALC','upper(THREAT_IMPACT_CALC_DESC)=''MEDIUM'''),pklookup('D_IUCN_TH
REAT_SCOPE','upper(DISPLAY_VALUE)=''RESTRICTED (11-
30%)'''),pklookup('D_IUCN_THREAT_SEVERITY','upper(DISPLAY_VALUE)=''SERIOUS OR 31-70% POP.
DECLINE'''),pklookup('D_IUCN_THREAT_TIMING','upper(DISPLAY_VALUE)=''''),Null);

insert into EL_SUBNATL_THREATS_ASSESS
(REC_CREATE_USER,ELEMENT_SUBNATIONAL_ID,D_IUCN_THREAT_CATEGORY_ID,D_THREAT_IMPACT_CALC_ID,
D_IUCN_THREAT_SCOPE_ID, D_IUCN_THREAT_SEVERITY_ID, D_IUCN_THREAT_TIMING_ID,
S_IUCN_THREAT_COMMENTS)
VALUES('rank_calc_upload',18439,89,pklookup('D_THREAT_IMPACT_CALC','upper(THREAT_IMPACT_CALC_DESC
)='''''),pklookup('D_IUCN_THREAT_SCOPE','upper(DISPLAY_VALUE)='''''),pklookup('D_IUCN_THREAT_SEVE
RITY','upper(DISPLAY_VALUE)='''''),pklookup('D_IUCN_THREAT_TIMING','upper(DISPLAY_VALUE)='''''),N
ull);
```