

Assembling POP tables for Existing (pre-version 5.9) BioSum Projects

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Introduction

These instructions and associated databases are intended to help a BioSum user load or reconstruct POP table data for current (as of 2019) and legacy BioSum projects (created under earlier versions of BioSum and updated so that they now running under BioSum version 5.8.10 or later). Please read the entire instruction set before deciding which workflow makes the most sense for your needs; consult BioSum support staff if any questions.

Why would I need to assemble or replace/repair the POP tables that relate to the post-stratification architecture of the FIA data? Versions of BioSum before 5.9 relied on POP tables associated with FIA data loaded into projects only to compute the acres represented by each FIA condition (which BioSum stores as `master.cond.acres`). POP tables associated with plots loaded from FIADB were stored in `master.accdb`, and later, in `master.db`. However, when plots were loaded from different EVALIDs (for example, when loading from different states into the same project, or when expanding the area of interest after some data had already been loaded), newly loaded data overwrote existing POP tables, which is a problem if using the POP tables to inform the design-based estimation native to FIA tools like Evaluator and PNW-FIA's OK Python Based Tabling Program (OKTabler). Those estimation approaches to compute totals, means (ratio of means) and associated sampling errors for almost any attributes tracked in or produced by BioSum require valid POP tables that account for all the plots involved in a BioSum Project. Starting with BioSum version 5.9, this is not an issue because POP tables no longer overwrite and provisions are made to ensure that all plots have associated POP table data when database outputs and context tables are exported for design based estimation.

The following MS Access-based workflow and queries were developed by J. Fried from the SQL queries that appear in L. Bross's instructions below this section (which also offer Access and SQLite workflows for accomplishing the management of POP tables to enable the use of FIA based estimation engines with BioSum output). Be sure to read the instructions provided by L. Bross, which provide more detail on this potentially complex database "repair" before choosing which workflow is the best fit for your needs. Also be sure to backup any existing `master.db` before undertaking these steps—it may be useful in determining the best evalid to use in the pop table repair effort.

POP_Extractor MS Access Workflow (J. Fried)

Download (and unzip, where applicable) the following four files:

[master.db](#): an unpopulated SQLite 3 database containing the structures of the four pop tables; this can be copied to or renamed **master_pop_destination.db** to receive the desired pop table content when running the queries embedded in the accompanying `POP_Extractor.accdb` database.

[master_pop_PNW.zip](#): all available pop table data for evaluations (evals) in the PNW states of California, Oregon, and Washington from data cycles ending in 2019 and earlier in an SQLite 3 database. If building or reconstructing a `master.mdb` for a project with vintage data from these

states, you will want to copy to or rename the database within this zip file to **master_pop_source.db** before running the queries in POP_Extractor.

[master_pop_RMRS.zip](#): all available pop table data for evaluations (evals) in the RMRS states of Idaho and Montana from data cycles ending in 2019 and earlier in an SQLite 3 database. If building or reconstructing a master.mdb for a project with vintage data from these states, you will want to copy to or rename the database within this zip file to **master_pop_source.db** before running the queries in POP_Extractor.

[POP_Extractor.accdb](#): An access database containing 8 table links and 4 queries. Relink the table links ending in 1 to the corresponding tables in **master_pop_destination.db** (that you created by renaming or copying master.db). Then relink the table links NOT ending in 1 to the corresponding tables in **master_pop_source.db** (that you created by copying the PNW or RMRS .db file to this name). Edit **each** query so that the criteria cell in evalid contains the evalids for the evaluations associated with the plots loaded in your BioSum project, then run all four queries. Check the resulting database (**master_pop_destination.db**) and if all looks good, copy it to your BioSum project's <projectname>\db folder as master.db and you're good to go.

Full POP table instructions by L. Bross

Prerequisites:

1. The BioSum project needs to be at version 5.8.10 or later. This can be confirmed by clicking on the "Help – About FIA Biosum" menu item or by checking the contents of the application.version file in the main folder of the project.
2. Verify that there is a master.db database in the project db folder. This database should contain the four POP tables required by BioSum (POP_EVAL, POP_ESTN_UNIT, POP_STRATUM, and POP_PLOT_STRATUM_ASSGN). These tables may or may not have data in them depending on previous actions taken with the project.
3. If the project has a master.db database in the project db folder, verify that it contains the most current table structure by locating the "modified_date" column in the table. If this field does NOT exist, a more recent copy of the database should be downloaded from biosum.info. Make a copy of the existing database before overwriting it with the new one. The existing database may have a record of the evalids/rscds previously loaded. If so, these can be referenced when populating the updated tables.
4. If tables need to be loaded for an older project for which you no longer have the original FIA Data Mart database distribution, the BioSum administrator can refer you to archived tables in MS Access format. Follow the procedures for Option #1. The BioSum administrator may also be able to assist in selecting the best evalid and rscd.
5. If the project is recent, the SQLite FIA Datamart tables are likely readily available. Follow the procedures for Option #2 to load the tables from SQLite. You will need to update the query statements with the desired evalid and rscd that may be available from the original master.db.

Option #1: Loading from MS Access if source POP tables are in an MS Access .accdb:

1. For the purposes of this document, we will work with evalid 411001 and rscd 26. Before loading an evalid, use an SQLite client to verify that the evalid isn't already in the target database:

```
select count(*) from pop_eval where evalid = '411001' and rscd = '26'
```

2. Open the MS Access database containing the source POP tables. The first step is to create links to the target POP tables in the project SQLite master.db
3. Use the 'External Data' -> 'New Data Source' -> 'From Other Sources' -> 'ODBC Database' menus from within MS Access. If you are not familiar with linking SQLite tables using the MS Access ODBC interface, please consult the internet or a BioSum administrator.
4. When MS Access adds the table links it will ask for a unique record identifier. Use the 'CN' field for all 4 tables. If the tables are successfully linked, you should see the 4 new table links with a '1' appended to each table name in the MS Access database.

5. Run this query to load the pop_eval table:

```
INSERT INTO POP_EVAL1
(CN,RSCD,EVALID,EVAL_DESCR,STATECD,LOCATION_NM,REPORT_YEAR_NM,NOTES,
START_INVYR, END_INVYR,GROWTH_ACCT,LAND_ONLY, BIOSUM_STATUS_CD)
select CN,RSCD,EVALID,EVAL_DESCR,STATECD,LOCATION_NM, REPORT_YEAR_NM,
NOTES,START_INVYR,END_INVYR,GROWTH_ACCT,LAND_ONLY,1
FROM POP_EVAL
WHERE EVALID = 411001 AND RSCD = 26
```

6. Run this query to load the pop_stratum table:

```
INSERT INTO pop_stratum1
(cn,estn_unit_cn,rscd,valid,estn_unit,stratumcd,stratum_descr,
statedc,plpointcnt,p2pointcnt,expns,adj_factor_macr,adj_factor_subp,
adj_factor_micr, biosum_status_cd)
SELECT cn,estn_unit_cn,rscd,valid,estn_unit,stratumcd,stratum_descr,
statedc,plpointcnt,p2pointcnt,expns,adj_factor_macr,adj_factor_subp,
adj_factor_micr, 1 FROM pop_stratum
WHERE EVALID = 411001 AND RSCD = 26
```

7. Run this query to load the pop_estn_unit table:

```
INSERT INTO pop_estn_unit1 (cn,eval_cn,rscd,valid,
estn_unit,estn_unit_descr,statedc,arealand_eu,
areatot_eu,area_used,area_source,plpntcnt_eu,plsource,
biosum_status_cd)

SELECT
cn,eval_cn,rscd,valid,estn_unit,estn_unit_descr,statedc,arealand_eu,
areatot_eu,area_used,area_source,plpntcnt_eu,plsource, 1

FROM POP_ESTN_UNIT WHERE EVALID = 411001 AND RSCD = 26
```

8. Run this query to load the pop_plot_stratum_assgn table:

```
INSERT INTO pop_plot_stratum_assgn1
(cn,stratum_cn,plt_cn,statedc,invyr,unitcd,countydc,plot,rscd,valid,
estn_unit,stratumcd,biosum_status_cd)
SELECT cn,stratum_cn,plt_cn,statedc,invyr,unitcd,countydc,plot,rscd,
valid,estn_unit,stratumcd,1
FROM POP_PLOT_STRATUM_ASSGN
WHERE EVALID = 411001 AND RSCD = 26
```

Option #2: Loading from SQLite if source POP tables are in an SQLite database:

1. Prerequisite: This process requires an SQLite editor that can connect to SQLite databases. This process was documented using SQLiteStudio.
2. Open the db/master.db table using the SQLite editor
3. Run this query to link the FIA Datamart SQLite .db to the project .db. Update the path to reflect the path to the source FIA Datamart SQLite .db on your computer:

```
ATTACH DATABASE 'C:\Docs\Biosum\FIADB_OR.db' AS FIADB
```

4. The full set of queries needs to be run for each eval/rscd that you want to load
5. Run this query to load the pop_eval table:

```
insert into pop_eval
(CN,RSCD,EVALID,EVAL_DESCR,STATECD,LOCATION_NM,REPORT_YEAR_NM,NOTES,
START_INVYR,END_INVYR,GROWTH_ACCT,LAND_ONLY, MODIFIED_DATE,
BIOSUM_STATUS_CD)
select
CN,RSCD,EVALID,EVAL_DESCR,STATECD,LOCATION_NM,REPORT_YEAR_NM,NOTES,
START_INVYR,END_INVYR,GROWTH_ACCT,LAND_ONLY, MODIFIED_DATE,1
from FIADB.pop_eval WHERE EVALID = 411001 AND RSCD = 26
```

6. Run this query to load the pop_estn_unit table:

```
INSERT INTO pop_estn_unit
(cn,eval_cn,rscd,evalid,estn_unit,estn_unit_descr,statecd,arealand_eu,areatot_eu, area_used,area_source,plpntcnt_eu,plsource,modified_date)
SELECT
cn,eval_cn,rscd,evalid,estn_unit,estn_unit_descr,statecd,arealand_eu,areatot_eu, area_used,area_source,plpntcnt_eu,plsource,modified_date
FROM FIADB.POP_ESTN_UNIT WHERE EVALID = 411001 AND RSCD = 26
```

7. Run this query to set the biosum_status_cd in the pop_estn_unit table:

```
UPDATE pop_estn_unit SET biosum_status_cd = 1
```

8. Run this query to load the pop_stratum table:

```
INSERT INTO pop_stratum
(cn,estn_unit_cn,rscd,evalid,estn_unit,stratumcd,stratum_descr,statecd,plpointcnt,
p2pointcnt,expns,adj_factor_macr,adj_factor_subp,adj_factor_micr,modified_date)
SELECT
cn,estn_unit_cn,rscd,evalid,estn_unit,stratumcd,stratum_descr,statecd,plpointcnt,
p2pointcnt,expns,adj_factor_macr,adj_factor_subp,adj_factor_micr,modified_date
FROM FIADB.POP_STRATUM WHERE EVALID = 411001 AND RSCD = 26
```

9. Run this query to set the biosum_status_cd in the pop_stratum table:

```
UPDATE pop_stratum SET biosum_status_cd = 1
```

10. Run this query to load the pop_plot_stratum_assgn table:

```
INSERT INTO pop_plot_stratum_assgn
(cn,stratum_cn,plt_cn,statecd,invyr,unitcd,countycd,plot,rscd,evalid,estn_unit,stratumcd, modified_date)
SELECT
cn,stratum_cn,plt_cn,statecd,invyr,unitcd,countycd,plot,rscd,evalid,estn_unit, stratumcd, modified_date
```

```
FROM FIADB.POP_PLOT_STRATUM_ASSGN
WHERE EVALID = 411001 AND RSCD = 26
```

11. Run this query to set the biosum_status_cd in the pop_plot_stratum_assgn table:

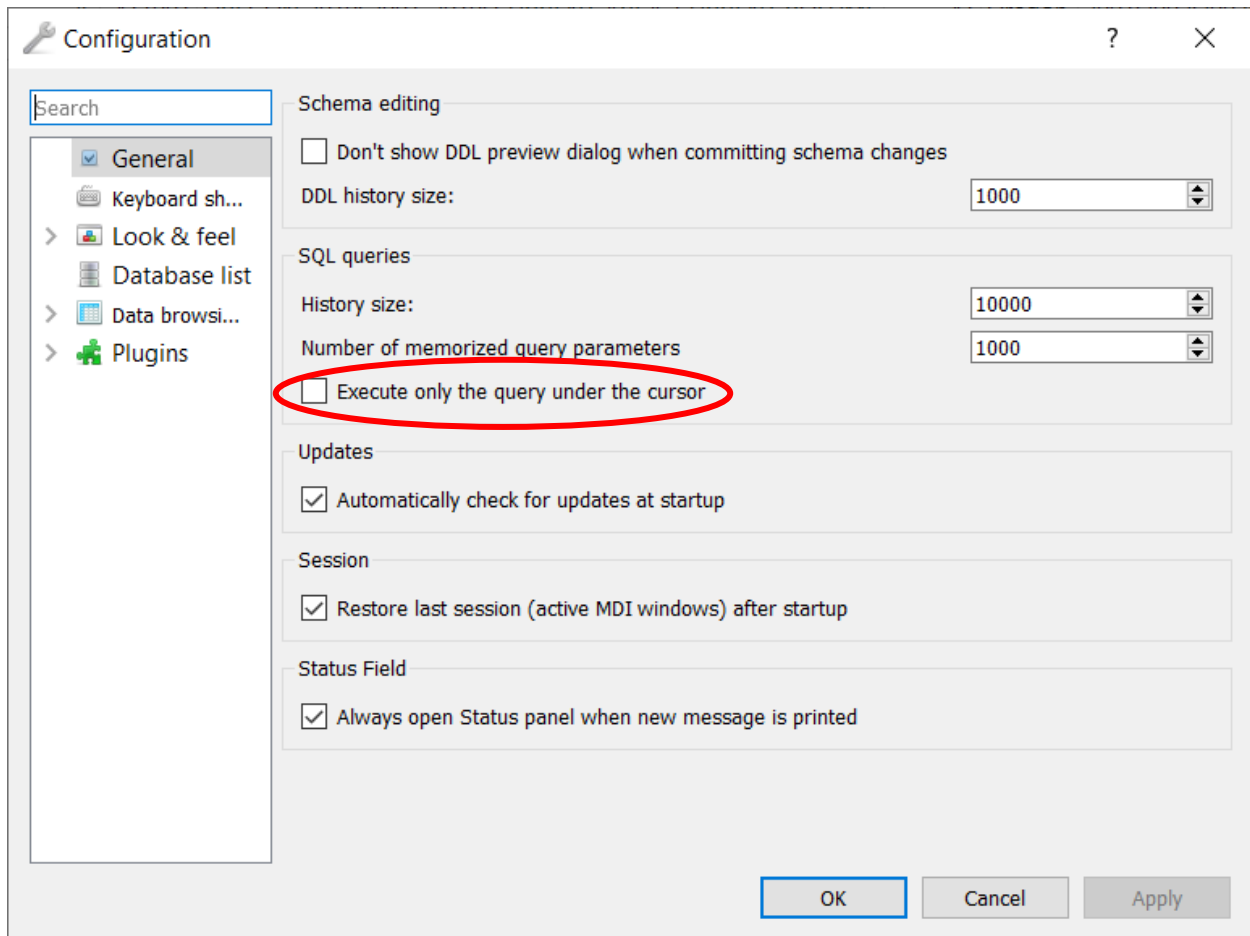
```
UPDATE pop_plot_stratum_assgn SET biosum_status_cd = 1
```

12. When all of the desired evalids have been loaded, run this query to detach the FIA Data Mart .db from the project .db:

```
DETACH DATABASE FIADB
```

Option #3: Complete script to load the tables from SQLite:

1. These instructions are for SQLiteStudio 3.2.1. Before trying to execute multiple commands using the script below, be sure that the 'Execute only the query under the cursor' checkbox is unchecked. This enables SQLiteStudio to execute a series of queries. This menu is under the Tools > Open Configuration Dialog menu.



2. Open and SQLEditor window and make sure that the database dropdown list at the top of the window is pointed to the correct master.db
3. Update the queries below below to reflect the location of the FIA Datamart database on your computer and the evalid and rscd values you want to load. When this is done, paste all of the queries into the SQLEditor query window and run the queries.

```

ATTACH DATABASE 'C:\Docs\Biosum\FIADB_OR.db' AS FIADB;

insert into pop_eval
(CN,RSCD,EVALID,EVAL_DESCR,STATECD,LOCATION_NM,REPORT_YEAR_NM,NOTES,
START_INVYR,END_INVYR,GROWTH_ACCT,LAND_ONLY, MODIFIED_DATE, BIOSUM_STATUS_CD)
select CN,RSCD,EVALID,EVAL_DESCR,STATECD,LOCATION_NM,REPORT_YEAR_NM,NOTES,
START_INVYR,END_INVYR,GROWTH_ACCT,LAND_ONLY, MODIFIED_DATE,1
from FIADB.pop_eval WHERE EVALID = 411001 AND RSCD = 26;

INSERT INTO pop_estn_unit
(cn,eval_cn,rscd,evalid,estn_unit,estn_unit_descr,statecd,arealand_eu,areatot_
eu, area_used,area_source,plpntcnt_eu,plsource,modified_date) SELECT
cn,eval_cn,rscd,evalid,estn_unit,estn_unit_descr,statecd,arealand_eu,areatot_
eu, area_used,area_source,plpntcnt_eu,plsource,modified_date FROM
FIADB.POP_ESTN_UNIT WHERE EVALID = 411001 AND RSCD = 26;

UPDATE pop_estn_unit SET biosum_status_cd = 1;

INSERT INTO pop_stratum
(cn,estn_unit_cn,rscd,evalid,estn_unit,stratumcd,stratum_descr,
statecd,plpointcnt,
p2pointcnt,expns,adj_factor_macr,adj_factor_subp,adj_factor_micr,
modified_date) SELECT
cn,estn_unit_cn,rscd,evalid,estn_unit,stratumcd,stratum_descr,statecd,
plpointcnt, p2pointcnt,expns,adj_factor_macr,adj_factor_subp,
adj_factor_micr, modified_date FROM FIADB.POP_STRATUM WHERE EVALID = 411001
AND RSCD = 26;

UPDATE pop_stratum SET biosum_status_cd = 1;

INSERT INTO pop_plot_stratum_assgn
(cn,stratum_cn,plt_cn,statecd,invyr,unitcd,countycd,plot,rscd,evalid,
estn_unit,stratumcd, modified_date)

SELECT cn,stratum_cn,plt_cn,statecd,invyr,unitcd,countycd,plot,rscd,evalid,
estn_unit, stratumcd, modified_date FROM FIADB.POP_PLOT_STRATUM_ASSGN WHERE
EVALID = 411001 AND RSCD = 26;

UPDATE pop_plot_stratum_assgn SET biosum_status_cd = 1;

DETACH DATABASE FIADB;

```