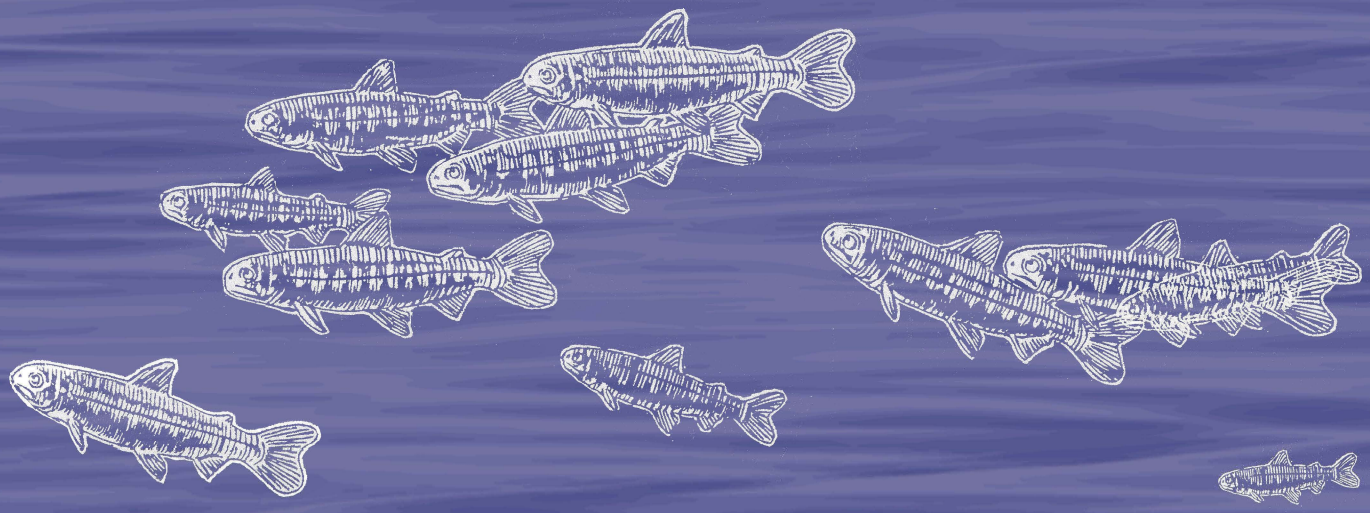
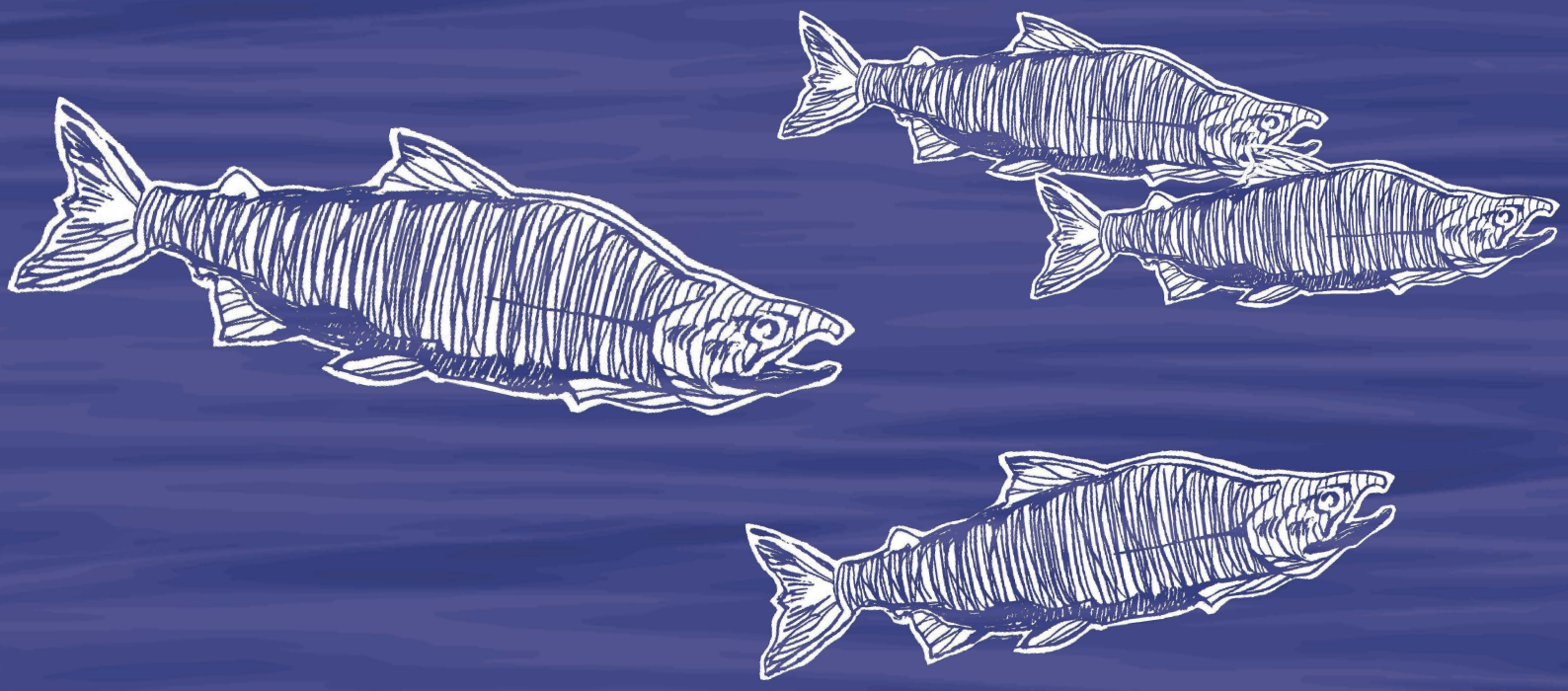


TagPro 1.1 USER'S MANUAL

CONVERTING ACOUSTIC-TAG EVENTS INTO CAPTURE HISTORIES

COLUMBIA BASIN RESEARCH

SCHOOL OF AQUATIC AND FISHERY SCIENCES



UNIVERSITY of WASHINGTON

TagPro

Acoustic-Tag Data Translation Utility

Version 1.1

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Table of Contents

Chapter 1: Overview

TagPro is a desktop application that takes acoustic-tag event data and creates an output file of capture/detection histories used for survival analysis by Program ATLAS or other software.

Below is an image of the TagPro user interface at startup (Figure 1).

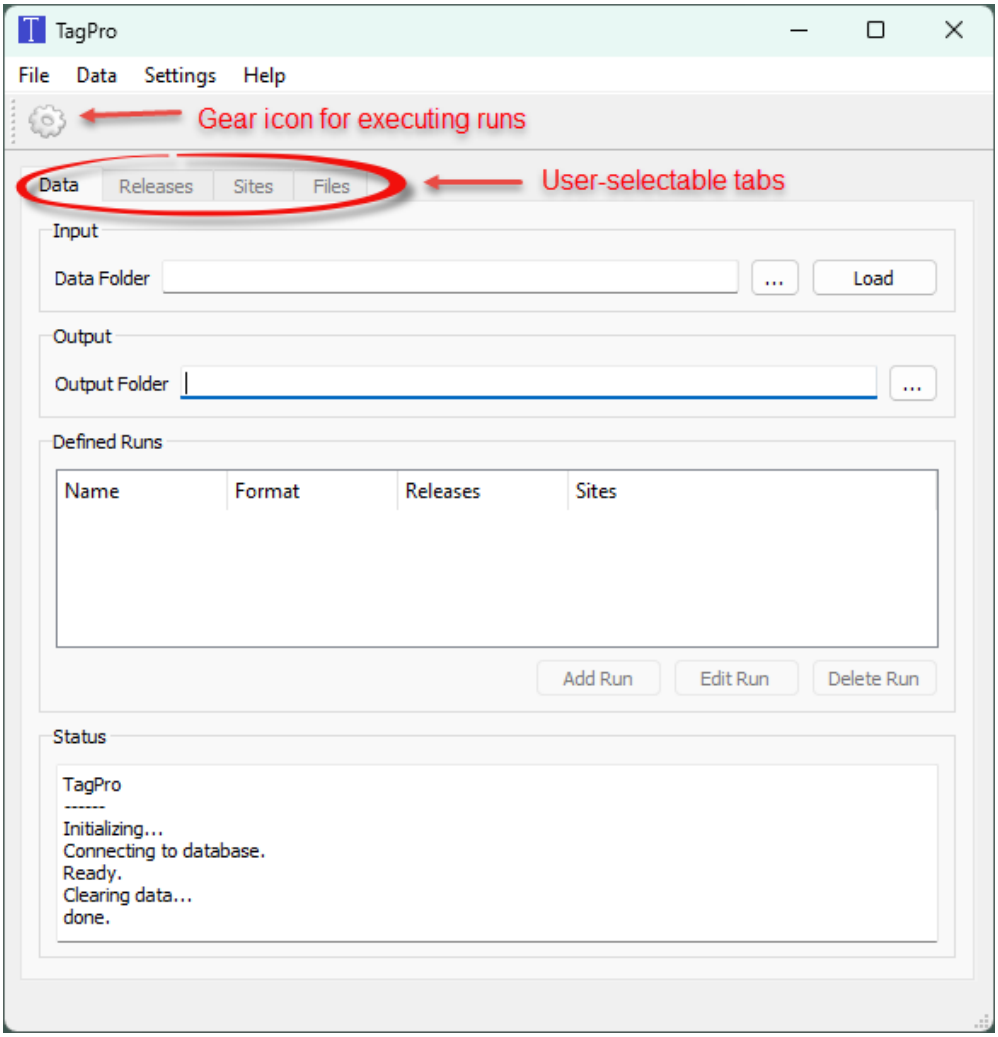


Figure 1. The main TagPro user interface window at startup.

There are four main tabs—“Data,” “Release,” “Sites,” and “Files” —where the primary work is done. The user presses the gear icon in the upper left to execute user-defined runs. At startup before any data are loaded, only the Data tab is available.

There is also a main menu bar above the gear icon across the top. The only functionality in that menu not available elsewhere is the “Clear All” command under “Data.” This function clears all input data, and the TagPro application will revert to its initial startup configuration. Because this command is potentially destructive, if the user selects it, a warning appears that allows the user to cancel that choice.

The user must take the following steps in TagPro to create an output file:

- Load the input data.
- Define the release groups.
- Define the sites.
- Define the runs.
- Execute the runs.

The following chapters of this manual cover each of these steps.

Chapter 2: Load the Input Data

In order to begin loading input data into TagPro, the user must first specify the data folder where the input data files are stored. Three files are required for TagPro: (1) tag release information, (2) detection node and array site information, and (3) validated detection event information. Format and required data for each are documented in Appendix A. These files must use the file names listed here:

- tags.csv
- nodes.csv
- events.csv

A “removals.csv” file detailing censoring events may also be used.

The user also specifies the output folder location. Once these folders have been selected, TagPro will remember the locations on subsequent runs. The user can then load the data using the “Load” button (circled in Figure 2). TagPro displays the status of the load process in the status window.

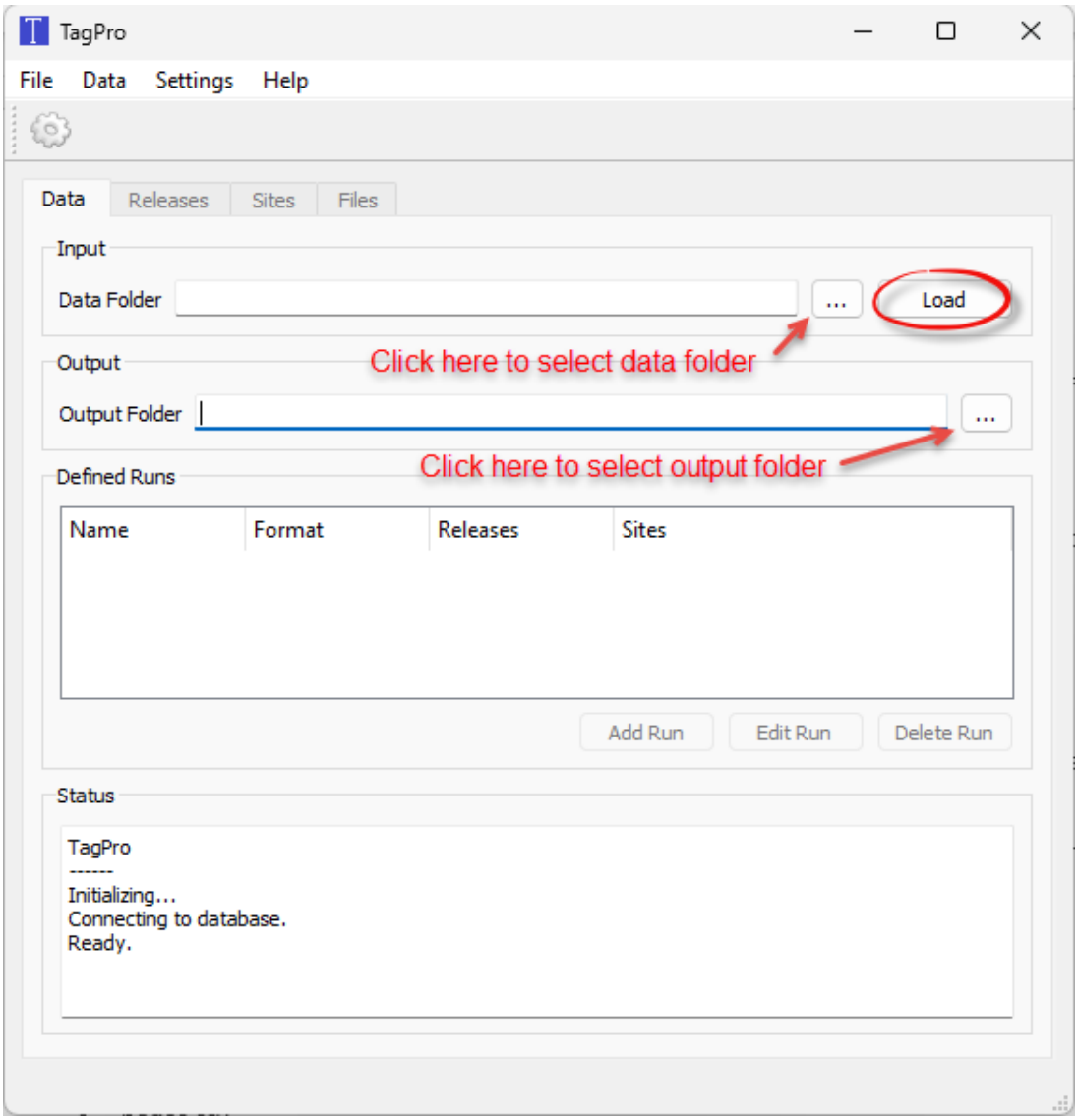


Figure 2. Loading input data and selecting an output folder in TagPro via the "Data" tab.

A pop-up window will appear once data have been successfully loaded (Figure 3).

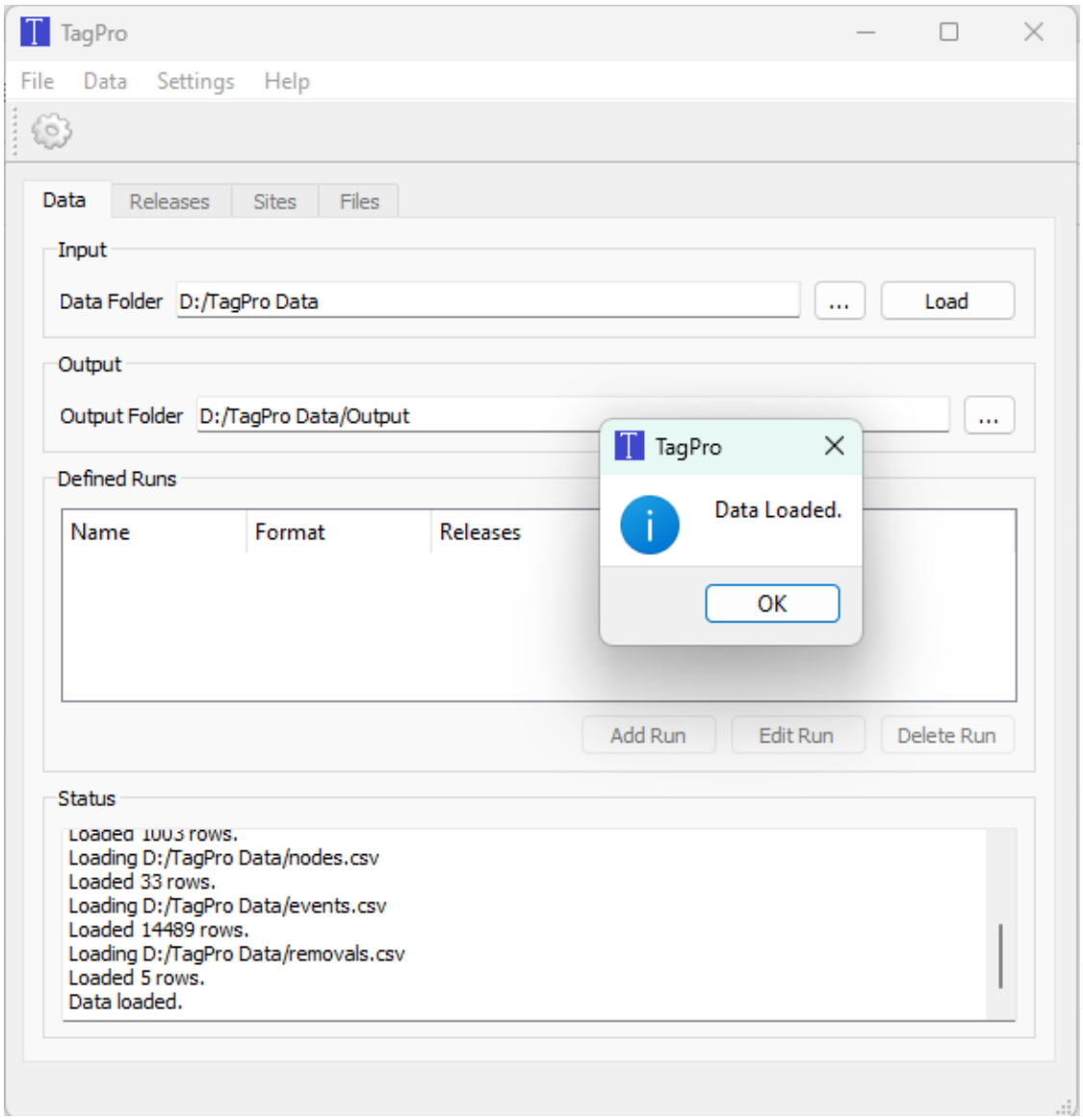


Figure 3: The confirmation popup in TagPro after data have been loaded.

Unsuccessful loads may occur if the required files are missing, incorrectly named, lacking required columns within the files, or if the data are incorrectly formatted. The most common of these issues is the data format for date-time, as Excel is often used to view or edit these files and defaults date-time objects to an incorrect format. The next section describes common fixes for this issue.

Date and Time Format

TagPro accepts two types of date and time format in the input files and provisionally a third format:

1. yyyy-mm-dd hh:mm:ss: (e.g., 2021-03-15 03:00:15; the default format, and the format required by previous versions of TagPro)
2. mm/dd/yyyy h:mm:ss: (e.g., 3/15/2021 3:00:15)

If an input .csv file is edited and saved in Excel, the date and time fields will be saved by default with the format mm/dd/yyyy h:mm (e.g., 3/15/2021 3:00). This is the same as the second format above without the seconds. If the user loads a data file with date and time in this format, an error displays in the status window (Figure 4). TagPro is warning the user that the lack of seconds on the date and time records can negatively impact the precision of estimates. The third provisional format can be set if the user chooses to accept this condition and then checks the “Allow times without seconds” option in the Settings menu (Figure 5). If the user turns this option on, a warning dialog again appears, warning the user of a loss of precision. If the user accepts this warning, the input files can then be loaded with the date and time records in the default Excel format.

When TagPro is terminated and subsequently restarted, it will revert to not allowing times without seconds.

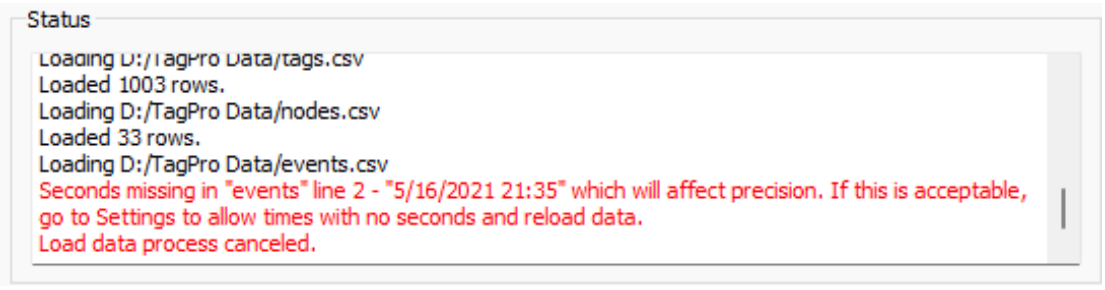


Figure 4: The warning generated when an input file lacks seconds in a date and time record.

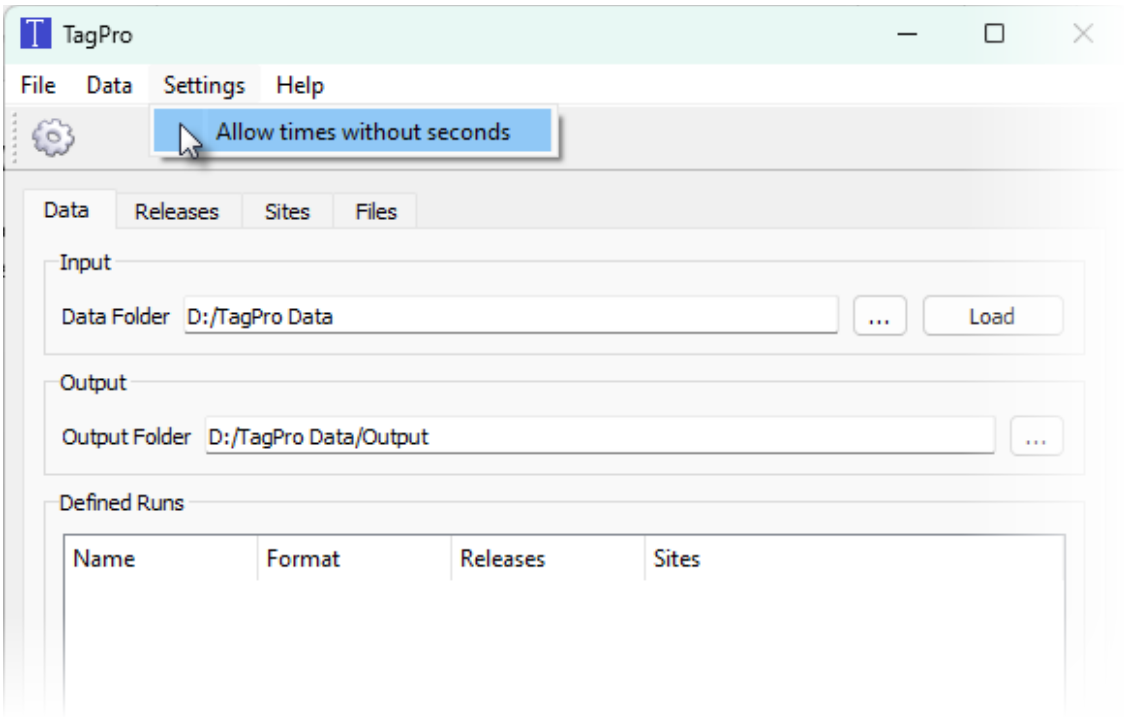


Figure 5: The “Allow times without seconds” option in the “Settings” menu.

Chapter 3: Define the Release Groups

After loading the data, the user can select the “Releases” tab to define the releases (Figure 6). The top section, labeled “Available Release Groups,” shows all releases from the tags input file as defined by release location, species, and tag year. The bottom section shows the releases defined by the user. The user can define releases in one of two ways:

1. Select one or more of the available releases and press the “Bulk Add” button to add them to the “Releases” window in the bottom section.
2. Select one or more of the available releases to combine into one release. In this case the user can accept the default name (the release names are hyphenated) or edit the release name in the “Release Name” box and press “Create.”

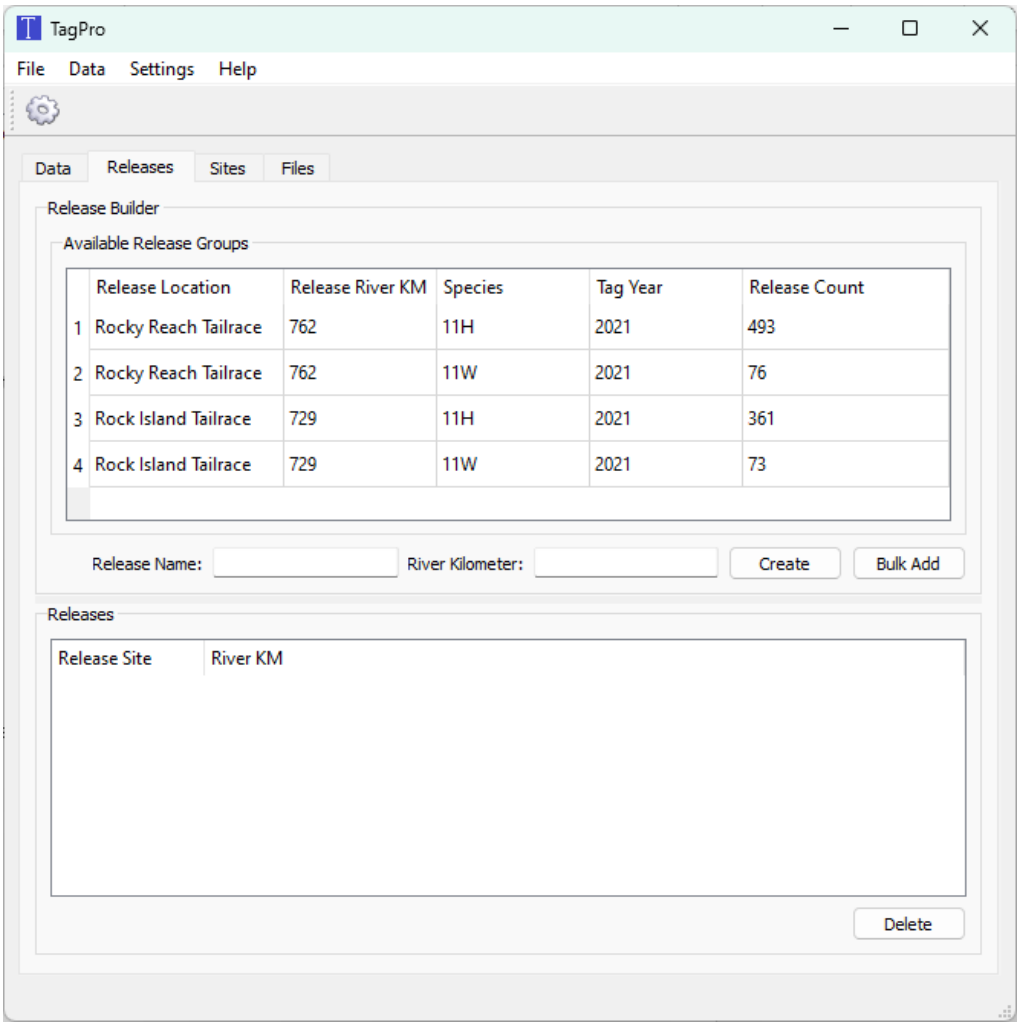


Figure 6. The TagPro "Releases" tab.

Selecting "Bulk Add" allows the user to create a large number of release groups where each line represents an individual release. Selected groups are highlighted in blue (Figure 7). Added releases appear in the lower "Releases" window (Figure 8) and are available for further processing in TagPro.

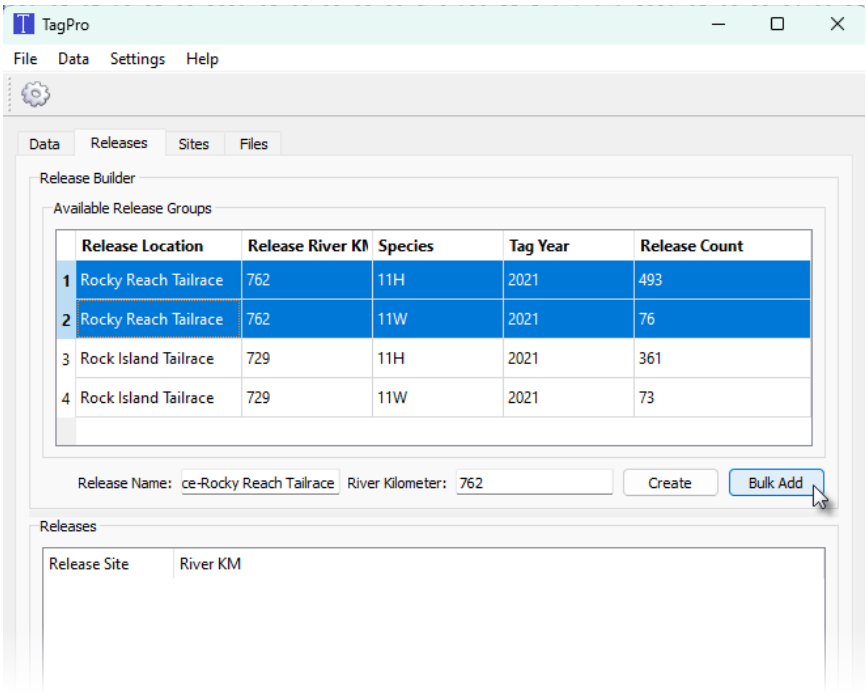


Figure 7. Using "Bulk Add" to define releases.

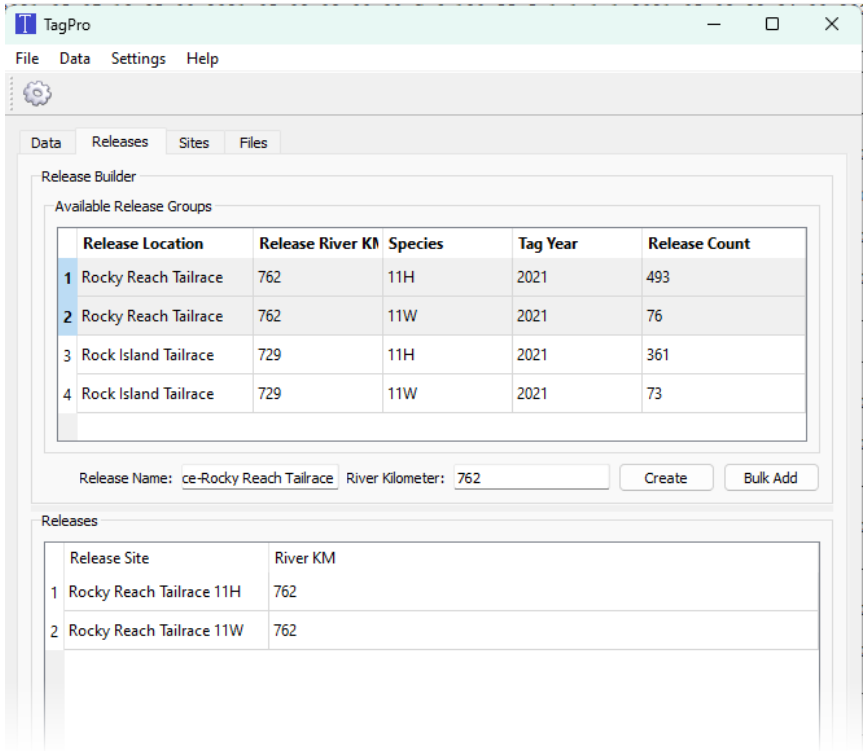


Figure 8. Releases added using "Bulk Add" button.

Alternatively, the user can combine releases into larger groups. In this example, rather than treating the wild and hatchery tagged groups as individual releases, two releases can be pooled into one by selecting them both in the “Available Release Groups section”. The default group name can be simplified. Below we changed the combined group to “RI Tailrace all species” (circled, Figure 9), and then pressed the “Create” button, with the result shown in Figure 10.

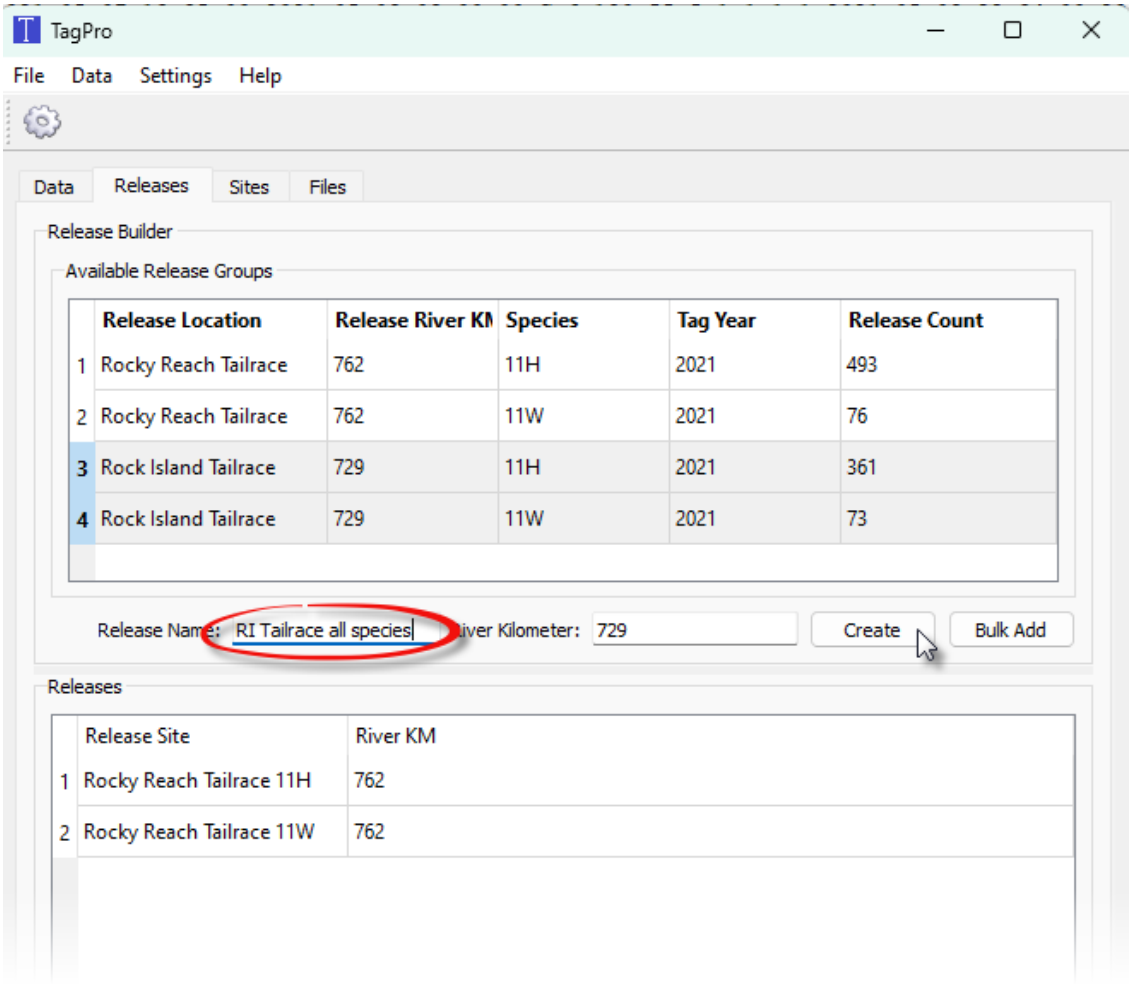


Figure 9. Create a release using the “Create” button.

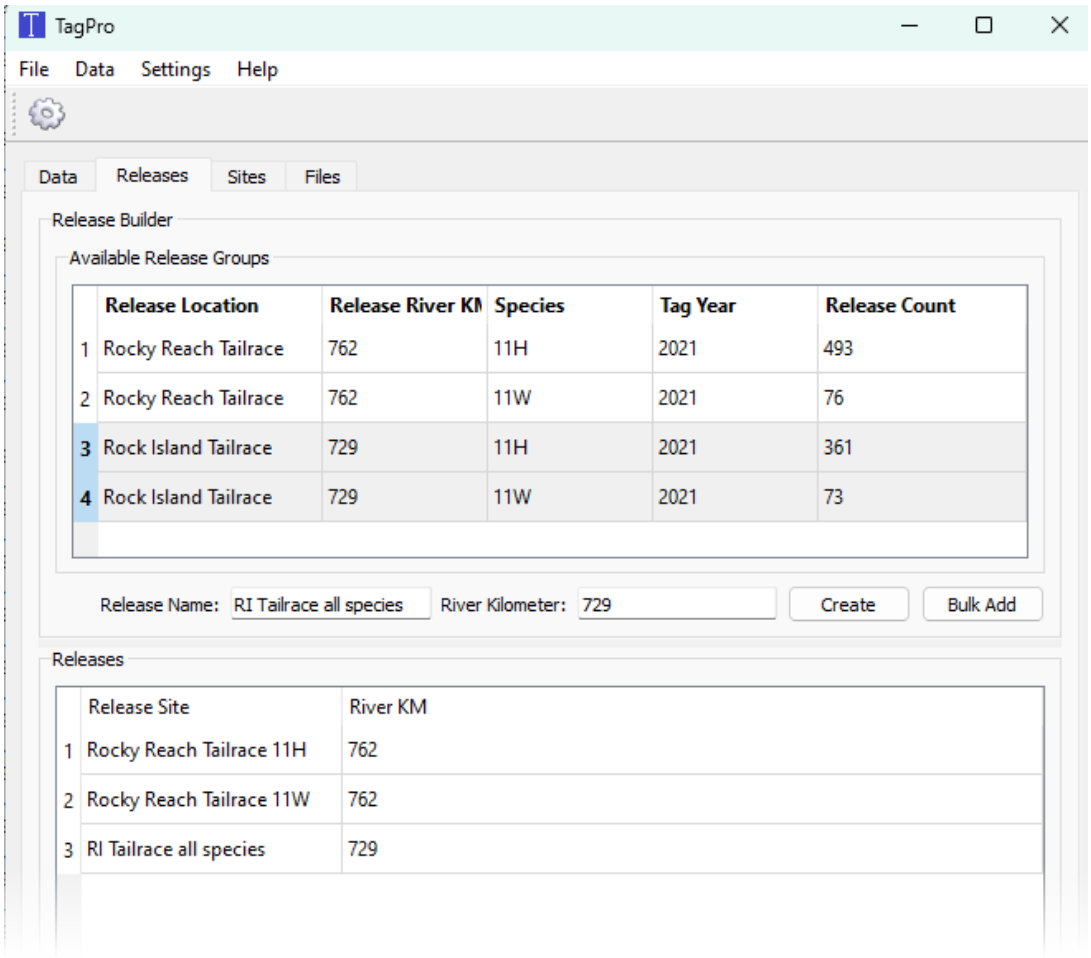


Figure 10. New releases created by combining two releases.

Chapter 4: Define the Sites

The user selects the “Sites” tab to define detection sites. The top section, “Available Arrays,” shows the locations available as defined in the nodes input file (Figure 11). The user then defines sites in the same way that releases are defined as described in the previous section, in that each line can be created as an individual site using “Bulk Add” or pooled by highlighting multiple sites and using “Create.”

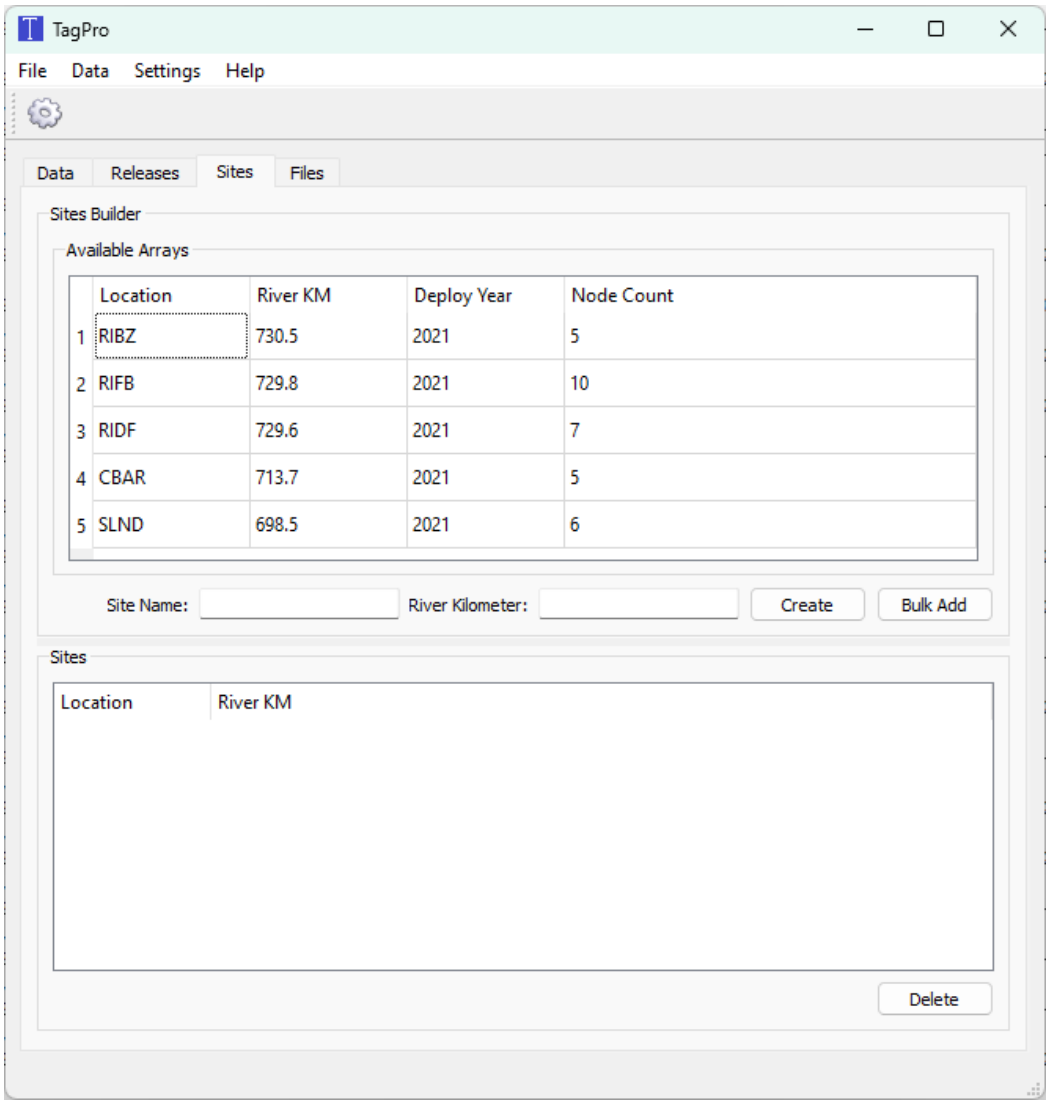


Figure 11. The “Sites” tab for setting sites.

In the below example (Figure 12), the user selected the first three arrays (RIBZ, RIFB, and RIDF), pressed “Bulk Add,” then selected the final two arrays (CBAR and SLND), renamed the site “Final,” and pressed “Create.”

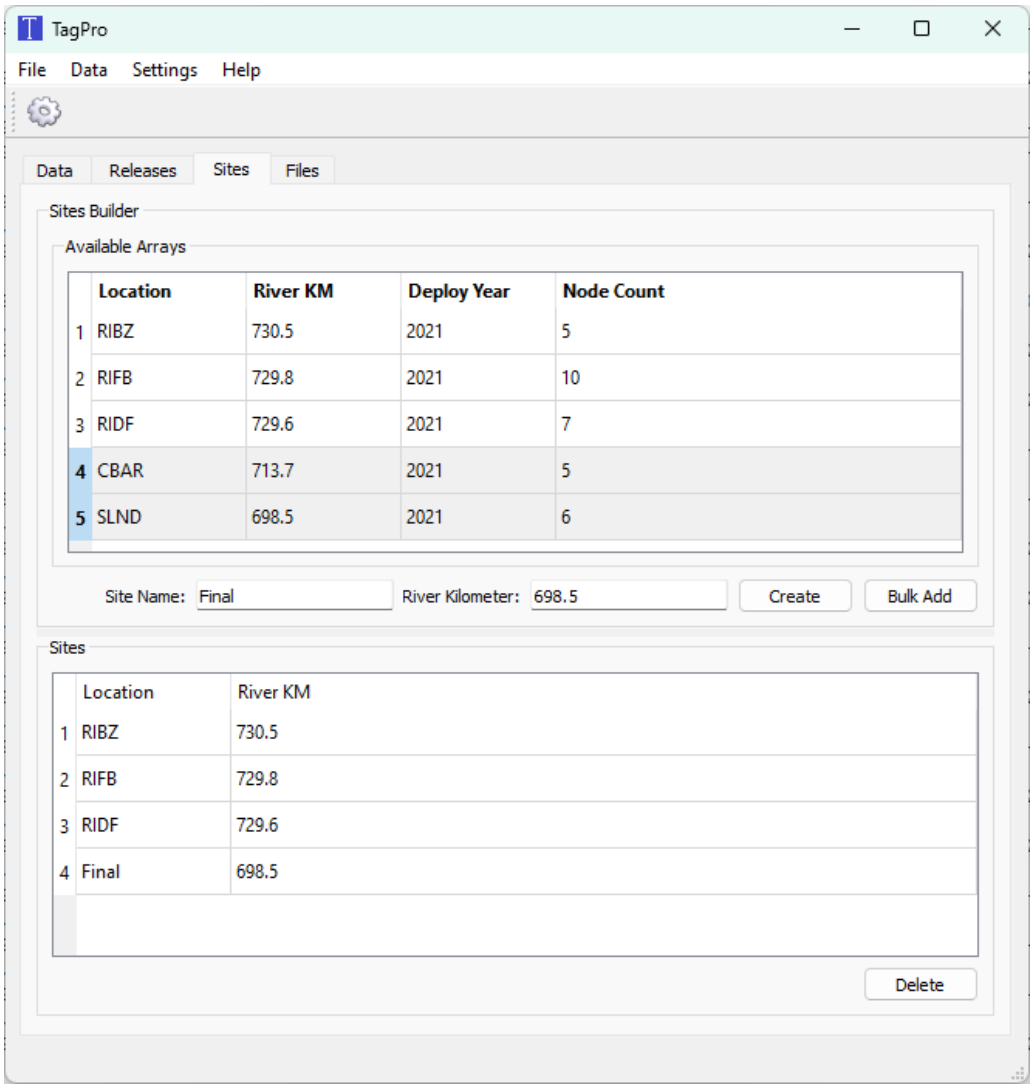


Figure 12. The “Sites” tab with user-defined sites.

Chapter 5: Define the Runs

Once the user has defined the releases and sites, they can define the output runs of detection histories. Runs are defined by:

1. the desired output format (“ATLAS” or “Standard”)
2. the selected release(s)
3. the selected sites

To define a run, the user must go back to the Data tab (Figure 2) and press the “Add Run” button, bringing up the “Add Run Definition” dialog (Figure 13). The user gives the run definition a name (“TagPro example” in this case) and selects an output format (“ATLAS “or “Standard”). In the case below, the user has selected ATLAS. The user then presses “Next.” Refer to Appendix B for a description of the two types of output files.

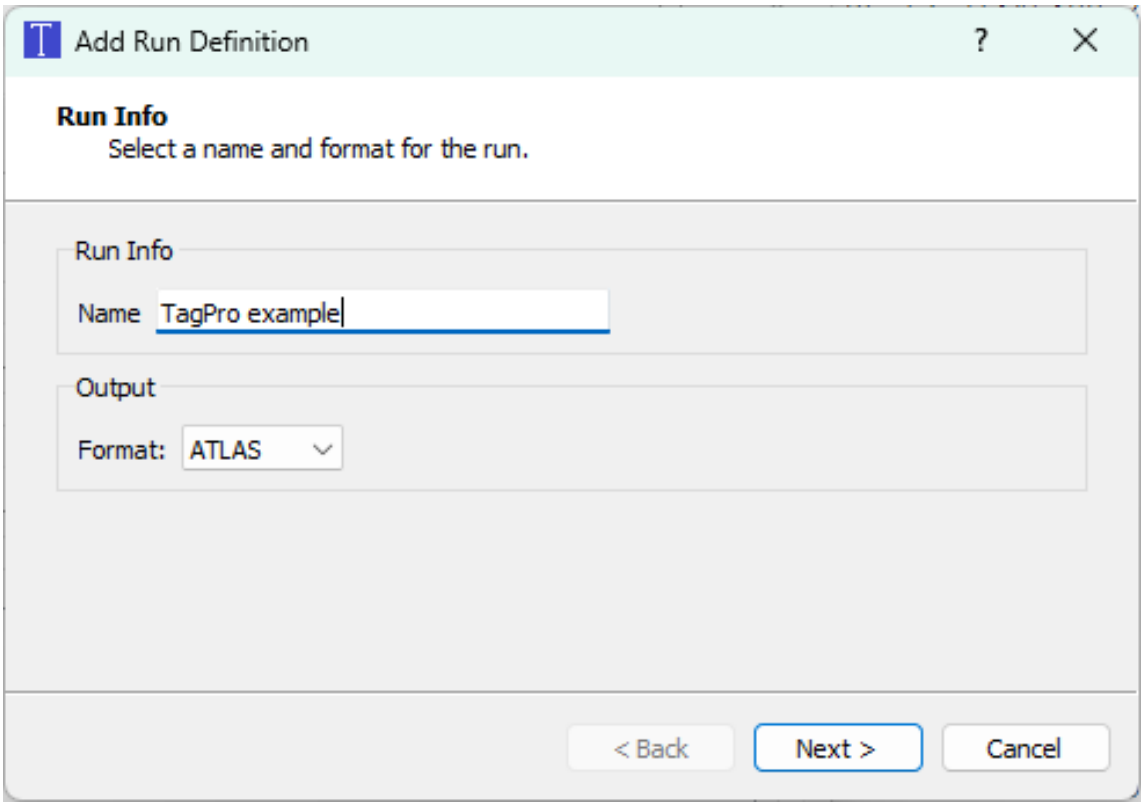


Figure 13: The "Add Run Definition" dialog for naming and selecting output format.

The Next button brings up the "Release Group Selection" dialog (Figure 14). Here the user selects one or more release groups. In this example the user has selected "RI Tailrace all species." The user then presses Next for the "Sites Definition" dialog (Figure 15). In Figure 15 example, the user has selected all sites.

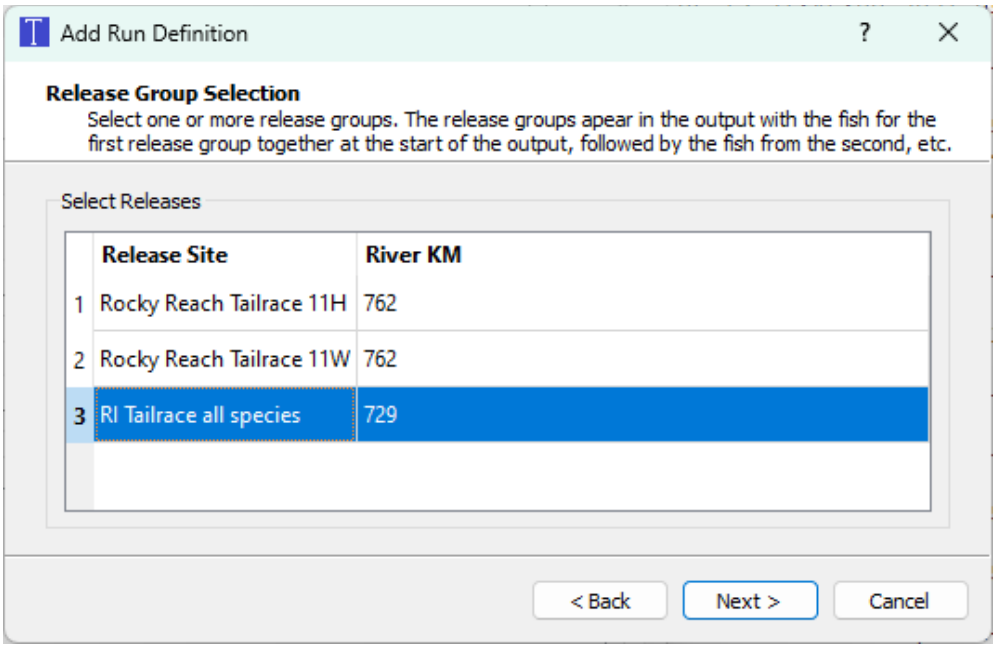


Figure 14: The "Release Group Selection" dialog for selecting releases.

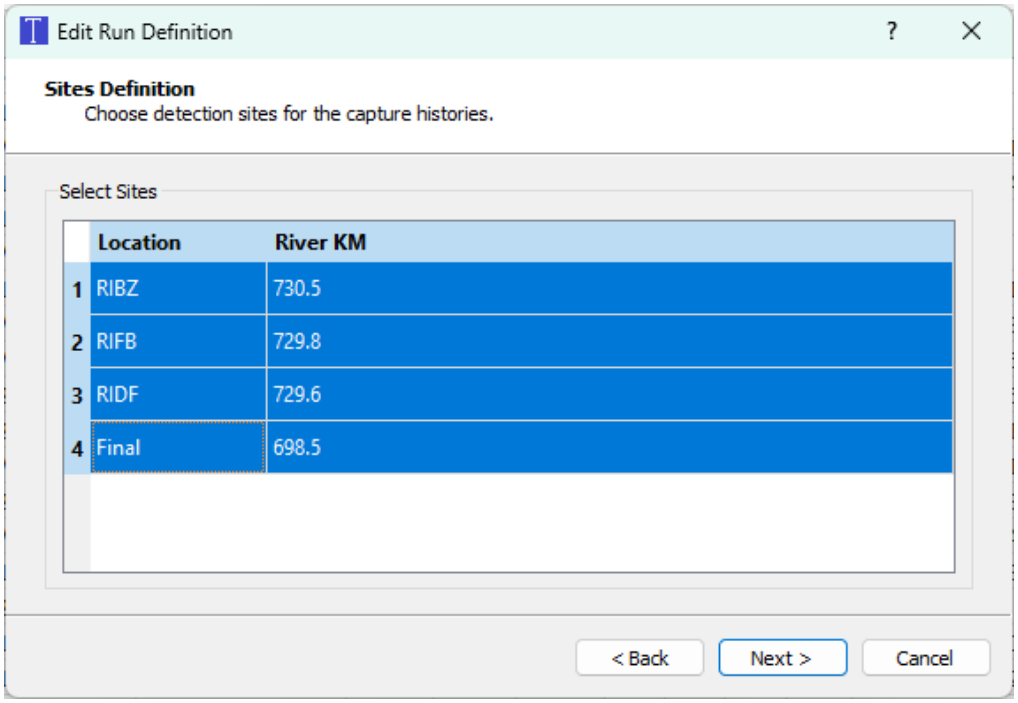


Figure 15: The "Sites Definition" dialog for selecting detection sites for run definition.

After pressing the Next button, the run definition summary appears (Figure 16). At this point the user can either press “Back” to modify the run definition, or “Finish” to complete the run definition.

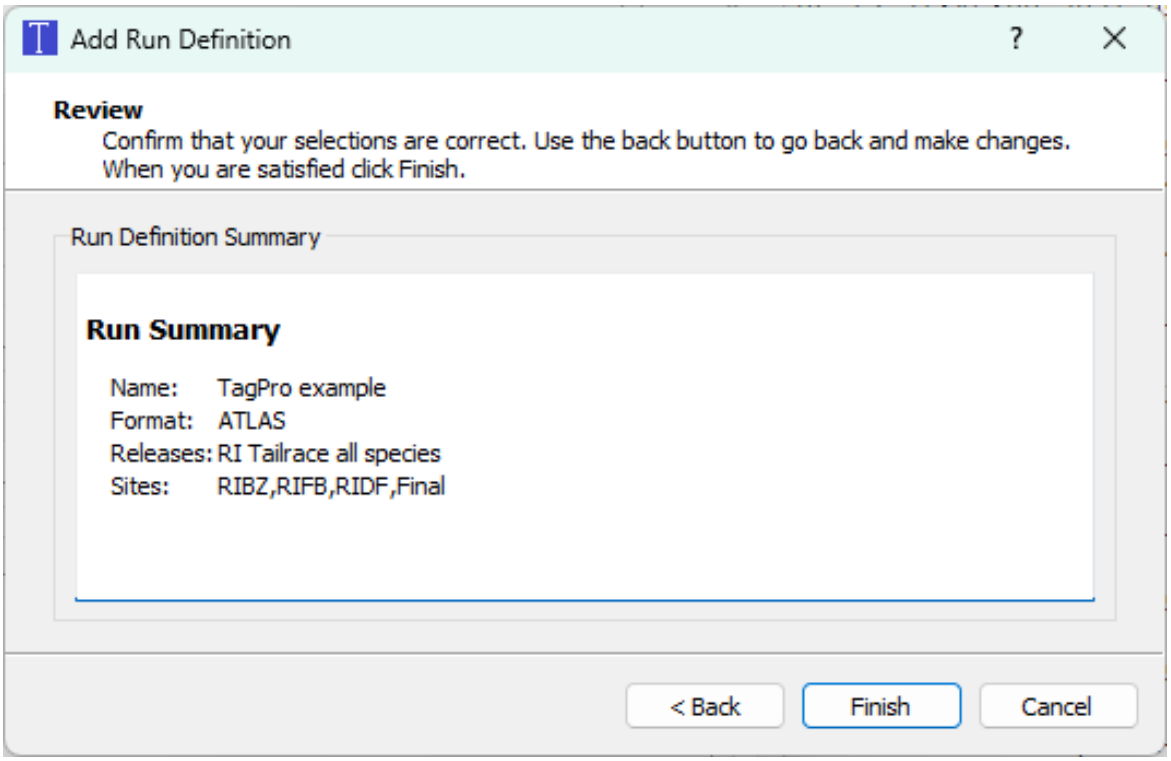


Figure 16: The “Run Summary” definitions including Name, Format, Releases, and Sites.

The run is then displayed as shown below (Figure 17).

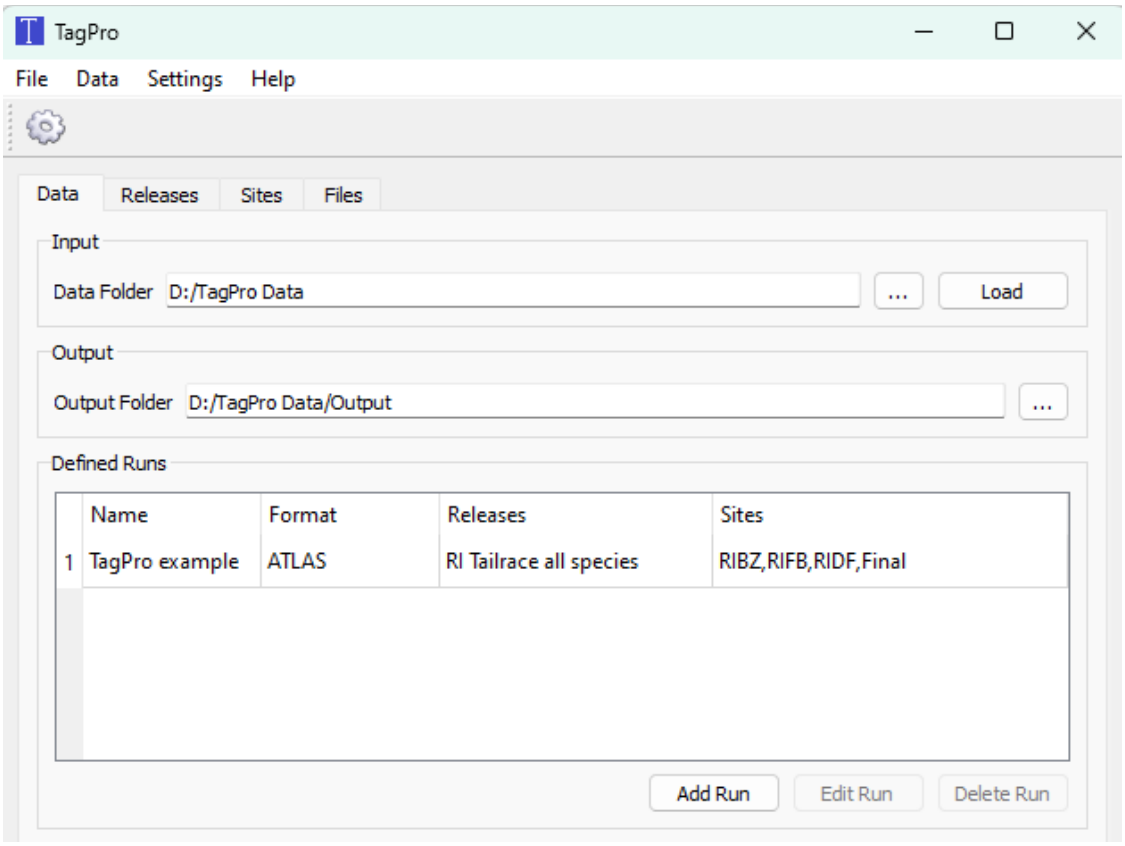


Figure 17: The "Data" tab with one run defined.

Chapter 6: Execute the Runs

Once runs have been defined, the final step is to select the desired runs (individually or multiple—each run will be saved individually). In our example, the user has defined two runs and selected both (Figure 18). The user presses the gear icon to process the selected runs. Alternatively, select “Run” under the “File” menu. When the runs are processed successfully, the number of records written to the output files is recorded in the Status area and a “Run Complete” message appears (Figure 19).

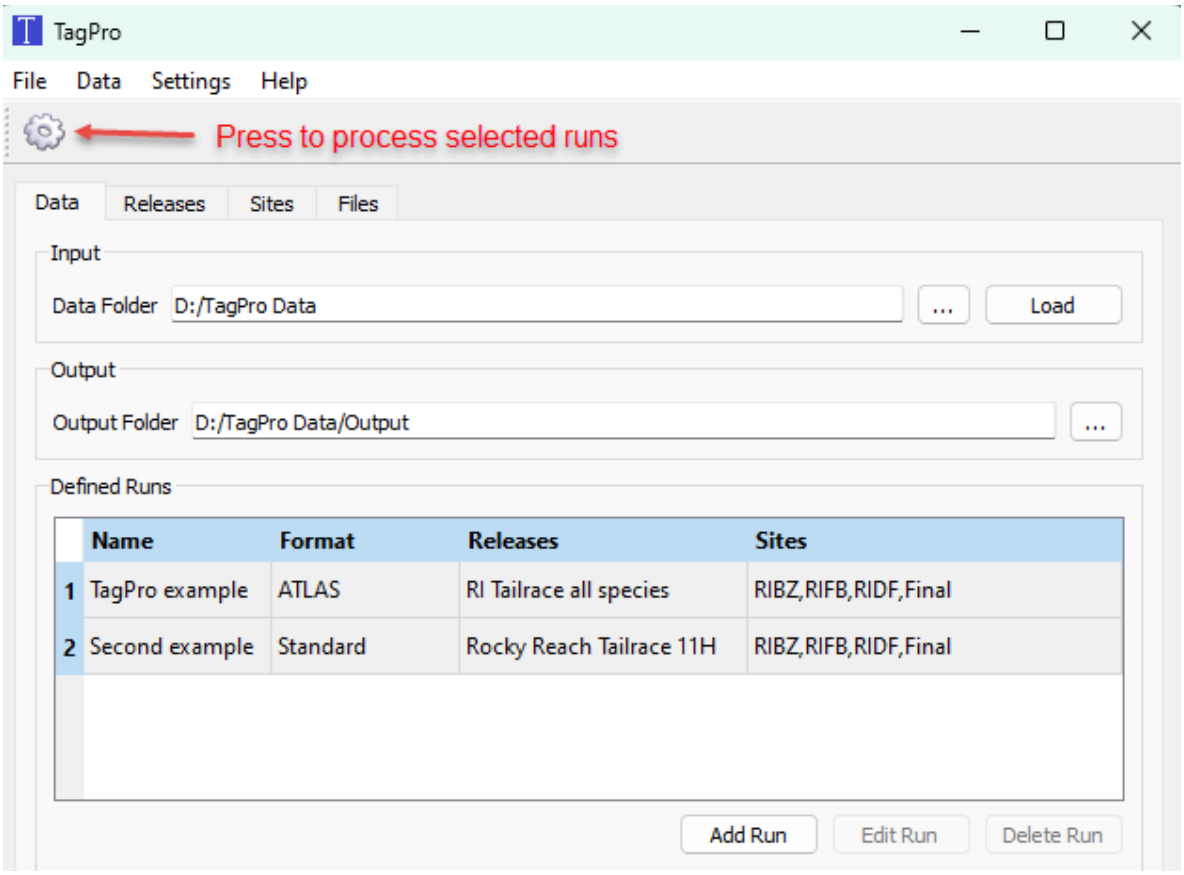


Figure 18: Two runs selected and ready to be processed.

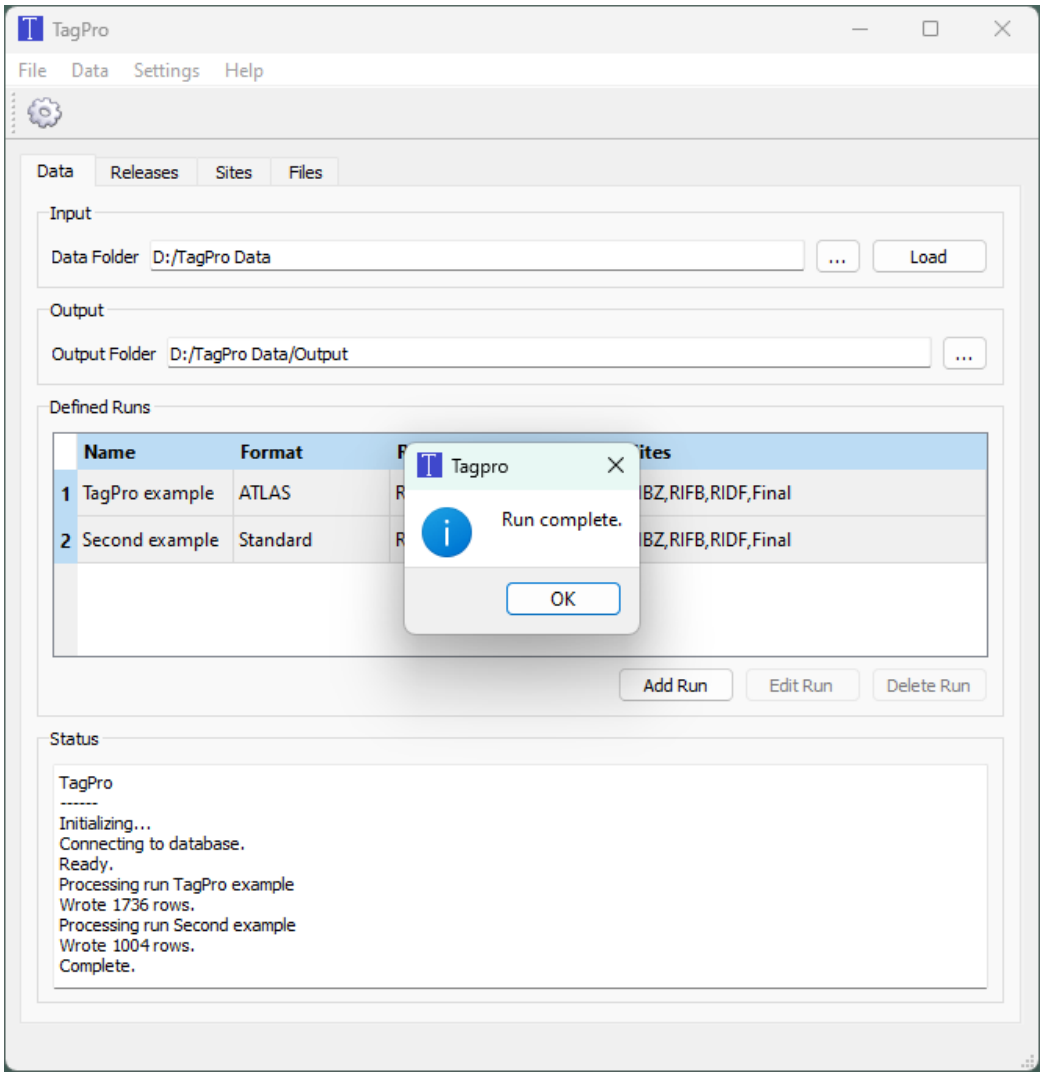


Figure 19: TagPro after processing the runs.

The resulting output files are placed in the specified output folder. The output file names are defined by the name of the run followed by the format of the run (Figure 20).

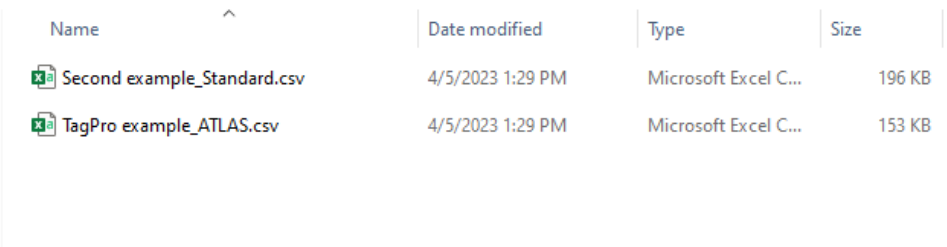


Figure 20: Example of TagPro output files.

Appendices

Appendix A: Input file Formats

The following shows the names of the required fields in each input file. The input files are comma separated value (.csv) files. The following required field names must be in the header of each file, but they can be in any order. Other fields are allowed to be present but they will be ignored by TagPro.

For the tags.csv file, the italicized field names are output as part of the “Standard” format, but not the “ATLAS” format. They are optional, and if present, empty values are allowed.

The field names are followed by their data type:

tags.csv

- tagger_name: text
- bucket: integer
- length: integer
- weight: real
- tag_code: text
- lot: integer
- species_code: text
- tag_date: datetime
- activation_date: datetime
- release_date: datetime
- release_location: text
- release_river_km: real
- mortality: integer (1 for mortality, 0 for not mortality)

nodes.csv

- node_code: text
- deploy_date: datetime
- location: text
- river_km: real

events.csv

- node_code: text
- tag_code: text
- first_datetime: datetime
- last_datetime: datetime

removals.csv

- tag_code: text
- removal_date: datetime
- removal_river_km: real

Appendix B: TagPro Output Files

TagPro can produce two types of output files.

1. The **ATLAS** format produces the required input format for Program ATLAS. It contains a fixed number of columns:
   - release name
   - lot
   - tag code
   - tag activation date and time
   - tag release date and time
   - site
   - 1 for detected, 0 for not detected
   - last detection date and time (if detected)

2. The **Standard** format has one row for each tag and, unlike the ATLAS format, has a variable number of columns depending on the number of detection

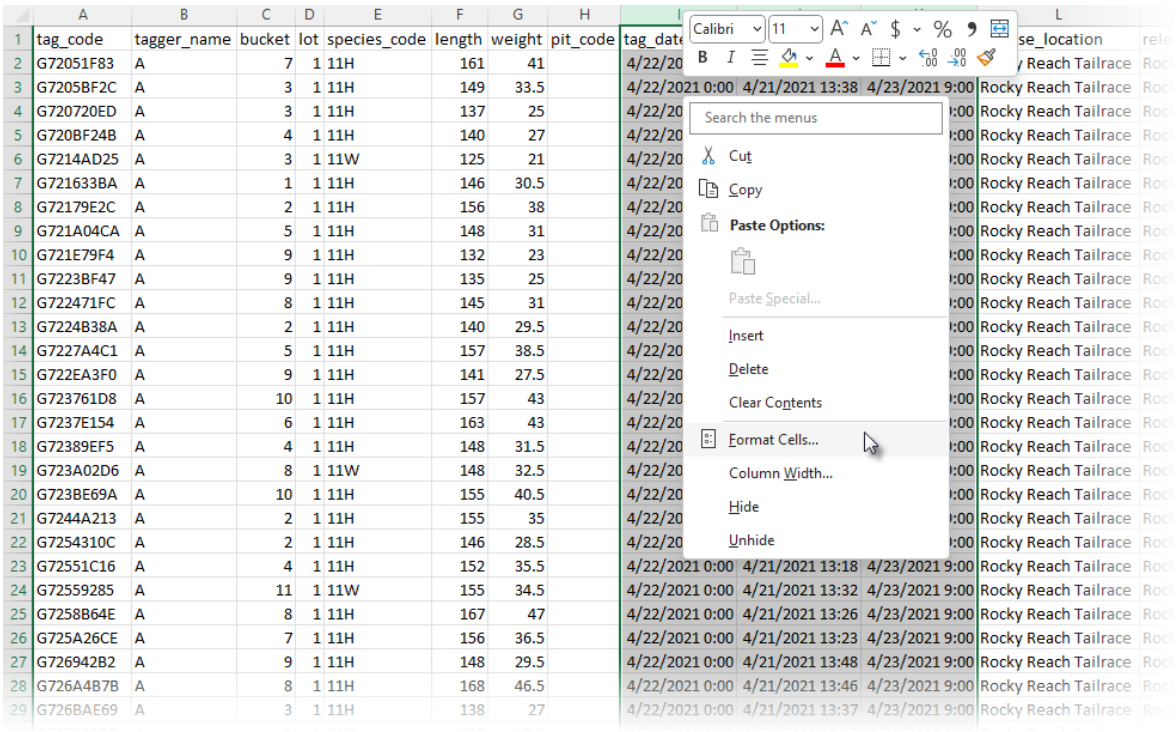
sites. The columns for tagger name, bucket, etc., can be used to easily create optional attribute files for Program ATLAS. The first columns are:

- release name
- lot
- tag code
- tag activation date and time
- tag release date and time
- tagger name
- bucket
- length
- weight
- one field for each detection site with a “1” for detected, “0” for not detected
- two fields for detection site: the first detection date and time, and the last detection date and time

Appendix C: Customizing the Date and Time Format in Excel

The following describes how to save a .csv file in Excel and preserve the seconds in date and time fields.

Figure C1 shows a tags file in an Excel worksheet with the three date-time fields selected (tag_date, activation_date, and release_date). The user has right clicked on the selected fields and is selecting “Format Cells…” from the context menu.



	A	B	C	D	E	F	G	H	I	L
1	tag_code	tagger_name	bucket	lot	species_code	length	weight	pit_code	tag_date	se_location
2	G72051F83	A	7	1	11H	161	41		4/22/20	Reach Tailrace
3	G7205BF2C	A	3	1	11H	149	33.5		4/22/2021 0:00	4/21/2021 13:38	4/23/2021 9:00	Rocky Reach Tailrace
4	G720720ED	A	3	1	11H	137	25		4/22/20	:00 Rocky Reach Tailrace
5	G720BF24B	A	4	1	11H	140	27		4/22/20	:00 Rocky Reach Tailrace
6	G7214AD25	A	3	1	11W	125	21		4/22/20	:00 Rocky Reach Tailrace
7	G721633BA	A	1	1	11H	146	30.5		4/22/20	:00 Rocky Reach Tailrace
8	G72179E2C	A	2	1	11H	156	38		4/22/20	:00 Rocky Reach Tailrace
9	G721A04CA	A	5	1	11H	148	31		4/22/20	:00 Rocky Reach Tailrace
10	G721E79F4	A	9	1	11H	132	23		4/22/20	:00 Rocky Reach Tailrace
11	G7223BF47	A	9	1	11H	135	25		4/22/20	:00 Rocky Reach Tailrace
12	G722471FC	A	8	1	11H	145	31		4/22/20	:00 Rocky Reach Tailrace
13	G7224B38A	A	2	1	11H	140	29.5		4/22/20	:00 Rocky Reach Tailrace
14	G7227A4C1	A	5	1	11H	157	38.5		4/22/20	:00 Rocky Reach Tailrace
15	G722EA3F0	A	9	1	11H	141	27.5		4/22/20	:00 Rocky Reach Tailrace
16	G723761D8	A	10	1	11H	157	43		4/22/20	:00 Rocky Reach Tailrace
17	G7237E154	A	6	1	11H	163	43		4/22/20	:00 Rocky Reach Tailrace
18	G72389EF5	A	4	1	11H	148	31.5		4/22/20	:00 Rocky Reach Tailrace
19	G723A02D6	A	8	1	11W	148	32.5		4/22/20	:00 Rocky Reach Tailrace
20	G723BE69A	A	10	1	11H	155	40.5		4/22/20	:00 Rocky Reach Tailrace
21	G7244A213	A	2	1	11H	155	35		4/22/20	:00 Rocky Reach Tailrace
22	G7254310C	A	2	1	11H	146	28.5		4/22/20	:00 Rocky Reach Tailrace
23	G72551C16	A	4	1	11H	152	35.5		4/22/2021 0:00	4/21/2021 13:18	4/23/2021 9:00	Rocky Reach Tailrace
24	G72559285	A	11	1	11W	155	34.5		4/22/2021 0:00	4/21/2021 13:32	4/23/2021 9:00	Rocky Reach Tailrace
25	G7258B64E	A	8	1	11H	167	47		4/22/2021 0:00	4/21/2021 13:26	4/23/2021 9:00	Rocky Reach Tailrace
26	G725A26CE	A	7	1	11H	156	36.5		4/22/2021 0:00	4/21/2021 13:23	4/23/2021 9:00	Rocky Reach Tailrace
27	G726942B2	A	9	1	11H	148	29.5		4/22/2021 0:00	4/21/2021 13:48	4/23/2021 9:00	Rocky Reach Tailrace
28	G726A4B7B	A	8	1	11H	168	46.5		4/22/2021 0:00	4/21/2021 13:46	4/23/2021 9:00	Rocky Reach Tailrace
29	G726BAE69	A	3	1	11H	138	27		4/22/2021 0:00	4/21/2021 13:37	4/23/2021 9:00	Rocky Reach Tailrace

Figure C1: Formatting date-time fields in a tags file in Excel.

Figure C2 shows the resulting Format Cells dialog. The user selects “Custom” under Category, and under Type, enters “m/dd/yy h:mm:ss” and then presses OK.

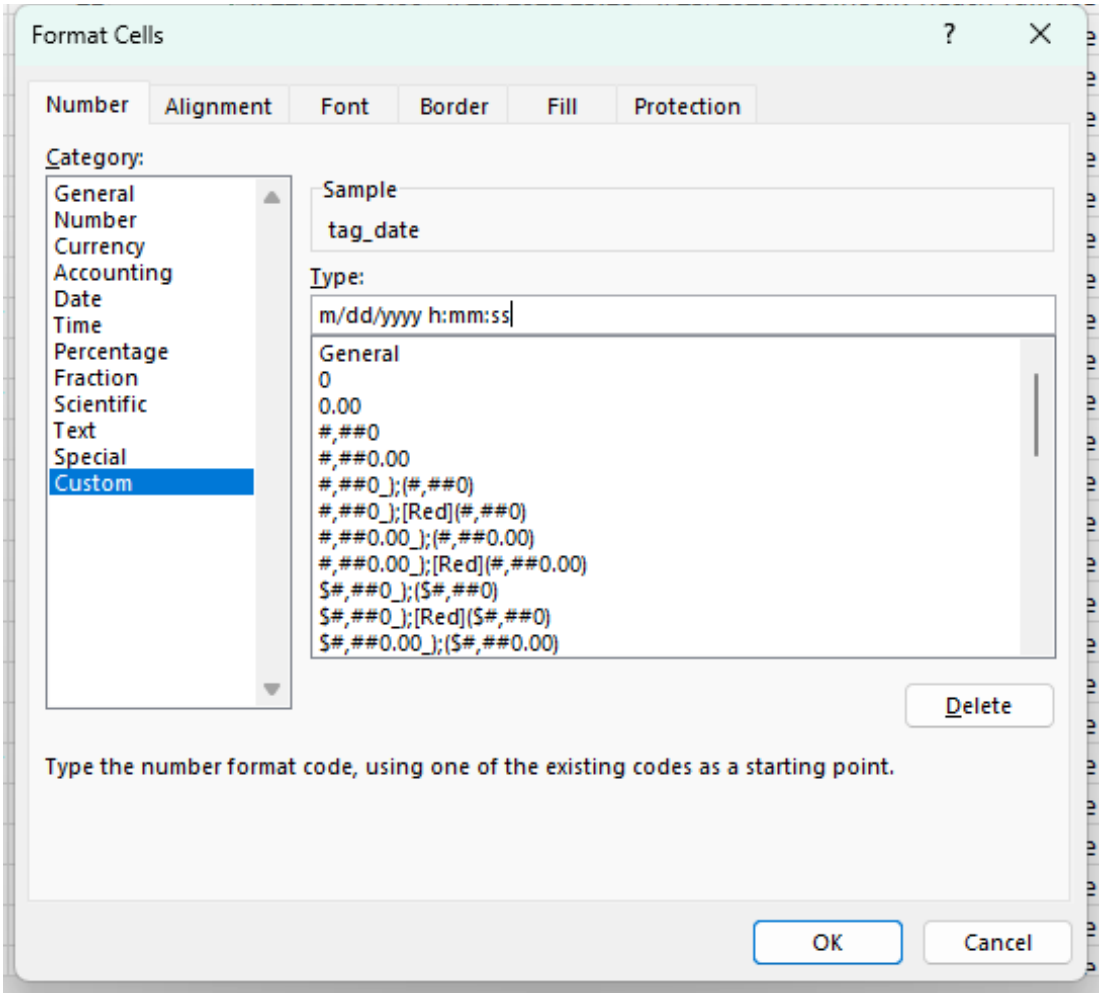


Figure C2: Excel “Format Cells” dialog.

Once this is done, when the user saves the .csv file, the seconds will be saved with the selected date-time fields.