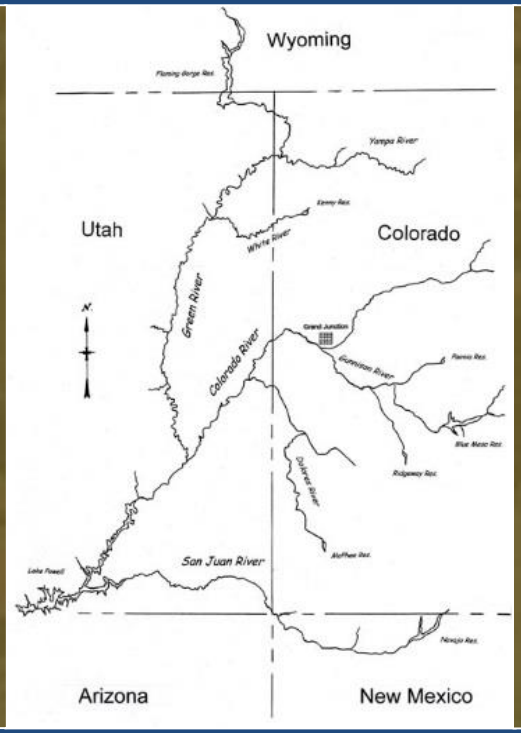
STReaMS: Species Tagging, Research & Monitoring System

Monthly Webinar
5/19/2016



Amy Greenwell
Colorado Natural Heritage Program
Warner College of Natural Resources
Colorado State University
www.cnhp.colostate.edu

Ben Johnke
Research Software Facility
Colorado State University

COLORADO NATURAL HERITAGE PROGRAM

WARNER COLLEGE OF Natural Resources

Colorado State University

Agenda

- March Workshop Wrap-up
- Revisit Study Clean-up
- Review of Batch Upload Process
  - Stocking Events
  - Research and Monitoring Projects
  - Antenna Files

Statement, seems straightforward

Question, or potentially questionable

March Workshop

- Good turnout from group
- Worked through a series of hands-on exercises to familiarize users with STReaMS
- We will do this again next March, most likely at CSU in Fort Collins
  - Batch uploads
  - Advanced query builder

Studies

- Studies need to be cleaned up in STReaMS
- Studies and permissions are linked
  - Right now PI's and Researchers that work on a Study can edit data collected from that Study
  - We propose to change this so only a Data Lead can upload and edit data from a Study (this would be the person that is giving the data to Travis and Scott right now).

Example: 128a(22i) Green R. CPM Pop. Est.

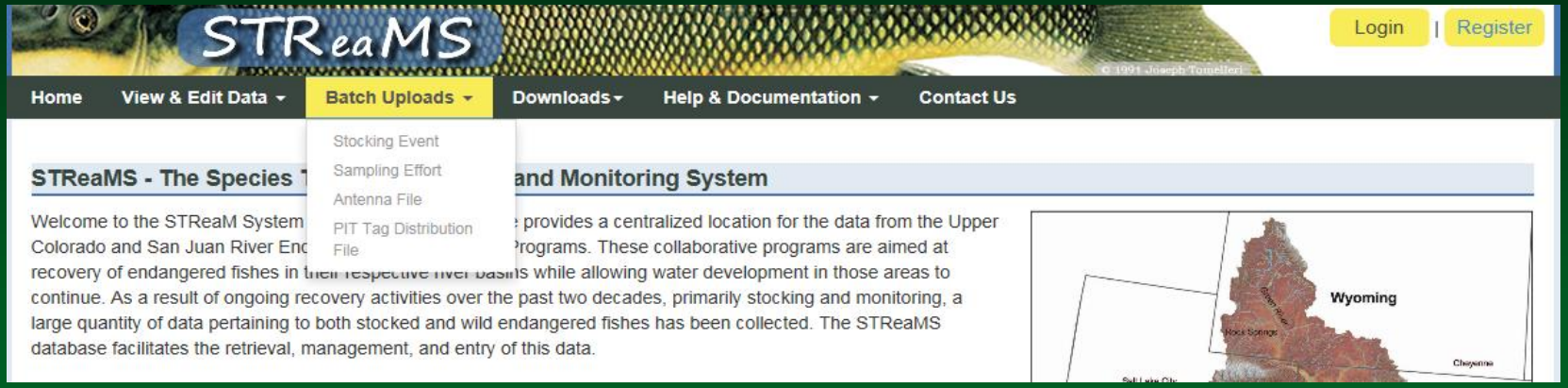
Agencies: Larval Fish Lab, UDWR-Vernal, USFWS-Vernal, UDWR-Moab

Personnel: **Bestgen (PI/Data Lead)*,** Hawkins (PI), White (PI), **Walford (PI/Data Lead)*,** Breen (PI), Jones (PI), Howard (PI)

*Only these two people can upload and edit data in this Study

Some clean-up can be completed by double-checking: (7 program elements – could be used for Program look-ups)
http://www.coloradoriverrecovery.org/documents-publications/work-plan-documents/project-annual-reports.html#III.

Batch Uploads

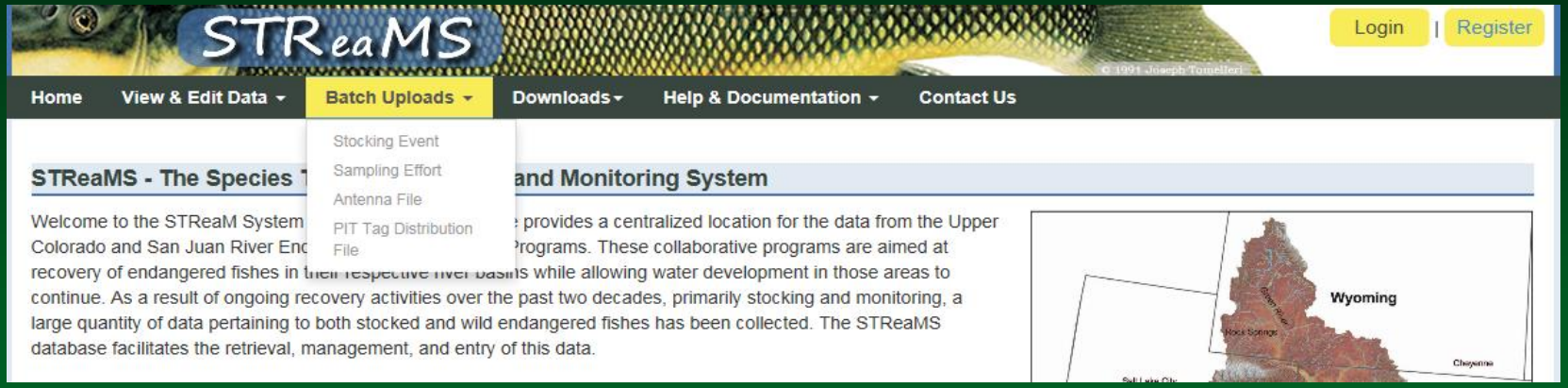


- Have to be a User with, at minimum, Researcher permissions
- Your Study must exist prior to importing data. You will be prompted to select your Study. If it is not in the database, you will have the option to add it.

Ideally, PI's will add their Study at the beginning of the project and add all agencies and key personnel

Only Data Leads can upload data

Batch Uploads – Overall Process



- You fill out your template (or collate data from users collecting data on your project into one template)
- Select the appropriate Upload option
- Load and analyze your file
- Fix errors and reanalyze data
- Commit your changes to STReaMS
  - Some records may be flagged or placed in a “temporary holding cell” until they are reviewed by a Database Manager

Batch Uploads – Analyze

- Before Uploading data files, the files will be Analyzed
  - You will Upload your file and Analyze it
  - The system will return an Error Report
  - You will fix the errors and reanalyze your data
  - When your file is clean, you will commit your file and the data will be uploaded to STReaMS

We can quality control much of the data on the front end, so errors are not imported.

Some errors are best checked after import. These will be identified using Quality Control tools.
(ex. Fish traveling unrealistic distances, or duplicate river captures uploaded on different Studies)

Batch Uploads – Insert Logic

The Batch Upload Script will check for four scenarios:

Tag and Fish do not exist in STReaMS.
Insert a new Tag, create a new Individual, assign it to the new Tag, create new Encounter

Tag exists, but is not associated with a Fish. (Tag Lots)
Create a new Individual, assign it to the existing Tag, create new Encounter

Tag does not exist, but Fish does.
Insert a new Tag, assign it to existing Individual, create new Encounter

Tag exists, and is associated with a Fish.
Create new Encounter

Batch Uploads – Rare Fish Template

Field Name	Format	System Upload Rule
PIT TAG 400	Text	Check for 10 characters, no symbols, no "O"? (will strip out decimal point)
PIT TAG 134	Text	Check for 13 characters, no symbols, no "O"? (will strip out decimal point)
REC NUM	Text	
AGENCY	Text	Agency must be in STReaMS; need to use standard codes
PRINCIPAL	Text	Not currently in STReaMS at the Encounter level, we have Sampled By. These are not the same. **Change field name in STReaMS.**
FILENAME	Text	
PROGRAM	Text	Do we need Program (or Project) Type? This is not in STReaMS. **This should live with Studies, not Encounters.**
RIVER	Text	System will check for valid River Code
RMI	Numeric, 1 decimals	Should we set a max?
YEAR	Numeric, 0 decimals	System will check for valid dates
DATE NUM	Text	System will check for valid dates
DATE TIME	Date/Time	System will check for valid date time format
SAMPLE NUMBER	Text	
SPECIES	Text	System will check for valid Species Code
LENGTH	Numeric, 1 decimals	Should we set a max? check for 9999, set to null. Check for a fish getting smaller and smaller, upload or QC?
WEIGHT	Numeric, 1 decimals	Should we set a max? check 99999, set to null
SEX	Text	System will check for valid Sex value. Blank will be set to Unknown.
RIPE	Text	System will check for valid Ripe value.
TUBERCLES	Text	System will check for valid Tubercles value
RAYS	Text	
RECAP 400 KHZ	Text	System will check for valid Recapture value
RECAP 134 KHZ	Text	System will check for valid Recapture value
NEW TAG	Text	Y/N, System will check for valid value
DISP	Text	System will check for valid Disposition Code
GEAR	Text	System will check for valid Gear Code
HABITAT	Text	System will check for valid Habitat Code
HAB 1	Text	System will check for valid Habitat Code
HAB 2	Text	System will check for valid Habitat Code
UTM ZONE	Numeric, 0 decimal	System will only allow 12 or 13
UTM X	Float	Constrain between 0 and 1,000,000
UTM Y	Float	Constrain between 3,920,000 and 4,850,000
NOTES	Text	

Batch Uploads – Tag Conflicts

- For the fields PIT TAG 400, PIT TAG 134 AND NEW TAG

400khz tag and 134 khz tag are already in the system assigned to two different Individuals
This record will go into a "temporary holding area" to be reviewed by a Database Manager. There could be a bad tag code, or other problems causing the mismatch, and the Data Manager will have the skills to track down the issue

New Tag = Y and the tag code listed in PIT TAG 134 is already in the system associated with an Individual
This record will go into a "temporary holding area" to be reviewed by a Database Manager. There could be a bad tag code, or other problems causing the mismatch, and the Data Manager will have the skills to track down the issue

Batch Uploads – Species Conflicts

The Individual is currently assigned to a valid species and the new Encounter has an "unidentified" species code:

No changes will be made to the Individual. The Field Recorded Species in the new Encounter will read UI, as reported in the field, but the species assigned to the Individual will remain the same.

The Individual is currently an "unidentified" species and the new Encounter has a valid species code:

The Individual will be assigned the new species code. The Field Recorded Species in the Encounter history will show the transition from UI to a known species.

Chubs: The Individual is currently assigned to some sort of chub and the new Encounter has a code for a different chub

The Individual will be assigned the new species code. Any chub species will always be based on the latest Encounter. The Field Recorded Species in the Encounter history will show the transitions.

For Individuals other than chubs: The Individual is currently assigned to a valid species and the new Encounter has a different, but valid species

This record will go into a "temporary holding area" to be reviewed by a Database Manager. There could be other problems causing the mismatch, like a bad tag code, and the Data Manager will have the skills to track down the issue

Batch Uploads – Sex Conflicts

The Individual is currently assigned to a valid M or F Sex code and the new Encounter has an "Indeterminate" Sex code:

No changes will be made to the Individual. The Field Recorded Species in the new Encounter will read "I", as reported in the field, but the Sex assigned to the Individual will remain the same.

The Individual is currently assigned an Unknown or Indeterminate Sex and the new Encounter has a valid M or F sex code

The Individual will be assigned the new Sex code. The Field Recorded Sex in the Encounter history will show the transition from "I" or blank to a known Sex.

The Individual is currently assigned to a valid Sex and the new Encounter has a different, but valid Sex (Ex. Individual is Female, new Encounter says it is Male)

No changes will be made to the Sex of the Individual. This record will get flagged for review by a Database Manager.

Batch Uploads – Disposition Conflicts

The Individual is currently presumed alive and the new Encounter has a code indicating the fish has died (DE, DF, DP, FC, SS)

The Individual will be changed to dead. The Disposition field in the Encounter history will show the transition from RA to DE (or another “dead” code)

The Individual is currently presumed dead and the new Encounter has a code indicating the fish is alive (HA, RA, RT or TL code)

This record will go into a “temporary holding area” to be reviewed by a Database Manager. There could be other problems causing the mismatch, like a bad tag code, and the Data Manager will have the skills to track down the issue

Batch Uploads – Conflict Summary

Not imported, placed in temporary holding area

Species Conflict (not chub): The Individual is currently assigned to a valid species and the new Encounter has a different, but valid species. This record will go into a "temporary holding area" to be reviewed by a Database Manager. There could be other problems causing the mismatch, like a bad tag code, and the Data Manager will have the skills to track down the issue

Tag Conflict 1: 400khz tag and 134 khz tag are already in the system assigned to two different Individuals. This record will go into a "temporary holding area" to be reviewed by a Database Manager. There could be a bad tag code, or other problems causing the mismatch, and the Data Manager will have the skills to track down the issue

Tag Conflict 2: New Tag = Y and the tag code listed in PIT TAG 134 is already in the system associated with an Individual. This record will go into a "temporary holding area" to be reviewed by a Database Manager. There could be a bad tag code, or other problems causing the mismatch, and the Data Manager will have the skills to track down the issue

Disposition Conflict: The Individual is currently presumed dead and the new Encounter has a code indicating the fish is alive (HA, RA, RT or TL code). This record will go into a "temporary holding area" to be reviewed by a Database Manager. There could be other problems causing the mismatch, like a bad tag code, and the Data Manager will have the skills to track down the issue

Imported, but flagged

Sex Conflict: The Individual is currently assigned to a valid Sex and the new Encounter has a different, but valid Sex (Ex. Species is Female, new encounter says it is Male)

No changes will be made to the Sex of the Individual. This record will get flagged for review by a Database Manager.

Batch Uploads – Sample Numbers

SAMPLE NUMBERS: THE LINK BETWEEN ENCOUNTERS AND SAMPLING EFFORT

- It would be best if Effort data could be uploaded at the same time as Fish data.
  - Is this a reasonable request?

Advantage:
The Sample Numbers in the Rare Fish spreadsheet could be compared to the Sample Numbers in the Effort spreadsheet. The system could ensure all Sample Numbers in the Fish spreadsheet exist in the Effort spreadsheet when it Analyzes the data prior to import. This will prevent having to clean up Sample Number problems after records are imported.

Disadvantage
Both Effort and Fish spreadsheets need to be prepared for upload at the same time. You will need to make time to prepare and upload them all at once.

Make joint file upload preferred but not required

Batch Uploads – Stocking Template

Field	Format	System
~~PIT TAG 400~~	~~Text~~	~~Check for 10 characters, no symbols, no "O"?~~ **Remove this field**
PIT TAG 134	Text	Check for 13 characters, no symbols, no "O"? (will strip out decimal point)
REC NUM	Text	
SPECIES	Text	System will check for valid Species Code
STOCK YEAR	Numeric, 0 decimal	System will check for valid year
DATE NUM	Text	System will check for valid dates
STOCK DATE	Date	System will check for valid dates
STOCK RIVER	Text	System will check for valid River Code
STOCK RMI	Numeric, 1 decimal	Should we set a max?
LENGTH	Numeric, 0 decimal	Should we set a max?
WEIGHT	Numeric, 0 decimal	Should we set a max?
SEX	Text	System will check for valid Sex value
YEARCLASS	Numeric, 0 decimal	System will check for valid yearclass
RIVER TEMP	Numeric, 1 decimal	Constrain range?
PH RIVER	Numeric, 1 decimal	Constrain range?
TANK TEMP	Numeric, 1 decimal	Constrain range?
PH TANK	Numeric, 1 decimal	Constrain range?
TEMPERED TIME	Numeric, 0 decimal	Report in minutes? **Yes**
HARVEST TYPE	Text	System will check for valid types, A or P
RELEASE TYPE	Text	System will check for valid types, H or S
LOT	Text	Check Lot using QC tools
SOURCE	Text	System will check for valid source (growout pond)
AGENCY	Text	Agency must be in STReaMS; need to use standard codes
FILENAME	Text	
COMMENTS	Text	

Batch Uploads – Antenna Files

```
0001,00 01 3D9.1C2C2D0833,06/01/15,02:14:47.3
0002,00 01 3D9.1C2C2D0833,06/01/15,02:24:33.5
0003,00 01 3D9.1C2D90A974,06/01/15,03:53:33.3
0004,00 01 3D9.1C2D90A974,06/01/15,03:59:21.3
0005,00 01 3D9.1C2D90A974,06/01/15,04:04:21.3
0006,00 01 3D9.1C2DE1E3CC,06/01/15,04:16:29.3
0007,00 01 3D9.1C2DE1E3CC,06/01/15,04:21:29.5
0008,00 01 3D9.1C2DE1E3CC,06/01/15,04:26:59.5
0009,00 01 3D9.1C2DE1E3CC,06/01/15,04:32:01.2
0010,00 01 3D9.1C2DE1E3CC,06/01/15,04:40:05.1
0011,00 01 3D9.1C2DE1E3CC,06/01/15,04:46:46.5
0012,00 01 3D9.1C2D5A97B2,06/01/15,04:50:19.3
0013,00 01 3D9.1C2DE1E3CC,06/01/15,04:53:06.0
0014,00 01 3D9.1C2DE1E3CC,06/01/15,04:58:06.2
0015,00 01 3D9.1C2D90A974,06/01/15,04:58:15.4
0016,00 01 3D9.1C2DE1E3CC,06/01/15,05:01:27.1
0017,00 01 3D9.1C2DE1E3CC,06/01/15,05:08:16.0
0018,00 01 3D9.1C2DE1E3CC,06/01/15,05:24:53.1
0019,00 01 3D9.1C2D90A974,06/01/15,06:51:49.4
0020,00 01 3D9.1C2D5A011B,06/01/15,17:38:50.5
0021,00 01 3D9.1C2DE1E3CC,06/01/15,17:46:47.0
```

*If Portable PIT records are in the Rare Fish Template, make sure they get uploaded as detection Encounter types, not captures.

Only the Tagcode, antenna, and the Date/Time Stamp will be gleaned from antenna files

Batch uploads for antenna files will only be used for stationary PIAs that cannot be remotely accessed to download data. Portable PIT antenna files will be incorporated into the rare fish template.

The data intervals imported to STReaMS will be one Encounter per tag per minute per antenna. We will add a frequency field to document the number of detections represented by one entry.

If the Individual does not exist, species will be set to Unidentified and Sex will be set to Unknown. These will be updated when new Encounters with complete data in these fields are uploaded.

Batch Uploads – Duplicates

- What is considered a duplicate record?
  - For a stocking file, it will be a duplicate tag code
  - For a rare fish file, it will be a combination of fields

For a stocking file, a duplicate will be a duplicate tag code. The system will check all tag codes with Individuals in STReaMS for duplicates during the upload process.

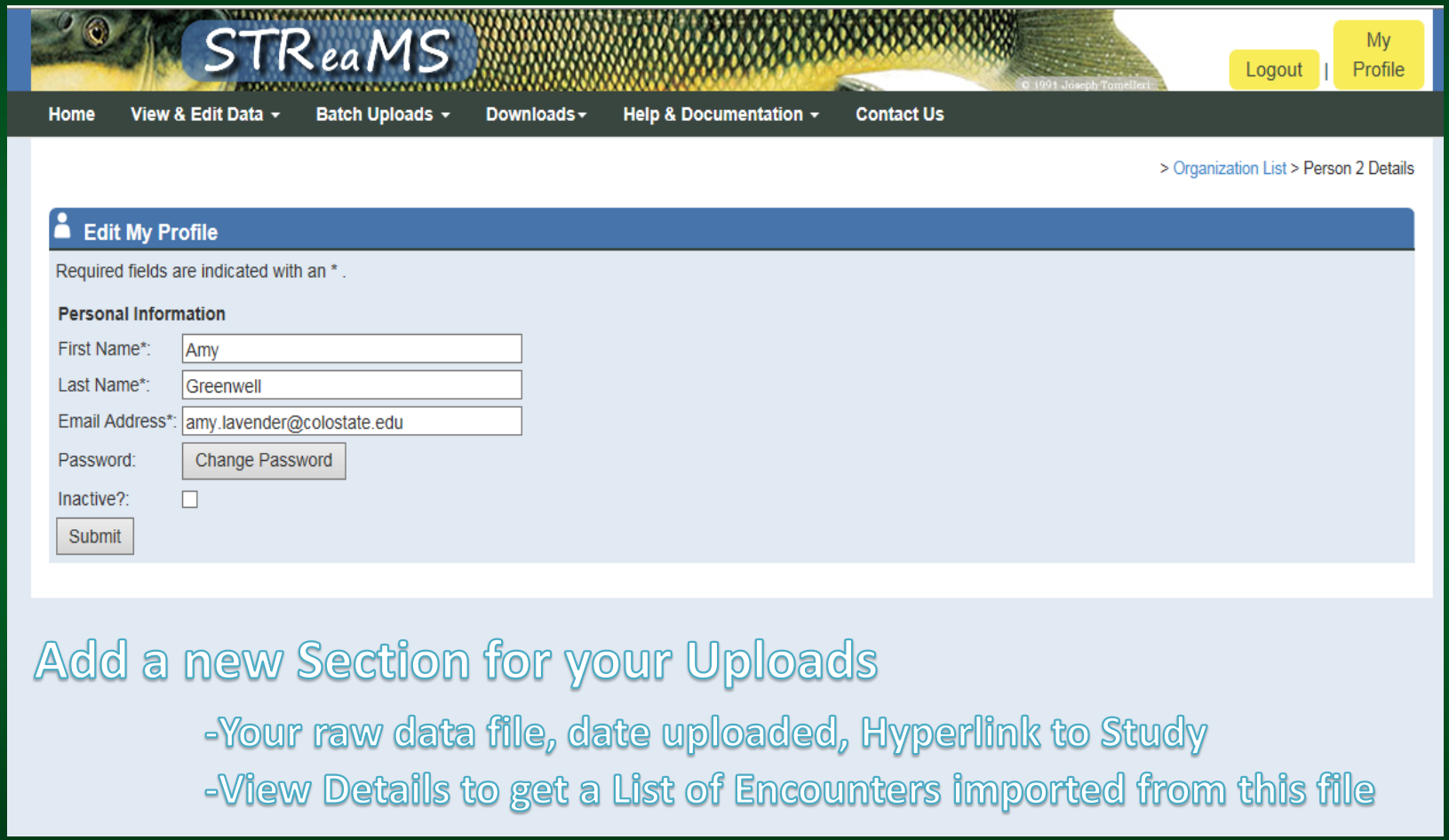
For a rare fish file, a duplicate will be the combination of: Tag code, Date, River, RMI

Duplicates will be checked using QC tools by the Database Manager on regular intervals.

In general, more complicated searches (which will likely take longer) will be performed using QC tools after data have been uploaded. Quick, straightforward searches, or high risk errors like stocking duplicates, will be checked during the upload process.

Batch Uploads – Tracking Your Uploads

- Keep track of your Uploads in My Profile



Add a new Section for your Uploads

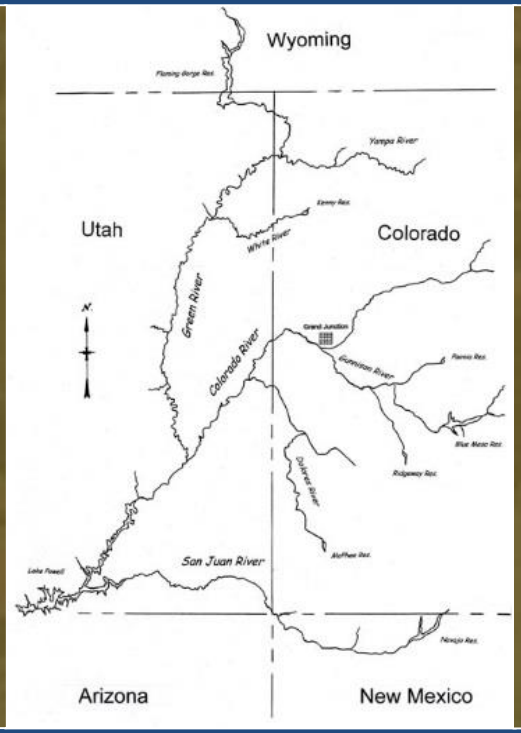
-Your raw data file, date uploaded, Hyperlink to Study

-View Details to get a List of Encounters imported from this file

The Database Manager will need a page to see all Uploads.

Studies need a check box indicating that all data for that year have been Uploaded.

Questions? Comments?



Amy Greenwell
Colorado Natural Heritage Program
Warner College of Natural Resources
Colorado State University
www.cnhp.colostate.edu

Ben Johnke
Research Software Facility
Colorado State University

COLORADO NATURAL HERITAGE PROGRAM

WARNER COLLEGE OF Natural Resources

Colorado State University