



Early Detection of Invasive Plant Species Monitoring Plan

Standard Operating Procedure #14: Data Entry and Verification

Version 1.2 (6 June 2017)

Change History

New Version	Revision Date	Author	Changes Made	Justification
1.0	2007	PACN	Developed.	
1.1	2/16/16	K. Kozar	Updated data entry procedures.	To make it easier for technicians and volunteers.
1.2	6/6/17	A. Ainsworth	Updated for ED plan.	Developed for EIPS.

Only changes in this specific SOP will be logged here. Version numbers will be incremented by a whole number (e.g., Version 1.3 to Version 2.0) when a change is made that significantly affects requirements or procedures. Version numbers will be incremented by decimals (e.g., Version 1.6 to Version 1.7) when there are minor modifications that do not affect requirements or procedures for publication in the series.

Purpose

This SOP describes the general procedures for data entry and verification in the working project database for field data collected within Pacific Island Network (PACN) parks as part of the Early Detection of Invasive Species Monitoring Plan (Ainsworth et al. 2017). Refer to the ED narrative sections “Overview of Database Design” and “Data Entry and Processing” for clarification of the distinction between the working database and the master database.

Database Instructions

The first action to be taken is to make sure the data entry workspace is set up properly for each user’s computer. If you are unclear about where this should be, contact the data manager (see SOP #11 “Workspace Setup and Project Records Management” for more information).

Important Reminders for Daily Database Use

- Backups should be made consistently at some point every day that data entry occurs. Normally the front-end application will automatically prompt you to make a backup either upon initially opening or upon exiting the application. Backups can also be made on demand

by hitting the “Back up data” button on the main menu and storing the backup file in the “backups” folder.

- New issues of the front-end application may be released as needed through the course of the field season. If this happens, there should be no need to move or alter the back-end file. Instead, the front-end file may be deleted and replaced with the new version, which will be named with an updated date stamp

Data Entry

The following are general guidelines to keep in mind:

1. Data entry will be conducted by the field crew at their duty station.
2. Data entry should occur as soon after data collection as possible so that the field leader keeps current with data entry tasks, and catches any errors or problems as close to the time of data collection as possible.
3. The working database application will be found in the project workspace on the server. The project workspace should be copied onto the user’s computer since the connection to the networked server is too slow for data entry (see SOP # 11 “Workspace Setup and Project Records Management”), with daily uploads to the network server.
 - a. Users should create a folder called “ED_Data_Entry” on their desktop.
 - b. Navigate to I:\vital_signs\ 03_early_detection_invasive_species\Data\Database in Windows Explorer.
 - c. Copy the file early_detection_FE_20170701.mdb
 - i. This is the data entry user interface (front end) that will be used to enter/edit data.
 - d. Paste file early_detection_FE_20170701.mdb within the ED_Data_Entry folder on the desktop.
 - e. Copy the file HAVO_2017_early_detection_BE1_20170701.mdb or HAVO_2017_early_detection_BE2_20170701.mdb
 - i. There are two files so that multiple staff can enter data at the same time, take just one back end file.
 - ii. This back end file is where the data are stored. Tables from this file are linked to the front end, when data is entered using the front end it is stored in the back end.
 - f. Paste the back end file within the ED_Data_Entry folder on the desktop.
 - g. After you have copied the back end file to the desktop, move (cut and paste) the file that is on the I drive into the Backups folders. This will ensure that multiple staff will not be working on this version of the database at the same time.
4. Each data entry form is patterned after the layout of the field form, and has built-in quality assurance components such as pick lists and validation rules to test for missing data or illogical combinations.
5. Open the file early_detection_FE_20170701.mdb. The first time the file is opened, the error message, “Back-end database file(s) missing” will appear. Click yes to the prompt, and browse to find the back-end file that is in your desktop ED_Data_Entry folder. Select the back end file by double clicking it, and click on “Update links” in the upper right corner of the window. **Even if you don’t see this error message, please check and make sure that you’re linked to the most recent back-end file!**

6. As data are being entered, the person entering the data should visually review each data form to make sure that the data on screen match the field forms. This should be done for each record prior to moving to the next form for data entry.
7. At the end of each data entry session, create a backup copy of the back end.
 - a. Click “Back Up Data” on the main switchboard of the database.
 - b. A pop up will ask you if you’d like to create a backup copy. Click “Yes”.
 - c. Save the backup in the default location, which is on the server -
I:\vital_signs\03_early_detection_invasive_species \Data\Database\Backups
 - d. Keep the auto-generated file name with the date stamp as is and click “Save”.
8. At the end of each data entry session, put the back end file on the I drive.
 - a. Cut HAVO_2017_early_detection_BE1(or 2)_20170701.mdb in the ED_Data_Entry folder.
 - b. Navigate to the I drive - I:\vital_signs\03_early_detection_invasive_species \Data\Database folder
 - c. Paste HAVO_2017_early_detection_BE1(or 2)_20170701.mdb
 - d. Update the date stamp at the end of the file name to the day’s date. For example, if it’s February 16, 2018, then update the file name to
HAVO_2017_early_detection_BE1(or 2)_20180216.mdb
9. After completing data entry, make sure to initial and date the top left corner of each data form.
10. Fill out the data entry log
 - a. Go to I:\vital_signs\03_early_detection_invasive_species \Data\Database
 - b. Open the excel spreadsheet ED_data_entry_log_20170701.xlsx and fill out the fields accordingly.
 - c. Update the date stamp at the end of the file name to the day’s date.

Data Verification

Data verification checks that the digitized data match the source data. The following guidelines regarding data verification should be followed:

1. Project leaders are responsible for specifying in the project plan one or more of the data verification methods available and ensuring proper execution. At the discretion of the project leader, additional verification methods may be applied.
2. Data verification is carried out by staff thoroughly familiar with data collection and entry.
3. All records (100%) should be verified against original source data using the method below.
 - a) Visual review after data entry: Upon completion of data entry, all records are printed and compared with the original values from the hard copy. Errors are clearly marked and corrected in the database as soon after data entry as possible. Reliability increases if someone other than the person keying the data performs the review. Alternatively, two technicians (one reading from the original data and one checking the entered data) can perform this review.
4. A subset of randomly selected records (10%) should be reviewed after initial verification by the project lead. If errors are found, the entire data set should be verified again.
5. A record of the verification process for each data set, including number of iterations and results, will be prepared by the project leader as part of formal metadata generation.

6. Spatial data collected as part of the project will be viewed in a Geographic Information System and visually inspected for accuracy (e.g., points located outside park boundaries, upland locations occurring in water).

