CA MRFSS/CRFS and OR MRFSS Data Update Steps

California Recreational Fisheries Survey, Marine Recreational Fisheries Statistics Survey

Data Contact Information:

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The following steps should be performed by someone familiar with ArcGIS, spreadsheets, and database tables.

1. Complete the online data request form on RecFIN's website (http://www.recfin.org/forms/request.htm) or email RecFIN's Fisheries Programmer. Wade Van Buskirk (wade@psmfc.org) is the current Fisheries Programmer (June 2010).

   Include the following information:
   - The reason for the request.
   - The years you are interested in.
   - Specify that you are only interested in records that have a location associated with them. RecFIN refers to these data as "on-board."
   - You can also request the data in the format that you are most comfortable working in, but they will most likely be in a .csv text file format.

2. These data are based on information recorded by interviewers on sport fishing vessel trips. Locations are recorded in specific lat/long coordinates. These locations are considered confidential and will need to be generalized to the 10' fishing blocks. Unfortunately, it will probably be too complicated for the RecFIN Programmer to convert the locations to Block IDs or to block center-coordinates, so you will have to convert the locations yourself. This means that you will need to request the raw data to perform the conversions. RecFIN will require the following:

   - A signed "PSMFC Confidentiality Agreement" form (provided by RecFIN).
   - Permission to release the data to you from the state in which the data originate.
     - For California, you should contact the Department of Fish and Game's Marine Fisheries Statistical Unit (see the CA Commercial Fisheries update procedure document for more detailed MFSU contact information).
     - For Oregon, you should contact the Department of Fish and Wildlife's Marine Information Management branch (see the OR Commercial Fisheries update procedure document for more detailed MIM contact information).

- Washington: according to RecFIN, Washington does not record location information as part of their MRFSS program.

3. Once you receive the data, it will be organized by region: Southern California, Northern California, and Oregon. Each region will be made up of three tables: Locations (fishing_locations), Catch Counts (fish_kept), and Boat Information (boat_info). You will want to first modify the coordinates in the Locations tables so that they are suitable for generating points in ArcMap.

    - Create subset tables of the Locations table based on the GFORMAT values (1 = DD°MM.MM', 2 = Site code, 3 = DD°MM'SS", and 4 = Loran). Most of the GFORMAT values should be "1" or "3" and these are the coordinate types we can convert, so make only a DD°MM.MM' table and a DD°MM'SS" table.
    - Use the field calculator to add a "1" back to the start of the longitude coordinates (this is pre-printed on the survey forms and not added back during data entry).
    - Add new fields and use the field calculator to convert all coordinate values to decimal degrees.

4. Create a subset of locations for all records that contain only starting coordinates (short stops with minimal drift). Generate points for these locations (according to RecFIN, records with only ending coordinates are probably incorrect.)

5. Create a subset of locations for all records with starting and ending coordinates. Use a geoprocessing tool such as *Hawth's Tools* "Add XY Line Data From Table" to generate lines for these records (you may need to join the lines back to the locations table based on the OID).

6. You may find that some of the points and lines you generated are outside of the fishing block area, occur on land, or that some of the lines are impossibly long. The bad points will be dropped later when you intersect them with the fishing blocks. However, you will need to separate good transects from bad ones.

    - According to RecFIN, transects that have speeds over 20 mph are likely incorrect. Add a field to the attributes of the transect file and calculate the length in miles.
    - Add a field to the transect file then calculate the mph for each record (divide the distance by the total minutes, then multiply that value by 60).
    - Create a subset transect file with only those lines that have speeds of 20 mph or less.
    - From this new transect file, select only those lines that are less than 10 miles in length (we want to limit the number of fishing blocks that each transect crosses and restrict them to a more realistic length). Create another subset file based on this selection. This should be your good transect file.

7. Use ArcMap's "Feature to Point" tool to create points from the good transects. These locations should represent the midpoint of each line.

8. Merge the transect points with the points from the records that only had starting coordinates. Intersect these with the fishing blocks (CA_Blks for the California records, ORWA_Blks for the Oregon records) to create a file with points only inside the fishing block area. After the intersect this file should also contain the ID of the fishing blocks.

9. The Catch (fish_kept) tables probably contain a mixture of species codes (10-digit numeric, ODFW, RecFIN, or Alpha5).

    - You will need to distinguish between these code types and create subset tables for each of them. Use the RecFIN_Species_Table stored in the fisheries geodatabase as a reference.
    - Each code type table you created will need to be joined to the Rec_FIN_Species_Table separately based on the code type used.
    - After you have completed the joins, merge each of the Catch table subsets back together. Use the field calculator to make the Species code equal to the 10-digit SP_CODE from the RecFIN_Species_Table so that all the records will use this code consistently.

10. Join the Catch (fish_kept) and Boat Information (boat_info) tables to the Locations point file you created, based on the ASSN field in each.

    - Do this separately for each region.
    - There will be some ASSN numbers that don't match because some records were dropped with the invalid locations. This is fine because you only want to keep data associated with a valid location on the map.

11. These joined files for each region will need to be summarized to uphold RecFIN's confidentiality requirements.

    - Prior to summary, create a CPUE (Catch per unit effort) field. Use the field calculator to divide the kept fish (KEPT) by observed anglers (OBSANG) values.
    - Summarize each table by Year, Month, Fishing Block, and Species (species code, common name, and scientific name).
    - The "Aggregate Features/Records" tool was used from *XTools Pro for ArcGIS desktop* to summarize the RecFIN data provided in the fisheries geodatabase.
        - Average and sum the CPUE fields.
        - Sum the KEPT field.
        - Average the MAXDEPTH and MINDEPTH fields.

12. Once you have created the summary tables, add a "Stops" field to each (short data type). Use the field calculator to divide the Sum_CPUE by the Average_CPUE. This will

give you the total number of fishing locations that were summarized for each record.

13. Use ArcCatalog to load your new data into the geodatabase.
    - Choose either the CA_MRFSS_data table (for the California regions) or the OR_MRFSS_data table (for the Oregon region).
    - Right-click on the table and choose Load > Data.
    - Verify that the "Target" and "Matching Source Field" values match during the load process. The data types should match or the Load could fail. Make sure the field names match correctly (they do not need to have the exact same name, but they should be the equivalent fields).
    - If you are given an error, it most likely means there is a data type conflict. You will need to go back and review the formatting to ensure that the field values and field data types aren't causing the conflict.
        - One troubleshooting method is to create a temporary file geodatabase and export your data to it. Open the new geodatabase table in ArcMap and evaluate the fields there to see if you can identify the problem and fix it. Then try to load the data again using the table in your temporary geodatabase.

14. After you have successfully updated the CA_MRFSS_data or the OR_MRFSS_data, you can also update the custom tools to reflect the new range of years in the drop-down menu.

    - Open the Fisheries ArcMap document.
    - Open the VBA editor.
    - Open frmTools.
    - Open the code window for the form.
    - Find the following variables which store the names and edit them:

```
Dim strORMRFSS As String
strORMRFSS = "OR MRFSS Data (1999 - 2009)"

Dim strCAMRFSS As String
strCAMRFSS = "CA MRFSS/CRFS Data (1999 - 2009)"
```

        - You can carefully edit the text inside the quotation marks, such as the years. However, you must be sure not to delete the quotation marks surrounding the title or the VBA code for this variable will cease to work correctly.

15. Save and close the VBA editor.