

Integrated Monitoring in Bird Conservation Regions (IMBCR):

Point Transect Quality Assurance/Quality Control Protocol

2012



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Contact Information:

Nick Van Lanen nick.vanlanen@rmbo.org
Chris White chris.white@rmbo.org
Rocky Mountain Bird Observatory
PO Box 1232
Brighton, CO 80601
303.659.4348

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I. Introduction

In order to provide data quality and assurance, IMBCR Partners proof the data collected and entered into the database after each field season. To efficiently catch as many errors as possible the data undergoes both a full proof and a proof using data queries. The full proof is designed to catch data entry errors that cannot be detected using the data queries. The proofing queries will identify records that are unusual in some way to facilitate further inspection. This process forms the second line of defense in eliminating erroneous records that may be missed during the full proof. Every technician and project is different; so proofers will need to actively consider the data proofing process for their area of interest. Do not ignore any incomplete or incorrect data that may become evident while following this protocol. If at any point you have concerns about data accuracy, do not wait to address them because you may not remember to correct these issues later.

You will need to run several queries in order to complete the data proofing process. We have set up a website you can go to where you can run queries specific to your study area (<https://fc.rmbo.org/queryproof.aspx>). Before you begin proofing, log onto this website. There you will find filter options and a “Download” button. Before you download a query, add the “Study Design” filter and select “IMBCR”. Next, select the state you are interested in followed by the BCR. Note that you can select multiple BCRs if you want (e.g., Avian Science Center can select IMBCR, MT, BCR10, BCR17) to get data specific to your area or you can leave out the BCR altogether and just select a state. Lastly, you will want to add the Year filter and select “2012”. The more specific your filters are the faster the query will run, so if you have a large project you may want to break it down into smaller pieces. There are more query filters as well, such as stratum, county, and management entity that should allow you to make the query as specific as you need.

Once you have set your filters, hit the “Download” button to download the queries for your study area. This will generate a single Excel workbook for you with multiple tabs; one for each query. Save this workbook on your computer for the proofing process. The first two tabs in this workbook contain the raw bird and raw vegetation data for your project and will be a useful reference tool. The third tab, labeled “Usable Data”, will be used to track usable and unusable vegetation data as described in the Full Proof section. The remaining tabs should appear in the order they are discussed in this document.

You will record changes made to the database and notes on those changes on the different query tabs in this workbook. Once the proofing process is complete you will send your saved Excel Workbook with notes to Chris White at chris.white@rmbo.org.

Note that some errors may show up on multiple query tabs. Once you have done a full proof of the data, you may want to rerun the queries to eliminate erroneous data that has already been fixed. You can rerun queries as often as you like as long as you keep a master Excel workbook that tracks all changes made in the database.

II. Physical Data

1. Data Entry

We cannot begin proofing data on a project until we have hard copies or scanned copies of all the datasheets and all the data have been entered into the database. To view a list of transects entered into the database, go to <https://fc.rmbo.org/Default.aspx> and enter your username and password. Click on the “Data Entry Status (CSV Download)” option at the top of the page. A data entry status

query will automatically run and generate an excel workbook for you. This workbook contains a list of transects entered into the database, the date the survey was conducted, the number of points checked as completed, the number of points with bird data entered (Bird Points), the number of points with vegetation data entered (Veg Points), the observer, the data enterer, and the date and time the transect was submitted to the database. Additionally, the workbook contains a column entitled "Point Difference" which subtracts the number of points with bird data from the number of points with vegetation data.

2. Scanning Data

Electronic copies of all bird monitoring datasheets serve as backups in case physical datasheets are lost. Field technicians should scan all of their data at the end of each 10-day work period and email it to their crew leaders. Crew leaders will be responsible for keeping this data organized until they return to the office.

If, for some reason, you do not have a scanned copy of a transect, you will need to create one. Before scanning, compile the datasheets for each transect in the following order: a) transect description page, b) transect map c) Landowner Contact Page, d) Landowner Contact Log, e) vegetation datasheet, f) reasons points not completed, g) bird datasheet(s). Be sure to scan each transect in this order.

After receiving scanned data from your technicians or scanning your data, open each individual file and verify that the scanned data is legible and complete. Make sure each file is saved with the exact same name as the transect followed by the year the survey was conducted (i.e., "CO-BCR16-BL21_2012"). If you are working from the RMBO office in Fort Collins please save all scanned copies of your data on the server at \\RMBONAS1\Science\Datasheets. If you do not work in the Fort Collins office you will need to upload your scanned data onto RMBO's ftp site (ftp://fc.rmbo.org/public_uploads). To do this, open a Windows Explorer window on your computer, and paste this ftp link into the address bar. This should take you to the upload folder. Once you are there, copy all of the scanned data and paste it into the uploads folder. Once you have done this, you will need to email Chris White at chris.white@rmbo.org and notify him that datasheets have been uploaded. RMBO staff will then transfer the data to the proper location on our server. You should always retain a copy of the scanned data on your own computer for future reference.

3. Datasheet Organization

Compile and staple together datasheets for each transect in the order that they were scanned. Organize transects by alphanumeric order according to project, BCR, state, or some other logical grouping. File these datasheets into the appropriate, pre-existing binders or create new binders as necessary.

4. Datasheet Check

Once you receive all the data from your field technicians, check through the hard copies of the data to verify that you have a copy of each transect completed. Check against the list of completed transects you put together during the field season for this. It is essential to have hard copies of datasheets for each transect, because during proofing we compare the data entered into the database with the data on the physical datasheets. You may need to contact field technicians to track down any missing data.

III. Transect Description Pages

Refer to the “Transect Descriptions” worksheet in the query workbook. This query will only display transect description information for surveys that were conducted this season and it will contain all of the information listed on the Transect Description Page for each transect in the database. Look through this worksheet and verify that technicians have entered their information correctly and completely. If you find errors in this table, you will need to make corrections using the Transect Description portion of the data entry application.

Note that it may be necessary to shorten long transect directions, descriptions, or notes as they may not print properly when generating transect description pages. If you are concerned that one of these fields may contain too many characters, go to <https://fc.rmbo.org/TransectDescriptionSheets.aspx> and actually generate the transect description page to see if looks okay.

1. Access Point UTM

It is very useful to have Access Point (AP) UTM associated with each transect. Make sure there are AP UTM associated with every completed transect. If you cannot find UTM on any of the datasheets or the technician’s GPS, then make a note in the notes section telling future observers to record that information.

2. DeLorme Page

Check to make sure every active transect has a DeLorme Page number and location code entered on the transect description page (i.e., 24 B3). This information makes it much easier to locate the transect on a map. If an active transect is missing this information, look up the transect map (<http://rmbo.org/v2/dataentry/monitoring/transectLocationMaps.aspx>) and find this location on a DeLorme Atlas.

3. Vehicle Accessibility

Verify that every survey completed has vehicle accessibility associated with it. The column for this on the transect table will have number values on it. These number values correspond with the vehicle accessibility options seen on the transect description page on the data entry site: 0 = Blank, 1 = All vehicles, 2 = High-clearance, and 3 = 4WD only. If there are any 0’s for completed surveys then there is no accessibility associated with that survey and the information needs to be filled in. Contact technicians about any missing vehicle accessibility information because you cannot always determine vehicle accessibility without physically visiting a site.

4. Transect Directions

Accurate and detailed directions to each transect are essential to finding transects on the ground (refer to the field protocol for more information on transect directions). Check to make sure every completed transect has directions. If a transect is missing directions, first check the hard copy of the transect description page to see if the field technician recorded directions there. If not, contact the field technician responsible for this transect and ask them to enter the directions. If they no longer have this information or cannot remember how to get there, record directions to the transect as best you can using a map. If you have to resort to this last option, make a note that the directions are approximate and that they should be updated by the next surveyor.

5. Transect Description

The transect description should contain information about 1) which points are accessible, 2) which points are private or public, 3) what habitat types are present on the transect, and 4) what order the points should be conducted (if applicable). Fill in any missing information as described in the above section.

6. Notes/Camping Info

The notes section should contain directions to the nearest or best camping spot in the area. If no camping is available, then there should be notes about where to stay in town, or other options. Eliminate any notes listing rare or unusual species detected on the transect. These notes may influence future observers and the birds they detect. Notes about interesting bird species at camp or somewhere outside of the survey grid are acceptable and may be retained.

7. Access and Transect Difficulty

This information should be filled out for every completed survey using the difficulty rubric found in the field protocol. There are two separate column, one for access difficulty and one for transect difficulty. If any completed surveys are missing this information, refer to the corresponding transect description page and see if the technician recorded this information. If they did not, email the technician and ask them for this information.

IV. Full Proof

Starting in 2012, we will be doing a full proof of all IMBCR data collected to catch and fix all data entry errors made. The main goal of a full proof is to find data entry errors and locate information which was not recorded correctly in the field. It is a long and tedious process requiring considerable concentration. Proofers are therefore encouraged to work through the full proof process by dedicating shorter intervals of time each day to the proofing process so they may maintain a sufficient level of focus (and sanity). Following the full proof, crew leaders will run some proofing queries to catch errors unrelated to typos such as ground cover percentages not adding up to 100%.

To conduct a full proof, you will need to compare the data on the datasheet with the data entered into the database for every survey conducted in your study area this season. If the data does not match up, then you will need to correct the data in the database to match the datasheet. In some cases you may find erroneous or missing data on the actual datasheet.

To make this process easier and more efficient, we have figured out a way to have the computer read aloud to you the data associated with a transect. This will allow you to keep your eyes on the physical datasheet and listen for discrepancies between the database and the physical datasheet while the computer reads you the data. Follow these steps to enable your computer to read the data aloud to you. You will also need to make sure you are using the most recent version of the data entry application.

- 1) Open Mozilla Firefox.
- 2) Visit: <http://addons.mozilla.org/en-us/firefox/addon/foxvox/>.
- 3) Follow the steps to install the FoxVox addon.
- 4) Restart Firefox to complete the installation.
- 5) Open the data entry application.

To view the data in the database, open up the index.htm file within the data entry system, click the "View Options" button and select "Enable Remote Transect Editing". You will be prompted to enter a

password which can be obtained from your supervisor. Next, click the “Load Remote Transect” button and select the transect and visit (year) of interest from the drop down menu. Once you have loaded the transect, click on the “Save Transect” button. This will generate readable text below all of the data entry forms. Select the text that you want FoxVox to read aloud. You will probably want to select one point of bird data at a time or a few points of vegetation data at a time to make it easier to keep your place. Once you have selected the text you want read, right click on the text and select the FoxVox menu and go to “Speak Selected Text”. Follow along on the hard copy or pdf scan of the datasheet while the computer reads the data aloud.

The following sections will give you a detailed breakdown on what to look for while conducting a full proof, how to document errors found in the database, and how to handle erroneous or missing data on the datasheet. The first section covers the transect information listed at the top of every vegetation datasheet, the second deals with point data, the third with vegetation data, and the fourth covers bird data.

1. Transect Information

Check the following information to verify that it was entered correctly.

A. Observer

Verify the observer ID on the datasheet matches that in the database.

B. Date

Verify the date on the datasheet matches the database and the work log for each technician. If the date in the database does not match the date on the datasheet and work log, correct it. If the date on the datasheet and the date in the database do not match the work log, email the crew leader who will verify with the technician when the survey was actually conducted. If no date was recorded, consult the technician’s work log to determine when the survey was conducted and enter that date.

C. GPS Unit #

Verify the correct GPS Unit # is listed. If a personal GPS was used then the GPS Unit # should be “0000”.

D. Who Collected

Make sure the survey is associated with the organization that conducted the survey.

E. Time

Verify that correct times were entered into the database. If no time is recorded on the datasheet then the time should have been entered as “0000”.

F. Sky

Verify the sky codes on the datasheet match those in the database. If no code was recorded on the datasheet the code should have been entered as “-1” in the database.

G. Wind

Verify the wind codes on the datasheet match those in the database. If no code was recorded on the datasheet the code should have been entered as “-1” in the database.

H. Temp

Verify the temperatures on the datasheet match the temperatures in the database. If no temperature was recorded on the datasheet then the temperature should have been entered as “-99”.

2. Point Data

This page contains information on point count start times, GPS Accuracy, and reasons points were not completed. Before going through the following categories line-by-line, check the hard copy or scan of the datasheet to make sure there is bird data for each point listed as “completed”. Also check to make sure there is no bird data recorded for a point on the hard copy of the datasheet that is listed as “not completed” on the point data page. If a point is listed as “completed” on the point data page in the database but there is no corresponding bird data on the hard copy of the data, change the status of that point to “O: Other” and enter “Reason unknown” in the notes section. If a point is listed as “not completed” but you find bird data for that point, first make sure there are no notes on the datasheets explaining why that point was not entered. If there are no notes and the data is legitimate change the status to “Completed”, enter the start time and accuracy for that point, and enter the Veg and Bird data in the corresponding tabs for that point. Once this is complete, check each of the following categories for accuracy:

A. Start Times

Verify the start time for each point on the datasheet matches the start time in the database. If no start time was recorded then “0000” should have been entered.

B. GPS Accuracy

Verify the GPS accuracy on the datasheet matches that in the database. If no GPS accuracy was recorded on the datasheet then “-1” should have been entered in the database.

C. Completed

Verify that each point listed as completed was actually completed. To do this, look at the bird datasheets and find the data for each point listed as completed. You should also verify there aren't additional points of data on the hard copy that are not listed as completed in the database. Lastly, for points that were not completed, verify that the reasons points weren't completed entered in the database match the reasons on the datasheet. If the reason is “O = Other” make sure that the notes section contains notes about why the point was not completed. Let your supervisor know about any missing information.

3. Vegetation Data Proofing

Refer to the “Usable Data” worksheet in the query workbook. This worksheet contains a complete list of transects completed in your study area during the field season, points that were surveyed on those transects, and all of the additional columns listed below. This sheet will be used to track data that cannot be fixed and thus cannot be used for analyses.

While proofing vegetation data, it is important to keep detailed notes of any corrections made to avoid confusion later on. Unfortunately, we cannot correct all errors in the vegetation data as we do with the bird data. Sometimes it is not possible to determine how to fix an error in the vegetation data. In these cases we mark the data as unusable, so these records can easily be excluded from analyses. The “Usable Data” sheet should be used to document data that are unusable and track any corrections that are made during both portions of the proofing process. Once you are done proofing

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all of your data you will send your “Usable Data” worksheet to RMBO staff for compilation with other IMBCR data. The “Usable Data” sheet will include the following columns:

- | | |
|-------------------------------------|---------------------------------|
| 1) Transect Number | 11) Other (Y/N) |
| 2) Date | 12) Snags |
| 3) Observer | 13) Shrub Cover % |
| 4) PointVisitID | 14) Shrub Height |
| 5) Point | 15) Shrub Species and Abundance |
| 6) Data Proofed | 16) Ground cover percentages |
| 7) Primary Habitat | 17) Residual Grass Height |
| 8) Canopy Cover % | 18) Grass Height |
| 9) Canopy Height | 19) Notes |
| 10) Overstory Species and Abundance | |

Proofed records should be tracked in the following way:

Unusable Data – Unusable data should always be flagged on the “Usable Data” sheet. To flag data as unusable on the “Usable Data” sheet enter a red “X” in the cell that corresponds to the appropriate transect, point, and data field column on the “Usable Data” worksheet. Be sure to record notes, also in red, in the “Notes” column of the worksheet. The notes should describe the field and the error that makes the data unusable.

Corrections – Any edits other than typo corrections should be documented on the “Usable Data” sheet. To document an edit enter a yellow “C” in the cell corresponding to the transect, point, and column where the correction was made. These could include edits such as filling in a missing data field based on the directions in this document. Basically, if you have to interpret data entered on the datasheet, rather than correct a typo, the interpretation should be documented as described above.

Data Proofed – In the “data proofed” column, put an “X” next to each point on each survey after it has been proofed. This will help keep track of the overall proofing process.

Please refer to Table 1 for examples of how to flag unusable data and corrections.

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Table 1. Example Usable Data Worksheet*

Date	Transect Num	Point	Data Proofed	Primary Habitat	Over-story	Shrub	Ground Cover	Snags	Notes
6/22/20 10	AZ-BCR16-KF1	1	X	X					Primary habitat not recorded
6/22/20 10	AZ-BCR16-KF1	2	X						
6/22/20 10	AZ-BCR16-KF1	2	X						Sky code recorded as 11
6/22/20 10	AZ-BCR16-KF1	3	X		X				Canopy cover of 40% with no species recorded
6/22/20 10	AZ-BCR16-KF1	4	X						
6/22/20 10	AZ-BCR16-KF1	5	X			C			Code for Shrub species changed from SB to SA
6/22/20 10	AZ-BCR16-KF1	6	X						
6/22/20 10	AZ-BCR16-KF1	6	X						
6/22/20 10	AZ-BCR16-KF1	7	X		X				Overstory height recorded as 75m
6/22/20 10	AZ-BCR16-KF1	7	X						
6/22/20 10	AZ-BCR16-KF1	9	X				X		Ground cover percent add to 135%
6/22/20 10	AZ-BCR16-KF1	10	X						
6/22/20 10	AZ-BCR16-KF1	11	X					X	Number of snags not recorded with DC present

*Note: Some columns were omitted from the Usable Data Worksheet to fit the example table on the page

A. Private Property

Check the Private Property column to make sure the entered data matches the datasheet. Correct any errors in data entry.

B. Primary Habitat

Make sure that all codes entered for Primary Habitat match the codes recorded on the datasheet. Correct any errors in data entry which you find. If the Primary Habitat field was left blank or the code recorded does not match any of the options on the drop-down list, make sure "XX" is selected in the database. Do not mark this data as unusable. Someone will correct this information during the query proofing process.

C. Canopy Cover (%)

Check to make sure that all data entered for Canopy Cover matches the datasheet. Correct any errors in data entry which you find. If the % Canopy Cover is left blank and there is no information entered in the overstory species or mean height fields then enter "0". This indicates that there was no overstory present at this point. If the % Canopy Cover is left blank but there is information entered in the Overstory Species or mean height fields leave the field blank and mark the data as unusable. This indicates that an overstory was present but the observer did not record the Overstory Percentage.

D. Canopy Height

Check to make sure that all entered Canopy Heights match the datasheet. Correct any errors in data entry which you find. If the Canopy Height was left blank, no Overstory Species were recorded, and the Canopy Cover Percentage was entered as "0" or was left blank, enter "0". This indicates that there was no overstory present at this point. If the Canopy Height is left blank and there is information entered in either the Canopy Cover Percentage or the Overstory Species mark the data as unusable. This indicates that an overstory was present but the observer forgot to record this information.

E. Overstory Species and Abundance

Check all species and percentages to make sure the data entered match the information on the datasheet. Make any necessary corrections. An "XX" code for an Overstory Species indicates that a legitimate two-letter plant code was recorded on the datasheet but that code was not available from the drop-down list at the time of data entry. Check the datasheet to find the two-letter code and change the "XX" to the appropriate code. If the code recorded on the datasheet does not match anything in the drop-down list leave it entered as "XX". Do not mark this data as unusable. Someone will correct this information during the query proofing process. If a code recorded on the datasheet does not match any of the codes in the drop-down list, ask your supervisor how to handle the situation.

If there is a % Canopy Cover or Canopy Height recorded and the Overstory Species field is left blank mark the data as unusable. This indicates that the observer forgot to record the Overstory Species information. If there is a single Overstory Species Percent field that was left blank and the percentages sum to less than 100, enter a quantity that allows for the sum of the fields to equal 100. If more than one Overstory Species Percent field is left blank flag the Overstory Species Percentages as unusable. If there is a percentage recorded with no associated two-letter veg code mark the data as unusable.

F. Other (Midstory, Cliff/Rock, P-dog town, P-dogs present)

Check to make sure all boxes marked "Y" on the datasheet are checked in the database and all boxes marked "N" are unchecked. If a box was left blank, assume that the field should be populated with an "N".

G. # of Snags

Verify the Number of Snags recorded on the datasheet match the Number of Snags entered into the database. Correct any errors in data entry. If the Number of Snags was left blank and BC, BD, DA, DC, DD, DJ, DY or SN were not recorded in the Overstory Species then enter "0" for the number of Snags. This indicates that no Snags were present at this point.

H. Shrub Layer Cover (%)

Check all values entered for Shrub Layer Cover and make sure they match the datasheet. Correct any errors in data entry. If the % Shrub Cover is left blank and there is no information recorded for Shrub Species or Shrub Height then enter "0". This indicates no shrub layer was present at this point. If the % Shrub Cover is left blank and there are Shrub Species or a Shrub Height recorded, mark the data as unusable. This indicates that a shrub layer was present, but the observer forgot to record this information.

I. Shrub Height

Check all Shrub Heights entered against the datasheet. Correct any errors in data entry. If the Shrub Height field is left blank and information is recorded for either Shrub Species or % Shrub Cover, mark this data as unusable. This indicates that a shrub layer was present, but the Shrub Height was not recorded. If the Shrub Height field is left blank and no other shrub information is recorded then enter "0". This indicates that no shrub layer was present at this point.

J. Shrub Species and Abundance

Check all Shrub Species and Shrub Species Percentages to make sure they match the data recorded on the datasheet. Correct any errors in data entry. If "XX" was entered for a species, this indicates that a legitimate two-letter plant code was recorded on the datasheet but that code was not available from the drop-down list at the time of data entry. In these instances, check the datasheet to find the two-letter code and change the "XX" to the appropriate code. If the code recorded does not match anything on the drop-down list, leave it entered as "XX". Do not mark this data as unusable. Someone will correct this information during the query proofing process.

If the Shrub Species field is left blank and information is entered for either % Shrub Cover or Mean Shrub Height mark the data as unusable. If the Shrub Species is left blank and no information is entered for Mean Shrub Height or % Shrub Cover, leave this section blank. If there is a single Shrub Species Percent field that was left blank and the percentages sum to less than 100, enter a quantity that allows for the sum of the fields to equal 100. If more than one Shrub Species Percent field is left blank flag the shrub cover percentages as unusable. If there is a percentage recorded with no associated two-letter veg code mark the data as unusable.

K. Ground Cover Percentages

Check that all Ground Cover Percentages match the datasheet. Correct any errors in data entry. If any field in the ground cover section was left blank, but the entered percentages sum to 100, enter a "0" for the blank field. If a single field in the ground cover section was left blank and the percentages sum to less than 100, enter a quantity that allows for the sum of the fields to equal 100. If more than one Ground Cover Percent field is left blank, flag the Ground Cover Percentages as unusable.

L. Residual Grass Height

Check to make sure that the Residual Grass Height was entered correctly. Make any necessary changes. If the Residual Grass Height was left blank and no Residual Grass Percent was recorded enter "0". If the Residual Grass Height was left blank or entered as "0" and Residual Grass Percent was recorded delete the "0" from the database and mark this data as unusable. This indicates that residual grass was present but the Residual Grass Height was not recorded.

M. Live Grass and Herbaceous Height

Check to make sure that the Live Grass and Herbaceous Height was entered correctly. Make any necessary changes. If the Live Grass and Herbaceous Height was left blank and no Live Grass or Herbaceous Percent was recorded enter "0". If the Live Grass and Herbaceous Height was left blank or entered as "0" and either a Live Grass or Herbaceous Percent was recorded delete the "0" from the database and mark this data as unusable. This indicates that grass or herbaceous covers were present but the Live Grass and Herbaceous Height was not recorded.

4. Bird Data

Check the following information to verify it was entered correctly.

A. Point

Make sure the point number associated with each bird record matches the datasheet.

B. Minute

Make sure the Minute associated with each bird record matches the datasheet. There is one scenario where the Point and Minute number in the database will not match the Point and Minute number on the datasheet. If a technician recorded an “88” bird between points, on the datasheet the bird will have “88” recorded in the Point column and no Minute recorded in the Minute column. However, in the database that 88 bird should have a Point number (the Point the observer completed before recording the 88 bird). The Minute associated with this 88 bird should be “88”.

If no Minutes were recorded on the datasheet for a Point then each Minute for that Point should be entered as “0”.

C. Species Codes

Verify that the four-letter Species Codes on the datasheet matches the four-letter Species Code in the database. If the four-letter Species Code on the datasheet does not appear in the database, consult the Crew Leader for that project. If you are the Crew Leader, see if you can decipher the incorrect Species Code to figure out what the species should be. If you cannot decipher the correct Species Code, contact the field technician to see if they can figure out what the species should be. If you still can't figure it out, enter “UNBI” for the Species Code.

Note that for “NOBI” (No Bird) detections the Distance, How, Sex, Visual, Migrating, Cluster Size, and Cluster Code info will be grayed out. These fields do not need to be verified. You should check that all “NOBI” detections have a Point and Minute associated with them. Make any necessary corrections to the database.

D. Distance

Verify the correct Distance was entered for each bird record. If no Distance was recorded on the datasheet then the Distance should be entered in the database as “-1”. If a Distance over 999m was recorded on the datasheet, that Distance should be entered as “999”. 88 birds should not have Distances associated with them, so if a distance was entered for an 88 bird change the Distance in the database to “-1”.

E. How

Verify the correct How code was entered for each bird record. If no How code was recorded on the datasheet then “U” should be entered.

F. Sex

Verify the correct Sex code was entered for each bird record. If no Sex code was recorded on the datasheet then “U” should be entered.

G. Visual?

If the Visual checkbox is checked on the datasheet, make sure that box is checked in the database.

H. Migrating?

If the Migrating checkbox is checked on the datasheet, make sure that box is checked in the database.

I. Cluster Size

Verify the Cluster Size on the datasheet matches the Cluster Size in the database. If the Cluster Size is blank on the datasheet, it should be entered as “1” in the database.

J. Cluster Code

If a Cluster Code is recorded on the datasheet make sure the Cluster Code was entered into the database.

K. 88 Birds

Field technicians tend to make mistakes when recording and entering 88 birds. Check to make sure all 88 birds are associated with the correct point (the point the technician surveyed immediately prior to detecting the 88 bird). If a field technician records an 88 bird before the first point or after the last point on a transect remove this data from the database. You should note these bird detections in the notes section on the transect visit page (the page where you enter wind, sky, time, etc.). Make sure the distance to each 88 bird was entered as “-1” in the database, since we do not record distances for 88 birds. Make any necessary changes in the database and record notes for any changes you make.

This concludes the full proof portion of data proofing. Be sure to fully proof all data within a study area before moving onto the following sections.

V. Uncommon Bird Proofing

This check should be completed by the crew leader to look for possible field identification errors made by field technicians. If a species was recorded infrequently, it could either be because a four-letter Species Code was entered into the database incorrectly, the bird was misidentified and doesn't occur in the study area, or it was identified correctly and is either a rare detection or an infrequently surveyed habitat type. The idea behind looking at uncommon Species Codes is to correct any mistakes in the first two scenarios and to confirm rare detections in the third scenario. Data entry errors should have been corrected during the Full Proof process, so you will mostly be looking for misidentifications and confirming legitimate rare detections.

Determining whether a rare detection is legitimate or not typically requires input from the technician that conducted the survey. Because technicians may take some time to respond to your inquiry we suggest that you work on the Uncommon Bird proofing before starting the query proofing process.

There are two steps to Uncommon Bird Proofing. The first step is to identify the Uncommon Birds you want to proof and the second step is actually proofing each of these uncommon records.

1. Identifying Uncommon Birds

For the first step, you will need to re-run the online proofing queries. Once you have generated a new workbook, delete all worksheets except for the first worksheet labeled “Raw Bird Data”. Save this workbook as “Uncommon Birds”. You will use this raw data to create a pivot table displaying the

number of each species recorded on the project. You should create two pivot tables, one showing the number of species detected by BCR and one showing the number of species by Primary Habitat (the BCR and Primary Habitat columns will be included in the raw bird data query). Separating your data by BCR and by Primary Habitat will better identify rare detections. For example, you create Uncommon Birds by Primary Habitat pivot table and discover that one of the 98 WEME detections that occurred in one BCR in your study area occurred in Spruce-Fir habitat. This record should be investigated. Had you not looked at the data this way, you wouldn't have investigated any of your 98 detections since Western Meadowlarks are generally not considered uncommon.

To create a pivot table by BCR, select the "Insert" tab at the top of your excel document, then select "PivotTable" and hit "Okay". From the Pivot Table Field List on the right, drag and drop "Common Name" into the Row Labels box at the bottom. Next, drag and drop BCR into the Column Labels box. Then, drag and drop the Cluster Count (CL_Count) in the values box at the bottom. You should see a table on the left side of the screen summarizing how many of each species were detected in each BCR. At the top of the table you should see "Sum of CL_Count". Right-click on this, select "Summarize Values by", and then select "Count". This will give you the number of detections for each species instead of the number of individuals recorded (that way one record of a cluster of 40 WTSW will show up as one, not 40). Label this sheet "BCR Pivot".

Copy the BCR Pivot table and special paste "values" in a new worksheet. Delete all unknown Species Codes and "NOBI" records. Copy and paste this table into a separate worksheet for each BCR within your study area. In each worksheet, isolate one BCR by deleting all other BCR columns then name the worksheet after the BCR to avoid confusion. Sort each table by the "count" column. Go through all Species Codes that have greater than 10 detections and delete any that don't look odd to you. You will proof the remaining Species Codes on this list as well as any Species Codes with 10 or fewer detections. Once you have a list of Species Codes to proof for each BCR within your study area use the "Filters" option in Excel to isolate the bird detections of interest and paste them into an excel worksheet labeled "Uncommon Birds by BCR". Repeat this entire process using Primary Habitat instead of BCR to get a list of Species Codes by Primary Habitat.

2. Proofing Uncommon Birds

Proofing for uncommon birds is more complicated than just comparing the data in the database to the data on the datasheets. However, you should check the datasheets first to make sure the uncommon bird in the database was entered correctly. If a field technician entered the wrong Species Code, simply change the record to the correct Species Code in the database. If the Species Code was entered correctly, then you will need to verify that the Species Code recorded is legitimate. Using a field guide, Breeding Bird Atlas, and any other relevant resources check the Primary Habitat where the field technician recorded the species to make sure the species can be found there. Use the transect maps website to locate the area where the detection occurred and compare this location against the range map for the species to determine if they normally occur there. Check historic RMBO data to see if the species has been detected on the same project in the past. Some records will be obviously right or wrong. For those that are obviously wrong, navigate to the transect through the data entry application and make the appropriate correction. Other detections may be questionable and will require contacting the field technician to obtain specifics regarding the observation. You will need to make judgment calls on many of these records, so please do your best to make an informed decision. Occasionally, technicians fail to respond or provide pertinent information regarding these uncommon bird sightings. In these cases you need to

decide if the record should be left in the database as is or if the Species Code should be changed to “UNBI” (Unknown Bird).

Ultimately, you will need to make a final decision about each questionable bird record in the database. If you are at all unsure about a record, change the Species Code to “UNBI”. Please keep detailed notes on your actions, whatever your decision may be.

VI. Queried Data Proofing

After the full proof is complete, and before the query proofing begins, run the data entry status query found at <https://fc.rmbo.org/Default.aspx>. The numbers in the “PointVisits”, “BirdPoints”, and “VegPoints” columns should be identical for each transect. Unequal values across these columns indicate there is a problem. You will need to figure out what the problem is and fix it. Once you complete this step you are ready to move on to the query proofing process described below.

There are certain errors that are not caught during the Full Proof process. In order to eliminate as many errors as possible, we will run several queries in the database to look for commonly made errors. There are four query proofing sections, one for each tab on the data entry application – 1) Transect info; 2) Point Data; 3) Vegetation Data and 4) Bird Data.

The query workbook you generated will contain a separate worksheet for each query listed below. You will probably want to re-run the query once you have completed the Full Proof and the Uncommon Bird proof to eliminate data entry errors you have already fixed. Be sure to merge the old and new query documents together so that any changes you have tracked are all contained within a single workbook.

Once you have re-run the queries, you will need to go through the data line-by-line on each worksheet looking for errors in the data as detailed in the following sections. If a line of data is correct highlight it in blue. If a line of data contains an error highlight it in red and enter notes in the corresponding Notes column that describe what was wrong with the data and how it was fixed. To correct the error in the database you will need to remotely load the transect with the error, edit the data, and resubmit the data to the database. Proofers should also correct the entry on the datasheet using a red pen, and re-scan the data.

Note that blank query worksheets mean that no errors were found by that query and you can simply move onto the next query worksheet. Because the new data entry application was designed to cut down on the number of errors in the data, you may find quite a few queries with no data.

1. Transect Info

A. Time

1) Transect Start Times

Refer to the worksheet labeled “Transect Start and End Times” in the query workbook. Sort by Transect Start Time ascending and check all Transect Start Times that are entered as “0000”. If there is a Transect Start Time recorded on the vegetation datasheet then enter the Transect Start Time on the Transect Info page. If the Transect Start Time was not recorded on the vegetation datasheet then enter the Point Start Time recorded on the bird datasheet for the first point count conducted. If no Transect Start Time was recorded on the

vegetation datasheet and no Point Start Time was recorded on the bird datasheet for the first point count conducted leave the Transect Start Time as "0000". Next, check all Transect Start Times that are more than 1 hour earlier than sunrise in your study area (these times are 1/2 hour earlier than a technician should start surveying). Finally, scroll down to check all Transect Start Times more than 1 hour after sunrise in your study area. If you find either of these situations and the data on the datasheet matches that in the database, email the corresponding technician for more information. If they cannot explain or verify that the Transect Start Time recorded is correct, change the Transect Start Time to "0000". Record any notes from your correspondence with the technician on the worksheet. If the Transect Start Time was entered incorrectly change it to match the Transect Start Time recorded on the datasheet.

2) Transect End Times

Next, sort the "Transect Start and End Times" worksheet by Transect End Time ascending. This will display all transects from earliest to latest Transect End Times. Check all Transect End Times that are entered as "0000". If there is a Transect End Time recorded on the vegetation datasheet then enter the Transect End Time in the database. If the Transect End Time was not recorded on the vegetation datasheet then add six minutes to the Point Start Time recorded on the bird datasheet for the last point count conducted and enter that time into the database. If no Point Start Time was recorded on the bird datasheet for the last point count conducted and the Transect End Time was not recorded on the vegetation datasheet leave the Transect End Time as "0000". Next, sort the sheet by Transect End Time descending. This will list transects from the latest Transect End Time to earliest Transect End Time. Check all Transect End Times that are 5 hours later than sunrise in your area. If you find either of these situations and the data on the datasheet matches that in the database, email the corresponding technician for more information. If they cannot explain or verify that the Transect End Time recorded is correct, change the Transect End Time to "0000". If the Transect End Time was entered incorrectly change it to match the datasheet.

3) Transect Start Time Later Than Transect End Time

Refer to the "Start – End > 0" worksheet. Any transects on this list have a Transect Start Time that is later than the Transect End Time. Check the vegetation datasheet to see if the times were entered correctly. If consulting the vegetation datasheet does not provide you with a reasonable Transect Start or Transect End Time you should consult the bird datasheets. The first point conducted in the morning should represent the Transect Start Time for the survey. Similarly, if a Transect End Time appears to be incorrectly entered, add six minutes to the Point Start Time recorded on the bird datasheet for the final point surveyed. This should represent the end of the survey. If the Transect Start or Transect End Times were entered incorrectly then fix the error. If you are unable to determine the Transect Start and/or Transect End Times using the vegetation and bird datasheets then enter "0000" for the missing time.

B. Sky

Refer to the "Unusual Sky Values" worksheet. This worksheet will contain a list of all Sky Codes that do not match accepted codes for Sky Conditions (the acceptable Sky Codes are -1, 0, 1, 2, 3, 5, 6 or 8). Compare all Sky Codes on this worksheet to the vegetation datasheet. If a Sky Code was entered incorrectly change the code to match the datasheet. If a Sky Code was recorded incorrectly on the vegetation datasheet then change the Sky Code in the database to "-1".

C. Wind

Refer to the “Unusual Wind Values” worksheet. This worksheet will contain a list of all Wind Codes that do not match accepted codes for wind conditions (the acceptable Wind Codes are 0 – 4). Compare all Wind Codes on this worksheet to the datasheet. If a Wind Code was entered incorrectly, change the code to match the datasheet. If a Wind Code greater than 4 was recorded on the datasheet and 1 or more points were not completed because of weather then change the end wind to “4”. If an incorrect Wind Code was recorded on the datasheet but weather was not a reason for any points being skipped change the Wind Code to “-1”.

2. Point Data

A. Point Start Time

Refer to the “Empty Point Start Time” worksheet. This query will pull out any Point Start Times entered as “0000”. This means a Point Start Time was not recorded for that point. If it is the first point conducted for that survey, see if a Transect Start Time was recorded on the vegetation datasheet. If so, use that as the Point Start Time for the first point. If not, leave the Point Start Time as “0000”. If it is the last point, see if there is a Transect End Time recorded on the vegetation datasheet. If so, subtract six minutes from the Transect End Time and use it as the Point Start Time for the last point. If not, leave the Point Start Time as “0000”. If a point is missing a Point Start Time, but the point before and the point after have Point Start Times, then determine the midpoint between those two Point Start Times and use that as the Point Start Time for the point with missing data. If consecutive points are missing Point Start Times, then leave the Point Start Times as “0000”.

Note that if you change a Point Start Time from “0000” to an actual time, the Point Start Time should fall between the Transect Start and End Times found on the vegetation datasheet. If it does not, refer to the following section for how to handle this situation.

B. Point Start Times outside of Transect Start and End Times

Refer to the “Point Start Not Btw Start & End” worksheet. This query will pull out any Point Start Times that do not fall between the Transect Start and End Times. For each record, check the Point Start Time recorded on the bird datasheet to make sure it was entered correctly. If the Point Start Time was entered correctly but does not fall between the Transect Start and End Times, and it is the first point conducted, use the Transect Start Time listed on the vegetation datasheet. If it is the last point, subtract six minutes from the Transect End Time listed on the vegetation datasheet and use it as the Point Start Time for the last point. If any other Point Start Time falls outside of the Transect Start and End Times for a survey but the point before and the point after have Point Start Times then determine the midpoint between those two Point Start Times and use that as the Point Start Time for the point with missing data. . If consecutive points are missing Point Start Times, then leave the Point Start Times as “0000”.

C. Points Not Completed

Refer to the “Points Skipped with No Code” worksheet. It is important to know why points were not completed during the season. You will need to check that all points not conducted on completed surveys within your study area have reasons they weren’t conducted associated with them. This query will contain points that don’t have reasons associated with them. Look at the hard copies or scan of the data to see if the codes were recorded on the datasheet but not

entered in the database. If so, enter the recorded codes in the database. If no reason codes were recorded, you will need to contact the field technician responsible for that transect and ask them why they did not complete those points. Once you've tracked this information down, enter it into the database. If you are unable to obtain this information record the code as "O: Other" and enter "Reason unknown" in the notes section.

3. Vegetation Data

You will need to fill out the "Usable Data" worksheet from the full proof section while conducting the vegetation data query proofing below. Follow the same steps as in the full proof section to mark data as unusable and to track interpretive changes you make to the database.

A. Primary Habitat

Refer to the "Unknown Primary Habitat" query. This query displays all "XX" Primary Habitat codes as well as any Primary Habitats that are not found on the accepted list of codes in the data entry application. If the Primary Habitat field is "XX" the proofer should review the canopy, shrub, and ground cover fields. If the proofer feels confident that they can deduce an appropriate Primary Habitat code for the point, the appropriate code should be entered. If it remains unclear what the Primary Habitat type should be after reviewing the canopy, shrub, and ground cover data the Primary Habitat field should be left as "XX" and the record should be flagged as unusable.

B. Mean Canopy Height

To check Mean Canopy Heights, select the "Invalid Canopy Heights" worksheet. This sheet will include all Mean Canopy Heights less than 3m and greater than 25m. Check all values on this sheet.

1) Heights less than 3m

Check all Mean Canopy Heights less than 3m to make sure they were entered correctly. If the Mean Canopy Height was entered incorrectly, and it is actually 3m or more, correct the Mean Canopy Height on the data entry site. If the Mean Canopy Height recorded on the datasheet is less than 3m, flag the data as unusable. If the Mean Canopy Height is equal to 0, check to make sure that no Overstory Cover or Overstory Species were recorded. If either of these was recorded, but no Mean Canopy Height was recorded, mark the data as unusable.

2) Heights greater than 25m

Check all Mean Canopy Heights greater than 25m. If the Mean Canopy Height was entered correctly and was actually recorded as over 25m then do not change the height or mark the data as unusable. Mean Canopy Heights over 25m are possible so we do not want to eliminate these data from analyses.

C. Overstory Species

Select the "Unknown Overstory Codes" worksheet. This query will display any two-letter Overstory Species Codes that are not on the acceptable list of codes found on the data entry application or any codes equal to "XX" or "OT".

1) Unacceptable Species Codes

Point Transect Quality Assurance/Quality Control Protocol

Sort this worksheet by “Species” and look for any codes other than “XX” or “OT”. If there are unacceptable codes found in the query, you will need to check each of these records to see if you can confidently determine what the technician intended to record. For example, if “PI” was entered as an Overstory Species and the transect is obviously in Pinyon/Juniper habitat, change the species code to “PY”. If you are uncertain about the species code recorded, try contacting the field technician that recorded the data to see if they can help you figure it out. If you are unable to contact the technician, or you are still unsure about the record, change the code to “OT”.

2) Unknown Species

Look for any “XX” or “OT” codes on this worksheet. You should consult the raw datasheet and enter the appropriate code provided it occurs in the drop down list on the data entry site. If the code recorded on the datasheet is not a legitimate code, see if you can confidently determine what the technician intended to record. For example, if “PI” was entered as an overstory species and the transect is obviously in Pinyon/Juniper habitat, change the species code to “PY”. If you are uncertain about the species code recorded, try contacting the field technician that recorded the data to see if they can help you figure it out. If you are unable to contact the technician, or you are still unsure about the record, change the code to “OT”.

D. Overstory Percentages

To check the Overstory Percentages, select the “All Overstory By Transect” worksheet. Create a column called “Total Percent” to the right of the last column on the sheet. Add a formula that sums across each row. Sort by “Total Percent” (the rightmost column) from smallest to largest. Check all Total Percentages that do not add up to 100 to make sure they were entered into the database correctly. Percentages totaling between 90 and 110 are acceptable. If the Total Percentages on the datasheet add up to less than 90% or more than 110% flag the data as unusable.

E. Snags

To check that the Overstory Percentages and Snags fields were properly recorded and entered select the “Snags w No Dead Codes or opposite” worksheet. This worksheet displays transects and points where 1) A non-zero value was entered for Snags and BC, BD, DA, DC, DD, DJ, DY or SN was not recorded as an overstory species or 2) BC, BD, DA, DC, DD, DJ, DY or SN was given a non-zero Overstory Percentage and no snags were recorded in the Snags field. Sort this worksheet by Transectnum and then by Point and consult the raw datasheet to check all of these records. For instance # 1, check the datasheet to see if five legitimate Overstory Species Codes were recorded. If five Overstory Species Codes were recorded then mark the row as “okay” and don’t make any changes to the database. If fewer than five Overstory Species Codes were recorded and the number of Snags is less than the % Canopy Cover (e.g., % Canopy Cover is equal to 20 and 12 Snags were recorded) subtract 1% from the largest Overstory Species Percentage and add “SN” as an Overstory Species Code with a Species Composition equal to “1%”. If fewer than five Overstory Species Codes were recorded and the number of Snags is greater than the % Canopy Cover mark the data as unusable in the Dead Overstory column of the “Usable Data” worksheet. For instance # 2, check the raw datasheet to verify that no Snags were recorded. If Snags were recorded on the datasheet but not entered into the database make the appropriate change to the database so it reflects the datasheet. If no snags were

recorded and one of the dead Overstory Species Codes was entered on the datasheet mark the data as unusable in the Snags column.

F. Shrub Codes in the Overstory

Using the “All Overstory By Transect” worksheet, go through each of the two-letter codes listed. Check to make sure the codes make sense for the overstory layer. If the observer recorded a code that seems unreasonable (e.g., a shrub species that never reaches 3m height was recorded as an Overstory Species) first check to make sure the code was entered correctly. If the code was entered correctly but the species doesn’t meet the requirements to be in that layer, check with the technician to make sure they recorded the code correctly. If they meant to record a different species, fix the data in the database accordingly. If they recorded the Overstory Code they meant to, or you do not hear back from the technician, flag the data as unusable. It is important to remember that tree species are often legitimately found in the shrub layer (representing saplings); however, the reverse is seldom true.

G. Shrub Height

Refer to the “Invalid Shrub Heights” worksheet for sections one and two below. This query will include all Shrub Heights greater than or equal to 3m and less than 0.25m.

1) Heights less than 0.25m

Check all Shrub Heights less than 0.25m. If the data was entered correctly and the height recorded on the datasheet is less than 0.25m mark the data as unusable. If the Shrub Height is equal to “0”, check to make sure that no Shrub Cover or Shrub Species were recorded. If either Shrub Cover or Shrub Species were recorded, but no Shrub Height was recorded, mark the data as unusable.

2) Heights greater than or equal to 3m

Check all Shrub Heights greater than or equal to 3m. If the data was entered correctly and the Shrub Height recorded on the datasheet is greater than or equal to 3m, mark the data as unusable.

H. Shrub Species

Select the “Unknown Shrub Codes” worksheet. This query will display any two-letter Shrub Species Codes that are not on the acceptable list of codes found on the data entry application or any codes equal to “XX” or “OT”. You will use this worksheet for sections one and two below.

1) Unacceptable Codes

Sort this worksheet by “Species” and look for any Shrub Species Codes other than “XX” or “OT”. If there are unacceptable codes found in the query, you will need to check each of these records to see if you can confidently determine what the technician intended to record. For example, if “PI” was entered as a Shrub Species and the transect is obviously in Pinyon/Juniper habitat, change the Shrub Species Code to “PY”. If you are uncertain about the Shrub Species Code recorded, try contacting the field technician that recorded the data to see if they can help you figure it out. If you are unable to contact the technician, or you are still unsure about the record, change the code to “OT”.

2) Unknown Species

Look for any “XX” or “OT” codes. You should consult the raw datasheet and enter the appropriate code provided it occurs in the drop down list on the data entry site. If the Shrub Species Code recorded on the datasheet is not a legitimate code, see if you can confidently determine what the technician intended to record. For example, if “PI” was entered as a Shrub Species Code and the transect is obviously in Pinyon/Juniper habitat, change the species code to “PY”. If you are uncertain about the species code recorded, try contacting the field technician that recorded the data to see if they can help you figure it out. If you are unable to contact the technician, or you are still unsure about the record, change the code to “OT”.

I. Shrub Percentages

To check the Shrub Percentages, select the “All Shrubs By Transect” worksheet and create a column called “Total Percent” to the right of the last column on the sheet. Add a formula that sums across each row. Sort by “Total Percent” descending. Check all Total Percentages that do not equal 100 to make sure they were entered into the database correctly. Total Percentages totaling between 90 and 110 are considered acceptable. If the Total Percentage adds up to less than 90% or more than 110% flag the data as unusable.

J. Ground Covers that don’t sum to 100

Select the “Ground Cover Not 100%” worksheet and create a column called “Total Percent” to the right of the last column on the sheet. Add a formula that sums across each row. Sort by “Total Percent”, descending. Check all Total Percentages that do not equal 100 to make sure they were entered into the database correctly. Total Percentages between 90 and 110 on the datasheet are acceptable. If the database matches the datasheet and the Total Percentage is less than 90% or more than 110% flag the data as unusable.

K. Grass and Herbaceous Height

Select the “0 Grass Height” worksheet. This query will display Residual Grass heights and Live Grass and Herbaceous heights that are “0” or were left blank. Check all residual grass height equal to 0 to make sure no residual grass % was present at that point. If there was residual grass present and the height was recorded as “0”, flag that data as unusable. If the residual grass height was left blank, check the datasheet to make sure there was no residual grass % recorded. If no residual grass was present, enter a “0” in the database. If there was residual grass present and the height was left blank, flag that data as unusable. Repeat this process for Live Grass and Herbaceous height.

4. Bird Data

A. Bird Distances ≤ 0

The “Bird Distances ≤ 0 ” worksheet displays all bird records, except for NOBI and 88 records, with distances equal to or less than 0. Check all of the records to make sure the data were entered correctly. Make any necessary changes in the database and record notes for any changes you make.

B. Birds with Cluster IDs

The “Birds with Cluster IDs” worksheet displays all bird records with an alpha code in the Cluster ID field. We need to verify that these are in fact clusters. Check each record to make sure they

meet the definition of a cluster. A cluster linked by an alpha code must meet the following requirements:

- 1) Must be the same species;
- 2) Must occur on the same point and same minute within a transect;
- 3) Must be within 20m of one another;
- 4) Can NOT be two singing males.

Look for errors like clusters across species or minutes, a single bird detection missing its partner, or non-alpha codes entered into this column. These are incorrect entries and should be fixed. Make any necessary changes in the database and record notes for any changes you make.

C. Birds with F, U, or Invalid How Codes

Refer to the “Birds with Invalid How or F U” worksheet. This worksheet displays all bird records with a “How” code entered as “U” or “F” as well as any codes not found on the drop-down list of accepted codes.

1) “U” Code

Check all codes equal to “U” against the physical datasheets to make sure these were entered correctly. If there was no “How” recorded on the datasheet then leave the code in the database as “U”. If there is an accepted “How” code recorded then enter the correct code in the database.

2) Flyovers

For all “F” (flyover) detections, it is a good idea to make sure technicians were correctly recording birds as flyovers. In the past, this has been a difficult concept for technicians to understand; often birds that are flying get recorded as flyovers even if they are actually using the surrounding habitat (i.e., Red Crossbill, swallows/swifts, raptors). If a technician repeatedly records a bird like Red Crossbill as a “flyover” and you believe the bird was using the habitat, you should change the “F” code to “U”. We do not include “flyover” birds in analysis, so if a technician consistently recorded a species as a “flyover” when it wasn’t the data analyses will be significantly impacted.

3) Unacceptable Codes

If there are bird detections with a how code letter that does not match any of the accepted how codes, look at the datasheet to see if someone entered the code into the database incorrectly and fix it in the database if you can. If a field technician actually recorded the code on the datasheet incorrectly, then change the code in the database to “U” for unknown.

D. Birds with Invalid Minutes

The “Birds with Invalid Minute” worksheet will show all bird records where the Minute field is equal to “0”, greater than “6” or missing altogether.

1) Minute equals 0

For bird records where the Minute field is equal to “0” check the datasheet to see if a valid Minute was recorded, and if so, enter that into the database. If no Minute was recorded and the Minute can be deduced by looking at the bird data (e.g., there is one bird recorded

followed by five NOBIs and none of the records have a Minute recorded), enter the Minutes as they should have been recorded. If the Minute associated with the bird record cannot be deduced (e.g., six bird records on a point with no Minutes recorded), then set all Minutes equal to "0".

2) Minute Greater Than 6

We record bird data for six minutes on point counts using the IMBCR protocol, so no bird record should have a Minute greater than "6". For any records with a Minute greater than "6", contact the technician to see if they can remember what they did. If the technician confirms recording too many minutes, delete bird records associated in any Minutes above six. If the technician does not respond or does not know, count the number of Minutes recorded for the timesheet. If only six Minutes were recorded, see if you can adjust the Minute numbers to be 1 – 6. If more than six Minutes were recorded, delete the data for any Minutes above 6 and change all Minutes to "0".

3) Minute Null

If no Minute was entered for a bird record, refer to the datasheet to see if a Minute was recorded and, if so, enter that number into the database. If no Minute was recorded on the datasheet, follow the instructions in the "Minute equals 0" section above.

G. Incorrect Minute Count

Each point count conducted using the IMBCR design should have six Minutes of data recorded. The "Incorrect Minute Count" worksheet will show the number of Minutes recorded for each point on each survey conducted when the number of Minutes does not equal six. Investigate why these points don't have six Minutes recorded. If errors were made during data entry, make any necessary changes in the database and record notes for any changes you make. If errors were made in the field, there are two ways of handling the problem:

1) No 6th Minute

If a technician recorded Minutes sequentially (e.g., 1, 2, 3, 4, 5), but forgot to record the sixth minute, you can assume that no birds were detected in the last minute. Enter a "NOBI" record for minute six in this case.

2) Too many or too few Minutes recorded

If a field technician recorded too many Minutes on the physical datasheet, contact the technician to see if they can remember what they did. If the technician confirms recording too many minutes, delete bird records associated with Minutes above six. If the technician does not respond or does not know, delete the data for any Minutes above six and change all Minutes to "0". If a technician recorded too few Minutes and they were not recorded sequentially (e.g., 1, 2, 4, 5, 6), then change all of the Minutes for these points to "0".

H. Invalid NOBIs

The "Invalid NOBI" worksheet will display any "NOBI" records that do not match the auto-fill requirements in the data entry application (Distance = -1, How = U, Sex = U, Visual and Migrant boxes not checked, Cluster Size = 0, and no Cluster Code recorded). Check each of these records to confirm that each "NOBI" on the list is a legitimate "NOBI". If the record was entered incorrectly, then change the "NOBI" to the appropriate 4-letter Species Code and make sure the

rest of the data for that record is accurate. If the record is a legitimate “NOBI”, note that on the worksheet and don’t worry about fixing the values in the database. We will run a query to automatically update this information once proofing is complete.

I. NOBIs with Birds

The “NOBI with Birds” worksheet will display all Transects, Points, and Minutes where there are both a NOBI and a non-NOBI Bird Code. Each of these lines represents an error since these two codes should never be found in the same minute. Consult the bird datasheet and make necessary changes to the database.

J. Migrant Birds

The “Migrant Birds” worksheet will display any bird records that have the “Migrating?” checkbox selected in the database. Review these records and make sure that the “Migrating?” box is checked on the datasheet too. If the bird record on the datasheet does NOT have the “Migrating?” box checked please uncheck the “Migrating?” box in the database.

VII. Final Steps (for the Monitoring Coordinator only)

After all proofing is complete the Monitoring Coordinator should request the database manager to do the following:

- Change NOBI distance = -1, How = U, Sex = U, Visual and Migrant boxes not checked, Cluster Size = 0, and no Cluster Code recorded
- Change 88 bird distances to “-1”
- Change all recorder to “none”
- Clear all cluster codes that do not meet the criteria
- Check for Missing UTMs/zones for on point and pointvisit tables
- Check for points missing bird data and reasons skipped that were entered into the database
- Check for points missing reasons skipped
- Check for points with bird data and a reason skipped
- Checked for points marked as completed with no bird data
- Make data available on ADC