

REEF CHECK CALIFORNIA QA/QC PROCEDURES

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This document summarizes the Quality Assurance/Quality Control procedures implemented by the Reef Check California Program (RCCA). These procedures were put in place to help ensure the quality of data collected by standardizing the training, data collection and data entry processes.

Training

All participants are required to successfully complete the RCCA Training course under the direct supervision of a certified RCCA Instructor to be eligible to submit data to the RCCA Nearshore Ecosystem Database. Participants with extensive prior scientific diving experience can opt out of the training course but must demonstrate proficiency in all components of the RCCA protocol including successfully passing both the written and field testing components under the supervision of a certified RCCA Instructor before they can submit data.

Required components of the RCCA training course are:

1. Completed reading of the Reef Check California Training Manual
2. Attendance and participation at all classroom sessions (10 hours)
3. Attendance and participation at the pool session (3 hours)
4. Attendance and participation at all field sessions (6 dives)
5. Successfully pass the written multiple choice test (85% passing score)
6. Successfully pass the species identification test (85% passing score)
7. Successfully complete the methods and species identification field practical exercises

Data Collection

RCCA data collection methods have been designed to ensure the safety of the surveyor as the primary goal followed by the accuracy and precision of all data collected. All surveyors must follow the methods outlined in the Reef Check California Training Manual (4th Edition). The following items have been included in the survey protocol to increase the precision of all surveys by reducing sampler error and bias:

1. Standardized site selection and transect deployment procedures
2. Standardized time requirements, search image and flashlights use procedures for all transects and fish surveys
3. Minimum size requirements for all invertebrate and algal species to focus on emergent animals only
4. Grouping of species with similar morphological traits (e.g. canary and vermilion rockfishes) to reduce the likelihood of misidentification
5. Use of size categories (i.e. bins) for fish surveys
6. Use of standardized data notation procedures on the underwater data sheets
7. High level of replication within a site

Field Data Verification

Immediately following each dive, each team member must review their data sheet for completeness and legibility. The Data Captain, who is designated prior to the survey to tally and ensure the correct completion of data sheets, verifies this prior to collection of each sheet and discusses any potential outliers with the team member. If a consensus on any datasheet cannot be reached at this time, that survey will be rejected and the survey will need to be redone.

Data Entry

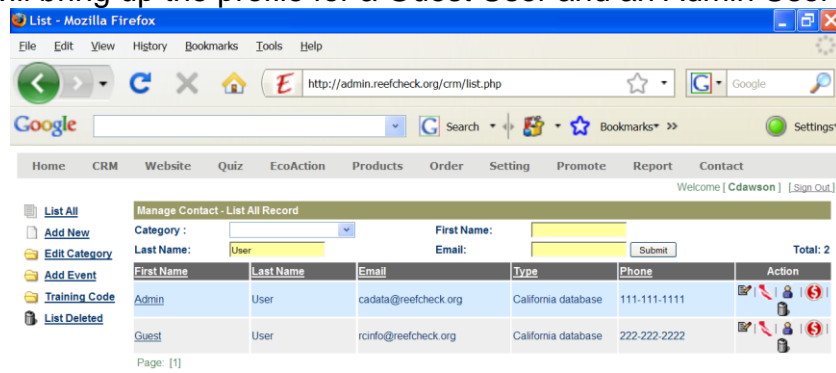
As of mid-2008 all data entry is completed the web-based data management and dissemination tool called the Nearshore Ecosystem Database (NED, <http://ned.reefcheck.org/>). The procedures below outlines the process to collect, manage and verify data collected by RCCA divers.


NED Standard Operation Procedures for Dataentry

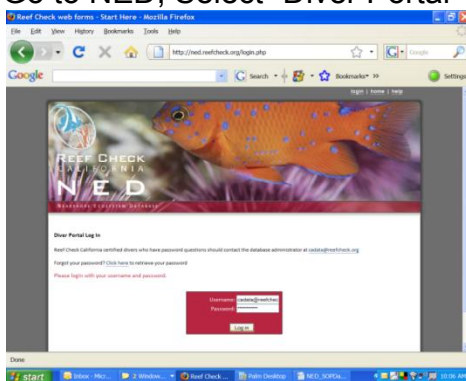
1. Data Captain or RCCA Staff takes completed datasheet set from survey site, rinses and dries sheets. Arrange datasheets by type 1) Site Description, 2) Fish, 3) Inverts, 4) Seaweed, 5) UPC.
2. Data is entered on-line through NED within 72 hours of completion of survey. NOTE: EVEN IF SURVEY WAS NOT COMPLETED ALL DATA COLLECTED NEEDS TO BE IN NED WITHIN 72 HOURS OF SURVEY.
 - a. Data is entered sequentially in NED with divers proceeding transect by transect
 - i. Site Description NOTE: YOUR NAME SHOULD GO IN "SUBMITTED BY" AND "CHECKED BY" WILL BE THE NAME OF THE PERSONE WHO SPOT CHECKS YOUR DATAENTRY PRIOR TO SUBMISSION.
 - ii. Fish 1-18
 - iii. Inverts 1-6
 - iv. Abalone size 1-6
 - v. Seaweed 1-6
 - vi. UPC 1-6
 - vii. Urchin Size
 - b. Dataentry person than goes to Review page.
 - i. For every transect where an error is shown the dataentry person needs to navigate back to that transect in NED and make sure the error either is:
 1. Entered correctly and should be checked off on the Review page as "OK"
 2. Needs to be corrected
 - ii. Once this is completed put your initials and the date on the BOTTOM of the datasheet under the transect you checked the error on.
 1. If any errors are corrected make the correction on the original datasheet in **RED**
 2. Make sure the correction is clearly legible on the datasheet
 - iii. After that error is checked/corrected return to Review page and repeat for all reported steps follow b(i)-b(ii).
 - c. After all reported errors are corrected have someone spot check your entries by pulling at least a couple of datasheets from the stack and checking to make sure you entered them correctly. This person does not have to be an RCCA trained person and their name should go in the "Checked by" box. If the person is not a RCCA diver you will need to enter their information in the "List additional divers" section. Hit save and continue then return to the drop down list in the "Checked by section" and their name will appear. (After this is completed hit "Submit Survey" button on the Review page. PLEASE WRITE THE PASSWORD GIVEN TO YOU BY NED ON THE TOP OF THE SITE DESCRIPTION SHEET.
 - d. Once you have received a confirmation email from your Regional Manager please use the self-addressed envelope with postage you received from your Volunteer Coordinator to mail the original datasheets. NOTE: THIS IS A KEY STEP IN THE PROCESS AS DATA CANNOT BE VETTED UNTIL THE DATASHEETS ARE RECEIVED.

QUALITY ASSURANCE/CONTROL PROCEDURES FOR NED BACKEND

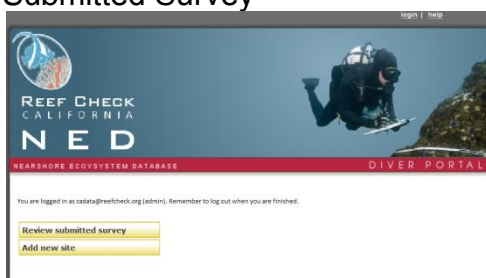
1. Regional Managers/Staff receive datasheets from Data Captain
2. Regional Manager/Staff goes to NED and logs-in. The Username and Password can be found by using your login for the CRM Database <http://admin.reefcheck.org/admin/index.php>
 - a. Go to CRM dropdown at the top of the page and select “Manage Contact”
 - b. In the “Last Name:” cell type User
 - c. This will bring up the profile for a Guest User and an Admin User



- i. The Guest User information can be given to someone who would like to check out the Diver Portal backend. This should only be given to colleagues with specific instructions on how to move within the system without corrupting the data entry process
 - ii. The Admin User information SHOULD NEVER UNDER ANY CIRCUMSTANCES BE GIVEN OUT TO ANYONE. When you sign in as an Admin. User you are connected to the database and changes you make will be permanent (i.e. if you erase data it will have to be entered again). The admin password will be changed often.
- d. Select the Basic information  icon to get the Username and Password information for the account you wish to sign in as.
3. Go to NED, Select “Diver Portal” and log-in as Admin. User



4. The first page that comes up gives you two option you can either “Add a New Site” or “Review Submitted Survey”



- a. The “Add new site” is to be used to add a new survey site that has not been surveyed in previous years. You simply add in the required information and select “Save and Exit”. DO NOT add a site until you have all the required information.

- b. The “Review submitted survey” button should be selected to do the final QA/QC checks of data so it can be finalized and displayed in the NED Map Viewer
- You will need to Select the survey you want to review from the drop down list and enter the password provided by NED to the dataentry person. If you do not have the password email cadata@reefcheck.org to get the password.
 - This will take you to the review page for that survey

Survey:	Errors:	Checked:
<input checked="" type="checkbox"/> Survey Info	No Errors	<input checked="" type="checkbox"/>
Fish:	Errors:	Checked:
<input checked="" type="checkbox"/> Transect 1	1 Error: Buddy has not been selected.	<input type="checkbox"/>
<input checked="" type="checkbox"/> Transect 2	2 Errors: Buddy has not been selected. You have not yet entered any observation values for this transect.	<input type="checkbox"/>
<input checked="" type="checkbox"/> Transect 3	1 Error: Buddy has not been selected.	<input type="checkbox"/>
<input checked="" type="checkbox"/> Transect 4	No Errors	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Transect 5	1 Error: You have not yet entered any observation values for this transect.	<input type="checkbox"/>

- First step in the review process is to navigate back to ALL the reported errors and compare it to the datasheet
 - If the data was entered correctly navigate back to the Review page and check it off
 - If it is entered incorrectly correct it in NED, be sure to hit “Save and Continue” before you go back to the Review page. Also make sure to put your initials and the date in GREEN or BLUE on the UPPER right hand corner or every datasheet you have checked.
- Once all errors have been corrected or checked off do the following making sure to put your initials and the date in GREEN or BLUE on the UPPER right hand corner or every datasheet you have checked.:
 - Review entire Site Description page comparing to datasheet
 - Random select 4 fish transects and review comparing to datasheet
 - Randomly select 1 invert transect and review comparing to datasheet
 - Be sure to check that abalone sizes were entered correctly
 - Also make sure subsampling was entered correctly
 - Be sure to review abalone sizing if applicable

4. Randomly select 1 algae transect and review comparing to datasheet
 5. Randomly select 1 UPC transect and review comparing to datasheet
 6. Make sure to review urchin sizing if it was completed
- c. After you have done the review of errors and the random checks (~20 % of transects entered) scroll to the bottom of the review page and select "Submit Survey as Final".
CAUTION ONLY DO THIS IF YOU ARE ABSOLUTELY POSITIVE ON ALL THE DATA ENTRY AND QA/QC PROCEDURES

The screenshot displays a survey review interface with the following elements:

- Transect 6:** A red 'x' icon and a checkmark icon. A red error message states: "1 Error: Buddy has not been selected."
- Urchin Size:** A table with two columns: "Urchin Size:" and "Errors:". Under "Urchin Size:", there is a checked checkbox for "Survey 1". Under "Errors:", it says "No Errors" and "There is no urchin sizing form associated with this diver survey." A "Checked:" label is on the right.
- Diver Certification Check:** A section with the text "All divers appear to be properly certified."
- Instructions:** A yellow box contains text: "Use the menu above to jump to a particular transect. When you have finished reviewing the survey and checked any errors, click on 'Submit Survey as Final' to add the survey to the master database. The survey can only be submitted once all errors have been checked."
- Action Buttons:**
 - "Submit Survey as Final" (yellow button)
 - "Downgrade Survey to Incomplete" (yellow button)
 - "Exit Survey" (blue button)
- Footer:** Text: "To exit the survey without making any changes to the survey status, click here:" followed by the "Exit Survey" button.

5. If you have found major errors or the survey was incorrectly submitted select "Downgrade Survey to Incomplete". This does not lose any data it simply once again makes this survey accessible through the "Diver Portal" to non-admin users.
6. You should go to NED mapviewer to see if your data has uploaded correctly to the site. If there are any discrepancies contact cadata@reefcheck.org immediately to describe the problem.