| Coral Skeleton Density | |
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| Prepared by: | Bahr Marine Ecology Lab |
| Last Updated: | December 2022 |
| Pre-requisite SOP: Coral Airbrushing Protocol, Coral Bleaching Protocol | |
| Safety Precautions: | |
| * Required PPE – Enclosed shoes, gloves | |
| Purpose: | |
| * To calculate bulk skeletal density of a coral skeleton * May reveal insights into calcification processes of accretion vs extension. | |
| Materials: | |
| * Graduated cylinder * Beaker * Tweezers * Water * Weigh boat * Scale/Balance * Towels | |
| Volume Procedure: | |
| * Determine what size graduated cylinder is required for the size of the corals. * Fill the graduated cylinder with x amount of water. This will change depending on the size of the cylinder and coral skeletons. This amount of water will be the same for each coral within your sample. * Saturate the coral in water and try to remove all air bubbles from the skeleton. This can be done by tapping the beaker or swishing the skeleton around with tweezers. * Once saturated, carefully lower the skeleton into the graduated cylinder filled with water using tweezers.   + Make sure the water is at the same level for each measurement. * Once the water settles determine how much the water has risen from its original measurement. This will give you the volume of the coral.   + Example: Starts at 50 mL and then rises to 65 mL. V = 15 mL * Do this 3 times for each coral, then repeat 2 more times on different days.   + In total, measure the volume of the corals on 3 different days and each coral 3 times on each day. | |
| Mass Procedure: | |
| * Using a beaker saturate the coral skeleton with water. Try to remove all air bubbles. * Pre-measure weigh boat on balance and record the mass. * Place the saturated coral skeleton in a weigh boat and then place it on a balance to determine the skeleton's wet mass. Try not to get the balance wet and dry up any water that spills. * Record the mass of the saturated coral skeleton and then subtract the weight boat’s mass. * Do this procedure 2 times for each coral. | |
| Density Procedure: | |
| * Average volumes for each coral skeleton. * Average mass for each coral skeleton. * Use the averages to determine the density of the skeleton.   + Use the equation density = mass/volume. | |
| Quality Assurance and Control: | |
| *Proper Training*  Proper protocols and training must be implemented to ensure the quality of data generated in the laboratory. Researchers must ensure that all equipment is accurately calibrated, inspected, and maintained according to the manufacturer’s instructions.  *Data Review*  All laboratory data will be reviewed for completeness and transfer errors. Data will be reviewed by a second individual after entry into Excel spreadsheets by comparing the entered, electronic data to the original records (e.g., hand-written datasheets or laboratory notebooks). Data will be summarized as descriptive statistics and in tabular and graphical form to allow visual inspection and verification, and comparison to expected or target values.    *Data Verification*  Data will be checked for compliance with the procedures outlined in the SOPs. Any deviations from those procedures and the impact on the quality of the data will be assessed and discussed with Task Members. Any laboratory data outliers will be flagged.    *Data Validation*  Once the data has been reviewed and verified, it will be assessed to determine the overall acceptability of the objectives of the project. Control samples will be used to determine the condition of the experimental test specimens in the absence of experimental treatments or exposures. Any errors in datasets detected will be discussed with lab members and project leads to determine the impact on the data and its use for the project. If there are any limitations to the data, they will be disclosed as part of the published literature.  *Procedure Specific QA/QC Methods* The same individual preforms tissue removal to decrease differences across members. Lot numbers and expiration dates for consumables are recorded by personnel performing the testing on datasheets or logbooks, as appropriate. Reagents or standard solutions are used beyond the expiration date printed on the label. All supplies, equipment, and consumables procured for the analysis this study are documented, inspected, and accepted in accordance with the requirements of each. All instruments used have been calibrated according to calibration procedures described in the instrument manuals. | |