

EVALUATION OF BENTHIC SAMPLING METHODS CONSIDERED FOR THE CORAL REEF ASSESSMENT AND MONITORING PROGRAM (CRAMP) IN HAWAII

Brown E, Cox EF, Tissot B, Rodgers K and Smith W. (CE, RK, SW) Hawaii Institute of Marine Biology, P.O. Box 1360, Kaneohe, HI 96744. (TB) Washington State University Vancouver, 14204 NE Salmon Creek Avenue, Vancouver, WA 98686-9600.

E-mail: Pavona@aol.com, (CE) Fcox@hawaii.edu, (TB) Tissot@vancouver.wsu.edu

Testing site-specific protocols and validation of methods in heterogeneous environments is an important precursor to initiating monitoring programs. This study examined the ability to detect change in coral cover among various methods for Hawaiian reefs. Transect lines of variable length (10m, 25m and 50m) with permanent pins at the endpoints were sampled at various sites using three methods: Photoquadrats, visual census point-intercept quadrats and video transects to measure coral cover. Sampling was repeated at several locations to estimate sampling precision, observer and method variability, and to calculate statistical power for these techniques. Repeat photoquadrats and point-intercept quadrat data showed high variability and consequently low precision. Variability between observers analyzing the same data was low. Power analysis with current sample sizes indicated that these methods had low power in detecting small change (5-10%) in coral cover and would only be suitable for delineating major changes (>20%) between years. We are currently evaluating digital video transects using a randomized sampling design with larger sample size. Another option is using permanent quadrats in a repeated measures design. (Key words: *coral reefs, monitoring, sampling design, power analysis, Hawaii*)