Caribbean Planning for the Adaptation to Global Climate Change (CPACC)

Workshop Report

Training Workshop on
Protocols for Site Selection, Monitoring and Data Analysis

7 – 14 March 1999

(Clarion Resort, New Providence, The Bahamas)

for

Component 5:
Coral Reef Monitoring for Climate Change.

Prepared by

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The CPACC Regional Project Implementation Unit and the Government of the Bahamas successfully hosted the Component 5 Sub-regional Training Workshop on the Protocols for Site Selection, Monitoring and Data Analysis.

Participants from the Bahamas, Belize and Jamaica as well as observers from Barbados and The Turks and Caicos Islands (Table 1) participated in a five-day training workshop at the Clarion Resort Hotel, New Providence, and The Bahamas.

The objectives of the workshop were to:

1. Familiarize pilot country team leaders with the equipment and protocols that will be used in the implementation of coral reef monitoring in their respective countries.
2. Train the pilot country representatives to train the members of their monitoring teams in their respective countries.

The first objective was achieved during the course of the training workshop. The second objective is expected to be achieved by the workshop participants shortly after they return to their respective countries.

The intense training programme comprised ;

- class room session on the protocols for;
  - the operation, maintenance and handling of the Sony DCR VX-1000 digital video camera (www.sel.sony.com/SEL/consumer/camcorder/dcr-vx1000.html) and the Light and Motion Stingray Under water DVC housing (www.lmindustries.com/uw/uw_index.htm).
  - site selection
  - monitoring, and
  - data analysis

- Field session on the applied aspects of protocols for;
  - site selection
  - coral reef monitoring using the Sony DRC VX-1000 DVC with underwater housing.

Figure 1. Dr. J. D. Woodley discusses refinements to the Site Selection Protocol based on information gathered during reconnaissance dives on local reefs. L. Walling Photo.

The classroom sessions tended to be interactive with a fair amount of debate on the pros and cons of particular aspects of a methodology or procedure. This was particularly the case with the review of the protocol on site selection and monitoring, led by Dr. Jeremy Woodley (woodley@uwimona.edu.jm). The discussion on issues such as the practical implications of random,

versus haphazard site selection and the spacing of randomly selected transect on a patchy reef environment, became quite animated at times, and extended well into Tuesday night.

It was agreed that the monitoring teams would not be able to select the locations for the sample transects in a truly random manner without some very expensive equipment or a prohibitive amount of bottom time. The problem that is faced when randomly selecting survey locations is, how does one get to successive, randomly selected points when under water. Jeff Miller (J_Miller@usgs.gov) at the US Geological Survey, Biological Resources Division in the US Virgin Islands, is currently developing a methodology to address this problem.

It was agreed that the best approach under the existing constraints, would be to

- randomly select sampling locations following the site selection protocol (this attachment is in MS Word with the file name " Site Selection").
- Map the randomly selected sampling locations
- Discard those sampling locations that are within 20 m of each other (too near)
- Discard those locations that do not fall, substantially on the target coral reefs
- Randomly select additional sampling locations to bring the number of transects up to the required total
- employ a procedure for moving from point to point under water using compass bearings, mapped sampling sites and distance estimation to establish transects for monitoring.

It is unlikely that, randomly selected, mapped and geographically referenced transect sites, could be accurately located in the field. The transect sites could be approximately located and would be independent of each other. It was felt that the inaccuracy associated with sample site location in the field, posed less of a problem in the final analysis, than the problem that would be posed by haphazard sampling in which the location of each transect is dependent on the one which precedes (Rogers 1998, caroline_rogers@usgs.gov).

The digital video footage that was recorded during the coral reef monitoring field exercises provided the data for the training sessions on data analysis. The images were analyzed by capturing individual video frames on a high resolution monitor and overlaying the screen with a clear plastic sheet containing random dots (Aronson and Swanson, 1997). The identities of the sessile organisms underlying the dots

were recorded (Fig. 1) in a spreadsheet template designed by Jeff Miller, one of the Trainers at our workshop.

Figure 2: Data Analysis Training Session. Participants record data on benthic coral reef community characteristics from captured video image. The digital video footage was recorded by the participants during an earlier training exercise. Data were entered into an Excel spreadsheet designed by Jeff Miller. L. Walling Photo.

The interactive nature of the classroom sessions led to some small but important changes to the spreadsheet template designed. Dulcie Linton

Figure 3: Jeff Miller (front center) guides workshop participants through the data analysis protocol. (L – R Back) Eleanor Phillips, Douglas Murry, Jeremy Saunders, Angelique Brathwaite, Krishna Desai, James Azueta, Gilford Lloyd (Front Left) and Dylan Gomez (Front Right). L. Walling Photo.

(dmlinton@uwimona.edu.jm), the Data Manager at the Centre for Marine Sciences, University of the West Indies, Jamaica, revised the codes for the benthic organisms and substrate so that they were consistent with the four-letter codes used by the CARICOMP Project (www.uwimona.edu.jm/centres/cms/caricomp/carinew.htm). This was important because the CPACC Project (www.cpacc.org) has attempted to ensure consistency and compatibility between the two programmes. Jeff Miller fine-tuned the spread sheet to improve the efficiency of data entry. The spreadsheet template has been attached as the Excel file "dataentry".

The Bahamas was chosen as the venue for the sub-regional training workshop because it was considered to have the least institutional experience among the pilot project countries in monitoring or surveying coral reefs. As a result of this inexperience, there was a paucity of base-line data on the coral reefs accessible through Government institutions. The critical value of base-line data for planning and decision making became apparent during and after the reconnaissance and site selection field exercises. Without detailed knowledge of the characteristics of the reefs around New Providence the team could not make meaningful and definitive decisions regarding the selection of target reef habitats(see the attachment "**Site Selection**") and the distribution of randomly located transects amongst similar target reef habitats.

All of the participants in the workshop recognised the problems that they would face if they attempted to implement a coral reef monitoring programmes without:

- mapping the **operational area** using the relevant photographs, charts and maps;
- determining the distribution of coral reefs and other habitats within the operational area, (steps A and B in the **Site Selection** Protocol).

It was suggested that we could have avoided some of the problems with site selection that the workshop team experienced by staging the workshop in an area where the reefs had been mapped. I feel that the participants learned more from having to work through the problems posed by inadequate base-line data.

It is expected that the workshop participants will go back to their respective countries and train the members of their monitoring teams in the application of the protocols presented and revised at the workshop.

The cc-reefs e-group will provide the participants with a forum to facilitate follow-up to discussions started at the workshop, to discuss implementation problems, and to exchange ideas and experiences with each other, and with other interested professionals.

References

Aronson, R. B. and Swanson, D. W. (1997). Video Surveys of Coral Reefs: Uni- and Multivariate Applications. In: Proc. 8th Int. Coral Reef Sym. 2:1441 - 1446.

Rogers, C. S. 1998. Sampling May be Haphazardous to Your Reef Monitoring Programme. Mimio.

Table 1: Contact Information for Workshop Participants.

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