

Coral Reef Health, Connectivity, Assessment and Monitoring

Eric Jordán-Dahlgren

According to many sources, coral reefs as we know them, are declining to a variable extent. Multiple stressors, both human induced and natural, seem to be responsible for mortality events among different elements of the coral community. Although it is now possible to identify or infer causes of mortality or degradation in many instances (bleaching, diseases, over-fishing; habitat destruction, etc.), we also have become aware that reefs are highly variable and may react differently to apparently similar stressors. As a consequence reef robustness, resilience and fragility are relative terms that vary along a wide time-space scale, and therefore difficult to use for predictive purposes. Our limited understanding of the ecological processes and interactions at the populational and community level, and of the oceanographic dynamics that modulate ecological connectivity, hampers our ability to interpret the long term effect of changes of state in the coral community, whether it be degradation or recovery. On a global scale we still are trying to assess the condition of reefs, and although we have

achieved good results, so far our limited knowledge on the complex dynamics of the reef ecosystem makes it difficult to identify unique indicators of reef health. Monitoring change in coral community structure or key coral populations is necessary to increase our understanding of coral community responses. But unless the monitoring is designed to evaluate—at adequate temporal and spatial scales—the effect of suspected stressors, its utility will be reduced merely to documenting change and not helping to explain why the change occurred. Given that there is now compelling evidence of degradation in coral reef systems, and that our need to better understand the context under which degradation and recovery occur is becoming more urgent by the day, this understanding may have far reaching implications for proper conservation and management strategies.