Recommended Survey Protocol for *Acropora* spp. in Support of Section 7 Consultation

(*Revised October 2007*)

Objective:
To outline recommended survey methods for determining the distribution and abundance of *Acropora* spp. at sites under permit review. The methods should be applicable to a broad range of project scales.

Problem:
Two aspects make quantitative sampling for *Acropora* spp. difficult:

1. Patchy and clumped distribution, with colonies as small as 0.01 m^2, which may be clumped together within a sub-area of the project area; and
2. Stratified distribution, with occurrence perhaps limited to a particular depth gradient or substrate type within a project area.

Recommended Methods:
The most appropriate approach depends on scale, and the amount of expected error depends on the approach. Unless a complete survey of the entire area is done, the estimated distribution and abundance of these species may be significantly in error. With the exception of very small project areas, efficient field sampling may require sampling in two stages. A preliminary visual reconnaissance of the site should be conducted to locate any occurrences of *Acropora* spp. Following the preliminary reconnaissance, a more comprehensive sampling should be initiated.

When using following survey methods, the survey personnel should record the following:

1. Species;
2. Single largest linear dimension of the colony or length, height, and width (units = mm) ;
3. Rank of percentage live tissue (i.e., > or < 50%);
4. GPS coordinate of each colony (if possible) or each survey site (unit = decimal degrees and state datum); and
5. Site map with locations of each colony.

Small Project Area (< ~0.1 hectare or 0.25 acre)
Conduct a visual reconnaissance of entire project area. This can be accomplished either with scooter assisted snorkel (if visibility and depth is sufficient to collect required data) or SCUBA. If a benthic habitat map is available, reconnaissance can be limited to hard bottom.

Intermediate to Large Project Area (> ~0.1 hectare or ~0.25 acre)
Data should be collected at 1 sampling site per every 10,000 m^2. If a benthic habitat map is available for the site, sampling can be limited to the portion of the project site that contains hard bottom (i.e., where the species may occur). The portion that contains unconsolidated sediment can be omitted from sampling area. If a benthic habitat map is unavailable, then samples must be collected per every 10,000 m^2 of project area. At each sampling site, a 2-tiered survey will be conducted.

1. Conduct a structured 20-min timed swim from a referenced center point (i.e., downline). If 5 or less colonies are encountered, collect the required data on those colonies and proceed to next sampling site. If more than 5 colonies are encountered, process to 2nd tier.
2. Conduct 3 belt transects from the referenced center point at 3 random bearings. Each belt transect should measure 4 m X 50 m, for a total of 200 m^2 sampled. Record all required data for all colonies encountered along the transect.