

# Reef Check California

## Uniform Point Contact (UPC) transects sampling

Reef Check California (RCCA) surveys consist of visual surveys performed by scuba divers. At each site, buddy teams of divers conduct eighteen 30 m x 2 m benthic transects, to monitor key species of fishes (35 species), invertebrates (33 species) and algae (5 species & 4 invasive species) and to characterize the reef substrate and relief. Each site is divided into two "zones" by depth (shallow 5-12 meters and deep 12-18 meters - or from offshore to inshore at sites with little depth variation) to assure that samples are distributed across the face of a reef from inshore to offshore. RCCA's survey methods are based on visual census survey methods developed by the Partnership of Interdisciplinary Studies of Coastal Oceans (PISCO) and have been modified so that they can be taught in a reasonable amount of time to volunteer scuba divers. Species are selected because of their ecological or economic importance or because they are of specific management interest.

Uniform Point Contact (UPC) surveys are conducted on 6 transects per site (3 transects in each zone). At each of 30 uniformly spaced points along the 30 meter long transect substrate, cover and relief are recorded.

Substrate type is recorded as:

- Sand (Sand/Silt/Clay, < 0.5 cm)
- Cobble (rock and shell debris, 0.5 cm – 15 cm)
- Boulder (> 15 cm – 1m diameter)
- Reef (> 1m diameter)
- Other (metal, other man-made material etc.)

Cover is recorded as:

- None. Bare rock or sand
- Brown Seaweed. Any type of the five large kelps that are surveyed on the seaweed transect (giant kelp, bull kelp, Pterygophora, southern sea palm and Laminaria spp.).
- Articulated Coralline Algae.
- Other Brown Seaweed. Any other type of brown seaweed including *Sargassum* spp., *Undaria pinnatifida* and *Cystoseira*.

- Green Algae. Any type of algae that appears very green in color.
- Red Algae. Any type of algae that appears red in color (other than articulated and crustose coralline algae).
- Crustose Coralline Algae. Only if there are no other organisms present above it.
- Sessile Invertebrates. Includes sponges, anemones, bryozoans, gorgonians, sand castle worms, barnacles, etc. .
- Mobile Invertebrates. Includes sea stars, urchins, sea cucumbers, crabs, limpets,.
- Seagrasses. Includes surfgrass and eelgrass.

Relief is recorded as follows:

Vertical relief will be estimated by determining the greatest vertical relief that exists within a 1 meter by 0.5 meter imaginary box along the tape. The measured section will extend 0.5 m in front of each point and 0.5 m to either side of the tape. The height is estimated as the difference in height between the highest and lowest points within the imaginary 1 m x 0.5 m box in front of you. Four categories are used to record vertical relief estimates:

- 0 – 10 cm
- >10 cm – 1 m
- >1m – 2 m
- >2 m

For a complete description of the UPC sampling methods see the RCCA monitoring protocol at: [http://reefcheck.org/rcca/monitoring\\_protocol.php](http://reefcheck.org/rcca/monitoring_protocol.php).