Band Transects

Purpose

To determine abundance and distribution of rare and clumped organisms not adequately sampled by quadrats

Materials

2 dive slates with pencils
2 1.5 meter PVC rods
2 15 m tapes w/carabiners
2 underwater band transect data sheets (Appendix K)

Personnel

2 SCUBA equipped observers experienced in the identification and search image needed for species listed in Table 6.

Methods

Divers will sample twelve points along the transect line. The points are systematic with a random starting point. At the start of each field season new sampling points must be randomly selected. The initial sampling point (a number between 0-7) is chosen using a randomized selection method. That number will be the meter mark for the first quadrat placement. The subsequent sampling points along the line are at 8.33 m intervals rounded to the nearest whole number (8 m, 17 m, 25m, etc). Each sampling point is recorded consecutively on the top of the data sheets corresponding to quadrat 1,2,3 etc. This systematic set of numbers with a random start will be the same for all sites sampled throughout a field season.

Divers will attach a 15 m tape to the lead line near each sampling point with a carabiner. The divers swim out 10 m in opposite directions as your dive partner perpendicular to the 100 m transect (Figure 5). Next, drop and secure the tape reels to the bottom and swim back towards the transect line along one side of the 10 m tape while using the 1.5 m PVC rod to determine the width of the transect and count the organisms listed on the data sheet that occur within that area. Once the lead line is reached, work back towards the reel along the opposite side of the tape, counting target organisms within 1.5 m of the tape. Once the reel is reached, wind up the tape and move to the next subsequent meter number along the 100 m transect line. Be sure to search the habitat thoroughly, including cracks, and crevices. However, do not conduct any invasive sampling (i.e. do not turn over rocks). At the beginning, midpoint and end of each transect you should make sure you have good contact with your dive partner.

After returning to the surface, check your data sheet and your dive partner's data sheet for readability and outliers. Rinse the data sheets in fresh water, allow them to air dry, and store them in the completed data sheet notebook.

On each transect, each diver covers an area of 3 m x 10 m. Add adjacent segments (Count A and Count B) from both divers to produce a sampled area of 3 m x 20 m at each of the 12 points.

At the bottom of Table 6 is a list of "write-in" species. These species are very rare and are not listed on the datasheet since there is not enough room to include them. If one is observed on band transects it can be written in to the blank row at the bottom of the datasheet. In general, all abalone species should be counted on band transects if observed.

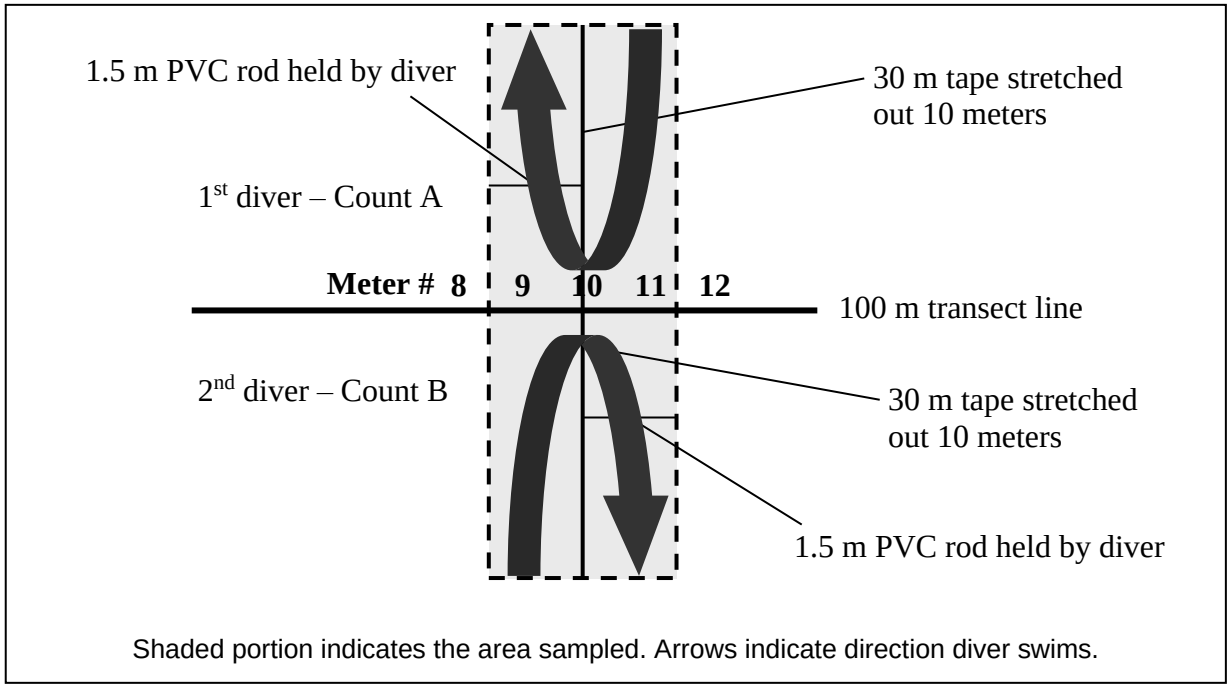

Figure 5. Band transect sampling procedure.

Time Required

Typically 100 to 150 minutes is required for sampling. Sampling time is decreased for flat, low relief habitats. Sampling time will increase at high relief, high cover areas. In addition, areas with large densities of *Lytechinus anamesus*, white sea urchin, will significantly slow sampling and may be best sampled using quadrats (in addition to band transects) at the discretion of the chief scientist on each cruise.

Table 6. Organisms sampled on band transects.

Species Name	Common Name
Algae	
Sargassum horneri	sargassum (adult = greater than 0.5 m tall or reproductive receptacles present)
Invertebrates	
Tethya aurantia	orange puffball sponge
Stylaster (Allopora) californicus	California hydrocoral
Urticina (Tealia) lofotensis	white-spotted rose anemone
Lophogorgia chilensis	red gorgonian
Muricea fruticosa	brown gorgonian
Muricea californica	California golden gorgonian
Megathura crenulata	giant keyhole limpet
Haliotis rufescens	red abalone
Haliotis corrugata	pink abalone
Haliotis fulgens	green abalone
Kelletia kelletii	Kellet's whelk
Crassadoma gigantea	rock scallop

Lytechinus anamesus	white sea urchin
Pycnopodia helianthoides	sunflower sea star
Aplysia californica	California brown sea hare
Panulirus interruptus	California spiny lobster
Additional "Write In" species:	
Haliotis sorenseni	white abalone
Haliotis assimilis	threaded abalone
Cryptochiton stelleri	gumboot chiton
Undaria pinnatifida	wakame (juvenile = less than 0.5 m tall, reproductive sporophyll absent)
Undaria pinnatifida	wakame (subadult = greater than 0.5 m tall and not reproductive [can have frills on either side of blade above the holdfast, but lacks mature, dark brown sporophyll])
Undaria pinnatifida	wakame (adult = greater than 0.5 m tall with well developed/reproductive sporophyll)