

SBC LTER Benthic Site Descriptions

Transects are all 40 meters in length and 2 meters wide unless otherwise noted. Eye bolts or rebar stakes mark the following distances along each transect: 0, 8, 16, 24, 32, 40 meters. Each Bolt is marked with a yellow tape flag attached with a pink cable tie. Rebar is marked with a 10-30cm piece of yellow polyethylene tubing. Eyebolts have tubing and sometimes a small float to keep the tubing upright. Concrete 1m long parking bumpers or long epoxy coated yellow rebar stakes mark the 0m and 40m of each transect. Note that the bumpers often move during storms up to 10m away!

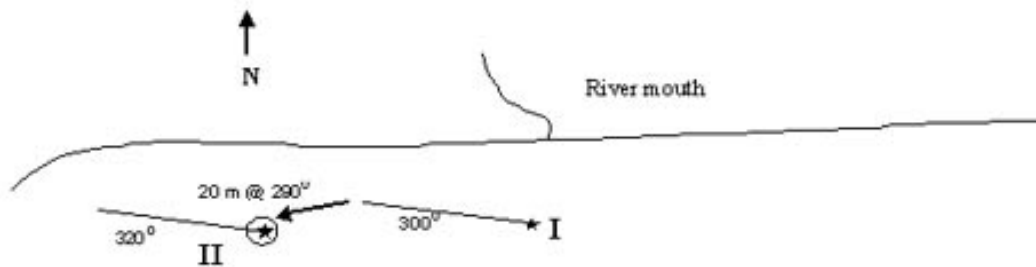
Arroyo Burro Reef

Transects: 2

Distance Apart: TR I-40 to TR II-0 is 20m at heading 290 degrees

General Orientation: 300 - 320

Tid-Bit(s): Transect I, 0m and 8m bolts



ABUR1 34, **24.007** 119, **44.663** Depth (meters): -6.3 to -7.2 Ref: WGS-84/MLLW

Description: Transect begins directly offshore of the Arroyo Burro creek mouth. Transect heading is 300-320 degrees. Bedrock and sand substrate has little relief (0-0.5m). Bolts 0, 8 and 16 are rebar with tygon tubing, the others are SS ¼" eyebolts with tubing and floats. Tid-Bits are on rebar at 0 and 8m. This transect often becomes inundated with sand and the eyebolts/rebar have been covered from 2005-present. There are parking bumpers located at the 0 and 40m, but the 40m is completely buried with only 40cm of 60cm long float attached to it exposed.

*** **2014 Biota: 50% SAND;60 Kelp Plants;33 PTL, 92 PTCA, 2 ANSP;91%DL** ***

ABUR2 34, **24.026** 119, **44.688** Depth (meters): -5.2 to -6 Ref: WGS-84/MLLW

Description: Transect starts 20m at 290 degrees from T1-40m rebar. Transect heading is 320 degrees. Transect consists of low bedrock ridges (0-0.5m) with areas of sand. 0m rebar is located on top of a 1m x 1m rock. All markers are SS ¼" eye bolts and/or rebar stakes with tubing. 0-16m are in deeper sand and 24-40m run along a ridge covered in shallow sand (since Aug-06). The 40m eyebolt is surrounded by large PTCA (Jul-10).

*** **2014 Biota : ALL SAND;4 Kelp Plants;2 ANSP;15%UV** ***

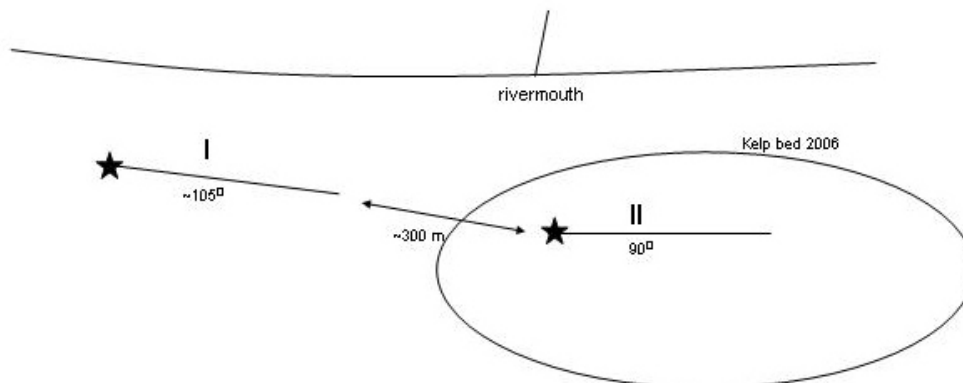
Arroyo Hondo Reef

Transects: 2

Distance Apart: TR I-40 to TR II-0 is 300m at heading 120 degrees

General Orientation: 70-110

Tid-Bit(s): Transect II, 0m and 8m bolts



AHND1 34, **28.312** 120, **8.663** Depth (meters): -6.3 to -7.1 Ref: WGS-84/MLLW

Description: From 2003-present this transect has been ~0.5m deep sand, with no exposed reef, but Diopatra beds with some epiphytic algae are present. Transect heading is approximately 105°. Depth slopes from approximately 16' at the 0 m stake to 24' at the 40 m stake. Due to high sand inundation another yellow parking bumper (at 0) and stakes at the 0, 24, and 40 have been put in temporarily. At the 40m stake, only 40 cm of float is sticking out of sand. The 24m stake only sticks 20 cm out of sand and lies 100° from 0m.

*** **2014 Biota: ALL SAND;4 Kelp Plants;2 OCTO, 0 PTCA;15%GS** ***

AHND2 34, **28.306** 120, **8.451** Depth (meters): -6.2 to -6.9 Ref: WGS-84/MLLW

Description: Transect is a boulder field with some relief (0-0.75m) and patchy sand with Diopatra beds. Bumper at 40m. This transect arcs from 70 to 90 degrees from the 0m bolt to the 16m bolt then runs 90 degrees. Markers at 0 and 8 m are SS 1/4" eyebolts, all others are rebar stakes, with tubing on the 0, 8, and 40m. Tid-Bits are on the 0 and 8m bolts.

*** **2014 Biota: 34% SAND;10 Kelp Plants;32 PTL, 9 ANSP, 3 SPL;85%DL** ***

Arroyo Quemado Reef

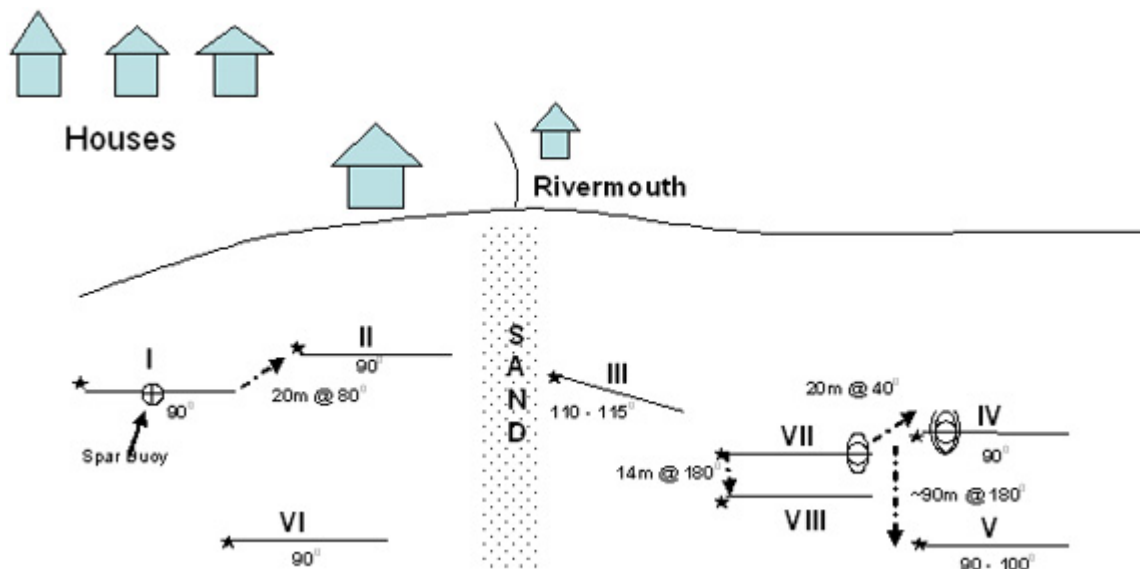
Transects: 8

Distance Apart: see map

General Orientation: 80 - 115

Tid-Bit(s): Transect II, 0m and 8m bolts

Light sensor: PAR at Transect IV 0m and VIII 0m stakes



AQUE1 34, **28.127** 120, **7.285** Depth (meters): -5.7 to -6.1 Ref: WGS-84/MLLW

Description: Transect begins west of the river mouth, on the backside of one of the larger ridges. The 0m bolt lies directly offshore of where the edge of the ridge jogs in, and then out, in a U-shape. Bedrock substrate with some moderate relief (0-1.5 m). All markers are SS ¼" eyebolts with tubing. Bumpers and rebar are located at the 0 and 40. Transect heading is 90 degrees. Tidbits are located at the 0 and 8m bolts.

*** **2014 Biota: NO SAND;4 Kelp Plants;63 PACA, 37 SPL, 1 CHOV, 5 AML, 2 DIL, 0 PTCA;16%EC** ***

AQUE2 34, **28.124** 120, **7.247** Depth (meters): -5.6 to -6.5 Ref: WGS-84/MLLW

Description: Located 20m at 80 degrees from TR1-40m bolt. The 0m bolt lies 1m past base of small (0.5m relief) ledge. Transect transverses slightly southeast across the prominent east/west ridges. Bedrock substrate with some moderate relief (0-1.5m). All markers are SS ¼" eyebolts with tubing. The 0m is marked with yellow rebar and a bumper. 8m bolt is on the lip of a ridge. 32m float is between 3 big kelp plants. Transect heading is 90 degrees.

*** **2014 Biota: NO SAND;4 Kelp Plants;177 PACA, 29 SPL, 1 ANSP;34%DL 19%EC 14%DIAT** ***

AQUE3 34, **28.075** 120, **7.155** Depth (meters): -8.1 to -8.7 Ref: WGS-84/MLLW

Description: Transect begins at the western edge of the hard substrate, nearly directly offshore of the river mouth (~200 m). Silt covered bedrock and small boulder substrate with little relief (0-0.5 m), some moderate sized areas of deep sand present along with Pterygophora and Diopatra beds. Bumpers at 0 and 40m. Most markers are SS ¼" eyebolts with tubing. The 0, 17, 24, and 40m have yellow rebar. Transect heading is 110-115 degrees.

*** **2014 Biota : 13% SAND;5 Kelp Plants;13 ANSP, 157 PTCA, 8 SPL, 17 CYOS, 1 PTL;15%R 10%DL** ***

AQUE4 34, **28.048** 120, **7.031** Depth (meters): -5.6 to -7.5 Ref: WGS-84/MLLW

Description: Transect begins east of the river mouth and is 20m @ 40 degrees from Transect 7-40m stake. Bedrock with several large boulder outcrops creating some significant relief (0-2.5 m) along transect. Some moderate sized areas of sand (1-5 m) present along with Diopatra beds common. 0m bolt is on a flat ~0.5m high plateau ~3 m west of a large boulder protruding from substrate (~2 m relief). Marker at 8m is SS ¼" eyebolt and is located at the base of a large boulder before sand, all others are ½" rebar stakes with tubing. Transect heading 90 degrees. Light sensor on 0 meter stake since 1/2008. 4-6 abalone often found in bedrock shelves near 24m bolt.

*** **2015 Biota: 26% SAND;42 Kelp Plants;10 ANSP, 62 CYOS, 2 SPL;10%CYOS** ***

AQUE5 34, **28.011** 120, **7.041** Depth (meters): -8.7 to -9.6 Ref: WGS-84/MLLW

Description: Located ~90m @180 degrees from T4-0m. Bedrock substrate, some moderate relief (0-1.5m), one small overhanging ridge at 30m, with sand channels and Diopatra beds on very flat bottom. Bumpers present at 0 and 40m. 0m has both old and new rebar. Transect heading is 90-100 degrees.

*** **2014 Biota: NO SAND;13 Kelp Plants;14 PACA, 3 CHOV, 3 SPL, 10 PTCA, 2 DIL;84%DL** ***

AQUE6 34, **28.053** 120, **7.251** Depth (meters): -10.2 to -11 Ref: WGS-84/MLLW

Description: Transect begins slightly west of the river mouth and offshore (~60m) from T2-0m. Sand (1-3cm deep) and bedrock substrate with low relief (0-0.5m). Diopatra beds common. 0m bolt is located on a small rock ~0.5m above the surrounding substrate. 8m is a ½" rebar stake, all others are SS ¼" eyebolts with tubing. Rebar and bumpers are present at the 0 and 40m. Transect heading is 90 degrees.

*** **2014 Biota: NO SAND;12 Kelp Plants;28 PACA, 11 DIL, 3 KEKE, 2 AML, 1 MUCA, 0 PTCA;14%DIOR** ***

AQUE7 34, **28.044** 120, **7.067** Depth (meters): -6.9 to -8.8 Ref: WGS-84/MLLW

Description: Transect begins east of the river mouth. Bedrock with several large boulder outcrops creating some significant relief (0-2.5 m) along transect. Some moderate sized areas of sand (1-3 m) present along with Diopatra beds. Fluorescent Bumper at transect start. 40m stake lies just past, almost under a large (2m tall x 3m wide) boulder. All markers are yellow ½" rebar stakes about 30-60cm tall, some with tubing. Transect heading is 90-100 degrees.

*** **2012 Biota: 50-75 PTCA; 80-90% rock; no adult kelp plants; DL,CYOS, PGL, MUCA common** ***

AQUE8 34, **28.037** 120, **7.067** Depth (meters): -8.3 to -9.3 Ref: WGS-84/MMLW

Description: Transect 8 begins 14m south of T7-0m. Bedrock substrate with several large boulder outcrops. Some moderate sized areas of sand present. All markers are yellow ½" rebar stakes about 20-40cm tall, some with tubing. The 16m rebar is in a crack between two large boulders. Transect heading is 90 degrees. Light sensor located on the 0m stake as of 6/2010. Kelp is continually cleared in 2m band on all sides of this transect.

*** **2012 Biota: 50-75 PTCA; 80-90% rock; 20 adult kelp plants; DL, CYOS, PGL, MUCA common** ***

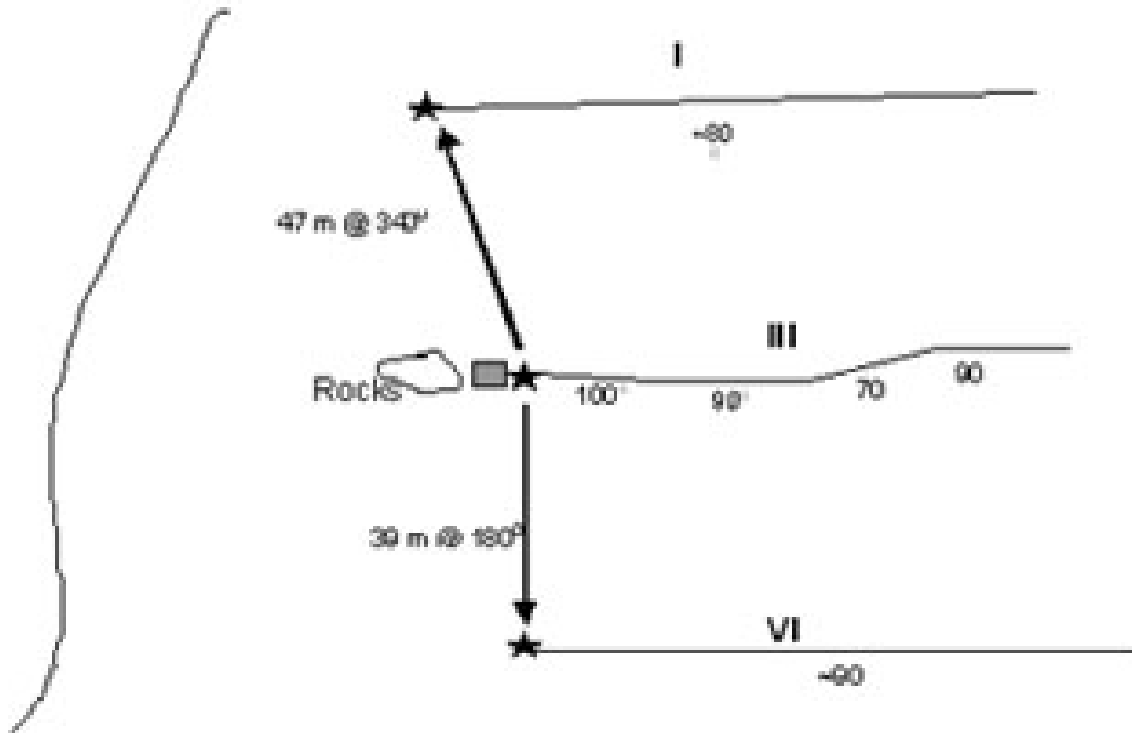
Bullito Reef

Transects: 3

Distance Apart: see map

General Orientation: 70 - 100

Tid-Bit(s): Transect III, 0m and 8m bolts



BULL1 34, 27.533 120, 20.006 Depth (meters): -4.1 to -6.2 Ref: WGS-84/MLLW

Description: Transect is closest to the river mouth, 47m at 340 degrees from T3-0m bolt. Bedrock and shale substrate with some slight relief (0-1 m) and thick understory algae cover. All markers are rebar stakes with tubing except for the 24m which is a SS 1/4" eyebolt. 0m parking lot bumper lies almost parallel to transect with rebar in it. Transect heading is ~80 degrees.

*** 2014 Biota : 1% SAND;17 Kelp Plants;50 ANSP, 23 PACA, 11 CHOV;26%BF 13%R 10%CC ***

BULL3 34, 27.509 120, 20.009 Depth (meters): -5.8 to -6.7 Ref: WGS-84/MLLW

Description: Transect starts 1.5m west of a rock mound (~3x3x1m) in the edge of a thick Pterygophora bed. Bedrock and shale substrate with some sandy areas and slight relief (0-1 m). All markers are rebar stakes with tubing. Yellow bumper at 40m end. Transect heading is variable, ranging from 100-70 degrees. Tid-Bits on the 0m and 8m stakes.

*** 2014 Biota: 5% SAND;17 Kelp Plants;35 PACA, 182 PTCA, 11 ANSP, 145 CYOS, 9 PRUB;13%CYOS 10%R ***

BULL6 34, 27.489 120, 20.013 Depth (meters): -6.5 to -7.3 Ref: WGS-84/MLLW

Description: Transect start is located 39m south of T3-0m. Bedrock and shale substrate with some sandy areas and slight relief (0-1 m). All markers are rebar stakes with tubing. Bumpers at 0 and 40m. Transect heading is approximately 80 degrees.

*** 2014 Biota : 35% SAND;7 Kelp Plants;73 ANSP, 34 PACA, 289 PTCA, 1 PTL ***

Carpinteria Reef

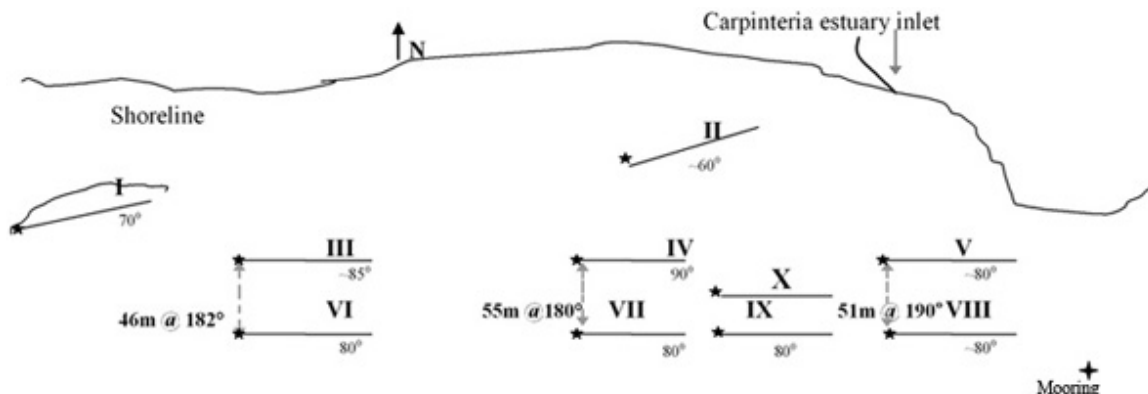
Transects: 10

Distance Apart: see map

General Orientation: 55 - 90

Tid-Bit(s): Transect III, 0m and 8m bolts

Light sensor: PAR at Transect VII and X, 0m stakes



CARP1 34, **23.545** 119, **32.628** Depth (meters): -2 to -3.3 Ref: WGS-84/MLLW

Description: Transect runs parallel along the significant NE-running reef ridge and has significant relief (up to 3m) on the northern side. Bedrock substrate with some slight relief (0-1m). Note: this transect can be very shallow and surgy. Please take caution when approaching and or anchoring in the vicinity due to the high relief shallow areas. Markers are located on the eastern slope of the ridge about 1.5m from the eastern trough at the base of the ridge. 8, 24, and 40m markers are SS 1/4" eyebolt, all others are rebar stakes with tubing. 0m rebar is on the onshore side of the ridge, in gap between 2 ridges. Transect heading is 70 degrees.

*** **Maintenance needed: 8m bolt needs float; 32m stake behind kelp plant, needs tubing** ***

*** **2014 Biota: NO SAND;17 Kelp Plants;94 SPL, 90 ANSP, 8 CHOV, 28 CRGI, 6 LIGL, 0 PTCA;75%CC** ***

CARP2 34, **23.566** 119, **32.422** Depth (meters): -2.6 to -3.2 Ref: WGS-84/MLLW

Description: Transect is located approximately 300 m east of T1-40m bolt. Generally a mudstone substrate with little relief (0-0.5 m). All markers are 1/2" rebar stakes with tubing. The 8 and 40m are also marked with SS 1/4" eyebolts. Transect heading varies, but is generally 60 degrees.

*** **2014 Biota: 6% SAND;16 Kelp Plants;57 SPL, 39 PACA, 130 CYOS, 7 LIGL, 2 APVA, 0**

PTCA;10%CO ***

CARP3 34, **23.491** 119, **32.64** Depth (meters): -5.4 to -7.1 Ref: WGS-84/MLLW

Description: Bedrock substrate with some moderate relief (0-1.5m), boulders, and some small areas (1-3m) of silt and sand. All marked with rebar stakes and eyebolts with tubing. The 8m only has rebar. 0m stake on top of 2 m x 0.5 m out-crop. Note that the 16m eyebolt is 20cm away from rebar. Heading varies but is generally 85 degrees. See transect heading diagram. Tid-Bits are on 0 and 8m bolts.

*** **2014 Biota : NO SAND;4 Kelp Plants;157 SPL, 71 PACA, 13 CHOV, 2 ANSP, 12 MECR, 1**

PTCA;43%FB 15%CHOV ***

CARP4 34, **23.503** 119, **32.499** Depth (meters): -3.4 to -5.2 Ref: WGS-84/MLLW

Description: Bedrock substrate with some moderate relief (0-1.5m) and some small areas (1-3m) of silty sand. 0m bolt begins at the crevice between two ridges. 8m marker is a yellow rebar stake (actually at 6.5m), all other markers are SS ¼" eyebolts with tubing. 0 and 40m bolt are also marked with rebar stakes and there is a bumper at the 40 end. Transect heading is 90 degrees.

*** **2014 Biota: NO SAND;5 Kelp Plants;224 SPL, 31 PACA, 2 CHOV, 10 MECR, 6 LIGL, 0 PTCA;31%EC *****

CARP5 34, **23.509** 119, **32.359** Depth (meters): -2.8 to -4.4 Ref: WGS-84/MLLW

Description: Mudstone ridges (1-2m) with areas of shell debris, cobble, and small boulders. The 0, 32, and 40m markers are 1/2" rebar with tubing, and the 40m and all other markers have SS ¼" eyebolts with tubing. Transect heading varies, but is generally 80 degrees. See transect heading diagram. Bumpers @ 0 and 40m.

*** **2014 Biota: NO SAND;4 Kelp Plants;71 SPL, 6 CHOV, 2 ANSP, 1 PACA, 13 LIGL, 0 PTCA;49%EC 13%DIAT *****

CARP6 34, **23.467** 119, **32.648** Depth (meters): -5.8 to -7 Ref: WGS-84/MLLW

Description: Transect starts ~50m @ 180 degrees from T3-0m bolt. Bedrock substrate with some moderate relief (0-1.5 m) and some small areas (1-3 m) of silty sand. The 8m marker is a SS ¼" eyebolt, all others are 1/2" rebar stakes with tubing. 0 and 40m are marked by both eyebolts and rebar. Transect heading is 80 degrees. Bumper @ 0m. Rebar loose at 16m and 24m, was hammered in.

*** **2014 Biota: NO SAND;4 Kelp Plants;163 SPL, 74 PACA, 49 CHOV, 3 ANSP, 6 MECR, 0 PTCA;48%FB *****

CARP7 34, **23.474** 119, **32.51** Depth (meters): -5.5 to -7.1 Ref: WGS-84/MLLW

Description: Located 55m @ 180 degrees from T5-0m bolt. Bedrock substrate with some moderate relief (0-1.5m) and some small areas (1-3 m) of silty sand and cobble channels. All markers are SS ¼" eyebolts with tubing. The 0 and 40m are also marked with rebar stakes. 24m bolt is on the downslope of 1m high ridge. Transect heading is 80 degrees. Light sensor located on the 0m stake as of 1/2008.

*** **2015 Biota: NO SAND;4 Kelp Plants;216 SPL, 127 CHOV, 34 PACA, 1 ANSP, 12 KEKE, 0 PTCA;49%EC *****

CARP8 34, **23.487** 119, **32.371** Depth (meters): -3.9 to -4.7 Ref: WGS-84/MLLW

Description: Located 51m @ 190 degrees from T5-0m bolt. Mudstone substrate with some moderate relief (0-1.5m) and some small areas of shell debris, cobble, and small boulders. Markers at 0 and 8m are ½" rebar stake, all others are SS ¼" eyebolts with tubing. The 40m is also marked with rebar stake. Heading is 80 degrees, but varies slightly from 24-32 (90 degrees). Bumper moved ~10m NE of 0m. 16 m stake covered with cobble, now has long float attached (2009).

*** **2014 Biota: NO SAND;4 Kelp Plants;139 SPL, 77 PACA, 1 CHOV, 5 AML, 3 APCA, 0 PTCA;31%EC *****

CARP9 34, **23.467** 119, **32.467** Depth (meters): -6.1 to -7.1 Ref: WGS-84/MLLW

Description: Located 20m @ 80 degrees from T7-40m bolt. Bedrock substrate with moderate relief (0-1.5m) and some small areas (1-3m) of silty sand and cobble channels. All markers are 1/2" rebar stakes with tubing. Transect heading is 80 degrees.

*** **2012 Biota: No PTCA; 100% rock; no adult kelp plants; Urchin Barren; POLA, LS, PACA, PBL, PGL, LOGR common *****

CARP10 34, **23.473** 119, **32.471** Depth (meters): -5.1 to -7.1 Ref: WGS-84/MLLW

Description: Located 13m @ 0° from T9-0m bolt. Bedrock substrate with moderate relief (0-1.5m). The 0 & 40m have 1/2" rebar stakes and eyebolts with tubing, all other markers are 1/4" SS eyebolts with tubing. Transect heading is ~ 90 degrees. Light sensor located at the 0m stake as of 6/2010. Kelp continually cleared in 2m band on all sides of the transect.

***** 2012 Biota: No PTCA; 100% rock; no adult kelp plants; Urchin Barren; POLA, LS, PACA, PBL, PGL, LOGR common *****

Goleta Bay

Transects: 2

Distance Apart: TR I-40 to TR II-0 is 18m at 90 degrees

General Orientation: 85 - 95

Tid-Bit(s): Transect I, 0m and 8m bolts



GOLB1 34, **24.827** 119, **49.344** Depth (meters): -4.7 to -5.4 Ref: WGS-84/MLLW

Description: Transect begins at western edge of existing kelp bed. Mudstone and sand substrate with several large isolated boulders creating some moderate relief (0-1.5 m). Parking lot bumper sits between two rocks at start. All markers, except the 8, are 1/2" rebar stakes with tubing. The 0m and 8m have SS 1/4" eyebolts with tubing. Transect heading is 90 degrees. Bumper @ 0m. Tidbits are on 0 and 8m eyebolts. 32m rebar mostly buried (2010).

*** **2014 Biota: 44% SAND;8 Kelp Plants;50 PTL, 18 PACA, 2 SPL;68%DL** ***

GOLB2 34, **24.819** 119, **49.308** Depth (meters): -4.2 to -5 Ref: WGS-84/MLLW

Description: Located 18m at 90 degrees from T1-40m rebar. Transect has mudstone and sand substrate with several large isolated boulders creating some moderate relief (0-1.5m). The 16m bolt is located on the top southwest side of a 2m x 2m rock and is a SS 1/4" eyebolt with tubing. All other markers are rebar stakes with tubing. Transect heading is generally 90 degrees. Bumper @ 0m. 24, 32, and 40m rebar partially buried (2010).

*** **2014 Biota: 76% SAND;4 Kelp Plants;11 SPL, 6 CHOV, 4 AML, 1 MECR, 0 PTCA;51%DL**
10%ZOMA ***

IV Reef

Transects: 8

Distance Apart: TR I-40 to TR II-0 is 21m at 90 degrees

General Orientation: 80 - 90

Tid-Bit(s): Transect I, 0m and 8m bolts



IVEE1	34, 24.17	119, 51.472	Depth (meters): -8.2 to -8.9	Ref: WGS-84/MLLW
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Description: Transect begins at western edge of existing eastern kelp bed near Depressions beach. Mudstone and small boulder substrate with some sand channels and slight relief (0-1m). 0m bolt is SE of large (3X1.5X1m) boulder. All markers are rebar stakes with tubing. Transect heading is 90 degrees. Tid-Bits are on 0 and 8m rebar stakes. No deep sand – all silt (2009).

*** **2014 Biota: 8% SAND;15 Kelp Plants;818 PRUB, 67 PACA, 14 ANSP, 13 CHOV, 4 SPL, 3 PTCA;56%DL** ***

IVEE2	34, 24.164	119, 51.434	Depth (meters): -8.7 to -9.5	Ref: WGS-84/MLLW
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Description: Located 22.5m at 80 degrees from T1-40m stake. Transect has a mudstone and sand substrate with several large isolated boulders creating some moderate relief (0-1.5m). All markers are 1/2" rebar stakes with tubing. Bumper @ 40m. Transect heading is ~80 degrees. 0m stake in north side of ~50 stipe kelp plant holdfast (2010).

*** **2014 Biota: 4% SAND;5 Kelp Plants;1247 PRUB, 118 PACA, 7 SPL, 2 ANSP;50%PRUB 20%ECB** ***

IVEE3	34, 24.275	119, 51.792	Depth (meters): -6 to -7	Ref: WGS-84/MLLW
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Description: Set up and first sampled in 2011. Transect begins near the center of IVEE kelp bed which is now a Marine Protected Area (2012). A mudstone substrate with many boulders with some sand channels and moderate relief (0-1.5 m). Depth is approximately 20 feet. 0m bolt is NE of large hand shaped boulder. Most markers are 50cm rebar stakes except the 16 m marker is a s.s. eyebolt. Transect heading is 90 degrees.

*** **LTE Site: This is a Long Term Experiment control site as of 2012** ***

*** **2015 Biota: NO SAND;25 Kelp Plants;4 PACA, 3 SPL, 1 ANSP, 2 KEKE, 1 MECR, 0 PTCA;56%DL** ***

IVEE4 34, **24.267** 119, **51.755** Depth (meters): -6 to -7 Ref: WGS-84/MLLW

Description: Set up and first sampled in 2011. Transect begins near the center of IVEE kelp bed which is now a Marine Protected Area (2012). This transect starts 20m East of the transect 3-40 stake. A mudstone substrate with many boulders with some sand channels and moderate relief (0-1.5 m). Depth is approximately 20 feet. Most markers are 50cm rebar stakes except the 24m marker is a s.s. eyebolt. Transect heading is 90 degrees.

*** **LTE Site: This is a Long Term Experiment annual Macrosystis removal site as of 2012** ***

*** **2012 Biota: 20 PTCA; 50% rock; no adult kelp plants; Urchin barren; half sand** ***

IVEE5 34, **24.33** 119, **51.973** Depth (meters): -6 to -7 Ref: WGS-84/MLLW

Description: Set up and first sampled in 2011. Transect begins near the center of IVEE kelp bed which is now a Marine Protected Area (2012). A bedrock and mudstone substrate with low relief (0-.5 m). Depth is approximately 18 feet. All markers are 25-50cm rebar stakes. Transect heading is 90 degrees. Transect starts offshore of yellow house next to stairs on cliff and dog park. Starts 3m East of 2m sand channel

*** **2014 Biota: NO SAND;34 Kelp Plants;145 PACA, 109 SPL, 17 ANSP, 23 CYOS, 1 CHOV, 0**

PTCA;40%DL 23%DIAT ***

IVEE6 34, **24.343** 119, **51.969** Depth (meters): -5 to -6 Ref: WGS-84/MLLW

Description: Set up and first sampled in 2011. Transect begins near the center of IVEE kelp bed which is now a Marine Protected Area (2012). A bedrock and mudstone substrate with low relief (0-.5 m). Depth is approximately 18 feet. All markers are 20-60cm rebar stakes. Transect heading is 90 degrees. Transect starts offshore of yellow house next to stairs on cliff and dog park. Transect starts 20m at 10 degrees from transect 5-0 bolt and the zero bolt is 1-2 m east of sand channel

*** **2014 Biota: NO SAND;35 Kelp Plants;62 PACA, 28 SPL, 190 CYOS, 4 ANSP, 1 CHOV, 0**

PTCA;13%ECB ***

IVEE7 34, **24.355** 119, **51.296** Depth (meters): -9 to -10 Ref: WGS-84/MLLW

Description: Set up and first sampled in 2011. Transect begins on West side of IVEE kelp bed which is now a Marine Protected Area (2012). A mudstone substrate with low relief (0-.25 m). Depth is approximately 30 feet. All markers are 50cm rebar stakes. Transect heading is 90 degrees. Transect starts offshore of large cactus and last university house on the cliff.

*** **2014 Biota: 25% SAND;15 Kelp Plants;39 PACA, 5 ANSP, 4 CYOS, 3 PTCA, 2 PAIN** ***

IVEE8 34, **24.35** 119, **51.258** Depth (meters): -9 to -10 Ref: WGS-84/MLLW

Description: Set up and first sampled in 2011. Transect begins on West side of IVEE kelp bed which is now a Marine Protected Area (2012). A mudstone substrate with low relief (0-.25 m). Depth is approximately 30 feet. All markers are 50cm rebar stakes. Transect heading is 90 degrees. Transect starts offshore of large cactus on the cliff. Transect starts 20m east of transect 7-40 stake.

*** **2014 Biota: 23% SAND;5 Kelp Plants;22 PACA, 14 PTCA, 1 ANSP;13%PHSE** ***

Mohawk Reef

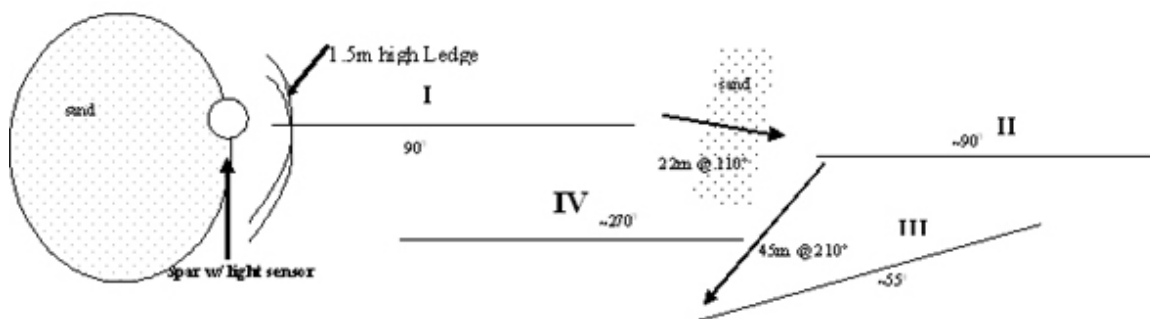
Transects: 4

Distance Apart: see map

General Orientation: 50-90 (and 270)

Tid-Bit(s): Transect I, 0m and 8m bolts

Light sensor: PAR at Transect II and III at 0m stakes; and IV at 8m stake



MOHK1 34, **23.66** 119, **43.8** Depth (meters): -4.2 to -6.3 Ref: WGS-84/MLLW

Description: Transect has a bedrock substrate with some moderate relief (0-1.5m) and some small (1-2m) areas of silty sand / shell hash. Transect follows a reef ledge that is ~1-2m off the sand below. Spar buoy is 2m west of the 0m bolt in a sand channel to mark the transect. Markers at 8, 24, and 32m are ¼" SS eyebolts with tubing, all others are rebar stakes with tubing. Transect heading is 90 degrees. Tid-Bits are on the 0 and 8m bolts.

*** **2014 Biota: 1% SAND;34 Kelp Plants;47 SPL, 2 ANSP, 26 CYOS, 12 MECR, 8 MUCA, 0 PTCA;44%R 21%TC** ***

MOHK2 34, **23.649** 119, **43.762** Depth (meters): -5.4 to -6.5 Ref: WGS-84/MLLW

Description: Located 22m @ 110 degrees from T1-40m bolt. Bedrock substrate with some moderate relief (0-1.5m) and some small (1-2m) areas of silty sand. Transect follows a small reef ledge that is ~1m off the sand below. All markers except the 16 and 24m are ¼" SS eyebolts with tubing. There is 1/2" rebar with tubing at the 0, 16, 24 and 40m. Transect starts at 70° then doglegs right to 90° after the 8m bolt. Light sensor on 0m stake after 6/08.

*** **2015 Biota: NO SAND;104 Kelp Plants;39 SPL, 14 CHOV, 12 ANSP, 70 CYOS, 15 EGME, 1 PTCA;14%R** ***

MOHK3 34, **23.628** 119, **43.769** Depth (meters): -6.5 to -7.2 Ref: WGS-84/MLLW

Description: Located 45m @ 210 degrees from T2-0m. Bedrock substrate with some moderate relief (0-1.5 m) and some small (1-3 m) areas of silty sand. Transect follows a small reef ledge that is ~1.5m off the sand below. All markers are 1/2" rebar, with tubing on the 8 and 24m. Transect runs about 55°. Light sensor on 0m stake after 6/08.

*** **2012 Biota: 50 PTCA; 90-100% rock; no adult kelp plants; EGME, CYOS, CC, R, RAT common** ***

MOHK4 34, **23.64** 119, **43.765** Depth (meters): -6.5 to -7.9 Ref: WGS-84/MLLW

Description: Located 24m @ 20° from the T3-0m bolt. Runs west along bedrock substrate with low relief (0-1.5m) and some areas of silty sand. All markers are 1/2" rebar with tubing, except the 16m which is a ¼" SS eyebolt with tubing. Transect runs about 270°. Kelp continually cleared in 2m band on all sides of the transect. Light sensor on 8m stake after 6/10.

*** **2012 Biota: 50 PTCA; 90-100% rock; 10 adult kelp plants; EGME, CYOS, CC, R, RAT common** ***

Naples Reef

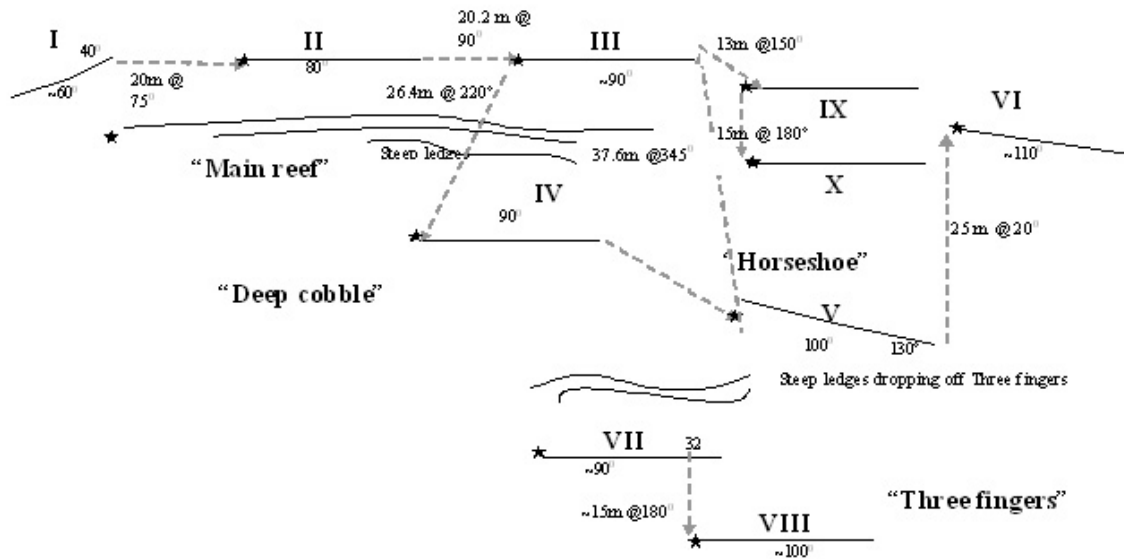
Transects: 10

Distance Apart: see map

General Orientation: 40 - 120

Tid-Bit(s): Transect II, 0m and 8m bolts

Light sensor: PAR at Transect III and IX at 0m stake



NAPL1 34, **25.34** 119, **57.176** Depth (meters): -6 to -9 Ref: WGS-84/MLLW

Description: Transect begins at extreme western edge of Naples main reef. Bedrock substrate with some significant relief (0-2m). All markers are SS ¼" eyebolts with tubing. 0 and 40m are also marked with yellow rebar stakes. Transect heading is variable, but generally 60 degrees. See transect heading diagram. All markers have hard tags. 24m stake is below a 1m ledge.

*** **2014 Biota: NO SAND;42 Kelp Plants;36.8 SPL, 116 AML, 106 CYOS, 5 ANSP;45%CC 14%CY** ***

NAPL2 34, **25.348** 119, **57.139** Depth (meters): -6.1 to -8 Ref: WGS-84/MLLW

Description: Located 20m @ 75 degrees from T1-40m bolt. Bedrock substrate with some significant relief (0-2 m). Tid-Bits are on 0m rebar and 8m bolt. All markers have eyebolts and hard tags and the 0 and 40m have rebar too. Tubing present on the 0, 16, 24, and 32m bolts, float present on the 32m. No rebar stake needed on 40m (2011). 0m stake in flat area 2m South of 2-3m tall ridge. Transect heading is 80 degrees.

*** **2014 Biota: NO SAND;67 Kelp Plants;27 SPL, 8 ANSP;61%CC** ***

NAPL3 34, **25.342** 119, **57.102** Depth (meters): -5.7 to -7.4 Ref: WGS-84/MLLW

Description: Located 20.2m @ 90 degrees from T2-40m bolt. Bedrock substrate with some significant relief (0-2 m). All markers are SS ¼" eyebolts with tubing. The 0 and 40m ends are also marked with 1/2" rebar stakes. 0m is ~8m or 4-5 ridges inshore of steep offshore slope. Also near ss hooks. Transect runs on the offshore side of the overhang between the 16 and 24m bolts. The 24-32m section is on inshore side of a large ridge, ~3m down slope. The 40m bolt is on top of a tiny (0.25m) ridge. Transect heading is 80 degrees. Light sensor on 0m stake as of 1/2008.

*** **2015 Biota: NO SAND;29 Kelp Plants;23 SPL, 12 CHOV, 117 CYOS, 3 ANSP;35%EC 30%CC** ***

NAPL4 34, **25.338** 119, **57.114** Depth (meters): -9.4 to -9.9 Ref: WGS-84/MLLW

Description: "Deep Cobble", located 26.4m @ 220° from T3, 0m bolt. Located on a 1x1m flat "raised" (0.5 m higher than surrounding substrate) boulder approximately 7 m south of the ridges that define the main reef. All markers are 1/2" rebar stakes. Transect heading is generally 90 degrees, but varies slightly. See transect heading diagram.

***** 2014 Biota: NO SAND;7 Kelp Plants;20 PTL, 11 CHOV, 17 PTCA, 14 CYOS, 1 AML;19%EC 16%DL 11%DIAT *****

NAPL5 34, **25.313** 119, **57.077** Depth (meters): -8.9 to -11.9 Ref: WGS-84/MLLW

Description: Transect begins at the apex of the "horseshoe" on the first flat bench east of deep cobble. Bedrock substrate with some moderate relief (0-1.5m). All markers except the 0m are SS ¼" eyebolts with tubing. The 0 and 40m are marked with 1/2" rebar stakes with tubing. Hard tags present. Transect follows a ridge and heading varies quite a bit, but is generally 100 degrees. See transect heading diagram. The 8m bolt is 1m inshore from a 1m tall ledge. The 16, 24, and 32m are all on top of a ledge, ~0.1-0.5m in from edge. 0m is in clump of PTCA (2010), 32 is on top of ridge buried in DL (2011).

***** 2014 Biota : NO SAND;32 Kelp Plants;20 PTL, 11 CHOV, 17 PTCA, 14 CYOS, 1 AML, 315 PTCA, 8 SPL, 90 AML, 5 PTL, 2 CHOV;28%CC 24%EC 10%CROC *****

NAPL6 34, **25.317** 119, **57.038** Depth (meters): -8.4 to -13.8 Ref: WGS-84/MLLW

Description: Located 25 m @ 30 degrees from T5-40m bolt. Bedrock substrate with some significant relief (0-2m). Transect increases in depth from ~33' at the 0m end to ~45' at the 40m end. 0m bolt on edge of second tallest (~2m) of several ridges at end of shelf. All markers are eyebolts with tubing, with rebar at the 0m also. 24 and 32m bolts are on the down slope. 40m bolt is offshore of 1m rock outcrop. Transect heading is 100 degrees, but heading from 8-16m is 90 degrees.

***** 2012 Biota: 50 PTCA; 100% rock; No adult kelp plants; CC, CY, DL, PGL, URLO, BA, FR, CF, SFL, BR common *****

***** 2014 Biota: NO SAND;32 Kelp Plants;112 AML, 46 PTCA, 3 PTL, 33 LAFA, 1 ANSP;18%CC 18%R *****

NAPL7 34, **25.309** 119, **57.112** Depth (meters): -7.7 to -12.7 Ref: WGS-84/MLLW

Description: Transect begins at the western end of "Three fingers" where the reef begins to slope from east to west into deeper water. Bedrock substrate with some significant relief (0-2m). Transect decreases in depth from ~36' at the 0m end to ~28' at the 40m end. All bolts are SS ¼" eyebolts with tubing. The 0 and 40m are also marked with 1/2" rebar stakes. Transect heading is generally 90 degrees, but varies slightly. 0m and 16m surrounded by PTCA 2009-2010.

***** 2014 Biota: NO SAND;54 Kelp Plants;113 AML, 8 SPL, 42 PTCA, 3 ANSP;59%CC *****

NAPL8 34, **25.31** 119, **57.019** Depth (meters): -7.6 to -13.7 Ref: WGS-84/MLLW

Description: Located ~15m @ 180 degrees from T7-32m bolt on a prominent ridge (3m relief). Bedrock substrate with some significant relief (0-2m). Transect increases in depth from ~33' at the 0m end to ~45' at the 40m end with a 1-2m high ridge to the north. 24m marker is a 1/2" rebar stake (located along the slope of a ridge, drops off). All other markers are SS ¼" eyebolts with tubing. The 0 and 40m are also marked with 1/2" rebar stakes. Heading ~100 degrees. 1-2m ridge to North of 40m stake.

***** 2014 Biota : NO SAND;28 Kelp Plants;113 AML, 8 SPL, 42 PTCA, 3 ANSP, 40 LAFA, 124 PTCA, 85 AML, 65 LAFA, 4 PTL, 3 SPL;74%CC *****

NAPL9 34, **25.329** 119, **57.073** Depth (meters): -6.6 to -8.6 Ref: WGS-84/MLLW

Description: Located 13m @ 150 degrees from T3-40m bolt. Bedrock substrate with some significant relief (0-2m). All markers are 1/2" rebar, 20-40cm tall. The 8m rebar is on the northern slope of a ridge, the 24 and 32m rebar lie in narrow valleys between ridges, while the 16m rebar is up on the ridge. The 40m rebar is up on 2m ridge after crossing a valley past the 32. Heading is ~90 degrees. Light sensor on 0m stake as of 1/2008.

***** 2011 Biota: 100's PTCA; 100% rock; 2 adult kelp plants; AML, PGL, DL, FR, RAT, CC, CY, UNAN, URLO, KEKE, MECR common; CYOS and PAPA present; lots of fish *****

NAPL10 34, **25.322** 119, **57.073** Depth (meters): -7.4 to -9 Ref: WGS-84/MLLW

Description: Located 15m @ 180° from T9-0m bolt. Bedrock substrate with some significant relief (0-2.5m). Transect crosses several ridges that run ~110-120 degrees. All markers are 1/4" SS eyebolts with tubing. The 8m bolt is on top of a ridge, while the 16 & 24m bolts are below ledges. The 40 bolt is right in front of a 1m tall ledge that drops off on the eastern edge. Heading is ~ 90°. Kelp continually cleared in 2m band on all sides of the transect.

***** 2011 Biota: 100's PTCA; 100% rock; no adult kelp plants; AML, PGL, DL, FR, RAT, CC, CY, UNAN, URLO, KEKE, MECR common; PAPA, LOGL, PHL, CYOS present; lots of fish *****

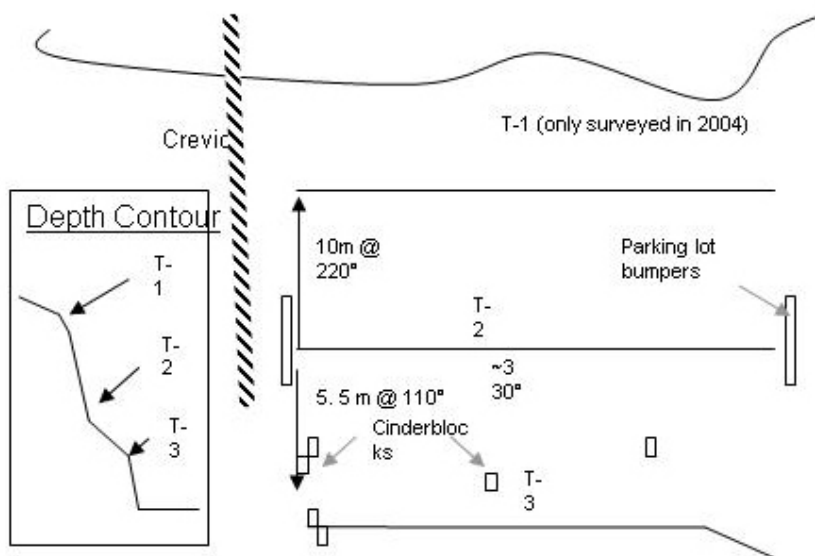
SCI Diablo Reef

Transects: 3 (2 sampled)

Distance Apart: T2-T3 5.5m at heading 110 degrees

General Orientation: 290 - 340

Tid-Bit(s): Transect II, 0m and 8m bolts



SCDI2 34, **3.518** 119, **45.458** Depth (meters): -5.2 to -11.9 Ref: WGS-84/MLLW

Description: Transect runs along rocky reef with patches of sand/shell debris and several large boulders. All markers are ¼ " SS eye bolts with tubing, with bumper at 0m marker. Transect heading is 320 degrees from 0-16m and 290 degrees from 16-40m. 16 m stake replaced winter 2009, now on top of large boulder ~10.3m deep. Headings still need to be modified. Tidbits located on the 0m bumper and the 8m bolt.

***** 2014 Biota: NO SAND;6 Kelp Plants;630 PRUB, 65 SPL, 6 ANSP, 76 EA, 28 AML, 0**

PTCA;29%CY 20%PRUB 20%R ***

SCDI3 34, **3.52** 119, **45.458** Depth (meters): -11.6 to -15.6 Ref: WGS-84/MLLW

Description: Transect located 5.5m @ 110 degrees from T2-0m bolt. Runs along rocky reef with patches of sand/shell debris and several large boulders and ledges. The depth varies from 43-50'. All markers are ¼ " SS eye bolts with tubing on the 0 and 40m. 0m bolt also has a float. The 0 and 8m bolts can easily be confused with those of Transect 2. 0m bolt is 12.9 m deep. Transect 3 has cinder blocks near 0m marker. Transect runs at 330 degrees until 33m bolt then curves to 340 degrees. 16m eye bolt is on a low lying, medium boulder in shell hash area. The 33m bolt is at the start of a ridge that slopes offshore and the 40m bolt is on top of the ridge.

***** 2014 Biota: NO SAND;4 Kelp Plants;46 PRUB, 35 SPL, 140 EA, 77 AML, 31 CRGI, 0**

PTCA;56%R ***

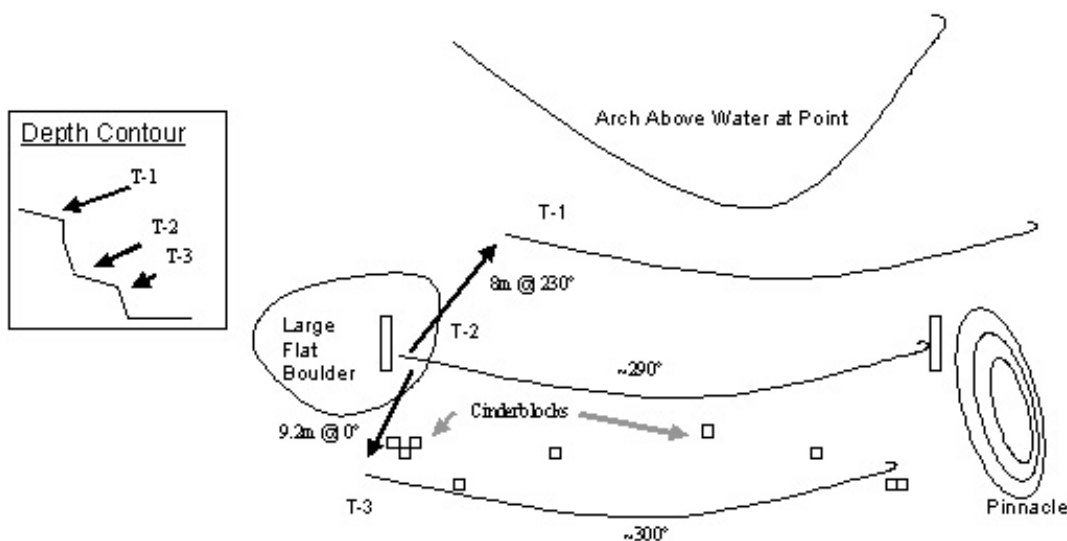
SCI Twin Harbor West Reef

Transects: 3 (2 sampled)

Distance Apart: T2-T3 9.2m at 0 degrees

General Orientation: 270 - 300

Tid-Bit(s): Transect II, 0m and 8m bolts



SCTW2 34, **2.664** 119, **42.908** Depth (meters): -2.7 to -7.8 Ref: WGS-84/MLLW

Description: Transect 2 lies along rocky reef with large boulders and patches of sand/shell debris. 0 and 40m are marked with bumpers with 3' floats. All markers are ¼ " SS eye bolts with tubing. The 24m bolt is located on west side of a boulder at 23.6m. The transect heading varies, but runs generally at 330 degrees. See transect heading diagrams. Tidbits located on the 0 & 8 m eyebolts. Hard tags present.

*** **2014 Biota: NO SAND;8 Kelp Plants;89 SPL, 27 PRUB, 1 ANSP, 12 EA, 4 AML, 0 PTCA;24%AL 18%EC** ***

SCTW3 34, **2.668** 119, **42.908** Depth (meters): -7.6 to -13.3 Ref: WGS-84/MLLW

Description: Located 9.2m @ 0 degrees from T2-0m. The beginning of transect three is at the base of the large boulder that transect 2 starts on. All markers are 1/4" ss eyebolts with tubing. The 0m bolt (F75) is near clump of cinder blocks and the 40m bolt is at the base of a pinnacle about 3-4m tall. There are more cinder blocks 0.5m north of 32 and 40m bolts. The 24m bolt lies in a small kelp plant (7/2011). Transect heading is variable, but generally 290 degrees. See transect heading diagrams. Hard tags present.

*** **2014 Biota: 3% SAND;5 Kelp Plants;8 SPL, 67 AML, 21 EA, 1 PRUB, 12 LOCH, 0 PTCA;28%R 26%AL** ***