

Random Point Contacts

Access Table Design Structure for Random Point Contact

Field Name	Data Type
ProgramCode	Text
Year	Number
EventCode	Text
IslandCode	Text
SiteCode	Text
Quadrat	Number
Species	Number
CountA	Number
CountB	Number
CountC	Number
CountD	Number

Sample Size and Database Anomalies

The numbers of Random Point Contact quadrats and points within each quadrat have changed several times since this protocol was employed. For analysis, it will be essential to know the total number of points collected each year when calculating percent coverage.

For each site sampled in:

- 1982 there were 25 quadrats with 20 points each, totaling 500 points.
- 1983 there were 40 quadrats with 10 points each, totaling 400 points.
- 1984 there were 10 quadrats with 50 points each, totaling 500 points.
- 1985-1995 there were 25 quadrats with 40 points each, totaling 1000 points.
- 1996-present there were 15 quadrats with 40 points each, totaling 600 points

CountA , CountB, CountC and CountD: From 1982-1994 all of the points for each quadrat were added together and entered into the database as CountA, with data fields CountB, CountC, and CountD remaining null. With the database conversion to Access in 1995 each quadrat was entered as CountA, CountB, CountC and CountD. The computer now needs to be instructed to add the four sides (CountA-D). Allowing the computer to conduct the additions decreases the chance of human error and improves data entry efficiency. For a summary of these changes, see below.

Table 23. Number of and points per RPC quadrat 1982-present.

Year	# Quadrats sampled	Points per Quadrat	Count A	Count B	CountC	CountD
1982	25	20	yes	null	null	null
1983	40	10	yes	null	null	null
1984	10	50	yes	null	null	null
1985 – 1994	25	40	yes	null	null	null
1995	25	40	yes	yes	yes	yes

1996 – present	15	40	yes	yes	yes	yes
----------------	----	----	-----	-----	-----	-----

Quadrat Placement

Prior to 1996 random points selected for placement of the quadrats were stratified random. After 1996, the sampling points are systematic with a randomly selected starting point.

Organisms Sampled Information

Table 24. RPC species sampling history.

Species Name	Species Code	Comments
Green Algae	1001	Sampling began in 1982
Miscellaneous Brown Algae	2001	Sampling began in 1982
<i>Desmarestia</i> spp.	2003	Sampling began in 1982
<i>Cystoseira</i> spp.	2007	Sampling began in 1982
<i>Macrocystis</i> , <i>Pterygophora</i> & <i>Eisenia</i> combined*	2008	Began 1982, discontinued in 1993*
<i>Macrocystis pyrifera</i> All	2010	Sampling began in 1993
<i>Sargassum</i> spp.*	2011	Began 1982, discontinued in 1984*
<i>Eisenia arborea</i> All	2012	Sampling began in 1983
<i>Pterygophora californica</i> All	2013	Sampling began in 1983
<i>Laminaria farlowii</i> All	2014	Sampling began in 1982
<i>Sargassum horneri</i> All*	2017	Sampling began in 2010*
Miscellaneous Red Algae	3001	Sampling began in 1982
Articulated Coralline Algae	3002	Sampling began in 1982
Encrusting Coralline Algae	3003	Sampling began in 1982
<i>Gelidium</i> spp.	3004	Sampling began in 1982
<i>Gigartina</i> spp.	3005	Sampling began in 1982
Miscellaneous Plants (i.e. Diatoms)	4001	Sampling began in 1982
Sponges	5001	Sampling began in 1985
<i>Leucetta losangelensis</i>	5003	Began 1982, discontinued in 1984
<i>Polymastia pachymastia</i>	5004	Began 1982, discontinued in 1984
<i>Corynactis californica</i>	6003	Sampling began in 1982
<i>Balanophyllia elegans</i>	6004	Sampling began in 1982
<i>Astrangia lajollaensis</i>	6005	Sampling began in 1982
Hydroids	6009	Sampled in 1985 for a few sites
<i>Diopatra ornata</i>	7001	Sampling began in 1982
<i>Phragmatopoma californica</i>	7002	Sampling began in 1982
<i>Spirobranchus spinosus</i>	7003	Sampled in 1985 for only one site
<i>Balanus</i> spp.	8002	Sampled in 1985 for only one site
<i>Serpulorbis squamigerus</i>	9001	Sampling began in 1982
Miscellaneous Bryozoans	10001	Sampling began in 1985
<i>Diaperoecia californica</i>	10002	Sampling began in 1982
<i>Pachythyone rubra</i> *	11008	Sampling began 1982-1984*
<i>Ophiothrix spiculata</i>	11010	Sampling began in 2003
Tunicates	12001	Sampling began in 1982
Miscellaneous Invertebrates including <i>O. spiculata</i> *	13001	Began 1983, discontinued 2002*
Miscellaneous Invertebrates excluding <i>O. spiculata</i> *	13002	Sampling began in 2003*
Bare Substrate	15001	Sampling began in 1985
Rock	15002	Sampling began in 1982
Cobble	15003	Sampling began in 1982
Sand	15004	Sampling began in 1982

*See below

From 1982-1993, the group of algae (species #2008) *Macrocystis pyrifera*, *Pterygophora californica*, and *Eisenia arborea* was sampled. In 1993, this category of algae was separated into its three distinct species, but this category can still be calculated by adding the three species

(#2010, #2012 and #2013) together. Note, that species #2008 CAN have greater than 100% cover. When sampling was conducted for species #2008 prior to 1993, each species in the group was counted. For example, it would be possible in any given quadrat to have a layering effect where all three species of algae (*M. pyrifera*, *P. californica*, and *E. arborea*) intercepted each point. This observation would yield a percent cover greater than 100%.

Sampling for *Sargassum horneri* (#2017) began in 2010. This invasive alga was discovered in Channel Islands National Park in 2009. This species was not present when *Sargassum* spp. (#2011, entirely *S. muticum*) was sampled 1982-1984. Therefore, those two categories are entirely separate.

Sampling for *Pachythyone rubra* (#11008) began in 1982 and stopped in 1984. Several sites were sampled in 1988, 1989, and 1990. SMWL, SMHR, SCFH, SCYB were sampled in 1988; SMWL, SMHR, SRRR, SCGI, SCFH, SCPB, SCYB, ANAR, ANLC, SBAP were sampled in 1989; SMWL, SMHR, SRJLNO, SRJLSO, SRRR, SCGI, SCFH, SCPB, SCSA, SCYB, ANCC, ANLC were sampled in 1990. All sites have been continuously sampled since 1991. For all years when sites were not monitored for *Pachythyone rubra*, they were counted in the miscellaneous invertebrates category.

Ophiothrix spiculata (#11010) is one of the few motile species counted on the Random Point Contact protocol. This species had become notably more prevalent at several KFM sites in the late 1990s and was separated out of the miscellaneous invertebrate category on RPCs to document this. Since this species was separated out of the “miscellaneous invertebrate” category, that category had to be renamed. The Miscellaneous invertebrate category for the years 1982-2002 is named “miscellaneous invertebrates including *O. spiculata*” (species # 13001), and from 2003 – present it is “miscellaneous Invertebrates excluding *O. spiculata*” (species # 13002). The original miscellaneous invertebrate category (#13001) can still be compared to past years by combining species #13002 (Miscellaneous invertebrates excluding *O. spiculata*) with species #11010 (*Ophiothrix spiculata*).

Sites Sampled Information

Table 25. RPC site sampling history.

Dates Available	Island Name	Site Code
1982 – Present	San Miguel	WL, HR
	Santa Rosa	JLNO, JLNO, RR
	Santa Cruz	GI, FH, PB, SA
	Anacapa	AR, CC, LC
	Santa Barbara	SESL, AP
1986 – Present	Santa Barbara	CAT
	Santa Cruz	YB
2001 – Present	San Miguel	MM
2003 – 2004	San Clemente	NWH, BSC, EP, HBC
2005 – Present	Santa Rosa	CP, TC, CSAW, SP
	Santa Cruz	DPM, PP, CVP, LS, PRF
	Anacapa	KH, EFC, BSB, LH
	Santa Barbara	WA, GC, SER