Description of what Ole did to the OCNMS data to massage and poke the data to make it comparable.

Raw data from Kvitek’s 1987, 1995, and 1999 are generally not available, so we extracted summary statistics about density of benthic invertebrates from project reports for each year. However, the methods for estimating the density of benthic invertebrates varied substantially among years (See TABLE) and we needed to convert data from each survey year into common units for comparison. We elected to translate all of the different surveys into units of countsm-2. We have estimates of mean density and standard deviation in unit m-2 from the years 1987, 1995, and 1999, but we lack the raw data at the quadrat data. Importantly, the sampling design from 1987 – in which many quadrats were placed directly adjacent to one another – means that the number of independent replicates are far less than the number of quadrats samples (i.e. the quadrats are pseudo-replicated). In the absence of the information to estimate the effective sample size, we used a sample size of 20 for the 1987 data to better reflect the uncertainty.

For 1999 we had both quadrat and transect information. We combined the quadrat and transect data by first calculating the mean and se for each data independently and combining the information using a weighted mean and weighted standard deviation. We used the inverse of SE2 as weights. Similarly, in 1995 and 1999 surveys were conducted at two depths at each site (6 an 12m). We elected to combine information from both depths, again weighting the different depths by SE2.

Weirdness: No seastar info from 1995.

Invertebrate Survey description in table form.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Survey |  | Area surveyed per site (m2) |
| 1987 | 1.0m2 quadrat by SCUBA | 100 per site. Not randomly placed locations | 100 |
|  | All counts conducted *in situ* |  |  |
| 1995 | 0.25m2 quadrat by SCUBA using video | 14-35 per site | 3.5-8.75 |
|  | Counts done by post-processing video. Most of the locations with video collected were not actually processed. |  |  |
| 1999 | 0.25m2 quadrat by SCUBA using video | 30 per site | 7.5 |
|  | 25 x 1m video transects | 3-4 per site | 75-100 |
| 2015 | 30 x 2m transects by SCUBA | 4 per site | 240 |
|  |  |  |  |

Sites and the years they were sampled.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 1987 | 1995 | 1999 | | 2015 |
| **Sites** | Quadrats | Quadrats | Quadrats | Transects | Transects |
| Neah Bay | X (2 Sites) | X | X |  | X |
| Chibahdel Rocks |  |  | X |  | X |
| Cape Flattery |  | X | X | X |  |
| Tatoosh Island |  | X | X | X | X |
| Makah Bay | X | X | X | X |  |
| Anderson Point | X | X | X | X | X |
| Point of the Arches | X | X | X | X | X |
| Cape Alava | X | X | X | X | X |
| Cape Johnson | X | X | X | X | X |
| Rock #305 | X | X | X | X | X |
| Teahwhit Head | X | X | X | X | X |
| Destruction Island |  |  | X |  | X |
|  |  |  |  |  |  |
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