Power Analysis Updates

At the beginning of period 20 (Winter 2019/2020), the estimated sampling effort (based on results from 2018/2019) was 15 rock sites (at avg transect length of 75 m) and 26 no rock sites (at avg transect length of 29 m). This is a total of 1126 m of rock sites and 754 m of non-rock sites.

So far during period 20 (Winter 2019/2020), the following sites have been sampled (Table below). Note that 10% of the designed no rocks sites have not yet been sampled, but have been scheduled for sampling. The first table gives the break down of sampling effort between rock and no rock sites, and the second table gives the breakdown between rock and no rock sites as well as whether these sites are open or closed to fishing. Note that the average transect length for rock sites in period 20 is higher than the previous periods (124 vs 75 m) but the average transect length for no rock sites is similar (32 vs 29 m).

|  |  |  |  |
| --- | --- | --- | --- |
| Strata | Number of transects | Total transect length | Average transect length |
| Rock | 10 | 1237.05 | 123.71 |
| No Rock | 22 | 697.1 | 31.68 |

|  |  |  |  |
| --- | --- | --- | --- |
| Strata | Number of transects | Total transect length | Average transect length |
| No fish No rock | 11 | 329 | 29.9 |
| No fish Yes rock | 7 | 911.15 | 130.16 |
| Yes fish No rock | 11 | 368.1 | 33.46 |
| Yes fish Yes rock | 3 | 325.9 | 108.63 |

We have updated our power analysis using an updated model to the ones used previously. These changes are based on input from our submitted paper. Here are the new recommended sampling efforts to track just the difference between rock and no rock sites:

Power Analysis

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Strata |  | Length |  | Length | Total |
| ~~Y/N~~ | ~~12~~ | ~~12\*75 = 900~~ | ~~54~~ | ~~54\*29 = 1566~~ | ~~2466~~ |
| Y/N | 18 | 18\*75 = 1350 | 35 | 35\*29 = 1015 | 2365 |
| ~~Y/N~~ | ~~28~~ | ~~28\*75 = 2100~~ | ~~18~~ | ~~18\*29 = 522~~ | ~~2622~~ |

Now, we are suggesting 18 rock sites and 35 no rock sites. This is a total of 1350 m of rock sites and 1015 m of no rock sites. Therefore, we need an additional 113 m of rock sites and 318 m of no rock sites surveyed.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Strata |  | Length |  | Length | Total |
| ~~NN - NY~~ | ~~15~~ | ~~15\*32 = 480~~ | ~~20~~ | ~~20\*82 = 1640~~ | ~~2120~~ |
| NN - NY | 25 | 25\*32 = 800 | 10 | 10\*82 = 820 | 1620 |

We also ran an additional power analyses using four strata instead of two – therefore, including whether or not the site is open for fishing as well as whether or not there are rocks. For all combination of strata except between no fishing no rock and no fishing yes rock we need to survey as many sites as possible.

To test for differences between the no fishing no rock strata and the other three strata, we suggest 800 m of total effort, which is an additional 471 m beyond what has already been sampled. For the no fish yes rock strata, we would suggest 820 m, which has already been completed.

Overall, we recommend sampling an additional 113 m of rock sites – with the suggestion that these are all within the open fishing zone. For the no rock sites, we suggest using the higher estimate from the second power analyses and completing an addition 471 m of sampling. We suggest this being split between areas that are open and closed to fishing.

For this season, we have already scheduled 112.5 m of rocks sites within the fishing zone and 90 m of rock sites outside of the fishing zone. Therefore, the only additional sampling suggested at this time would be 236 m of no rock sites within the fishing zone and 236 m of no rock sites outside of the fishing zone.