

APPENDIX C – Additional Power Analyses

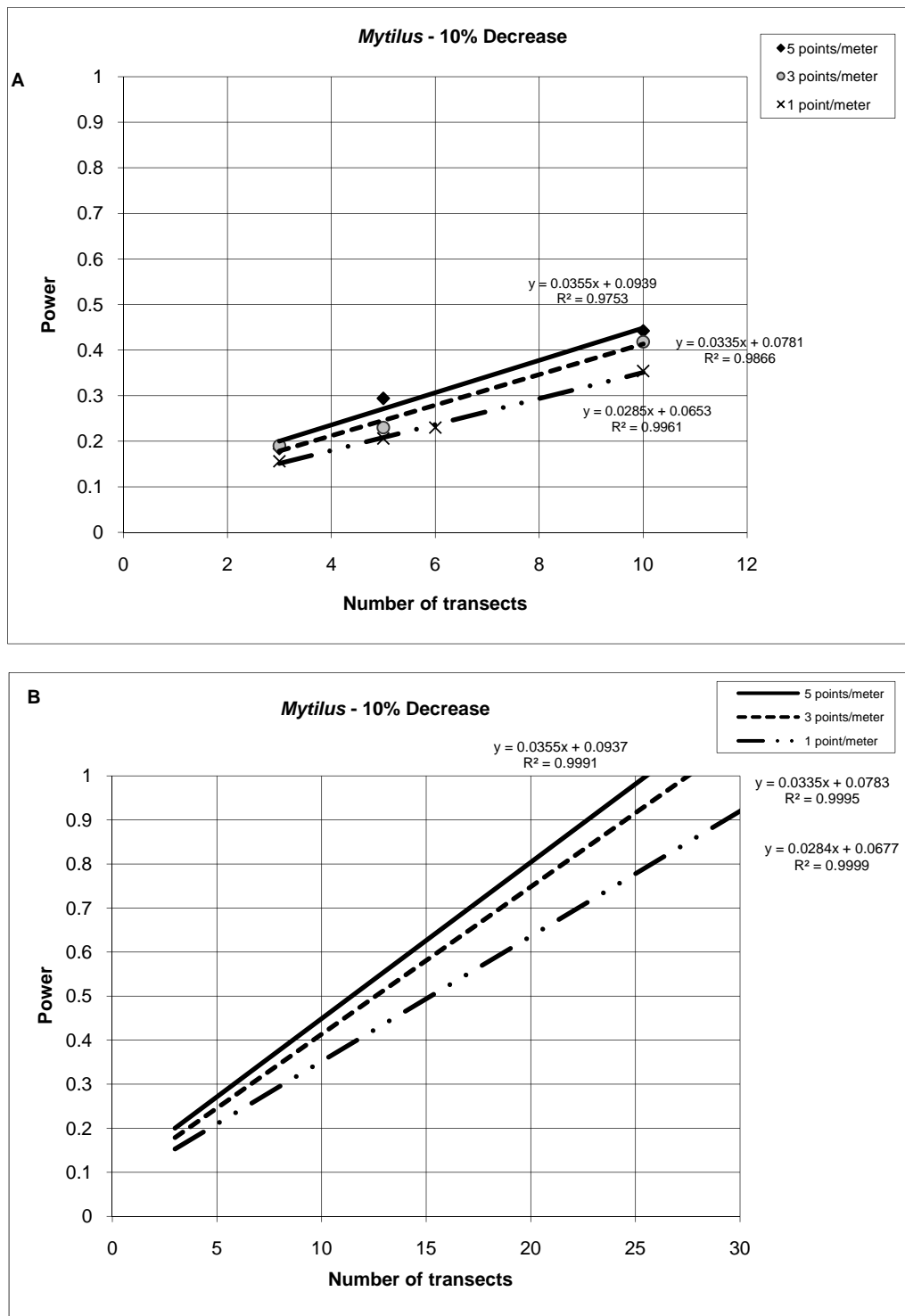


Figure C1. Change in the power to detect a 10% decrease in *Mytilus* as a result of varying the number of transects sampled per site with respect to 1, 3, and 5 points sampled per meter. Sampling was conducted in 1997 at 6 sites. $\alpha = 0.05$. A. Points graphed using data. B. Linear trend of power based on data.

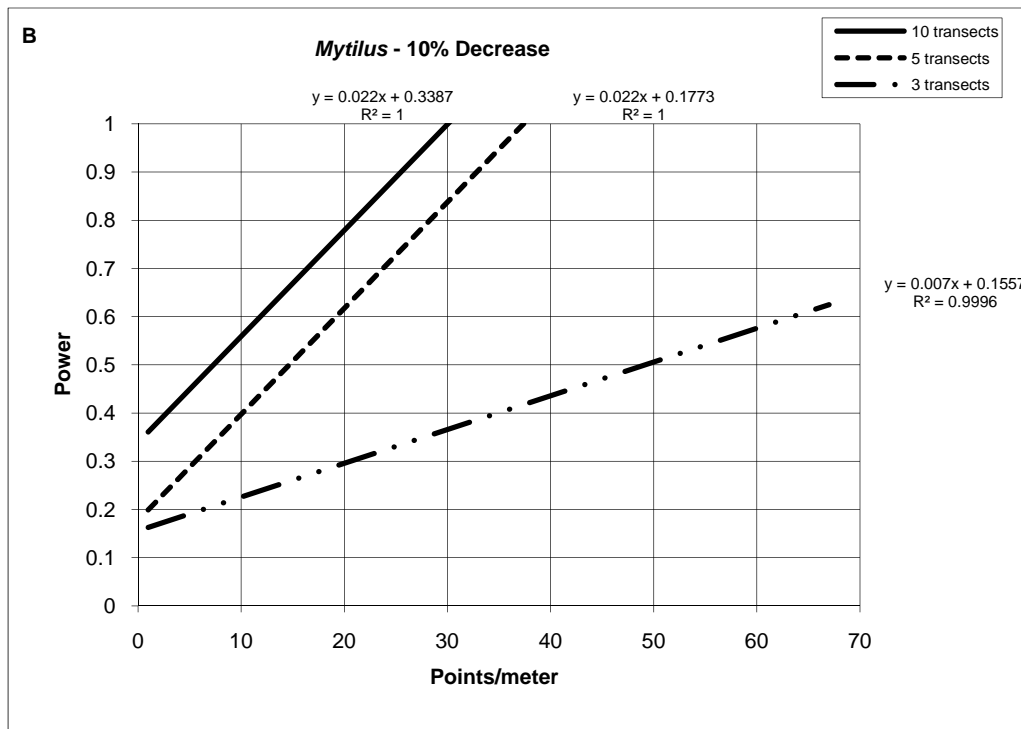
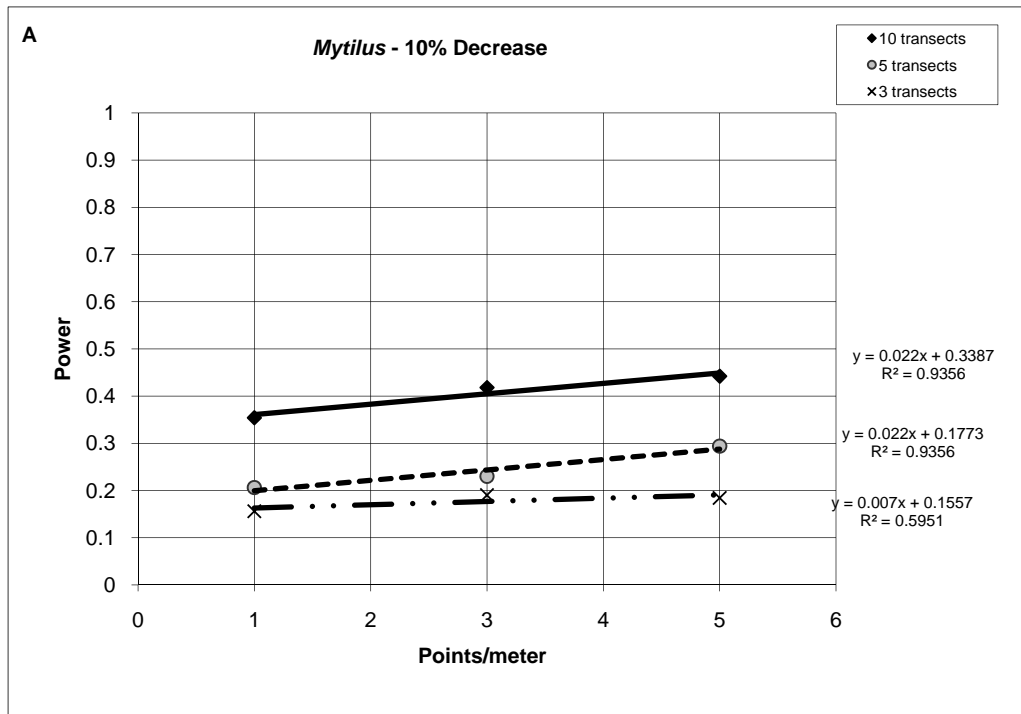


Figure C2. Change in the power to detect a 10% decrease in *Mytilus* as a result of varying the number of points sampled per meter with respect to 3, 5, and 10 transects per site. Sampling was conducted in 1997 at 6 sites. $\alpha = 0.05$. A. Points graphed using data. B. Linear trend of power based on data.

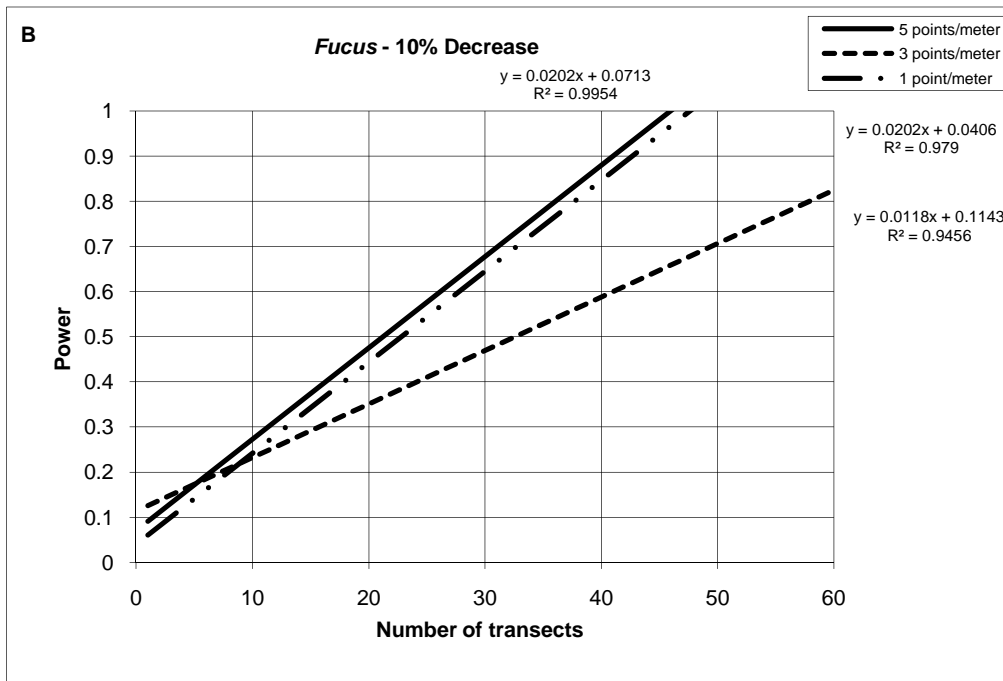
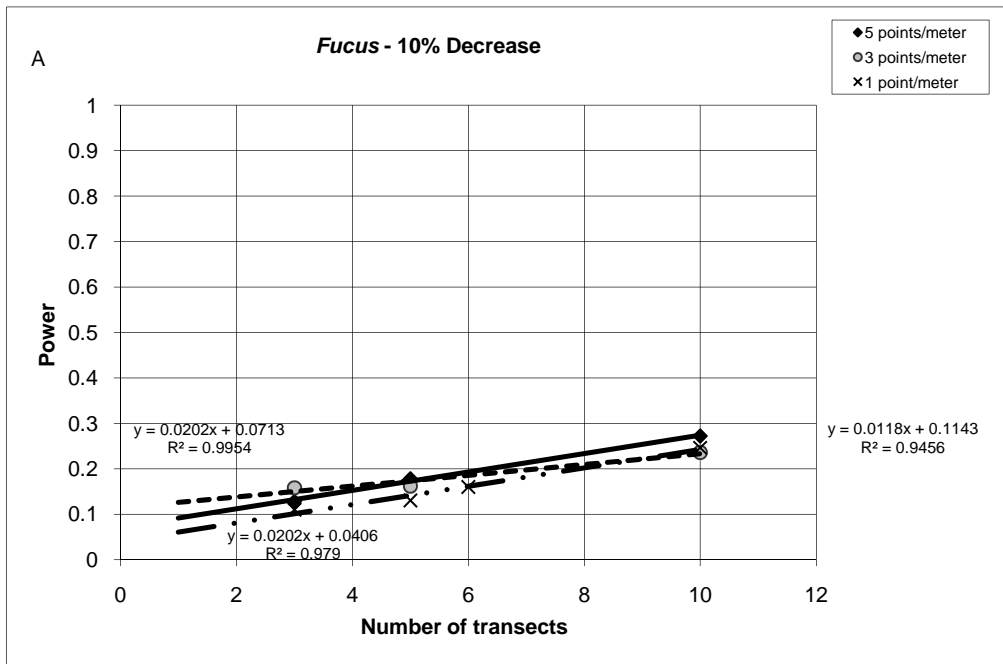


Figure C3. Change in the power to detect a 10% decrease in *Fucus* as a result of varying the number of transects sampled per site with respect to 1, 3, and 5 points sampled per meter. Sampling was done in 1997 at 6 sites. $\alpha = 0.05$. A. Points graphed using data. B. Linear trend of power based on data.

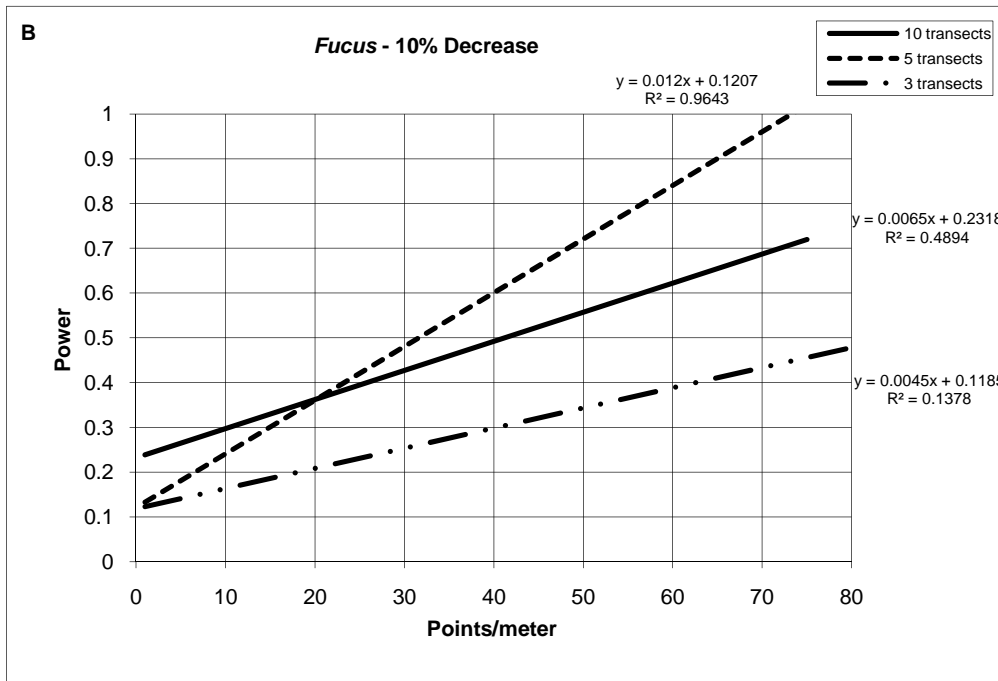
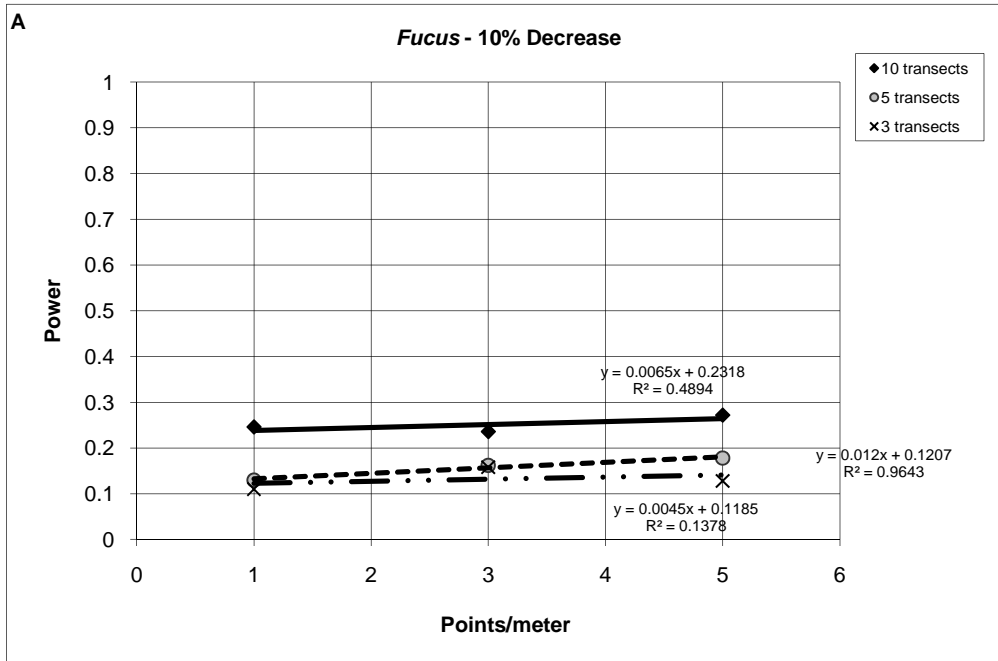


Figure C4. Change in the power to detect a 10% decrease in *Fucus* as a result of varying the number of points sampled per meter with respect to 3, 5, and 10 transects per site. Sampling was done in 1997 at 6 sites. $\alpha = 0.05$. A. Points graphed using data. B. Linear trend of power based on data.

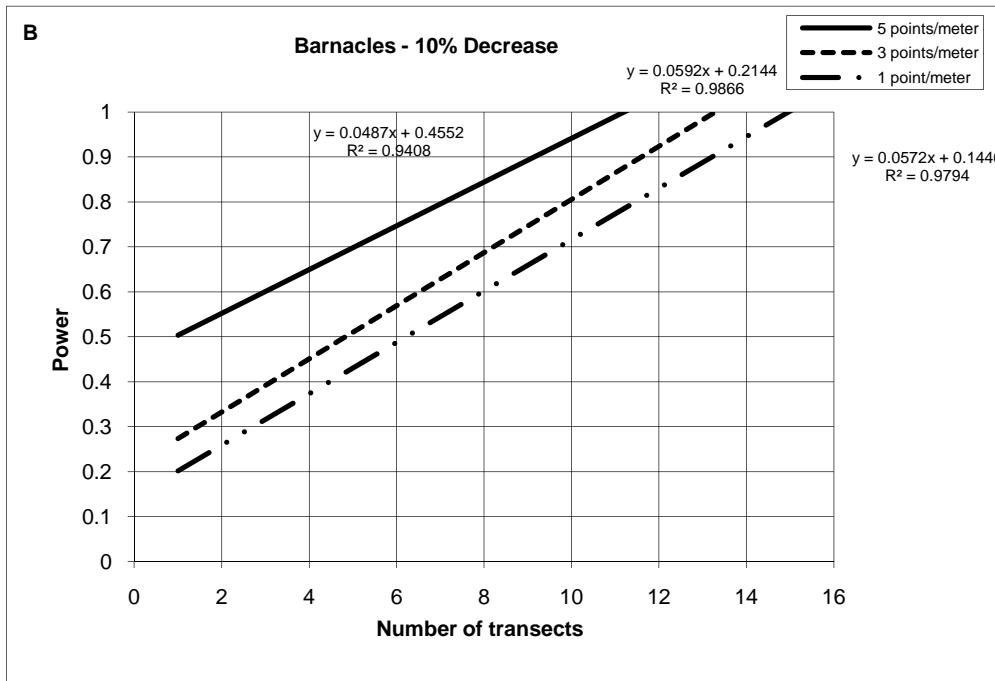
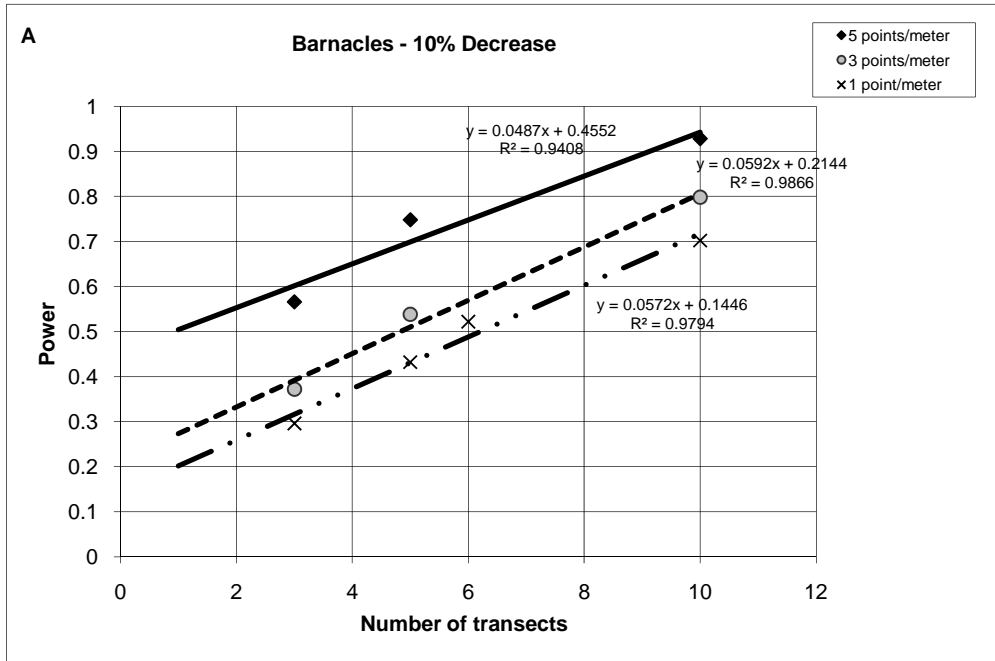


Figure C5. Change in the power to detect a 10% decrease in barnacles as a result of varying the number of transects sampled per site with respect to 1, 3, and 5 points sampled per meter. Sampling was done in 1997 at 6 sites. $\alpha = 0.05$. A. Points graphed using data. B. Linear trend of power based on data.

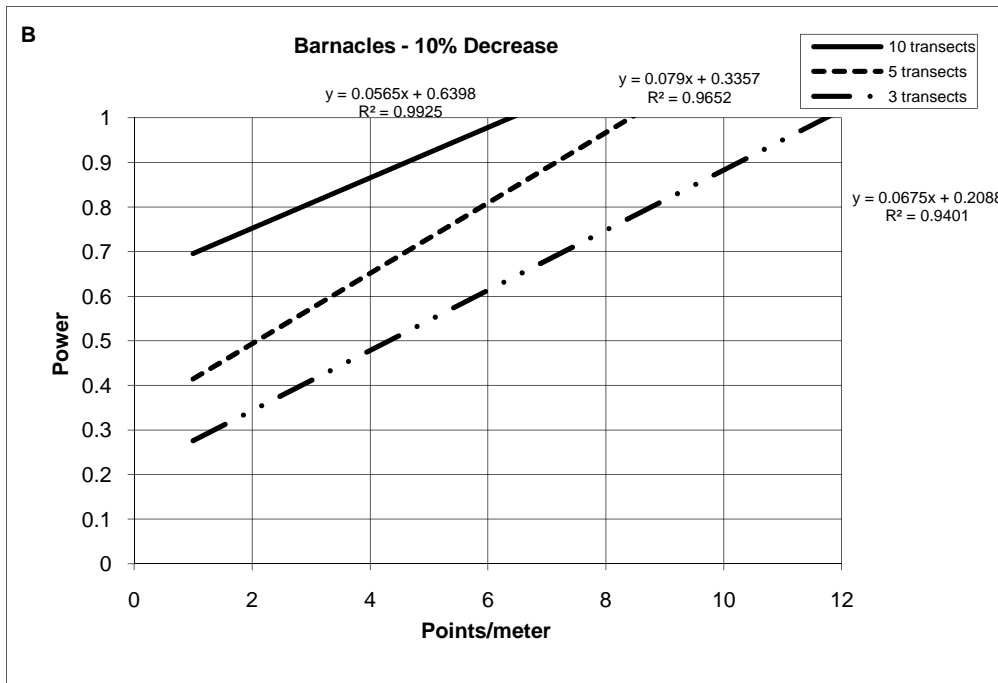
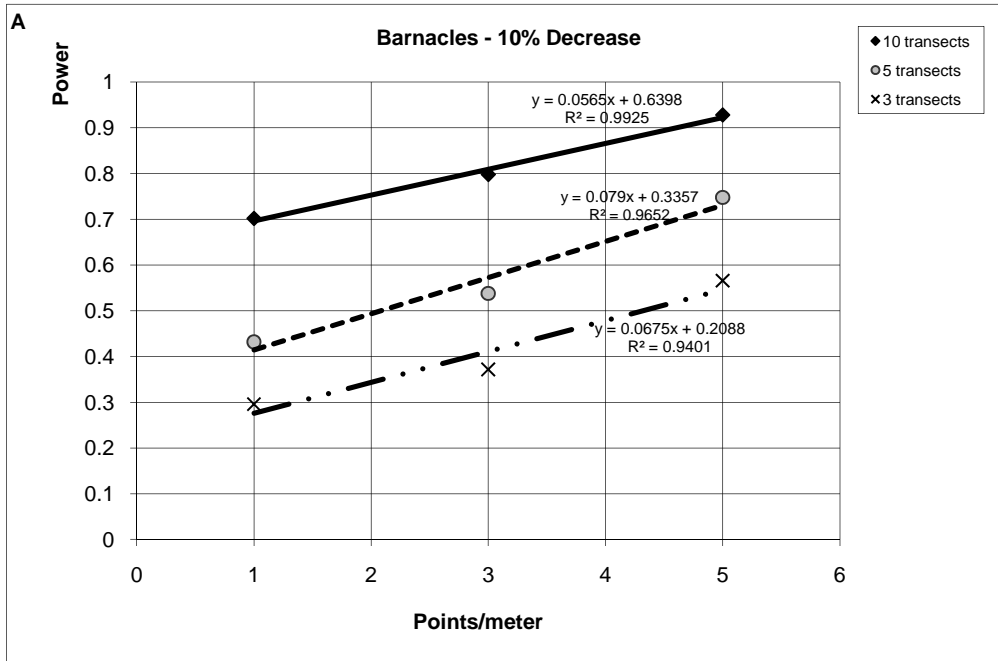


Figure C6. Change in the power to detect a 10% decrease in barnacles as a result of varying the number of points sampled per meter with respect to 3, 5, and 10 transects per site. Sampling was done in 1997 at 6 sites. $\alpha = 0.05$. A. Points graphed using data. B. Linear trend of power based on data.

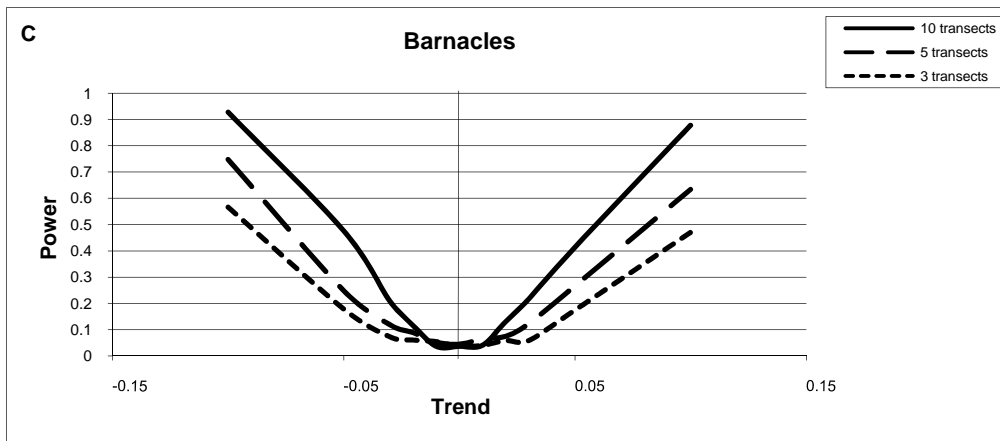
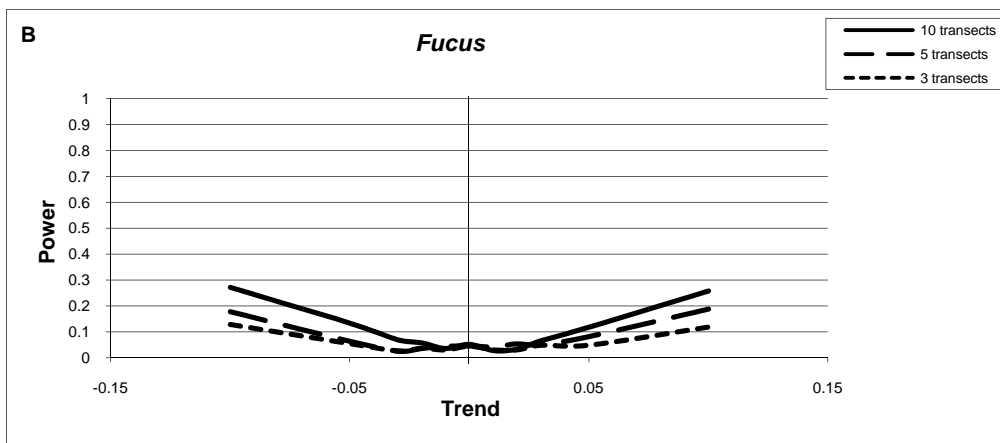
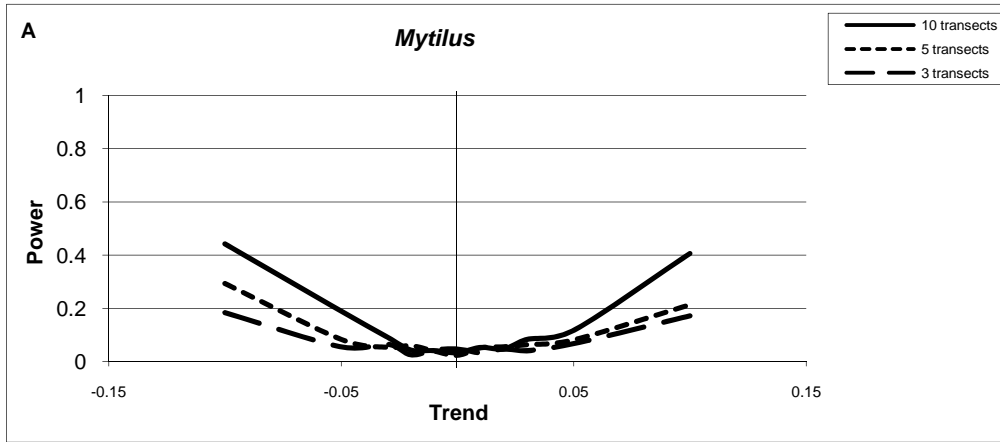
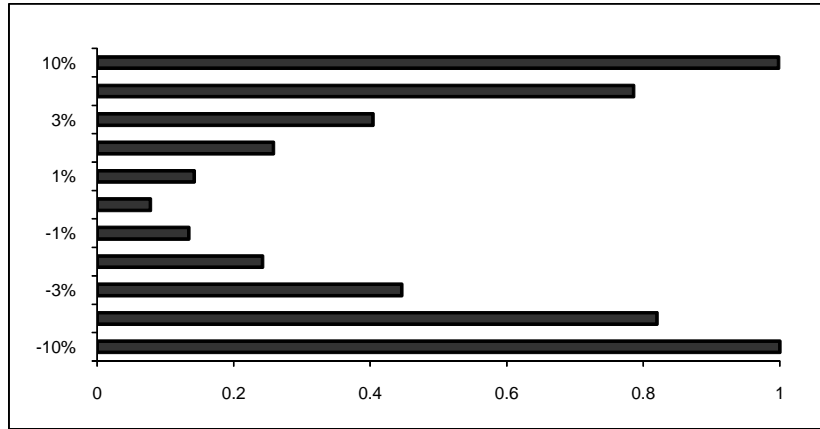


Figure C7. Power to detect trends of differing magnitudes at 3, 5, and 10 transects sampled per site. Data are based on the 1997 fine-grained sampling of 6 sites. Each transect is sampled at 5 points/meter. $\alpha = 0.05$. A. *Mytilus*; B. *Fucus*; C. Barnacles.

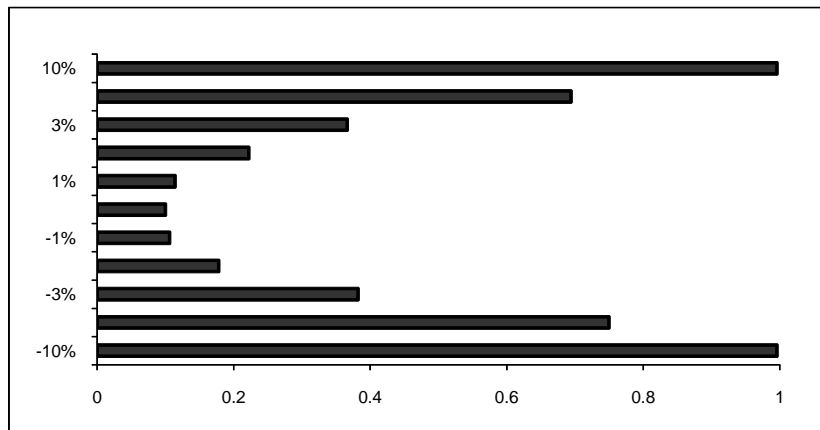
Barnacles

| Population Trend | Power |
|------------------|-------|
| -10% | 1 |
| -5% | 0.82 |
| -3% | 0.446 |
| -2% | 0.242 |
| -1% | 0.134 |
| 0% | 0.078 |
| 1% | 0.142 |
| 2% | 0.258 |
| 3% | 0.404 |
| 5% | 0.786 |
| 10% | 0.998 |



Mytilus

| Population Trend | Power |
|------------------|-------|
| -10% | 0.996 |
| -5% | 0.75 |
| -3% | 0.382 |
| -2% | 0.178 |
| -1% | 0.106 |
| 0% | 0.1 |
| 1% | 0.114 |
| 2% | 0.222 |
| 3% | 0.366 |
| 5% | 0.694 |
| 10% | 0.996 |



Fucus

| Population Trend | Power |
|------------------|-------|
| -10% | 0.93 |
| -5% | 0.398 |
| -3% | 0.244 |
| -2% | 0.142 |
| -1% | 0.11 |
| 0% | 0.076 |
| 1% | 0.114 |
| 2% | 0.154 |
| 3% | 0.228 |
| 5% | 0.426 |
| 10% | 0.868 |

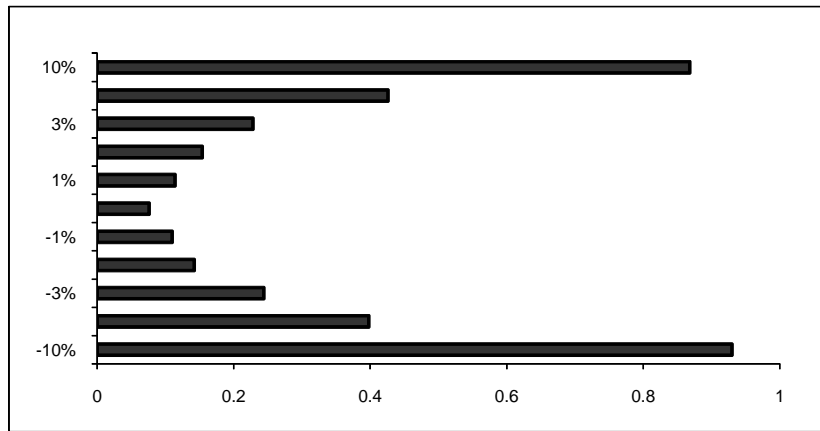
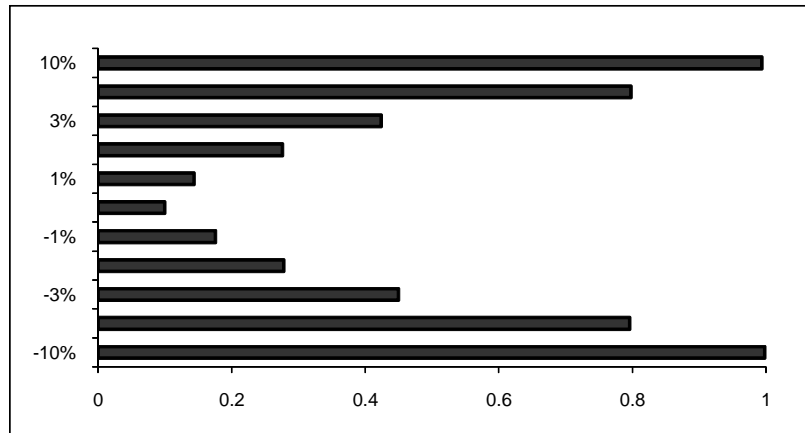


Figure C8. Power to detect population trends based on 3 years of data (1998-2001) in A. barnacles; B. *Mytilus*; and C. *Fucus*. Sampling was done on the level of 25 sites, 6 transects, 1 point/meter. $\alpha = 0.10$.

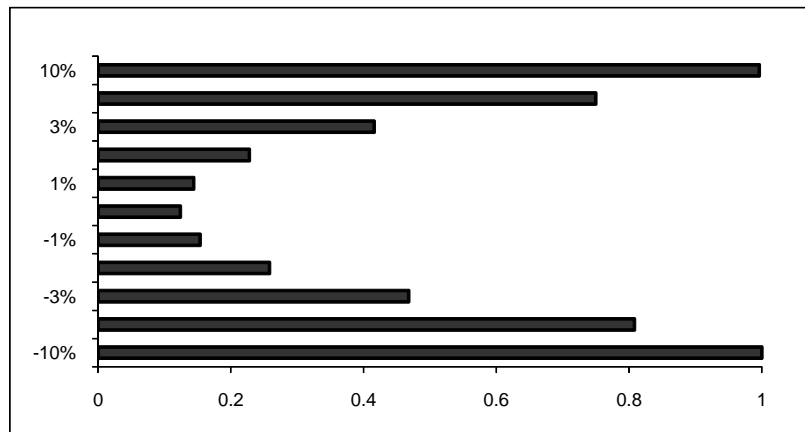
Barnacles

| Population Trend | Power |
|------------------|-------|
| -10% | 0.998 |
| -5% | 0.796 |
| -3% | 0.45 |
| -2% | 0.278 |
| -1% | 0.176 |
| 0% | 0.1 |
| 1% | 0.144 |
| 2% | 0.276 |
| 3% | 0.424 |
| 5% | 0.798 |
| 10% | 0.994 |



Mytilus

| Population Trend | Power |
|------------------|-------|
| -10% | 1 |
| -5% | 0.808 |
| -3% | 0.468 |
| -2% | 0.258 |
| -1% | 0.154 |
| 0% | 0.124 |
| 1% | 0.144 |
| 2% | 0.228 |
| 3% | 0.416 |
| 5% | 0.75 |
| 10% | 0.996 |



Fucus

| Population Trend | Power |
|------------------|-------|
| -10% | 0.95 |
| -5% | 0.46 |
| -3% | 0.266 |
| -2% | 0.212 |
| -1% | 0.12 |
| 0% | 0.098 |
| 1% | 0.114 |
| 2% | 0.182 |
| 3% | 0.234 |
| 5% | 0.492 |
| 10% | 0.88 |

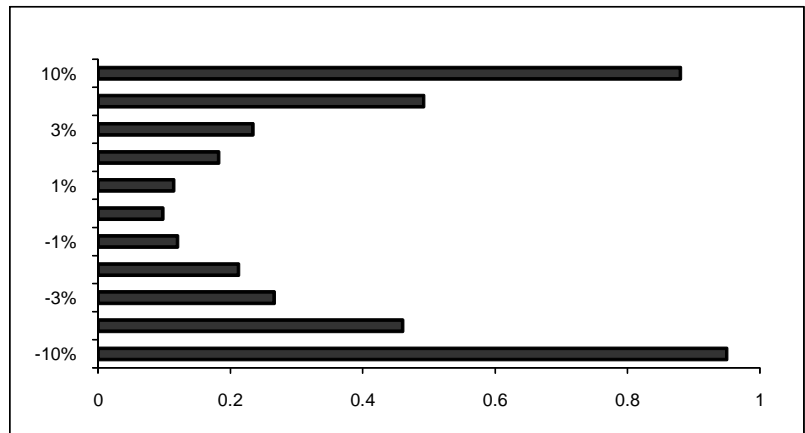
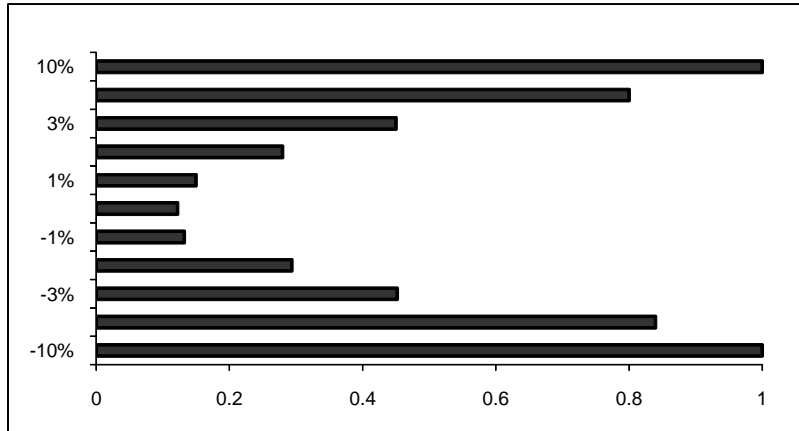


Figure C9. Power to detect population trends based on 3 years of data (1998-2001) in A. barnacles; B. *Mytilus*; and C. *Fucus*. Sampling was done on the level of 25 sites, 6 transects, 2 points/meter. $\alpha = 0.10$.

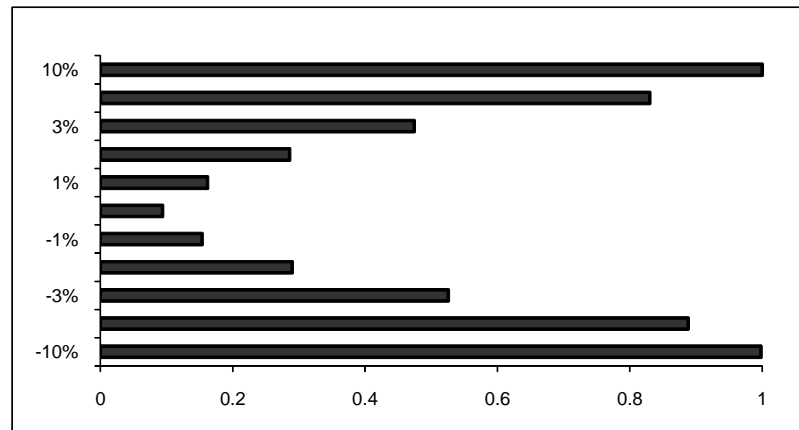
Barnacles

| Population Trend | Power |
|------------------|-------|
| -10% | 1 |
| -5% | 0.84 |
| -3% | 0.452 |
| -2% | 0.294 |
| -1% | 0.132 |
| -0% | 0.122 |
| 1% | 0.15 |
| 2% | 0.28 |
| 3% | 0.45 |
| 5% | 0.8 |
| 10% | 1 |



Mytilus

| Population Trend | Power |
|------------------|-------|
| -10% | 0.998 |
| -5% | 0.888 |
| -3% | 0.526 |
| -2% | 0.29 |
| -1% | 0.154 |
| -0% | 0.094 |
| 1% | 0.162 |
| 2% | 0.286 |
| 3% | 0.474 |
| 5% | 0.83 |
| 10% | 1 |



Fucus

| Population Trend | Power |
|------------------|-------|
| -10% | 0.946 |
| -5% | 0.488 |
| -3% | 0.25 |
| -2% | 0.148 |
| -1% | 0.12 |
| -0% | 0.084 |
| 1% | 0.126 |
| 2% | 0.176 |
| 3% | 0.208 |
| 5% | 0.47 |
| 10% | 0.926 |

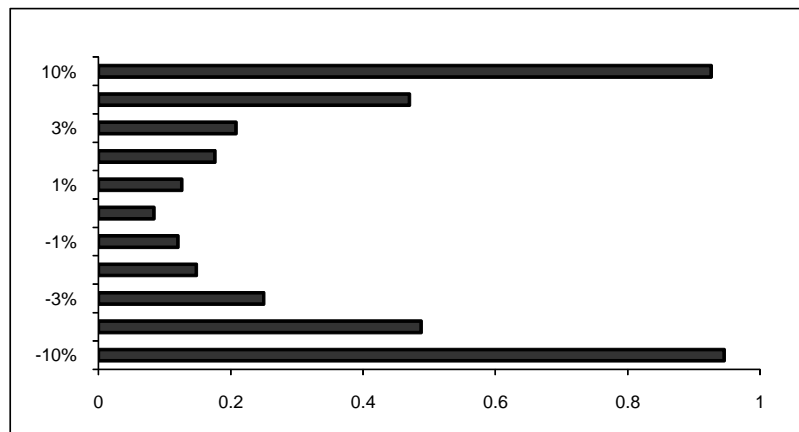
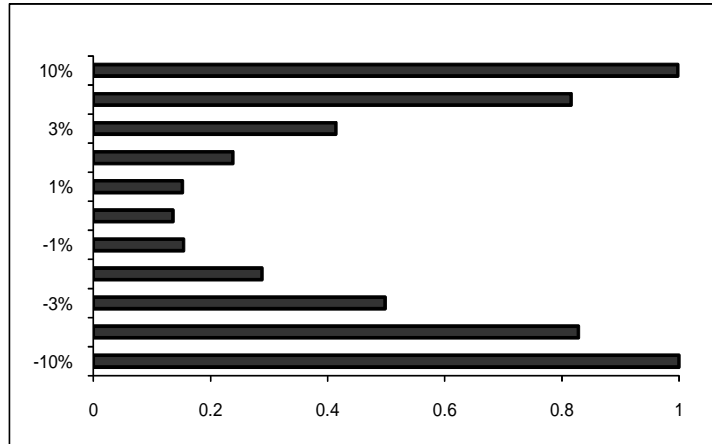


Figure C10. Power to detect population trends based on 3 years of data (1998-2001) in A. barnacles; B. *Mytilus*; and C. *Fucus*. Sampling was done on the level of 25 sites, 6 transects, 3 points/meter. $\alpha = 0.10$.

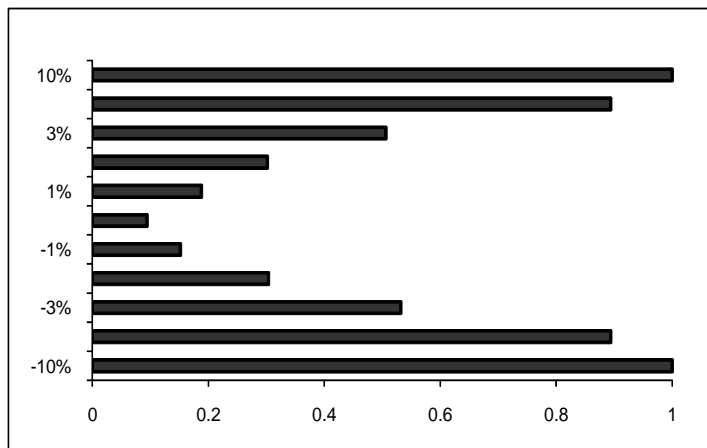
Barnacles

| Population Trend | Power |
|------------------|-------|
| -10% | 1 |
| -5% | 0.828 |
| -3% | 0.498 |
| -2% | 0.288 |
| -1% | 0.154 |
| -0% | 0.136 |
| 1% | 0.152 |
| 2% | 0.238 |
| 3% | 0.414 |
| 5% | 0.816 |
| 10% | 0.998 |



Mytilus

| Population Trend | Power |
|------------------|-------|
| -10% | 1 |
| -5% | 0.894 |
| -3% | 0.532 |
| -2% | 0.304 |
| -1% | 0.152 |
| -0% | 0.094 |
| 1% | 0.188 |
| 2% | 0.302 |
| 3% | 0.506 |
| 5% | 0.894 |
| 10% | 1 |



Fucus

| Population Trend | Power |
|------------------|-------|
| -10% | 0.948 |
| -5% | 0.47 |
| -3% | 0.246 |
| -2% | 0.184 |
| -1% | 0.1 |
| -0% | 0.082 |
| 1% | 0.136 |
| 2% | 0.17 |
| 3% | 0.292 |
| 5% | 0.48 |
| 10% | 0.898 |

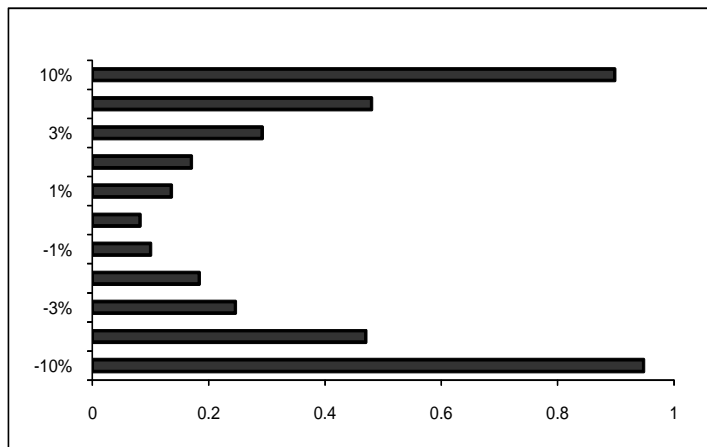
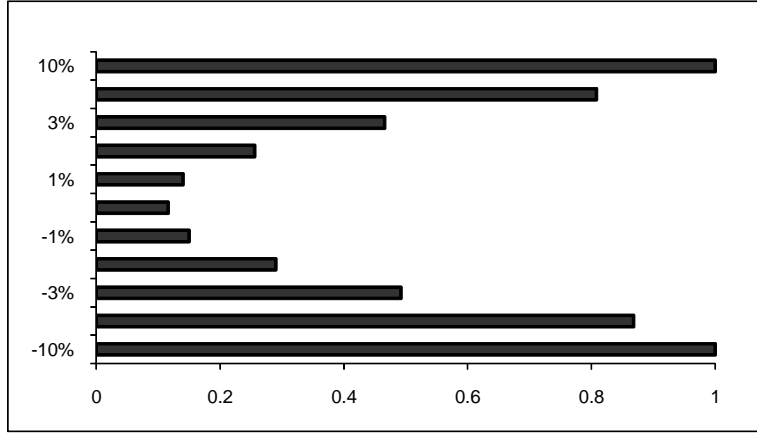


Figure C11. Power to detect population trends based on 3 years of data (1998-2001) in A. barnacles; B. *Mytilus*; and C. *Fucus*. Sampling was done on the level of 25 sites, 6 transects, 4 points/meter. $\alpha = 0.10$.

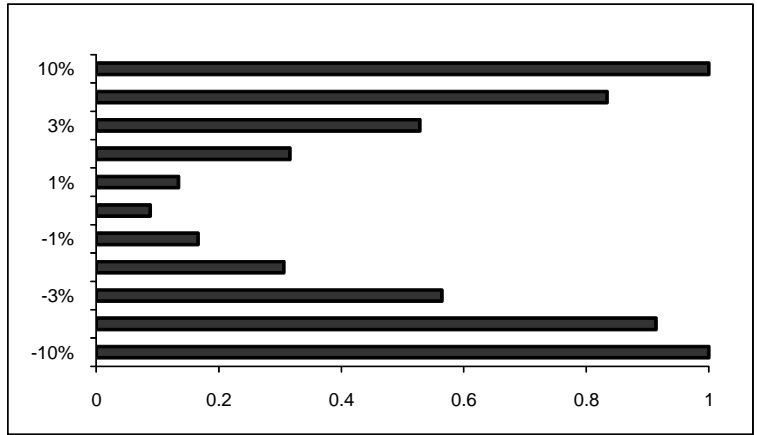
Barnacles

| Population Trend | Power |
|------------------|-------|
| -10% | 1 |
| -5% | 0.868 |
| -3% | 0.492 |
| -2% | 0.29 |
| -1% | 0.15 |
| -0% | 0.116 |
| 1% | 0.14 |
| 2% | 0.256 |
| 3% | 0.466 |
| 5% | 0.808 |
| 10% | 1 |



Mytilus

| Population Trend | Power |
|------------------|-------|
| -10% | 1 |
| -5% | 0.914 |
| -3% | 0.564 |
| -2% | 0.306 |
| -1% | 0.166 |
| -0% | 0.088 |
| 1% | 0.134 |
| 2% | 0.316 |
| 3% | 0.528 |
| 5% | 0.834 |
| 10% | 1 |



Fucus

| Population Trend | Power |
|------------------|-------|
| -10% | 0.946 |
| -5% | 0.508 |
| -3% | 0.274 |
| -2% | 0.142 |
| -1% | 0.14 |
| -0% | 0.084 |
| 1% | 0.102 |
| 2% | 0.138 |
| 3% | 0.268 |
| 5% | 0.474 |
| 10% | 0.922 |

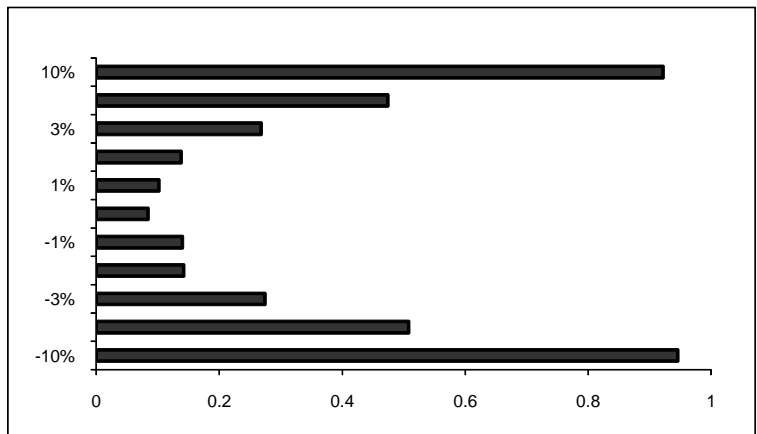


Figure C12. Power to detect population trends based on 3 years of data (1998-2001) in A. barnacles; B. Mytilus; and C. Fucus. Sampling was done on the level of 25 sites, 6 transects, 5 points/meter. $\alpha = 0.10$.

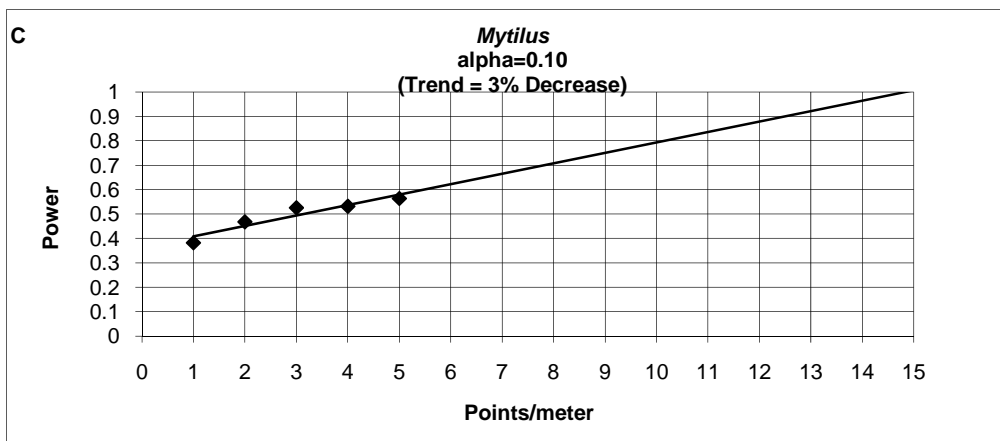
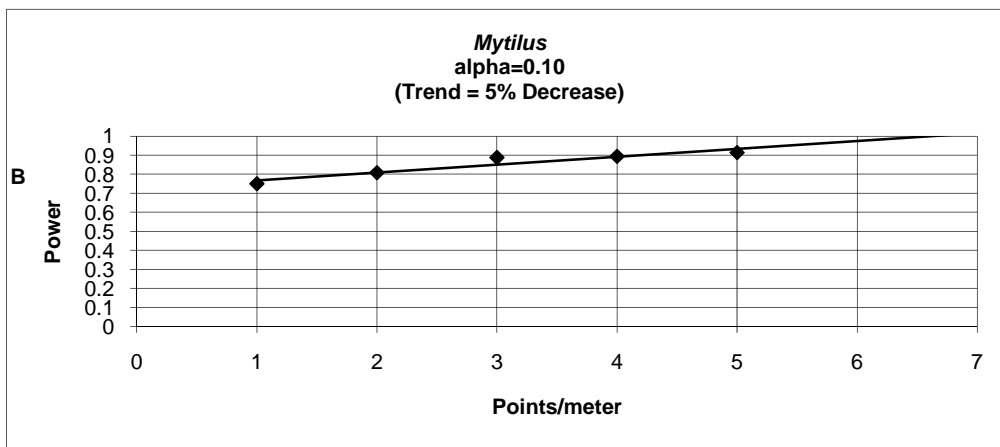
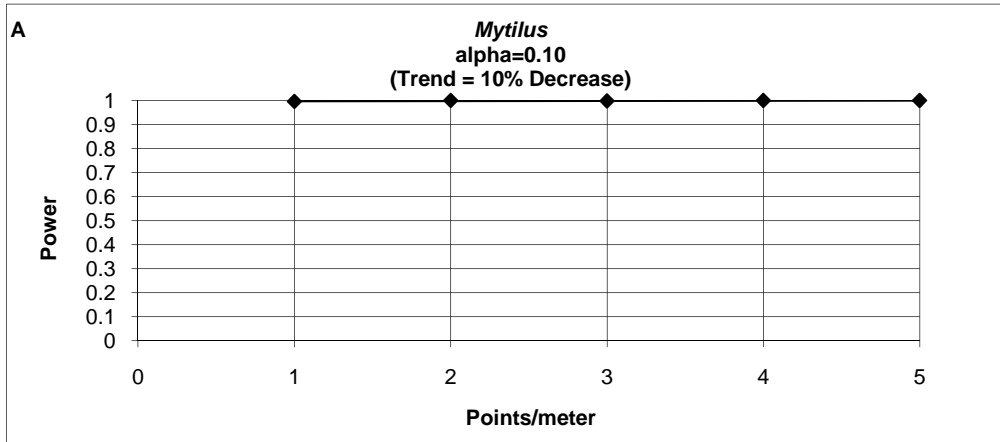


Figure C13. Power to detect a decline in *Mytilus* populations as a function of the number of points sampled per meter of each transect. Data are based on 3 years of sampling (1998-2001) at 25 sites, 6 transects at each site. $\alpha = 0.10$. A. 10% decrease; B. 5% decrease; C. 3% decrease. Points on graphs indicate data; lines are linear projections of the trends suggested by these data.

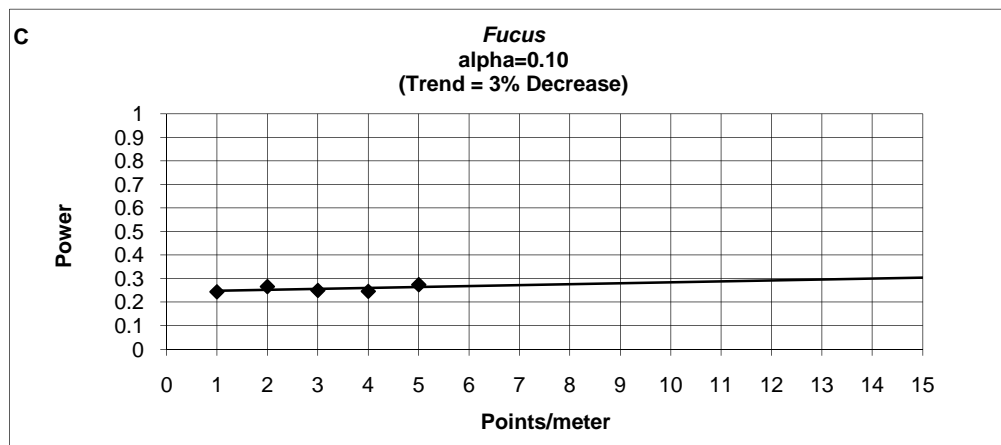
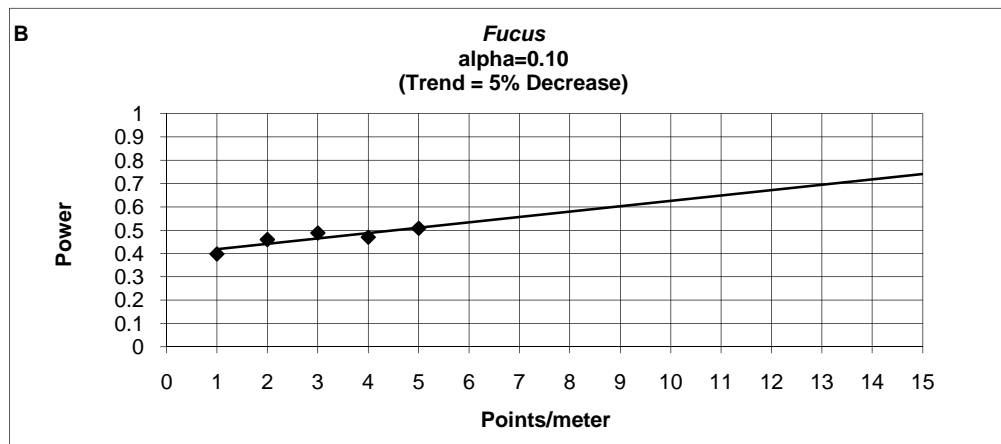
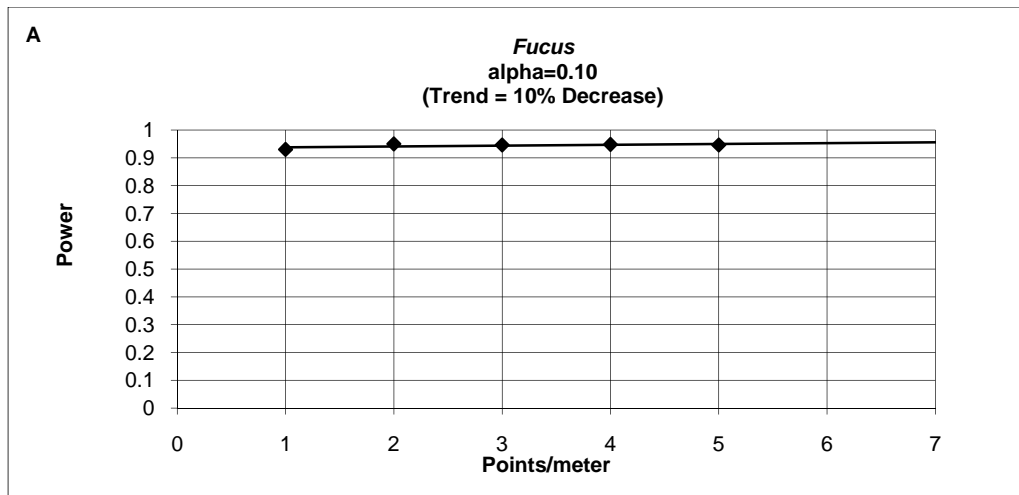


Figure C14. Power to detect a decline in *Fucus* populations as a function of the number of points sampled per meter of each transect. Data are based on 3 years of sampling (1998-2001) at 25 sites, 6 transects at each site. $\alpha = 0.10$. A. 10% decrease; B. 5% decrease; C. 3% decrease. Points on graphs indicate data; lines are linear projections of the trends suggested by these data.

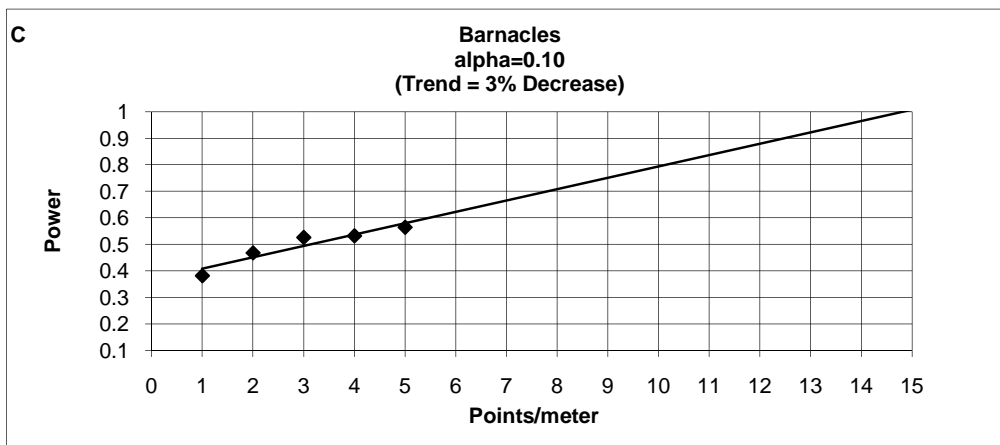
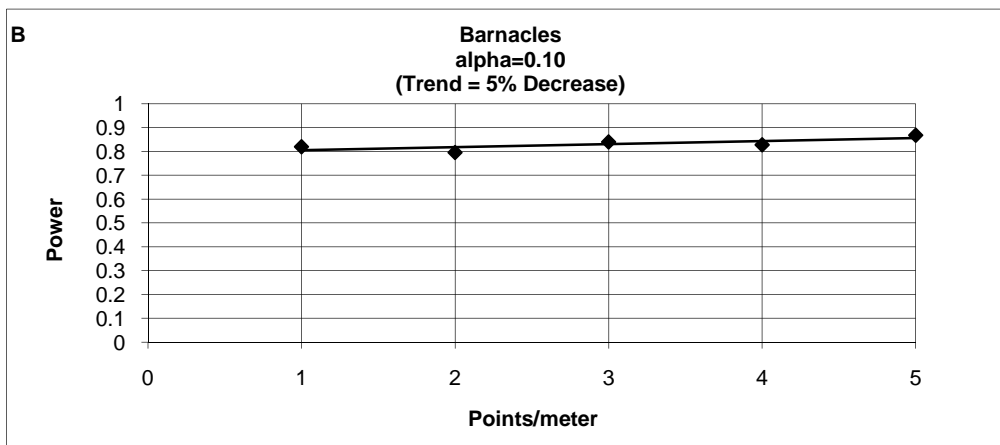
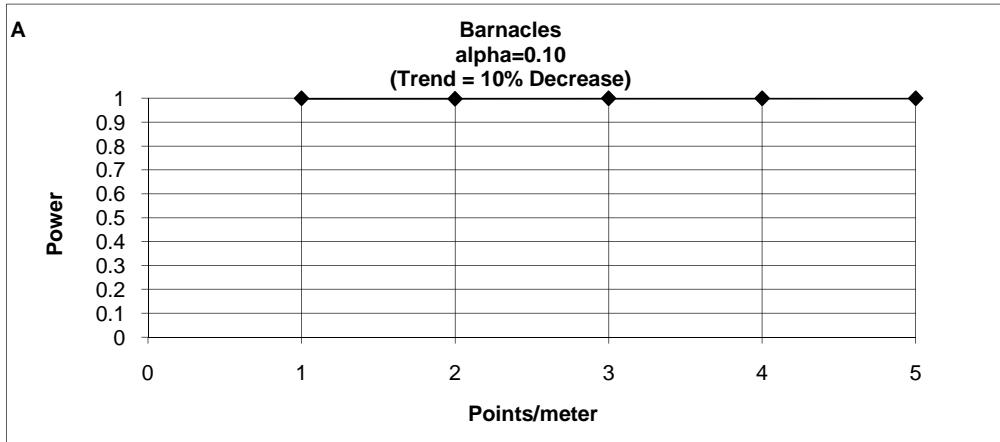


Figure C15. Power to detect a decline in barnacle populations as a function of the number of points sampled per meter of each transect. Data are based on 3 years of sampling (1998-2001) at 25 sites, 6 transects at each site. $\alpha = 0.10$. A. 10% decrease; B. 5% decrease; C. 3% decrease. Points on graphs indicate data; lines are linear projections of the trends suggested by these data.

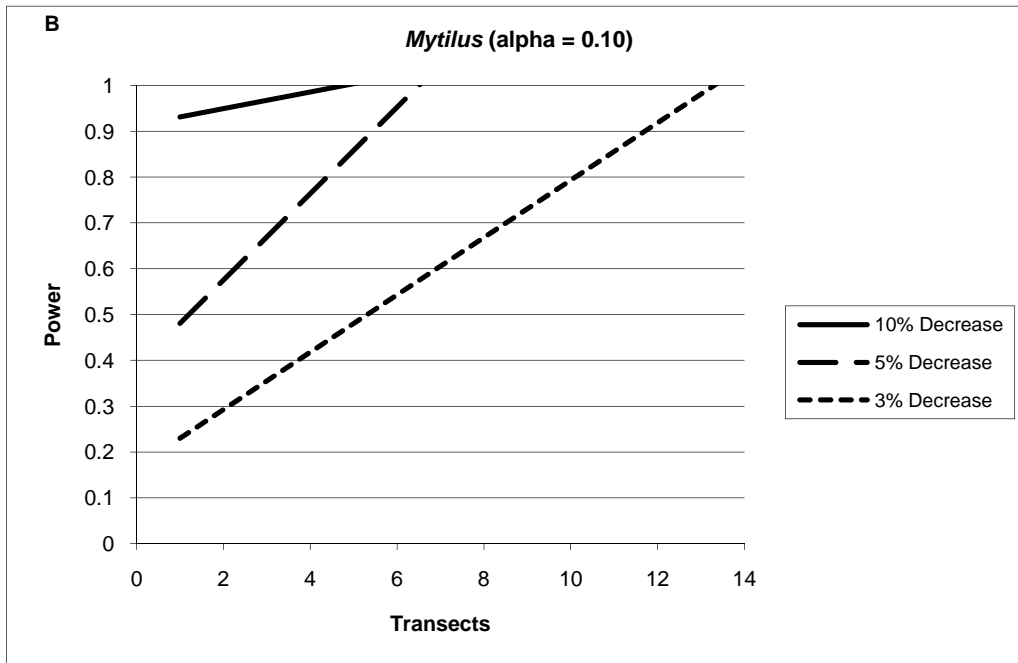
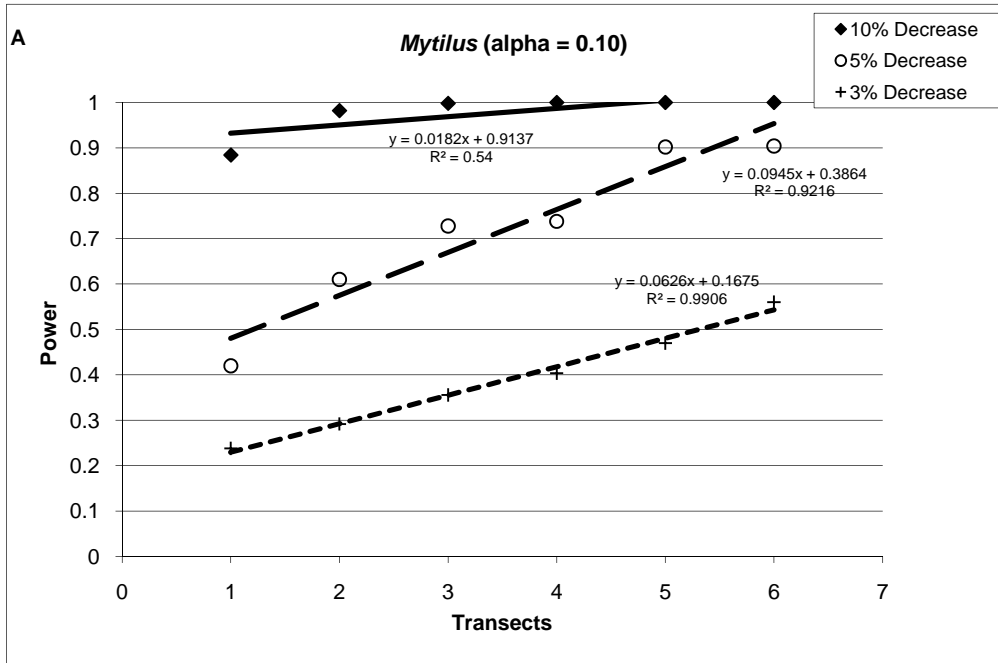
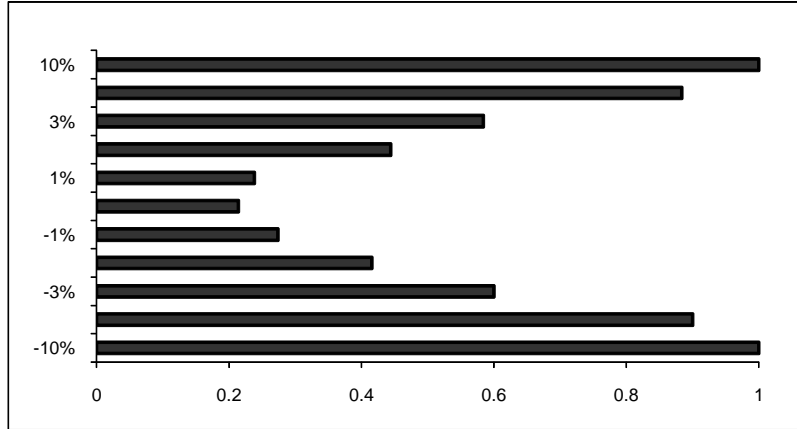


Figure C16. Power to detect declines in *Mytilus* populations (10%, 5%, and 3%) as a function of the number of transects sampled at each site. Transects were sampled at a frequency of 1 point/meter. Data are based on the analysis of 25 sites sampled 4 times (1997-2001). $\alpha = 0.10$. A. Points graphed using data. B. Linear trend of power based on data.

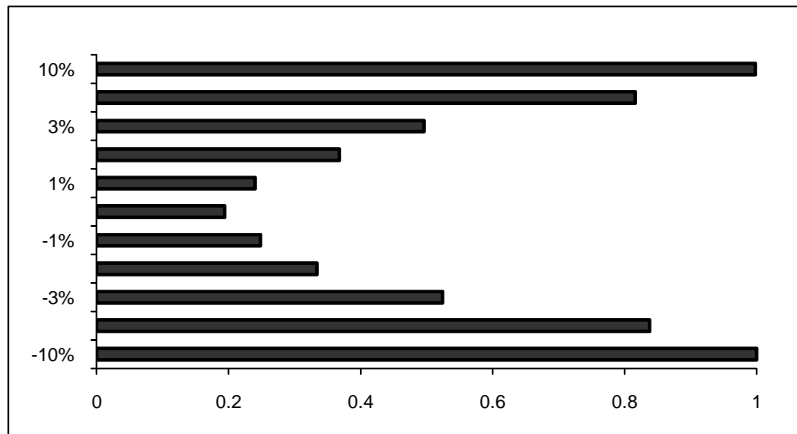
Barnacles

| Population Trend | Power |
|------------------|-------|
| -10% | 1 |
| -5% | 0.9 |
| -3% | 0.6 |
| -2% | 0.416 |
| -1% | 0.274 |
| -0% | 0.214 |
| 1% | 0.238 |
| 2% | 0.444 |
| 3% | 0.584 |
| 5% | 0.884 |
| 10% | 1 |



Mytilus

| Population Trend | Power |
|------------------|-------|
| -10% | 1 |
| -5% | 0.838 |
| -3% | 0.524 |
| -2% | 0.334 |
| -1% | 0.248 |
| -0% | 0.194 |
| 1% | 0.24 |
| 2% | 0.368 |
| 3% | 0.496 |
| 5% | 0.816 |
| 10% | 0.998 |



Fucus

| Population Trend | Power |
|------------------|-------|
| -10% | 0.982 |
| -5% | 0.632 |
| -3% | 0.382 |
| -2% | 0.264 |
| -1% | 0.206 |
| -0% | 0.21 |
| 1% | 0.244 |
| 2% | 0.26 |
| 3% | 0.34 |
| 5% | 0.548 |
| 10% | 0.928 |

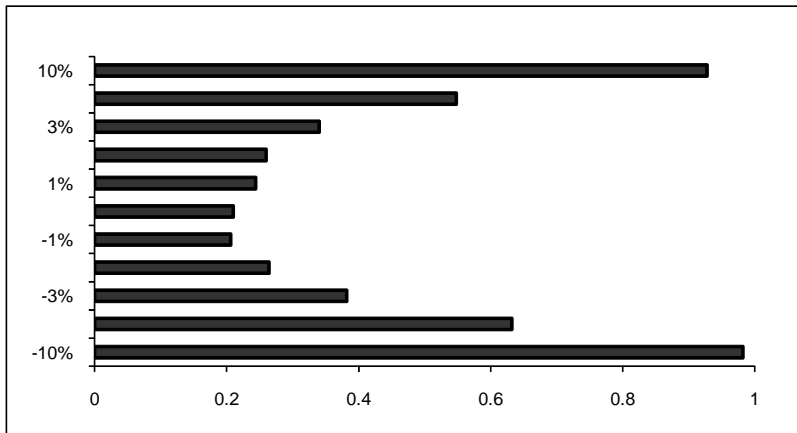
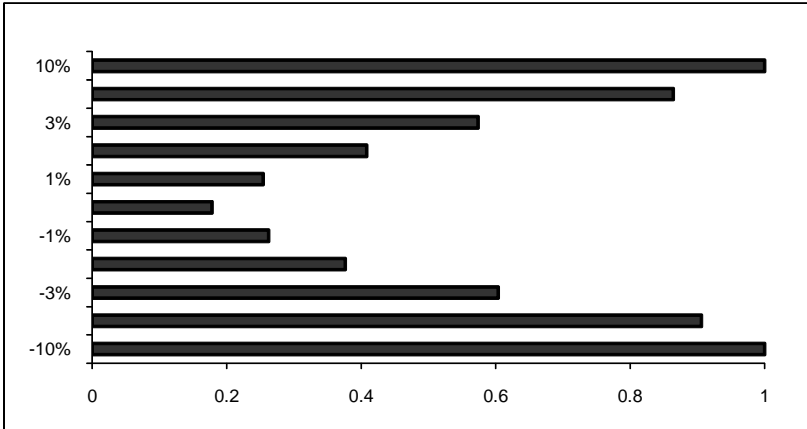


Figure C17. Power to detect population trends based on 3 years of data (1998-2001) in A. barnacles; B. *Mytilus*; and C. *Fucus*. Sampling was done on the level of 25 sites, 6 transects, 1 point/meter. $\alpha = 0.20$.

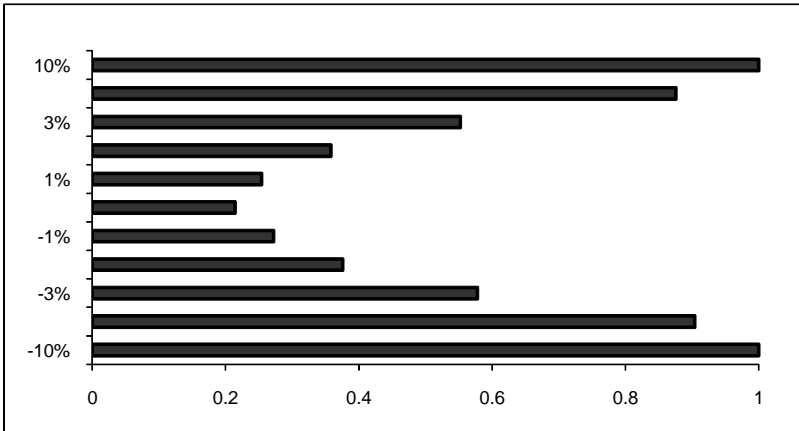
Barnacles

| Population Trend | Power |
|------------------|-------|
| -10% | 1 |
| -5% | 0.906 |
| -3% | 0.604 |
| -2% | 0.376 |
| -1% | 0.262 |
| 0% | 0.178 |
| 1% | 0.254 |
| 2% | 0.408 |
| 3% | 0.574 |
| 5% | 0.864 |
| 10% | 1 |



Mytilus

| Population Trend | Power |
|------------------|-------|
| -10% | 1 |
| -5% | 0.904 |
| -3% | 0.578 |
| -2% | 0.376 |
| -1% | 0.272 |
| 0% | 0.214 |
| 1% | 0.254 |
| 2% | 0.358 |
| 3% | 0.552 |
| 5% | 0.876 |
| 10% | 1 |



Fucus

| Population Trend | Power |
|------------------|-------|
| -10% | 0.976 |
| -5% | 0.688 |
| -3% | 0.384 |
| -2% | 0.294 |
| -1% | 0.2 |
| 0% | 0.22 |
| 1% | 0.208 |
| 2% | 0.304 |
| 3% | 0.386 |
| 5% | 0.572 |
| 10% | 0.958 |

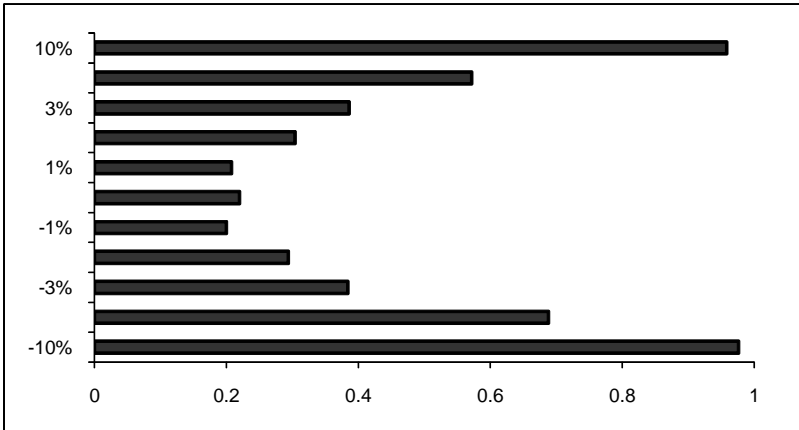
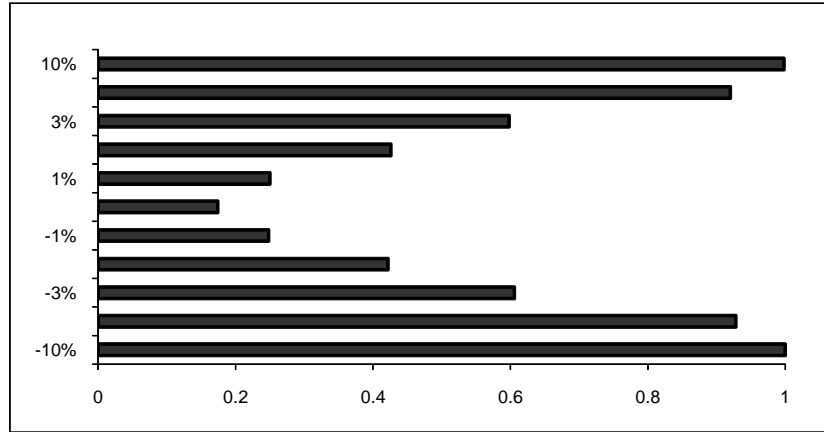


Figure C18. Power to detect population trends based on 3 years of data (1998-1999) in A. barnacles; B. *Mytilus*; and C. *Fucus*. Sampling was done on the level of 25 sites, 6 transects, 2 points/meter. $\alpha = 0.20$.

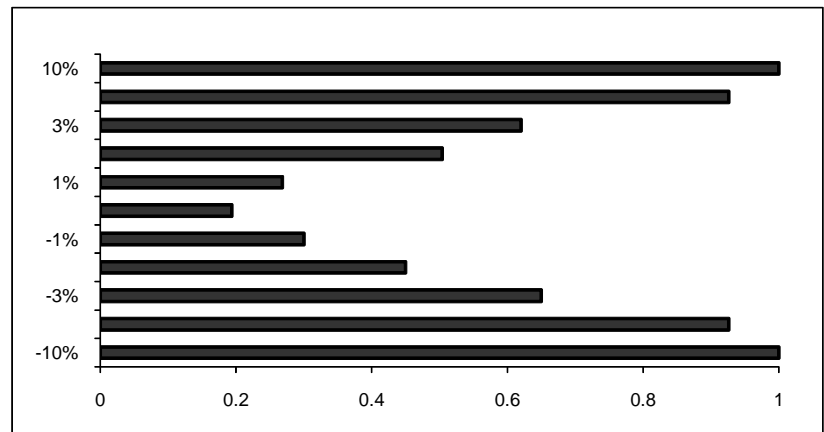
Barnacles

| Population Trend | Power |
|------------------|-------|
| -10% | 1 |
| -5% | 0.928 |
| -3% | 0.606 |
| -2% | 0.422 |
| -1% | 0.248 |
| -0% | 0.174 |
| 1% | 0.25 |
| 2% | 0.426 |
| 3% | 0.598 |
| 5% | 0.92 |
| 10% | 0.998 |



Mytilus

| Population Trend | Power |
|------------------|-------|
| -10% | 1 |
| -5% | 0.926 |
| -3% | 0.65 |
| -2% | 0.45 |
| -1% | 0.3 |
| -0% | 0.194 |
| 1% | 0.268 |
| 2% | 0.504 |
| 3% | 0.62 |
| 5% | 0.926 |
| 10% | 1 |



Fucus

| Population Trend | Power |
|------------------|-------|
| -10% | 0.98 |
| -5% | 0.67 |
| -3% | 0.382 |
| -2% | 0.304 |
| -1% | 0.23 |
| -0% | 0.216 |
| 1% | 0.218 |
| 2% | 0.292 |
| 3% | 0.39 |
| 5% | 0.576 |
| 10% | 0.98 |

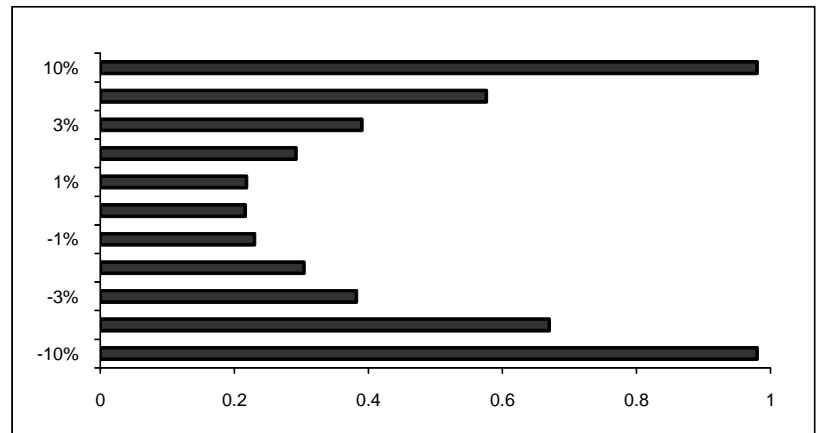
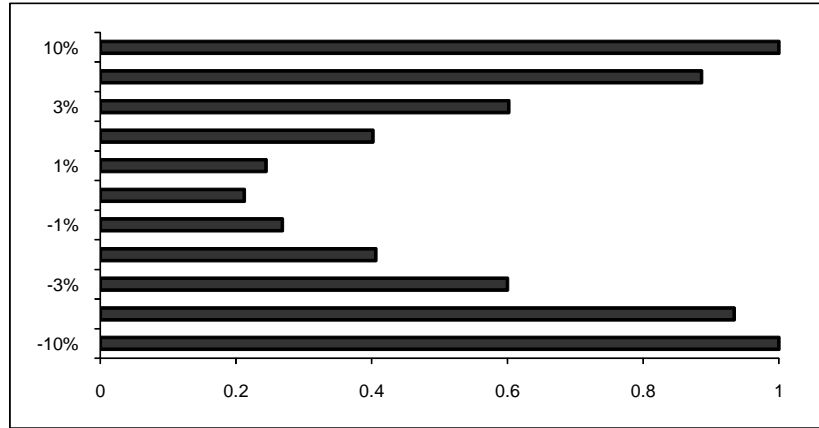


Figure C19. Power to detect population trends based on 3 years of data (1998-2001) in A. barnacles; B. *Mytilus*; and C. *Fucus*. Sampling was done on the level of 25 sites, 6 transects, 3 points/meter. $\alpha = 0.20$.

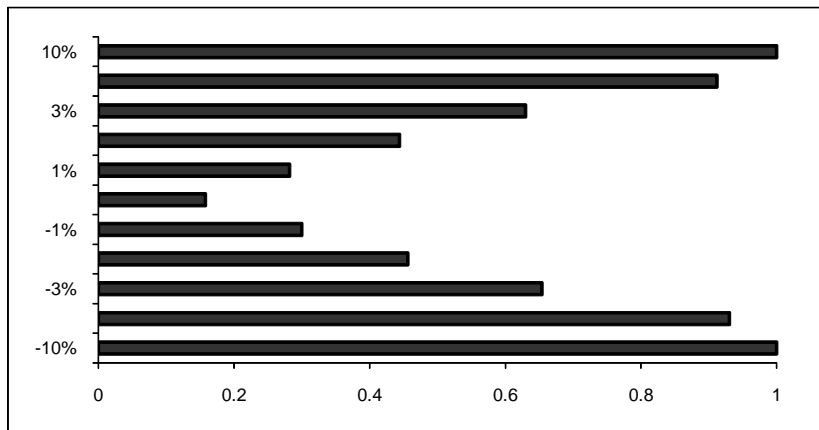
Barnacles

| Population Trend | Power |
|------------------|-------|
| -10% | 1 |
| -5% | 0.934 |
| -3% | 0.6 |
| -2% | 0.406 |
| -1% | 0.268 |
| 0% | 0.212 |
| 1% | 0.244 |
| 2% | 0.402 |
| 3% | 0.602 |
| 5% | 0.886 |
| 10% | 1 |



Mytilus

| Population Trend | Power |
|------------------|-------|
| -10% | 1 |
| -5% | 0.93 |
| -3% | 0.654 |
| -2% | 0.456 |
| -1% | 0.3 |
| 0% | 0.158 |
| 1% | 0.282 |
| 2% | 0.444 |
| 3% | 0.63 |
| 5% | 0.912 |
| 10% | 1 |



Fucus

| Population Trend | Power |
|------------------|-------|
| -10% | 0.974 |
| -5% | 0.652 |
| -3% | 0.43 |
| -2% | 0.242 |
| -1% | 0.202 |
| 0% | 0.222 |
| 1% | 0.22 |
| 2% | 0.264 |
| 3% | 0.422 |
| 5% | 0.654 |
| 10% | 0.98 |

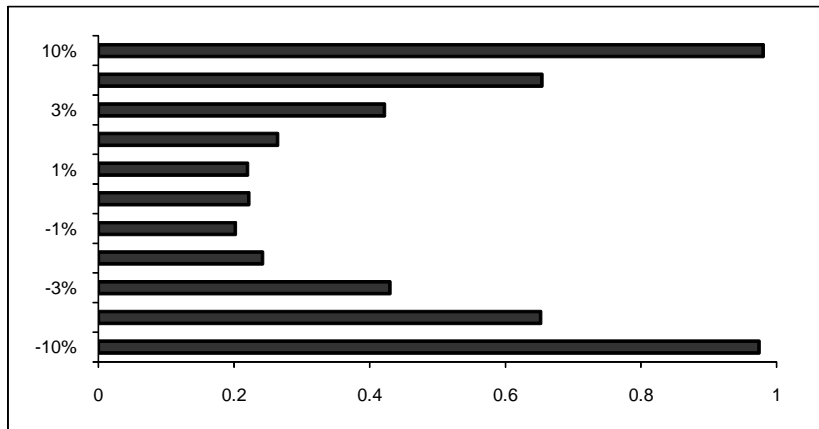
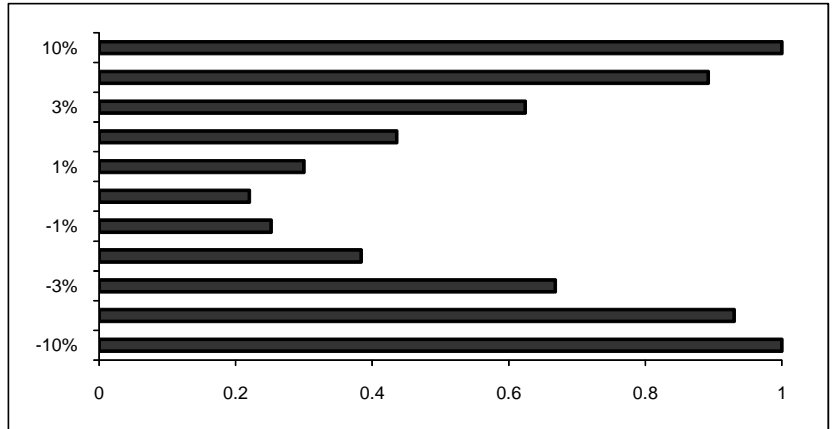


Figure C20. Power to detect population trends based on 3 years of data (1998-2001) in A. barnacles; B. *Mytilus*; and C. *Fucus*. Sampling was done on the level of 25 sites, 6 transects, 4 points/meter. $\alpha = 0.20$.

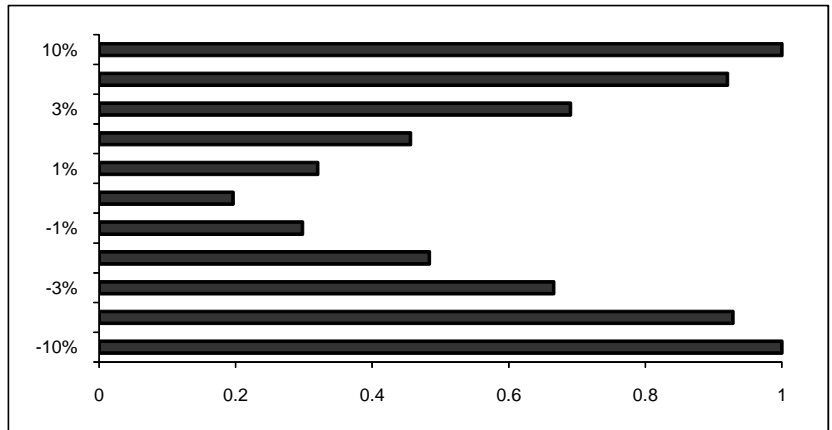
Barnacles

| Population Trend | Power |
|------------------|-------|
| -10% | 1 |
| -5% | 0.93 |
| -3% | 0.668 |
| -2% | 0.384 |
| -1% | 0.252 |
| -0% | 0.22 |
| 1% | 0.3 |
| 2% | 0.436 |
| 3% | 0.624 |
| 5% | 0.892 |
| 10% | 1 |



Mytilus

| Population Trend | Power |
|------------------|-------|
| -10% | 1 |
| -5% | 0.928 |
| -3% | 0.666 |
| -2% | 0.484 |
| -1% | 0.298 |
| -0% | 0.196 |
| 1% | 0.32 |
| 2% | 0.456 |
| 3% | 0.69 |
| 5% | 0.92 |
| 10% | 1 |



Fucus

| Population Trend | Power |
|------------------|-------|
| -10% | 0.984 |
| -5% | 0.654 |
| -3% | 0.366 |
| -2% | 0.3 |
| -1% | 0.262 |
| -0% | 0.206 |
| 1% | 0.212 |
| 2% | 0.236 |
| 3% | 0.368 |
| 5% | 0.62 |
| 10% | 0.956 |

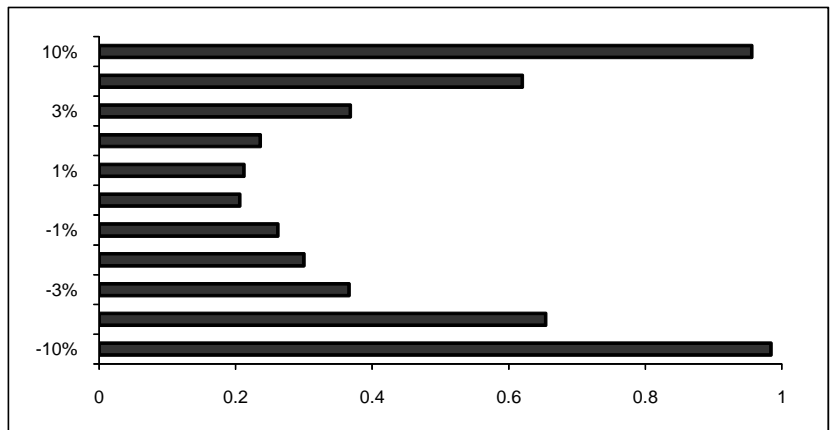


Figure C21. Power to detect population trends based on 3 years of data (1998-2001) in A. barnacles; B. *Mytilus*; and C. *Fucus*. Sampling was done on the level of 25 sites, 6 transects, 5 points/meter. $\alpha = 0.20$.

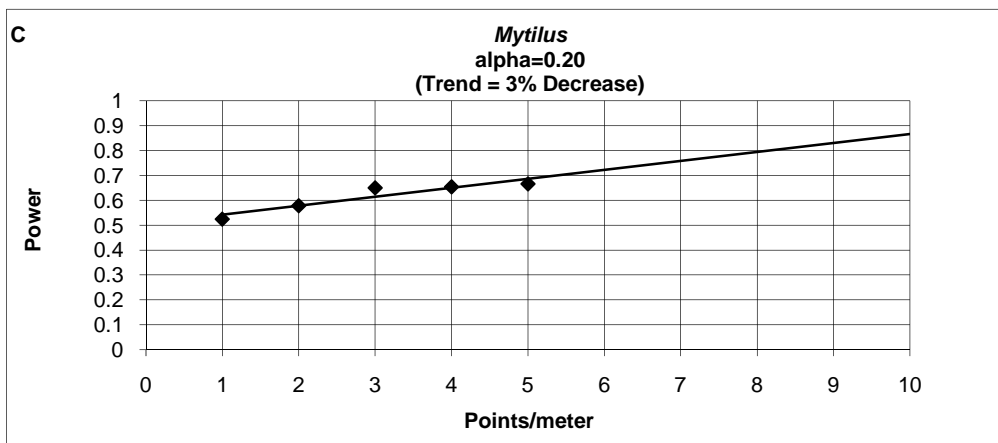
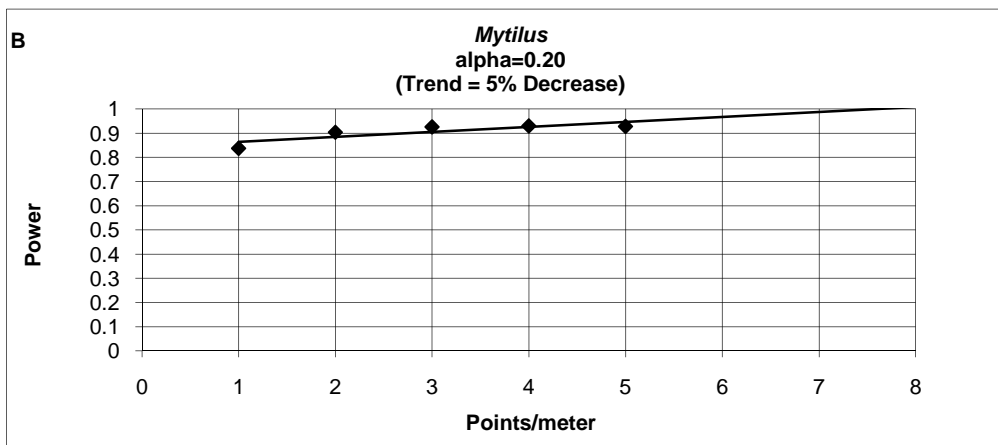
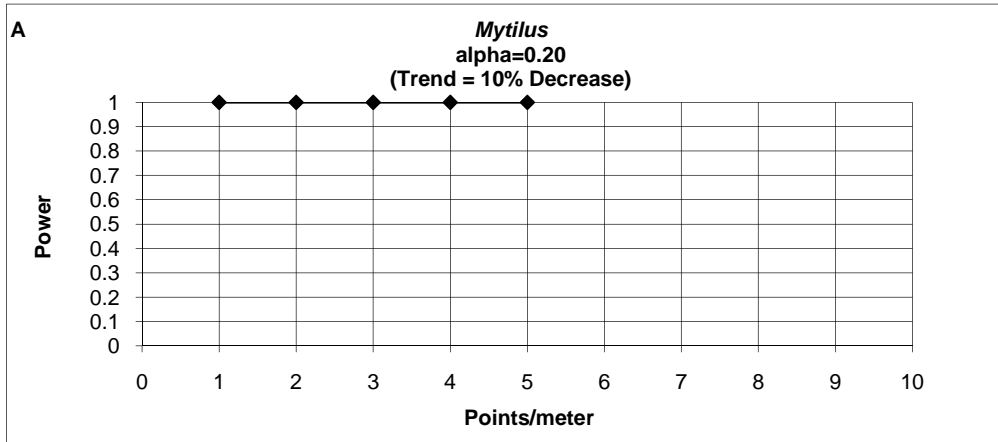


Figure C22. Power to detect a decline in *Mytilus* populations as a function of the number of points sampled per meter of each transect. Data are based on 3 years of sampling (1998-2001) at 25 sites, 6 transects at each site. $\alpha = 0.20$. A. 10% decrease; B. 5% decrease; C. 3% decrease. Points on graphs indicate data; lines are linear projections of the trends suggested by these data.

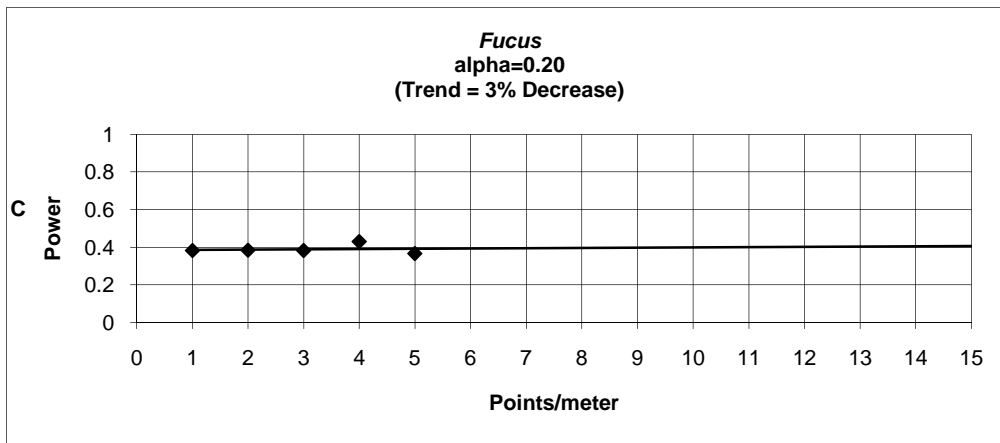
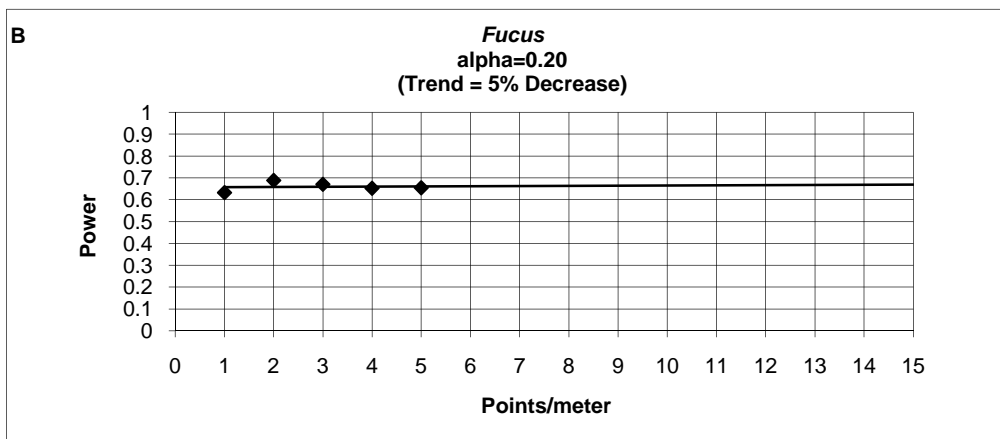
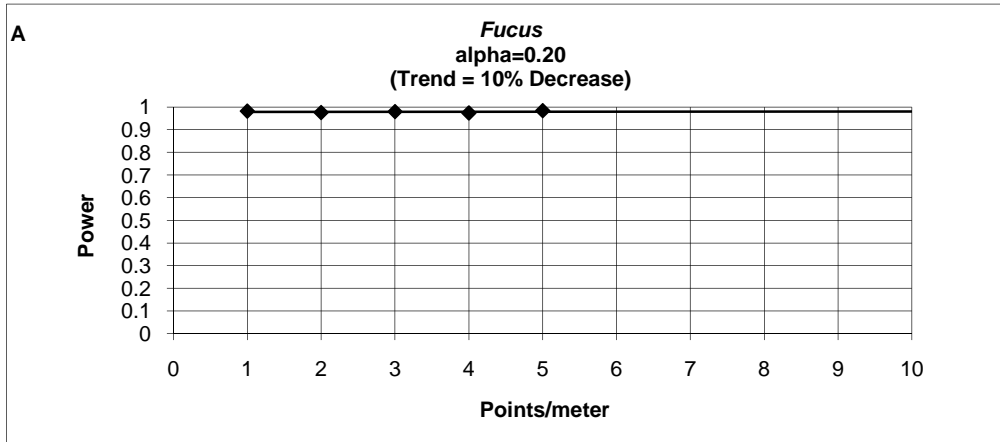


Figure C23. Power to detect a decline in *Fucus* populations as a function of the number of points sampled per meter of each transect. Data are based on 3 years of sampling (1998-2001) at 25 sites, 6 transects at each site. $\alpha = 0.20$. A. 10% decrease; B. 5% decrease; C. 3% decrease. Points on graphs indicate data; lines are linear projections of the trends suggested by these data.

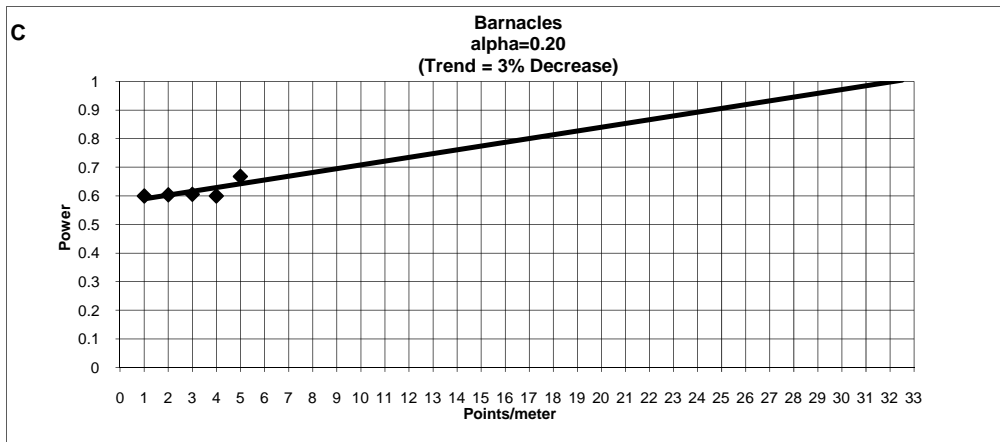
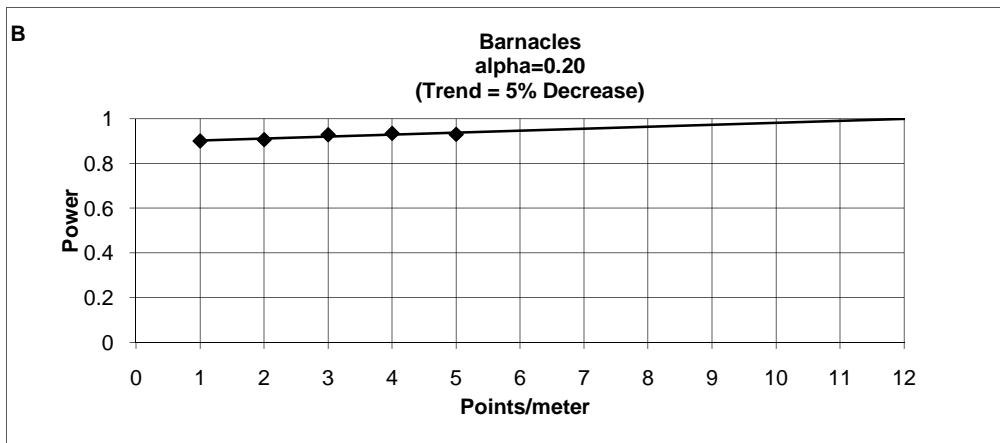
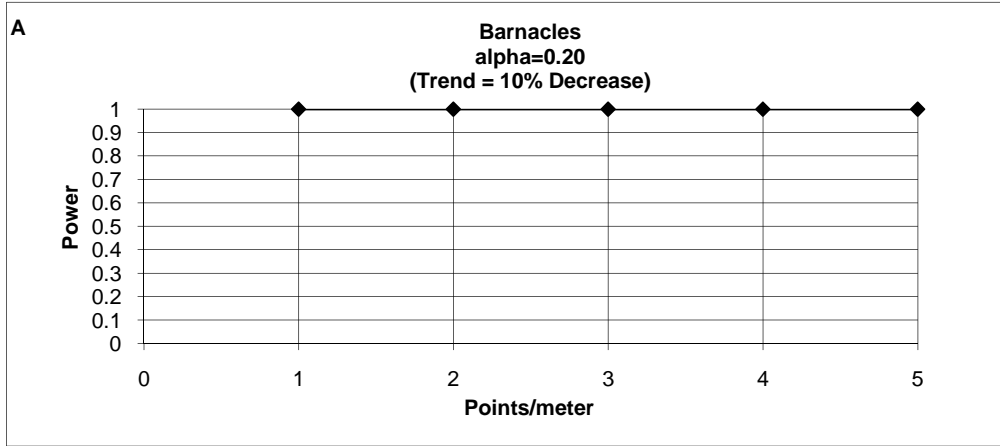


Figure C24. Power to detect a decline in barnacle populations as a function of the number of points sampled per meter of each transect. Data are based on 3 years of sampling (1998-2001) at 25 sites, 6 transects at each site. $\alpha = 0.20$. A. 10% decrease; B. 5% decrease; C. 3% decrease. Points on graphs indicate data; lines are linear projections of the trends suggested by these data.

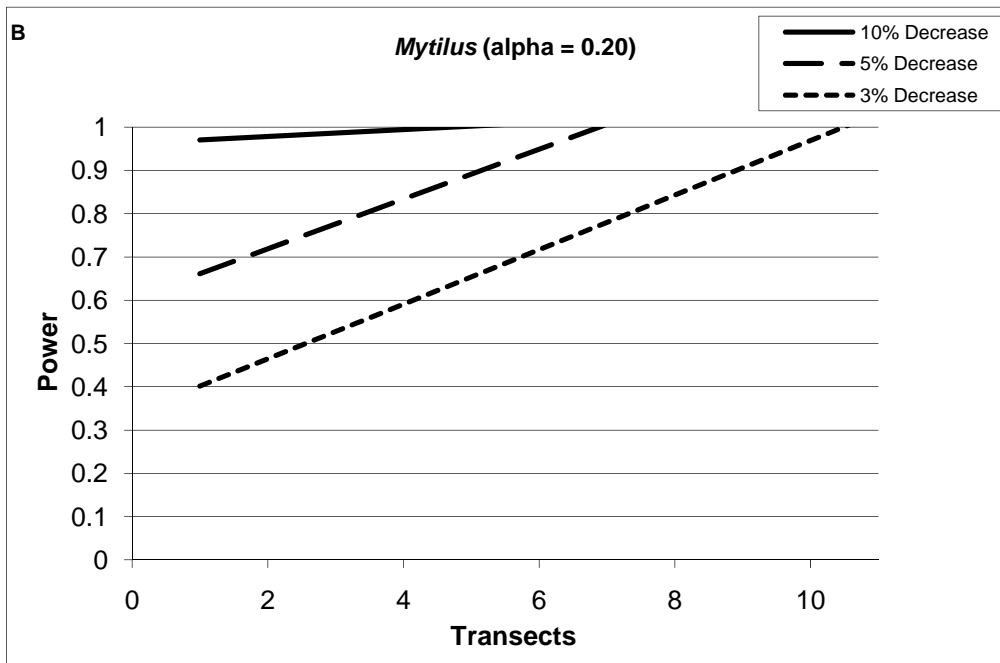
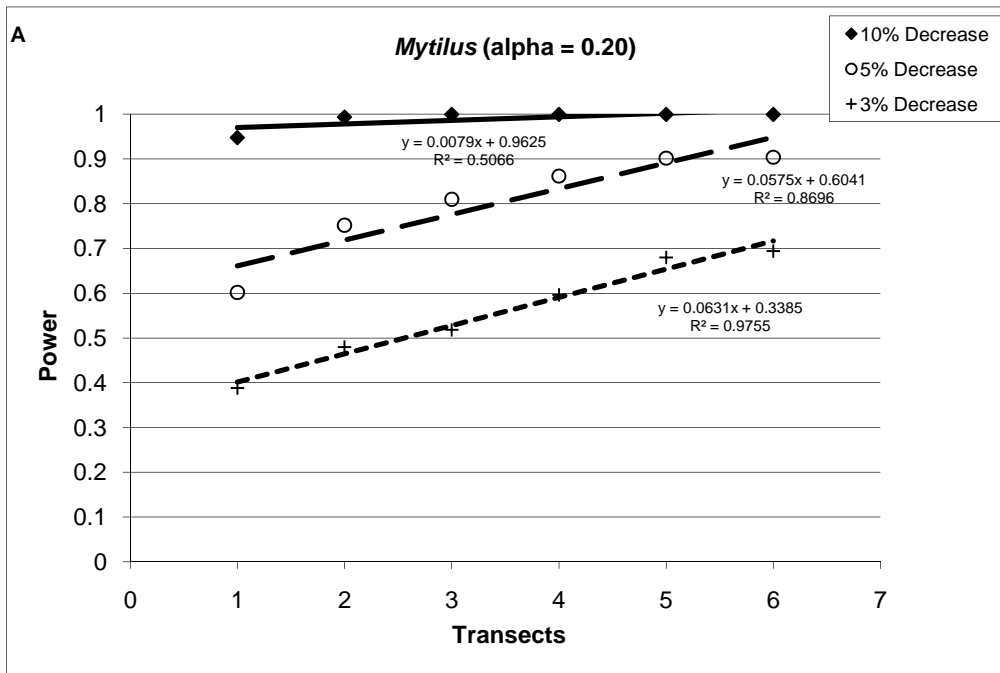


Figure C25. Power to detect declines in *Mytilus* populations (10%, 5%, and 3%) as a function of the number of transects sampled at each site. Transects were sampled at a frequency of 1 point/meter. Data are based on the analysis of 25 sites sampled over 4 years (1997-2001). $\alpha = 0.20$. A. Points graphed using data. B. Linear trend of power based on data.

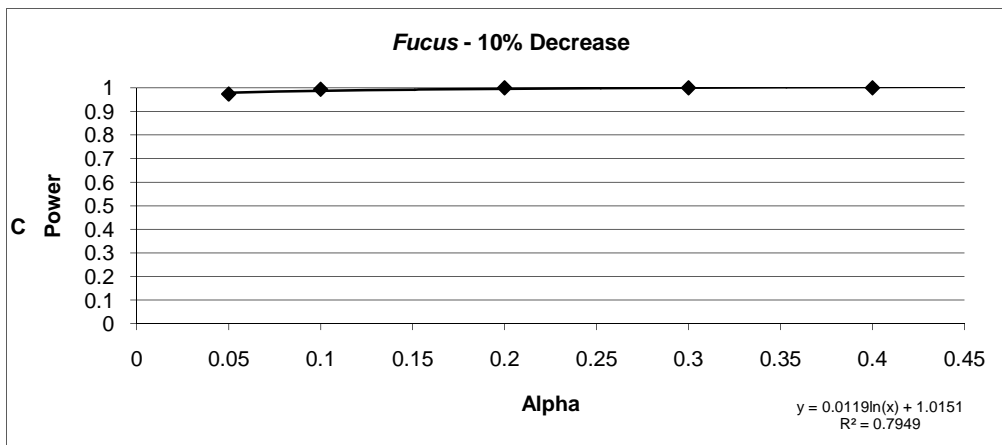
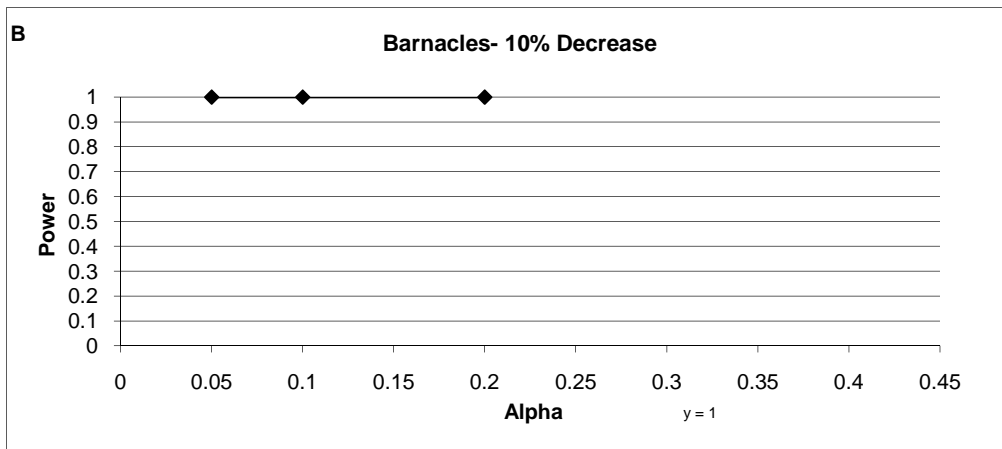
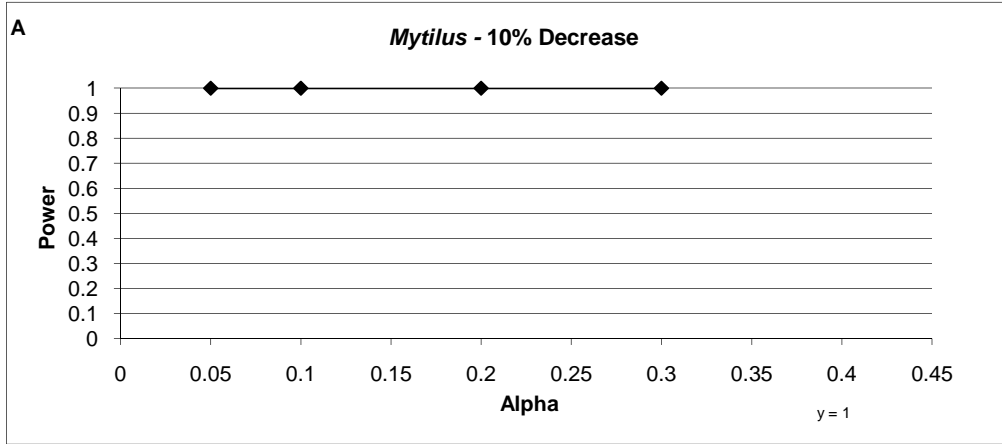


Figure C26. The relationship between alpha and the power to detect a 10% decline in the populations of the predominant species A. *Mytilus*, B. barnacles, C. *Fucus*. All data are based on 4 years of sampling (1997-2001) at the coarse-grained level: 25 sites, 6 transects, 1 point/meter.

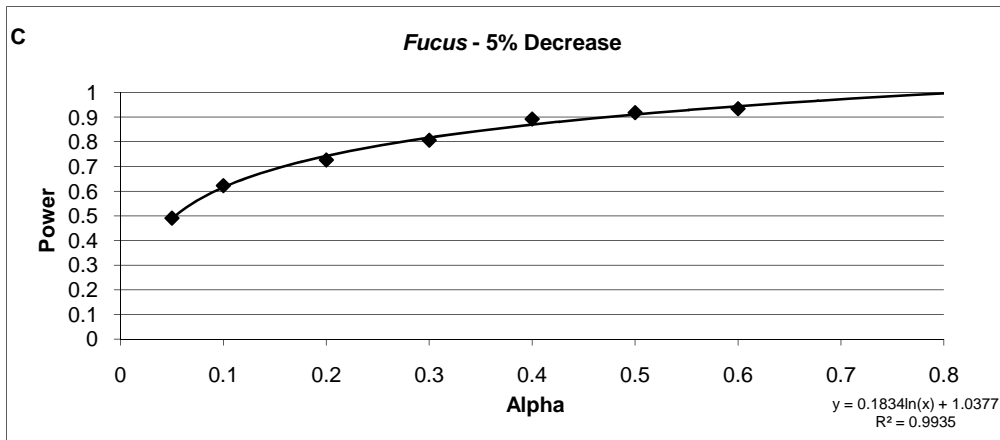
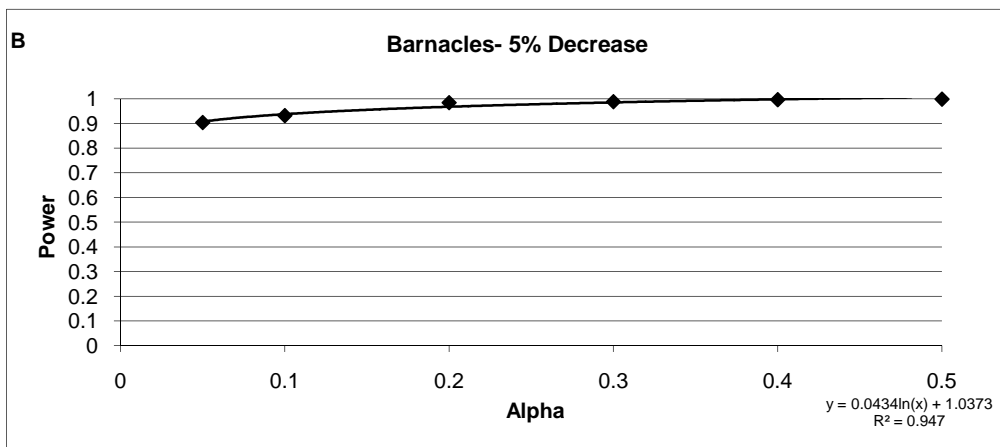
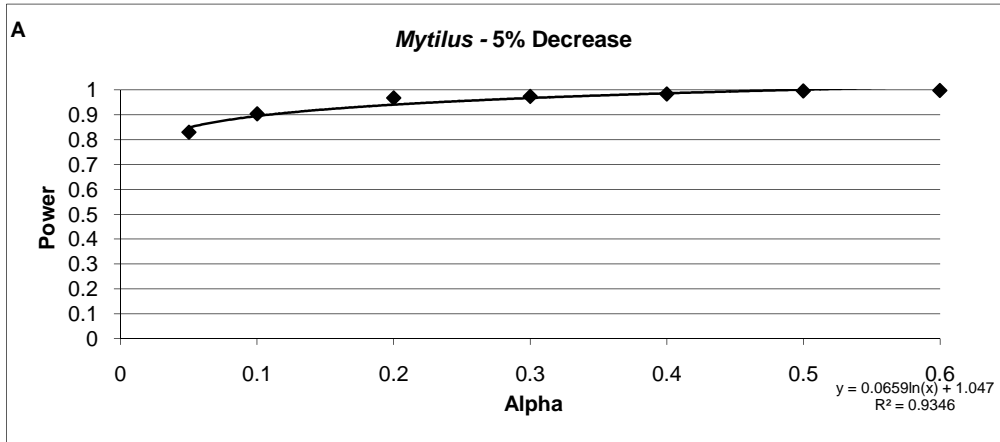


Figure C27. The relationship between alpha and the power to detect a 5% decline in the populations of the predominant species. A. *Mytilus*, B. barnacles, C. *Fucus*. All data are based on 4 years of sampling (1997-2001) at the coarse-grained level: 25 sites, 6 transects, 1 point/meter.