

Pink-footed goose anthropogenic mortality review: Population model

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Foreword

Natural England commission a range of reports from external contractors to provide evidence and advice to assist us in delivering our duties. The views in this report are those of the authors and do not necessarily represent those of Natural England.

Background

Natural England has been advising on the environmental impacts of onshore and offshore wind farms to both applicants and regulators for a number of years. Over that time the cumulative impacts to certain species has been a key issue. Recently one species in particular, the pink-footed goose *Anser brachyrhyncus*, was thought to be reaching levels of cumulative impact that may be unsustainable.

In order to better understand this Natural England commissioned the Wildfowl and Wetlands Trust to undertake a review on the impacts of wind farms to pink-footed geese.

The results provide the best evidence at the current time and they are published in three related reports:

- *Pink-footed Goose anthropogenic mortality review: Avoidance rate review* (NECR196);
- *Pink-footed goose anthropogenic mortality: collision risk modelling* (NECR197);
- This report *Pink-footed Goose anthropogenic mortality review: Population model* (NECR198).

This information will be used by Natural England, regulators, applicants and their consultants to make better informed decisions about new wind farms.

This report should be cited as WWT Consulting *Pink-footed Goose anthropogenic mortality review: Population model*. Natural England Commissioned Report, NECR198.

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Further information

This report can be downloaded from the Natural England website:

www.gov.uk/government/organisations/natural-england. For information on Natural England publications contact the Natural England Enquiry Service on 0845 600 3078 or e-mail enquiries@naturalengland.org.uk

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Contents

1. INTRODUCTION

2. DEMOGRAPHIC RATE ANALYSIS

Methods

Results

3. POPULATION MODELLING

Methods

Results

4. DISCUSSION

5. REFERENCES

APPENDIX I. TABLES

APPENDIX II. FIGURES

APPENDIX III. RAW DATA

APPENDIX IV. DEMOGRAPHIC RATE CALCULATIONS

APPENDIX V. TABLES OF SUMMARY MODEL OUTPUT FOR THE GB PINK-FOOTED GOOSE POPULATION OBTAINED USING BOTH THE DENSITY DEPENDENT AND DENSITY INDEPENDENT MODELS, AND FOR THE SPA POPULATIONS USING THE DENSITY INDEPENDENT MODEL. STARTING POPULATION SIZES WERE THE FIVE YEAR MEAN COUNTS

Figures

Figure 1 - Demographic rates plotted against population size. Open circles are data from years 1960-1986, filled circles are data from 1987-2012. The blue lines are the best fitting GLM predictions for the full span of years (1960-2012), red lines for the period 1987-2012.

Figure 2 - Demographic rates plotted against year. Open circles are data from years 1960-1986, filled circles are data from 1987-2012. The blue lines are the best fitting GLM predictions for the full span of years (1960-2012), red lines for the period 1987-2012.

Figure 3 - Model validation run. Density independent median prediction (black line) and 95% confidence intervals (dashed red line) obtained with initial size set to the 1987 count. The orange line is the observed counts between 1987 and 2012. The survival rate was the average estimated between 1987 and 2012 (0.85).

Figure 4 - Model validation run. Density dependent median prediction (black line) and 95% confidence intervals (dashed red line) obtained with initial size set to the 1987 count. The orange line is the observed counts between 1987 and 2012. The survival rate was the average estimated between 1987 and 2012 (0.85).

Figure 5 - Summed difference between the counts and deterministic model projection between 1987 and 2012. The maximum value (S_{max}) which gave the minimum summed differences was 0.92.

Figure 6 - GB: Density Dependent simulation. Population projection with zero additional mortality.

-
- Figure 7 - GB: Density Dependent simulation. Probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality.
- Figure 8 - GB: Density Dependent simulation. Increase in probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality.
- Figure 9 - GB: Density Dependent simulation. Population growth rate with increasing additional mortality.
- Figure 10 - GB: Density Dependent simulation. Change in population growth rate with increasing additional mortality.
- Figure 11 - GB: Density Independent simulation. Population projection with zero additional mortality.
- Figure 12 - GB: Density Independent simulation. Probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality.
- Figure 13 - GB: Density Independent simulation. Increase in probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality.
- Figure 14 - GB: Density Independent simulation. Population growth rate with increasing additional mortality.
- Figure 15 - GB: Density Independent simulation. Change in population growth rate with increasing additional mortality.
- Figure 16 - Broadland: Density Independent simulation. Population projection with zero additional mortality.
- Figure 17 - Broadland: Density Independent simulation. Probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality.
- Figure 18 - Broadland: Density Independent simulation. Increase in probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality.
- Figure 19 - Broadland: Density Independent simulation. Population growth rate with increasing additional mortality.
- Figure 20 - Broadland: Density Independent simulation. Change in population growth rate with increasing additional mortality.
- Figure 21 - Lindisfarne: Density Independent simulation. Population projection with zero additional mortality.
- Figure 22 - Lindisfarne: Density Independent simulation. Probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality.
- Figure 23 - Lindisfarne: Density Independent simulation. Increase in probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality.
- Figure 24 - Lindisfarne: Density Independent simulation. Population growth rate with increasing additional mortality.
- Figure 25 - Lindisfarne: Density Independent simulation. Change in population growth rate with increasing additional mortality.

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- Figure 26 - Martin Mere: Density Independent simulation. Population projection with zero additional mortality.
- Figure 27 - Martin Mere: Density Independent simulation. Probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality.
- Figure 28 - Martin Mere: Density Independent simulation. Increase in probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality.
- Figure 29 - Martin Mere: Density Independent simulation. Population growth rate with increasing additional mortality.
- Figure 30 - Martin Mere: Density Independent simulation. Change in population growth rate with increasing additional mortality.
- Figure 31 - Morecambe Bay: Density Independent simulation. Population projection with zero additional mortality.
- Figure 32 - Morecambe Bay: Density Independent simulation. Probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality.
- Figure 33 - Morecambe Bay: Density Independent simulation. Increase in probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality.
- Figure 34 - Morecambe Bay: Density Independent simulation. Population growth rate with increasing additional mortality.
- Figure 35 - 36 Morecambe Bay: Density Independent simulation. Change in population growth rate with increasing additional mortality.
- Figure 37 - North Norfolk Coast: Density Independent simulation. Population projection with zero additional mortality.
- Figure 38 - North Norfolk Coast: Density Independent simulation. Probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality.
- Figure 39 - North Norfolk Coast: Density Independent simulation. Increase in probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality.
- Figure 40 - North Norfolk Coast: Density Independent simulation. Population growth rate with increasing additional mortality.
- Figure 41 - North Norfolk Coast: Density Independent simulation. Change in population growth rate with increasing additional mortality.
- Figure 42 - Ribble and Alt Estuaries: Density Independent simulation. Population projection with zero additional mortality.
- Figure 43 - Ribble and Alt Estuaries: Density Independent simulation. Probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality.
- Figure 44 - Ribble and Alt Estuaries: Density Independent simulation. Increase in probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality.
- Figure 45 - Ribble and Alt Estuaries: Density Independent simulation. Population growth rate with increasing additional mortality.

-
- Figure 46 - Ribble and Alt Estuaries: Density Independent simulation. Change in population growth rate with increasing additional mortality.
- Figure 47 - The Wash: Density Independent simulation. Population projection with zero additional mortality.
- Figure 48 - The Wash: Density Independent simulation. Probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality.
- Figure 49 - The Wash: Density Independent simulation. Increase in probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality.
- Figure 50 - The Wash: Density Independent simulation. Population growth rate with increasing additional mortality.
- Figure 51 - The Wash: Density Independent simulation. Change in population growth rate with increasing additional mortality.
- Figure 52 - Upper Solway Flats and Marshes: Density Independent simulation. Population projection with zero additional mortality.
- Figure 53 - Upper Solway Flats and Marshes: Density Independent simulation. Probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality.
- Figure 54 - Upper Solway Flats and Marshes: Density Independent simulation. Increase in probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality.
- Figure 55 - Upper Solway Flats and Marshes: Density Independent simulation. Population growth rate with increasing additional mortality.
- Figure 56 - Upper Solway Flats and Marshes: Density Independent simulation. Change in population growth rate with increasing additional mortality.

1. INTRODUCTION

- 1.1 This report provides an analysis of British pink-footed goose *Anser brachyrhynchus* demographic data and outputs from a population model developed using these data. The model was used to investigate the potential effects of additional mortality on the British population. In addition, the model has been used at the level of individual SPA populations to provide predictions of the potential effect of additional mortality on these sub-populations.

2. DEMOGRAPHIC RATE ANALYSIS

Methods

- 2.1 Pink-footed goose surveys are conducted each autumn and winter throughout Scotland and England as part of the Icelandic-breeding Goose Census (Mitchell 2013). These surveys record three key metrics:
- The number of birds in each flock which are summed to produce a GB population count;
 - A sub-sample of each flock is aged (juvenile / adult) to generate estimates of the proportion of young present (birds fledged in the preceding summer); and,
 - The average family size (hereafter referred to as mean brood size). Note that use of the term 'mean brood size' to refer to the autumn estimate, rather than that which would be estimated immediately post-hatching, was adopted to ensure consistency with goose reporting on the wintering grounds.
- 2.2 These data are available for a continuous period since the winter 1960/1961 to 2012/2013 (although there are no mean brood size estimates for 1986 and 1987).
- 2.3 Using these three estimates it is possible to calculate the following additional demographic rates:
- Annual survival from the previous count; and,
 - The minimum proportion of adults required to have bred in the preceding summer to account for the number of young and the mean brood size.
- 2.4 The count, age ratio and family size data and the calculation methods are provided in the appendices.
- 2.5 Generalised linear models were used to test for the presence of trends in survival, productivity, mean brood size and the proportion of breeders. Explanatory variables used were year and log population size. The presence of such trends in relation to population size can be used to infer potential population regulation (i.e. density dependence) operating through increased resource competition at higher population sizes. This analysis was not exhaustive with regards the selection of potential explanatory variables since the purpose was to identify broad trends to inform the population modelling.
- 2.6 Two analyses were conducted, first using all years (1961 – 2012) and secondly using a more recent subset of the last 26 years (1987-2012). The starting year for the latter analysis (1987) was selected as this was the first year after the population underwent an apparent rapid increase in size from around 100,000 in 1984 to over 170,000 in 1987. While some of this large increase will have been natural growth, it is also thought

that changes in survey coverage also increased the number of birds counted. Inclusion of these transitional years in the analysis therefore risks artificially inflating demographic rates. Consequently the demographic rates used in the population modelling were those derived from the more recent span of years.

Results

- 2.7** The analysis of demographic rates found no evidence for significant relationships between the proportion of juveniles, the proportion of breeding birds or survival with either time or population size over the period 1960-2012 (Table 1, Appendix I; Figure 1 Appendix II) or the more recent 26 years (Table 1 Appendix I; Figure 2 Appendix II). Thus, none of these metrics appears to have shown a density dependent response.
- 2.8** However, there was some suggestion that the mean brood size has declined slightly since 1960 ($t = -2.16$, $p = 0.035$). Indeed, the mean brood size was the only variable which showed consistent declines against both population size and year and irrespective of the time span used. However, the reduction is quite modest, from an average of around 2.75 in the 1960s to just over 2 in recent years, and does not yet appear to have been sufficient to stop further population increase.

3. POPULATION MODELLING

Methods

- 3.1** The population model developed for the pink-footed goose population simulated changes in numbers expected at intervals of one year. Between each census point individuals within each age class transition to the next age class with a probability equivalent to their age specific survival rate. An annual population model such as this could include an age class for each year up to the maximum age for the species being modelled. However, the maximum age is rarely known with certainty and consequently a 'final' age class comprising all individuals above a threshold age (typically sexual maturity) is used for convenience. In geese, first breeding typically occurs three years post-fledging, hence the population model was developed with three age classes. Individuals enter the model as juveniles (as observed in Britain in the autumn, i.e. 4-5 months old), move from this 0-1 year age group to the 1-2 year age group (immatures) and finally to the 2+ (adult) age group. The number of individuals which move up at each time step is calculated with a probability defined by the survival rate. Note, that only birds which were adults at the previous time step (i.e. birds which were already in the 2+ age group) and which survive from the previous time step contribute to the production of juveniles. Hence, the number of juveniles is calculated as the number of adults in the previous time step multiplied by the product of survival, breeding proportion and mean brood size.
- 3.2** Population counts are conducted during autumn/early winter in the UK. Thus, the model simulated the population in annual steps equivalent to a series of autumn censuses. Both sexes are modelled together, thus in the above calculation the mean brood size is halved prior to calculation. Survival rates and the proportion of breeders were generated as random numbers from beta distributions. The same survival rate was used for all age classes as it is not possible to estimate age-specific rates from the count data, however, the random values for each age class were generated independently. This may over-estimate survival for birds in their first year. However, it should be noted that the mean brood size and proportion of breeders values account for juvenile mortality (occurring between hatching and subsequent wintering ground counts) since these values are estimated from observations made on the wintering grounds. Consequently, the higher mortality expected during the first few months is accounted for within the model as reduced productivity. The reproductive terms in the model are thus a combination of the

true breeding rate (as would be measured on the breeding grounds) and post-hatching survival.

- 3.3** The analysis of demographic rates found no evidence for relationships between survival or the proportion of breeding birds over the last 26 years and population size (Table 1, Appendix I; Figures 1 and 2 Appendix II). However, there was some evidence that the mean brood size has declined since 1960. Thus, two versions of the population model were developed with the mean brood size modelled as density independent in one and density dependent in the other. In both versions log-normally distributed random values were used, with the standard deviation calculated from the period 1987/8-2012/13. In the density independent model the mean was calculated from the values across this period. In the density dependent version the mean value in each year was calculated using the population size (N) and the coefficients from the linear relationship between the mean brood size and log population size (between 1987 and 2012: mean brood size = $-0.382 \times \log N + 6.93$).
- 3.4** To validate the parameters used the model was run for a period of 25 years from the 1987 count as the starting population size and the modelled outputs compared with the actual population counts over the same period (Figures 3 and 4 Appendix II).
- 3.5** In their baseline form, both the density independent (Figure 3 Appendix II) and the density dependent (Figure 4 Appendix II) models predicted that the British population should have grown at a faster rate between 1987 and 2012 than was observed. The real population has increased by an average of around 3% per year (although see below for further discussion) while the population models generated rates of between 4.95% (density dependent) and 5.4% (density independent). The possible reasons for this are explored below.
- 3.6** Of the population metrics obtained on the wintering grounds (population counts, mean brood size, proportion of juveniles), the one likely to contain the greatest errors is the population counts since there is a high risk of both double counting of the same individuals and also missing flocks entirely. In contrast, the proportion of juveniles and the mean brood size are obtained from a smaller sample of flocks and the potential influences of double counting or missed flocks on the overall estimates is likely to be small.
- 3.7** Although the population counts may contain both sampling errors (i.e. over and under estimates) and also bias (e.g. due to incomplete survey coverage) the two types of error have a different effect on survival estimates. Crucially, systematic bias would not be expected to have much effect on estimated survival since the numbers of adults and juveniles (used to estimate survival) are derived independently (from the age ratio survey). Thus, systematically adjusting the population size up or down would not affect the relative proportions of each age class and the survival estimate would remain the same. In contrast, over and under estimating the population size increases the range of annual survival values and can lead to clearly erroneous rates greater than 1 for example. Below we present a method which has been used to account for these errors when estimating the survival rate. This method is based on an assumption that although individual counts may be wrong, overall the errors are balanced. On this basis the time series of counts was used to inform the adjustment, as the overall trend is considered to be reliable, even if individual estimates are less so.
- 3.8** The method involved adjusting the baseline survival rate in order to obtain a closer correspondence between the model predictions and the observed counts. The adjustment was made by defining a maximum annual survival rate (S_{\max}) which individual annual rates could not exceed (i.e. S_{\max} was substituted for higher individual

annual rates). The average survival rate from the updated time series of annual ones was then used in the population model and the predicted counts compared with the observed counts. A range of values for S_{max} was investigated with the goal to identify the value which gave a population model prediction closest to the observed counts across all years. Fit was estimated as the summed differences between predicted and observed counts between 1987 and 2012 (Figure 5 Appendix II).

- 3.9** A maximum annual survival rate (S_{max}) of 0.92 was found to minimise the differences between observed and predicted counts. Substituting this value into the time series of survival rates in years where a higher rate had been calculated reduced the overall mean from 0.851 to 0.835. Using this adjusted survival rate in the stochastic population model generated an average growth rate of 2.6%, close to the observed rate of 3.0% and this value was therefore retained for use in the population simulations. This reduced survival rate was also close to that estimated across a shorter span of years (0.81) by Frederiksen et al. (2004). The full set of demographic rates used in the model is provided in Table 2 Appendix I.
- 3.10** The model was developed using data collected across the entire British population and is consequently most reliable when used to generate predictions at this population scale. However, on request from Natural England the model was also run using individual SPA population estimates as the starting point (Table 3 Appendix I). The outputs from these simulations should provide reasonable guides to potential impacts at these scales. However, since the model simulates a closed population the results are precautionary as they treat each population as isolated from all others, which is contrary to the fact that some degree of exchange between populations is known to occur. Consequently, the effects of losses at any given site will probably be overstated since exchange between sites would be expected to spread the impact. There is also no adjustment to the demographic rates used for each SPA (since there are no reliable data on which to base this), however it is likely that some degree of variation exists between SPA populations. The lack of site specific reproductive rates (i.e. mean brood size and proportion of breeders) also means that only the density independent model can be used for the individual SPA simulations, since the density dependent relationship was calculated using the national data. However, this is probably a reasonable simplification at this scale since effects on reproductive success are more likely to result from competition on the breeding grounds than at individual wintering SPAs.
- 3.11** The starting year for simulations was 2012, the year of the most recent available count, although to minimise the effects of count errors, the starting population size was the average peak count over the most recent five years. Nine alternative starting population sizes were used (Table 3 Appendix I).
- 3.12** Pink-footed geese are quarry species throughout their range; an average of 14,000 birds has been shot in Iceland each year (1995-2012) and an estimated 25,000 are shot in the UK each year (Frederiksen 2002, Hart and Harradine 2003). The peak of UK shooting occurs in the early part of the autumn prior to when coordinated counts occur in early winter (and also the estimates of age ratios and mean brood sizes). The loss of these birds from the population is implicitly included in the population counts and reproduction estimates (including any adjustments to age ratios due to shooting bias) and therefore the models are effectively post-shooting ones. Additional mortality simulated here is therefore on top of this high level of existing harvest.
- 3.13** Additional annual mortality was simulated across a range of initial values between 0 and 25,000 at increments of 500 for the British population, with proportionally smaller ranges applied to the individual SPA populations. Prior to each simulation the mortality number

was converted to a rate in order to keep mortality in proportion to the population size throughout a simulation (e.g. a mortality of 1,000 for the GB population would be converted to a rate of $1000/326540 = 0.0031$). Mortality was applied to all age classes in proportion to their presence in the population at each time step.

3.14 The results below only include the outputs for the British population, derived using both the density dependent and density independent models. The outputs for the SPA populations and tables to accompany all the figures are provided in the Appendices. As well as a baseline (zero additional mortality) prediction, the following outputs are provided:

- Probability of population decline (relative to starting size, and percentages thereof: 99, 98, 95, 90, 85, 80, 75 and 50) in relation to additional mortality;
- Increase in the probability of population decline (relative to starting size, and percentages thereof: 99, 98, 95, 90, 85, 80, 75 and 50) in relation to additional mortality;
- Population growth rate (median and 95% confidence interval) in relation to additional mortality; and,
- Change in population growth rate (median and 95% confidence interval) in relation to additional mortality.

3.15 The probabilities of decline and growth rates were calculated using the final 20 years of each simulation. Removing the first 5 years minimises the influence of starting conditions.

Results

- 3.16** Figures 6 to 15, Appendix II, show the population projection, probability of population decline below a range of percentages (100%-50%), the increase in probability of population decline below a range of percentages (100%-50%), the population growth rate with increasing mortality and the change in population growth rate with increasing mortality for density dependent and density independent simulations. Tables of summary model outputs are presented in Appendix V.
- 3.17** The baseline annual growth prediction generated by the density dependent model was just under 1% while for the density independent model a rate of 2% was generated. Consequently the density dependent model generated a median GB population size prediction of just over 400,000 after 25 years (Figure 6 Appendix II), while the density independent one generated an equivalent prediction of 540,000 (Figure 11 Appendix II). With additional mortality the growth rate declines, reaching 1 (i.e. a stable population) when additional mortality reached 4,000 in the density dependent model (Figure 9 Appendix II) and 6,500 in the density independent model (Figure 14 Appendix II). Although this apparently suggests that the sustainable mortality (i.e. that which generates a stable population size) is larger in the absence of density dependent regulation (6,500 vs. 4,000), this is in fact due to the difference in baseline growth rates with the baseline density dependent growth approximately half that of the density independent one. Hence, comparison of the equivalent reductions in growth generated by the two models indicated that a 2.5% reduction in growth occurs at a mortality of 8,000 in the density independent model compared with 11,000 in the density dependent one. Furthermore, although an average growth rate of 1 in a density independent model gives the appearance of stability, the population is in effect balanced on a knife-edge between unsustainability (and eventual extinction, occurring with slightly higher mortality) and unrestricted growth (with slightly lower mortality). This contrasts with the density dependent predictions of stability which occur due to the buffering effects of regulation.
- 3.18** The density dependent model predicted the risk that the population will fall below its starting size within 25 years was 72% with no additional mortality which increased to 90% when additional mortality exceeded 7,000 (Figure 7 Appendix II). The same increase in mortality (from 0 to 7,000) led to a 23% increase in risk predicted by the density independent model (from 59% to 82%; Figure 12 Appendix II).
- 3.19** Graphical outputs for the SPA population projections, derived using the density independent model, and tables for all the outputs (i.e. including the GB population using both models) are shown in Figures 16 to 55, Appendix II.

4. DISCUSSION

- 4.1** The prediction made in the previous population modelling conducted for the British pink-footed goose population (Trinder *et al.* 2005) was that the population would stabilise at around 220,000 individuals which contrasts with recent counts of over 350,000 (derived using a density dependent model). There has been little change in the demographic rates since the previous analysis, therefore this difference does not appear to have resulted from improved survival or reproduction. However, the approach for modelling density dependence adopted by Trinder *et al.* (2005), which was based on limits to the proportion of breeding birds, appears to have over-estimated the strength of population regulation. Detecting density-dependent regulation is challenging in slow-breeding species such as geese and studies of other Arctic-breeding geese (e.g. Morrisette *et al.*, 2010) have failed to find strong evidence for its effects. That said, there is some indication to support the action of density dependence in this population. The mean brood size has shown a consistent negative trend with time and population size, albeit
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the magnitude of decline is small. A density dependent model was developed using the relationship between brood size and population size. However, since the evidence for regulation is not overwhelming a density independent model was also developed. The predictions from these two models are likely to bracket the change expected in the real population.

- 4.2** Population models are only as reliable as the data used to parameterise them. As demographic data always contain some degree of uncertainty in their estimates it is most appropriate to consider relative outputs from the models rather than absolute ones (i.e. the change in predicted outcome against a baseline rather than the absolute prediction itself). Hence the more reliable outputs are the *change* in the risk of population decline and the *change* in the growth rate. An example of how this can be applied would be as follows: if it has been determined that there should be no more than a 5% increase in the predicted risk of a 20% population decline, the model outputs can be used to identify the maximum level of additional mortality before this point is reached (in this case both models indicate this figure lies between 1,000 and 1,500). Alternatively, if a 1% reduction in the population growth rate is considered to be the limit of acceptability, then an additional mortality of between 3,000 (density independent) and 4,500 (density dependent) would be identified. The baseline predictions of any decline occurring are comparatively high (72% and 59% for the density dependent and density independent simulations respectively). This reflects the large variance on the demographic rates used in the model which in turn is a reflection of the population census and productivity estimation methods it is necessary to use for a large population which is distributed over a large range. Furthermore, it should be borne in mind that although a population may dip below a given threshold size between year 6 and 25, thereby registering as a population which has declined below that threshold, it may then recover and be much larger by year 25. Consequently assessing population status on the risk of decline across a span of years rather than just the final year is inherently precautionary.
- 4.3** This approach was adopted (instead of the alternative of considering only the final population size) for two main reasons, First, the population is counted and reported on annually, rather than counted annually but only reviewed every 25th year. Therefore, in reality concerns would be raised about a decline in population size as it occurred, not after 25 years with the benefit of knowing that it had dipped and recovered as might be the case if a 25 year review was applied. Second, as the projection period increases the reliability of the model outputs decreases. This chiefly stems from the assumption that the conditions experienced during the period of data collection will continue to apply for the duration of the simulation. Clearly, as the projection period increases the likelihood that this will be the case declines. In addition, the multiplicative nature of population processes generates ever widening confidence intervals which further reduce confidence in results as simulation period increases. Hence, deriving predictions based across a span of years, rather than just on the population size in the final year of the simulation, reduces the sensitivity of results on this assumption.
- 4.4** Predictions of decline probability (and change in this probability) can be sensitive to the baseline population growth rate. This may be of particular concern when the model predicted growth rate appears to be at odds with the recently observed rate of growth. This may occur when a model is constructed using demographic data from different populations or important aspects (e.g. density dependence) are omitted. In the current case these aspects are not expected to critically affect the results for two reasons: the data have been derived from the population of interest and the predicted growth rate (after survival rate adjustment) is close to that observed in recent years. This does not mean that the actual growth rate will necessarily remain the same. However, the

likelihood of it being sufficiently different to affect the current results is considered to be small.

- 4.5** As would be expected, the density dependent model is more robust to increasing mortality, with smaller reductions in the growth rate for any given level of mortality. For example, a reduction in the growth rate of 2.5% occurs with mortality of 8,000 in the density independent model and 11,000 in the density dependent model. This is due to the buffering effects of density dependent regulation: as the population is reduced, reproduction among survivors increases. In this respect, and also by preventing unlimited growth, the density dependent model is a more realistic representation of the real population. However, if the mechanism by which regulation in the actual population occurs is not well represented by the observed changes in the mean brood size used here then the population will not respond to additional mortality as predicted. Furthermore, if the mechanism by which the population is regulated changes in the future then the population may be 'released' from the current control and expand rapidly, or alternatively be subject to greater regulation leading to declines. Only with a much better understanding of the population processes involved would it become possible to become more confident in the predictions generated.
- 4.6** Another assumption made in the modelling relates to survival. We have limited information on age-related survival, thus the adult rate has been used for all age classes. While this is a simplification, it is unlikely to have an important effect on the model results. This is because the model structure is such that juveniles are actually several months old and have survived their first autumn migration before they are counted (and therefore enter the modelled population). Their survival is probably quite similar to older age classes from this point. Since age ratios and mean brood sizes are estimated soon after arrival on the wintering grounds, there is little overlap between the two survival periods for juvenile birds (from fledging to arrival in Britain and from first autumn to second autumn) and therefore the risk of double accounting (of survival) is minimal. It was also necessary to adjust survival in order to bring the model predictions in line with the recent time series. The adjustment to survival required (from 0.851 to 0.835) was comparatively small and was also close to the value estimated by Frederiksen *et al.* (2004) of 0.814. Therefore this adjustment is considered to have been reasonable and consistent with other evidence. Nonetheless, estimating survival using counts and age ratios is inherently less reliable (e.g. due to sampling errors) than individual based methods (re-sighting of marked individuals). The most robust means to increase confidence in the survival rate estimation (and by extension the population model) would be to undertake a systematic programme of ringing, re-sighting and collecting recovered (i.e. shot) birds, ideally covering a range of locations. For comparatively long-lived species such as geese this would need to last for at least 5 years (and preferably at least 10) before reliable and robust results would be expected.
- 4.7** Using the population model to project individual SPA populations makes the assumption that these sub-populations are subject to the same effects as the whole population and that they operate as identical sub-units. This is unlikely to be completely true, particularly for the smaller populations. Factors such as exchange between populations (which is likely to occur) and the fact that some geese may be components of more than one population during the winter also complicate interpretation of the model outputs. As such the SPA level predictions generated by the model should be treated with caution. The division of the total population into smaller independent sub-units means that the results represent worst case potential effects of additional mortality on these sub-populations. In the absence of a better understanding of the dynamics of individual SPA populations, a guide to the extent to which the model results can be considered to provide a reliable guide to potential effects at any given SPA can be derived from the SPA population size: the larger the population (i.e. the greater the proportion of the

whole it represents) the greater the confidence which can be placed in the results. Hence the more reliable outputs will be those for Morecambe Bay, Ribble and Alt Estuaries and North Norfolk Coast, while those for Lindisfarne and Broadland will be the least reliable.

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APPENDIX I. Tables

Table 1 - Results of generalised linear models of demographic rates using year and population size as explanatory variables with either the full span of data (1960/1 – 2012/13) or the most recent 25 years (1987/8 – 2012/13). Significant trends (at $p < 0.05$) are highlighted in bold

Explanatory variable / period	Demographic rate	Estimate	SE	t	p	Model deviance	Residual df	Error structure
Year / 1960-2012	Prop. juveniles	-0.002	0.003	-0.498	0.621	119531	51	quasibinomial
	Mean brood size	-0.009	0.004	-2.161	0.035	10.6	51	gaussian
	Prop. breeders	0.002	0.004	0.479	0.634	111900	49	quasibinomial
	Survival	0.0007	0.0011	0.6588	0.5131	0.695	50	gaussian
Year / 1987-2012	Prop. juveniles	-0.0009	0.0066	-0.143	0.8878	61713	24	quasibinomial
	Mean brood size	-0.011	0.008	-1.368	0.184	2.3	24	gaussian
	Prop. breeders	0.004	0.007	0.548	0.589	47623	24	quasibinomial
	Survival	-0.0003	0.0032	-0.101	0.9208	0.365	24	gaussian
Log population size / 1960-2012	Prop. juveniles	0.01	0.08	0.18	0.86	120008	51	quasibinomial
	Mean brood size	-0.1	0.1	-1.46	0.2	11.1	51	gaussian
	Prop. breeders	0.1	0.1	1	0.3	110192	49	quasibinomial
	Survival	0.03	0.03	1.14	0.26	0.684	50	gaussian
Log population size / 1987-2012	Prop. juveniles	0.2	0.2	0.7	0.5	60519	24	quasibinomial
	Mean brood size	-0.4	0.3	-1.3	0.2	2.31	24	gaussian
	Prop. breeders	0.45	0.24	1.84	0.08	42404	24	quasibinomial
	Survival	0.2	0.1	1.7	0.1	0.327	24	gaussian

Table 2 - Demographic rates used in the population model

Rate	Mean (1987-2012)	Standard deviation (1987-2012)
Survival	0.835	0.1
Proportion of breeders (amongst 2+ age birds only)	0.312	0.062
Mean brood size (density independent)	2.19	0.315
Mean brood size (density dependent)	$\log(\text{total population}) \times -0.382 + 6.93$	0.315

Table 3 - Starting population sizes used in the model (From Carl Mitchell pers. comm.)

Population	Five year peak mean population size (2008/9 – 2012/13)
British total	326,540
Upper Solway Flats and Marshes SPA	7,206
Morecambe Bay SPA	29,153
Ribble and Alt Estuaries SPA	18,123
Martin Mere SPA	8,200
Lindisfarne SPA	3,026
The Wash SPA	8,498
North Norfolk Coast SPA	18,305
Broadland SPA	5,078

APPENDIX II. Figures

Figure 1 - Demographic rates plotted against population size. Open circles are data from years 1960-1986, filled circles are data from 1987-2012. The blue lines are the best fitting GLM predictions for the full span of years (1960-2012), red lines for the period 1987-2012

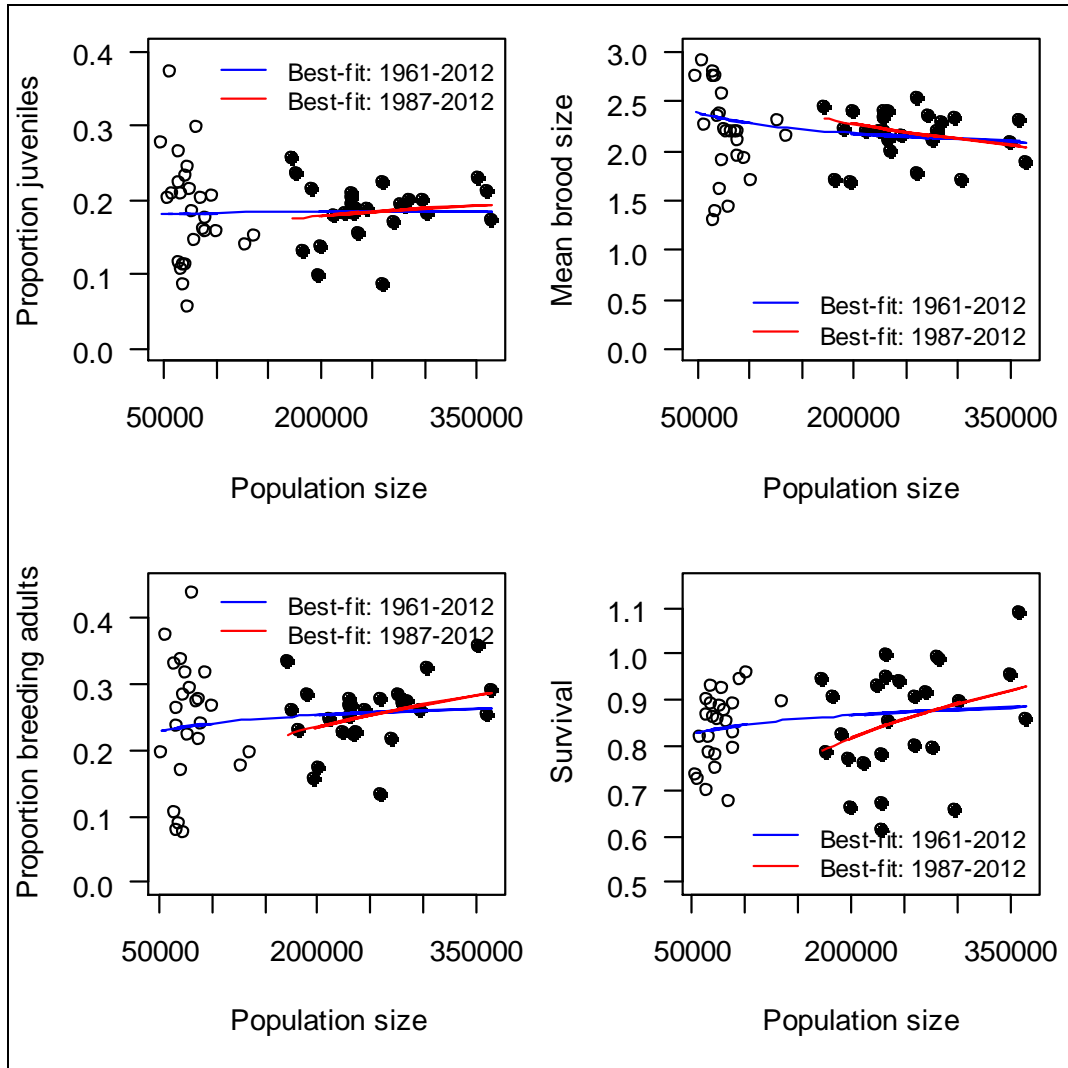


Figure 2 - Demographic rates plotted against year. Open circles are data from years 1960-1986, filled circles are data from 1987-2012. The blue lines are the best fitting GLM predictions for the full span of years (1960-2012), red lines for the period 1987-2012

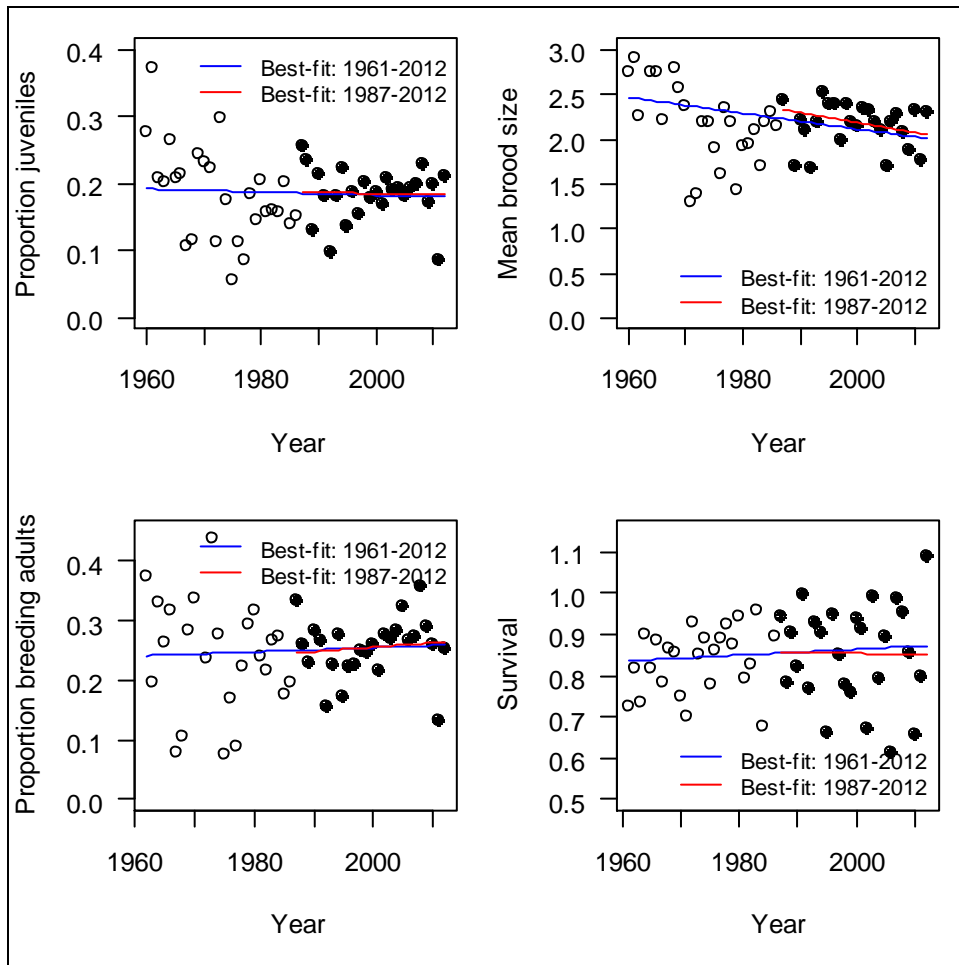


Figure 3 - Model validation run. Density independent median prediction (black line) and 95% confidence intervals (dashed red line) obtained with initial size set to the 1987 count. The orange line is the observed counts between 1987 and 2012. The survival rate was the average estimated between 1987 and 2012 (0.85)

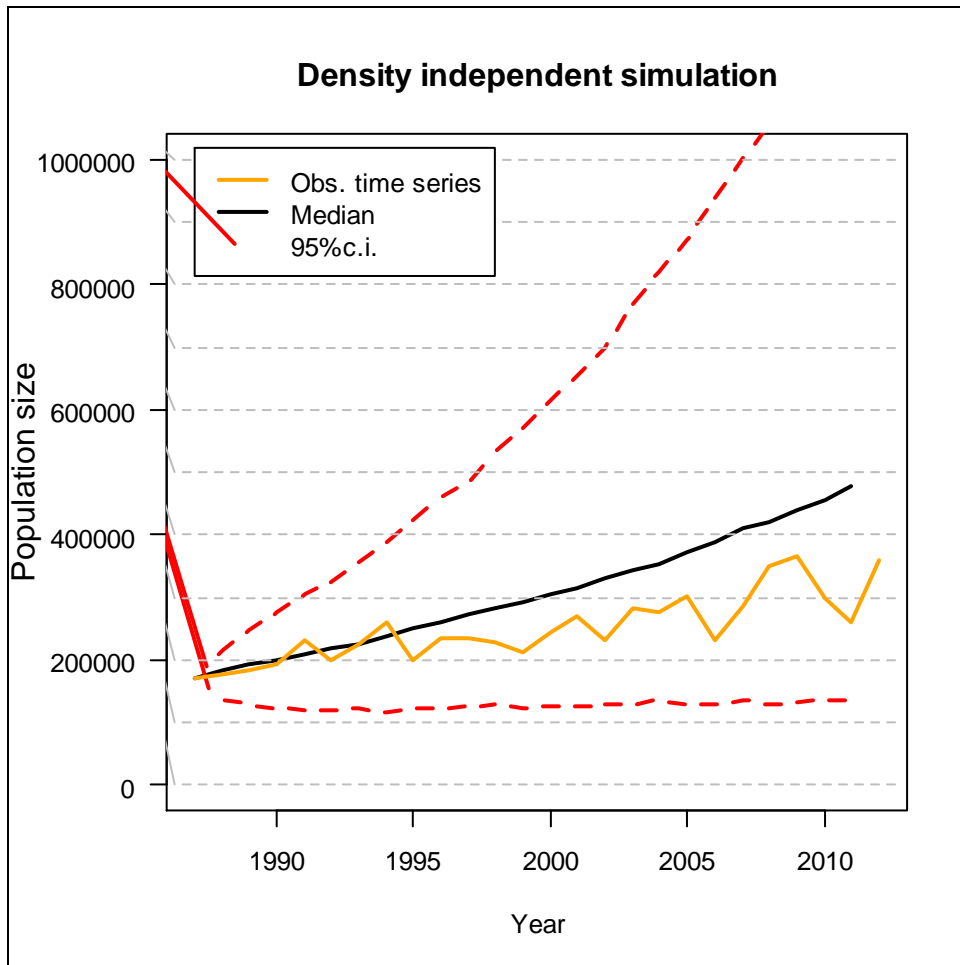


Figure 4 - Model validation run. Density dependent median prediction (black line) and 95% confidence intervals (dashed red line) obtained with initial size set to the 1987 count. The orange line is the observed counts between 1987 and 2012. The survival rate was the average estimated between 1987 and 2012 (0.85)

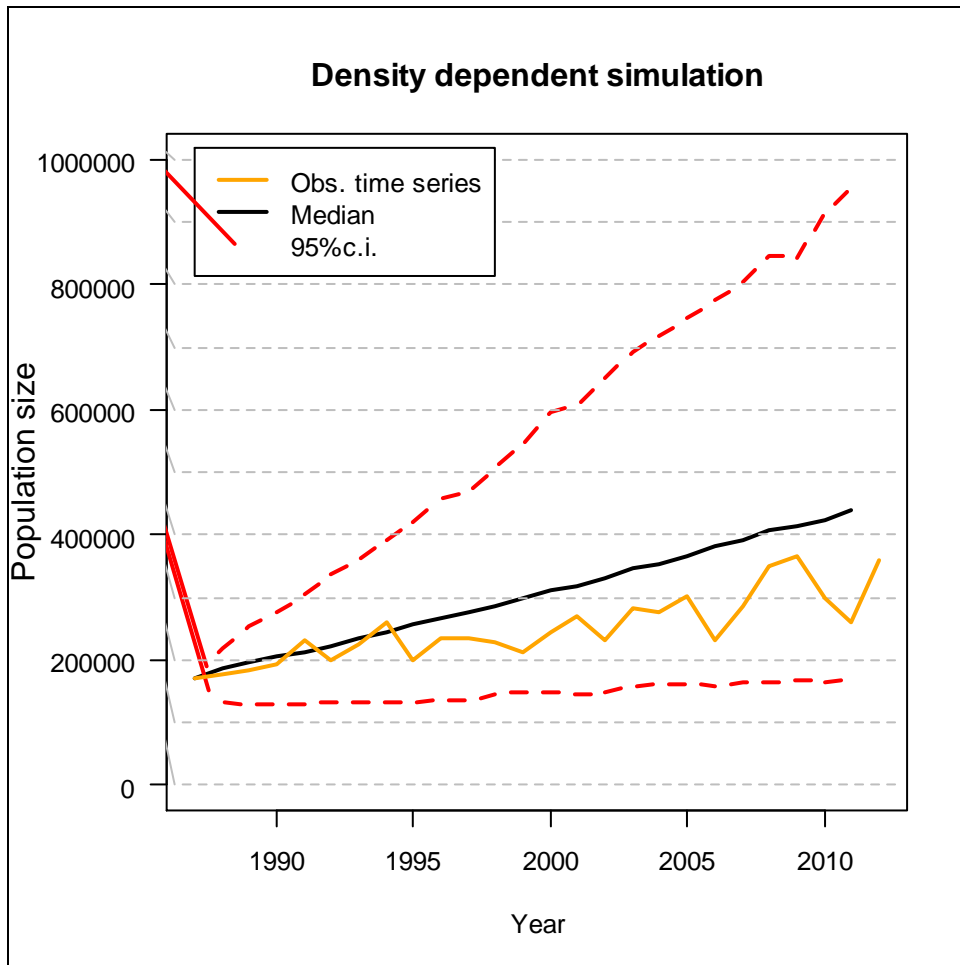


Figure 5 - Summed difference between the counts and deterministic model projection between 1987 and 2012. The maximum value (S_{max}) which gave the minimum summed differences was 0.92

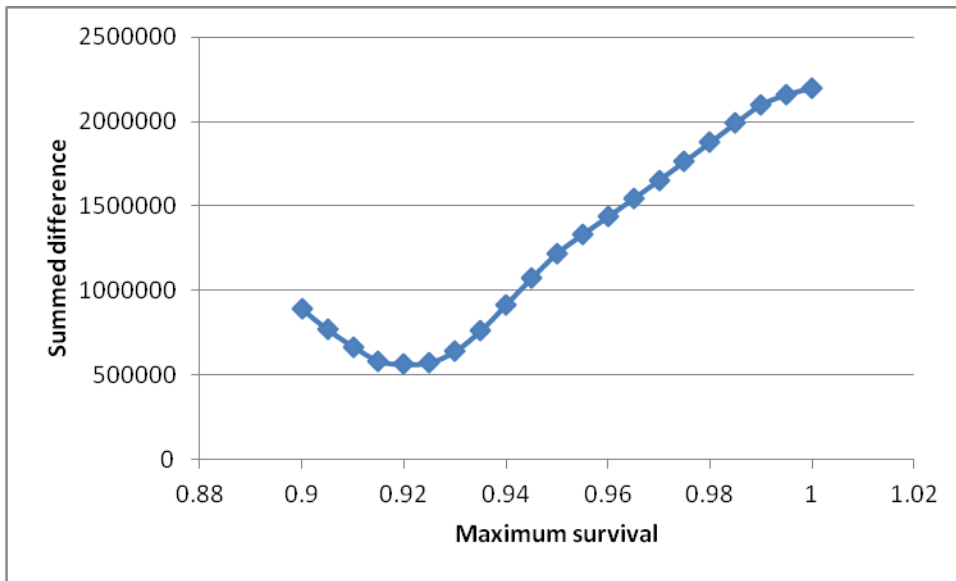


Figure 6 - GB: Density Dependent simulation. Population projection with zero additional mortality

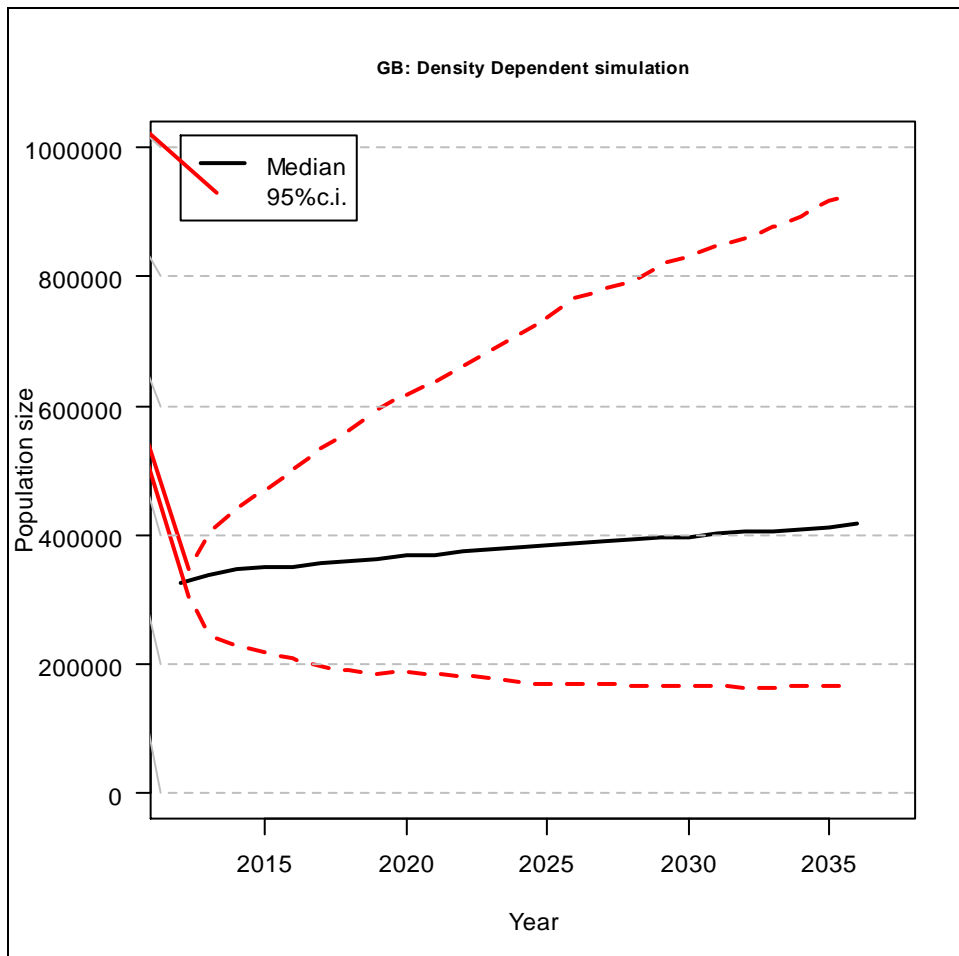


Figure 7 - GB: Density Dependent simulation. Probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality

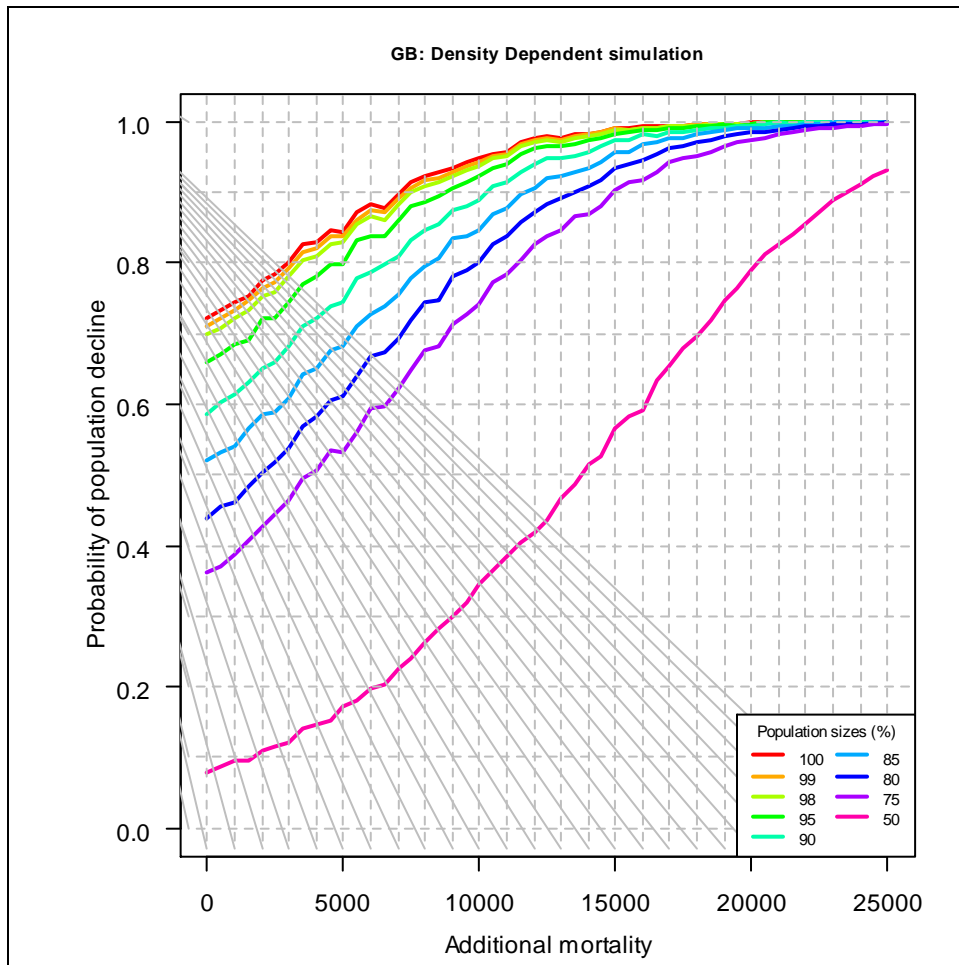


Figure 8 - GB: Density Dependent simulation. Increase in probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality

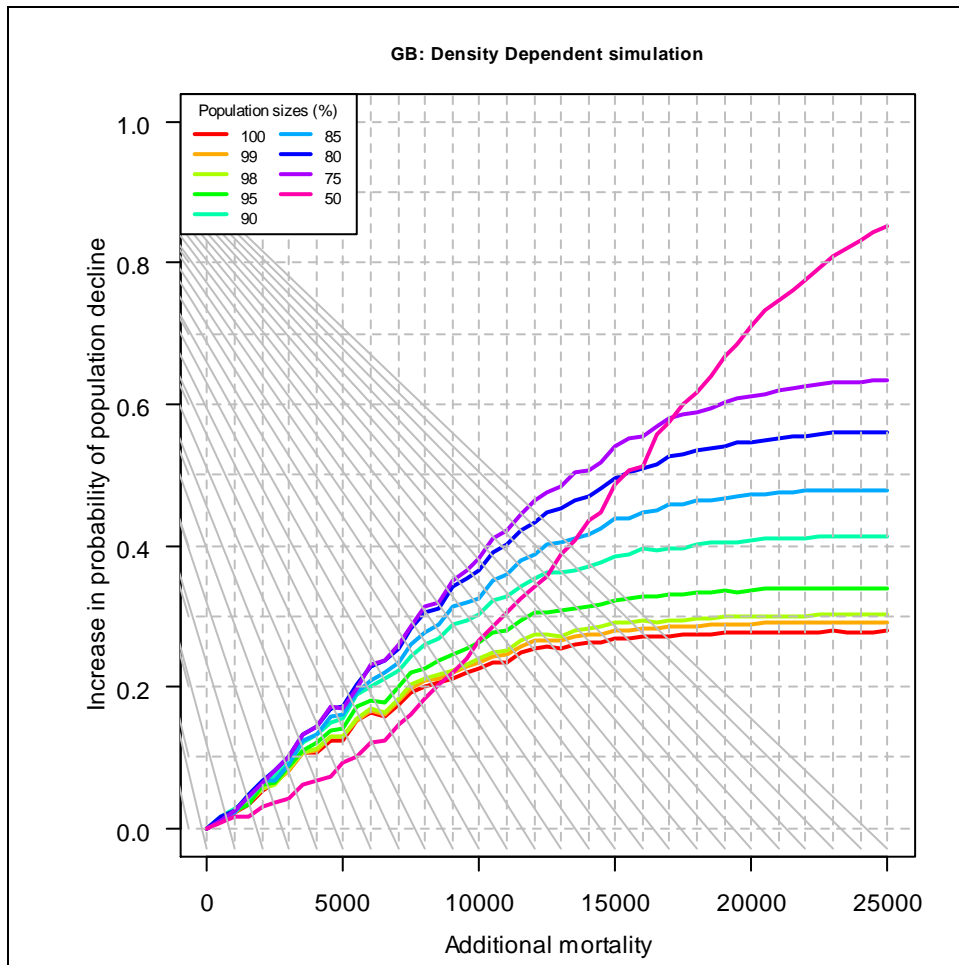


Figure 9 - GB: Density Dependent simulation. Population growth rate with increasing additional mortality

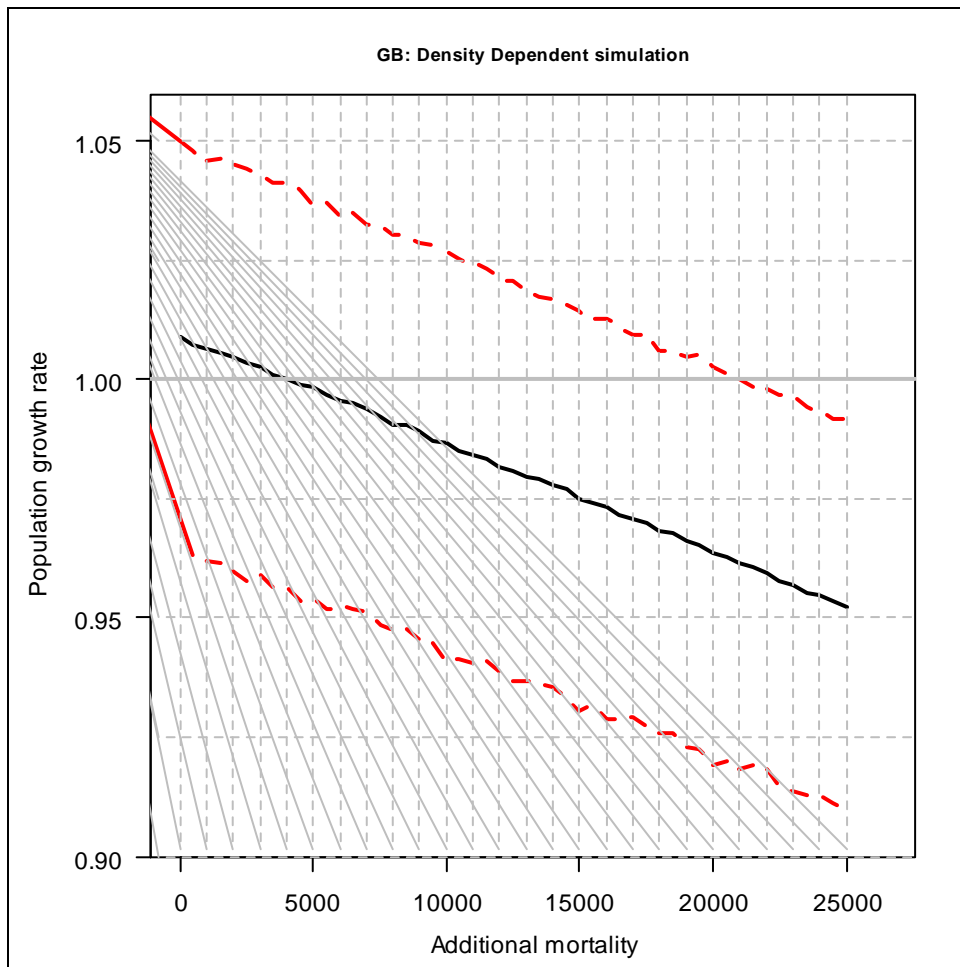


Figure 10 - GB: Density Dependent simulation. Change in population growth rate with increasing additional mortality

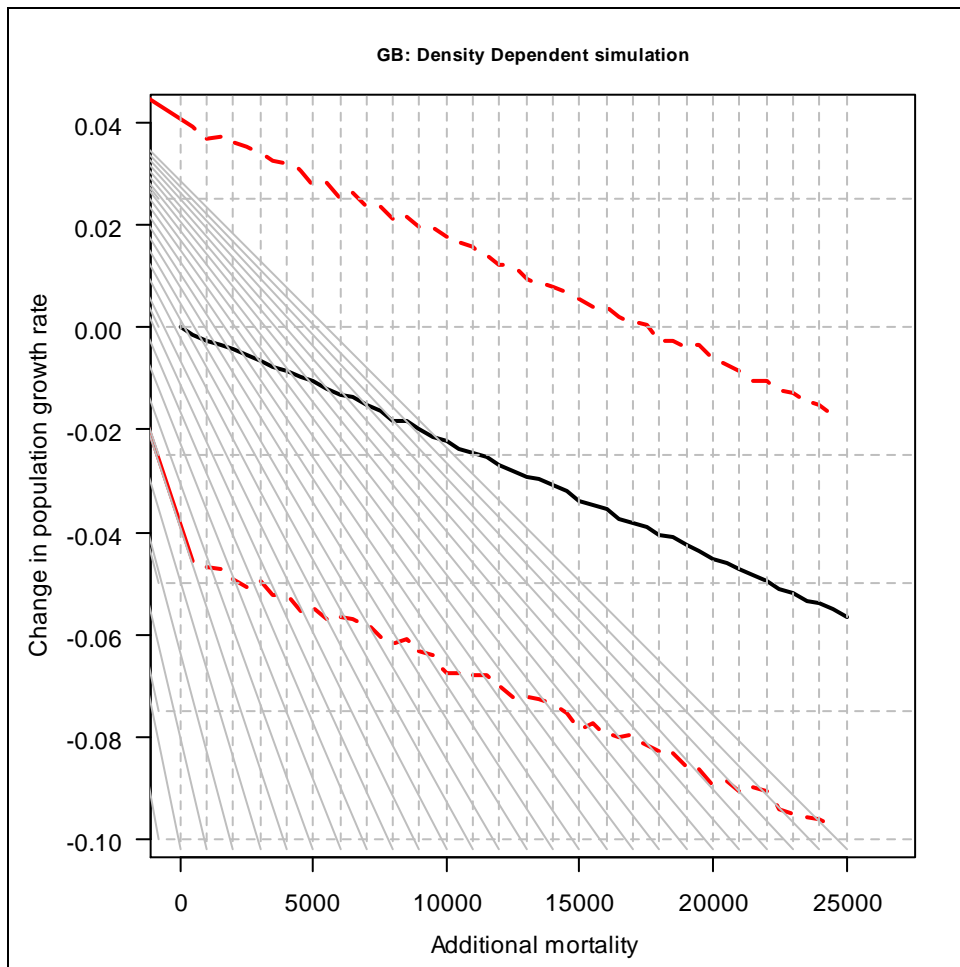


Figure 11 - GB: Density Independent simulation. Population projection with zero additional mortality

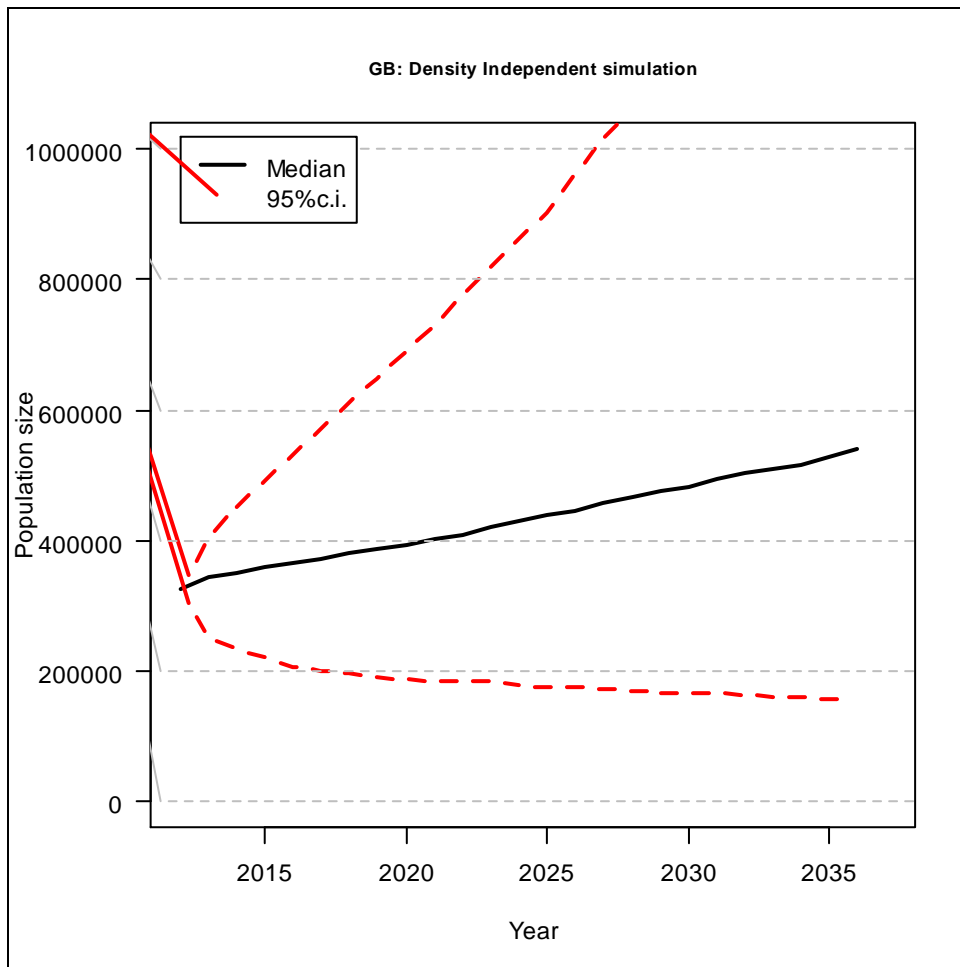


Figure 12 - GB: Density Independent simulation. Probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality

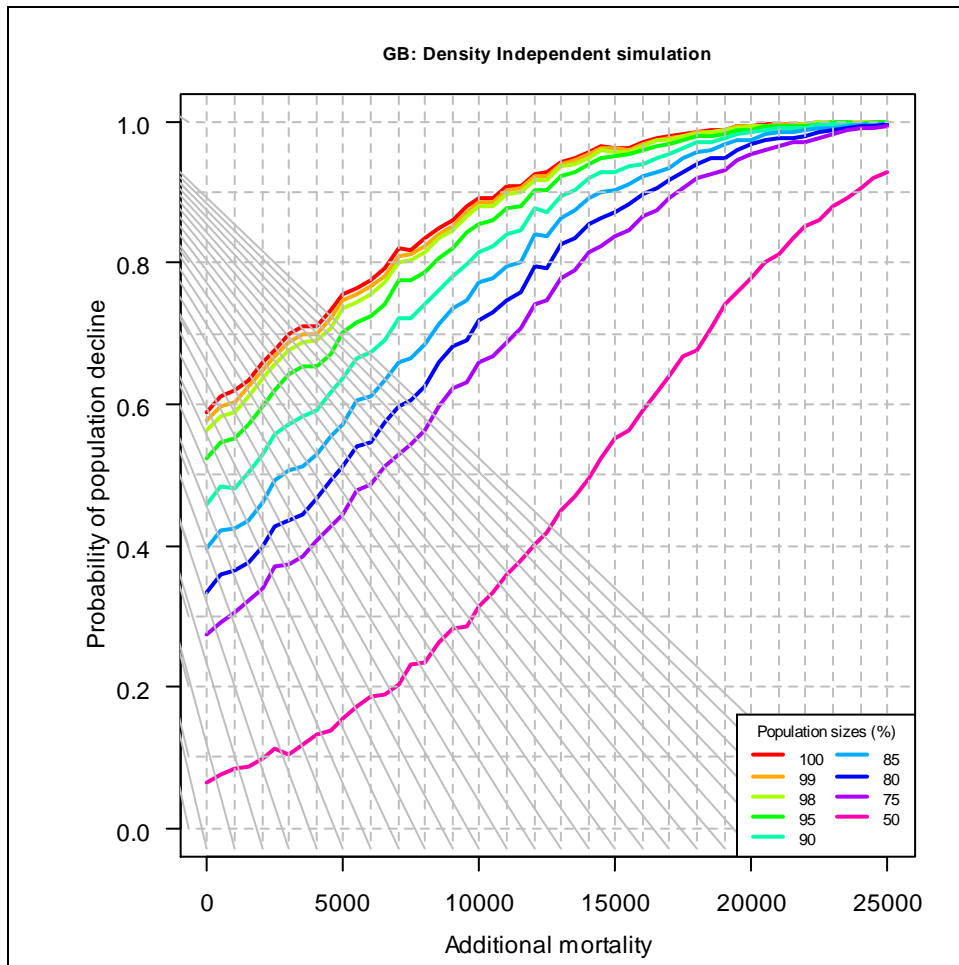


Figure 13 - GB: Density Independent simulation. Increase in probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality

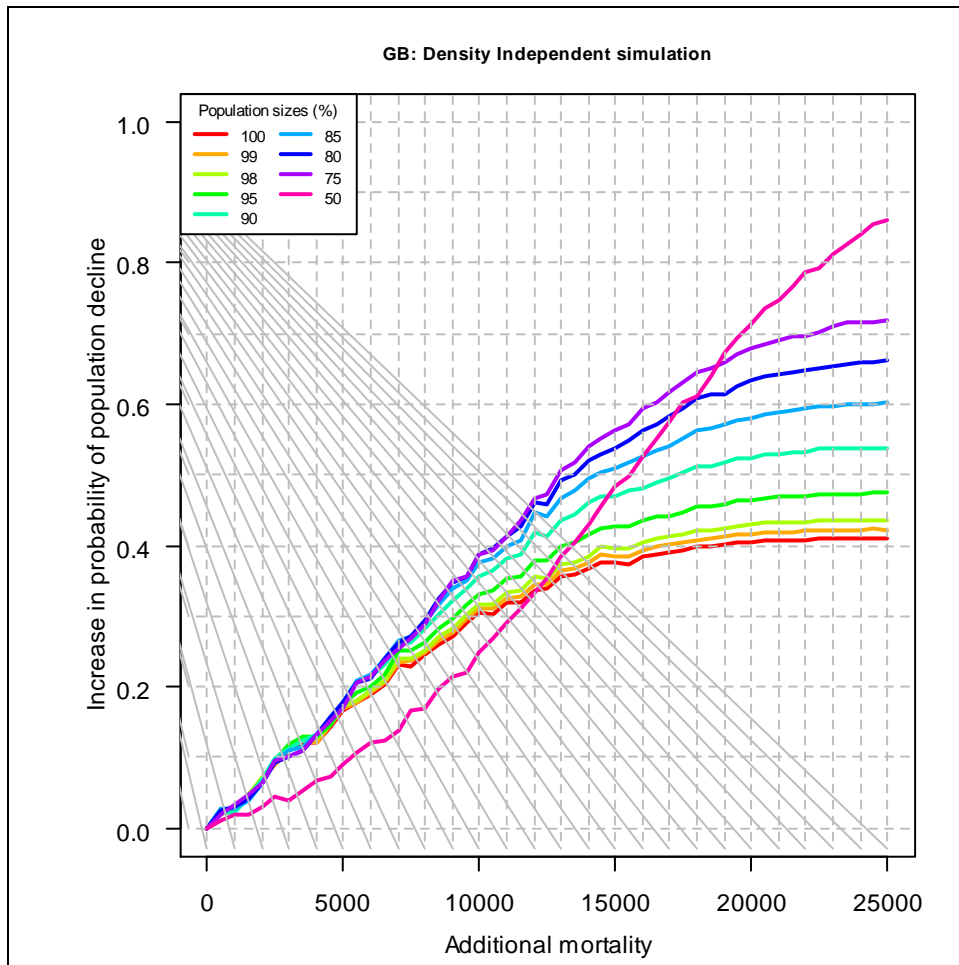


Figure 14 - GB: Density Independent simulation. Population growth rate with increasing additional mortality

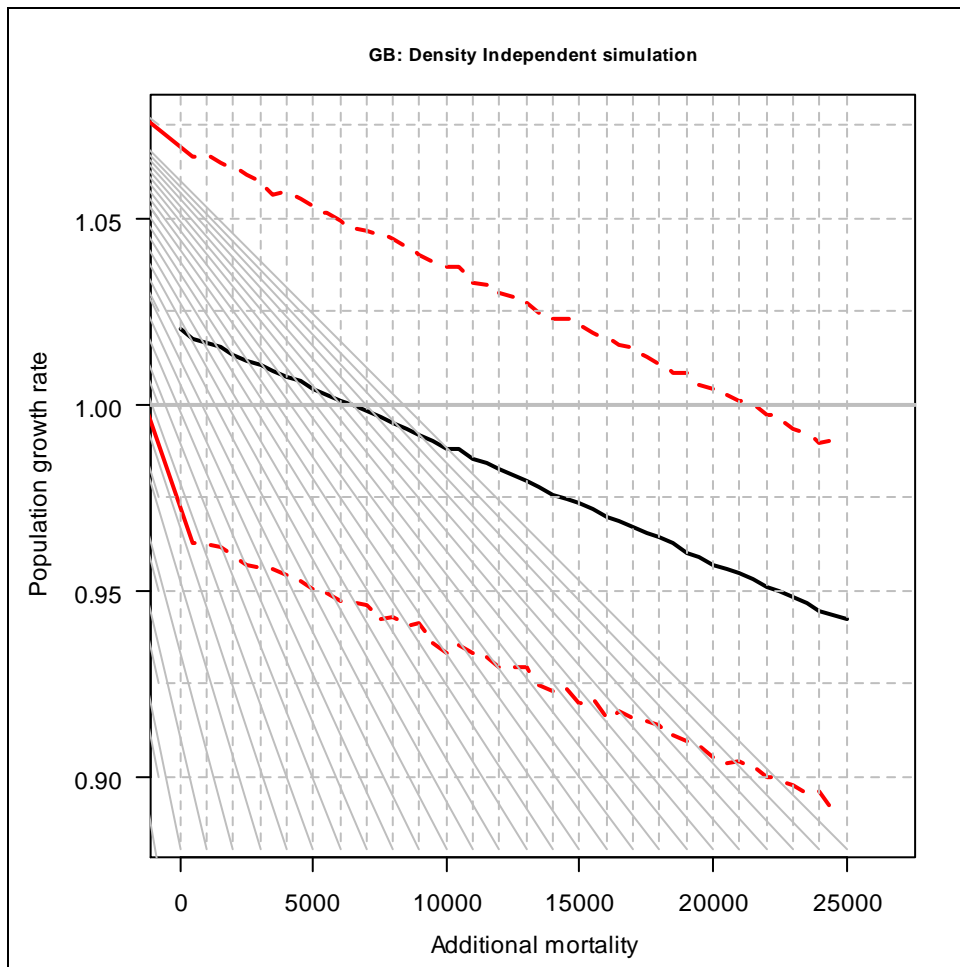


Figure 15 - GB: Density Independent simulation. Change in population growth rate with increasing additional mortality

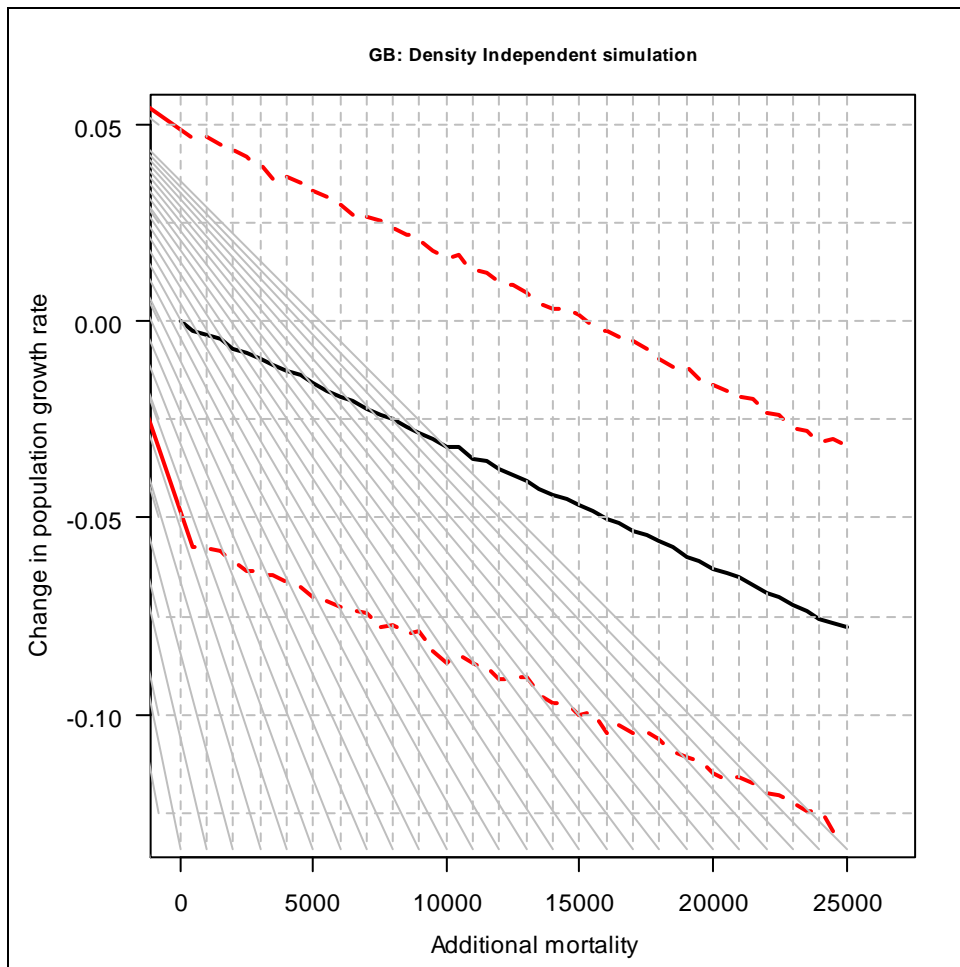


Figure 16 - Broadland: Density Independent simulation. Population projection with zero additional mortality

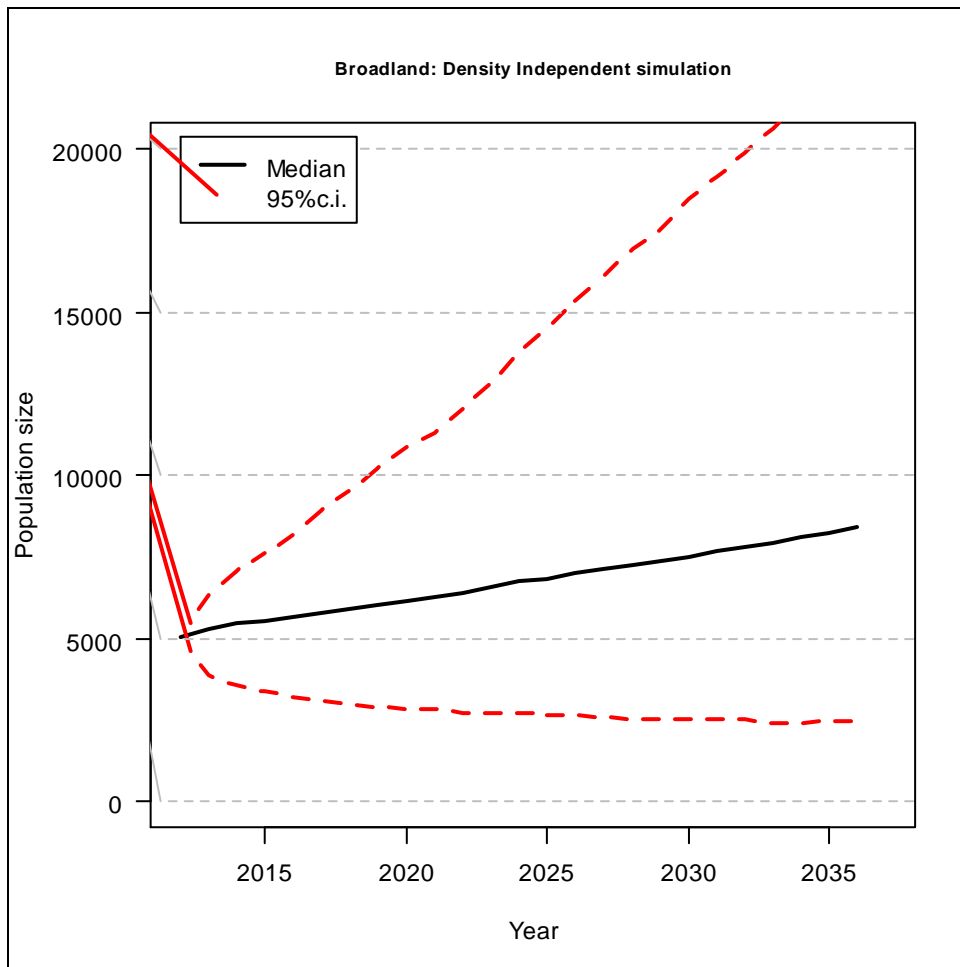


Figure 17 - Broadland: Density Independent simulation. Probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality

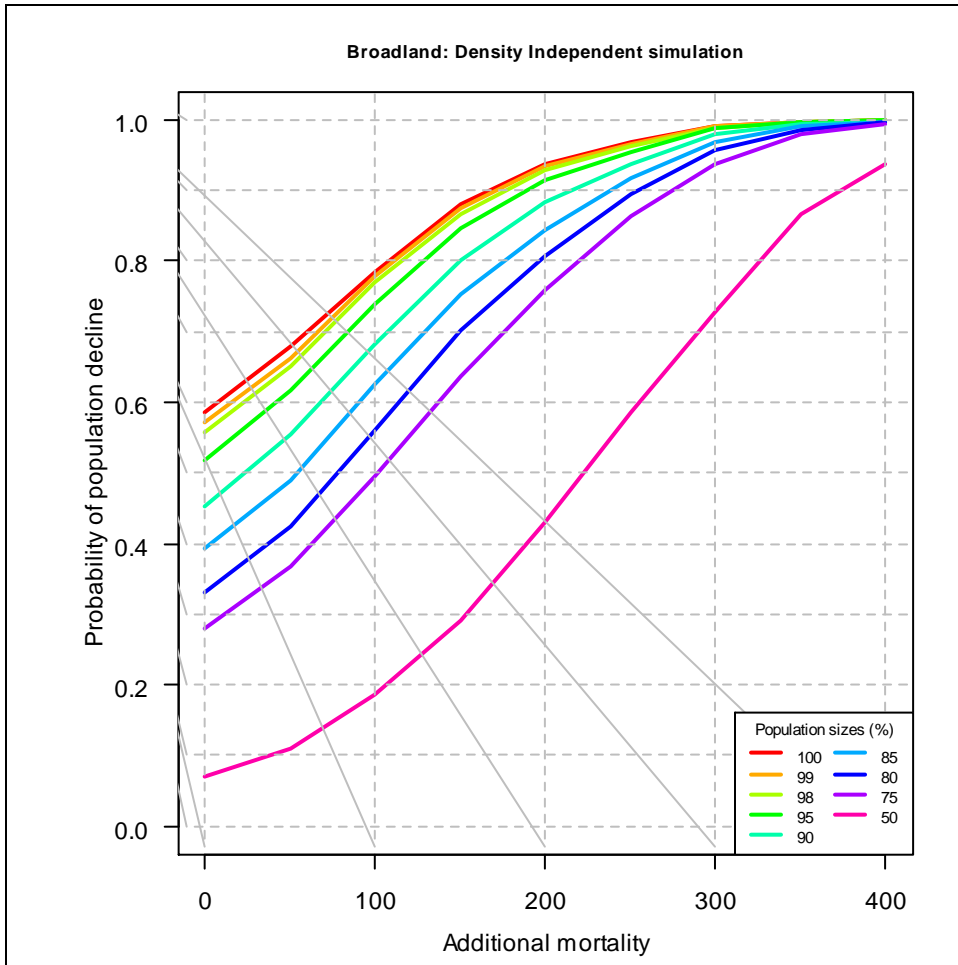


Figure 18 - Broadland: Density Independent simulation. Increase in probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality

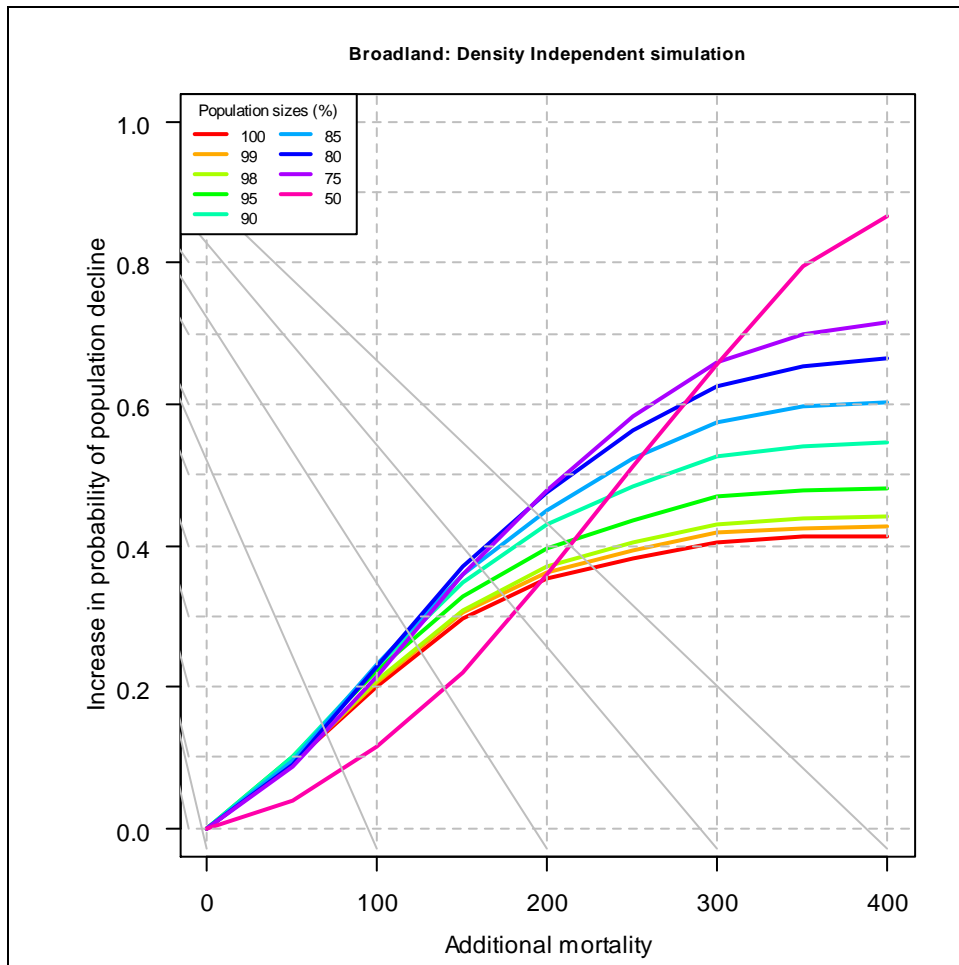


Figure 19 - Broadland: Density Independent simulation. Population growth rate with increasing additional mortality

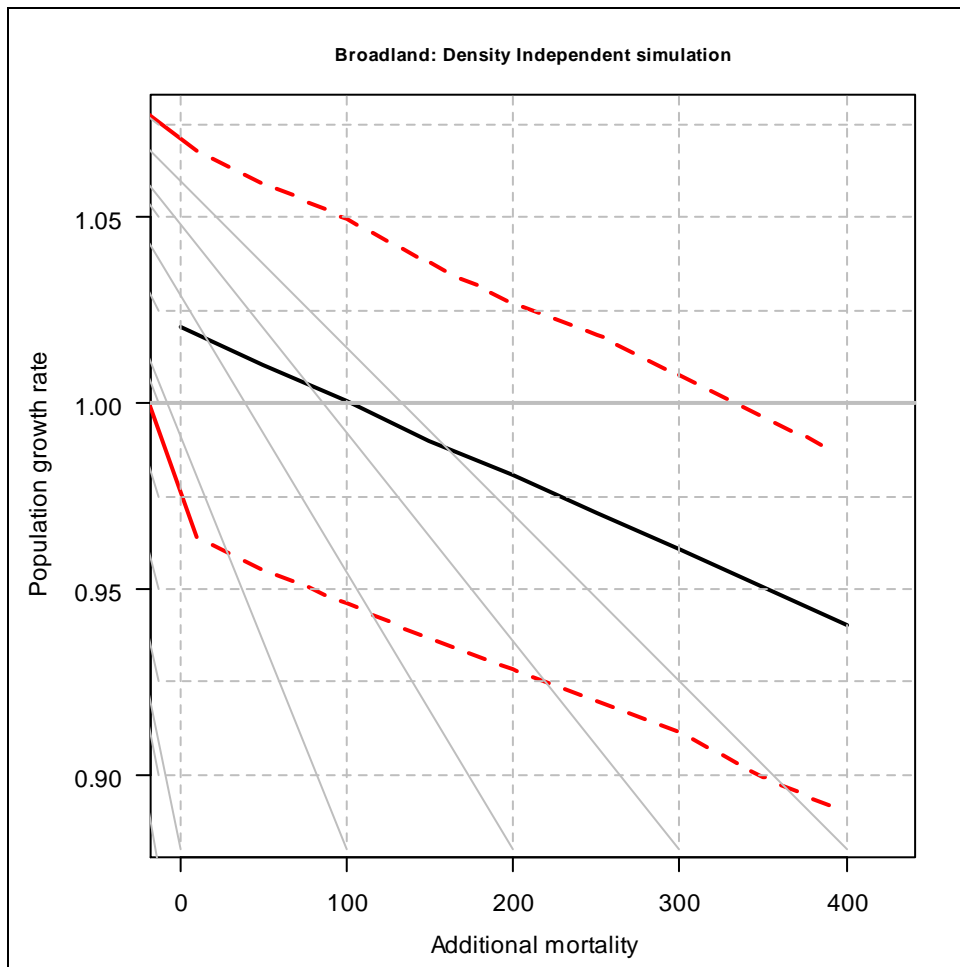


Figure 20 - Broadland: Density Independent simulation. Change in population growth rate with increasing additional mortality

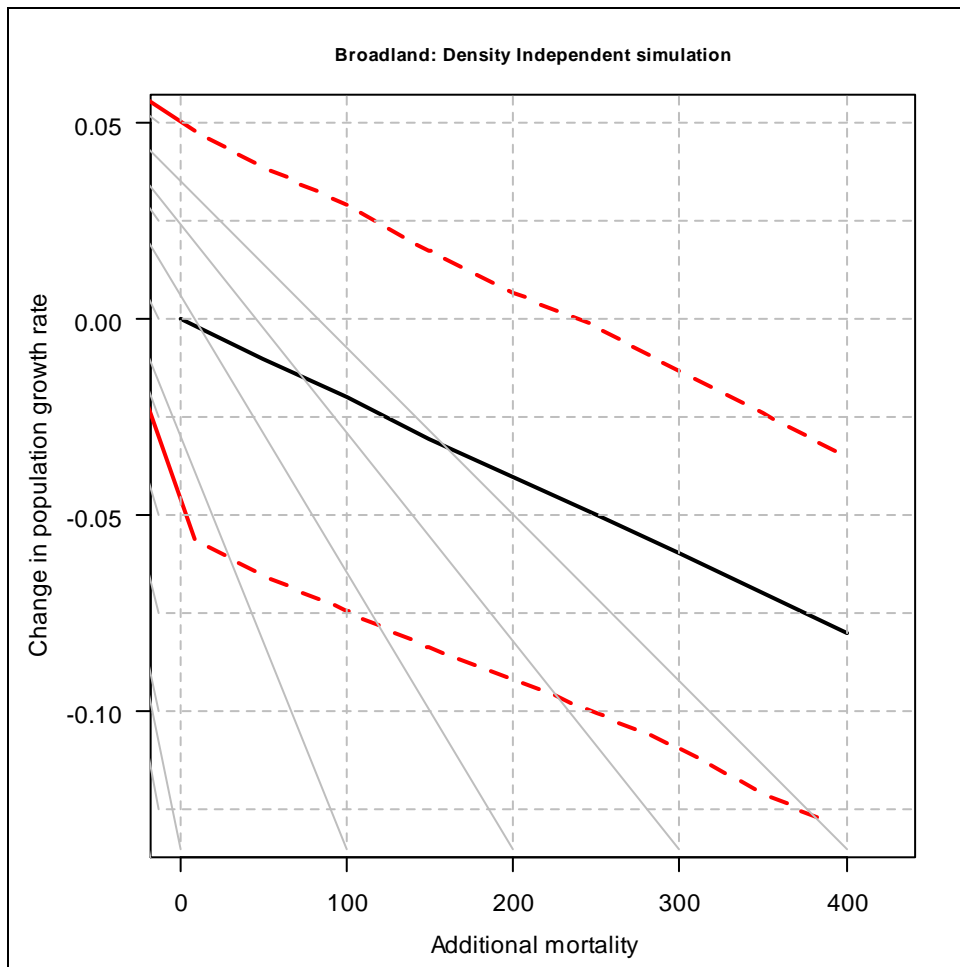


Figure 21 - Lindisfarne: Density Independent simulation. Population projection with zero additional mortality

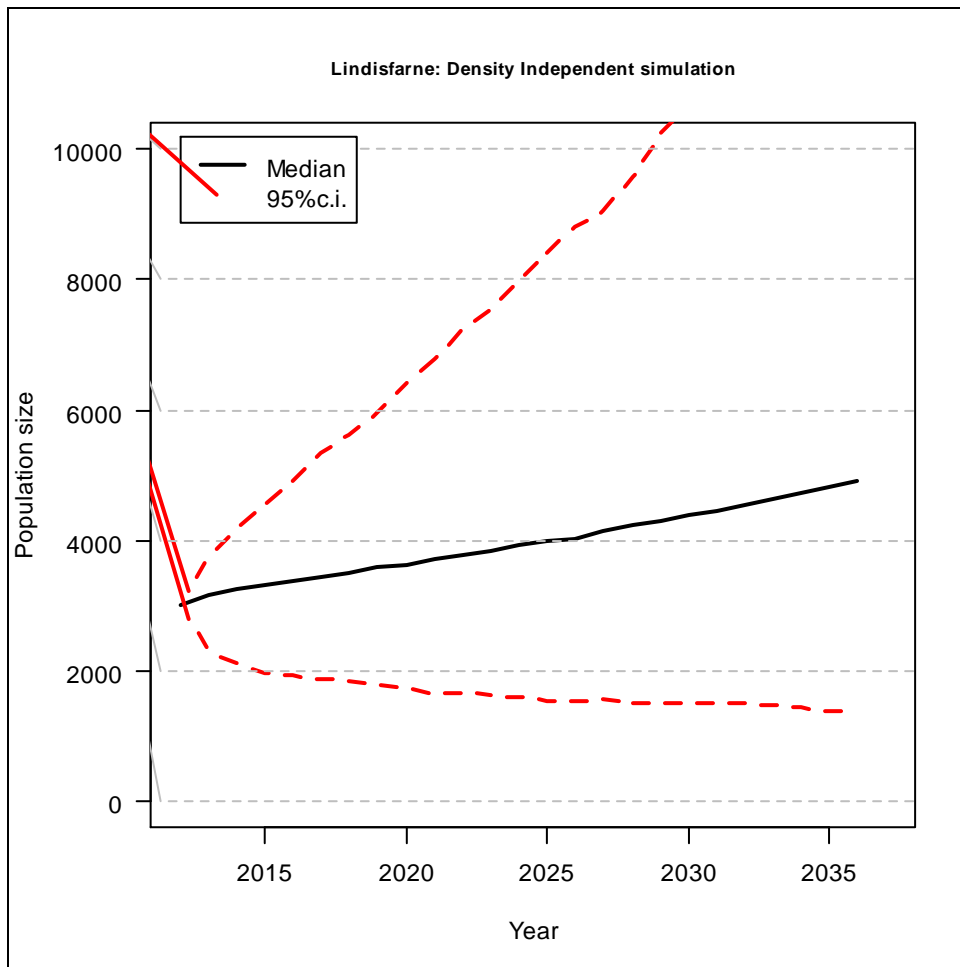


Figure 22 - Lindisfarne: Density Independent simulation. Probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality

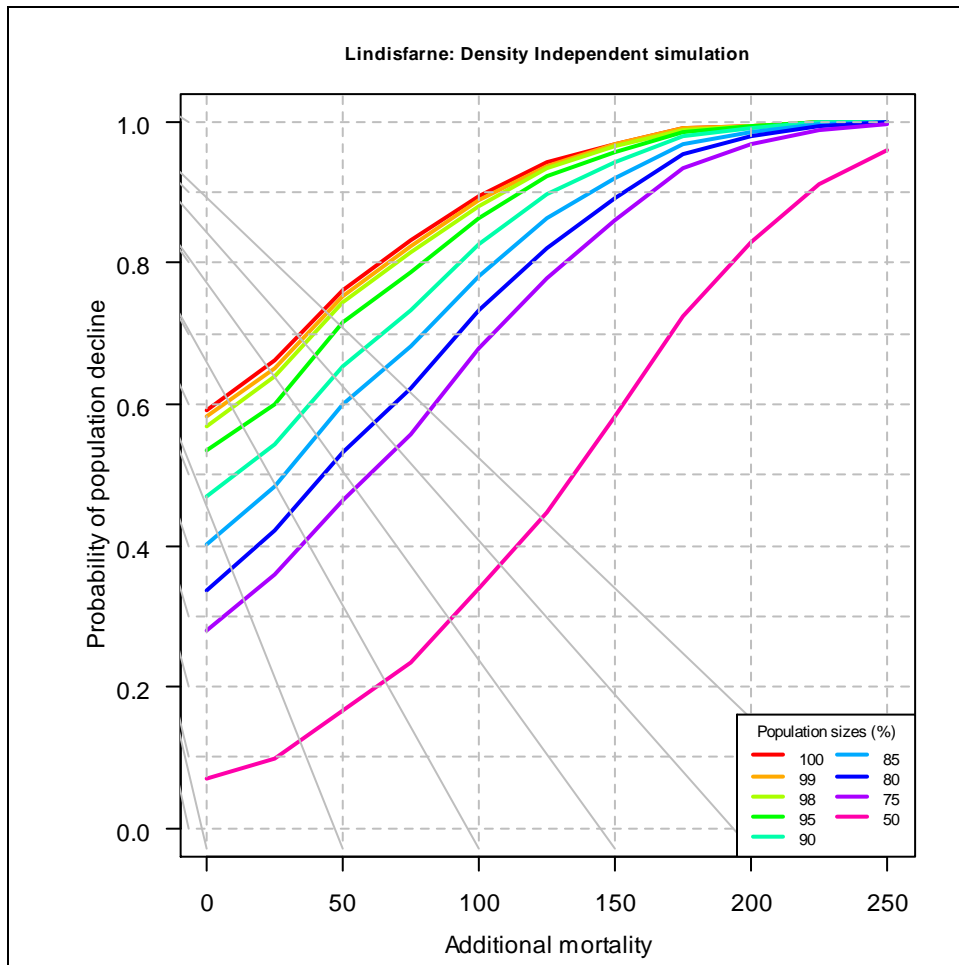


Figure 23 - Lindisfarne: Density Independent simulation. Increase in probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality

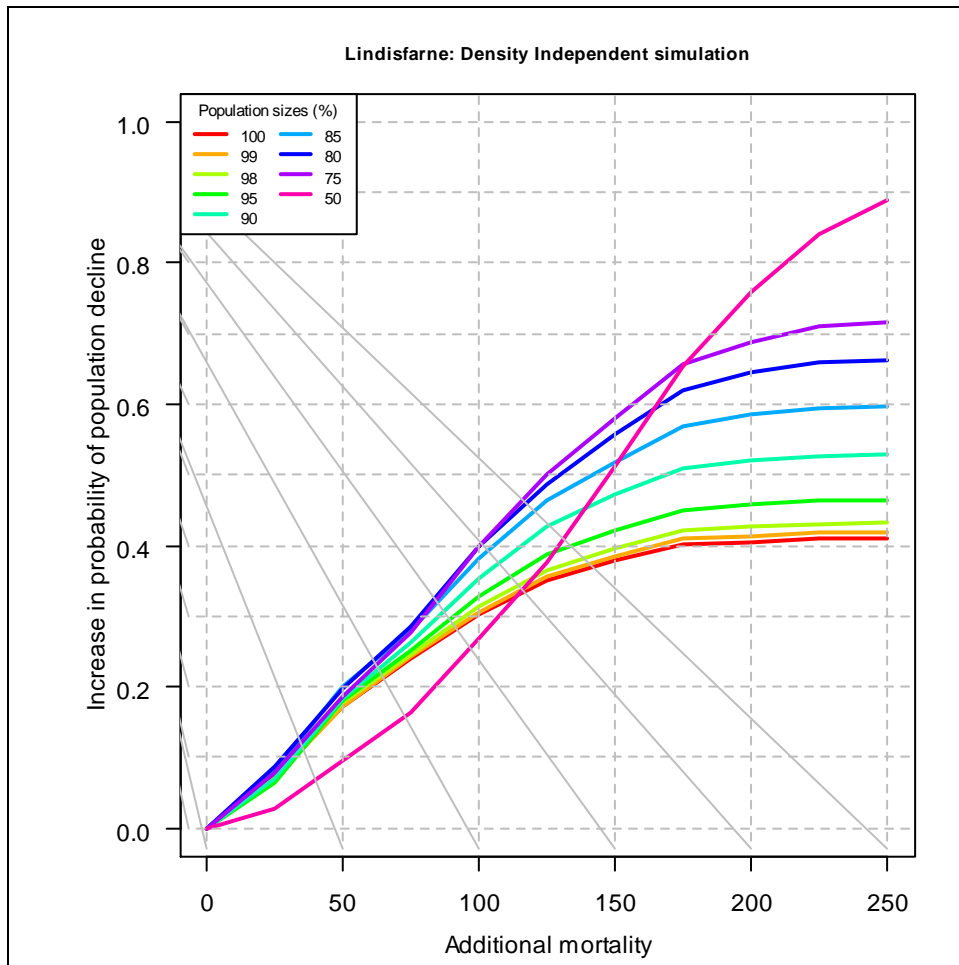


Figure 24 - Lindisfarne: Density Independent simulation. Population growth rate with increasing additional mortality

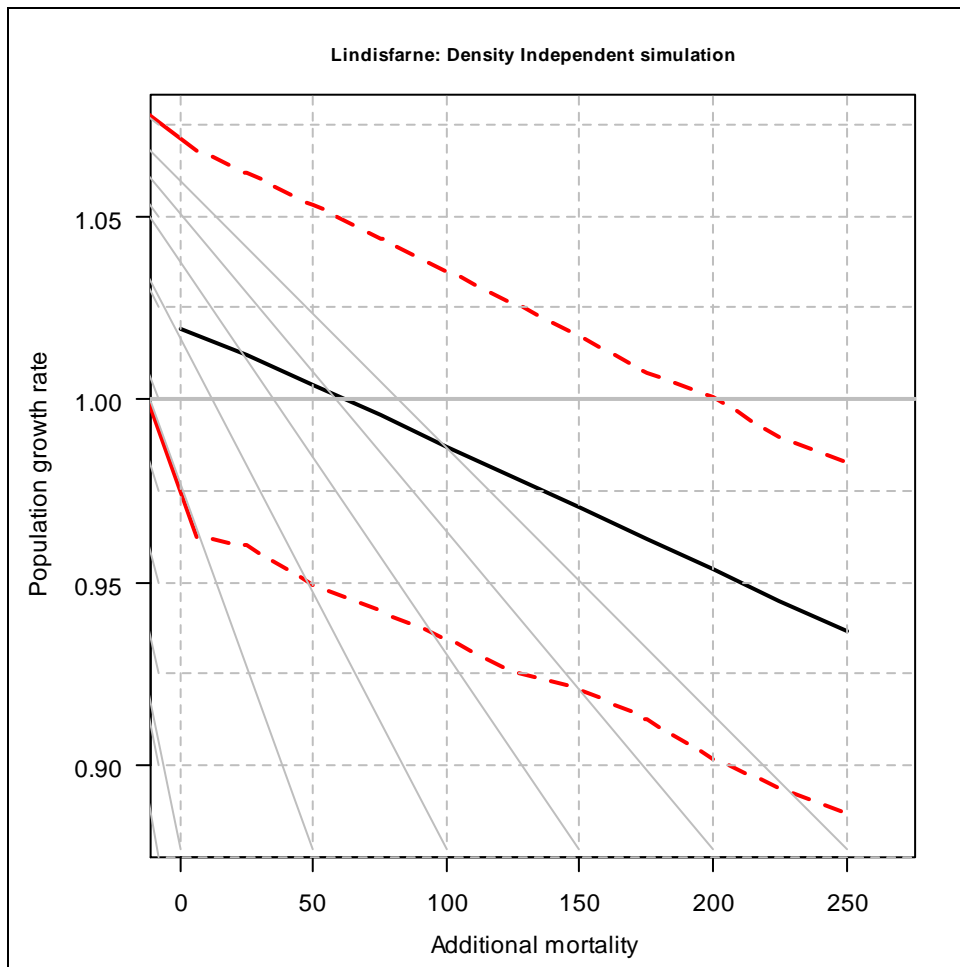


Figure 25 - Lindisfarne: Density Independent simulation. Change in population growth rate with increasing additional mortality

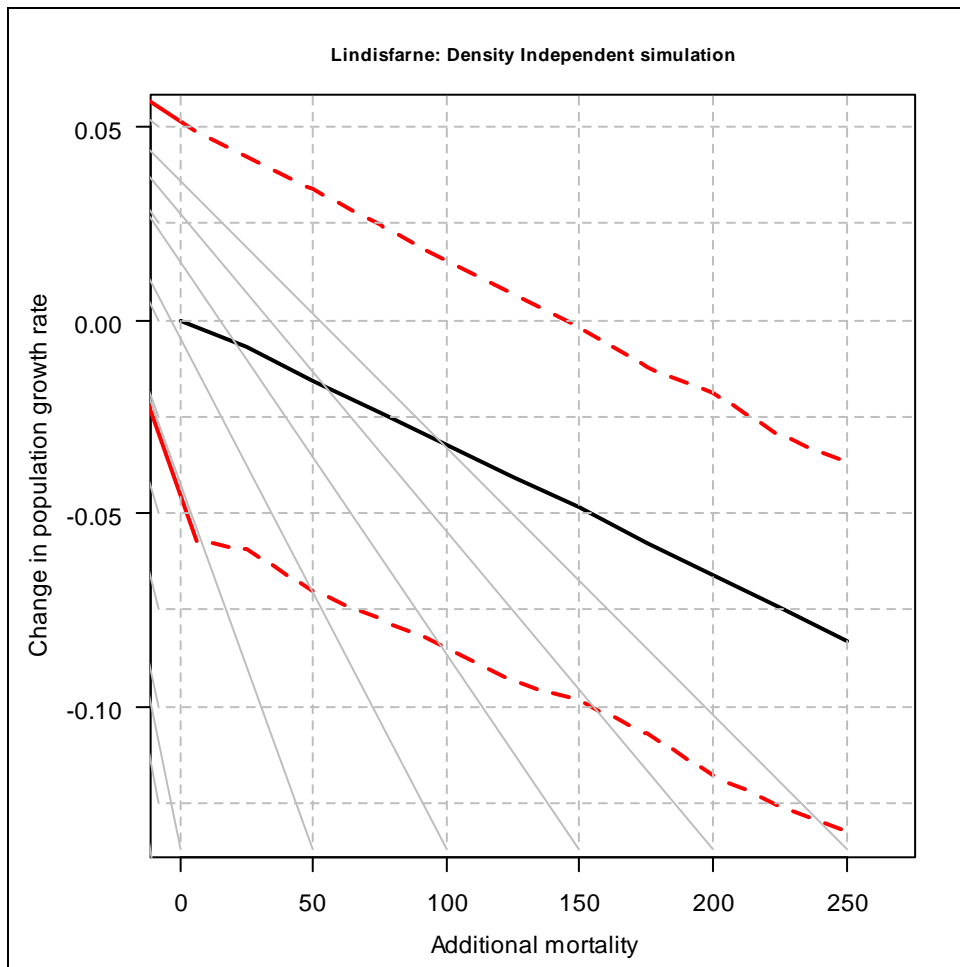


Figure 26 - Martin Mere: Density Independent simulation. Population projection with zero additional mortality

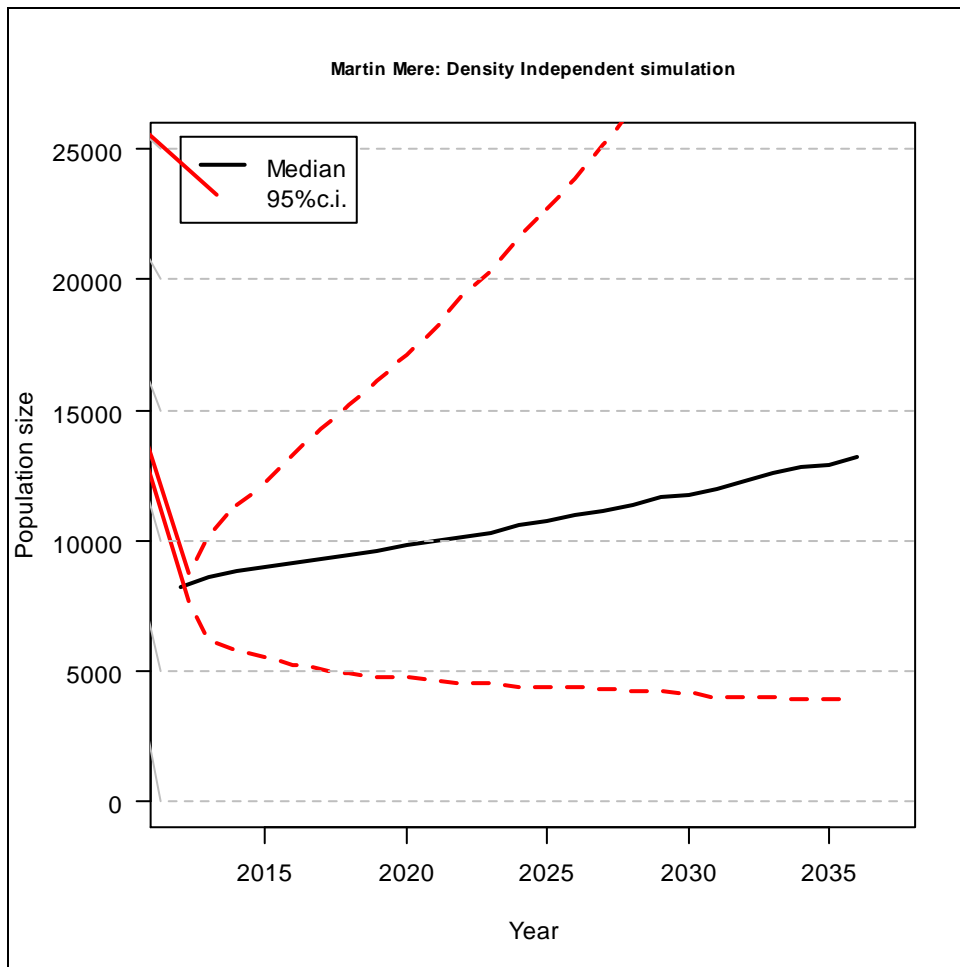


Figure 27 - Martin Mere: Density Independent simulation. Probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality

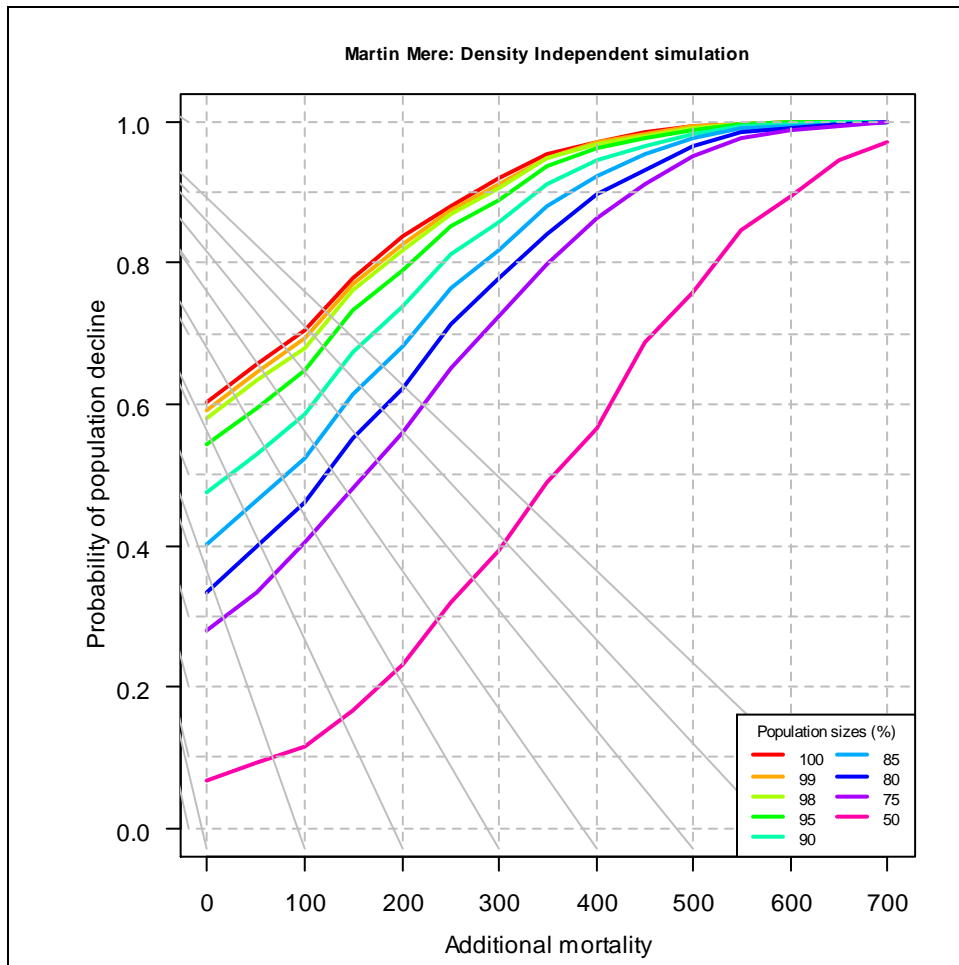


Figure 28 - Martin Mere: Density Independent simulation. Increase in probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality

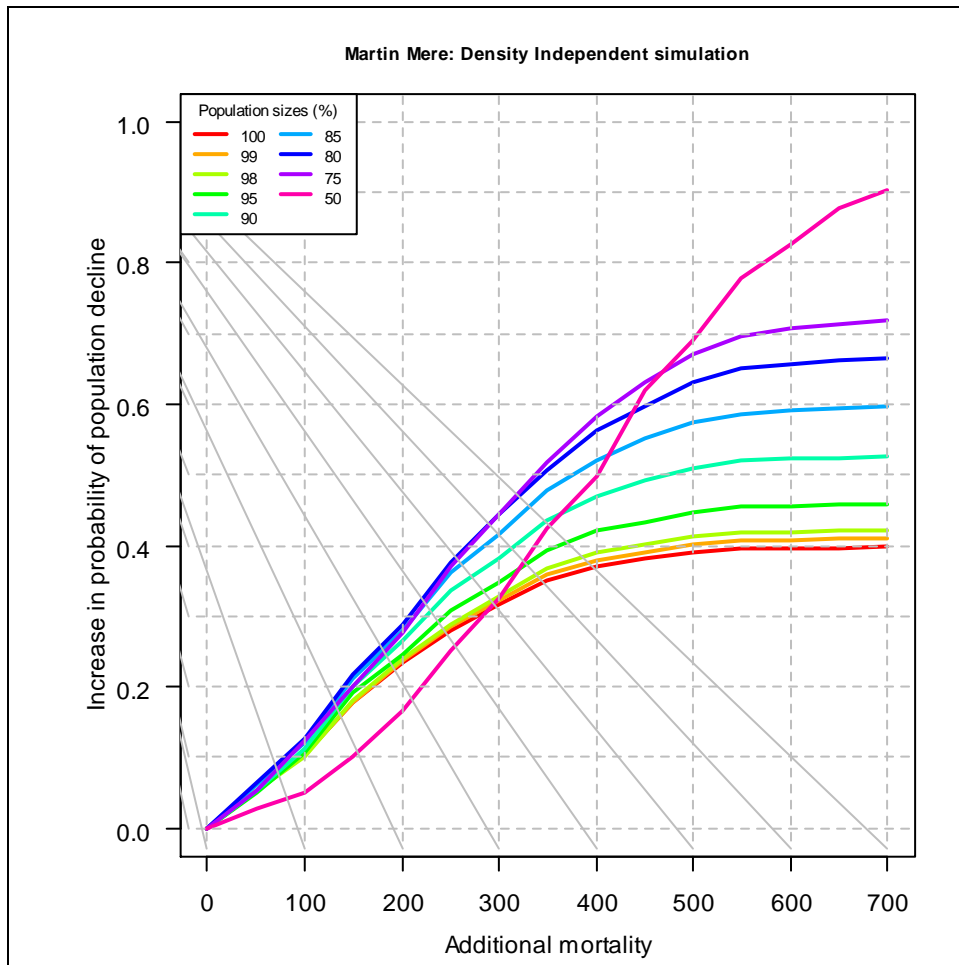


Figure 29 - Martin Mere: Density Independent simulation. Population growth rate with increasing additional mortality

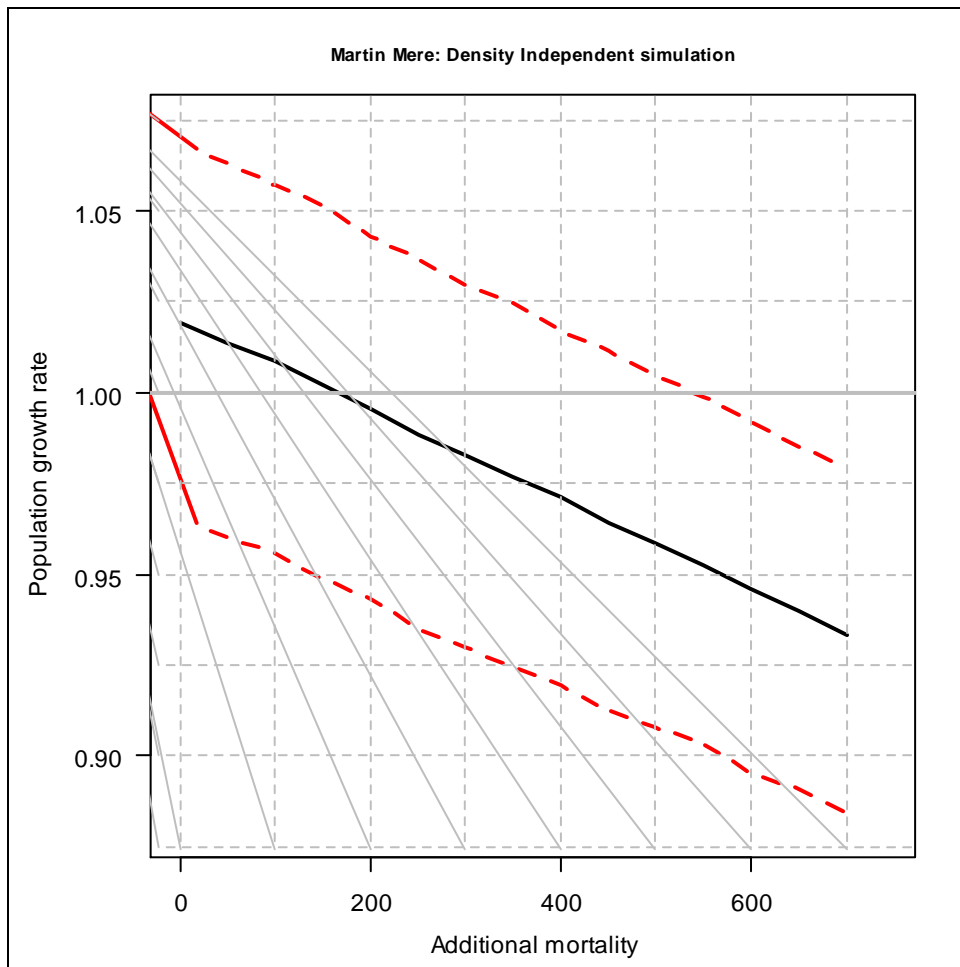


Figure 30 - Martin Mere: Density Independent simulation. Change in population growth rate with increasing additional mortality

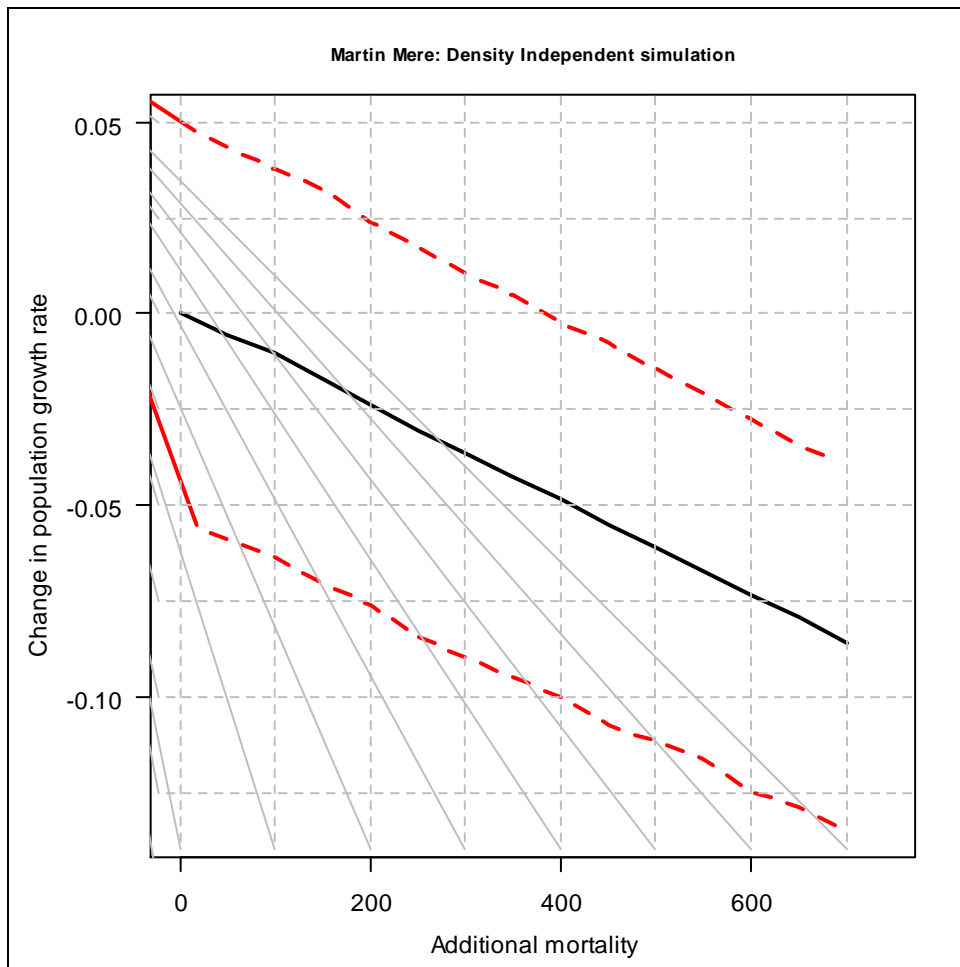


Figure 31 - Morecambe Bay: Density Independent simulation. Population projection with zero additional mortality

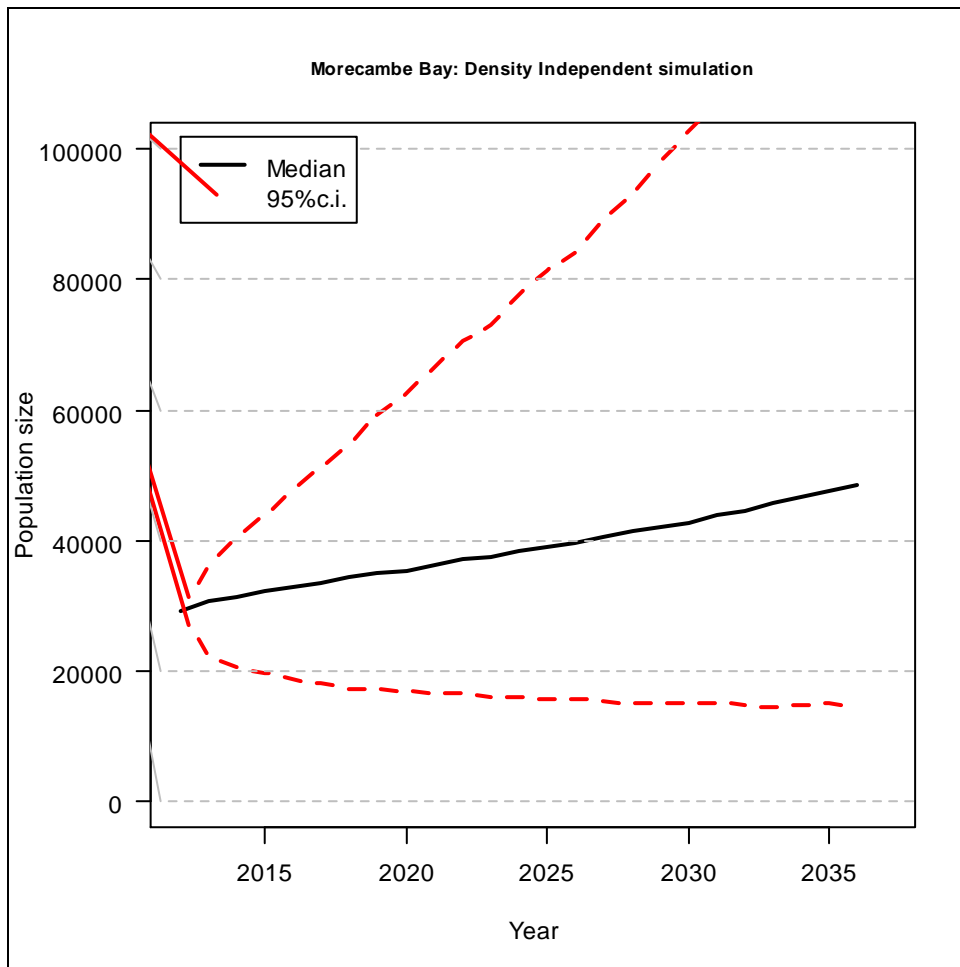


Figure 32 - Morecambe Bay: Density Independent simulation. Probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality

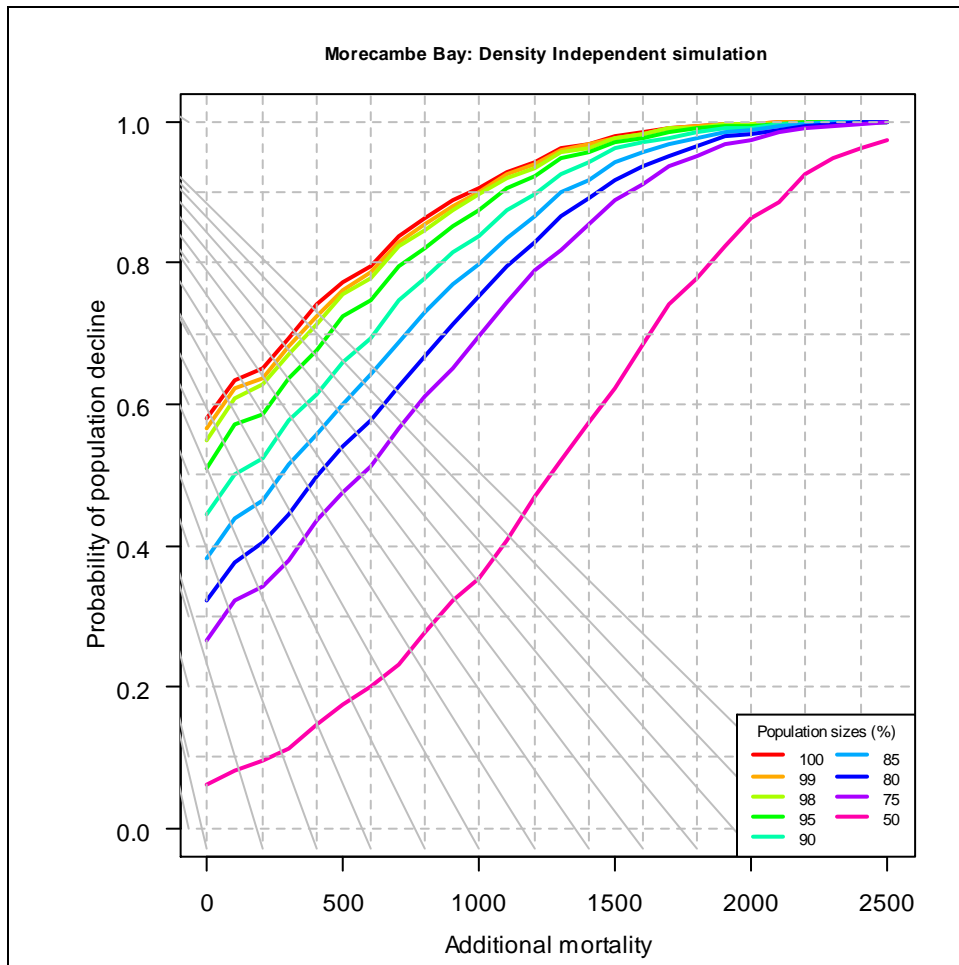


Figure 33 - Morecambe Bay: Density Independent simulation. Increase in probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality

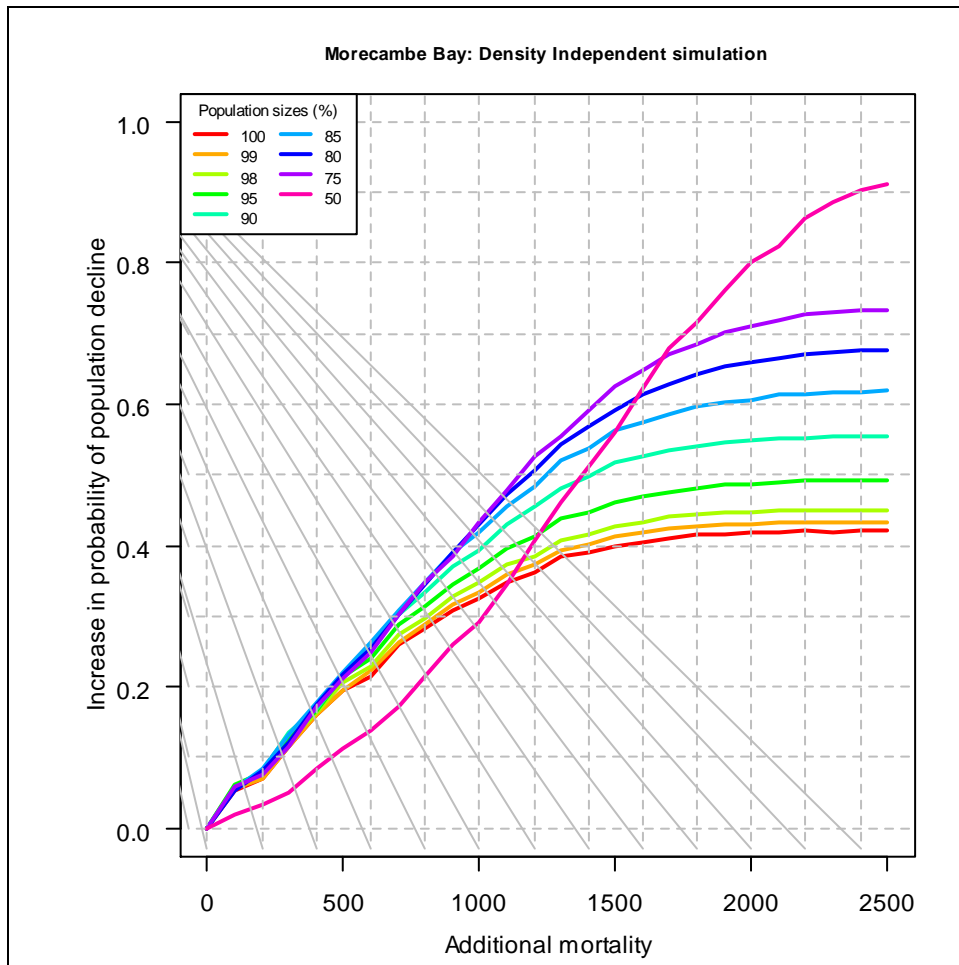


Figure 34 - Morecambe Bay: Density Independent simulation. Population growth rate with increasing additional mortality

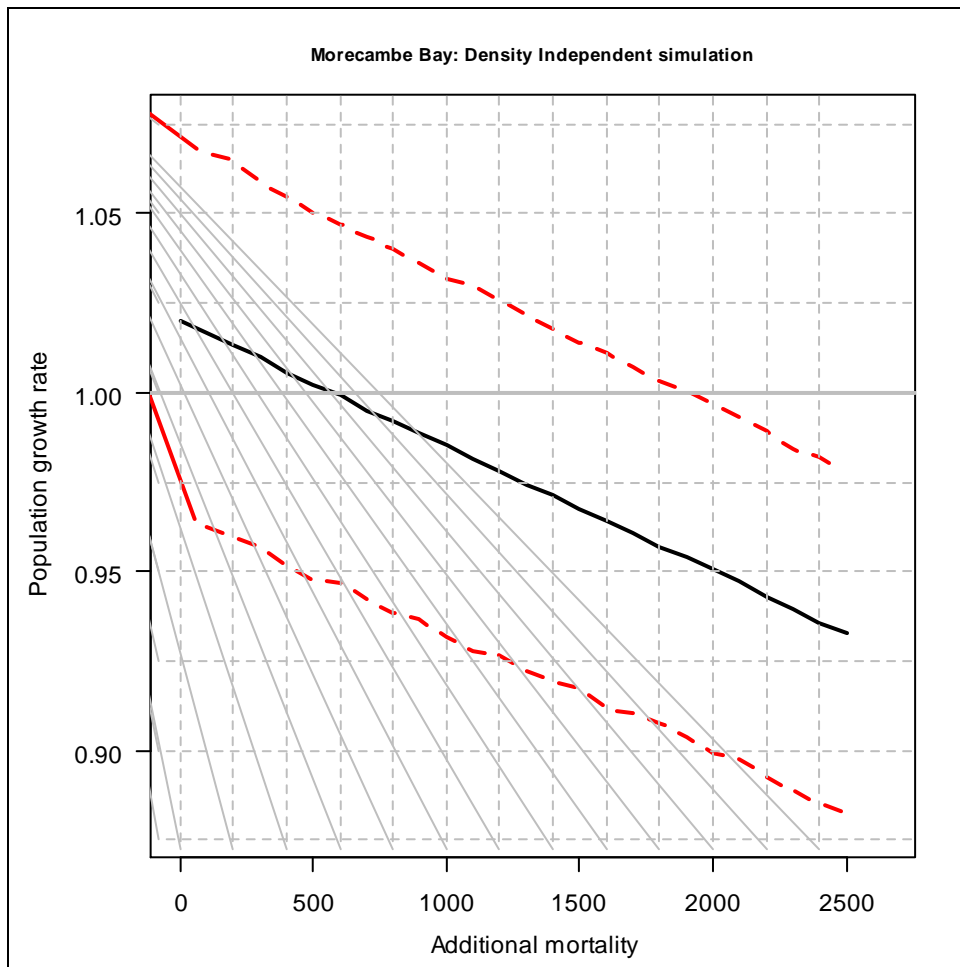


Figure 35 - 36 Morecambe Bay: Density Independent simulation. Change in population growth rate with increasing additional mortality

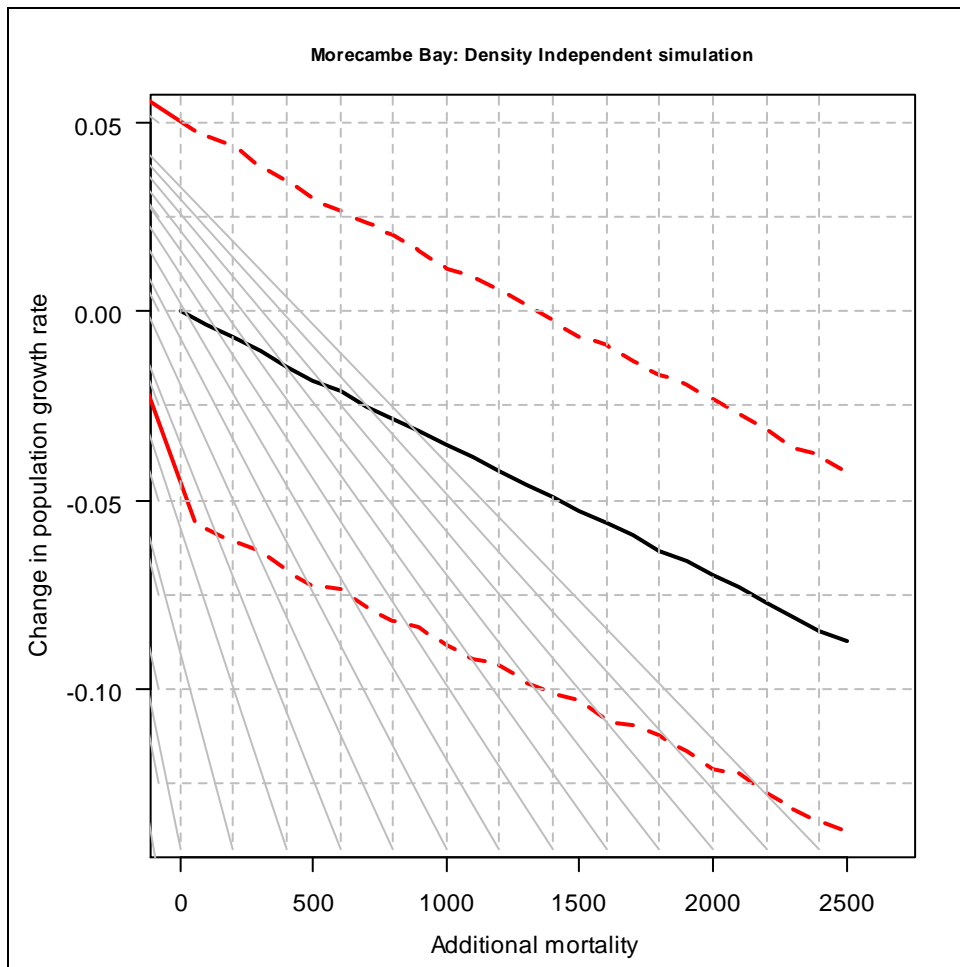


Figure 37 - North Norfolk Coast: Density Independent simulation. Population projection with zero additional mortality

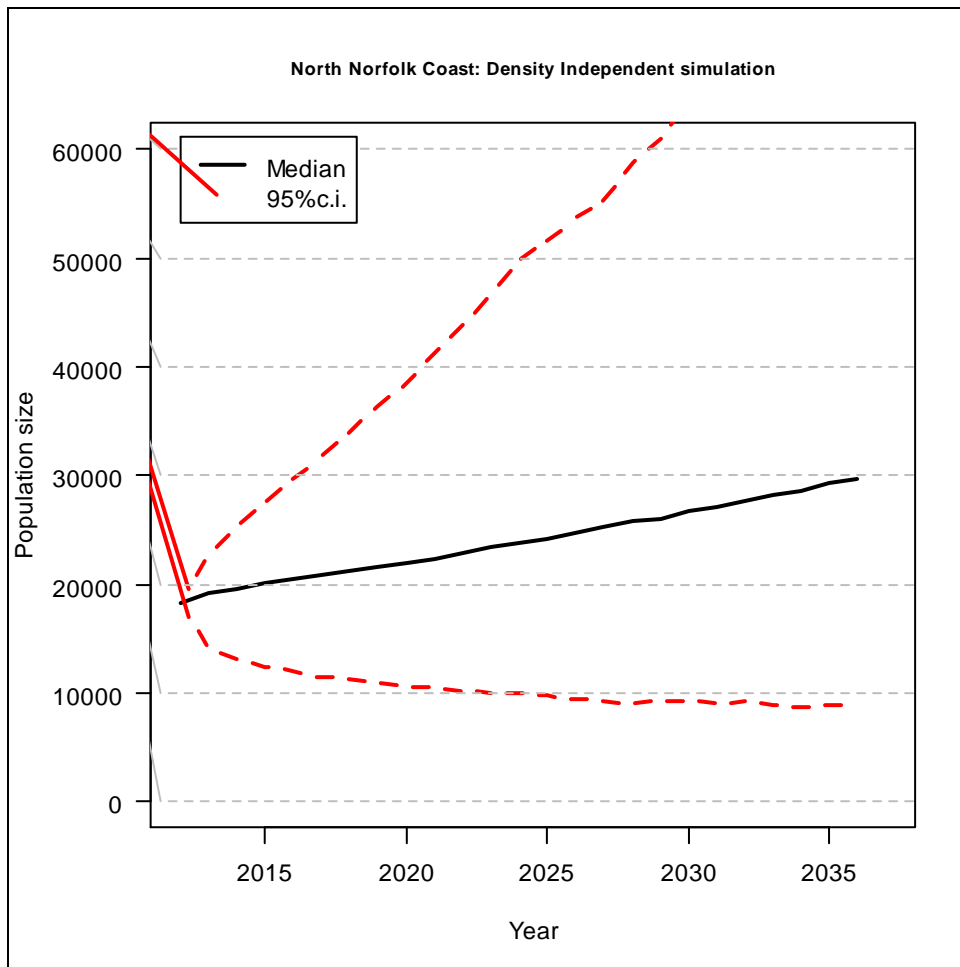


Figure 38 - North Norfolk Coast: Density Independent simulation. Probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality

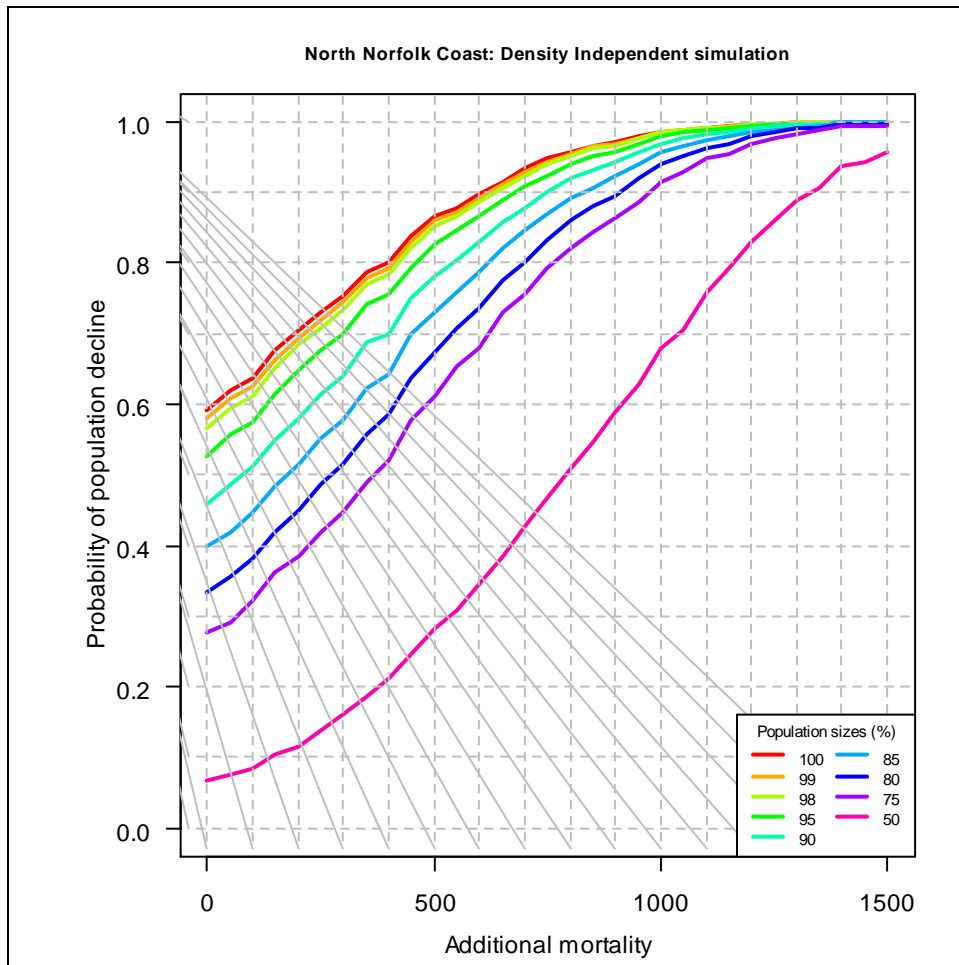


Figure 39 - North Norfolk Coast: Density Independent simulation. Increase in probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality

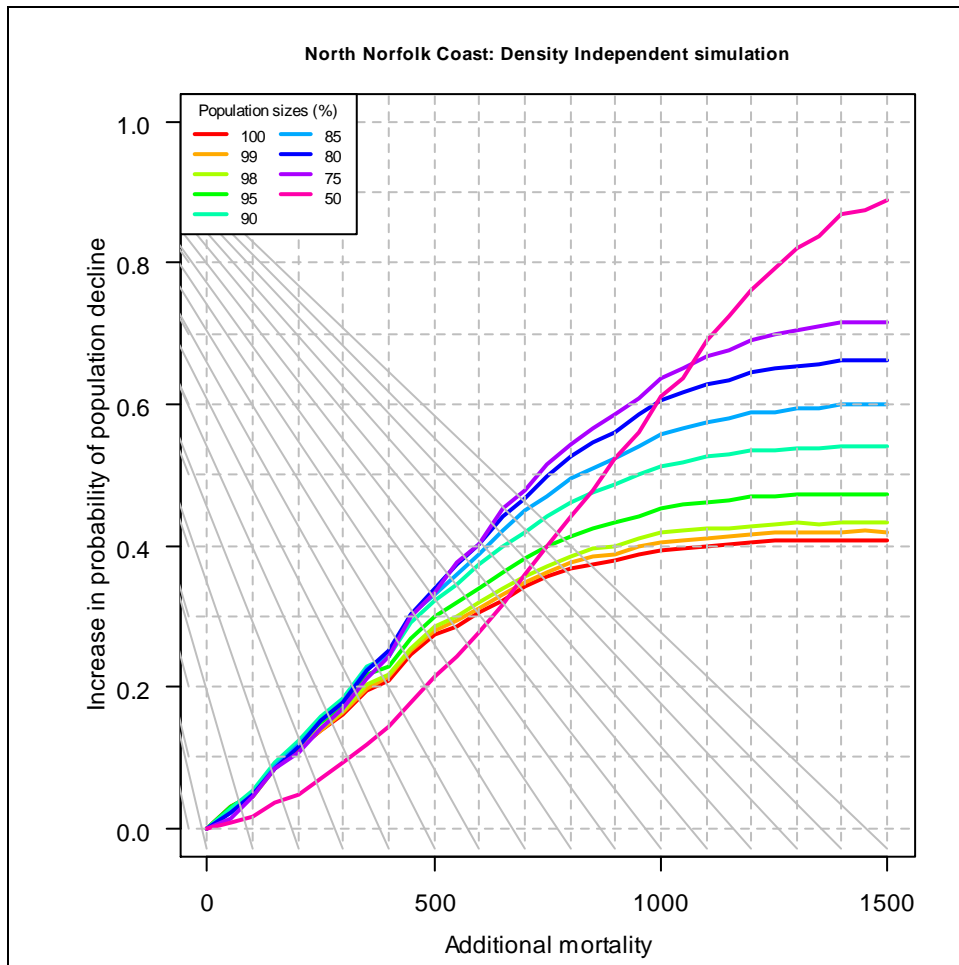


Figure 40 - North Norfolk Coast: Density Independent simulation. Population growth rate with increasing additional mortality

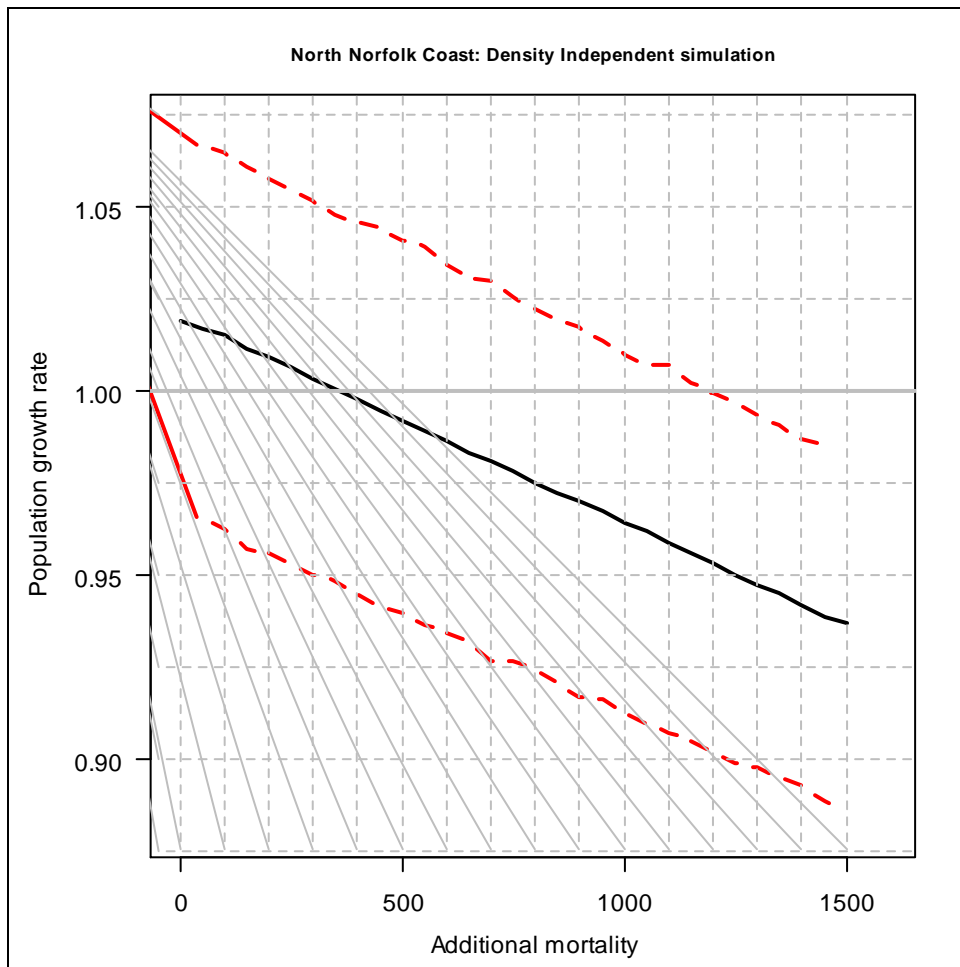


Figure 41 - North Norfolk Coast: Density Independent simulation. Change in population growth rate with increasing additional mortality

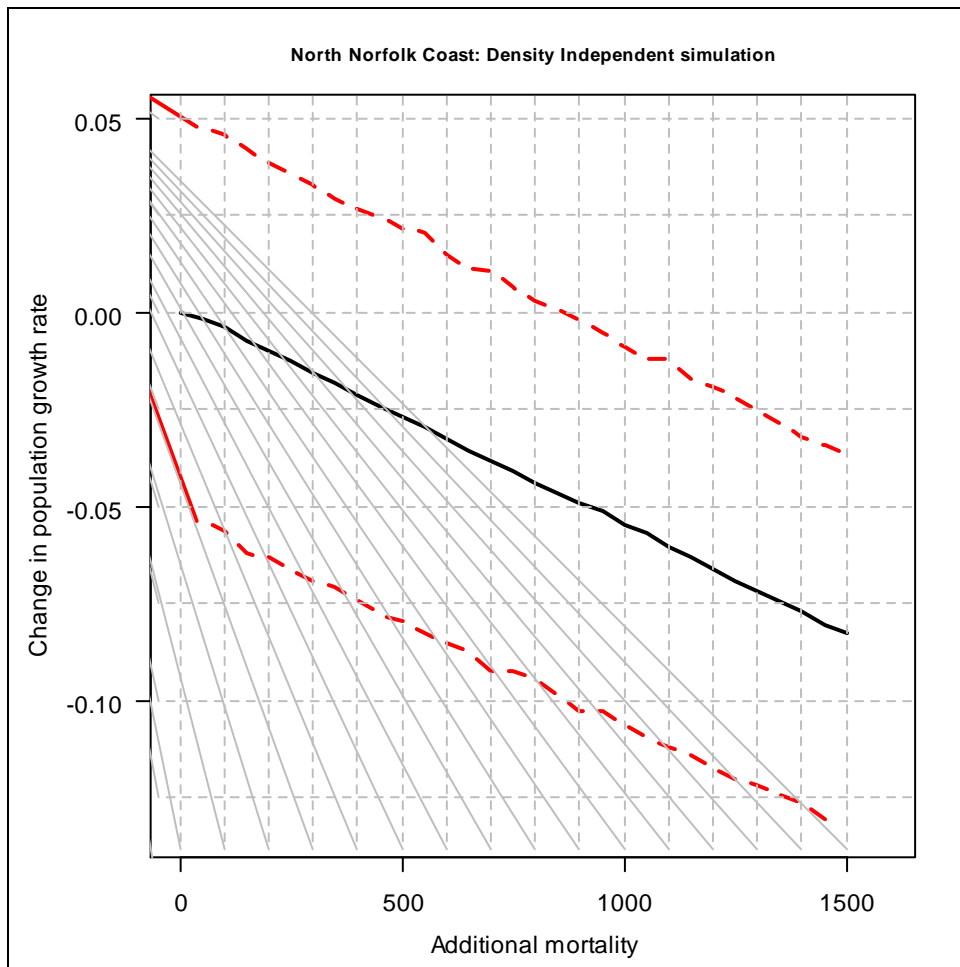


Figure 42 - Ribble and Alt Estuaries: Density Independent simulation. Population projection with zero additional mortality

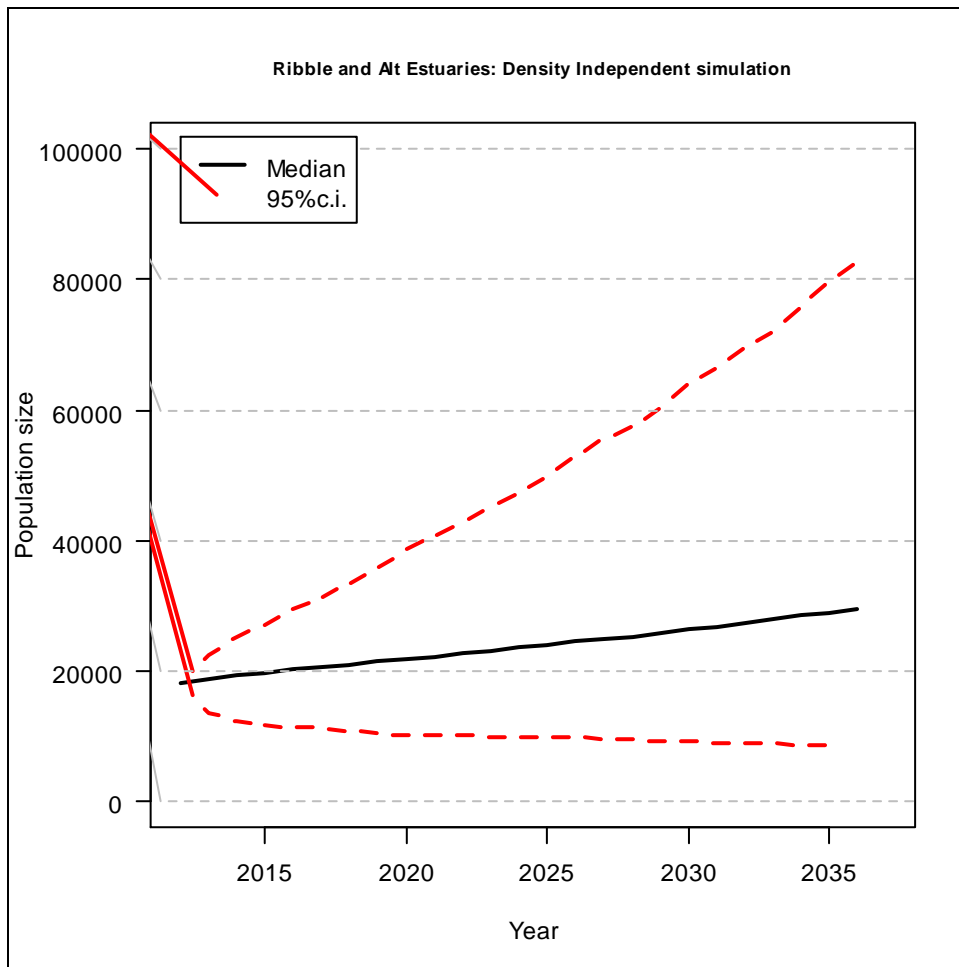


Figure 43 - Ribble and Alt Estuaries: Density Independent simulation. Probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality

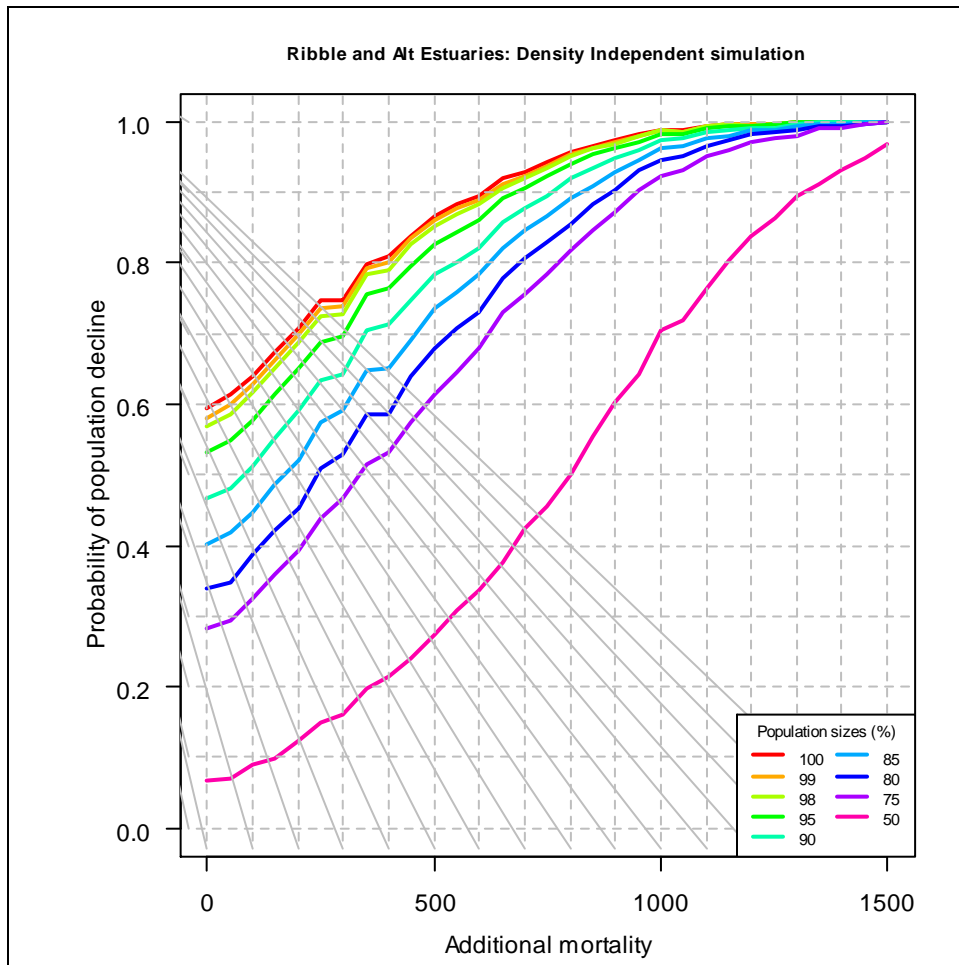


Figure 44 - Ribble and Alt Estuaries: Density Independent simulation. Increase in probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality

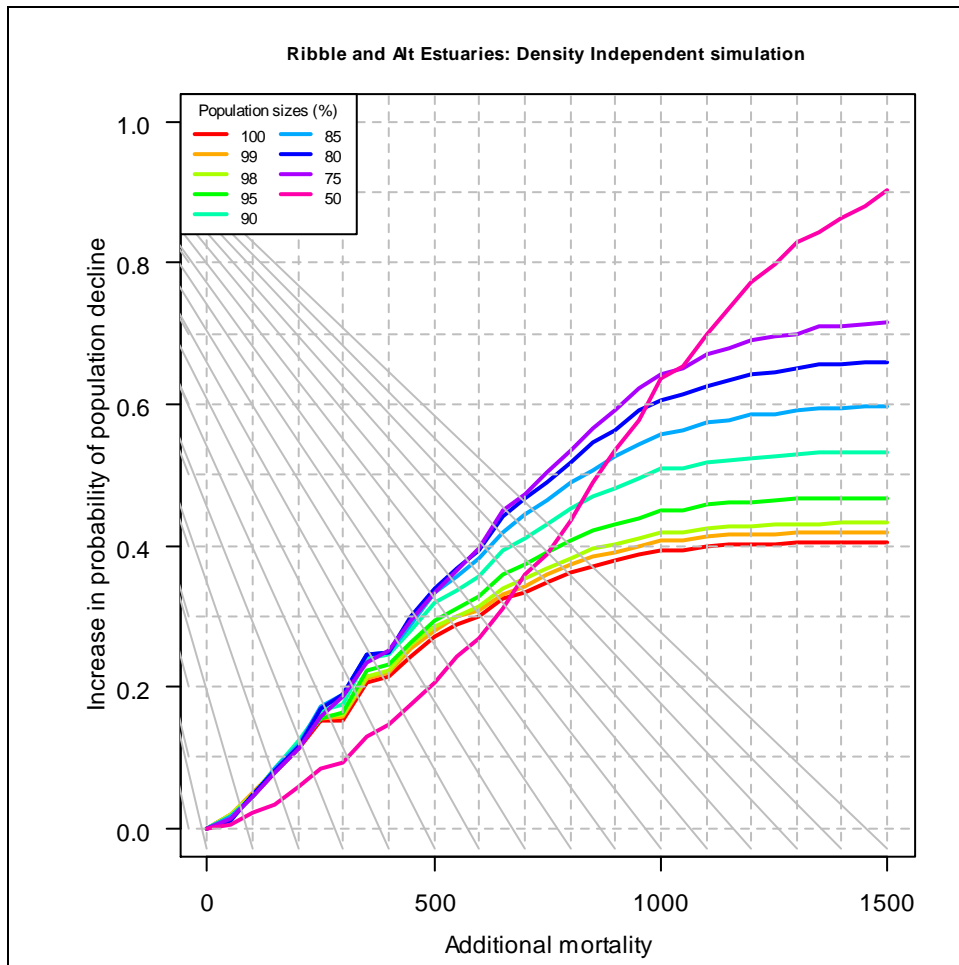


Figure 45 - Ribble and Alt Estuaries: Density Independent simulation. Population growth rate with increasing additional mortality

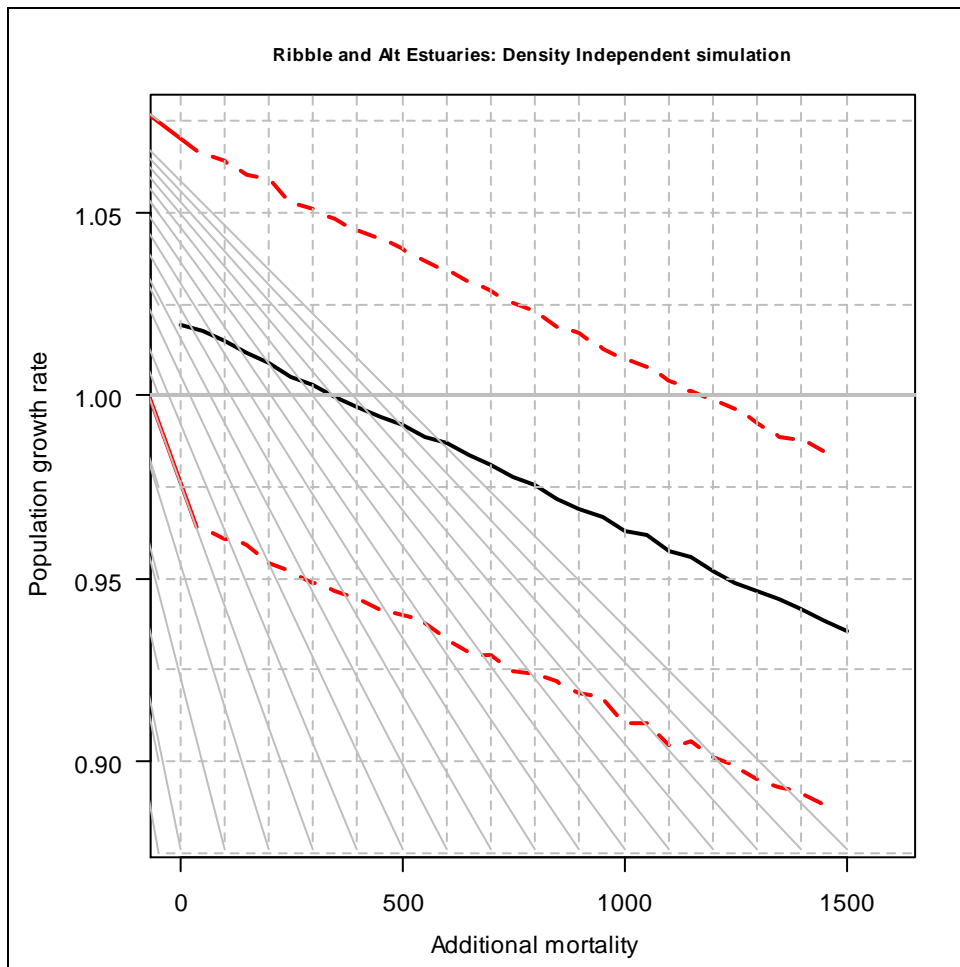


Figure 46 - Ribble and Alt Estuaries: Density Independent simulation. Change in population growth rate with increasing additional mortality

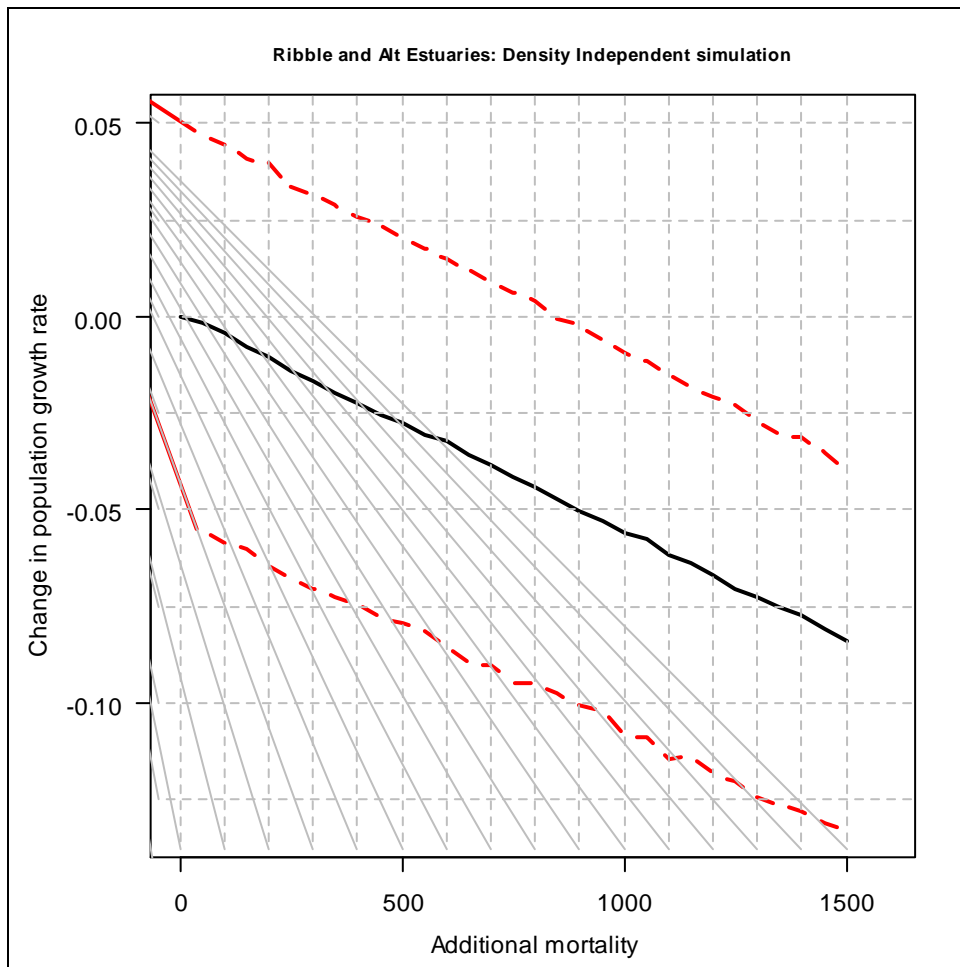


Figure 47 - The Wash: Density Independent simulation. Population projection with zero additional mortality

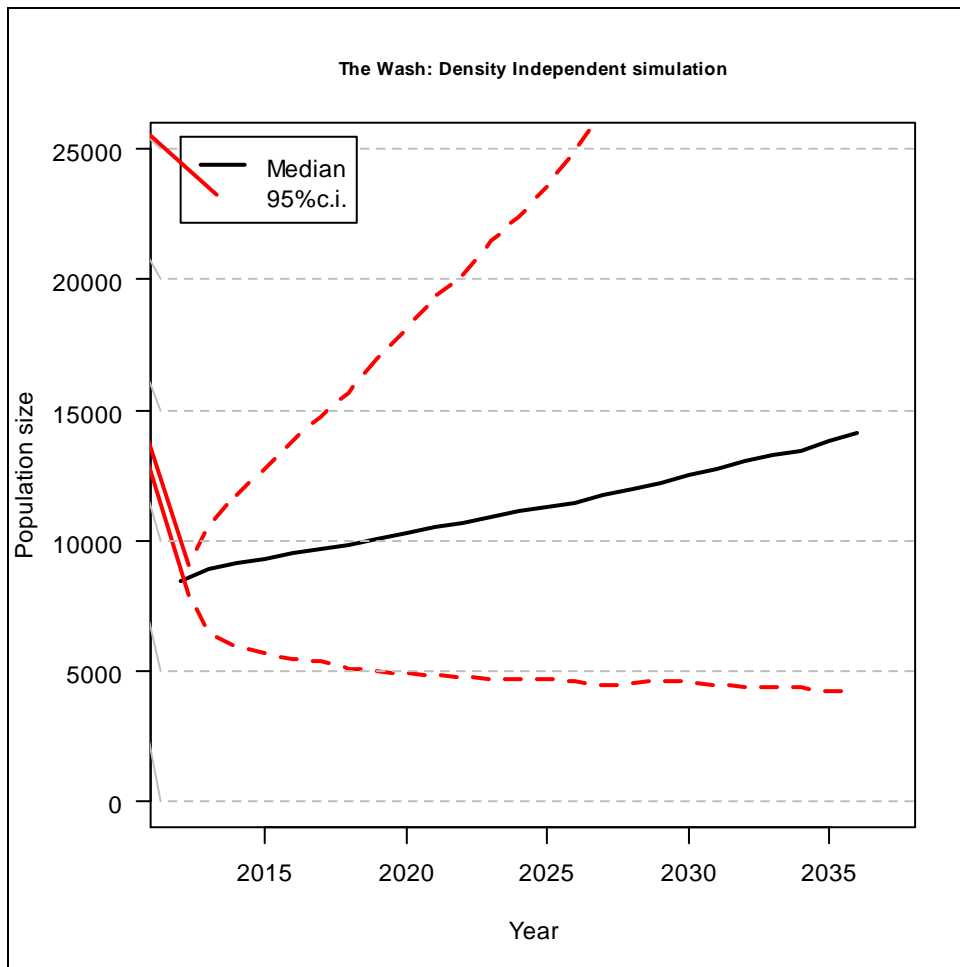


Figure 48 - The Wash: Density Independent simulation. Probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality

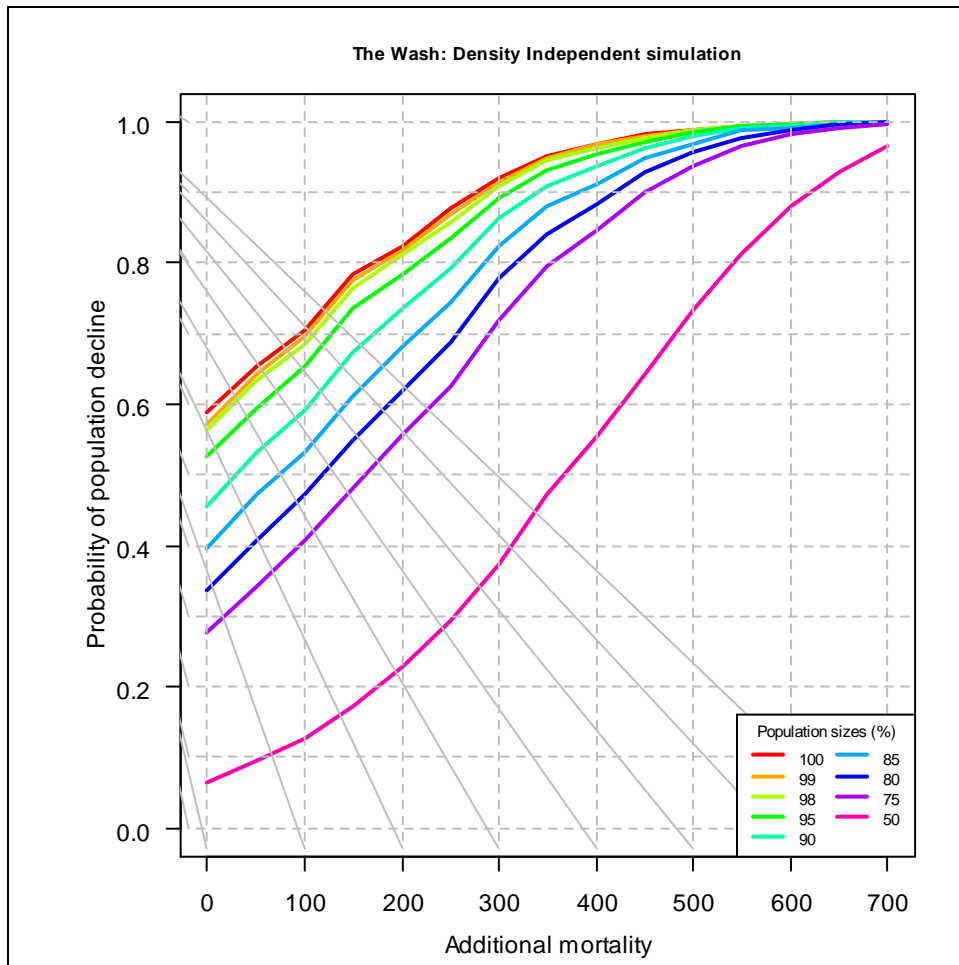


Figure 49 - The Wash: Density Independent simulation. Increase in probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality

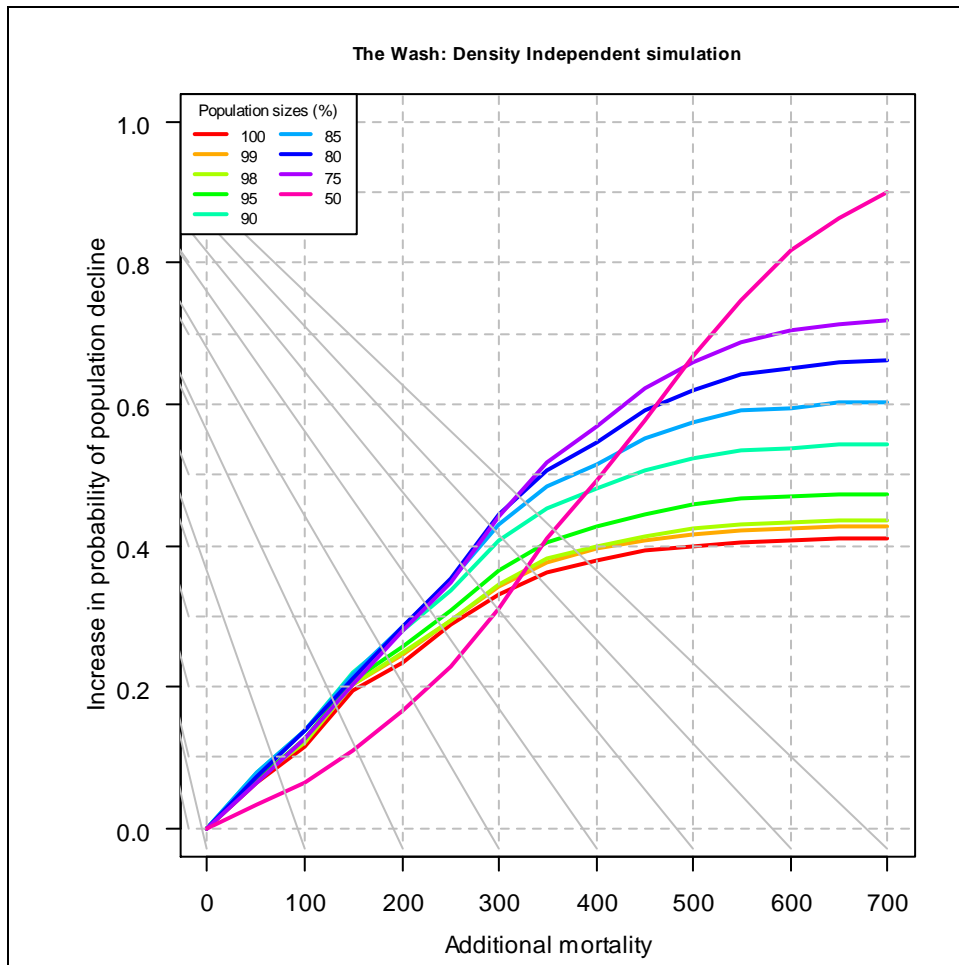


Figure 50 - The Wash: Density Independent simulation. Population growth rate with increasing additional mortality

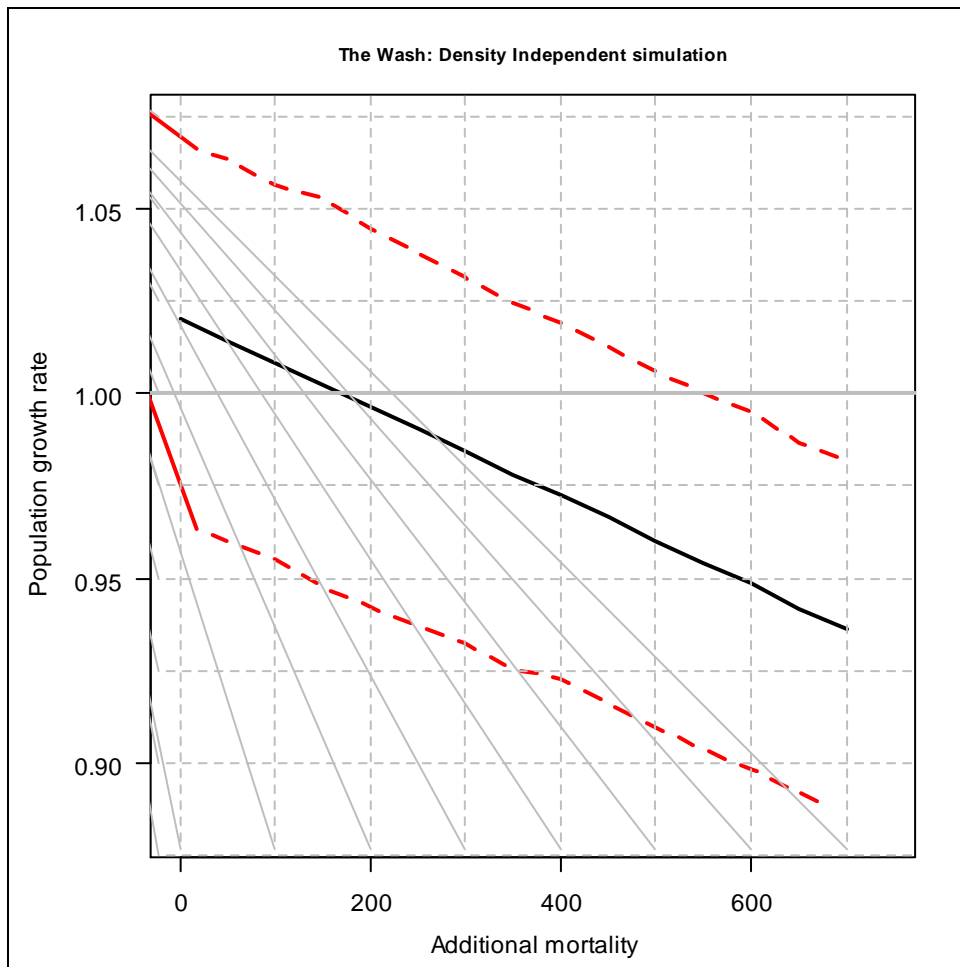
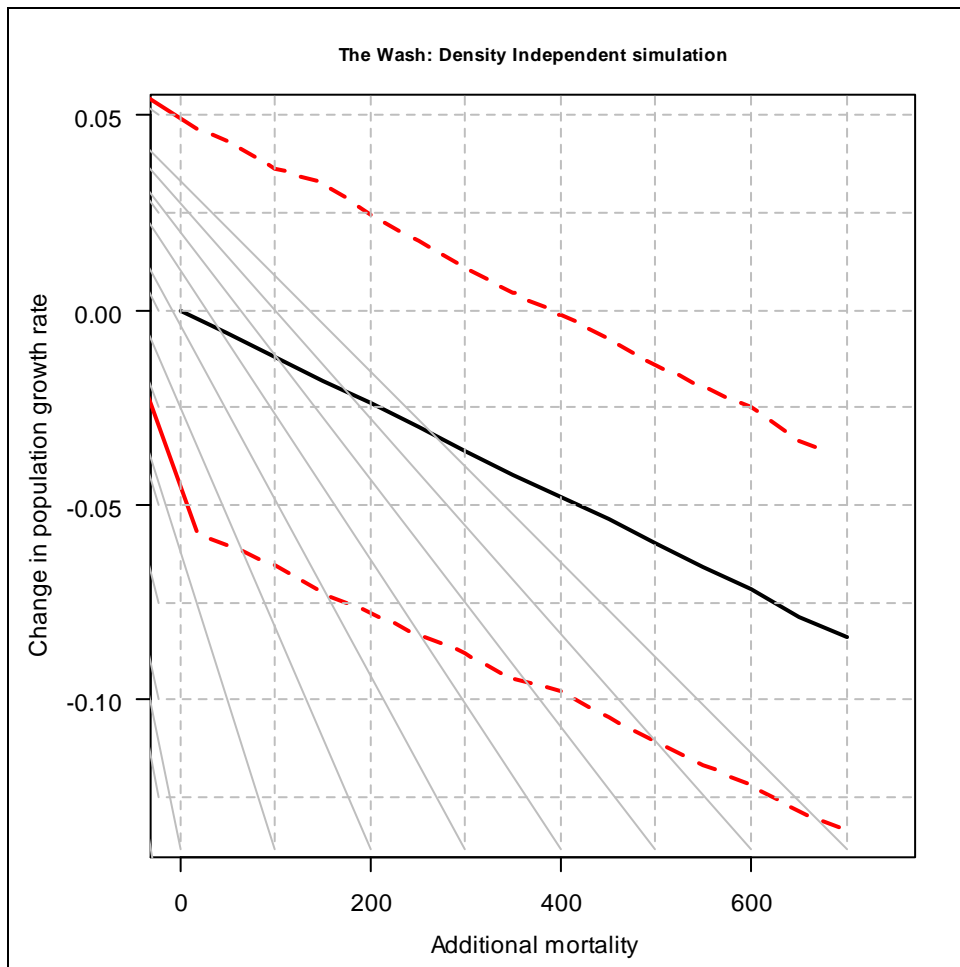


Figure 51 - The Wash: Density Independent simulation. Change in population growth rate with increasing additional mortality



**Figure 52 - Upper Solway Flats and Marshes: Density Independent simulation.
Population projection with zero additional mortality**

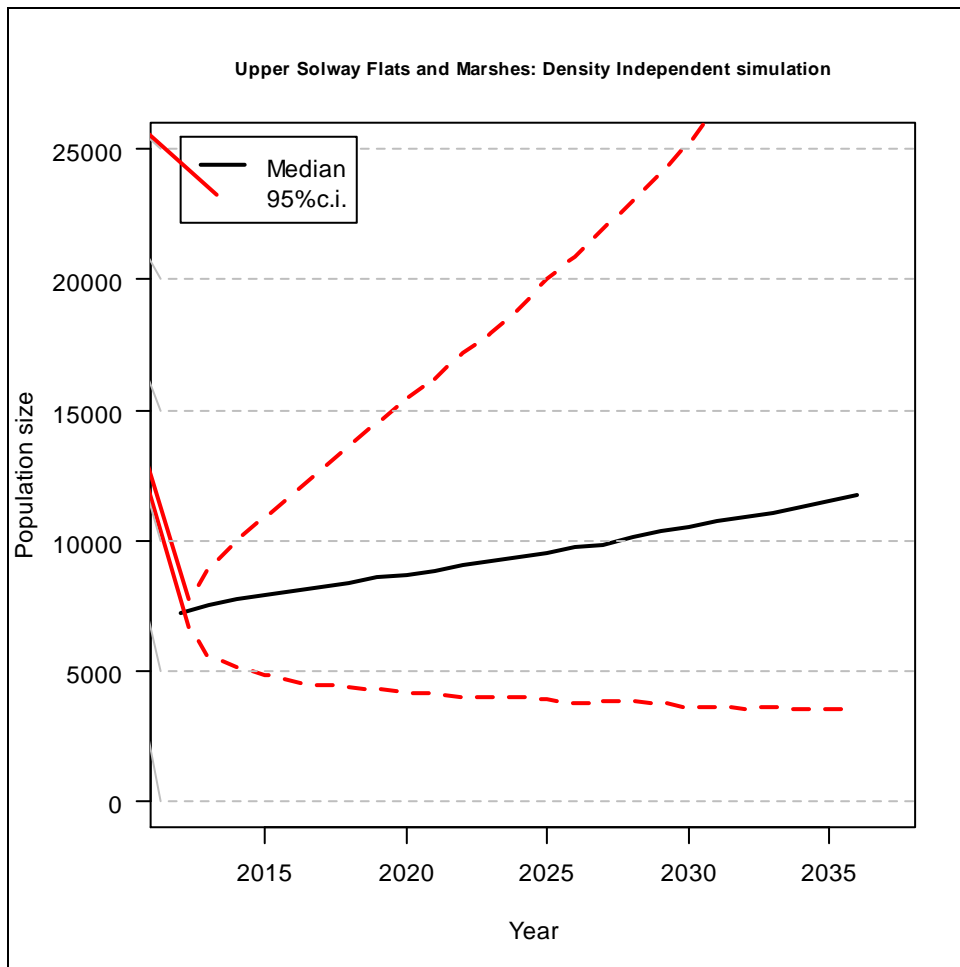


Figure 53 - Upper Solway Flats and Marshes: Density Independent simulation. Probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality

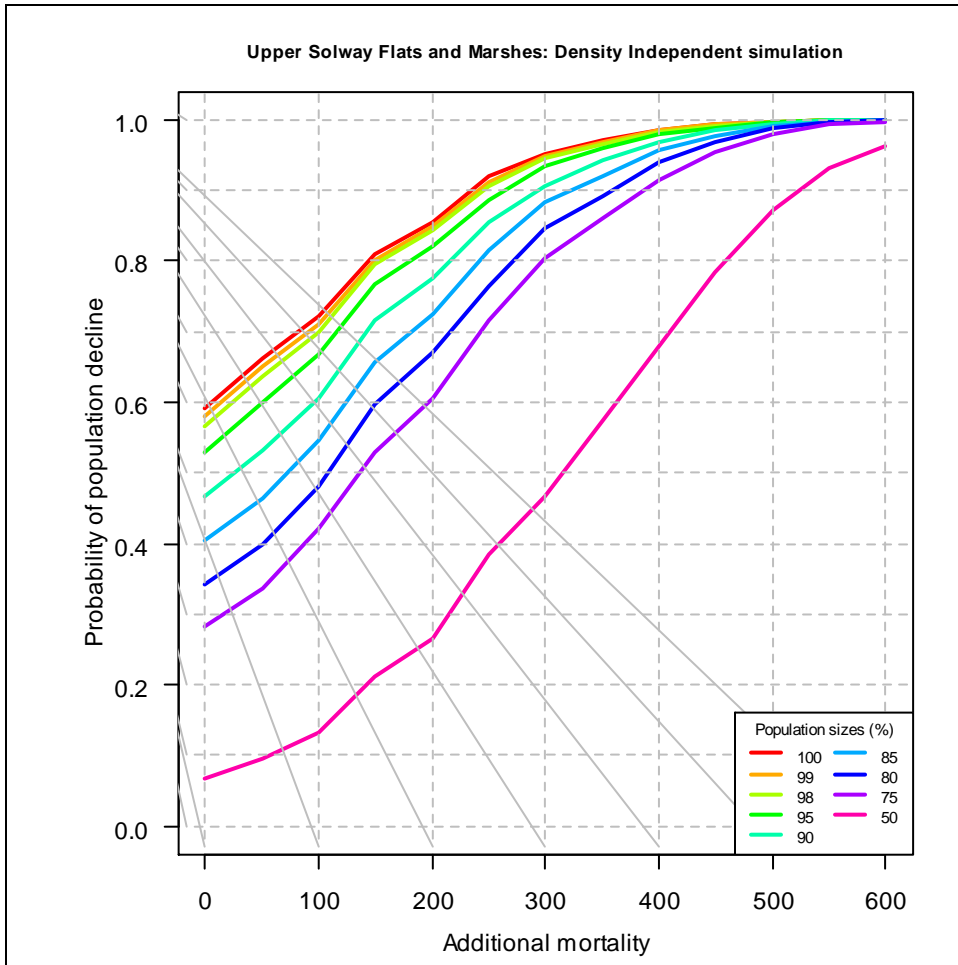
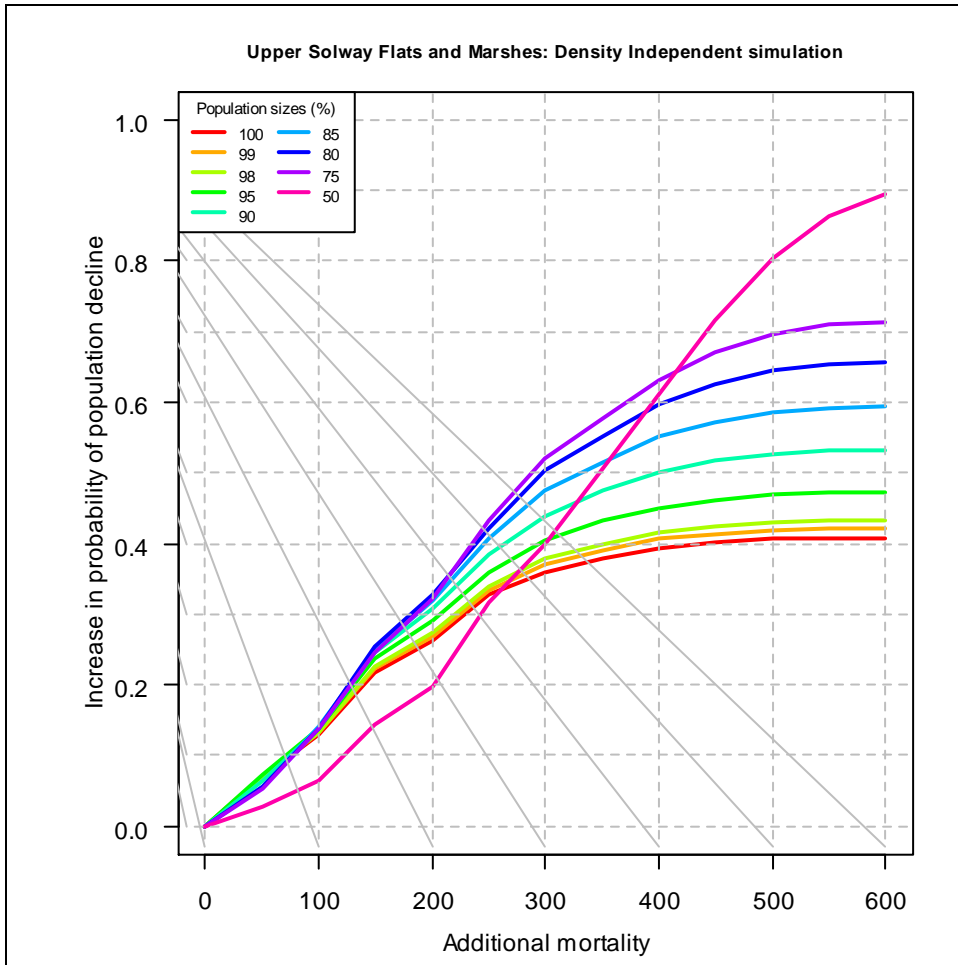


Figure 54 - Upper Solway Flats and Marshes: Density Independent simulation. Increase in probability of population decline below a range of percentages (100 - 50%) of the starting size with increasing additional mortality



**Figure 55 - Upper Solway Flats and Marshes: Density Independent simulation.
Population growth rate with increasing additional mortality**

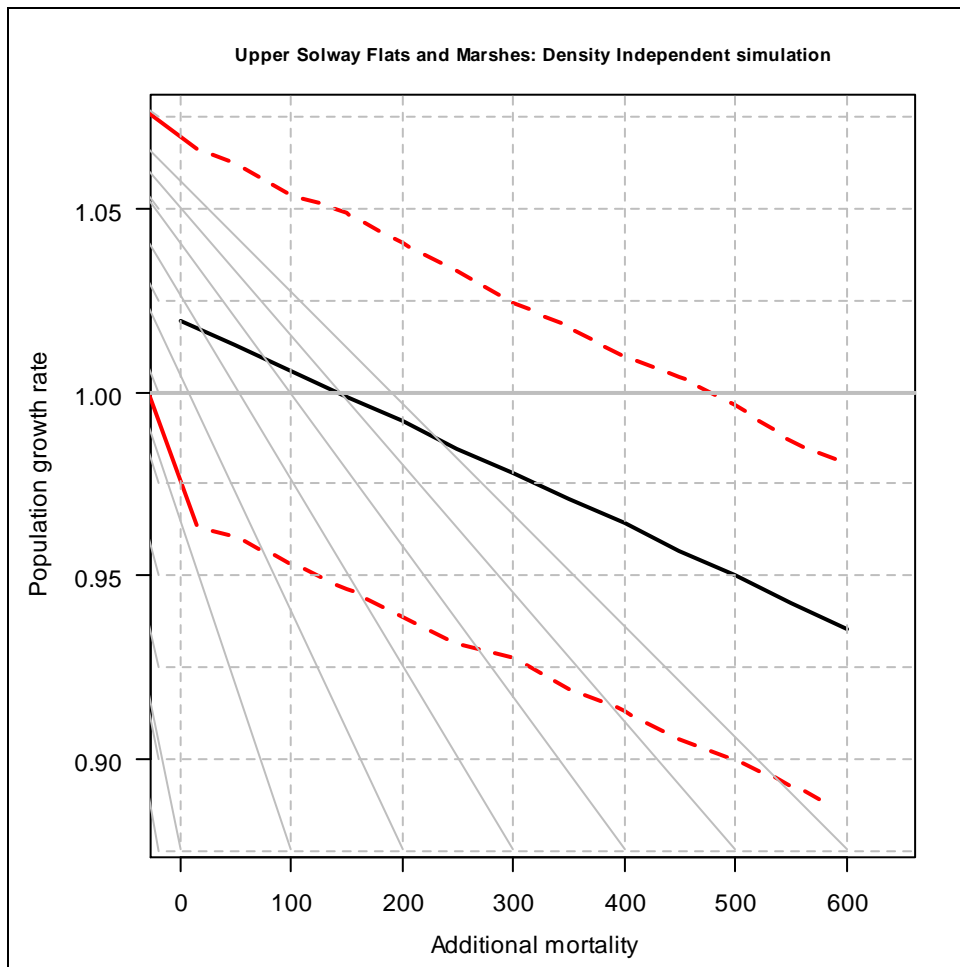
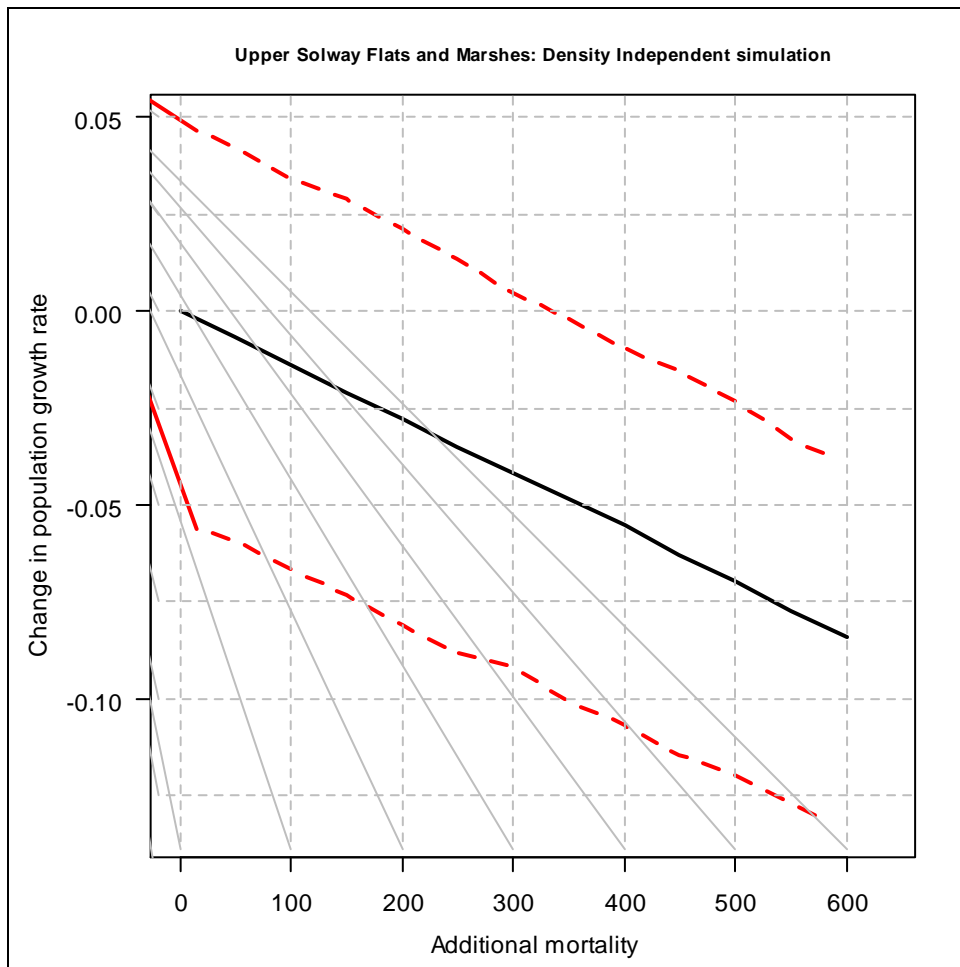


Figure 56 - Upper Solway Flats and Marshes: Density Independent simulation. Change in population growth rate with increasing additional mortality



APPENDIX III. Raw data

Table 4 - Count, age ratio and mean brood size estimates for the period 1960/61 to 2012/13. Note that there are no mean brood size estimates for 1986/7 and 1987/8, thus these values using the coefficients from the linear relationship between mean brood size and proportion of juveniles

Year	GB count	Proportion of juveniles	Mean brood size
1960/61	48000	0.276	2.74
1961/62	55680	0.374	2.91
1962/63	57570	0.209	2.25
1963/64	53180	0.202	3.25
1964/65	65240	0.266	2.74
1965/66	67280	0.21	2.75
1966/67	75910	0.216	2.21
1967/68	66470	0.108	4
1968/69	65190	0.117	2.79
1969/70	73830	0.244	2.57
1970/71	71910	0.231	2.36
1971/72	64980	0.222	1.3
1972/73	68010	0.114	1.39
1973/74	82350	0.299	2.2
1974/75	89090	0.176	2.2
1975/76	73250	0.056	1.9
1976/77	71090	0.113	1.6
1977/78	69110	0.085	2.35
1978/79	78160	0.184	2.2
1979/80	80390	0.147	1.43
1980/81	95410	0.206	1.92
1981/82	89900	0.157	1.95
1982/83	88730	0.161	2.1
1983/84	101120	0.159	1.7
1984/85	85880	0.202	2.2
1985/86	128130	0.139	2.3
1986/87	135720	0.153	2.15
1987/88	171980	0.256	2.43
1988/89	176210	0.235	3.19
1989/90	182969	0.13	1.7
1990/91	191452	0.215	2.22
1991/92	232962	0.181	2.1
1992/93	197861	0.097	1.67
1993/94	224354	0.181	2.18
1994/95	260486	0.222	2.52
1995/96	200343	0.138	2.4
1996/97	234379	0.188	2.4
1997/98	235559	0.155	2
1998/99	229408	0.203	2.4
1999/00	212493	0.178	2.2
2000/01	245349	0.187	2.15
2001/02	270921	0.171	2.35
2002/03	229824	0.21	2.33

Year	GB count	Proportion of juveniles	Mean brood size
2003/04	280998	0.19	2.19
2004/05	276644	0.194	2.1
2005/06	302774	0.181	1.7
2006/07	230123	0.193	2.2
2007/08	284405	0.2	2.27
2008/09	351188	0.229	2.08
2009/10	364212	0.173	1.87
2010/11	297798	0.199	2.32
2011/12	260325	0.085	1.77
2012/13	359175	0.211	2.3

APPENDIX IV. Demographic rate calculations

Calculation of demographic data and age class sizes for the Icelandic breeding pink-footed goose population using the annual total population count (N), proportion of juveniles (PJ) and mean brood size (BS) data. In all of the following equations subscript 't' is used to denote the current year, 't-1' the previous year.

Number of juveniles: $J_t = PJ_t * N_t$

Crude annual survival rate (from year t-1 to year t): $CS_t = \frac{N_t - J_t}{N_{t-1}}$

Number of birds in their second year: $N2_t = J_{t-1} * CS_t$

Number of birds in their third year or older: $N3_t = N_t - (J_t + N2_t)$

Proportion of breeders:
(i.e. the minimum number of third year and older birds required to have bred to account for the estimated number of juveniles)

$$PB_t = \frac{J_t / BS_t}{0.5 * N3_t}$$

APPENDIX V. Tables of summary model output for the GB pink-footed goose population obtained using both the density dependent and density independent models, and for the SPA populations using the density independent model. Starting population sizes were the five year mean counts

Table 5 - GB: Density Dependent simulation. Population growth rate

Addn. adult mortality	Median gr. rate	Lwr. 95%c.i.	Uppr. 95%c.i.	Chg. in median gr. rate	Chg. in lwr. 95%c.i.	Chg. in Uppr. 95%c.i.
0	1.0088	0.9648	1.0487	0.000000	-0.04405	0.0398958
500	1.0073	0.9631	1.0481	-0.001490	-0.04569	0.0392723
1000	1.0063	0.9619	1.0459	-0.002510	-0.04690	0.0370496
1500	1.0056	0.9615	1.0462	-0.003196	-0.04735	0.0374176
2000	1.0046	0.9598	1.0451	-0.004196	-0.04898	0.0362940
2500	1.0034	0.9579	1.0442	-0.005406	-0.05088	0.0353964
3000	1.0025	0.9592	1.0428	-0.006326	-0.04962	0.0340167
3500	1.0010	0.9565	1.0412	-0.007790	-0.05230	0.0324341
4000	1.0003	0.9564	1.0412	-0.008470	-0.05239	0.0323529
4500	0.9991	0.9535	1.0395	-0.009727	-0.05533	0.0306846
5000	0.9983	0.9541	1.0368	-0.010518	-0.05473	0.0279683
5500	0.9968	0.9519	1.0370	-0.012048	-0.05687	0.0281805
6000	0.9955	0.9522	1.0341	-0.013328	-0.05663	0.0253172
6500	0.9952	0.9518	1.0350	-0.013581	-0.05699	0.0261591
7000	0.9938	0.9512	1.0323	-0.014995	-0.05765	0.0234860
7500	0.9923	0.9485	1.0323	-0.016484	-0.06031	0.0234946
8000	0.9907	0.9473	1.0302	-0.018150	-0.06149	0.0214104
8500	0.9904	0.9479	1.0303	-0.018409	-0.06093	0.0214502
9000	0.9891	0.9455	1.0287	-0.019721	-0.06330	0.0198466
9500	0.9873	0.9449	1.0285	-0.021470	-0.06388	0.0196649
10000	0.9867	0.9411	1.0266	-0.022096	-0.06768	0.0178141
10500	0.9849	0.9415	1.0253	-0.023917	-0.06734	0.0164981
11000	0.9842	0.9407	1.0246	-0.024593	-0.06810	0.0157976
11500	0.9833	0.9410	1.0231	-0.025473	-0.06786	0.0142967
12000	0.9818	0.9387	1.0212	-0.027025	-0.07006	0.0123388
12500	0.9809	0.9367	1.0209	-0.027956	-0.07210	0.0121112
13000	0.9797	0.9367	1.0185	-0.029160	-0.07210	0.0096801
13500	0.9790	0.9364	1.0176	-0.029775	-0.07246	0.0087475
14000	0.9780	0.9356	1.0168	-0.030774	-0.07325	0.0079447
14500	0.9770	0.9335	1.0155	-0.031837	-0.07532	0.0067189
15000	0.9750	0.9303	1.0146	-0.033790	-0.07850	0.0057525
15500	0.9742	0.9316	1.0129	-0.034645	-0.07726	0.0040958
16000	0.9735	0.9290	1.0128	-0.035349	-0.07981	0.0040183
16500	0.9715	0.9289	1.0109	-0.037354	-0.07993	0.0020775
17000	0.9708	0.9291	1.0096	-0.038061	-0.07974	0.0007508
17500	0.9697	0.9272	1.0094	-0.039084	-0.08159	0.0006146
18000	0.9684	0.9258	1.0061	-0.040431	-0.08298	-0.0026780
18500	0.9679	0.9257	1.0062	-0.040918	-0.08310	-0.0026505
19000	0.9664	0.9229	1.0046	-0.042461	-0.08589	-0.0041914

Addn. adult mortality	Median gr. rate	Lwr. 95%c.i.	Uppr. 95%c.i.	Chg. in median gr. rate	Chg. in lwr. 95%c.i.	Chg. in Uppr. 95%c.i.
19500	0.9651	0.9226	1.0053	-0.043680	-0.08618	-0.0034802
20000	0.9636	0.9192	1.0028	-0.045259	-0.08956	-0.0059795
20500	0.9628	0.9200	1.0014	-0.045976	-0.08877	-0.0073797
21000	0.9616	0.9183	1.0002	-0.047182	-0.09051	-0.0085913
21500	0.9606	0.9190	0.9985	-0.048249	-0.08978	-0.0103489
22000	0.9594	0.9183	0.9982	-0.049369	-0.09056	-0.0106126
22500	0.9577	0.9146	0.9969	-0.051114	-0.09423	-0.0118643
23000	0.9569	0.9137	0.9962	-0.051883	-0.09508	-0.0125922
23500	0.9554	0.9130	0.9941	-0.053394	-0.09582	-0.0146724
24000	0.9548	0.9127	0.9936	-0.053989	-0.09607	-0.0152251
24500	0.9536	0.9111	0.9916	-0.055184	-0.09775	-0.0171923
25000	0.9524	0.9104	0.9916	-0.056416	-0.09845	-0.0172033

Table 6 - GB: Density Dependent simulation. Median population size at 5 year intervals

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	351535	370007	387984	395073	414091
500	351649	366147	379497	394078	404294
1000	349464	361667	374389	384933	394907
1500	347691	357869	368887	376830	385691
2000	344186	352129	361357	366839	372503
2500	342513	349307	356736	361169	364197
3000	341416	344381	348891	354846	358172
3500	336307	338692	342832	339385	340653
4000	336550	337695	335947	336548	335868
4500	334528	329882	328682	328184	327751
5000	331259	328130	326084	325284	320963
5500	330969	324297	317407	312449	308612
6000	326770	320977	311181	302264	297483
6500	327331	316502	309951	300985	293267
7000	324679	313476	303635	292694	284448
7500	323266	310633	295002	284662	274066
8000	322102	302157	288879	276751	262251
8500	318217	299495	282310	271887	260187
9000	315296	294725	277725	263861	253841
9500	318306	295555	275621	257861	243702
10000	311772	283775	265575	250349	237312
10500	312290	284315	265449	244745	230780
11000	308650	281183	257252	238404	221555
11500	306901	276731	252831	233375	217154
12000	306370	273267	248753	230558	211488
12500	303931	271168	243855	222590	206277
13000	302512	264762	240260	216706	198687
13500	299778	262750	234856	211531	194090
14000	298616	259697	231306	207119	188713
14500	296220	256163	227814	204504	185130
15000	293235	252524	220608	195843	176523
15500	292780	250812	218656	192006	173303
16000	291948	251560	215298	189479	170366
16500	288757	244425	211260	182010	160969
17000	287254	239982	206772	178888	158266
17500	284387	237023	202099	174053	152457
18000	285773	235169	198666	171047	149796
18500	281078	232365	195282	167928	144924
19000	278304	227037	190511	161271	139395
19500	278508	225643	185898	155822	135041
20000	276611	221700	181459	151465	129607
20500	273686	218910	180097	148422	126858
21000	271774	216365	175684	146363	125239
21500	270890	214813	173138	143032	120572
22000	270385	211827	168219	138317	115899
22500	268764	206361	164893	133703	111313

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
23000	265212	204343	162187	132044	109515
23500	266032	203150	160237	128685	106476
24000	264335	198693	156910	125877	103100
24500	261218	195802	153358	121796	100308
25000	262156	197132	151976	120482	97143

Table 7 - GB: Density Dependent simulation. Ratio of impacted to unimpacted median population size at 5 year intervals

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	1.000	1.000	1.000	1.000	1.000
500	1.000	0.990	0.978	0.997	0.976
1000	0.994	0.977	0.965	0.974	0.954
1500	0.989	0.967	0.951	0.954	0.931
2000	0.979	0.952	0.931	0.929	0.900
2500	0.974	0.944	0.919	0.914	0.880
3000	0.971	0.931	0.899	0.898	0.865
3500	0.957	0.915	0.884	0.859	0.823
4000	0.957	0.913	0.866	0.852	0.811
4500	0.952	0.892	0.847	0.831	0.791
5000	0.942	0.887	0.840	0.823	0.775
5500	0.941	0.876	0.818	0.791	0.745
6000	0.930	0.867	0.802	0.765	0.718
6500	0.931	0.855	0.799	0.762	0.708
7000	0.924	0.847	0.783	0.741	0.687
7500	0.920	0.840	0.760	0.721	0.662
8000	0.916	0.817	0.745	0.701	0.633
8500	0.905	0.809	0.728	0.688	0.628
9000	0.897	0.797	0.716	0.668	0.613
9500	0.905	0.799	0.710	0.653	0.589
10000	0.887	0.767	0.684	0.634	0.573
10500	0.888	0.768	0.684	0.619	0.557
11000	0.878	0.760	0.663	0.603	0.535
11500	0.873	0.748	0.652	0.591	0.524
12000	0.872	0.739	0.641	0.584	0.511
12500	0.865	0.733	0.629	0.563	0.498
13000	0.861	0.716	0.619	0.549	0.480
13500	0.853	0.710	0.605	0.535	0.469
14000	0.849	0.702	0.596	0.524	0.456
14500	0.843	0.692	0.587	0.518	0.447
15000	0.834	0.682	0.569	0.496	0.426
15500	0.833	0.678	0.564	0.486	0.419
16000	0.830	0.680	0.555	0.480	0.411
16500	0.821	0.661	0.545	0.461	0.389
17000	0.817	0.649	0.533	0.453	0.382
17500	0.809	0.641	0.521	0.441	0.368
18000	0.813	0.636	0.512	0.433	0.362
18500	0.800	0.628	0.503	0.425	0.350
19000	0.792	0.614	0.491	0.408	0.337
19500	0.792	0.610	0.479	0.394	0.326
20000	0.787	0.599	0.468	0.383	0.313
20500	0.779	0.592	0.464	0.376	0.306
21000	0.773	0.585	0.453	0.370	0.302
21500	0.771	0.581	0.446	0.362	0.291
22000	0.769	0.572	0.434	0.350	0.280

22500	0.765	0.558	0.425	0.338	0.269
23000	0.754	0.552	0.418	0.334	0.264
23500	0.757	0.549	0.413	0.326	0.257
24000	0.752	0.537	0.404	0.319	0.249
24500	0.743	0.529	0.395	0.308	0.242
25000	0.746	0.533	0.392	0.305	0.235

Table 8 - GB: Density Dependent simulation. Probability population will decline below initial size (100%) in any year of simulation and percentages of initial size (99-50%)

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.721	0.709	0.698	0.660	0.587	0.519	0.437	0.362	0.0792
500	0.734	0.722	0.708	0.671	0.603	0.531	0.454	0.372	0.0858
1000	0.743	0.732	0.723	0.684	0.614	0.541	0.463	0.388	0.0954
1500	0.754	0.746	0.734	0.692	0.630	0.566	0.485	0.406	0.0948
2000	0.775	0.764	0.754	0.721	0.652	0.586	0.503	0.428	0.1094
2500	0.785	0.772	0.760	0.723	0.660	0.587	0.518	0.443	0.1144
3000	0.802	0.792	0.782	0.746	0.681	0.609	0.538	0.463	0.1224
3500	0.828	0.816	0.805	0.770	0.709	0.642	0.570	0.496	0.1406
4000	0.829	0.820	0.810	0.780	0.721	0.651	0.582	0.505	0.1468
4500	0.845	0.838	0.827	0.798	0.738	0.678	0.607	0.535	0.1526
5000	0.845	0.838	0.829	0.800	0.744	0.681	0.611	0.533	0.1716
5500	0.873	0.862	0.854	0.831	0.777	0.711	0.641	0.560	0.1810
6000	0.884	0.875	0.867	0.839	0.787	0.728	0.667	0.593	0.1990
6500	0.879	0.871	0.862	0.839	0.798	0.739	0.674	0.598	0.2020
7000	0.897	0.891	0.883	0.860	0.809	0.755	0.692	0.623	0.2254
7500	0.914	0.907	0.900	0.879	0.831	0.779	0.719	0.649	0.2390
8000	0.923	0.917	0.910	0.886	0.848	0.795	0.744	0.675	0.2618
8500	0.927	0.921	0.915	0.896	0.855	0.806	0.748	0.683	0.2820
9000	0.933	0.928	0.922	0.905	0.876	0.834	0.781	0.713	0.3006
9500	0.942	0.938	0.931	0.914	0.882	0.839	0.790	0.728	0.3202
10000	0.948	0.943	0.938	0.922	0.889	0.846	0.801	0.743	0.3440
10500	0.955	0.952	0.948	0.936	0.910	0.870	0.826	0.772	0.3638
11000	0.957	0.954	0.951	0.940	0.916	0.879	0.838	0.785	0.3858
11500	0.970	0.967	0.964	0.954	0.929	0.898	0.859	0.805	0.4056
12000	0.977	0.975	0.972	0.964	0.941	0.907	0.871	0.827	0.4200
12500	0.978	0.976	0.974	0.966	0.948	0.921	0.884	0.839	0.4360
13000	0.976	0.974	0.971	0.967	0.948	0.923	0.891	0.848	0.4670
13500	0.983	0.979	0.978	0.970	0.951	0.930	0.902	0.867	0.4872
14000	0.983	0.983	0.980	0.973	0.957	0.934	0.908	0.869	0.5140
14500	0.986	0.985	0.983	0.977	0.965	0.944	0.918	0.880	0.5276
15000	0.991	0.990	0.989	0.983	0.973	0.957	0.934	0.902	0.5650
15500	0.991	0.989	0.988	0.984	0.974	0.958	0.940	0.914	0.5844
16000	0.994	0.992	0.992	0.989	0.982	0.967	0.946	0.918	0.5912
16500	0.993	0.991	0.990	0.987	0.981	0.970	0.953	0.930	0.6354
17000	0.994	0.994	0.993	0.990	0.984	0.976	0.963	0.942	0.6536
17500	0.995	0.994	0.993	0.991	0.984	0.978	0.965	0.948	0.6784
18000	0.996	0.995	0.995	0.993	0.988	0.982	0.971	0.952	0.6968
18500	0.997	0.996	0.996	0.994	0.991	0.984	0.975	0.956	0.7188
19000	0.998	0.998	0.997	0.996	0.992	0.988	0.979	0.966	0.7476
19500	0.998	0.997	0.997	0.995	0.993	0.990	0.983	0.971	0.7640
20000	0.998	0.998	0.997	0.996	0.994	0.991	0.985	0.975	0.7894
20500	0.999	0.999	0.999	0.999	0.996	0.992	0.986	0.978	0.8126
21000	1.000	1.000	0.999	0.999	0.998	0.995	0.989	0.982	0.8262
21500	0.999	0.999	0.999	0.999	0.998	0.995	0.991	0.984	0.8404
22000	1.000	1.000	0.999	0.999	0.999	0.996	0.993	0.989	0.8546

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
22500	1.000	1.000	1.000	1.000	0.999	0.997	0.994	0.992	0.8714
23000	1.000	1.000	1.000	1.000	0.999	0.999	0.996	0.992	0.8894
23500	1.000	1.000	1.000	1.000	0.999	0.999	0.997	0.993	0.9010
24000	1.000	1.000	1.000	1.000	0.999	0.998	0.997	0.994	0.9126
24500	1.000	1.000	1.000	1.000	0.999	0.999	0.998	0.996	0.9226
25000	1.000	1.000	1.000	1.000	0.999	0.999	0.998	0.997	0.9306

Table 9 - GB: Density Dependent simulation. Change in probability population will decline below initial size (100%) in any year of simulation and percentages of initial size (99-50%)

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
500	0.0124	0.0130	0.0096	0.0110	0.0154	0.0118	0.0170	0.0094	0.0066
1000	0.0220	0.0228	0.0242	0.0240	0.0270	0.0214	0.0254	0.0256	0.0162
1500	0.0328	0.0368	0.0354	0.0322	0.0430	0.0462	0.0478	0.0440	0.0156
2000	0.0538	0.0548	0.0556	0.0608	0.0644	0.0668	0.0662	0.0652	0.0302
2500	0.0634	0.0632	0.0612	0.0634	0.0724	0.0680	0.0808	0.0810	0.0352
3000	0.0804	0.0826	0.0834	0.0858	0.0942	0.0894	0.1010	0.1004	0.0432
3500	0.1064	0.1064	0.1062	0.1106	0.1220	0.1230	0.1324	0.1332	0.0614
4000	0.1072	0.1110	0.1116	0.1204	0.1338	0.1312	0.1444	0.1430	0.0676
4500	0.1240	0.1288	0.1286	0.1382	0.1504	0.1584	0.1694	0.1722	0.0734
5000	0.1236	0.1290	0.1310	0.1398	0.1564	0.1614	0.1736	0.1704	0.0924
5500	0.1516	0.1528	0.1556	0.1712	0.1902	0.1920	0.2034	0.1978	0.1018
6000	0.1624	0.1658	0.1682	0.1794	0.2002	0.2088	0.2302	0.2306	0.1198
6500	0.1572	0.1622	0.1636	0.1788	0.2108	0.2200	0.2368	0.2360	0.1228
7000	0.1754	0.1816	0.1844	0.1998	0.2218	0.2356	0.2552	0.2606	0.1462
7500	0.1930	0.1976	0.2020	0.2196	0.2438	0.2600	0.2822	0.2864	0.1598
8000	0.2016	0.2078	0.2118	0.2266	0.2606	0.2760	0.3066	0.3130	0.1826
8500	0.2060	0.2118	0.2168	0.2362	0.2674	0.2870	0.3106	0.3204	0.2028
9000	0.2120	0.2192	0.2240	0.2454	0.2888	0.3148	0.3434	0.3502	0.2214
9500	0.2204	0.2292	0.2330	0.2538	0.2946	0.3200	0.3526	0.3654	0.2410
10000	0.2270	0.2338	0.2394	0.2618	0.3018	0.3262	0.3640	0.3806	0.2648
10500	0.2340	0.2424	0.2492	0.2758	0.3228	0.3510	0.3890	0.4098	0.2846
11000	0.2354	0.2448	0.2524	0.2804	0.3284	0.3592	0.4008	0.4228	0.3066
11500	0.2486	0.2582	0.2660	0.2944	0.3420	0.3782	0.4220	0.4430	0.3264
12000	0.2556	0.2654	0.2738	0.3042	0.3538	0.3880	0.4340	0.4642	0.3408
12500	0.2570	0.2666	0.2752	0.3060	0.3610	0.4018	0.4468	0.4766	0.3568
13000	0.2544	0.2644	0.2722	0.3070	0.3612	0.4034	0.4534	0.4852	0.3878
13500	0.2612	0.2702	0.2798	0.3098	0.3638	0.4106	0.4644	0.5046	0.4080
14000	0.2620	0.2734	0.2818	0.3136	0.3702	0.4148	0.4706	0.5066	0.4348
14500	0.2642	0.2754	0.2846	0.3176	0.3776	0.4248	0.4804	0.5178	0.4484
15000	0.2696	0.2806	0.2902	0.3228	0.3856	0.4378	0.4966	0.5400	0.4858
15500	0.2696	0.2802	0.2900	0.3244	0.3866	0.4384	0.5032	0.5514	0.5052
16000	0.2722	0.2828	0.2932	0.3292	0.3948	0.4476	0.5092	0.5554	0.5120
16500	0.2712	0.2820	0.2914	0.3274	0.3934	0.4508	0.5162	0.5676	0.5562
17000	0.2724	0.2844	0.2944	0.3300	0.3970	0.4570	0.5254	0.5792	0.5744
17500	0.2734	0.2850	0.2948	0.3308	0.3970	0.4586	0.5278	0.5856	0.5992
18000	0.2744	0.2862	0.2968	0.3332	0.4006	0.4630	0.5342	0.5896	0.6176
18500	0.2756	0.2870	0.2976	0.3344	0.4034	0.4650	0.5380	0.5938	0.6396
19000	0.2762	0.2884	0.2986	0.3362	0.4052	0.4682	0.5418	0.6038	0.6684
19500	0.2764	0.2882	0.2986	0.3350	0.4058	0.4708	0.5456	0.6090	0.6848
20000	0.2770	0.2886	0.2986	0.3360	0.4070	0.4714	0.5474	0.6122	0.7102
20500	0.2778	0.2898	0.3006	0.3390	0.4092	0.4730	0.5490	0.6154	0.7334
21000	0.2782	0.2904	0.3010	0.3390	0.4110	0.4756	0.5520	0.6200	0.7470
21500	0.2778	0.2900	0.3008	0.3388	0.4106	0.4756	0.5540	0.6216	0.7612

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
22000	0.2782	0.2904	0.3010	0.3394	0.4114	0.4768	0.5558	0.6266	0.7754
22500	0.2784	0.2906	0.3014	0.3400	0.4118	0.4772	0.5566	0.6292	0.7922
23000	0.2786	0.2908	0.3016	0.3402	0.4120	0.4796	0.5590	0.6298	0.8102
23500	0.2782	0.2904	0.3012	0.3398	0.4118	0.4792	0.5598	0.6306	0.8218
24000	0.2782	0.2904	0.3012	0.3398	0.4120	0.4784	0.5598	0.6312	0.8334
24500	0.2784	0.2906	0.3014	0.3398	0.4120	0.4794	0.5604	0.6332	0.8434
25000	0.2786	0.2904	0.3012	0.3398	0.4122	0.4792	0.5610	0.6350	0.8514

Table 10 - GB: Density Dependent simulation. Probability population will be below initial size in years 5/10/15/20/25

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	0.378	0.359	0.334	0.321	0.285
500	0.378	0.365	0.346	0.324	0.317
1000	0.378	0.371	0.365	0.350	0.334
1500	0.390	0.398	0.381	0.367	0.357
2000	0.409	0.409	0.396	0.388	0.385
2500	0.408	0.414	0.407	0.404	0.400
3000	0.422	0.435	0.434	0.419	0.416
3500	0.443	0.452	0.454	0.464	0.465
4000	0.439	0.459	0.471	0.470	0.473
4500	0.452	0.489	0.493	0.496	0.497
5000	0.475	0.494	0.502	0.504	0.514
5500	0.477	0.509	0.533	0.541	0.551
6000	0.498	0.522	0.548	0.575	0.585
6500	0.496	0.540	0.559	0.577	0.593
7000	0.509	0.556	0.573	0.603	0.625
7500	0.518	0.569	0.608	0.640	0.662
8000	0.525	0.594	0.635	0.660	0.684
8500	0.542	0.612	0.648	0.670	0.697
9000	0.565	0.630	0.680	0.712	0.730
9500	0.549	0.632	0.685	0.730	0.753
10000	0.581	0.660	0.708	0.748	0.767
10500	0.579	0.666	0.723	0.774	0.802
11000	0.597	0.695	0.745	0.786	0.812
11500	0.618	0.706	0.754	0.799	0.833
12000	0.610	0.721	0.783	0.822	0.854
12500	0.630	0.742	0.799	0.841	0.869
13000	0.637	0.744	0.810	0.845	0.879
13500	0.656	0.765	0.824	0.863	0.886
14000	0.656	0.771	0.836	0.878	0.900
14500	0.674	0.786	0.850	0.885	0.908
15000	0.689	0.813	0.865	0.903	0.931
15500	0.702	0.810	0.869	0.911	0.942
16000	0.695	0.810	0.875	0.919	0.948
16500	0.725	0.832	0.897	0.934	0.952
17000	0.725	0.849	0.903	0.945	0.965
17500	0.730	0.854	0.918	0.948	0.968
18000	0.739	0.865	0.925	0.957	0.975
18500	0.757	0.879	0.934	0.959	0.979
19000	0.779	0.895	0.947	0.969	0.980
19500	0.772	0.893	0.949	0.973	0.981
20000	0.789	0.904	0.956	0.978	0.986
20500	0.798	0.916	0.959	0.981	0.991
21000	0.803	0.930	0.968	0.986	0.993
21500	0.814	0.927	0.972	0.987	0.994
22000	0.822	0.933	0.974	0.990	0.996

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
22500	0.835	0.949	0.982	0.993	0.996
23000	0.847	0.951	0.983	0.994	0.999
23500	0.848	0.956	0.985	0.993	0.997
24000	0.859	0.959	0.986	0.996	0.998
24500	0.864	0.965	0.988	0.996	0.999
25000	0.879	0.967	0.992	0.997	0.998

Table 11 - GB: Density Dependent simulation. Increase in probability population will be below initial size in years 5/10/15/20/25

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	0.0000	0.0000	0.0000	0.0000	0.0000
500	0.0000	0.0058	0.0128	0.0024	0.0322
1000	0.0006	0.0112	0.0310	0.0284	0.0486
1500	0.0120	0.0382	0.0476	0.0458	0.0718
2000	0.0308	0.0494	0.0620	0.0670	0.0996
2500	0.0302	0.0542	0.0732	0.0826	0.1152
3000	0.0438	0.0760	0.1004	0.0974	0.1306
3500	0.0656	0.0924	0.1202	0.1426	0.1798
4000	0.0612	0.0996	0.1370	0.1492	0.1878
4500	0.0746	0.1298	0.1594	0.1744	0.2114
5000	0.0972	0.1350	0.1680	0.1824	0.2288
5500	0.0996	0.1492	0.1998	0.2196	0.2658
6000	0.1206	0.1622	0.2146	0.2538	0.3000
6500	0.1184	0.1808	0.2258	0.2562	0.3074
7000	0.1316	0.1966	0.2392	0.2816	0.3396
7500	0.1402	0.2100	0.2744	0.3184	0.3768
8000	0.1472	0.2342	0.3014	0.3392	0.3992
8500	0.1638	0.2524	0.3148	0.3492	0.4122
9000	0.1874	0.2704	0.3464	0.3904	0.4450
9500	0.1712	0.2724	0.3516	0.4090	0.4678
10000	0.2034	0.3006	0.3742	0.4272	0.4814
10500	0.2016	0.3068	0.3892	0.4530	0.5166
11000	0.2188	0.3352	0.4110	0.4644	0.5266
11500	0.2404	0.3462	0.4202	0.4774	0.5480
12000	0.2322	0.3616	0.4494	0.5012	0.5686
12500	0.2524	0.3830	0.4654	0.5194	0.5834
13000	0.2594	0.3842	0.4768	0.5236	0.5934
13500	0.2784	0.4058	0.4906	0.5414	0.6012
14000	0.2784	0.4114	0.5028	0.5570	0.6146
14500	0.2962	0.4266	0.5166	0.5642	0.6232
15000	0.3116	0.4538	0.5316	0.5816	0.6454
15500	0.3238	0.4508	0.5352	0.5898	0.6564
16000	0.3172	0.4510	0.5416	0.5978	0.6624
16500	0.3474	0.4730	0.5638	0.6126	0.6664
17000	0.3470	0.4894	0.5698	0.6236	0.6796
17500	0.3518	0.4946	0.5844	0.6268	0.6826
18000	0.3612	0.5054	0.5912	0.6358	0.6898
18500	0.3792	0.5192	0.6002	0.6380	0.6936
19000	0.4014	0.5354	0.6138	0.6478	0.6952
19500	0.3940	0.5338	0.6156	0.6514	0.6960
20000	0.4114	0.5444	0.6226	0.6570	0.7012
20500	0.4198	0.5564	0.6256	0.6602	0.7058
21000	0.4254	0.5706	0.6346	0.6644	0.7074
21500	0.4358	0.5680	0.6386	0.6658	0.7092
22000	0.4442	0.5738	0.6402	0.6684	0.7110

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
22500	0.4574	0.5892	0.6488	0.6714	0.7112
23000	0.4690	0.5918	0.6494	0.6724	0.7136
23500	0.4700	0.5968	0.6516	0.6720	0.7122
24000	0.4810	0.5994	0.6522	0.6750	0.7126
24500	0.4864	0.6052	0.6542	0.6748	0.7142
25000	0.5008	0.6076	0.6584	0.6762	0.7126

Table 12 - GB: Density Dependent simulation. Probability final year population size will be less than median (0%) unimpacted population size and percentages (1-50%) of median unimpacted size

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.500	0.491	0.484	0.457	0.407	0.348	0.298	0.249	0.0672
500	0.524	0.513	0.503	0.477	0.429	0.376	0.329	0.282	0.0790
1000	0.549	0.538	0.528	0.496	0.443	0.394	0.345	0.298	0.0872
1500	0.560	0.551	0.544	0.517	0.471	0.416	0.368	0.312	0.0918
2000	0.593	0.585	0.577	0.548	0.500	0.452	0.396	0.349	0.0970
2500	0.614	0.605	0.595	0.571	0.522	0.465	0.411	0.363	0.1184
3000	0.633	0.626	0.620	0.591	0.538	0.482	0.429	0.374	0.1282
3500	0.671	0.662	0.653	0.632	0.575	0.527	0.474	0.419	0.1404
4000	0.680	0.674	0.663	0.637	0.590	0.545	0.486	0.434	0.1460
4500	0.712	0.704	0.695	0.662	0.619	0.570	0.510	0.453	0.1606
5000	0.728	0.719	0.711	0.682	0.637	0.583	0.527	0.472	0.1816
5500	0.755	0.747	0.739	0.713	0.665	0.614	0.563	0.506	0.1952
6000	0.782	0.775	0.767	0.745	0.706	0.650	0.598	0.537	0.2180
6500	0.789	0.782	0.774	0.752	0.703	0.662	0.607	0.549	0.2208
7000	0.815	0.806	0.801	0.780	0.736	0.689	0.638	0.575	0.2436
7500	0.835	0.830	0.824	0.806	0.766	0.720	0.676	0.618	0.2660
8000	0.853	0.846	0.841	0.824	0.783	0.743	0.697	0.643	0.2966
8500	0.862	0.857	0.849	0.831	0.798	0.755	0.709	0.656	0.3016
9000	0.887	0.880	0.873	0.857	0.829	0.788	0.740	0.684	0.3252
9500	0.895	0.890	0.885	0.871	0.843	0.807	0.763	0.706	0.3550
10000	0.901	0.896	0.893	0.880	0.854	0.817	0.776	0.728	0.3826
10500	0.923	0.921	0.916	0.905	0.880	0.849	0.810	0.762	0.4098
11000	0.926	0.922	0.919	0.908	0.886	0.853	0.822	0.779	0.4390
11500	0.943	0.940	0.938	0.926	0.903	0.876	0.842	0.804	0.4546
12000	0.950	0.947	0.945	0.937	0.916	0.893	0.863	0.826	0.4838
12500	0.955	0.952	0.949	0.940	0.923	0.902	0.876	0.842	0.5030
13000	0.966	0.962	0.960	0.951	0.935	0.913	0.886	0.852	0.5360
13500	0.968	0.966	0.963	0.957	0.945	0.923	0.893	0.861	0.5590
14000	0.975	0.973	0.972	0.967	0.952	0.932	0.906	0.877	0.5808
14500	0.978	0.977	0.975	0.969	0.957	0.941	0.915	0.887	0.6052
15000	0.984	0.983	0.982	0.979	0.970	0.954	0.936	0.911	0.6430
15500	0.988	0.986	0.985	0.982	0.973	0.962	0.947	0.927	0.6672
16000	0.987	0.986	0.986	0.984	0.976	0.966	0.950	0.931	0.6714
16500	0.990	0.990	0.989	0.984	0.977	0.968	0.954	0.941	0.7174
17000	0.993	0.992	0.991	0.989	0.984	0.978	0.969	0.949	0.7370
17500	0.993	0.992	0.992	0.989	0.985	0.978	0.969	0.957	0.7630
18000	0.997	0.996	0.996	0.995	0.991	0.985	0.977	0.967	0.7798
18500	0.997	0.997	0.996	0.995	0.992	0.987	0.981	0.970	0.7970
19000	0.997	0.997	0.997	0.996	0.994	0.990	0.983	0.975	0.8262
19500	0.996	0.996	0.996	0.994	0.992	0.990	0.983	0.976	0.8388
20000	0.998	0.998	0.998	0.996	0.995	0.991	0.988	0.982	0.8586
20500	0.999	0.999	0.999	0.998	0.997	0.995	0.992	0.988	0.8714
21000	0.999	0.999	0.999	0.999	0.998	0.995	0.993	0.990	0.8920
21500	1.000	1.000	1.000	0.999	0.999	0.997	0.995	0.991	0.9024
22000	1.000	0.999	0.999	0.999	0.998	0.997	0.996	0.993	0.9062

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
22500	1.000	1.000	0.999	0.999	0.999	0.998	0.997	0.995	0.9248
23000	1.000	1.000	1.000	1.000	1.000	1.000	0.999	0.998	0.9370
23500	1.000	1.000	1.000	1.000	1.000	0.999	0.998	0.996	0.9452
24000	1.000	1.000	1.000	1.000	0.999	0.999	0.998	0.997	0.9518
24500	1.000	1.000	1.000	1.000	1.000	1.000	0.999	0.998	0.9596
25000	1.000	1.000	1.000	1.000	1.000	1.000	0.998	0.997	0.9656

Table 13 - GB: Density Dependent simulation. Change in probability final year population size will be less than median (0%) unimpacted population size and percentages (1-50%) of median unimpacted size

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
500	0.0240	0.0218	0.0194	0.0206	0.0226	0.0278	0.0308	0.0330	0.0118
1000	0.0488	0.0466	0.0438	0.0394	0.0364	0.0460	0.0472	0.0492	0.0200
1500	0.0600	0.0596	0.0600	0.0600	0.0648	0.0680	0.0698	0.0638	0.0246
2000	0.0934	0.0936	0.0934	0.0916	0.0938	0.1036	0.0984	0.1000	0.0298
2500	0.1138	0.1134	0.1112	0.1144	0.1156	0.1172	0.1132	0.1140	0.0512
3000	0.1332	0.1344	0.1360	0.1344	0.1314	0.1340	0.1312	0.1252	0.0610
3500	0.1706	0.1712	0.1696	0.1748	0.1688	0.1790	0.1764	0.1704	0.0732
4000	0.1802	0.1826	0.1796	0.1798	0.1838	0.1970	0.1876	0.1852	0.0788
4500	0.2124	0.2126	0.2116	0.2052	0.2120	0.2218	0.2124	0.2046	0.0934
5000	0.2284	0.2274	0.2268	0.2248	0.2304	0.2346	0.2286	0.2234	0.1144
5500	0.2554	0.2554	0.2550	0.2558	0.2582	0.2656	0.2648	0.2576	0.1280
6000	0.2818	0.2838	0.2832	0.2884	0.2994	0.3020	0.3000	0.2880	0.1508
6500	0.2890	0.2906	0.2906	0.2948	0.2968	0.3134	0.3092	0.3006	0.1536
7000	0.3150	0.3148	0.3176	0.3230	0.3290	0.3410	0.3398	0.3262	0.1764
7500	0.3354	0.3384	0.3400	0.3494	0.3598	0.3720	0.3776	0.3690	0.1988
8000	0.3534	0.3550	0.3570	0.3676	0.3760	0.3946	0.3986	0.3944	0.2294
8500	0.3620	0.3658	0.3652	0.3738	0.3918	0.4064	0.4112	0.4072	0.2344
9000	0.3874	0.3888	0.3894	0.4004	0.4222	0.4400	0.4418	0.4352	0.2580
9500	0.3950	0.3988	0.4012	0.4146	0.4368	0.4588	0.4652	0.4572	0.2878
10000	0.4006	0.4044	0.4090	0.4236	0.4470	0.4686	0.4778	0.4790	0.3154
10500	0.4232	0.4294	0.4326	0.4478	0.4736	0.5008	0.5122	0.5134	0.3426
11000	0.4264	0.4306	0.4348	0.4508	0.4794	0.5052	0.5236	0.5302	0.3718
11500	0.4432	0.4488	0.4538	0.4690	0.4966	0.5278	0.5436	0.5556	0.3874
12000	0.4496	0.4556	0.4608	0.4798	0.5096	0.5452	0.5648	0.5774	0.4166
12500	0.4548	0.4606	0.4648	0.4832	0.5160	0.5540	0.5780	0.5930	0.4358
13000	0.4658	0.4710	0.4764	0.4946	0.5286	0.5650	0.5884	0.6034	0.4688
13500	0.4682	0.4748	0.4790	0.4998	0.5388	0.5750	0.5952	0.6126	0.4918
14000	0.4752	0.4822	0.4886	0.5100	0.5452	0.5836	0.6082	0.6288	0.5136
14500	0.4784	0.4858	0.4910	0.5118	0.5500	0.5930	0.6174	0.6388	0.5380
15000	0.4836	0.4918	0.4986	0.5222	0.5630	0.6056	0.6376	0.6622	0.5758
15500	0.4876	0.4952	0.5016	0.5248	0.5666	0.6142	0.6488	0.6780	0.6000
16000	0.4870	0.4952	0.5020	0.5268	0.5692	0.6174	0.6522	0.6826	0.6042
16500	0.4902	0.4984	0.5052	0.5274	0.5708	0.6196	0.6564	0.6922	0.6502
17000	0.4926	0.5008	0.5076	0.5324	0.5770	0.6302	0.6710	0.7006	0.6698
17500	0.4930	0.5010	0.5080	0.5322	0.5788	0.6300	0.6710	0.7086	0.6958
18000	0.4966	0.5052	0.5126	0.5382	0.5844	0.6370	0.6792	0.7182	0.7126
18500	0.4970	0.5056	0.5124	0.5384	0.5856	0.6384	0.6830	0.7218	0.7298
19000	0.4974	0.5060	0.5132	0.5390	0.5876	0.6414	0.6852	0.7262	0.7590
19500	0.4962	0.5050	0.5118	0.5376	0.5854	0.6414	0.6852	0.7274	0.7716
20000	0.4980	0.5066	0.5140	0.5392	0.5882	0.6430	0.6898	0.7330	0.7914
20500	0.4988	0.5076	0.5150	0.5412	0.5902	0.6464	0.6936	0.7392	0.8042
21000	0.4992	0.5080	0.5154	0.5420	0.5912	0.6470	0.6948	0.7412	0.8248
21500	0.4996	0.5084	0.5158	0.5426	0.5922	0.6488	0.6968	0.7420	0.8352

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
22000	0.4996	0.5082	0.5156	0.5422	0.5918	0.6492	0.6982	0.7442	0.8390
22500	0.4996	0.5084	0.5156	0.5426	0.5920	0.6496	0.6986	0.7462	0.8576
23000	0.4998	0.5086	0.5160	0.5430	0.5932	0.6516	0.7010	0.7494	0.8698
23500	0.5000	0.5088	0.5162	0.5432	0.5932	0.6506	0.6998	0.7474	0.8780
24000	0.4998	0.5086	0.5160	0.5430	0.5928	0.6510	0.7002	0.7486	0.8846
24500	0.5000	0.5088	0.5162	0.5432	0.5934	0.6514	0.7014	0.7496	0.8924
25000	0.5000	0.5088	0.5162	0.5430	0.5930	0.6514	0.7002	0.7488	0.8984

Table 14 - GB: Density Independent simulation. Population growth rate

Addn. adult mortality	Median gr. rate	Lwr. 95%c.i.	Uppr. 95%c.i.	Chg. in median gr. rate	Chg. in lwr. 95%c.i.	Chg. in Uppr. 95%c.i.
0	1.0202	0.9665	1.0704	0.000000	-0.05364	0.0502342
500	1.0177	0.9626	1.0664	-0.002499	-0.05759	0.0462807
1000	1.0166	0.9627	1.0671	-0.003544	-0.05748	0.0469945
1500	1.0155	0.9618	1.0648	-0.004629	-0.05839	0.0446888
2000	1.0131	0.9594	1.0638	-0.007018	-0.06076	0.0436429
2500	1.0118	0.9566	1.0619	-0.008343	-0.06353	0.0417700
3000	1.0106	0.9563	1.0600	-0.009590	-0.06383	0.0397983
3500	1.0090	0.9557	1.0562	-0.011196	-0.06448	0.0360534
4000	1.0073	0.9540	1.0568	-0.012839	-0.06616	0.0366670
4500	1.0063	0.9526	1.0552	-0.013830	-0.06754	0.0350786
5000	1.0042	0.9502	1.0533	-0.015905	-0.06997	0.0331718
5500	1.0026	0.9492	1.0515	-0.017598	-0.07095	0.0313677
6000	1.0008	0.9472	1.0495	-0.019357	-0.07292	0.0293392
6500	0.9999	0.9467	1.0473	-0.020237	-0.07346	0.0271791
7000	0.9980	0.9458	1.0467	-0.022153	-0.07432	0.0265447
7500	0.9964	0.9424	1.0457	-0.023750	-0.07780	0.0255553
8000	0.9951	0.9428	1.0443	-0.025054	-0.07740	0.0241146
8500	0.9933	0.9409	1.0423	-0.026817	-0.07925	0.0221133
9000	0.9919	0.9412	1.0404	-0.028259	-0.07891	0.0202516
9500	0.9903	0.9361	1.0379	-0.029834	-0.08406	0.0177198
10000	0.9881	0.9334	1.0367	-0.032008	-0.08679	0.0165397
10500	0.9880	0.9351	1.0369	-0.032151	-0.08502	0.0167899
11000	0.9853	0.9334	1.0327	-0.034878	-0.08675	0.0125409
11500	0.9845	0.9322	1.0322	-0.035653	-0.08791	0.0120567
12000	0.9824	0.9292	1.0301	-0.037720	-0.09097	0.0099904
12500	0.9810	0.9295	1.0291	-0.039106	-0.09065	0.0089742
13000	0.9794	0.9296	1.0273	-0.040780	-0.09054	0.0071861
13500	0.9776	0.9248	1.0246	-0.042544	-0.09533	0.0044791
14000	0.9758	0.9232	1.0232	-0.044334	-0.09693	0.0030503
14500	0.9748	0.9233	1.0230	-0.045355	-0.09688	0.0027989
15000	0.9733	0.9200	1.0215	-0.046878	-0.10016	0.0013153
15500	0.9717	0.9206	1.0194	-0.048450	-0.09958	-0.0007915
16000	0.9697	0.9152	1.0178	-0.050436	-0.10496	-0.0023972
16500	0.9687	0.9176	1.0159	-0.051470	-0.10257	-0.0042319
17000	0.9670	0.9152	1.0149	-0.053178	-0.10497	-0.0052564
17500	0.9656	0.9152	1.0130	-0.054600	-0.10499	-0.0071893
18000	0.9641	0.9140	1.0107	-0.056009	-0.10617	-0.0094559
18500	0.9626	0.9109	1.0086	-0.057557	-0.10924	-0.0115655
19000	0.9603	0.9093	1.0084	-0.059896	-0.11088	-0.0117640
19500	0.9589	0.9084	1.0053	-0.061252	-0.11173	-0.0148899
20000	0.9571	0.9050	1.0040	-0.063070	-0.11511	-0.0161108
20500	0.9559	0.9034	1.0025	-0.064275	-0.11672	-0.0176586
21000	0.9550	0.9043	1.0010	-0.065197	-0.11584	-0.0191672
21500	0.9529	0.9028	1.0003	-0.067260	-0.11733	-0.0198639
22000	0.9511	0.9000	0.9970	-0.069018	-0.12018	-0.0231535

Addn. adult mortality	Median gr. rate	Lwr. 95%c.i.	Uppr. 95%c.i.	Chg. in median gr. rate	Chg. in lwr. 95%c.i.	Chg. in Uppr. 95%c.i.
22500	0.9500	0.8994	0.9965	-0.070126	-0.12076	-0.0236622
23000	0.9480	0.8978	0.9931	-0.072168	-0.12232	-0.0270278
23500	0.9465	0.8955	0.9921	-0.073654	-0.12466	-0.0280920
24000	0.9446	0.8959	0.9897	-0.075551	-0.12423	-0.0304765
24500	0.9433	0.8904	0.9899	-0.076805	-0.12970	-0.0302279
25000	0.9424	0.8919	0.9881	-0.077768	-0.12829	-0.0320796

Table 15 - GB: Density Independent simulation. Median population size at 5 year intervals

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	366200	403145	446222	493807	539336
500	364133	392868	430978	471961	519082
1000	360578	393923	424276	462264	499633
1500	360218	388513	412405	450214	485469
2000	356835	379699	403607	432784	454924
2500	351257	374810	394882	418380	445482
3000	350293	370026	389722	409242	433631
3500	350322	363614	378793	399515	416973
4000	348431	362851	374680	384533	401301
4500	343597	358925	365861	374162	389726
5000	342185	350812	355470	363971	370285
5500	341124	344091	347038	350853	352147
6000	340056	342078	344716	341647	344407
6500	335425	334239	333034	329830	336523
7000	333435	331857	328134	323610	318041
7500	334735	328335	322630	315772	310218
8000	332272	324177	312048	307498	296841
8500	327217	317370	305201	293300	283941
9000	324730	312565	296589	286767	273617
9500	325833	310929	295104	280760	266684
10000	321795	300722	281395	268696	253373
10500	318416	299358	279826	264965	249346
11000	319866	298820	275493	256214	235469
11500	316194	292496	267442	246754	229285
12000	314609	286614	261502	240795	219223
12500	312510	286482	258503	234923	213260
13000	308174	279285	249035	222475	200037
13500	307446	276057	244906	220212	193743
14000	306748	270474	239671	211488	188741
14500	303412	266444	235195	207968	181217
15000	300690	259907	229193	198471	173701
15500	301758	262039	222917	194504	169229
16000	298888	256649	219516	189308	160511
16500	296287	250970	215005	182541	156189
17000	294400	247933	210376	174983	148573
17500	292397	243924	203910	171338	143270
18000	290699	242136	204336	170020	138754
18500	289488	237877	196062	162936	133983
19000	287540	232709	190990	156646	127052
19500	284205	228272	187094	149263	122669
20000	281972	227142	181112	144764	117311
20500	281843	225384	177707	141713	113912
21000	280576	221433	176616	139591	110707
21500	276703	218014	171192	134285	104512
22000	277201	216517	167761	129415	100436

22500	277381	212666	165059	126447	99039
23000	271719	206070	156292	118725	92116
23500	270472	205851	157092	118058	90448
24000	268058	202767	151281	112687	84909
24500	265074	196250	147132	110200	82312
25000	265162	197096	145710	109479	80497

Table 16 - GB: Density Independent simulation. Ratio of impacted to unimpacted median population size at 5 year intervals

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	1.000	1.000	1.000	1.000	1.000
500	0.994	0.975	0.966	0.956	0.962
1000	0.985	0.977	0.951	0.936	0.926
1500	0.984	0.964	0.924	0.912	0.900
2000	0.974	0.942	0.904	0.876	0.843
2500	0.959	0.930	0.885	0.847	0.826
3000	0.957	0.918	0.873	0.829	0.804
3500	0.957	0.902	0.849	0.809	0.773
4000	0.951	0.900	0.840	0.779	0.744
4500	0.938	0.890	0.820	0.758	0.723
5000	0.934	0.870	0.797	0.737	0.687
5500	0.932	0.854	0.778	0.711	0.653
6000	0.929	0.849	0.773	0.692	0.639
6500	0.916	0.829	0.746	0.668	0.624
7000	0.911	0.823	0.735	0.655	0.590
7500	0.914	0.814	0.723	0.639	0.575
8000	0.907	0.804	0.699	0.623	0.550
8500	0.894	0.787	0.684	0.594	0.526
9000	0.887	0.775	0.665	0.581	0.507
9500	0.890	0.771	0.661	0.569	0.494
10000	0.879	0.746	0.631	0.544	0.470
10500	0.870	0.743	0.627	0.537	0.462
11000	0.873	0.741	0.617	0.519	0.437
11500	0.863	0.726	0.599	0.500	0.425
12000	0.859	0.711	0.586	0.488	0.406
12500	0.853	0.711	0.579	0.476	0.395
13000	0.842	0.693	0.558	0.451	0.371
13500	0.840	0.685	0.549	0.446	0.359
14000	0.838	0.671	0.537	0.428	0.350
14500	0.829	0.661	0.527	0.421	0.336
15000	0.821	0.645	0.514	0.402	0.322
15500	0.824	0.650	0.500	0.394	0.314
16000	0.816	0.637	0.492	0.383	0.298
16500	0.809	0.623	0.482	0.370	0.290
17000	0.804	0.615	0.471	0.354	0.275
17500	0.798	0.605	0.457	0.347	0.266
18000	0.794	0.601	0.458	0.344	0.257
18500	0.791	0.590	0.439	0.330	0.248
19000	0.785	0.577	0.428	0.317	0.236
19500	0.776	0.566	0.419	0.302	0.227
20000	0.770	0.563	0.406	0.293	0.218
20500	0.770	0.559	0.398	0.287	0.211
21000	0.766	0.549	0.396	0.283	0.205
21500	0.756	0.541	0.384	0.272	0.194
22000	0.757	0.537	0.376	0.262	0.186

22500	0.757	0.528	0.370	0.256	0.184
23000	0.742	0.511	0.350	0.240	0.171
23500	0.739	0.511	0.352	0.239	0.168
24000	0.732	0.503	0.339	0.228	0.157
24500	0.724	0.487	0.330	0.223	0.153
25000	0.724	0.489	0.327	0.222	0.149

Table 17 - GB: Density Independent simulation. Probability population will decline below initial size (100%) in any year of simulation and percentages of initial size (99-50%)

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.589	0.576	0.563	0.525	0.459	0.395	0.334	0.274	0.0658
500	0.611	0.598	0.583	0.547	0.483	0.422	0.358	0.292	0.0766
1000	0.620	0.604	0.590	0.552	0.481	0.424	0.365	0.307	0.0846
1500	0.635	0.624	0.611	0.571	0.503	0.435	0.375	0.322	0.0860
2000	0.658	0.647	0.636	0.596	0.530	0.460	0.399	0.339	0.0974
2500	0.678	0.667	0.656	0.619	0.558	0.492	0.426	0.370	0.1114
3000	0.700	0.689	0.678	0.642	0.571	0.506	0.436	0.374	0.1042
3500	0.711	0.700	0.687	0.653	0.583	0.512	0.445	0.384	0.1176
4000	0.710	0.699	0.690	0.655	0.591	0.529	0.466	0.407	0.1318
4500	0.734	0.722	0.709	0.672	0.616	0.554	0.491	0.426	0.1380
5000	0.755	0.746	0.735	0.701	0.636	0.572	0.511	0.444	0.1550
5500	0.765	0.755	0.744	0.715	0.666	0.605	0.541	0.479	0.1716
6000	0.777	0.767	0.757	0.724	0.673	0.613	0.545	0.488	0.1868
6500	0.792	0.782	0.772	0.742	0.691	0.635	0.575	0.512	0.1906
7000	0.820	0.810	0.802	0.776	0.721	0.660	0.598	0.529	0.2044
7500	0.819	0.813	0.803	0.775	0.722	0.666	0.607	0.542	0.2320
8000	0.834	0.825	0.814	0.788	0.743	0.686	0.627	0.562	0.2354
8500	0.849	0.842	0.834	0.807	0.763	0.713	0.659	0.596	0.2628
9000	0.861	0.853	0.847	0.822	0.781	0.736	0.683	0.623	0.2816
9500	0.881	0.872	0.865	0.843	0.800	0.747	0.690	0.630	0.2860
10000	0.893	0.887	0.880	0.855	0.816	0.773	0.720	0.660	0.3150
10500	0.891	0.887	0.881	0.861	0.823	0.778	0.730	0.668	0.3350
11000	0.909	0.902	0.897	0.878	0.840	0.795	0.747	0.688	0.3578
11500	0.909	0.905	0.899	0.881	0.845	0.801	0.760	0.709	0.3778
12000	0.926	0.922	0.918	0.904	0.878	0.842	0.797	0.742	0.4006
12500	0.927	0.922	0.917	0.904	0.873	0.837	0.793	0.748	0.4200
13000	0.944	0.940	0.936	0.924	0.894	0.863	0.826	0.779	0.4510
13500	0.948	0.944	0.940	0.929	0.903	0.874	0.835	0.791	0.4690
14000	0.956	0.953	0.949	0.940	0.920	0.891	0.855	0.815	0.4962
14500	0.966	0.963	0.961	0.950	0.928	0.899	0.864	0.824	0.5226
15000	0.964	0.961	0.958	0.950	0.929	0.904	0.871	0.837	0.5508
15500	0.963	0.960	0.958	0.953	0.936	0.912	0.884	0.845	0.5642
16000	0.972	0.970	0.967	0.959	0.941	0.922	0.898	0.867	0.5914
16500	0.976	0.974	0.973	0.967	0.950	0.929	0.906	0.876	0.6168
17000	0.979	0.978	0.975	0.967	0.954	0.935	0.918	0.892	0.6392
17500	0.982	0.980	0.979	0.973	0.962	0.947	0.929	0.906	0.6692
18000	0.987	0.985	0.983	0.979	0.970	0.958	0.941	0.920	0.6774
18500	0.987	0.986	0.985	0.980	0.972	0.961	0.948	0.925	0.7066
19000	0.989	0.989	0.988	0.984	0.976	0.968	0.949	0.932	0.7408
19500	0.993	0.993	0.992	0.988	0.982	0.973	0.960	0.945	0.7582
20000	0.993	0.993	0.993	0.989	0.984	0.975	0.968	0.953	0.7790
20500	0.996	0.995	0.995	0.993	0.989	0.982	0.973	0.959	0.8010
21000	0.996	0.996	0.995	0.994	0.990	0.985	0.978	0.964	0.8118
21500	0.996	0.995	0.995	0.994	0.991	0.986	0.978	0.970	0.8340
22000	0.997	0.997	0.997	0.995	0.992	0.989	0.981	0.971	0.8522

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
22500	0.998	0.998	0.998	0.998	0.996	0.991	0.986	0.977	0.8594
23000	0.999	0.998	0.998	0.998	0.996	0.992	0.987	0.983	0.8792
23500	0.999	0.999	0.999	0.998	0.997	0.995	0.992	0.989	0.8912
24000	0.999	0.999	0.998	0.998	0.997	0.996	0.994	0.990	0.9060
24500	0.999	0.999	0.999	0.999	0.998	0.996	0.994	0.990	0.9204
25000	0.999	0.999	0.999	0.999	0.998	0.998	0.996	0.994	0.9278

Table 18 - GB: Density Independent simulation. Change in probability population will decline below initial size (100%) in any year of simulation and percentages of initial size (99-50%)

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
500	0.0222	0.0216	0.0202	0.0222	0.0234	0.0266	0.0240	0.0184	0.0108
1000	0.0308	0.0274	0.0270	0.0278	0.0218	0.0286	0.0308	0.0328	0.0188
1500	0.0462	0.0478	0.0484	0.0460	0.0436	0.0396	0.0408	0.0484	0.0202
2000	0.0696	0.0706	0.0728	0.0716	0.0710	0.0652	0.0650	0.0648	0.0316
2500	0.0888	0.0906	0.0932	0.0944	0.0986	0.0966	0.0918	0.0958	0.0456
3000	0.1112	0.1124	0.1148	0.1176	0.1120	0.1110	0.1022	0.1000	0.0384
3500	0.1226	0.1234	0.1240	0.1288	0.1236	0.1168	0.1106	0.1102	0.0518
4000	0.1214	0.1226	0.1270	0.1306	0.1322	0.1338	0.1322	0.1328	0.0660
4500	0.1450	0.1456	0.1460	0.1476	0.1566	0.1592	0.1572	0.1526	0.0722
5000	0.1660	0.1696	0.1722	0.1760	0.1766	0.1770	0.1770	0.1706	0.0892
5500	0.1766	0.1786	0.1814	0.1908	0.2066	0.2102	0.2070	0.2054	0.1058
6000	0.1878	0.1908	0.1940	0.1994	0.2134	0.2174	0.2112	0.2140	0.1210
6500	0.2034	0.2060	0.2094	0.2172	0.2314	0.2396	0.2408	0.2382	0.1248
7000	0.2308	0.2336	0.2390	0.2514	0.2614	0.2648	0.2642	0.2556	0.1386
7500	0.2302	0.2364	0.2402	0.2502	0.2632	0.2708	0.2726	0.2686	0.1662
8000	0.2454	0.2486	0.2512	0.2638	0.2834	0.2912	0.2928	0.2880	0.1696
8500	0.2606	0.2658	0.2714	0.2824	0.3036	0.3176	0.3246	0.3220	0.1970
9000	0.2720	0.2766	0.2836	0.2974	0.3222	0.3406	0.3488	0.3496	0.2158
9500	0.2918	0.2960	0.3024	0.3180	0.3404	0.3516	0.3556	0.3566	0.2202
10000	0.3040	0.3104	0.3172	0.3308	0.3572	0.3774	0.3864	0.3862	0.2492
10500	0.3022	0.3104	0.3178	0.3362	0.3640	0.3826	0.3962	0.3942	0.2692
11000	0.3198	0.3258	0.3344	0.3536	0.3806	0.3996	0.4130	0.4142	0.2920
11500	0.3200	0.3282	0.3362	0.3562	0.3862	0.4062	0.4258	0.4352	0.3120
12000	0.3372	0.3452	0.3554	0.3798	0.4190	0.4464	0.4626	0.4680	0.3348
12500	0.3386	0.3456	0.3542	0.3790	0.4138	0.4416	0.4592	0.4738	0.3542
13000	0.3550	0.3640	0.3734	0.3990	0.4352	0.4682	0.4922	0.5054	0.3852
13500	0.3594	0.3680	0.3774	0.4040	0.4440	0.4790	0.5012	0.5168	0.4032
14000	0.3676	0.3764	0.3858	0.4154	0.4604	0.4958	0.5206	0.5414	0.4304
14500	0.3776	0.3870	0.3976	0.4252	0.4686	0.5040	0.5302	0.5506	0.4568
15000	0.3752	0.3850	0.3950	0.4258	0.4700	0.5086	0.5366	0.5630	0.4850
15500	0.3744	0.3834	0.3952	0.4282	0.4768	0.5168	0.5496	0.5716	0.4984
16000	0.3834	0.3932	0.4036	0.4348	0.4816	0.5272	0.5638	0.5934	0.5256
16500	0.3874	0.3976	0.4100	0.4422	0.4906	0.5338	0.5724	0.6022	0.5510
17000	0.3900	0.4012	0.4124	0.4424	0.4948	0.5398	0.5836	0.6178	0.5734
17500	0.3934	0.4040	0.4164	0.4484	0.5028	0.5520	0.5948	0.6322	0.6034
18000	0.3978	0.4086	0.4202	0.4548	0.5112	0.5628	0.6074	0.6462	0.6116
18500	0.3980	0.4094	0.4220	0.4558	0.5130	0.5654	0.6136	0.6508	0.6408
19000	0.4004	0.4122	0.4248	0.4590	0.5170	0.5728	0.6154	0.6582	0.6750
19500	0.4046	0.4162	0.4286	0.4630	0.5226	0.5780	0.6262	0.6712	0.6924
20000	0.4042	0.4164	0.4296	0.4648	0.5248	0.5802	0.6344	0.6790	0.7132
20500	0.4068	0.4184	0.4316	0.4680	0.5296	0.5866	0.6390	0.6856	0.7352
21000	0.4076	0.4192	0.4322	0.4696	0.5304	0.5898	0.6438	0.6904	0.7460
21500	0.4072	0.4190	0.4322	0.4690	0.5314	0.5906	0.6442	0.6964	0.7682

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
22000	0.4080	0.4204	0.4338	0.4704	0.5332	0.5934	0.6470	0.6968	0.7864
22500	0.4096	0.4218	0.4352	0.4732	0.5364	0.5962	0.6524	0.7030	0.7936
23000	0.4098	0.4220	0.4354	0.4736	0.5366	0.5968	0.6534	0.7096	0.8134
23500	0.4100	0.4224	0.4356	0.4736	0.5374	0.6000	0.6576	0.7148	0.8254
24000	0.4098	0.4222	0.4354	0.4732	0.5382	0.6004	0.6598	0.7166	0.8402
24500	0.4106	0.4230	0.4364	0.4740	0.5384	0.6004	0.6596	0.7164	0.8546
25000	0.4104	0.4228	0.4360	0.4742	0.5388	0.6024	0.6618	0.7198	0.8620

**Table 19 - [Insert caption text here] Table 20 GB: Density Independent simulation.
Probability population will be below initial size in years 5/10/15/20/25**

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	0.317	0.287	0.243	0.227	0.202
500	0.329	0.304	0.271	0.239	0.222
1000	0.343	0.302	0.292	0.259	0.234
1500	0.343	0.318	0.293	0.268	0.250
2000	0.358	0.339	0.316	0.294	0.281
2500	0.377	0.344	0.346	0.319	0.300
3000	0.388	0.365	0.344	0.326	0.310
3500	0.389	0.377	0.365	0.344	0.334
4000	0.386	0.380	0.377	0.372	0.366
4500	0.412	0.397	0.398	0.392	0.390
5000	0.418	0.425	0.416	0.421	0.404
5500	0.433	0.446	0.445	0.441	0.448
6000	0.431	0.452	0.453	0.464	0.462
6500	0.455	0.475	0.478	0.491	0.483
7000	0.465	0.484	0.497	0.506	0.519
7500	0.458	0.494	0.513	0.526	0.535
8000	0.471	0.510	0.538	0.545	0.568
8500	0.496	0.534	0.562	0.584	0.594
9000	0.512	0.550	0.582	0.604	0.618
9500	0.503	0.554	0.595	0.623	0.647
10000	0.522	0.597	0.631	0.652	0.674
10500	0.542	0.594	0.631	0.658	0.684
11000	0.535	0.611	0.654	0.690	0.719
11500	0.559	0.623	0.675	0.711	0.733
12000	0.568	0.652	0.694	0.738	0.771
12500	0.573	0.653	0.713	0.747	0.777
13000	0.599	0.689	0.737	0.782	0.813
13500	0.603	0.692	0.748	0.800	0.828
14000	0.609	0.721	0.772	0.816	0.853
14500	0.628	0.735	0.781	0.831	0.868
15000	0.643	0.743	0.808	0.846	0.877
15500	0.638	0.745	0.814	0.855	0.889
16000	0.651	0.768	0.833	0.872	0.896
16500	0.668	0.781	0.839	0.883	0.915
17000	0.671	0.791	0.853	0.895	0.921
17500	0.694	0.810	0.871	0.909	0.932
18000	0.693	0.816	0.883	0.918	0.948
18500	0.703	0.821	0.891	0.931	0.958
19000	0.723	0.837	0.909	0.941	0.959
19500	0.738	0.860	0.914	0.949	0.969
20000	0.752	0.873	0.926	0.957	0.973
20500	0.749	0.882	0.937	0.962	0.979
21000	0.758	0.879	0.937	0.970	0.984
21500	0.771	0.888	0.946	0.972	0.983
22000	0.772	0.899	0.948	0.971	0.987

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
22500	0.787	0.903	0.957	0.981	0.991
23000	0.814	0.927	0.965	0.983	0.993
23500	0.811	0.926	0.972	0.988	0.995
24000	0.821	0.934	0.973	0.991	0.995
24500	0.825	0.945	0.978	0.992	0.995
25000	0.841	0.949	0.981	0.995	0.998

Table 21 - GB: Density Independent simulation. Increase in probability population will be below initial size in years 5/10/15/20/25

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	0.0000	0.0000	0.0000	0.0000	0.0000
500	0.0118	0.0172	0.0278	0.0118	0.0204
1000	0.0258	0.0156	0.0494	0.0324	0.0320
1500	0.0254	0.0318	0.0496	0.0412	0.0484
2000	0.0408	0.0522	0.0734	0.0668	0.0794
2500	0.0600	0.0572	0.1028	0.0920	0.0982
3000	0.0708	0.0782	0.1010	0.0988	0.1082
3500	0.0720	0.0902	0.1224	0.1172	0.1328
4000	0.0684	0.0936	0.1336	0.1454	0.1644
4500	0.0942	0.1108	0.1546	0.1656	0.1882
5000	0.1010	0.1382	0.1728	0.1942	0.2028
5500	0.1156	0.1592	0.2018	0.2140	0.2460
6000	0.1136	0.1656	0.2100	0.2376	0.2600
6500	0.1374	0.1884	0.2354	0.2640	0.2810
7000	0.1474	0.1978	0.2536	0.2796	0.3178
7500	0.1408	0.2078	0.2700	0.2994	0.3334
8000	0.1536	0.2230	0.2950	0.3186	0.3666
8500	0.1788	0.2472	0.3188	0.3576	0.3922
9000	0.1944	0.2632	0.3390	0.3776	0.4164
9500	0.1858	0.2676	0.3520	0.3964	0.4456
10000	0.2044	0.3108	0.3884	0.4252	0.4728
10500	0.2244	0.3072	0.3878	0.4310	0.4820
11000	0.2176	0.3248	0.4108	0.4636	0.5178
11500	0.2414	0.3362	0.4322	0.4846	0.5316
12000	0.2504	0.3656	0.4512	0.5110	0.5692
12500	0.2558	0.3662	0.4696	0.5198	0.5754
13000	0.2820	0.4020	0.4942	0.5552	0.6110
13500	0.2852	0.4058	0.5046	0.5734	0.6266
14000	0.2916	0.4342	0.5292	0.5894	0.6514
14500	0.3106	0.4484	0.5382	0.6042	0.6666
15000	0.3256	0.4566	0.5654	0.6196	0.6756
15500	0.3204	0.4586	0.5706	0.6286	0.6870
16000	0.3332	0.4810	0.5896	0.6448	0.6944
16500	0.3504	0.4948	0.5964	0.6566	0.7132
17000	0.3534	0.5042	0.6104	0.6686	0.7198
17500	0.3764	0.5230	0.6282	0.6826	0.7300
18000	0.3758	0.5290	0.6396	0.6914	0.7462
18500	0.3852	0.5348	0.6476	0.7046	0.7566
19000	0.4052	0.5508	0.6660	0.7146	0.7574
19500	0.4206	0.5734	0.6710	0.7220	0.7674
20000	0.4342	0.5862	0.6830	0.7300	0.7710
20500	0.4318	0.5956	0.6940	0.7354	0.7776
21000	0.4402	0.5928	0.6944	0.7430	0.7824
21500	0.4532	0.6018	0.7032	0.7448	0.7810
22000	0.4544	0.6122	0.7046	0.7440	0.7854

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
22500	0.4694	0.6164	0.7140	0.7546	0.7890
23000	0.4966	0.6400	0.7218	0.7566	0.7910
23500	0.4940	0.6396	0.7288	0.7614	0.7934
24000	0.5032	0.6470	0.7298	0.7638	0.7936
24500	0.5076	0.6588	0.7348	0.7652	0.7934
25000	0.5232	0.6624	0.7384	0.7686	0.7964

Table 22 - GB: Density Independent simulation. Probability final year population size will be less than median (0%) unimpacted population size and percentages (1-50%) of median unimpacted size

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.500	0.494	0.489	0.468	0.430	0.393	0.358	0.323	0.124
500	0.527	0.520	0.512	0.491	0.458	0.420	0.384	0.342	0.145
1000	0.554	0.547	0.542	0.520	0.481	0.440	0.397	0.354	0.157
1500	0.574	0.568	0.559	0.538	0.500	0.457	0.418	0.374	0.163
2000	0.619	0.611	0.605	0.585	0.546	0.505	0.465	0.413	0.189
2500	0.634	0.627	0.621	0.599	0.565	0.521	0.479	0.436	0.204
3000	0.659	0.652	0.646	0.627	0.590	0.545	0.497	0.451	0.205
3500	0.683	0.675	0.667	0.644	0.608	0.568	0.524	0.481	0.225
4000	0.700	0.696	0.687	0.666	0.633	0.590	0.550	0.506	0.253
4500	0.723	0.717	0.711	0.691	0.655	0.618	0.575	0.527	0.274
5000	0.756	0.749	0.742	0.724	0.692	0.654	0.607	0.561	0.288
5500	0.762	0.757	0.751	0.735	0.707	0.675	0.635	0.590	0.321
6000	0.797	0.791	0.786	0.768	0.735	0.698	0.659	0.613	0.337
6500	0.814	0.807	0.802	0.787	0.755	0.718	0.679	0.633	0.355
7000	0.837	0.832	0.827	0.809	0.779	0.749	0.713	0.669	0.382
7500	0.840	0.835	0.830	0.815	0.787	0.755	0.719	0.677	0.401
8000	0.864	0.859	0.854	0.842	0.807	0.775	0.738	0.705	0.433
8500	0.878	0.874	0.869	0.857	0.831	0.801	0.769	0.736	0.467
9000	0.888	0.884	0.879	0.869	0.850	0.824	0.794	0.759	0.490
9500	0.902	0.899	0.896	0.886	0.865	0.837	0.809	0.775	0.509
10000	0.926	0.923	0.919	0.906	0.888	0.863	0.839	0.801	0.548
10500	0.926	0.923	0.919	0.908	0.889	0.866	0.840	0.809	0.556
11000	0.937	0.934	0.932	0.924	0.909	0.887	0.862	0.832	0.589
11500	0.943	0.941	0.938	0.929	0.914	0.897	0.873	0.846	0.607
12000	0.953	0.951	0.950	0.943	0.929	0.911	0.893	0.868	0.647
12500	0.960	0.957	0.955	0.948	0.934	0.918	0.902	0.880	0.663
13000	0.966	0.965	0.965	0.961	0.949	0.939	0.922	0.906	0.703
13500	0.974	0.972	0.971	0.968	0.959	0.947	0.932	0.915	0.722
14000	0.979	0.979	0.978	0.975	0.968	0.955	0.941	0.926	0.749
14500	0.982	0.981	0.980	0.977	0.971	0.964	0.951	0.937	0.765
15000	0.985	0.984	0.983	0.982	0.975	0.968	0.957	0.941	0.783
15500	0.987	0.986	0.986	0.983	0.977	0.969	0.961	0.947	0.798
16000	0.990	0.989	0.987	0.985	0.982	0.975	0.967	0.957	0.818
16500	0.991	0.990	0.990	0.988	0.985	0.981	0.975	0.965	0.842
17000	0.992	0.991	0.991	0.989	0.985	0.981	0.974	0.968	0.859
17500	0.994	0.994	0.994	0.993	0.990	0.986	0.981	0.975	0.873
18000	0.996	0.996	0.996	0.995	0.993	0.990	0.986	0.979	0.897
18500	0.995	0.995	0.995	0.994	0.993	0.991	0.987	0.982	0.904
19000	0.997	0.996	0.996	0.995	0.994	0.992	0.990	0.985	0.916
19500	0.999	0.998	0.998	0.998	0.997	0.995	0.993	0.989	0.928
20000	0.999	0.998	0.998	0.998	0.997	0.995	0.993	0.989	0.940
20500	1.000	1.000	1.000	0.999	0.999	0.998	0.996	0.994	0.948
21000	0.999	0.999	0.999	0.999	0.999	0.998	0.997	0.996	0.955
21500	0.999	0.999	0.999	0.999	0.998	0.998	0.997	0.994	0.961
22000	1.000	1.000	1.000	1.000	1.000	0.999	0.998	0.997	0.966

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
22500	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.998	0.973
23000	1.000	1.000	1.000	1.000	1.000	0.999	0.998	0.998	0.979
23500	1.000	1.000	1.000	1.000	1.000	0.999	0.999	0.998	0.983
24000	1.000	1.000	1.000	1.000	1.000	0.999	0.999	0.999	0.988
24500	1.000	1.000	1.000	1.000	1.000	0.999	0.999	0.999	0.988
25000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.999	0.994

Table 23 - GB: Density Independent simulation. Change in probability final year population size will be less than median (0%) unimpacted population size and percentages (1-50%) of median unimpacted size

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
500	0.0266	0.0254	0.0226	0.0232	0.0284	0.0262	0.0254	0.0190	0.0204
1000	0.0542	0.0530	0.0524	0.0526	0.0516	0.0466	0.0388	0.0316	0.0324
1500	0.0738	0.0736	0.0696	0.0702	0.0702	0.0636	0.0594	0.0516	0.0386
2000	0.1194	0.1172	0.1156	0.1178	0.1160	0.1120	0.1064	0.0900	0.0642
2500	0.1342	0.1324	0.1320	0.1316	0.1358	0.1276	0.1210	0.1138	0.0794
3000	0.1586	0.1580	0.1568	0.1596	0.1600	0.1516	0.1384	0.1288	0.0802
3500	0.1826	0.1804	0.1778	0.1764	0.1782	0.1750	0.1656	0.1586	0.1010
4000	0.1996	0.2014	0.1974	0.1986	0.2036	0.1968	0.1916	0.1830	0.1286
4500	0.2230	0.2228	0.2216	0.2238	0.2250	0.2242	0.2168	0.2048	0.1496
5000	0.2558	0.2546	0.2530	0.2560	0.2622	0.2606	0.2490	0.2380	0.1636
5500	0.2622	0.2628	0.2612	0.2674	0.2778	0.2818	0.2770	0.2674	0.1966
6000	0.2972	0.2968	0.2966	0.3008	0.3056	0.3046	0.3004	0.2904	0.2126
6500	0.3136	0.3130	0.3130	0.3194	0.3250	0.3250	0.3210	0.3104	0.2308
7000	0.3370	0.3382	0.3376	0.3418	0.3498	0.3552	0.3548	0.3468	0.2578
7500	0.3398	0.3412	0.3410	0.3474	0.3572	0.3612	0.3608	0.3540	0.2768
8000	0.3638	0.3652	0.3650	0.3742	0.3778	0.3820	0.3796	0.3826	0.3086
8500	0.3782	0.3796	0.3794	0.3890	0.4016	0.4078	0.4106	0.4134	0.3428
9000	0.3880	0.3894	0.3892	0.4018	0.4206	0.4310	0.4356	0.4366	0.3658
9500	0.4020	0.4044	0.4068	0.4180	0.4356	0.4432	0.4506	0.4528	0.3846
10000	0.4258	0.4286	0.4298	0.4388	0.4588	0.4700	0.4810	0.4780	0.4232
10500	0.4264	0.4288	0.4296	0.4402	0.4598	0.4728	0.4818	0.4868	0.4316
11000	0.4366	0.4400	0.4422	0.4566	0.4794	0.4940	0.5034	0.5094	0.4644
11500	0.4426	0.4468	0.4486	0.4614	0.4846	0.5036	0.5150	0.5234	0.4826
12000	0.4530	0.4568	0.4604	0.4756	0.4992	0.5174	0.5346	0.5452	0.5222
12500	0.4596	0.4632	0.4656	0.4806	0.5040	0.5246	0.5436	0.5570	0.5382
13000	0.4658	0.4712	0.4752	0.4934	0.5198	0.5456	0.5636	0.5832	0.5786
13500	0.4740	0.4780	0.4816	0.5004	0.5290	0.5536	0.5738	0.5920	0.5972
14000	0.4790	0.4844	0.4884	0.5070	0.5382	0.5614	0.5826	0.6032	0.6250
14500	0.4816	0.4872	0.4908	0.5090	0.5412	0.5702	0.5930	0.6144	0.6406
15000	0.4848	0.4900	0.4940	0.5140	0.5454	0.5742	0.5986	0.6188	0.6590
15500	0.4870	0.4920	0.4962	0.5158	0.5472	0.5756	0.6026	0.6244	0.6732
16000	0.4896	0.4952	0.4980	0.5178	0.5522	0.5812	0.6084	0.6346	0.6932
16500	0.4910	0.4962	0.5002	0.5206	0.5554	0.5878	0.6172	0.6428	0.7178
17000	0.4916	0.4970	0.5014	0.5218	0.5558	0.5878	0.6156	0.6450	0.7342
17500	0.4944	0.5000	0.5046	0.5254	0.5604	0.5928	0.6232	0.6524	0.7482
18000	0.4964	0.5018	0.5064	0.5272	0.5630	0.5962	0.6274	0.6562	0.7726
18500	0.4954	0.5006	0.5054	0.5268	0.5632	0.5978	0.6292	0.6592	0.7798
19000	0.4970	0.5022	0.5066	0.5278	0.5644	0.5990	0.6320	0.6622	0.7914
19500	0.4986	0.5042	0.5088	0.5302	0.5676	0.6016	0.6344	0.6668	0.8032
20000	0.4986	0.5040	0.5086	0.5300	0.5670	0.6020	0.6350	0.6668	0.8156
20500	0.4996	0.5054	0.5102	0.5318	0.5696	0.6042	0.6374	0.6712	0.8232
21000	0.4994	0.5052	0.5100	0.5316	0.5692	0.6044	0.6388	0.6732	0.8302
21500	0.4994	0.5050	0.5098	0.5310	0.5688	0.6048	0.6386	0.6718	0.8366

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
22000	0.4998	0.5056	0.5104	0.5322	0.5700	0.6056	0.6398	0.6740	0.8412
22500	0.5000	0.5058	0.5106	0.5324	0.5702	0.6064	0.6414	0.6758	0.8484
23000	0.4998	0.5056	0.5104	0.5322	0.5700	0.6060	0.6402	0.6752	0.8550
23500	0.5000	0.5058	0.5106	0.5324	0.5702	0.6060	0.6408	0.6756	0.8588
24000	0.5000	0.5058	0.5106	0.5324	0.5702	0.6060	0.6412	0.6762	0.8640
24500	0.5000	0.5058	0.5106	0.5322	0.5702	0.6060	0.6408	0.6760	0.8636
25000	0.5000	0.5058	0.5106	0.5324	0.5702	0.6064	0.6414	0.6766	0.8692

Table 24 - Broadland: Density Independent simulation. Population growth rate

Addn. adult mortality	Median gr. rate	Lwr. 95%c.i.	Uppr. 95%c.i.	Chg. in median gr.	Chg. in lwr. 95%c.i.	Chg. in Uppr. 95%c.i.
0	1.0204	0.9663	1.0702	0.00000	-0.05417	0.049802
50	1.0104	0.9553	1.0593	-0.01003	-0.06518	0.038867
100	1.0007	0.9461	1.0496	-0.01973	-0.07434	0.029124
150	0.9900	0.9367	1.0379	-0.03041	-0.08371	0.017409
200	0.9804	0.9286	1.0272	-0.04004	-0.09183	0.006718
250	0.9703	0.9199	1.0186	-0.05019	-0.10057	-0.001834
300	0.9607	0.9115	1.0074	-0.05978	-0.10891	-0.013052
350	0.9503	0.8995	0.9963	-0.07010	-0.12097	-0.024125
400	0.9404	0.8899	0.9853	-0.08002	-0.13057	-0.035152

Table 25 - Broadland: Density Independent simulation. Median population size at 5 year intervals

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	5668	6309	6988	7659	8440
50	5482	5807	6115	6466	6740
100	5223	5279	5238	5250	5252
150	5046	4814	4540	4333	4142
200	4838	4369	3976	3540	3233
250	4670	4020	3464	2946	2538
300	4465	3656	3000	2451	1978
350	4265	3290	2575	1988	1542
400	4090	3000	2208	1610	1197

Table 26 - Broadland: Density Independent simulation. Ratio of impacted to unimpacted median population size at 5 year intervals

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	1.000	1.000	1.000	1.000	1.000
50	0.967	0.920	0.875	0.844	0.799
100	0.921	0.837	0.749	0.685	0.622
150	0.890	0.763	0.650	0.566	0.491
200	0.853	0.693	0.569	0.462	0.383
250	0.824	0.637	0.496	0.385	0.301
300	0.788	0.579	0.429	0.320	0.234
350	0.752	0.522	0.368	0.260	0.183
400	0.721	0.476	0.316	0.210	0.142

Table 27 - Broadland: Density Independent simulation. Probability population will decline below initial size (100%) in any year of simulation and percentages of initial size (99-50%)

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.585	0.572	0.559	0.517	0.453	0.394	0.332	0.279	0.0712
50	0.678	0.664	0.652	0.617	0.554	0.489	0.423	0.366	0.1096
100	0.785	0.778	0.769	0.740	0.682	0.625	0.561	0.494	0.1864
150	0.882	0.876	0.867	0.846	0.801	0.754	0.703	0.638	0.2906
200	0.938	0.934	0.928	0.914	0.882	0.844	0.807	0.758	0.4308
250	0.968	0.965	0.962	0.954	0.938	0.918	0.894	0.863	0.5846
300	0.991	0.991	0.989	0.987	0.978	0.969	0.958	0.938	0.7284
350	0.998	0.997	0.996	0.996	0.994	0.991	0.985	0.979	0.8666
400	0.999	0.999	0.999	0.999	0.998	0.997	0.996	0.995	0.9380

Table 28 - Broadland: Density Independent simulation. Change in probability population will decline below initial size (100%) in any year of simulation and percentages of initial size (99-50%)

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.0000	0.0000	0.0000	0.000	0.000	0.0000	0.0000	0.000	0.0000
50	0.0926	0.0918	0.0936	0.100	0.101	0.0952	0.0912	0.087	0.0384
100	0.1998	0.2062	0.2104	0.222	0.229	0.2312	0.2294	0.215	0.1152
150	0.2964	0.3042	0.3082	0.329	0.347	0.3598	0.3710	0.359	0.2194
200	0.3522	0.3624	0.3696	0.396	0.429	0.4496	0.4754	0.479	0.3596
250	0.3826	0.3930	0.4034	0.437	0.485	0.5240	0.5626	0.583	0.5134
300	0.4056	0.4188	0.4298	0.469	0.525	0.5748	0.6258	0.658	0.6572
350	0.4126	0.4256	0.4376	0.478	0.540	0.5968	0.6536	0.700	0.7954
400	0.4140	0.4276	0.4404	0.482	0.545	0.6030	0.6646	0.715	0.8668

Table 29 - Broadland: Density Independent simulation. Probability population will be below initial size in years 5/10/15/20/25

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	0.324	0.281	0.246	0.224	0.201
50	0.369	0.352	0.335	0.319	0.313
100	0.449	0.462	0.470	0.476	0.477
150	0.509	0.562	0.610	0.628	0.644
200	0.583	0.672	0.717	0.751	0.783
250	0.646	0.755	0.820	0.864	0.900
300	0.718	0.847	0.908	0.945	0.964
350	0.794	0.913	0.963	0.982	0.989
400	0.851	0.957	0.987	0.994	0.998

Table 30 - Broadland: Density Independent simulation. Increase in probability population will be below initial size in years 5/10/15/20/25

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	0.0000	0.000	0.0000	0.000	0.000
50	0.0442	0.071	0.0884	0.095	0.112
100	0.1244	0.180	0.2236	0.251	0.275
150	0.1846	0.281	0.3632	0.403	0.443
200	0.2588	0.391	0.4706	0.526	0.582
250	0.3214	0.474	0.5736	0.640	0.699
300	0.3938	0.565	0.6618	0.720	0.763
350	0.4698	0.632	0.7162	0.757	0.788
400	0.5266	0.675	0.7408	0.770	0.797

Table 31 - Broadland: Density Independent simulation. Probability final year population size will be less than median (0%) unimpacted population size and percentages (1-50%) of median unimpacted size

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.500	0.492	0.483	0.465	0.428	0.389	0.348	0.311	0.130
50	0.661	0.654	0.646	0.626	0.588	0.546	0.502	0.448	0.217
100	0.798	0.791	0.786	0.768	0.741	0.706	0.671	0.630	0.353
150	0.914	0.912	0.910	0.897	0.875	0.851	0.823	0.792	0.515
200	0.963	0.962	0.960	0.956	0.945	0.927	0.908	0.887	0.677
250	0.987	0.987	0.986	0.985	0.979	0.972	0.965	0.954	0.823
300	0.997	0.997	0.997	0.997	0.995	0.993	0.991	0.987	0.920
350	0.999	0.999	0.999	0.999	0.999	0.998	0.998	0.997	0.975
400	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.999	0.994

Table 32 - Broadland: Density Independent simulation. Change in probability final year population size will be less than median (0%) unimpacted population size and percentages (1-50%) of median unimpacted size

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0000
50	0.161	0.162	0.163	0.161	0.161	0.157	0.154	0.137	0.0868
100	0.298	0.299	0.303	0.304	0.313	0.317	0.323	0.318	0.2232
150	0.414	0.420	0.427	0.432	0.447	0.462	0.475	0.481	0.3854
200	0.463	0.470	0.476	0.491	0.518	0.538	0.560	0.576	0.5476
250	0.487	0.495	0.503	0.520	0.551	0.583	0.617	0.642	0.6930
300	0.497	0.505	0.513	0.532	0.567	0.604	0.642	0.675	0.7902
350	0.499	0.507	0.516	0.534	0.571	0.609	0.649	0.685	0.8450
400	0.500	0.508	0.517	0.535	0.572	0.611	0.651	0.688	0.8642

Table 33 - Lindisfarne: Density Independent simulation. Population growth rate

Addn. adult mortality	Median gr. rate	Lwr. 95%c.i.	Uppr. 95%c.i.	Chg. in median gr. rate	Chg. in lwr. 95%c.i.	Chg. in Uppr. 95%c.i.
0	1.0194	0.9627	1.0702	0.000000	-0.05665	0.050890
25	1.0122	0.9601	1.0617	-0.007136	-0.05923	0.042338
50	1.0037	0.9492	1.0531	-0.015672	-0.07018	0.033744
75	0.9954	0.9419	1.0438	-0.023924	-0.07742	0.024410
100	0.9871	0.9345	1.0349	-0.032211	-0.08480	0.015513
125	0.9789	0.9259	1.0264	-0.040428	-0.09342	0.007006
150	0.9708	0.9208	1.0176	-0.048549	-0.09856	-0.001771
175	0.9615	0.9125	1.0074	-0.057806	-0.10684	-0.011983
200	0.9536	0.9017	1.0006	-0.065713	-0.11765	-0.018751
225	0.9448	0.8939	0.9896	-0.074503	-0.12544	-0.029738
250	0.9365	0.8871	0.9823	-0.082845	-0.13227	-0.037036

Table 34 - Lindisfarne: Density Independent simulation. Median population size at 5 year intervals

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	3389	3710	4041	4456	4922
25	3292	3492	3668	3927	4126
50	3145	3210	3280	3266	3345
75	3064	3003	2922	2880	2796
100	2958	2760	2586	2422	2276
125	2868	2580	2328	2086	1865
150	2768	2352	2033	1750	1518
175	2674	2200	1802	1461	1214
200	2582	2018	1589	1261	987
225	2482	1866	1410	1055	802
250	2386	1714	1242	882	633

Table 35 - Lindisfarne: Density Independent simulation. Ratio of impacted to unimpacted median population size at 5 year intervals

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	1.000	1.000	1.000	1.000	1.000
25	0.971	0.941	0.908	0.881	0.838
50	0.928	0.865	0.812	0.733	0.680
75	0.904	0.809	0.723	0.646	0.568
100	0.873	0.744	0.640	0.543	0.462
125	0.846	0.695	0.576	0.468	0.379
150	0.817	0.634	0.503	0.393	0.308
175	0.789	0.593	0.446	0.328	0.247
200	0.762	0.544	0.393	0.283	0.201
225	0.732	0.503	0.349	0.237	0.163
250	0.704	0.462	0.307	0.198	0.129

Table 36 - Lindisfarne: Density Independent simulation. Probability population will decline below initial size (100%) in any year of simulation and percentages of initial size (99-50%)

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.591	0.582	0.568	0.536	0.471	0.402	0.335	0.279	0.0712
25	0.663	0.651	0.639	0.599	0.543	0.483	0.421	0.358	0.0976
50	0.762	0.753	0.745	0.716	0.655	0.601	0.532	0.465	0.1662
75	0.832	0.824	0.815	0.788	0.734	0.682	0.621	0.556	0.2356
100	0.894	0.888	0.881	0.863	0.826	0.782	0.734	0.678	0.3398
125	0.943	0.938	0.934	0.922	0.897	0.865	0.821	0.779	0.4470
150	0.969	0.967	0.965	0.957	0.942	0.921	0.892	0.860	0.5840
175	0.992	0.991	0.989	0.985	0.979	0.970	0.955	0.935	0.7246
200	0.995	0.995	0.994	0.994	0.990	0.986	0.979	0.968	0.8296
225	1.000	1.000	1.000	0.999	0.998	0.997	0.994	0.989	0.9122
250	1.000	1.000	1.000	1.000	0.999	0.999	0.998	0.997	0.9604

Table 37 - Lindisfarne: Density Independent simulation. Change in probability population will decline below initial size (100%) in any year of simulation and percentages of initial size (99-50%)

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000
25	0.0718	0.0692	0.0712	0.0634	0.0716	0.0814	0.086	0.0788	0.0264
50	0.1708	0.1714	0.1770	0.1808	0.1838	0.1998	0.197	0.1862	0.0950
75	0.2406	0.2422	0.2470	0.2522	0.2626	0.2808	0.286	0.2772	0.1644
100	0.3026	0.3066	0.3130	0.3274	0.3546	0.3808	0.399	0.3990	0.2686
125	0.3516	0.3560	0.3656	0.3868	0.4262	0.4630	0.486	0.4996	0.3758
150	0.3780	0.3852	0.3964	0.4218	0.4714	0.5190	0.556	0.5808	0.5128
175	0.4008	0.4088	0.4208	0.4498	0.5082	0.5680	0.619	0.6562	0.6534
200	0.4040	0.4130	0.4262	0.4580	0.5194	0.5846	0.644	0.6888	0.7584
225	0.4088	0.4180	0.4314	0.4636	0.5274	0.5950	0.659	0.7094	0.8410
250	0.4090	0.4180	0.4316	0.4642	0.5280	0.5972	0.663	0.7174	0.8892

Table 38 - Lindisfarne: Density Independent simulation. Probability population will be below initial size in years 5/10/15/20/25

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	0.326	0.288	0.258	0.232	0.204
25	0.365	0.347	0.319	0.306	0.288
50	0.437	0.435	0.434	0.444	0.432
75	0.480	0.508	0.533	0.539	0.557
100	0.535	0.607	0.635	0.667	0.695
125	0.595	0.683	0.744	0.776	0.809
150	0.659	0.762	0.830	0.864	0.898
175	0.719	0.828	0.900	0.940	0.964
200	0.772	0.894	0.945	0.973	0.983
225	0.826	0.939	0.977	0.991	0.997
250	0.874	0.969	0.990	0.996	0.999

Table 39 - Lindisfarne: Density Independent simulation. Increase in probability population will be below initial size in years 5/10/15/20/25

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	0.0000	0.000	0.0000	0.0000	0.0000
25	0.0394	0.059	0.0608	0.0744	0.0844
50	0.1110	0.147	0.1758	0.2118	0.2278
75	0.1538	0.220	0.2750	0.3070	0.3528
100	0.2090	0.319	0.3768	0.4352	0.4910
125	0.2696	0.395	0.4858	0.5444	0.6052
150	0.3328	0.473	0.5712	0.6316	0.6942
175	0.3932	0.540	0.6420	0.7082	0.7598
200	0.4462	0.606	0.6864	0.7406	0.7790
225	0.5004	0.650	0.7182	0.7586	0.7932
250	0.5484	0.680	0.7316	0.7644	0.7950

Table 40 - Lindisfarne: Density Independent simulation. Probability final year population size will be less than median (0%) unimpacted population size and percentages (1-50%) of median unimpacted size

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.500	0.493	0.487	0.465	0.431	0.392	0.346	0.305	0.123
25	0.629	0.622	0.615	0.593	0.554	0.508	0.463	0.416	0.186
50	0.751	0.743	0.737	0.719	0.686	0.653	0.610	0.562	0.299
75	0.849	0.844	0.840	0.827	0.801	0.768	0.732	0.691	0.417
100	0.927	0.923	0.920	0.910	0.892	0.869	0.842	0.811	0.557
125	0.966	0.965	0.965	0.959	0.949	0.936	0.917	0.901	0.692
150	0.989	0.988	0.988	0.986	0.981	0.973	0.964	0.951	0.809
175	0.997	0.997	0.997	0.996	0.995	0.994	0.990	0.985	0.911
200	0.999	0.999	0.999	0.998	0.998	0.997	0.995	0.993	0.957
225	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.987
250	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.996

Table 41 - Lindisfarne: Density Independent simulation. Change in probability final year population size will be less than median (0%) unimpacted population size and percentages (1-50%) of median unimpacted size

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0000
25	0.129	0.129	0.128	0.128	0.123	0.116	0.116	0.111	0.0628
50	0.251	0.251	0.251	0.254	0.255	0.261	0.264	0.257	0.1754
75	0.349	0.352	0.354	0.362	0.370	0.375	0.386	0.386	0.2938
100	0.427	0.431	0.433	0.445	0.461	0.476	0.496	0.506	0.4332
125	0.466	0.473	0.478	0.495	0.519	0.544	0.570	0.596	0.5682
150	0.489	0.496	0.501	0.521	0.550	0.581	0.617	0.646	0.6854
175	0.497	0.504	0.510	0.532	0.564	0.602	0.643	0.680	0.7880
200	0.499	0.507	0.512	0.534	0.567	0.605	0.649	0.688	0.8334
225	0.500	0.507	0.513	0.535	0.569	0.608	0.653	0.695	0.8636
250	0.500	0.507	0.513	0.535	0.569	0.608	0.653	0.695	0.8728

Table 42 - Martin Mere: Density Independent simulation. Population growth rate

Addn. adult mortality	Median gr. rate	Lwr. 95%c.i.	Uppr. 95%c.i.	Chg. in median gr. rate	Chg. in lwr. 95%c.i.	Chg. in Uppr. 95%c.i.
0	1.0194	0.9657	1.0690	0.000000	-0.05362	0.049660
50	1.0139	0.9605	1.0631	-0.005491	-0.05890	0.043757
100	1.0089	0.9559	1.0572	-0.010499	-0.06349	0.037869
150	1.0021	0.9489	1.0517	-0.017271	-0.07049	0.032349
200	0.9957	0.9432	1.0429	-0.023687	-0.07615	0.023545
250	0.9885	0.9350	1.0366	-0.030853	-0.08432	0.017207
300	0.9829	0.9296	1.0298	-0.036457	-0.08973	0.010446
350	0.9766	0.9243	1.0244	-0.042724	-0.09509	0.005072
400	0.9710	0.9195	1.0168	-0.048415	-0.09987	-0.002542
450	0.9642	0.9121	1.0115	-0.055207	-0.10728	-0.007856
500	0.9587	0.9077	1.0050	-0.060678	-0.11164	-0.014328
550	0.9522	0.9033	0.9987	-0.067134	-0.11608	-0.020669
600	0.9458	0.8949	0.9921	-0.073556	-0.12445	-0.027228
650	0.9400	0.8907	0.9850	-0.079367	-0.12864	-0.034351
700	0.9334	0.8843	0.9792	-0.086000	-0.13508	-0.040133

Table 43 - Martin Mere: Density Independent simulation. Median population size at 5 year intervals

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	9136	10001	10986	12024	13176
50	8992	9546	10124	10866	11630
100	8724	9164	9476	9845	10312
150	8509	8621	8584	8628	8790
200	8316	8164	7934	7813	7563
250	8114	7592	7118	6906	6446
300	7948	7222	6629	6064	5527
350	7741	6828	6044	5408	4766
400	7554	6485	5642	4901	4199
450	7302	6062	5002	4220	3464
500	7123	5790	4690	3779	3044
550	6968	5442	4264	3310	2603
600	6788	5116	3795	2912	2220
650	6598	4810	3522	2584	1897
700	6404	4576	3190	2254	1600

Table 44 - Martin Mere: Density Independent simulation. Ratio of impacted to unimpacted median population size at 5 year intervals

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	1.000	1.000	1.000	1.000	1.000
50	0.984	0.955	0.921	0.904	0.883
100	0.955	0.916	0.862	0.819	0.783
150	0.931	0.862	0.781	0.718	0.667
200	0.910	0.816	0.722	0.650	0.574
250	0.888	0.759	0.648	0.574	0.489
300	0.870	0.722	0.603	0.504	0.419
350	0.847	0.683	0.550	0.450	0.362
400	0.827	0.648	0.514	0.408	0.319
450	0.799	0.606	0.455	0.351	0.263
500	0.780	0.579	0.427	0.314	0.231
550	0.763	0.544	0.388	0.275	0.198
600	0.743	0.512	0.345	0.242	0.168
650	0.722	0.481	0.321	0.215	0.144
700	0.701	0.458	0.290	0.187	0.121

Table 45 - Martin Mere: Density Independent simulation. Probability population will decline below initial size (100%) in any year of simulation and percentages of initial size (99-50%)

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.602	0.591	0.579	0.542	0.474	0.402	0.335	0.281	0.0676
50	0.656	0.645	0.633	0.594	0.528	0.465	0.400	0.334	0.0940
100	0.706	0.693	0.680	0.648	0.587	0.522	0.463	0.405	0.1168
150	0.779	0.769	0.761	0.733	0.674	0.615	0.553	0.481	0.1676
200	0.838	0.827	0.819	0.789	0.740	0.682	0.624	0.559	0.2330
250	0.881	0.875	0.869	0.851	0.812	0.765	0.713	0.652	0.3200
300	0.919	0.912	0.907	0.890	0.857	0.819	0.779	0.726	0.3930
350	0.953	0.950	0.947	0.936	0.911	0.880	0.842	0.798	0.4906
400	0.972	0.970	0.968	0.963	0.945	0.924	0.897	0.864	0.5652
450	0.984	0.982	0.981	0.976	0.966	0.954	0.933	0.912	0.6878
500	0.993	0.993	0.992	0.989	0.983	0.977	0.966	0.951	0.7582
550	0.997	0.997	0.997	0.996	0.994	0.990	0.985	0.976	0.8462
600	0.999	0.999	0.999	0.998	0.997	0.995	0.992	0.987	0.8948
650	0.999	0.999	0.999	0.999	0.999	0.998	0.996	0.995	0.9450
700	1.000	1.000	1.000	1.000	1.000	0.999	0.999	0.999	0.9714

Table 46 - Martin Mere: Density Independent simulation. Change in probability population will decline below initial size (100%) in any year of simulation and percentages of initial size (99-50%)

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
50	0.054	0.0542	0.0542	0.0516	0.0536	0.0622	0.0648	0.0536	0.0264
100	0.104	0.1028	0.1008	0.1058	0.1124	0.1200	0.1276	0.1238	0.0492
150	0.177	0.1782	0.1818	0.1910	0.2000	0.2124	0.2176	0.2002	0.1000
200	0.236	0.2366	0.2394	0.2470	0.2656	0.2792	0.2888	0.2782	0.1654
250	0.279	0.2844	0.2894	0.3092	0.3372	0.3622	0.3776	0.3716	0.2524
300	0.317	0.3214	0.3274	0.3480	0.3826	0.4170	0.4442	0.4450	0.3254
350	0.351	0.3592	0.3680	0.3938	0.4366	0.4776	0.5068	0.5170	0.4230
400	0.370	0.3792	0.3890	0.4214	0.4708	0.5220	0.5622	0.5834	0.4976
450	0.382	0.3914	0.4018	0.4340	0.4914	0.5520	0.5976	0.6312	0.6202
500	0.391	0.4022	0.4132	0.4468	0.5088	0.5748	0.6310	0.6704	0.6906
550	0.395	0.4064	0.4174	0.4542	0.5198	0.5872	0.6496	0.6956	0.7786
600	0.397	0.4086	0.4200	0.4564	0.5222	0.5926	0.6568	0.7066	0.8272
650	0.397	0.4088	0.4202	0.4574	0.5246	0.5954	0.6612	0.7138	0.8774
700	0.398	0.4092	0.4206	0.4578	0.5254	0.5970	0.6642	0.7178	0.9038

Table 47 - Martin Mere: Density Independent simulation. Probability population will be below initial size in years 5/10/15/20/25

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	0.333	0.291	0.257	0.226	0.203
50	0.352	0.339	0.312	0.288	0.259
100	0.389	0.378	0.370	0.358	0.346
150	0.442	0.446	0.454	0.461	0.449
200	0.475	0.506	0.526	0.541	0.558
250	0.517	0.590	0.621	0.645	0.668
300	0.561	0.631	0.696	0.723	0.756
350	0.601	0.704	0.766	0.800	0.833
400	0.644	0.763	0.823	0.868	0.898
450	0.697	0.818	0.877	0.918	0.941
500	0.737	0.854	0.917	0.950	0.973
550	0.776	0.907	0.952	0.978	0.988
600	0.820	0.939	0.977	0.989	0.996
650	0.856	0.961	0.986	0.995	0.999
700	0.884	0.974	0.993	0.999	1.000

Table 48 - Martin Mere: Density Independent simulation. Increase in probability population will be below initial size in years 5/10/15/20/25

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	0.0000	0.0000	0.0000	0.0000	0.0000
50	0.0196	0.0474	0.0552	0.0616	0.0558
100	0.0564	0.0870	0.1132	0.1318	0.1436
150	0.1094	0.1550	0.1972	0.2352	0.2458
200	0.1424	0.2152	0.2692	0.3148	0.3552
250	0.1844	0.2986	0.3646	0.4192	0.4652
300	0.2280	0.3398	0.4396	0.4970	0.5532
350	0.2678	0.4132	0.5094	0.5744	0.6306
400	0.3112	0.4714	0.5662	0.6420	0.6954
450	0.3640	0.5264	0.6200	0.6922	0.7386
500	0.4044	0.5628	0.6606	0.7244	0.7698
550	0.4430	0.6158	0.6958	0.7516	0.7854
600	0.4870	0.6474	0.7204	0.7630	0.7928
650	0.5234	0.6698	0.7290	0.7688	0.7960
700	0.5508	0.6830	0.7366	0.7728	0.7968

Table 49 - Martin Mere: Density Independent simulation. Probability final year population size will be less than median (0%) unimpacted population size and percentages (1-50%) of median unimpacted size

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.500	0.493	0.488	0.465	0.428	0.386	0.346	0.303	0.118
50	0.589	0.581	0.574	0.551	0.515	0.475	0.428	0.379	0.162
100	0.675	0.669	0.662	0.639	0.596	0.555	0.514	0.466	0.225
150	0.765	0.760	0.755	0.736	0.702	0.665	0.624	0.583	0.315
200	0.843	0.839	0.834	0.818	0.789	0.760	0.720	0.680	0.408
250	0.906	0.903	0.898	0.888	0.868	0.844	0.819	0.787	0.515
300	0.945	0.942	0.939	0.930	0.915	0.898	0.876	0.847	0.620
350	0.974	0.973	0.972	0.967	0.959	0.944	0.928	0.906	0.714
400	0.989	0.989	0.988	0.986	0.982	0.977	0.966	0.952	0.796
450	0.996	0.995	0.995	0.994	0.991	0.985	0.981	0.975	0.878
500	0.999	0.999	0.999	0.999	0.998	0.997	0.994	0.991	0.925
550	0.999	0.999	0.999	0.999	0.999	0.999	0.998	0.996	0.965
600	1.000	1.000	1.000	1.000	1.000	1.000	0.999	0.999	0.981
650	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.992
700	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.998

Table 50 - Martin Mere: Density Independent simulation. Change in probability final year population size will be less than median (0%) unimpacted population size and percentages (1-50%) of median unimpacted size

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.000
50	0.0894	0.0876	0.0866	0.0854	0.0866	0.0896	0.0816	0.0754	0.044
100	0.1746	0.1760	0.1746	0.1736	0.1680	0.1692	0.1676	0.1624	0.107
150	0.2646	0.2670	0.2670	0.2702	0.2740	0.2798	0.2778	0.2794	0.198
200	0.3434	0.3458	0.3466	0.3526	0.3612	0.3744	0.3732	0.3762	0.291
250	0.4056	0.4098	0.4104	0.4224	0.4394	0.4588	0.4730	0.4832	0.397
300	0.4446	0.4488	0.4516	0.4646	0.4866	0.5124	0.5294	0.5438	0.502
350	0.4744	0.4802	0.4842	0.5020	0.5306	0.5586	0.5812	0.6030	0.597
400	0.4894	0.4956	0.5004	0.5204	0.5540	0.5910	0.6192	0.6484	0.679
450	0.4958	0.5024	0.5074	0.5284	0.5626	0.5992	0.6342	0.6712	0.760
500	0.4990	0.5060	0.5114	0.5336	0.5696	0.6112	0.6478	0.6878	0.807
550	0.4992	0.5062	0.5116	0.5338	0.5708	0.6132	0.6514	0.6930	0.848
600	0.5000	0.5070	0.5124	0.5346	0.5718	0.6140	0.6528	0.6952	0.864
650	0.5000	0.5070	0.5124	0.5344	0.5716	0.6142	0.6534	0.6964	0.875
700	0.5000	0.5070	0.5124	0.5346	0.5718	0.6142	0.6534	0.6964	0.880

Table 51 - Morecambe Bay: Density Independent simulation. Population growth rate

Addn. adult mortality	Median gr. rate	Lwr. 95%c.i.	Uppr. 95%c.i.	Chg. in median gr. rate	Chg. in lwr. 95%c.i.	Chg. in Uppr. 95%c.i.
0	1.0203	0.9673	1.0702	0.000000	-0.05302	0.049908
100	1.0167	0.9625	1.0668	-0.003613	-0.05773	0.046497
200	1.0135	0.9595	1.0647	-0.006765	-0.06075	0.044439
300	1.0101	0.9566	1.0585	-0.010220	-0.06370	0.038208
400	1.0054	0.9518	1.0549	-0.014844	-0.06851	0.034667
500	1.0021	0.9473	1.0504	-0.018172	-0.07302	0.030115
600	0.9992	0.9467	1.0471	-0.021084	-0.07362	0.026816
700	0.9950	0.9421	1.0437	-0.025269	-0.07820	0.023452
800	0.9918	0.9384	1.0404	-0.028461	-0.08192	0.020092
900	0.9885	0.9367	1.0362	-0.031795	-0.08355	0.015944
1000	0.9851	0.9318	1.0316	-0.035175	-0.08846	0.011339
1100	0.9816	0.9280	1.0294	-0.038650	-0.09228	0.009124
1200	0.9782	0.9265	1.0261	-0.042117	-0.09379	0.005860
1300	0.9744	0.9220	1.0219	-0.045865	-0.09825	0.001648
1400	0.9712	0.9192	1.0179	-0.049041	-0.10110	-0.002387
1500	0.9677	0.9175	1.0137	-0.052598	-0.10282	-0.006533
1600	0.9640	0.9117	1.0114	-0.056284	-0.10853	-0.008910
1700	0.9609	0.9107	1.0073	-0.059354	-0.10960	-0.013026
1800	0.9570	0.9079	1.0034	-0.063278	-0.11238	-0.016860
1900	0.9539	0.9037	1.0007	-0.066362	-0.11658	-0.019542
2000	0.9504	0.8991	0.9971	-0.069855	-0.12122	-0.023151
2100	0.9471	0.8977	0.9932	-0.073168	-0.12259	-0.027122
2200	0.9431	0.8927	0.9891	-0.077155	-0.12755	-0.031133
2300	0.9394	0.8884	0.9845	-0.080833	-0.13187	-0.035746
2400	0.9357	0.8850	0.9822	-0.084563	-0.13526	-0.038074
2500	0.9329	0.8825	0.9777	-0.087401	-0.13777	-0.042574

Table 52 - Morecambe Bay: Density Independent simulation. Median population size at 5 year intervals

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	32872	36163	39722	44062	48568
100	31868	34510	37353	40769	43861
200	31697	33724	36405	38391	40990
300	31444	32821	34473	35816	37814
400	30648	31477	32643	33494	34030
500	30357	30387	31036	31332	31916
600	30119	30024	29710	29274	29402
700	29445	28894	28063	27463	26374
800	29166	27744	26741	25593	24819
900	28599	27204	25352	23779	22746
1000	28341	26261	24251	22582	21033
1100	28001	25592	23313	20895	19166
1200	27548	24694	21710	19484	17530
1300	27165	23925	20930	18176	15968
1400	26799	23110	19888	17212	14768
1500	26554	22446	19071	16267	13724
1600	25718	21318	17676	14810	12384
1700	25657	20978	17166	13873	11482
1800	25185	20135	16240	13102	10417
1900	24836	19830	15508	12234	9698
2000	24620	19000	14802	11424	8891
2100	24193	18394	13997	10690	8071
2200	23642	17625	12936	9778	7287
2300	23546	17129	12524	9212	6720
2400	23098	16446	11906	8583	6130
2500	22810	15992	11224	7976	5650

Table 53 - Morecambe Bay: Density Independent simulation. Ratio of impacted to unimpacted median population size at 5 year intervals

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	1.000	1.000	1.000	1.000	1.000
100	0.969	0.954	0.940	0.925	0.903
200	0.964	0.933	0.916	0.871	0.844
300	0.957	0.908	0.868	0.813	0.779
400	0.932	0.870	0.822	0.760	0.701
500	0.923	0.840	0.781	0.711	0.657
600	0.916	0.830	0.748	0.664	0.605
700	0.896	0.799	0.706	0.623	0.543
800	0.887	0.767	0.673	0.581	0.511
900	0.870	0.752	0.638	0.540	0.468
1000	0.862	0.726	0.611	0.512	0.433
1100	0.852	0.708	0.587	0.474	0.395
1200	0.838	0.683	0.547	0.442	0.361
1300	0.826	0.662	0.527	0.412	0.329
1400	0.815	0.639	0.501	0.391	0.304
1500	0.808	0.621	0.480	0.369	0.283
1600	0.782	0.590	0.445	0.336	0.255
1700	0.780	0.580	0.432	0.315	0.236
1800	0.766	0.557	0.409	0.297	0.214
1900	0.756	0.548	0.390	0.278	0.200
2000	0.749	0.525	0.373	0.259	0.183
2100	0.736	0.509	0.352	0.243	0.166
2200	0.719	0.487	0.326	0.222	0.150
2300	0.716	0.474	0.315	0.209	0.138
2400	0.703	0.455	0.300	0.195	0.126
2500	0.694	0.442	0.283	0.181	0.116

Table 54 - Morecambe Bay: Density Independent simulation. Probability population will decline below initial size (100%) in any year of simulation and percentages of initial size (99-50%)

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.580	0.566	0.549	0.508	0.444	0.381	0.323	0.265	0.0616
100	0.633	0.622	0.609	0.571	0.502	0.438	0.377	0.324	0.0802
200	0.651	0.637	0.627	0.586	0.525	0.465	0.405	0.341	0.0958
300	0.694	0.681	0.672	0.637	0.578	0.514	0.444	0.379	0.1132
400	0.741	0.726	0.713	0.675	0.614	0.558	0.498	0.436	0.1460
500	0.773	0.762	0.755	0.723	0.660	0.601	0.540	0.477	0.1750
600	0.795	0.788	0.779	0.748	0.694	0.644	0.578	0.512	0.1998
700	0.839	0.830	0.823	0.795	0.747	0.689	0.626	0.566	0.2326
800	0.862	0.854	0.846	0.822	0.778	0.729	0.669	0.612	0.2768
900	0.888	0.881	0.876	0.853	0.815	0.770	0.713	0.650	0.3216
1000	0.906	0.901	0.896	0.875	0.838	0.799	0.754	0.697	0.3542
1100	0.929	0.925	0.921	0.905	0.874	0.836	0.796	0.744	0.4064
1200	0.943	0.939	0.935	0.922	0.898	0.866	0.830	0.790	0.4698
1300	0.963	0.960	0.956	0.947	0.925	0.900	0.866	0.819	0.5214
1400	0.969	0.967	0.964	0.957	0.942	0.919	0.892	0.855	0.5738
1500	0.979	0.978	0.978	0.971	0.961	0.943	0.916	0.890	0.6214
1600	0.985	0.983	0.982	0.977	0.970	0.956	0.937	0.913	0.6856
1700	0.991	0.991	0.990	0.985	0.978	0.967	0.953	0.937	0.7410
1800	0.994	0.993	0.992	0.990	0.984	0.977	0.967	0.951	0.7778
1900	0.996	0.996	0.995	0.994	0.990	0.984	0.978	0.967	0.8230
2000	0.997	0.997	0.997	0.995	0.992	0.988	0.983	0.974	0.8636
2100	0.998	0.998	0.998	0.997	0.996	0.994	0.989	0.984	0.8866
2200	1.000	1.000	1.000	1.000	0.997	0.996	0.994	0.992	0.9262
2300	0.999	0.999	0.999	0.999	0.999	0.998	0.998	0.994	0.9490
2400	1.000	1.000	1.000	1.000	1.000	0.999	0.999	0.997	0.9634
2500	1.000	1.000	1.000	1.000	1.000	0.999	0.999	0.998	0.9734

Table 55 - Morecambe Bay: Density Independent simulation. Change in probability population will decline below initial size (100%) in any year of simulation and percentages of initial size (99-50%)

Additional adult	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
100	0.0538	0.0558	0.0598	0.0626	0.0574	0.0574	0.0536	0.0590	0.0186
200	0.0710	0.0716	0.0780	0.0780	0.0804	0.0846	0.0812	0.0766	0.0342
300	0.1142	0.1156	0.1230	0.1292	0.1342	0.1332	0.1210	0.1148	0.0516
400	0.1614	0.1598	0.1636	0.1672	0.1700	0.1776	0.1742	0.1716	0.0844
500	0.1936	0.1962	0.2056	0.2152	0.2160	0.2206	0.2168	0.2120	0.1134
600	0.2154	0.2218	0.2300	0.2396	0.2502	0.2630	0.2548	0.2476	0.1382
700	0.2594	0.2640	0.2736	0.2872	0.3032	0.3082	0.3022	0.3014	0.1710
800	0.2826	0.2880	0.2970	0.3136	0.3336	0.3484	0.3452	0.3478	0.2152
900	0.3082	0.3156	0.3268	0.3446	0.3704	0.3898	0.3896	0.3856	0.2600
1000	0.3260	0.3348	0.3474	0.3666	0.3942	0.4182	0.4306	0.4324	0.2926
1100	0.3490	0.3592	0.3722	0.3964	0.4298	0.4554	0.4722	0.4794	0.3448
1200	0.3634	0.3736	0.3856	0.4142	0.4542	0.4850	0.5068	0.5258	0.4082
1300	0.3838	0.3938	0.4068	0.4392	0.4806	0.5198	0.5424	0.5546	0.4598
1400	0.3890	0.4012	0.4150	0.4484	0.4976	0.5380	0.5690	0.5902	0.5122
1500	0.3998	0.4122	0.4286	0.4624	0.5172	0.5620	0.5926	0.6256	0.5598
1600	0.4052	0.4174	0.4332	0.4692	0.5256	0.5756	0.6136	0.6482	0.6240
1700	0.4112	0.4248	0.4406	0.4766	0.5338	0.5868	0.6292	0.6722	0.6794
1800	0.4146	0.4272	0.4430	0.4814	0.5400	0.5968	0.6434	0.6864	0.7162
1900	0.4166	0.4302	0.4464	0.4858	0.5462	0.6038	0.6550	0.7026	0.7614
2000	0.4176	0.4312	0.4478	0.4864	0.5482	0.6070	0.6592	0.7098	0.8020
2100	0.4188	0.4324	0.4490	0.4890	0.5516	0.6134	0.6660	0.7196	0.8250
2200	0.4202	0.4340	0.4508	0.4916	0.5530	0.6152	0.6706	0.7274	0.8646
2300	0.4198	0.4336	0.4504	0.4912	0.5548	0.6176	0.6744	0.7298	0.8874
2400	0.4204	0.4342	0.4510	0.4918	0.5554	0.6184	0.6752	0.7326	0.9018
2500	0.4204	0.4342	0.4510	0.4916	0.5554	0.6186	0.6754	0.7338	0.9118

Table 56 - Morecambe Bay: Density Independent simulation. Probability population will be below initial size in years 5/10/15/20/25

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	0.318	0.276	0.242	0.217	0.186
100	0.348	0.322	0.292	0.266	0.242
200	0.355	0.337	0.318	0.298	0.278
300	0.383	0.368	0.357	0.340	0.324
400	0.422	0.416	0.403	0.400	0.395
500	0.434	0.450	0.447	0.445	0.442
600	0.449	0.472	0.483	0.497	0.492
700	0.483	0.512	0.539	0.547	0.564
800	0.499	0.554	0.575	0.605	0.619
900	0.531	0.577	0.624	0.655	0.680
1000	0.551	0.621	0.662	0.689	0.723
1100	0.569	0.651	0.702	0.751	0.781
1200	0.599	0.684	0.748	0.794	0.819
1300	0.624	0.723	0.786	0.821	0.856
1400	0.648	0.754	0.814	0.865	0.890
1500	0.656	0.789	0.854	0.895	0.925
1600	0.713	0.824	0.884	0.920	0.942
1700	0.725	0.843	0.908	0.939	0.961
1800	0.738	0.855	0.924	0.957	0.972
1900	0.762	0.890	0.943	0.968	0.982
2000	0.782	0.907	0.953	0.979	0.988
2100	0.804	0.925	0.966	0.985	0.993
2200	0.850	0.947	0.981	0.991	0.996
2300	0.849	0.957	0.986	0.996	0.999
2400	0.876	0.965	0.992	0.998	1.000
2500	0.885	0.971	0.992	0.999	0.999

Table 57 - Morecambe Bay: Density Independent simulation. Increase in probability population will be below initial size in years 5/10/15/20/25

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	0.0000	0.0000	0.0000	0.0000	0.0000
100	0.0302	0.0456	0.0504	0.0494	0.0554
200	0.0370	0.0606	0.0760	0.0818	0.0914
300	0.0648	0.0918	0.1150	0.1230	0.1372
400	0.1036	0.1400	0.1614	0.1832	0.2082
500	0.1162	0.1738	0.2058	0.2282	0.2558
600	0.1306	0.1956	0.2418	0.2804	0.3052
700	0.1644	0.2354	0.2972	0.3306	0.3772
800	0.1808	0.2774	0.3338	0.3880	0.4324
900	0.2130	0.3004	0.3820	0.4380	0.4934
1000	0.2328	0.3446	0.4204	0.4722	0.5362
1100	0.2508	0.3752	0.4606	0.5344	0.5944
1200	0.2812	0.4078	0.5062	0.5774	0.6326
1300	0.3058	0.4472	0.5444	0.6048	0.6694
1400	0.3298	0.4780	0.5728	0.6480	0.7032
1500	0.3382	0.5130	0.6126	0.6784	0.7384
1600	0.3950	0.5480	0.6428	0.7036	0.7556
1700	0.4070	0.5668	0.6660	0.7224	0.7742
1800	0.4202	0.5792	0.6820	0.7402	0.7852
1900	0.4440	0.6136	0.7010	0.7512	0.7958
2000	0.4640	0.6310	0.7118	0.7626	0.8018
2100	0.4858	0.6484	0.7248	0.7686	0.8068
2200	0.5316	0.6708	0.7390	0.7746	0.8098
2300	0.5308	0.6806	0.7446	0.7796	0.8124
2400	0.5574	0.6890	0.7504	0.7812	0.8132
2500	0.5672	0.6946	0.7508	0.7824	0.8130

Table 58 - Morecambe Bay: Density Independent simulation. Probability final year population size will be less than median (0%) unimpacted population size and percentages (1-50%) of median unimpacted size

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.500	0.493	0.487	0.465	0.431	0.390	0.348	0.306	0.118
100	0.570	0.563	0.555	0.534	0.497	0.459	0.420	0.380	0.156
200	0.615	0.609	0.602	0.582	0.544	0.504	0.462	0.416	0.187
300	0.672	0.668	0.661	0.645	0.606	0.565	0.520	0.476	0.224
400	0.741	0.734	0.727	0.706	0.673	0.631	0.593	0.544	0.285
500	0.785	0.781	0.776	0.756	0.722	0.685	0.642	0.595	0.330
600	0.820	0.813	0.807	0.792	0.764	0.730	0.695	0.650	0.369
700	0.867	0.863	0.859	0.844	0.816	0.784	0.750	0.715	0.444
800	0.900	0.897	0.894	0.883	0.861	0.831	0.799	0.764	0.482
900	0.926	0.923	0.921	0.912	0.895	0.872	0.843	0.813	0.550
1000	0.947	0.944	0.941	0.931	0.913	0.893	0.872	0.842	0.606
1100	0.960	0.958	0.956	0.950	0.939	0.923	0.906	0.881	0.664
1200	0.970	0.969	0.968	0.964	0.953	0.941	0.927	0.909	0.721
1300	0.984	0.983	0.982	0.979	0.971	0.960	0.948	0.932	0.761
1400	0.989	0.989	0.988	0.986	0.982	0.973	0.962	0.952	0.814
1500	0.995	0.995	0.994	0.993	0.989	0.985	0.979	0.969	0.858
1600	0.995	0.995	0.994	0.993	0.991	0.988	0.983	0.978	0.889
1700	0.997	0.997	0.997	0.996	0.995	0.993	0.990	0.985	0.922
1800	0.999	0.999	0.999	0.998	0.997	0.997	0.994	0.992	0.943
1900	0.999	0.999	0.999	0.999	0.999	0.998	0.997	0.995	0.959
2000	0.999	0.999	0.999	0.999	0.999	0.999	0.998	0.997	0.971
2100	1.000	1.000	1.000	1.000	1.000	0.999	0.999	0.998	0.983
2200	1.000	1.000	1.000	1.000	1.000	1.000	0.999	0.999	0.990
2300	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.995
2400	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.997
2500	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.998

Table 59 - Morecambe Bay: Density Independent simulation. Change in probability final year population size will be less than median (0%) unimpacted population size and percentages (1-50%) of median unimpacted size

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.0000	0.000	0.000	0.000	0.0000	0.000	0.0000	0.0000	0.0000
100	0.0698	0.070	0.068	0.069	0.0664	0.069	0.0726	0.0744	0.0386
200	0.1152	0.116	0.115	0.117	0.1138	0.114	0.1144	0.1106	0.0692
300	0.1724	0.175	0.174	0.180	0.1750	0.175	0.1728	0.1700	0.1060
400	0.2412	0.241	0.240	0.242	0.2422	0.242	0.2454	0.2386	0.1672
500	0.2854	0.288	0.289	0.291	0.2916	0.295	0.2942	0.2896	0.2122
600	0.3204	0.320	0.320	0.327	0.3332	0.341	0.3472	0.3438	0.2514
700	0.3672	0.370	0.372	0.380	0.3852	0.394	0.4020	0.4088	0.3266
800	0.3998	0.404	0.407	0.418	0.4302	0.442	0.4518	0.4586	0.3640
900	0.4262	0.430	0.434	0.448	0.4640	0.482	0.4956	0.5070	0.4322
1000	0.4470	0.451	0.454	0.467	0.4824	0.504	0.5246	0.5362	0.4884
1100	0.4600	0.465	0.469	0.485	0.5088	0.533	0.5580	0.5748	0.5462
1200	0.4704	0.476	0.481	0.499	0.5228	0.552	0.5798	0.6034	0.6028
1300	0.4842	0.490	0.495	0.515	0.5400	0.570	0.6004	0.6260	0.6436
1400	0.4894	0.496	0.501	0.521	0.5510	0.584	0.6148	0.6462	0.6966
1500	0.4954	0.502	0.507	0.529	0.5586	0.595	0.6310	0.6632	0.7402
1600	0.4954	0.502	0.507	0.529	0.5606	0.599	0.6352	0.6724	0.7712
1700	0.4974	0.504	0.510	0.531	0.5644	0.603	0.6426	0.6796	0.8038
1800	0.4986	0.506	0.512	0.534	0.5668	0.607	0.6464	0.6862	0.8248
1900	0.4992	0.506	0.512	0.534	0.5684	0.609	0.6496	0.6892	0.8410
2000	0.4992	0.506	0.512	0.534	0.5682	0.609	0.6502	0.6910	0.8528
2100	0.4998	0.507	0.513	0.535	0.5690	0.609	0.6510	0.6918	0.8656
2200	0.5000	0.507	0.513	0.535	0.5692	0.610	0.6516	0.6930	0.8722
2300	0.5000	0.507	0.513	0.535	0.5694	0.610	0.6524	0.6942	0.8768
2400	0.5000	0.507	0.513	0.535	0.5694	0.610	0.6524	0.6942	0.8792
2500	0.5000	0.507	0.513	0.535	0.5694	0.610	0.6524	0.6942	0.8798

Table 60 - North Norfolk Coast: Density Independent simulation. Population growth rate

Addn. adult mortality	Median gr. rate	Lwr. 95%c.i.	Uppr. 95%c.i.	Chg. in median gr. rate	Chg. in lwr. 95%c.i.	Chg. in Uppr. 95%c.i.
0	1.0192	0.9661	1.0678	0.000000	-0.05311	0.0486221
50	1.0172	0.9656	1.0663	-0.001988	-0.05356	0.0470670
100	1.0152	0.9626	1.0647	-0.003983	-0.05657	0.0454774
150	1.0117	0.9571	1.0613	-0.007527	-0.06205	0.0421495
200	1.0093	0.9560	1.0576	-0.009922	-0.06318	0.0384274
250	1.0066	0.9531	1.0552	-0.012561	-0.06607	0.0360420
300	1.0036	0.9500	1.0518	-0.015628	-0.06917	0.0325977
350	1.0008	0.9482	1.0482	-0.018338	-0.07099	0.0290334
400	0.9981	0.9453	1.0459	-0.021123	-0.07385	0.0267475
450	0.9948	0.9412	1.0440	-0.024427	-0.07800	0.0247964
500	0.9920	0.9398	1.0407	-0.027208	-0.07939	0.0214925
550	0.9894	0.9367	1.0394	-0.029806	-0.08252	0.0201758
600	0.9865	0.9340	1.0341	-0.032720	-0.08519	0.0149450
650	0.9833	0.9320	1.0306	-0.035852	-0.08715	0.0113876
700	0.9809	0.9268	1.0299	-0.038301	-0.09237	0.0106937
750	0.9783	0.9265	1.0258	-0.040882	-0.09266	0.0065857
800	0.9752	0.9244	1.0222	-0.043944	-0.09478	0.0030202
850	0.9724	0.9205	1.0199	-0.046767	-0.09866	0.0006771
900	0.9701	0.9166	1.0173	-0.049122	-0.10258	-0.0019125
950	0.9677	0.9162	1.0139	-0.051477	-0.10299	-0.0052889
1000	0.9644	0.9126	1.0102	-0.054810	-0.10658	-0.0090296
1050	0.9622	0.9099	1.0073	-0.057016	-0.10930	-0.0118674
1100	0.9588	0.9070	1.0072	-0.060386	-0.11217	-0.0119533
1150	0.9560	0.9049	1.0022	-0.063149	-0.11429	-0.0170197
1200	0.9531	0.9020	0.9998	-0.066104	-0.11723	-0.0193883
1250	0.9502	0.8990	0.9972	-0.069020	-0.12019	-0.0219386
1300	0.9472	0.8975	0.9937	-0.071962	-0.12165	-0.0254819
1350	0.9450	0.8950	0.9908	-0.074163	-0.12422	-0.0284014
1400	0.9420	0.8929	0.9868	-0.077174	-0.12632	-0.0323362
1450	0.9387	0.8887	0.9852	-0.080512	-0.13044	-0.0340236
1500	0.9367	0.8855	0.9823	-0.082440	-0.13373	-0.0368529

Table 61 - North Norfolk Coast: Density Independent simulation. Median population size at 5 year intervals

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	20489	22360	24648	27067	29737
50	20226	21947	23917	26134	28455
100	20030	21513	23164	25016	26912
150	19693	21018	22174	23397	24875
200	19577	20564	21404	22318	23409
250	19452	20088	20690	21221	21963
300	19129	19719	19797	20170	20586
350	18962	19035	19085	19030	19069
400	18804	18692	18763	18344	18160
450	18491	18093	17603	17102	16518
500	18333	17513	16669	15928	15433
550	18024	17231	16283	15401	14377
600	17857	16630	15588	14638	13626
650	17626	16191	14951	13724	12564
700	17469	15939	14368	12999	11757
750	17270	15272	13810	12366	11006
800	16982	14946	13214	11693	10238
850	16950	14720	12704	11060	9610
900	16753	14474	12310	10530	9028
950	16646	13992	11897	9963	8555
1000	16374	13744	11520	9600	7894
1050	16115	13375	11022	9042	7534
1100	16056	12861	10546	8503	6846
1150	15700	12493	10008	7952	6331
1200	15564	12246	9674	7630	5886
1250	15458	11996	9150	7142	5539
1300	15246	11629	8820	6626	5060
1350	15082	11422	8514	6362	4822
1400	14771	10894	8084	6016	4438
1450	14756	10761	7834	5670	4096
1500	14598	10472	7502	5394	3906

Table 62 - North Norfolk Coast: Density Independent simulation. Ratio of impacted to unimpacted median population size at 5 year intervals

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	1.000	1.000	1.000	1.000	1.000
50	0.987	0.982	0.970	0.966	0.957
100	0.978	0.962	0.940	0.924	0.905
150	0.961	0.940	0.900	0.864	0.836
200	0.955	0.920	0.868	0.825	0.787
250	0.949	0.898	0.839	0.784	0.739
300	0.934	0.882	0.803	0.745	0.692
350	0.925	0.851	0.774	0.703	0.641
400	0.918	0.836	0.761	0.678	0.611
450	0.903	0.809	0.714	0.632	0.555
500	0.895	0.783	0.676	0.588	0.519
550	0.880	0.771	0.661	0.569	0.483
600	0.872	0.744	0.632	0.541	0.458
650	0.860	0.724	0.607	0.507	0.423
700	0.853	0.713	0.583	0.480	0.395
750	0.843	0.683	0.560	0.457	0.370
800	0.829	0.668	0.536	0.432	0.344
850	0.827	0.658	0.515	0.409	0.323
900	0.818	0.647	0.499	0.389	0.304
950	0.812	0.626	0.483	0.368	0.288
1000	0.799	0.615	0.467	0.355	0.265
1050	0.787	0.598	0.447	0.334	0.253
1100	0.784	0.575	0.428	0.314	0.230
1150	0.766	0.559	0.406	0.294	0.213
1200	0.760	0.548	0.392	0.282	0.198
1250	0.754	0.536	0.371	0.264	0.186
1300	0.744	0.520	0.358	0.245	0.170
1350	0.736	0.511	0.345	0.235	0.162
1400	0.721	0.487	0.328	0.222	0.149
1450	0.720	0.481	0.318	0.209	0.138
1500	0.712	0.468	0.304	0.199	0.131

Table 63 - North Norfolk Coast: Density Independent simulation. Probability population will decline below initial size (100%) in any year of simulation and percentages of initial size (99-50%)

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.592	0.580	0.567	0.526	0.458	0.399	0.334	0.278	0.0676
50	0.621	0.608	0.596	0.557	0.486	0.420	0.356	0.291	0.0758
100	0.638	0.625	0.613	0.573	0.511	0.446	0.381	0.321	0.0846
150	0.677	0.664	0.651	0.614	0.550	0.485	0.420	0.362	0.1042
200	0.705	0.694	0.684	0.648	0.581	0.516	0.450	0.385	0.1160
250	0.730	0.718	0.708	0.676	0.615	0.551	0.488	0.420	0.1372
300	0.753	0.745	0.733	0.699	0.640	0.577	0.514	0.448	0.1618
350	0.787	0.779	0.770	0.743	0.688	0.624	0.557	0.489	0.1854
400	0.802	0.794	0.785	0.755	0.699	0.643	0.585	0.520	0.2110
450	0.838	0.831	0.822	0.793	0.749	0.700	0.637	0.577	0.2458
500	0.867	0.860	0.853	0.827	0.780	0.730	0.674	0.612	0.2824
550	0.878	0.873	0.867	0.847	0.803	0.759	0.708	0.653	0.3094
600	0.897	0.891	0.886	0.866	0.830	0.788	0.737	0.679	0.3460
650	0.914	0.910	0.905	0.889	0.857	0.820	0.774	0.730	0.3850
700	0.933	0.928	0.924	0.908	0.876	0.848	0.801	0.755	0.4274
750	0.948	0.943	0.939	0.924	0.900	0.870	0.832	0.792	0.4672
800	0.958	0.955	0.952	0.940	0.919	0.893	0.860	0.821	0.5102
850	0.966	0.964	0.962	0.950	0.933	0.907	0.881	0.843	0.5470
900	0.970	0.968	0.965	0.958	0.943	0.923	0.895	0.864	0.5900
950	0.980	0.978	0.977	0.968	0.958	0.940	0.919	0.887	0.6274
1000	0.986	0.985	0.984	0.979	0.969	0.957	0.939	0.915	0.6800
1050	0.989	0.988	0.987	0.985	0.976	0.965	0.951	0.930	0.7056
1100	0.991	0.990	0.990	0.988	0.984	0.974	0.964	0.947	0.7596
1150	0.993	0.993	0.992	0.990	0.985	0.978	0.968	0.955	0.7930
1200	0.996	0.996	0.995	0.995	0.992	0.987	0.980	0.969	0.8288
1250	0.998	0.997	0.997	0.996	0.994	0.989	0.984	0.977	0.8602
1300	0.999	0.999	0.999	0.998	0.996	0.992	0.990	0.983	0.8900
1350	0.998	0.998	0.998	0.997	0.996	0.994	0.991	0.987	0.9068
1400	1.000	0.999	0.999	0.999	0.999	0.998	0.997	0.994	0.9358
1450	1.000	1.000	1.000	1.000	0.999	0.998	0.996	0.994	0.9428
1500	1.000	1.000	1.000	1.000	0.999	0.999	0.997	0.995	0.9568

Table 64 - North Norfolk Coast: Density Independent simulation. Change in probability population will decline below initial size (100%) in any year of simulation and percentages of initial size (99-50%)

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
50	0.0294	0.0278	0.0288	0.0306	0.0286	0.0212	0.0216	0.0130	0.0082
100	0.0462	0.0456	0.0458	0.0472	0.0532	0.0474	0.0468	0.0434	0.0170
150	0.0852	0.0838	0.0842	0.0880	0.0922	0.0860	0.0852	0.0846	0.0366
200	0.1134	0.1146	0.1174	0.1218	0.1236	0.1174	0.1158	0.1068	0.0484
250	0.1378	0.1382	0.1408	0.1502	0.1576	0.1526	0.1534	0.1420	0.0696
300	0.1616	0.1650	0.1666	0.1732	0.1824	0.1778	0.1792	0.1706	0.0942
350	0.1954	0.1988	0.2028	0.2168	0.2300	0.2248	0.2224	0.2114	0.1178
400	0.2104	0.2138	0.2184	0.2286	0.2418	0.2442	0.2502	0.2424	0.1434
450	0.2460	0.2508	0.2552	0.2672	0.2912	0.3012	0.3028	0.2988	0.1782
500	0.2748	0.2804	0.2858	0.3010	0.3224	0.3316	0.3392	0.3342	0.2148
550	0.2864	0.2934	0.2998	0.3206	0.3458	0.3602	0.3736	0.3748	0.2418
600	0.3048	0.3112	0.3192	0.3398	0.3728	0.3888	0.4022	0.4008	0.2784
650	0.3224	0.3306	0.3386	0.3632	0.3998	0.4208	0.4400	0.4518	0.3174
700	0.3416	0.3482	0.3576	0.3820	0.4188	0.4488	0.4664	0.4774	0.3598
750	0.3562	0.3632	0.3718	0.3980	0.4426	0.4708	0.4980	0.5138	0.3996
800	0.3664	0.3752	0.3848	0.4140	0.4616	0.4944	0.5252	0.5430	0.4426
850	0.3744	0.3844	0.3950	0.4240	0.4752	0.5082	0.5468	0.5652	0.4794
900	0.3780	0.3880	0.3982	0.4318	0.4856	0.5240	0.5604	0.5862	0.5224
950	0.3878	0.3984	0.4104	0.4424	0.5000	0.5408	0.5850	0.6092	0.5598
1000	0.3946	0.4056	0.4176	0.4530	0.5118	0.5580	0.6048	0.6372	0.6124
1050	0.3972	0.4084	0.4204	0.4586	0.5188	0.5662	0.6166	0.6518	0.6380
1100	0.3994	0.4106	0.4230	0.4620	0.5260	0.5750	0.6294	0.6694	0.6920
1150	0.4014	0.4134	0.4254	0.4644	0.5278	0.5796	0.6340	0.6774	0.7254
1200	0.4042	0.4160	0.4286	0.4688	0.5344	0.5878	0.6452	0.6912	0.7612
1250	0.4060	0.4176	0.4302	0.4700	0.5362	0.5900	0.6500	0.6996	0.7926
1300	0.4072	0.4192	0.4318	0.4720	0.5380	0.5934	0.6552	0.7052	0.8224
1350	0.4064	0.4184	0.4314	0.4712	0.5384	0.5954	0.6564	0.7094	0.8392
1400	0.4078	0.4196	0.4326	0.4732	0.5412	0.5994	0.6630	0.7166	0.8682
1450	0.4082	0.4202	0.4328	0.4736	0.5412	0.5994	0.6616	0.7160	0.8752
1500	0.4078	0.4198	0.4328	0.4736	0.5418	0.6000	0.6628	0.7174	0.8892

Table 65 - North Norfolk Coast: Density Independent simulation. Probability population will be below initial size in years 5/10/15/20/25

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	0.320	0.285	0.254	0.228	0.209
50	0.340	0.304	0.278	0.247	0.230
100	0.354	0.325	0.286	0.269	0.251
150	0.378	0.354	0.338	0.321	0.305
200	0.391	0.374	0.361	0.343	0.329
250	0.404	0.400	0.394	0.390	0.382
300	0.424	0.418	0.427	0.426	0.418
350	0.440	0.449	0.462	0.467	0.470
400	0.453	0.475	0.475	0.499	0.505
450	0.482	0.515	0.535	0.557	0.574
500	0.496	0.552	0.586	0.612	0.618
550	0.525	0.572	0.605	0.632	0.656
600	0.542	0.606	0.646	0.674	0.710
650	0.561	0.642	0.678	0.715	0.748
700	0.575	0.656	0.713	0.747	0.784
750	0.598	0.699	0.745	0.789	0.823
800	0.626	0.727	0.780	0.826	0.853
850	0.631	0.744	0.806	0.843	0.875
900	0.652	0.757	0.822	0.868	0.895
950	0.671	0.788	0.854	0.894	0.927
1000	0.693	0.813	0.885	0.922	0.944
1050	0.718	0.832	0.895	0.931	0.958
1100	0.732	0.859	0.924	0.950	0.967
1150	0.757	0.881	0.933	0.958	0.974
1200	0.775	0.892	0.942	0.970	0.984
1250	0.787	0.912	0.961	0.980	0.988
1300	0.806	0.924	0.965	0.986	0.992
1350	0.816	0.935	0.974	0.987	0.994
1400	0.841	0.950	0.984	0.993	0.998
1450	0.846	0.956	0.985	0.996	0.999
1500	0.866	0.963	0.989	0.996	0.999

Table 66 - North Norfolk Coast: Density Independent simulation. Increase in probability population will be below initial size in years 5/10/15/20/25

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	0.0000	0.0000	0.0000	0.0000	0.0000
50	0.0204	0.0194	0.0244	0.0188	0.0210
100	0.0338	0.0404	0.0320	0.0406	0.0422
150	0.0582	0.0696	0.0842	0.0928	0.0960
200	0.0716	0.0892	0.1070	0.1150	0.1202
250	0.0840	0.1150	0.1404	0.1616	0.1730
300	0.1042	0.1338	0.1736	0.1972	0.2098
350	0.1198	0.1644	0.2080	0.2382	0.2614
400	0.1328	0.1900	0.2210	0.2702	0.2964
450	0.1624	0.2302	0.2818	0.3286	0.3650
500	0.1764	0.2674	0.3328	0.3832	0.4096
550	0.2048	0.2874	0.3518	0.4038	0.4478
600	0.2222	0.3210	0.3928	0.4456	0.5010
650	0.2414	0.3574	0.4246	0.4862	0.5390
700	0.2552	0.3718	0.4598	0.5182	0.5754
750	0.2778	0.4146	0.4914	0.5604	0.6144
800	0.3066	0.4422	0.5266	0.5972	0.6446
850	0.3108	0.4590	0.5528	0.6150	0.6668
900	0.3324	0.4726	0.5688	0.6400	0.6866
950	0.3510	0.5030	0.6008	0.6656	0.7182
1000	0.3730	0.5282	0.6314	0.6938	0.7352
1050	0.3980	0.5474	0.6418	0.7028	0.7498
1100	0.4124	0.5744	0.6708	0.7216	0.7580
1150	0.4374	0.5966	0.6790	0.7298	0.7658
1200	0.4550	0.6070	0.6886	0.7420	0.7758
1250	0.4674	0.6278	0.7078	0.7516	0.7794
1300	0.4862	0.6390	0.7114	0.7572	0.7832
1350	0.4962	0.6502	0.7200	0.7584	0.7854
1400	0.5214	0.6658	0.7300	0.7646	0.7892
1450	0.5266	0.6712	0.7316	0.7672	0.7902
1500	0.5460	0.6784	0.7358	0.7680	0.7906

Table 67 - North Norfolk Coast: Density Independent simulation. Probability final year population size will be less than median (0%) unimpacted population size and percentages (1-50%) of median unimpacted size

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.500	0.491	0.485	0.464	0.421	0.382	0.345	0.305	0.120
50	0.528	0.522	0.514	0.494	0.456	0.419	0.382	0.341	0.134
100	0.575	0.567	0.561	0.539	0.494	0.456	0.414	0.370	0.159
150	0.630	0.622	0.616	0.595	0.556	0.514	0.470	0.423	0.191
200	0.671	0.665	0.657	0.638	0.599	0.554	0.512	0.466	0.212
250	0.704	0.699	0.692	0.671	0.641	0.600	0.557	0.511	0.252
300	0.757	0.752	0.746	0.723	0.688	0.650	0.611	0.560	0.296
350	0.791	0.785	0.780	0.761	0.729	0.695	0.652	0.607	0.329
400	0.817	0.812	0.807	0.791	0.760	0.727	0.685	0.642	0.364
450	0.855	0.850	0.844	0.831	0.807	0.781	0.747	0.708	0.424
500	0.888	0.885	0.881	0.866	0.844	0.819	0.787	0.746	0.473
550	0.902	0.899	0.895	0.886	0.864	0.842	0.813	0.780	0.524
600	0.926	0.923	0.920	0.913	0.898	0.875	0.852	0.824	0.560
650	0.949	0.946	0.943	0.936	0.918	0.898	0.878	0.852	0.620
700	0.957	0.955	0.954	0.948	0.935	0.919	0.901	0.876	0.655
750	0.967	0.966	0.965	0.961	0.952	0.937	0.920	0.904	0.699
800	0.980	0.979	0.978	0.975	0.966	0.957	0.943	0.926	0.745
850	0.984	0.983	0.982	0.978	0.970	0.962	0.951	0.934	0.789
900	0.989	0.988	0.987	0.984	0.978	0.972	0.961	0.950	0.813
950	0.995	0.995	0.994	0.992	0.989	0.985	0.979	0.971	0.844
1000	0.996	0.996	0.995	0.995	0.993	0.991	0.985	0.979	0.880
1050	0.996	0.996	0.996	0.995	0.995	0.993	0.989	0.984	0.901
1100	0.999	0.999	0.998	0.998	0.996	0.993	0.990	0.987	0.927
1150	1.000	0.999	0.999	0.999	0.997	0.995	0.995	0.991	0.941
1200	0.999	0.999	0.999	0.999	0.998	0.998	0.997	0.995	0.957
1250	0.999	0.999	0.999	0.999	0.999	0.998	0.997	0.996	0.970
1300	1.000	1.000	1.000	1.000	1.000	0.999	0.999	0.998	0.977
1350	1.000	1.000	1.000	1.000	1.000	0.999	0.999	0.999	0.983
1400	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.992
1450	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.992
1500	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.999	0.994

Table 68 - North Norfolk Coast: Density Independent simulation. Change in probability final year population size will be less than median (0%) unimpacted population size and percentages (1-50%) of median unimpacted size

Additional adult	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
50	0.0284	0.0312	0.0296	0.0304	0.0352	0.0368	0.0362	0.0364	0.0134
100	0.0748	0.0754	0.0762	0.0746	0.0734	0.0736	0.0690	0.0646	0.0386
150	0.1304	0.1310	0.1312	0.1308	0.1348	0.1322	0.1244	0.1182	0.0712
200	0.1712	0.1736	0.1728	0.1736	0.1776	0.1716	0.1662	0.1610	0.0922
250	0.2044	0.2080	0.2076	0.2068	0.2204	0.2178	0.2116	0.2056	0.1318
300	0.2566	0.2612	0.2610	0.2588	0.2674	0.2674	0.2652	0.2550	0.1762
350	0.2910	0.2942	0.2952	0.2966	0.3084	0.3124	0.3070	0.3024	0.2086
400	0.3170	0.3204	0.3222	0.3268	0.3394	0.3444	0.3392	0.3366	0.2436
450	0.3548	0.3586	0.3592	0.3666	0.3858	0.3992	0.4018	0.4032	0.3038
500	0.3882	0.3936	0.3962	0.4024	0.4230	0.4366	0.4420	0.4410	0.3528
550	0.4018	0.4080	0.4102	0.4216	0.4434	0.4594	0.4678	0.4750	0.4036
600	0.4258	0.4318	0.4356	0.4490	0.4768	0.4926	0.5062	0.5194	0.4398
650	0.4486	0.4544	0.4588	0.4716	0.4966	0.5158	0.5330	0.5470	0.5000
700	0.4570	0.4642	0.4692	0.4842	0.5140	0.5364	0.5556	0.5712	0.5352
750	0.4674	0.4748	0.4802	0.4974	0.5308	0.5552	0.5742	0.5986	0.5788
800	0.4804	0.4882	0.4936	0.5108	0.5446	0.5744	0.5978	0.6210	0.6246
850	0.4836	0.4914	0.4974	0.5140	0.5486	0.5796	0.6054	0.6286	0.6692
900	0.4890	0.4972	0.5024	0.5200	0.5574	0.5898	0.6156	0.6448	0.6932
950	0.4954	0.5036	0.5092	0.5284	0.5684	0.6026	0.6334	0.6660	0.7236
1000	0.4962	0.5044	0.5108	0.5306	0.5716	0.6084	0.6394	0.6736	0.7600
1050	0.4964	0.5048	0.5112	0.5314	0.5738	0.6106	0.6434	0.6792	0.7804
1100	0.4986	0.5074	0.5138	0.5342	0.5746	0.6110	0.6446	0.6824	0.8066
1150	0.4996	0.5082	0.5148	0.5346	0.5760	0.6128	0.6494	0.6864	0.8204
1200	0.4992	0.5080	0.5146	0.5352	0.5774	0.6156	0.6516	0.6902	0.8372
1250	0.4994	0.5082	0.5148	0.5354	0.5782	0.6156	0.6518	0.6912	0.8498
1300	0.4996	0.5084	0.5150	0.5356	0.5786	0.6168	0.6532	0.6928	0.8566
1350	0.5000	0.5088	0.5154	0.5358	0.5786	0.6168	0.6536	0.6938	0.8632
1400	0.5000	0.5088	0.5154	0.5360	0.5790	0.6178	0.6546	0.6946	0.8722
1450	0.5000	0.5088	0.5154	0.5360	0.5790	0.6178	0.6544	0.6948	0.8716
1500	0.5000	0.5086	0.5152	0.5358	0.5788	0.6176	0.6544	0.6944	0.8742

Table 69 - Ribble and Alt Estuaries: Density Independent simulation. Population growth rate

Addn. adult mortality	Median gr. rate	Lwr. 95%c.i.	Uppr. 95%c.i.	Chg. in median gr. rate	Chg. in lwr. 95%c.i.	Chg. in Uppr. 95%c.i.
0	1.0193	0.9641	1.0694	0.000000	-0.05520	0.0500739
50	1.0175	0.9642	1.0667	-0.001842	-0.05512	0.0473456
100	1.0149	0.9608	1.0640	-0.004414	-0.05851	0.0446549
150	1.0117	0.9590	1.0603	-0.007614	-0.06038	0.0409535
200	1.0090	0.9544	1.0592	-0.010355	-0.06496	0.0398117
250	1.0052	0.9519	1.0528	-0.014172	-0.06749	0.0334581
300	1.0029	0.9488	1.0510	-0.016410	-0.07050	0.0316940
350	0.9995	0.9465	1.0482	-0.019859	-0.07285	0.0289034
400	0.9972	0.9445	1.0452	-0.022132	-0.07481	0.0258414
450	0.9941	0.9417	1.0427	-0.025277	-0.07767	0.0233881
500	0.9920	0.9398	1.0403	-0.027337	-0.07955	0.0209305
550	0.9888	0.9376	1.0369	-0.030517	-0.08171	0.0175596
600	0.9869	0.9337	1.0344	-0.032411	-0.08568	0.0150284
650	0.9835	0.9297	1.0313	-0.035804	-0.08964	0.0119261
700	0.9810	0.9289	1.0288	-0.038366	-0.09048	0.0094473
750	0.9779	0.9244	1.0255	-0.041444	-0.09493	0.0061304
800	0.9753	0.9242	1.0232	-0.044014	-0.09510	0.0038723
850	0.9720	0.9219	1.0190	-0.047345	-0.09745	-0.0003919
900	0.9692	0.9187	1.0170	-0.050193	-0.10063	-0.0023496
950	0.9666	0.9171	1.0131	-0.052707	-0.10221	-0.0062730
1000	0.9632	0.9107	1.0098	-0.056123	-0.10862	-0.0095220
1050	0.9619	0.9104	1.0080	-0.057440	-0.10892	-0.0113291
1100	0.9575	0.9046	1.0042	-0.061827	-0.11475	-0.0151156
1150	0.9556	0.9054	1.0011	-0.063724	-0.11390	-0.0182018
1200	0.9522	0.9011	0.9984	-0.067155	-0.11822	-0.0209592
1250	0.9490	0.8990	0.9966	-0.070324	-0.12034	-0.0226987
1300	0.9466	0.8950	0.9925	-0.072748	-0.12439	-0.0268303
1350	0.9442	0.8930	0.9885	-0.075095	-0.12639	-0.0308692
1400	0.9418	0.8912	0.9881	-0.077545	-0.12817	-0.0312114
1450	0.9383	0.8881	0.9842	-0.081017	-0.13124	-0.0351174
1500	0.9354	0.8860	0.9794	-0.083937	-0.13335	-0.0399681

Table 70 - Ribble and Alt Estuaries: Density Independent simulation. Median population size at 5 year intervals

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	20296	22242	24504	26931	29478
50	20029	21938	23896	26088	28209
100	19874	21379	22895	24317	26376
150	19575	20771	21999	23406	24743
200	19368	20158	21028	22022	23117
250	18984	19470	20170	20525	20980
300	18971	19386	19754	19937	20276
350	18609	18318	18559	18512	18611
400	18602	18348	18055	17754	17453
450	18379	17877	17421	16916	16124
500	18144	17209	16687	15959	15385
550	18076	16990	16086	15126	14344
600	17785	16686	15636	14724	13572
650	17498	16204	14780	13752	12542
700	17259	15666	14096	12964	11674
750	17161	15346	13768	12239	11006
800	16959	14959	13404	11622	10205
850	16818	14679	12626	11054	9426
900	16604	14234	12161	10340	8760
950	16394	13854	11610	9754	8237
1000	16068	13357	10962	9078	7424
1050	15930	13063	10810	8852	7330
1100	15777	12622	10176	8160	6688
1150	15544	12396	9848	7792	6190
1200	15388	12069	9369	7298	5730
1250	15286	11701	8914	6858	5270
1300	14970	11353	8585	6565	4954
1350	14966	11218	8304	6298	4696
1400	14686	10937	8064	5908	4420
1450	14490	10474	7611	5522	4014
1500	14282	10298	7408	5274	3738

Table 71 - Ribble and Alt Estuaries: Density Independent simulation. Ratio of impacted to unimpacted median population size at 5 year intervals

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	1.000	1.000	1.000	1.000	1.000
50	0.987	0.986	0.975	0.969	0.957
100	0.979	0.961	0.934	0.903	0.895
150	0.964	0.934	0.898	0.869	0.839
200	0.954	0.906	0.858	0.818	0.784
250	0.935	0.875	0.823	0.762	0.712
300	0.935	0.872	0.806	0.740	0.688
350	0.917	0.824	0.757	0.687	0.631
400	0.917	0.825	0.737	0.659	0.592
450	0.906	0.804	0.711	0.628	0.547
500	0.894	0.774	0.681	0.593	0.522
550	0.891	0.764	0.656	0.562	0.487
600	0.876	0.750	0.638	0.547	0.460
650	0.862	0.729	0.603	0.511	0.425
700	0.850	0.704	0.575	0.481	0.396
750	0.846	0.690	0.562	0.454	0.373
800	0.836	0.673	0.547	0.432	0.346
850	0.829	0.660	0.515	0.410	0.320
900	0.818	0.640	0.496	0.384	0.297
950	0.808	0.623	0.474	0.362	0.279
1000	0.792	0.601	0.447	0.337	0.252
1050	0.785	0.587	0.441	0.329	0.249
1100	0.777	0.567	0.415	0.303	0.227
1150	0.766	0.557	0.402	0.289	0.210
1200	0.758	0.543	0.382	0.271	0.194
1250	0.753	0.526	0.364	0.255	0.179
1300	0.738	0.510	0.350	0.244	0.168
1350	0.737	0.504	0.339	0.234	0.159
1400	0.724	0.492	0.329	0.219	0.150
1450	0.714	0.471	0.311	0.205	0.136
1500	0.704	0.463	0.302	0.196	0.127

Table 72 - Ribble and Alt Estuaries: Density Independent simulation. Probability population will decline below initial size (100%) in any year of simulation and percentages of initial size (99-50%)

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.595	0.580	0.568	0.533	0.466	0.403	0.339	0.281	0.0668
50	0.613	0.599	0.587	0.550	0.482	0.418	0.349	0.294	0.0714
100	0.641	0.630	0.616	0.577	0.511	0.447	0.386	0.326	0.0896
150	0.675	0.661	0.651	0.615	0.552	0.488	0.422	0.359	0.0996
200	0.708	0.699	0.688	0.650	0.590	0.520	0.454	0.393	0.1250
250	0.748	0.736	0.724	0.688	0.634	0.576	0.508	0.440	0.1502
300	0.748	0.738	0.728	0.697	0.643	0.591	0.529	0.467	0.1604
350	0.800	0.792	0.783	0.756	0.706	0.647	0.585	0.516	0.1974
400	0.811	0.800	0.791	0.764	0.712	0.650	0.587	0.533	0.2142
450	0.838	0.834	0.827	0.796	0.746	0.692	0.639	0.575	0.2416
500	0.866	0.859	0.852	0.828	0.785	0.735	0.679	0.614	0.2734
550	0.884	0.879	0.868	0.843	0.802	0.759	0.706	0.646	0.3086
600	0.894	0.888	0.883	0.862	0.822	0.784	0.731	0.678	0.3364
650	0.919	0.912	0.906	0.891	0.859	0.822	0.779	0.730	0.3766
700	0.928	0.924	0.920	0.907	0.877	0.845	0.806	0.755	0.4254
750	0.942	0.938	0.935	0.922	0.896	0.865	0.829	0.784	0.4556
800	0.957	0.954	0.951	0.939	0.919	0.892	0.856	0.817	0.5022
850	0.966	0.964	0.962	0.954	0.935	0.908	0.884	0.847	0.5552
900	0.973	0.971	0.969	0.962	0.947	0.928	0.903	0.873	0.6018
950	0.982	0.980	0.978	0.972	0.960	0.947	0.931	0.903	0.6432
1000	0.989	0.988	0.987	0.983	0.974	0.961	0.945	0.923	0.7042
1050	0.988	0.987	0.986	0.982	0.977	0.967	0.952	0.933	0.7200
1100	0.994	0.994	0.993	0.991	0.986	0.978	0.964	0.953	0.7646
1150	0.995	0.995	0.995	0.993	0.987	0.980	0.973	0.961	0.8040
1200	0.996	0.995	0.995	0.994	0.991	0.988	0.982	0.972	0.8394
1250	0.997	0.996	0.996	0.996	0.992	0.988	0.985	0.977	0.8644
1300	0.999	0.999	0.999	0.998	0.997	0.994	0.989	0.981	0.8958
1350	0.999	0.999	0.999	0.999	0.998	0.997	0.995	0.992	0.9114
1400	0.999	0.999	0.999	0.999	0.998	0.997	0.995	0.992	0.9304
1450	1.000	1.000	1.000	1.000	0.999	0.999	0.998	0.996	0.9482
1500	1.000	1.000	1.000	1.000	1.000	0.999	0.999	0.998	0.9688

Table 73 - Ribble and Alt Estuaries: Density Independent simulation. Change in probability population will decline below initial size (100%) in any year of simulation and percentages of initial size (99-50%)

Additional adult	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
50	0.018	0.0188	0.0194	0.0170	0.0158	0.0154	0.0098	0.0122	0.0046
100	0.046	0.0492	0.0480	0.0440	0.0450	0.0440	0.0472	0.0448	0.0228
150	0.080	0.0810	0.0830	0.0822	0.0852	0.0850	0.0826	0.0778	0.0328
200	0.113	0.1186	0.1200	0.1172	0.1238	0.1174	0.1148	0.1120	0.0582
250	0.153	0.1554	0.1568	0.1558	0.1676	0.1732	0.1694	0.1582	0.0834
300	0.154	0.1574	0.1606	0.1640	0.1762	0.1880	0.1902	0.1858	0.0936
350	0.205	0.2120	0.2158	0.2238	0.2392	0.2448	0.2456	0.2348	0.1306
400	0.216	0.2198	0.2236	0.2316	0.2460	0.2478	0.2480	0.2520	0.1474
450	0.244	0.2536	0.2594	0.2634	0.2798	0.2892	0.3004	0.2940	0.1748
500	0.272	0.2790	0.2844	0.2954	0.3182	0.3324	0.3396	0.3326	0.2066
550	0.289	0.2984	0.3006	0.3100	0.3354	0.3566	0.3674	0.3648	0.2418
600	0.299	0.3078	0.3150	0.3294	0.3552	0.3818	0.3918	0.3966	0.2696
650	0.324	0.3320	0.3388	0.3586	0.3922	0.4190	0.4402	0.4490	0.3098
700	0.333	0.3434	0.3526	0.3744	0.4102	0.4428	0.4672	0.4736	0.3586
750	0.347	0.3578	0.3678	0.3894	0.4292	0.4628	0.4896	0.5028	0.3888
800	0.362	0.3736	0.3832	0.4068	0.4526	0.4894	0.5170	0.5354	0.4354
850	0.371	0.3836	0.3948	0.4214	0.4684	0.5058	0.5452	0.5654	0.4884
900	0.378	0.3902	0.4010	0.4294	0.4808	0.5252	0.5638	0.5916	0.5350
950	0.387	0.4000	0.4108	0.4392	0.4938	0.5440	0.5920	0.6214	0.5764
1000	0.394	0.4074	0.4198	0.4502	0.5080	0.5588	0.6064	0.6416	0.6374
1050	0.393	0.4062	0.4184	0.4498	0.5104	0.5640	0.6130	0.6514	0.6532
1100	0.399	0.4132	0.4250	0.4582	0.5192	0.5750	0.6254	0.6712	0.6978
1150	0.401	0.4150	0.4278	0.4608	0.5206	0.5774	0.6336	0.6792	0.7372
1200	0.401	0.4150	0.4274	0.4610	0.5242	0.5850	0.6432	0.6902	0.7726
1250	0.402	0.4160	0.4288	0.4630	0.5256	0.5858	0.6462	0.6960	0.7976
1300	0.404	0.4182	0.4310	0.4658	0.5302	0.5910	0.6496	0.6992	0.8290
1350	0.404	0.4186	0.4314	0.4664	0.5318	0.5948	0.6562	0.7102	0.8446
1400	0.405	0.4190	0.4318	0.4668	0.5320	0.5944	0.6562	0.7106	0.8636
1450	0.405	0.4194	0.4322	0.4670	0.5328	0.5962	0.6586	0.7146	0.8814
1500	0.405	0.4194	0.4322	0.4672	0.5332	0.5964	0.6600	0.7170	0.9020

Table 74 - Ribble and Alt Estuaries: Density Independent simulation. Probability population will be below initial size in years 5/10/15/20/25

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	0.324	0.288	0.260	0.227	0.205
50	0.338	0.295	0.271	0.248	0.229
100	0.352	0.328	0.302	0.281	0.260
150	0.373	0.352	0.330	0.316	0.300
200	0.390	0.376	0.366	0.360	0.346
250	0.419	0.425	0.404	0.411	0.406
300	0.425	0.421	0.429	0.426	0.429
350	0.450	0.487	0.479	0.482	0.485
400	0.456	0.486	0.505	0.520	0.524
450	0.478	0.514	0.538	0.559	0.577
500	0.497	0.557	0.577	0.604	0.609
550	0.504	0.579	0.609	0.640	0.662
600	0.533	0.598	0.632	0.670	0.702
650	0.558	0.634	0.682	0.727	0.752
700	0.584	0.667	0.719	0.759	0.792
750	0.587	0.691	0.746	0.784	0.813
800	0.611	0.715	0.778	0.822	0.853
850	0.630	0.738	0.809	0.853	0.889
900	0.652	0.759	0.829	0.876	0.909
950	0.677	0.795	0.860	0.905	0.933
1000	0.708	0.829	0.890	0.928	0.950
1050	0.724	0.839	0.907	0.936	0.957
1100	0.742	0.867	0.922	0.959	0.976
1150	0.756	0.885	0.941	0.963	0.977
1200	0.768	0.890	0.953	0.974	0.989
1250	0.794	0.914	0.957	0.978	0.988
1300	0.807	0.924	0.970	0.987	0.994
1350	0.823	0.938	0.976	0.991	0.996
1400	0.842	0.951	0.980	0.992	0.997
1450	0.856	0.963	0.987	0.995	0.998
1500	0.869	0.967	0.993	0.998	0.999

Table 75 - Ribble and Alt Estuaries: Density Independent simulation. Increase in probability population will be below initial size in years 5/10/15/20/25

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	0.0000	0.0000	0.0000	0.0000	0.0000
50	0.0138	0.0068	0.0104	0.0208	0.0238
100	0.0278	0.0396	0.0414	0.0540	0.0546
150	0.0486	0.0636	0.0692	0.0890	0.0946
200	0.0656	0.0876	0.1052	0.1324	0.1412
250	0.0950	0.1370	0.1436	0.1836	0.2010
300	0.1010	0.1332	0.1682	0.1988	0.2240
350	0.1252	0.1990	0.2188	0.2550	0.2794
400	0.1320	0.1976	0.2446	0.2928	0.3190
450	0.1536	0.2264	0.2774	0.3312	0.3720
500	0.1728	0.2694	0.3164	0.3766	0.4034
550	0.1798	0.2908	0.3486	0.4128	0.4572
600	0.2086	0.3098	0.3714	0.4430	0.4968
650	0.2336	0.3460	0.4218	0.4992	0.5464
700	0.2596	0.3794	0.4584	0.5312	0.5872
750	0.2622	0.4034	0.4856	0.5564	0.6078
800	0.2868	0.4268	0.5180	0.5948	0.6478
850	0.3060	0.4496	0.5486	0.6258	0.6842
900	0.3276	0.4708	0.5684	0.6484	0.7036
950	0.3530	0.5068	0.6000	0.6776	0.7276
1000	0.3832	0.5412	0.6300	0.7008	0.7450
1050	0.3996	0.5506	0.6462	0.7082	0.7516
1100	0.4176	0.5786	0.6620	0.7316	0.7706
1150	0.4316	0.5972	0.6804	0.7354	0.7722
1200	0.4432	0.6020	0.6926	0.7464	0.7842
1250	0.4694	0.6264	0.6968	0.7508	0.7826
1300	0.4830	0.6364	0.7098	0.7594	0.7888
1350	0.4984	0.6500	0.7156	0.7632	0.7910
1400	0.5180	0.6632	0.7198	0.7648	0.7922
1450	0.5314	0.6746	0.7262	0.7678	0.7932
1500	0.5446	0.6788	0.7322	0.7710	0.7940

Table 76 - Ribble and Alt Estuaries: Density Independent simulation. Probability final year population size will be less than median (0%) unimpacted population size and percentages (1-50%) of median unimpacted size

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.500	0.491	0.483	0.461	0.421	0.388	0.350	0.310	0.125
50	0.531	0.525	0.517	0.494	0.457	0.418	0.376	0.339	0.142
100	0.581	0.575	0.567	0.544	0.503	0.463	0.421	0.380	0.156
150	0.626	0.619	0.611	0.590	0.547	0.509	0.469	0.424	0.187
200	0.672	0.665	0.658	0.637	0.602	0.552	0.511	0.470	0.225
250	0.724	0.719	0.713	0.694	0.660	0.620	0.582	0.536	0.271
300	0.753	0.747	0.742	0.724	0.690	0.650	0.609	0.563	0.304
350	0.809	0.803	0.796	0.780	0.745	0.711	0.670	0.626	0.351
400	0.822	0.816	0.812	0.794	0.766	0.739	0.708	0.668	0.384
450	0.864	0.857	0.853	0.837	0.812	0.780	0.747	0.713	0.434
500	0.892	0.887	0.881	0.868	0.844	0.813	0.780	0.739	0.472
550	0.913	0.909	0.906	0.897	0.874	0.847	0.817	0.785	0.521
600	0.928	0.926	0.924	0.915	0.896	0.873	0.845	0.809	0.558
650	0.948	0.945	0.942	0.932	0.919	0.902	0.879	0.852	0.617
700	0.957	0.956	0.953	0.949	0.937	0.923	0.907	0.882	0.662
750	0.970	0.968	0.967	0.963	0.952	0.937	0.921	0.898	0.703
800	0.976	0.975	0.974	0.970	0.963	0.953	0.941	0.925	0.742
850	0.987	0.985	0.984	0.981	0.974	0.966	0.957	0.945	0.795
900	0.988	0.988	0.987	0.985	0.982	0.977	0.968	0.958	0.830
950	0.993	0.993	0.992	0.991	0.989	0.985	0.978	0.971	0.863
1000	0.997	0.996	0.996	0.995	0.993	0.990	0.986	0.980	0.886
1050	0.998	0.997	0.997	0.996	0.993	0.991	0.989	0.984	0.908
1100	0.999	0.999	0.999	0.998	0.998	0.996	0.994	0.990	0.937
1150	1.000	1.000	1.000	1.000	0.999	0.998	0.996	0.993	0.946
1200	0.999	0.999	0.999	0.999	0.999	0.998	0.996	0.995	0.963
1250	0.999	0.999	0.999	0.999	0.999	0.998	0.997	0.996	0.969
1300	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.999	0.978
1350	1.000	1.000	1.000	1.000	1.000	1.000	0.999	0.999	0.989
1400	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.990
1450	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.994
1500	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.998

Table 77 - Ribble and Alt Estuaries: Density Independent simulation. Change in probability final year population size will be less than median (0%) unimpacted population size and percentages (1-50%) of median unimpacted size

Additional adult	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.0000	0.000	0.0000	0.0000	0.0000	0.0000	0.0000	0.000	0.0000
50	0.0310	0.034	0.0340	0.0338	0.0362	0.0296	0.0266	0.029	0.0162
100	0.0812	0.084	0.0842	0.0836	0.0824	0.0752	0.0714	0.070	0.0306
150	0.1264	0.128	0.1284	0.1292	0.1264	0.1212	0.1196	0.113	0.0620
200	0.1724	0.174	0.1750	0.1768	0.1812	0.1644	0.1610	0.160	0.0994
250	0.2236	0.228	0.2296	0.2332	0.2388	0.2320	0.2320	0.226	0.1454
300	0.2534	0.256	0.2588	0.2630	0.2692	0.2618	0.2592	0.252	0.1784
350	0.3088	0.312	0.3134	0.3194	0.3242	0.3226	0.3208	0.316	0.2252
400	0.3218	0.325	0.3288	0.3336	0.3448	0.3512	0.3582	0.358	0.2582
450	0.3636	0.366	0.3704	0.3766	0.3912	0.3920	0.3974	0.402	0.3086
500	0.3924	0.396	0.3984	0.4070	0.4228	0.4252	0.4308	0.429	0.3462
550	0.4132	0.418	0.4234	0.4362	0.4530	0.4592	0.4678	0.474	0.3954
600	0.4282	0.435	0.4414	0.4542	0.4754	0.4848	0.4950	0.499	0.4322
650	0.4478	0.454	0.4586	0.4710	0.4982	0.5138	0.5296	0.541	0.4912
700	0.4568	0.465	0.4702	0.4888	0.5164	0.5352	0.5570	0.572	0.5362
750	0.4704	0.477	0.4844	0.5028	0.5306	0.5494	0.5718	0.588	0.5776
800	0.4764	0.484	0.4906	0.5094	0.5418	0.5652	0.5916	0.615	0.6170
850	0.4866	0.494	0.5006	0.5204	0.5528	0.5782	0.6076	0.635	0.6696
900	0.4882	0.497	0.5040	0.5244	0.5610	0.5886	0.6180	0.648	0.7044
950	0.4930	0.502	0.5092	0.5306	0.5680	0.5968	0.6288	0.660	0.7380
1000	0.4968	0.505	0.5130	0.5346	0.5722	0.6020	0.6368	0.670	0.7610
1050	0.4976	0.506	0.5136	0.5350	0.5724	0.6032	0.6390	0.674	0.7826
1100	0.4990	0.508	0.5160	0.5378	0.5770	0.6080	0.6442	0.680	0.8116
1150	0.4998	0.509	0.5166	0.5390	0.5776	0.6098	0.6462	0.682	0.8204
1200	0.4994	0.508	0.5164	0.5386	0.5776	0.6098	0.6462	0.684	0.8378
1250	0.4992	0.508	0.5162	0.5386	0.5778	0.6100	0.6470	0.686	0.8432
1300	0.5000	0.509	0.5170	0.5394	0.5788	0.6118	0.6502	0.689	0.8524
1350	0.5000	0.509	0.5168	0.5392	0.5788	0.6116	0.6498	0.689	0.8632
1400	0.5000	0.509	0.5170	0.5394	0.5790	0.6120	0.6504	0.689	0.8650
1450	0.5000	0.509	0.5170	0.5394	0.5790	0.6120	0.6504	0.690	0.8688
1500	0.5000	0.509	0.5170	0.5394	0.5790	0.6118	0.6502	0.689	0.8722

Table 78 - The Wash: Density Independent simulation. Population growth rate

Addn. adult mortality	Median gr. rate	Lwr. 95%c.i.	Uppr. 95%c.i.	Chg. in median gr. rate	Chg. in lwr. 95%c.i.	Chg. in Uppr. 95%c.i.
0	1.0202	0.9651	1.0682	0.000000	-0.05505	0.047967
50	1.0142	0.9602	1.0635	-0.005959	-0.05999	0.043350
100	1.0082	0.9551	1.0566	-0.011961	-0.06511	0.036379
150	1.0022	0.9478	1.0527	-0.017982	-0.07237	0.032558
200	0.9965	0.9424	1.0446	-0.023645	-0.07778	0.024446
250	0.9905	0.9369	1.0382	-0.029679	-0.08332	0.018055
300	0.9843	0.9324	1.0314	-0.035865	-0.08783	0.011256
350	0.9778	0.9253	1.0244	-0.042433	-0.09486	0.004226
400	0.9724	0.9224	1.0189	-0.047828	-0.09782	-0.001269
450	0.9668	0.9160	1.0128	-0.053417	-0.10415	-0.007362
500	0.9603	0.9096	1.0062	-0.059931	-0.11054	-0.013944
550	0.9542	0.9034	1.0004	-0.065957	-0.11680	-0.019818
600	0.9485	0.8982	0.9953	-0.071693	-0.12203	-0.024889
650	0.9417	0.8916	0.9867	-0.078490	-0.12859	-0.033527
700	0.9361	0.8865	0.9815	-0.084043	-0.13368	-0.038656

Table 79 - The Wash: Density Independent simulation. Median population size at 5 year intervals

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	9502	10532	11485	12742	14148
50	9219	9929	10509	11350	12154
100	9102	9445	9815	10172	10618
150	8782	8882	8949	9095	9148
200	8626	8434	8293	8191	7968
250	8406	8040	7624	7336	6982
300	8223	7528	7026	6464	5979
350	7998	7137	6334	5712	5110
400	7797	6780	5926	5127	4444
450	7590	6425	5442	4590	3876
500	7488	6128	4976	4057	3304
550	7271	5778	4574	3578	2831
600	7096	5422	4185	3196	2434
650	6836	5114	3756	2761	2047
700	6790	4857	3488	2504	1802

Table 80 - The Wash: Density Independent simulation. Ratio of impacted to unimpacted median population size at 5 year intervals

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	1.000	1.000	1.000	1.000	1.000
50	0.970	0.943	0.915	0.891	0.859
100	0.958	0.897	0.855	0.798	0.750
150	0.924	0.843	0.779	0.714	0.647
200	0.908	0.801	0.722	0.643	0.563
250	0.885	0.763	0.664	0.576	0.493
300	0.865	0.715	0.612	0.507	0.423
350	0.842	0.678	0.552	0.448	0.361
400	0.821	0.644	0.516	0.402	0.314
450	0.799	0.610	0.474	0.360	0.274
500	0.788	0.582	0.433	0.318	0.234
550	0.765	0.549	0.398	0.281	0.200
600	0.747	0.515	0.364	0.251	0.172
650	0.719	0.486	0.327	0.217	0.145
700	0.715	0.461	0.304	0.196	0.127

Table 81 - The Wash: Density Independent simulation. Probability population will decline below initial size (100%) in any year of simulation and percentages of initial size (99-50%)

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.589	0.572	0.564	0.527	0.456	0.395	0.336	0.278	0.0638
50	0.653	0.642	0.633	0.594	0.533	0.473	0.409	0.342	0.0966
100	0.705	0.695	0.685	0.654	0.592	0.532	0.473	0.406	0.1278
150	0.784	0.775	0.766	0.736	0.675	0.612	0.548	0.482	0.1730
200	0.825	0.818	0.813	0.784	0.735	0.682	0.621	0.559	0.2290
250	0.877	0.868	0.859	0.835	0.791	0.745	0.689	0.625	0.2934
300	0.919	0.914	0.909	0.892	0.863	0.825	0.780	0.720	0.3740
350	0.952	0.949	0.945	0.932	0.909	0.880	0.842	0.795	0.4732
400	0.969	0.968	0.963	0.954	0.936	0.911	0.883	0.846	0.5560
450	0.982	0.980	0.978	0.972	0.961	0.948	0.927	0.901	0.6412
500	0.989	0.988	0.988	0.985	0.980	0.969	0.956	0.937	0.7320
550	0.995	0.995	0.994	0.993	0.990	0.987	0.977	0.965	0.8122
600	0.998	0.998	0.998	0.997	0.994	0.991	0.988	0.982	0.8810
650	1.000	1.000	1.000	0.999	0.999	0.997	0.996	0.992	0.9286
700	1.000	1.000	1.000	1.000	0.999	0.999	0.998	0.997	0.9646

Table 82 - The Wash: Density Independent simulation. Change in probability population will decline below initial size (100%) in any year of simulation and percentages of initial size (99-50%)

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.0000	0.0000	0.000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
50	0.0636	0.0696	0.069	0.0666	0.0776	0.0774	0.0728	0.0638	0.0328
100	0.1160	0.1228	0.121	0.1270	0.1368	0.1368	0.1368	0.1280	0.0640
150	0.1952	0.2028	0.202	0.2086	0.2192	0.2168	0.2124	0.2038	0.1092
200	0.2358	0.2460	0.249	0.2570	0.2790	0.2866	0.2854	0.2808	0.1652
250	0.2876	0.2954	0.295	0.3082	0.3358	0.3496	0.3534	0.3474	0.2296
300	0.3300	0.3412	0.346	0.3648	0.4078	0.4298	0.4438	0.4424	0.3102
350	0.3632	0.3766	0.382	0.4050	0.4532	0.4846	0.5062	0.5172	0.4094
400	0.3802	0.3952	0.400	0.4268	0.4806	0.5160	0.5472	0.5680	0.4922
450	0.3924	0.4072	0.414	0.4454	0.5058	0.5530	0.5916	0.6230	0.5774
500	0.3996	0.4160	0.424	0.4576	0.5244	0.5734	0.6200	0.6594	0.6682
550	0.4058	0.4226	0.431	0.4662	0.5342	0.5914	0.6412	0.6870	0.7484
600	0.4086	0.4254	0.434	0.4696	0.5386	0.5956	0.6520	0.7044	0.8172
650	0.4108	0.4274	0.436	0.4724	0.5432	0.6020	0.6598	0.7136	0.8648
700	0.4106	0.4274	0.436	0.4728	0.5436	0.6036	0.6626	0.7190	0.9008

Table 83 - The Wash: Density Independent simulation. Probability population will be below initial size in years 5/10/15/20/25

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	0.323	0.282	0.250	0.225	0.199
50	0.370	0.336	0.307	0.290	0.274
100	0.383	0.382	0.378	0.364	0.357
150	0.446	0.447	0.448	0.443	0.450
200	0.472	0.507	0.521	0.532	0.544
250	0.519	0.564	0.596	0.621	0.644
300	0.554	0.640	0.680	0.724	0.745
350	0.611	0.703	0.752	0.797	0.828
400	0.646	0.754	0.812	0.852	0.883
450	0.689	0.805	0.867	0.904	0.934
500	0.716	0.847	0.908	0.944	0.962
550	0.761	0.878	0.940	0.968	0.982
600	0.806	0.918	0.959	0.982	0.992
650	0.851	0.948	0.981	0.993	0.997
700	0.857	0.966	0.989	0.996	0.999

Table 84 - The Wash: Density Independent simulation. Increase in probability population will be below initial size in years 5/10/15/20/25

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	0.0000	0.0000	0.000	0.0000	0.0000
50	0.0470	0.0542	0.057	0.0642	0.0756
100	0.0604	0.1002	0.127	0.1386	0.1580
150	0.1232	0.1650	0.197	0.2174	0.2512
200	0.1490	0.2252	0.271	0.3062	0.3450
250	0.1964	0.2824	0.346	0.3958	0.4452
300	0.2308	0.3578	0.430	0.4982	0.5464
350	0.2882	0.4214	0.502	0.5714	0.6294
400	0.3228	0.4726	0.562	0.6266	0.6838
450	0.3662	0.5228	0.617	0.6790	0.7354
500	0.3928	0.5650	0.658	0.7186	0.7636
550	0.4380	0.5966	0.690	0.7430	0.7828
600	0.4832	0.6364	0.709	0.7564	0.7928
650	0.5284	0.6662	0.730	0.7676	0.7978
700	0.5340	0.6838	0.739	0.7704	0.8002

Table 85 - The Wash: Density Independent simulation. Probability final year population size will be less than median (0%) unimpacted population size and percentages (1-50%) of median unimpacted size

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.500	0.494	0.486	0.462	0.422	0.387	0.355	0.318	0.128
50	0.602	0.595	0.589	0.569	0.534	0.495	0.449	0.405	0.188
100	0.697	0.689	0.683	0.661	0.623	0.583	0.545	0.499	0.250
150	0.782	0.777	0.773	0.754	0.722	0.684	0.646	0.599	0.331
200	0.847	0.842	0.838	0.824	0.794	0.762	0.725	0.681	0.418
250	0.907	0.905	0.900	0.892	0.871	0.850	0.820	0.783	0.510
300	0.951	0.949	0.946	0.940	0.926	0.910	0.888	0.861	0.620
350	0.975	0.973	0.972	0.968	0.960	0.949	0.935	0.914	0.733
400	0.988	0.987	0.987	0.985	0.980	0.973	0.964	0.951	0.797
450	0.997	0.997	0.996	0.995	0.991	0.988	0.981	0.975	0.870
500	0.998	0.998	0.998	0.996	0.995	0.994	0.990	0.987	0.920
550	0.999	0.999	0.999	0.998	0.998	0.997	0.996	0.994	0.956
600	1.000	1.000	1.000	1.000	0.999	0.999	0.999	0.998	0.979
650	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.991
700	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.997

Table 86 - The Wash: Density Independent simulation. Change in probability final year population size will be less than median (0%) unimpacted population size and percentages (1-50%) of median unimpacted size

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.000	0.000	0.000	0.000	0.000	0.000	0.0000	0.000	0.0000
50	0.102	0.102	0.102	0.108	0.112	0.108	0.0942	0.087	0.0596
100	0.197	0.196	0.196	0.199	0.201	0.196	0.1896	0.181	0.1220
150	0.282	0.283	0.287	0.293	0.300	0.296	0.2906	0.281	0.2030
200	0.347	0.349	0.352	0.362	0.372	0.375	0.3700	0.363	0.2896
250	0.407	0.411	0.414	0.430	0.450	0.462	0.4646	0.465	0.3820
300	0.451	0.455	0.460	0.478	0.504	0.523	0.5330	0.543	0.4916
350	0.475	0.479	0.486	0.506	0.538	0.562	0.5804	0.597	0.6044
400	0.488	0.493	0.500	0.523	0.558	0.586	0.6088	0.633	0.6688
450	0.497	0.503	0.510	0.533	0.570	0.600	0.6264	0.658	0.7412
500	0.498	0.504	0.511	0.535	0.573	0.606	0.6354	0.669	0.7914
550	0.499	0.505	0.512	0.537	0.576	0.609	0.6406	0.676	0.8272
600	0.500	0.506	0.513	0.538	0.578	0.612	0.6440	0.680	0.8508
650	0.500	0.506	0.514	0.538	0.578	0.613	0.6450	0.682	0.8630
700	0.500	0.506	0.514	0.538	0.578	0.612	0.6448	0.682	0.8688

Table 87 - Upper Solway Flats and Marshes: Density Independent simulation. Population growth rate

Adn. adult mortality	Median gr. rate	Lwr. 95%c.i.	Uppr. 95%c.i.	Chg. in median gr. rate	Chg. in lwr. 95%c.i.	Chg. in Uppr. 95%c.i.
0	1.0196	0.9651	1.0682	0.000000	-0.05451	0.048544
50	1.0129	0.9603	1.0623	-0.006712	-0.05933	0.042718
100	1.0060	0.9531	1.0539	-0.013591	-0.06647	0.034307
150	0.9988	0.9463	1.0487	-0.020793	-0.07334	0.029052
200	0.9920	0.9385	1.0407	-0.027629	-0.08109	0.021069
250	0.9844	0.9313	1.0331	-0.035220	-0.08828	0.013525
300	0.9779	0.9280	1.0245	-0.041691	-0.09165	0.004861
350	0.9710	0.9190	1.0175	-0.048574	-0.10063	-0.002080
400	0.9643	0.9128	1.0097	-0.055321	-0.10682	-0.009886
450	0.9568	0.9052	1.0041	-0.062810	-0.11445	-0.015507
500	0.9499	0.9000	0.9963	-0.069702	-0.11961	-0.023326
550	0.9424	0.8928	0.9869	-0.077210	-0.12684	-0.032684
600	0.9357	0.8854	0.9800	-0.083948	-0.13419	-0.039594

Table 88 - Upper Solway Flats and Marshes: Density Independent simulation. Median population size at 5 year intervals

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	8068	8874	9746	10746	11724
50	7849	8394	8956	9374	10054
100	7659	7972	8210	8307	8548
150	7362	7260	7156	7125	7138
200	7228	6971	6722	6391	6144
250	6936	6440	5834	5428	5003
300	6782	6050	5399	4847	4316
350	6596	5651	4895	4196	3657
400	6418	5330	4408	3696	3088
450	6194	4972	3982	3220	2572
500	5985	4640	3586	2740	2150
550	5824	4324	3209	2377	1769
600	5672	4083	2945	2090	1497

Table 89 - Upper Solway Flats and Marshes: Density Independent simulation. Ratio of impacted to unimpacted median population size at 5 year intervals.

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	1.000	1.000	1.000	1.000	1.000
50	0.973	0.946	0.919	0.872	0.858
100	0.949	0.898	0.842	0.773	0.729
150	0.912	0.818	0.734	0.663	0.609
200	0.896	0.786	0.690	0.595	0.524
250	0.860	0.726	0.599	0.505	0.427
300	0.841	0.682	0.554	0.451	0.368
350	0.818	0.637	0.502	0.391	0.312
400	0.795	0.601	0.452	0.344	0.263
450	0.768	0.560	0.409	0.300	0.219
500	0.742	0.523	0.368	0.255	0.183
550	0.722	0.487	0.329	0.221	0.151
600	0.703	0.460	0.302	0.194	0.128

Table 90 - Upper Solway Flats and Marshes: Density Independent simulation. Probability population will decline below initial size (100%) in any year of simulation and percentages of initial size (99-50%)

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.592	0.579	0.567	0.528	0.468	0.406	0.342	0.283	0.0680
50	0.663	0.650	0.636	0.600	0.531	0.463	0.399	0.336	0.0962
100	0.721	0.710	0.700	0.667	0.606	0.547	0.480	0.422	0.1330
150	0.810	0.801	0.794	0.766	0.715	0.656	0.597	0.528	0.2122
200	0.855	0.848	0.842	0.820	0.776	0.726	0.670	0.605	0.2662
250	0.919	0.913	0.906	0.887	0.854	0.814	0.763	0.716	0.3844
300	0.950	0.948	0.945	0.933	0.907	0.882	0.847	0.803	0.4682
350	0.970	0.969	0.966	0.960	0.942	0.920	0.893	0.860	0.5754
400	0.986	0.985	0.984	0.979	0.969	0.957	0.940	0.916	0.6796
450	0.994	0.993	0.992	0.989	0.984	0.977	0.967	0.955	0.7838
500	0.998	0.997	0.997	0.996	0.994	0.991	0.988	0.981	0.8718
550	1.000	1.000	1.000	0.999	0.999	0.998	0.996	0.993	0.9312
600	1.000	1.000	1.000	0.999	0.999	0.999	0.998	0.997	0.9640

Table 91 - Upper Solway Flats and Marshes: Density Independent simulation. Change in probability population will decline below initial size (100%) in any year of simulation and percentages of initial size (99-50%)

Additional adult	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	0.0000	0.0000	0.0000
50	0.0712	0.0716	0.0694	0.072	0.0634	0.0574	0.0574	0.0528	0.0282
100	0.1294	0.1316	0.1332	0.139	0.1380	0.1408	0.1378	0.1388	0.0650
150	0.2188	0.2226	0.2274	0.238	0.2470	0.2498	0.2546	0.2452	0.1442
200	0.2636	0.2694	0.2756	0.293	0.3084	0.3198	0.3276	0.3222	0.1982
250	0.3278	0.3342	0.3394	0.359	0.3858	0.4086	0.4214	0.4326	0.3164
300	0.3584	0.3692	0.3780	0.405	0.4396	0.4762	0.5046	0.5194	0.4002
350	0.3784	0.3898	0.3992	0.432	0.4742	0.5144	0.5506	0.5772	0.5074
400	0.3942	0.4062	0.4170	0.451	0.5014	0.5512	0.5982	0.6324	0.6116
450	0.4020	0.4140	0.4256	0.461	0.5166	0.5708	0.6250	0.6716	0.7158
500	0.4060	0.4186	0.4304	0.468	0.5262	0.5852	0.6458	0.6974	0.8038
550	0.4082	0.4210	0.4330	0.472	0.5308	0.5918	0.6538	0.7098	0.8632
600	0.4080	0.4208	0.4328	0.472	0.5314	0.5930	0.6562	0.7138	0.8960

Table 92 - Upper Solway Flats and Marshes: Density Independent simulation. Probability population will be below initial size in years 5/10/15/20/25

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	0.324	0.287	0.249	0.219	0.199
50	0.363	0.333	0.320	0.301	0.289
100	0.397	0.386	0.384	0.388	0.386
150	0.466	0.490	0.506	0.507	0.507
200	0.493	0.539	0.565	0.595	0.615
250	0.566	0.638	0.683	0.712	0.735
300	0.608	0.695	0.760	0.806	0.833
350	0.655	0.772	0.829	0.866	0.897
400	0.699	0.817	0.875	0.921	0.949
450	0.750	0.869	0.921	0.954	0.974
500	0.797	0.921	0.960	0.981	0.991
550	0.836	0.949	0.980	0.993	0.998
600	0.873	0.964	0.990	0.997	1.000

Table 93 - Upper Solway Flats and Marshes: Density Independent simulation. Increase in probability population will be below initial size in years 5/10/15/20/25

Additional adult mortality	5th. yr.	10th. yr.	15th. yr.	20th. yr.	25th. yr.
0	0.0000	0.0000	0.0000	0.0000	0.0000
50	0.0396	0.0464	0.0714	0.0818	0.0894
100	0.0732	0.0986	0.1348	0.1684	0.1870
150	0.1426	0.2030	0.2566	0.2874	0.3078
200	0.1692	0.2524	0.3162	0.3756	0.4162
250	0.2418	0.3510	0.4336	0.4930	0.5362
300	0.2842	0.4078	0.5106	0.5862	0.6342
350	0.3312	0.4850	0.5802	0.6462	0.6976
400	0.3756	0.5302	0.6264	0.7012	0.7500
450	0.4266	0.5822	0.6718	0.7350	0.7750
500	0.4734	0.6338	0.7106	0.7620	0.7918
550	0.5126	0.6620	0.7314	0.7740	0.7990
600	0.5488	0.6772	0.7410	0.7778	0.8004

Table 94 - Upper Solway Flats and Marshes: Density Independent simulation. Probability final year population size will be less than median (0%) unimpacted population size and percentages (1-50%) of median unimpacted size

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.500	0.493	0.487	0.464	0.429	0.390	0.349	0.309	0.116
50	0.605	0.597	0.588	0.565	0.527	0.493	0.452	0.406	0.185
100	0.719	0.712	0.705	0.682	0.645	0.603	0.562	0.518	0.253
150	0.821	0.817	0.811	0.793	0.762	0.722	0.686	0.646	0.372
200	0.888	0.884	0.881	0.869	0.845	0.815	0.786	0.746	0.464
250	0.941	0.939	0.937	0.928	0.911	0.891	0.871	0.840	0.609
300	0.971	0.971	0.969	0.966	0.956	0.944	0.929	0.913	0.721
350	0.988	0.988	0.987	0.985	0.979	0.973	0.963	0.953	0.802
400	0.995	0.995	0.995	0.993	0.992	0.990	0.986	0.979	0.886
450	0.999	0.999	0.999	0.999	0.998	0.997	0.993	0.990	0.938
500	1.000	1.000	1.000	1.000	0.999	0.999	0.999	0.998	0.973
550	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.992
600	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.996

Table 95 - Upper Solway Flats and Marshes: Density Independent simulation. Change in probability final year population size will be less than median (0%) unimpacted population size and percentages (1-50%) of median unimpacted size

Additional adult mortality	100%	99%	98%	95%	90%	85%	80%	75%	50%
0	0.000	0.000	0.000	0.000	0.0000	0.000	0.000	0.0000	0.0000
50	0.105	0.104	0.101	0.100	0.0976	0.103	0.103	0.0966	0.0684
100	0.219	0.219	0.218	0.217	0.2160	0.213	0.213	0.2082	0.1370
150	0.321	0.324	0.325	0.329	0.3324	0.332	0.338	0.3362	0.2558
200	0.388	0.391	0.394	0.404	0.4158	0.425	0.437	0.4362	0.3478
250	0.441	0.446	0.450	0.464	0.4812	0.501	0.522	0.5306	0.4924
300	0.471	0.478	0.482	0.501	0.5266	0.554	0.580	0.6036	0.6050
350	0.488	0.495	0.500	0.521	0.5498	0.583	0.615	0.6436	0.6854
400	0.495	0.503	0.508	0.529	0.5624	0.600	0.637	0.6692	0.7702
450	0.499	0.506	0.512	0.534	0.5690	0.607	0.645	0.6810	0.8218
500	0.500	0.507	0.513	0.535	0.5700	0.610	0.650	0.6882	0.8570
550	0.500	0.507	0.513	0.536	0.5704	0.610	0.651	0.6902	0.8756
600	0.500	0.507	0.513	0.536	0.5704	0.610	0.651	0.6902	0.8802