Neart na Gaoithe Offshore Wind Farm

Environmental Impact Assessment Report: Addendum of Additional Information

Appendix A: Comparison of revised PVA model runs for guillemot and razorbill

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Guillemot – Forth Islands SPA, NnG alone

Overall, for guillemots at the Forth Islands SPA, using the revised start populations provided by SNH in May 2018, for the wind farm scenario tested did not result in a significant difference in the predicted population growth rates or the associated counterfactual values (Table 1).

Table 1: Comparison of change in predicted population growth rate for guillemots breeding at the Forth Islands SPA with and without the Project over 25 years and 50 years

	Baseline change after 25 & 50 years (no wind farm)	Percentage point change with NnG after 25 & 50 years (displacement all year)	Percentage change in median annual growth rate compared to baseline	Counterfactual of the annual growth rate
EIAR – 25 years (Table 9.84)	**1.8949**	**-0.025**	**-1.31**	**98.69%**
Revised – 25 years	**1.8690**	**-0.016**	**-0.83**	**99.17%**
EIAR – 50 years (Table 9.86)	**1.8916**	**-0.014**	**-0.73**	**99.27%**
Revised – 50 years	**1.8722**	**-0.0212**	**-1.13**	**98.87%**

Similarly, for guillemots at the Forth Islands SPA, using the revised start populations provided by SNH in May 2018, for the cumulative wind farm scenarios tested did not result in a significant difference in the change in predicted end populations or the associated counterfactual values (Table 2).

Table 2: Comparison of change in predicted population size for guillemots breeding at the Forth Islands SPA with and without the Project over 25 years and 50 years

	Start Population	Baseline population after 50 years (no wind farm)	Population after 50 years with NnG (displacement all year)	Percentage change in median final population size compared to baseline	Counterfactual of Population Size (CPS)
EIAR – 25 years (Table 9.85)	**38,573 pairs**	**67,234 pairs**	**67,611 pairs**	**+0.56**	**100.56%**
Revised – 25 years	**19,287 pairs**	**33,347 pairs**	**33,556 pairs**	**+0.63**	**100.63%**
EIAR – 50 years (Table 9.87)	**38,573 pairs**	**108,366 pairs**	**107,270 pairs**	**-1.01**	**98.99%**
Revised – 50 years	**19,287 pairs**	**53,164 pairs**	**53,018 pairs**	**-0.27**	**99.73%**

For guillemots at the Forth Islands SPA, using the revised start populations provided by SNH in May 2018, for the cumulative wind farm scenarios tested did not result in a significant difference in the predicted 50th centile values (Table 3).

Table 3: Comparison of the 50th centile values for guillemots breeding at the Forth Islands SPA with and without the Project over 25 years and 50 years

	50th centile for unimpacted population (Baseline)	Centile for impacted population that matches 50th centile for baseline population after 25 years with NnG (displacement all year)	Centile for impacted population that matches 50th centile for baseline population after 50 years with NnG (displacement all year)
EIAR (Table 9.88)	**0.50**	**0.52**	**0.47**
Revised	**0.50**	**0.50**	**0.49**

Guillemot – Fowlsheugh SPA, NnG alone

Overall, for guillemots at the Fowlsheugh SPA, using the revised start populations provided by SNH in May 2018, for the wind farm scenario tested did not result in a significant difference in the predicted population growth rates or the associated counterfactual values (Table 4).

Table 4: Comparison of change in predicted population growth rate for guillemots breeding at the Fowlsheugh SPA with and without the Project over 25 years and 50 years

	Baseline change after 25 & 50 years (no wind farm)	Percentage point change with NnG after 25 & 50 years (displacement all year)	Percentage change in median annual growth rate compared to baseline	Counterfactual of the annual growth rate
EIAR – 25 years (Table 9.84)	**2.3258**	**+0.004**	**+0.17**	**100.17%**
Revised – 25 years	**2.3097**	**-0.01**	**+0.45**	**99.55%**
EIAR – 50 years (Table 9.86)	**2.3278**	**-0.026**	**-1.13**	**98.87%**
Revised – 50 years	**2.3045**	**-0.003**	**-0.15**	**99.85%**

Similarly, for guillemots at the Fowlsheugh SPA, using the revised start populations provided by SNH in May 2018, for the cumulative wind farm scenarios tested did not result in a significant difference in the change in predicted end populations or the associated counterfactual values (Table 5).

Table 5: Comparison of change in predicted population size for guillemots breeding at the Fowlsheugh SPA with and without the Project over 25 years and 50 years

	Start Population	Baseline population after 50 years (no wind farm)	Population after 50 years with NnG (displacement all year)	Percentage change in median final population size compared to baseline	Counterfactual of Population Size (CPS)
EIAR – 25 years (Table 9.85)	**74,379 pairs**	**150,711 pairs**	**150,453 pairs**	**-0.17**	**99.83%**
Revised – 25 years	**37,190 pairs**	**74,962 pairs**	**74,198 pairs**	**-0.06**	**99.94%**
EIAR – 50 years (Table 9.87)	**74,379 pairs**	**267,057 pairs**	**264,113 pairs**	**-1.10**	**98.90%**
Revised – 50 years	**37,190 pairs**	**132,567 pairs**	**131,721 pairs**	**-0.64**	**99.36%**

For guillemots at the Fowlsheugh SPA, using the revised start populations provided by SNH in May 2018, for the cumulative wind farm scenarios tested did not result in a significant difference in the predicted 50th centile values (Table 6).

Table 6: Comparison of the 50th centile values for guillemots breeding at the Fowlsheugh SPA with and without the Project over 25 years and 50 years

	50th centile for unimpacted population (Baseline)	Centile for impacted population that matches 50th centile for baseline population after 25 years with NnG (displacement all year)	Centile for impacted population that matches 50th centile for baseline population after 50 years with NnG (displacement all year)
EIAR (Table 9.88)	**0.50**	**0.49**	**0.47**
Revised	**0.50**	**0.50**	**0.48**

Razorbill – Forth Islands SPA, NnG alone

Overall, for razorbills at the Forth Islands SPA, using the revised start populations provided by SNH in May 2018, for the cumulative wind farm scenarios tested did not result in a significant difference in the predicted population

growth rates or the associated counterfactual values (Table 7). For both sets of model runs, the razorbill population at the Forth Islands SPA was predicted to be fairly stable over both 25 years and 50 years, with a population growth rate close to zero. This means that any change will be relatively large, relative to the small initial rate. Similarly, the counterfactual of the growth rate is highly influenced by the initial growth rate and bears little relevance to the change in growth rate on its own. Therefore, in this case, the percentage point change, which shows a very slight decrease compared to the predicted baseline rate, gives a better representation of the change in growth rate. There was little difference in the percentage point change when using the revised start populations provided by SNH in May 2018.

Table 7: Comparison of change in predicted population growth rate for razorbills breeding at the Forth Islands SPA with and without the Project over 25 years and 50 years

	Baseline change after 25 & 50 years (no wind farm)	Percentage point change with NnG after 25 & 50 years (displacement all year)	Percentage change in median annual growth rate compared to baseline	Counterfactual of the annual growth rate
EIAR – 25 years (Table 9.89)	**0.0313**	**-0.027**	**-86.58**	**13.42%**
Revised – 25 years	**0.0213**	**-0.042**	**-199.06**	**-99.06%**
EIAR – 50 years (Table 9.91)	**0.0631**	**-0.087**	**-137.24**	**-37.24%**
Revised – 50 years	**0.051**	**-0.103**	**-201.96**	**-101.96%**

For razorbills at the Forth Islands SPA, using the revised start populations provided by SNH in May 2018, for the cumulative wind farm scenarios tested did not result in a significant difference in the change in predicted end populations or the associated counterfactual values (Table 8).

Table 8: Comparison of change in predicted population size for razorbills breeding at the Forth Islands SPA with and without the Project over 25 years and 50 years

	Start Population	Baseline population after 50 years (no wind farm)	Population after 50 years with NnG (displacement all year)	Percentage change in median final population size compared to baseline	Counterfactual of Population Size (CPS)
EIAR – 25 years (Table 9.90)	**7,792 pairs**	**7,862 pairs**	**7,870 pairs**	**+0.10**	**100.10%**

Revised – 25 years	**3,896 pairs**	**3,949 pairs**	**3,892 pairs**	**-1.45**	**98.55%**
EIAR – 50 years (Table 9.92)	**7,792 pairs**	**8,063 pairs**	**7,749 pairs**	**-3.89**	**96.11%**
Revised – 50 years	**3,896 pairs**	**4,009 pairs**	**3,811 pairs**	**-4.93**	**95.07%**

For razorbills breeding at the Forth Islands SPA, using the revised start populations provided by SNH in May 2018, for the cumulative wind farm scenarios tested did not result in a significant difference in the predicted 50th centile values (Table 9).

Table 9: Comparison of the 50th centile values for razorbills breeding at the Forth Islands SPA with and without the Project over 25 years and 50 years

	50th centile for unimpacted population (Baseline)	**Centile for impacted population that matches 50th centile for baseline population after 25 years with NnG (displacement all year)**	**Centile for impacted population that matches 50th centile for baseline population after 50 years with NnG (displacement all year)**
EIAR (Table 9.93)	**0.50**	**0.50**	**0.45**
Revised	**0.50**	**0.48**	**0.44**

Razorbill – Fowlsheugh SPA, NnG alone

Overall, for razorbills at the Fowlsheugh SPA, using the revised start populations provided by SNH in May 2018, for the cumulative wind farm scenarios tested did not result in a significant difference in the predicted population growth rates or the associated counterfactual values (Table 10).

Table 10: Comparison of change in predicted population growth rate for razorbills breeding at the Fowlsheugh SPA with and without the Project over 25 years and 50 years

	Baseline change after 25 & 50 years (no wind farm)	**Percentage point change with NnG after 25 & 50 years (displacement all year)**	**Percentage change in median annual growth rate compared to baseline**	**Counterfactual of the annual growth rate**
EIAR – 25 years (Table 9.89)	**0.9516**	**-0.065**	**-6.78**	**93.22%**

Revised – 25 years	**0.9209**	**-0.108**	**-11.75**	**88.25%**
EIAR – 50 years (Table 9.91)	**0.9416**	**-0.071**	**-7.50**	**92.50%**
Revised – 50 years	**0.9493**	**-0.113**	**-11.92**	**88.08%**

For both sets of model runs, the razorbill population at the Forth Islands SPA was predicted to be fairly stable over both 25 years and 50 years, with a population growth rate close to zero. This means that any change will be relatively large, relative to the small initial rate. Similarly, the counterfactual of the growth rate is highly influenced by the initial growth rate and bears little relevance to the change in growth rate on its own. Therefore, in this case, the percentage point change, which shows a very slight decrease compared to the predicted baseline rate, gives a better representation of the change in growth rate. There was little difference in the percentage point change when using the revised start populations provided by SNH in May 2018.

For razorbills at the Fowlsheugh SPA, using the revised start populations provided by SNH in May 2018, for the cumulative wind farm scenarios tested did not result in a significant difference in the change in predicted end populations or the associated counterfactual values (Table 11).

Table 11: Comparison of change in predicted population size for razorbills breeding at the Fowlsheugh SPA with and without the Project over 25 years and 50 years

	Start Population	Baseline population after 50 years (no wind farm)	Population after 50 years with NnG (displacement all year)	Percentage change in median final population size compared to baseline	Counterfactual of Population Size (CPS)
EIAR – 25 years (Table 9.90)	**9,950 pairs**	**13,491 pairs**	**13,324 pairs**	**-1.23**	**98.77%**
Revised – 25 years	**4,975 pairs**	**6,665 pairs**	**6,445 pairs**	**-3.30**	**96.70%**
EIAR – 50 years (Table 9.92)	**9,950 pairs**	**16,932 pairs**	**16,353 pairs**	**-3.42**	**96.58%**
Revised – 50 years	**4,975 pairs**	**8,468 pairs**	**8,007 pairs**	**-5.44**	**94.56%**

For razorbills breeding at the Fowlsheugh SPA, using the revised start populations provided by SNH in May 2018, for the cumulative wind farm scenarios tested did not result in a significant difference in the predicted 50th centile values (Table 12).

Table 12: Comparison of the 50th centile values for razorbills breeding at the Fowlsheugh SPA with and without the Project over 25 years and 50 years

	50th centile for unimpacted population (Baseline)	Centile for impacted population that matches 50th centile for baseline population after 25 years with NnG (displacement all year)	Centile for impacted population that matches 50th centile for baseline population after 50 years with NnG (displacement all year)
EIAR (Table 9.93)	**0.50**	**0.48**	**0.44**
Revised	**0.50**	**0.44**	**0.42**

Cumulative Assessment

Guillemot – Forth Islands SPA, NnG with Forth & Tay projects

Overall, for guillemots at the Forth Islands SPA, using the revised start populations provided by SNH in May 2018, for the cumulative wind farm scenarios tested did not result in a significant difference in the predicted population growth rates or the associated counterfactual values (Table 13).

Table 13: Comparison of change in predicted population growth rate for guillemots breeding at the Forth Islands SPA with and without NnG and the Forth & Tay projects over 25 years and 50 years

	Baseline change after 25 & 50 years (no wind farm)	Percentage point change with NnG & F&T projects after 25 & 50 years (displacement all year)	Percentage change in median annual growth rate compared to baseline	Counterfactual of the annual growth rate
EIAR – 25 years (Table 9.217)	**1.8949**	**-0.063**	**-3.32**	**96.68%**
Revised – 25 years	**1.8690**	**-0.065**	**-3.50**	**96.50%**
EIAR – 50 years (Table 9.219)	**1.8916**	**-0.045**	**-2.39**	**97.61%**
Revised – 50 years	**1.8722**	**-0.075**	**-3.99**	**96.01%**

Similarly, for guillemots at the Forth Islands SPA, using the revised start populations provided by SNH in May 2018, for the cumulative wind farm scenarios tested did not result in a significant difference in the change in predicted end populations or the associated counterfactual values (Table 14).

Table 14: Comparison of change in predicted population size for guillemots breeding at the Forth Islands SPA with and without NnG and the Forth & Tay projects over 25 years and 50 years

	Start Population	Baseline population after 50 years (no wind farm)	Population after 50 years with NnG & F&T projects (displacement all year)	Percentage change in median final population size compared to baseline	Counterfactual of Population Size (CPS)
EIAR – 25 years (Table 9.218)	**38,573 pairs**	**67,234 pairs**	**66,454 pairs**	**-1.16**	**98.84%**

Revised – 25 years	**19,287 pairs**	**33,347 pairs**	**33,141 pairs**	**-0.62**	**99.38%**
EIAR – 50 years (Table 9.220)	**38,573 pairs**	**108,366 pairs**	**105,244 pairs**	**-2.88**	**97.12%**
Revised – 50 years	**19,287 pairs**	**53,164 pairs**	**51,283 pairs**	**-3.53**	**96.46%**

For guillemots at the Forth Islands SPA, using the revised start populations provided by SNH in May 2018, for the cumulative wind farm scenarios tested did not result in a significant difference in the predicted 50th centile values (Table 15).

Table 15: Comparison of the 50th centile values for guillemots breeding at the Forth Islands SPA with and without NnG and the Forth & Tay projects over 25 years and 50 years

	50th centile for unimpacted population (Baseline)	**Centile for impacted population that matches 50th centile for baseline population after 25 years with NnG & F&T projects (displacement all year)**	**Centile for impacted population that matches 50th centile for baseline population after 50 years with NnG & F&T projects (displacement all year)**
EIAR (Table 9.221)	**0.50**	**0.47**	**0.43**
Revised	**0.50**	**0.46**	**0.41**

Guillemot – Fowlsheugh SPA, NnG with Forth & Tay projects

Overall, for guillemots at the Fowlsheugh SPA, using the revised start populations provided by SNH in May 2018, for the cumulative wind farm scenarios tested did not result in a significant difference in the predicted population growth rates or the associated counterfactual values (Table 16).

Table 16: Comparison of change in predicted population growth rate for guillemots breeding at the Fowlsheugh SPA with and without NnG and the Forth & Tay projects over 25 years and 50 years

	Baseline change after 25 & 50 years (no wind farm)	**Percentage point change with NnG & F&T projects after 25 & 50 years (displacement all year)**	**Percentage change in median annual growth rate compared to baseline**	**Counterfactual of the annual growth rate**
EIAR – 25 years (Table 9.217)	**2.3258**	**-0.024**	**-1.01**	**98.99%**

Revised – 25 years	**2.3097**	**-0.054**	**-2.36**	**97.64%**
EIAR – 50 years (Table 9.219)	**2.3278**	**-0.045**	**-1.94**	**98.06%**
Revised – 50 years	**2.3045**	**-0.060**	**-2.61**	**97.39%**

Similarly, for guillemots at the Fowlsheugh SPA, using the revised start populations provided by SNH in May 2018, for the cumulative wind farm scenarios tested did not result in a significant difference in the change in predicted end populations or the associated counterfactual values (Table 17).

Table 17: Comparison of change in predicted population size for guillemots breeding at the Fowlsheugh SPA with and without NnG and the Forth & Tay projects over 25 years and 50 years

	Start Population	Baseline population after 50 years (no wind farm)	Population after 50 years with NnG & F&T projects (displacement all year)	Percentage change in median final population size compared to baseline	Counterfactual of Population Size (CPS)
EIAR – 25 years (Table 9.218)	**74,379 pairs**	**150,711 pairs**	**149,071 pairs**	**-1.09**	**98.91%**
Revised – 25 years	**37,190 pairs**	**74,962 pairs**	**73,975 pairs**	**-1.32**	**98.68%**
EIAR – 50 years (Table 9.220)	**74,379 pairs**	**267,057 pairs**	**261,912 pairs**	**-1.93**	**98.07%**
Revised – 50 years	**37,190 pairs**	**132,567 pairs**	**128,310 pairs**	**-3.21**	**96.79%**

For guillemots at the Fowlsheugh SPA, using the revised start populations provided by SNH in May 2018, for the cumulative wind farm scenarios tested did not result in a significant difference in the predicted 50th centile values (Table 18).

Table 18: Comparison of the 50th centile values for guillemots breeding at the Fowlsheugh SPA with and without NnG and the Forth & Tay projects over 25 years and 50 years

	50th centile for unimpacted population (Baseline)	Centile for impacted population that matches 50th centile for baseline population after 25 years with NnG (displacement all year)	Centile for impacted population that matches 50th centile for baseline population after 50 years with NnG (displacement all year)
EIAR (Table 9.221)	**0.50**	**0.45**	**0.45**
Revised	**0.50**	**0.44**	**0.41**

Razorbill – Forth Islands SPA, NnG with Forth & Tay projects

Overall, for razorbills at the Forth Islands SPA, using the revised start populations provided by SNH in May 2018, for the cumulative wind farm scenarios tested did not result in a significant difference in the predicted population growth rates or the associated counterfactual values (Table 19). For both sets of model runs, the razorbill population at the Forth Islands SPA was predicted to be fairly stable over both 25 years and 50 years, with a population growth rate close to zero. This means that any change will be relatively large, relative to the small initial rate. Similarly, the counterfactual of the growth rate is highly influenced by the initial growth rate and bears little relevance to the change in growth rate on its own. Therefore, in this case, the percentage point change, which shows a very slight decrease compared to the predicted baseline rate, gives a better representation of the change in growth rate. There was little difference between the percentage point change when using the revised start populations provided by SNH in May 2018.

Table 19: Comparison of change in predicted population growth rate for razorbills breeding at the Forth Islands SPA with and without NnG and the Forth & Tay projects over 25 years and 50 years

	Baseline change after 25 & 50 years (no wind farm)	Percentage point change with NnG & F&T projects after 25 & 50 years (displacement all year)	Percentage change in median annual growth rate compared to baseline	Counterfactual of the annual growth rate
EIAR – 25 years (Table 9.222)	**0.0313**	**-0.113**	**-360.70**	**-260.70%**
Revised – 25 years	**0.0213**	**-0.314**	**-1,476.06**	**-1,376.06%**
EIAR – 50 years (Table 9.224)	**0.0631**	**-0.173**	**-274.17**	**-174.17%**
Revised – 50 years	**0.0510**	**-0.336**	**-659.22**	**-559.22%**

For razorbills at the Forth Islands SPA, using the revised start populations provided by SNH in May 2018, for the cumulative wind farm scenarios tested resulted in slightly greater changes in predicted end populations and the associated counterfactual values (Table 20). However these differences were not considered significant.

Table 20: Comparison of change in predicted population size for razorbills breeding at the Forth Islands SPA with and without NnG and the Forth & Tay projects over 25 years and 50 years

	Start Population	Baseline population after 50 years (no wind farm)	Population after 50 years with NnG & F&T projects (displacement all year)	Percentage change in median final population size compared to baseline	Counterfactual of Population Size (CPS)
EIAR – 25 years (Table 9.223)	**7,792 pairs**	**7,862 pairs**	**7,563 pairs**	**-3.80**	**96.20%**
Revised – 25 years	**3,896 pairs**	**3,949 pairs**	**3,610 pairs**	**-8.59**	**91.41%**
EIAR – 50 years (Table 9.225)	**7,792 pairs**	**8,063 pairs**	**7,428 pairs**	**-7.88**	**92.12%**
Revised – 50 years	**3,896 pairs**	**4,009 pairs**	**3,346 pairs**	**-16.52**	**83.48%**

For razorbills at the Forth Islands SPA, using the revised start populations provided by SNH in May 2018, for the cumulative wind farm scenarios tested resulted in a slightly greater difference in the predicted 50th centile values over 25 years and 50 years (Table 21). However this difference was not considered significant.

Table 21: Comparison of the 50th centile values for razorbills breeding at the Forth Islands SPA with and without NnG and the Forth & Tay projects over 25 years and 50 years

	50th centile for unimpacted population (Baseline)	Centile for impacted population that matches 50th centile for baseline population after 25 years with NnG & F&T projects (displacement all year)	Centile for impacted population that matches 50th centile for baseline population after 50 years with NnG & F&T projects (displacement all year)
EIAR (Table 9.226)	**0.50**	**0.42**	**0.39**
Revised	**0.50**	**0.34**	**0.27**

Razorbill – Fowlsheugh SPA, NnG with Forth & Tay projects

Overall, for razorbills at the Fowlsheugh SPA, using the revised start populations provided by SNH in May 2018, for the cumulative wind farm scenarios tested resulted in slightly greater decreases in the predicted population growth rates and the associated counterfactual values (Table 22). However these differences were not considered significant.

For both sets of model runs, the razorbill population at the Fowlsheugh SPA was predicted to be fairly stable over both 25 years and 50 years, with a low population growth rate. This means that any change will be relatively large, relative to the small initial rate. Similarly, the counterfactual of the growth rate is highly influenced by the initial growth rate and bears little relevance to the change in growth rate on its own. Therefore, in this case, the percentage point change, which shows a slight decrease compared to the predicted baseline rate, gives a better representation of the change in growth rate. There was little difference between the percentage point change when using the revised start populations provided by SNH in May 2018.

Table 22: Comparison of change in predicted population growth rate for razorbills breeding at the Fowlsheugh SPA with and without NnG and the Forth & Tay projects over 25 years and 50 years

	Baseline change after 25 & 50 years (no wind farm)	Percentage point change with NnG & F&T projects after 25 & 50 years (displacement all year)	Percentage change in median annual growth rate compared to baseline	Counterfactual of the annual growth rate
EIAR – 25 years (Table 9.222)	**0.9516**	**-0.181**	**-19.00**	**81.00%**
Revised – 25 years	**0.9209**	**-0.262**	**-28.41**	**71.59%**
EIAR – 50 years (Table 9.224)	**0.9416**	**-0.133**	**-14.14**	**85.86%**
Revised – 50 years	**0.9493**	**-0.318**	**-33.50**	**66.50%**

For razorbills at the Fowlsheugh SPA, using the revised start populations provided by SNH in May 2018, for the cumulative wind farm scenarios tested resulted in slightly greater changes in predicted end populations and the associated counterfactual values (Table 23). However these differences were not considered significant.

Table 23: Comparison of change in predicted population size for razorbills breeding at the Fowlsheugh SPA with and without NnG and the Forth & Tay projects over 25 years and 50 years

	Start Population	Baseline population after 50 years (no wind farm)	Population after 50 years with NnG & F&T projects (displacement all year)	Percentage change in median final population size compared to baseline	Counterfactual of Population Size (CPS)
EIAR – 25 years (Table 9.223)	**9,950 pairs**	**13,491 pairs**	**12,923 pairs**	**-4.21**	**95.79%**
Revised – 25 years	**4,975 pairs**	**6,665 pairs**	**6,231 pairs**	**-6.51**	**93.49%**
EIAR – 50 years (Table 9.225)	**9,950 pairs**	**16,932 pairs**	**15,910 pairs**	**-6.04**	**93.96%**

Revised – 50 years	**4,975 pairs**	**8,468 pairs**	**7,223 pairs**	**-14.70**	**85.30%**

For razorbills at the Fowlsheugh SPA, using the revised start populations provided by SNH in May 2018, for the cumulative wind farm scenarios tested resulted in a slightly greater difference in the predicted 50th centile values over 25 years and 50 years (Table 24). However this difference was not considered significant.

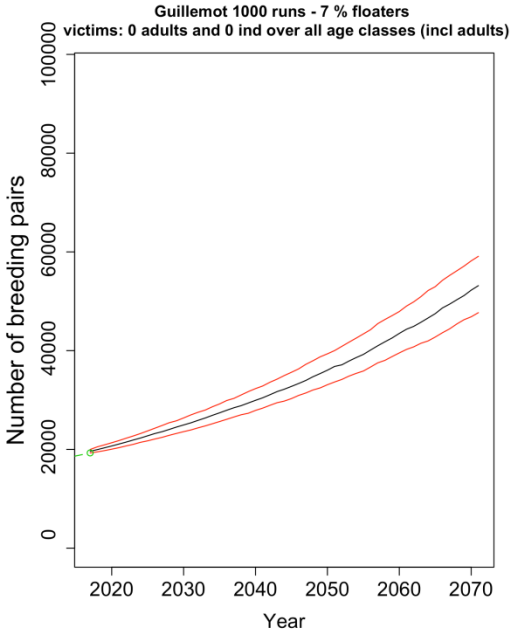
Table 24: Comparison of the 50th centile values for razorbills breeding at the Fowlsheugh SPA with and without NnG and the Forth & Tay projects over 25 years and 50 years

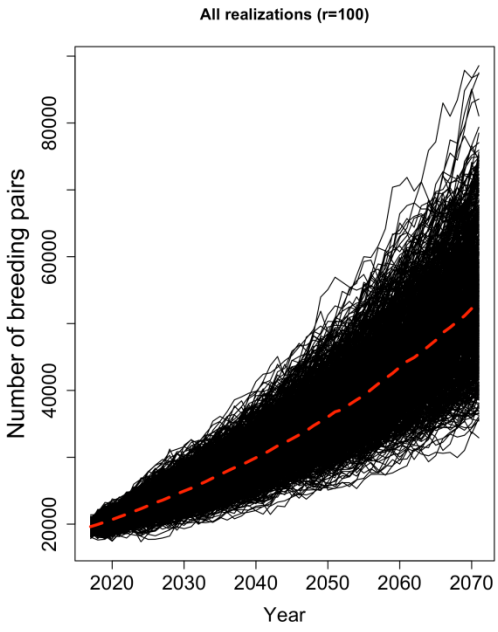
	50th centile for unimpacted population (Baseline)	**Centile for impacted population that matches 50th centile for baseline population after 25 years with NnG (displacement all year)**	**Centile for impacted population that matches 50th centile for baseline population after 50 years with NnG (displacement all year)**
EIAR (Table 9.226)	**0.50**	**0.42**	**0.41**
Revised	**0.50**	**0.38**	**0.29**

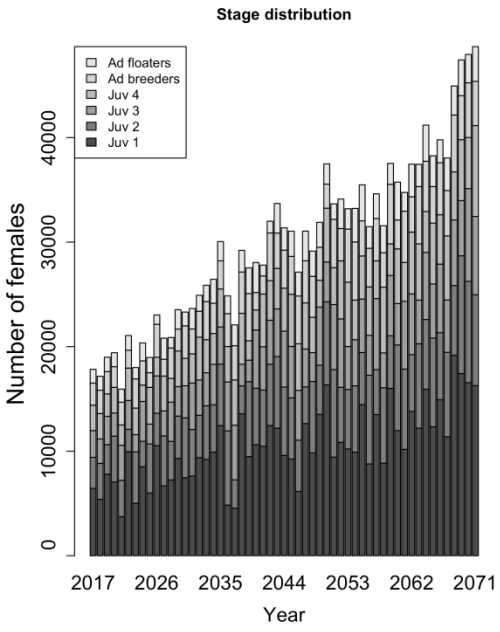
Plots from the model runs for guillemot and razorbill are shown below.

Guillemot
Forth Islands SPA
Baseline

Guillemot	Firth of Forth	S0	0.542
Guillemot	Firth of Forth	S0sd	0.04
Guillemot	Firth of Forth	S1	0.782
Guillemot	Firth of Forth	S1sd	0.02
Guillemot	Firth of Forth	S2	0.922
Guillemot	Firth of Forth	S2sd	0.02
Guillemot	Firth of Forth	S3	0.9
Guillemot	Firth of Forth	S3sd	0.02
Guillemot	Firth of Forth	S4	0.9
Guillemot	Firth of Forth	S4sd	0.02
Guillemot	Firth of Forth	Sad	0.935
Guillemot	Firth of Forth	Sadsd	0.03
Guillemot	Firth of Forth	R	0.68
Guillemot	Firth of Forth	F0	R * 0.5
Guillemot	Firth of Forth	F0sd	0.075
Guillemot	Firth of Forth	B1	6.6
Guillemot	Firth of Forth	I_ad	38573

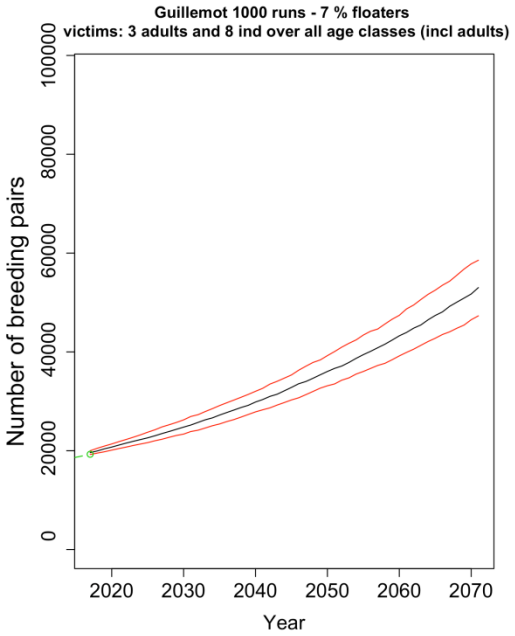


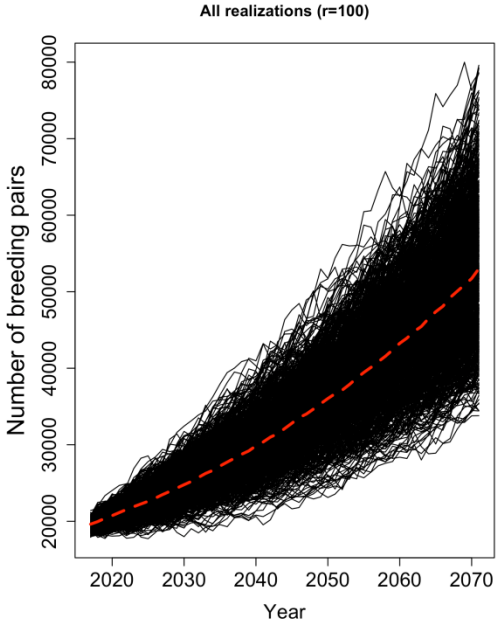


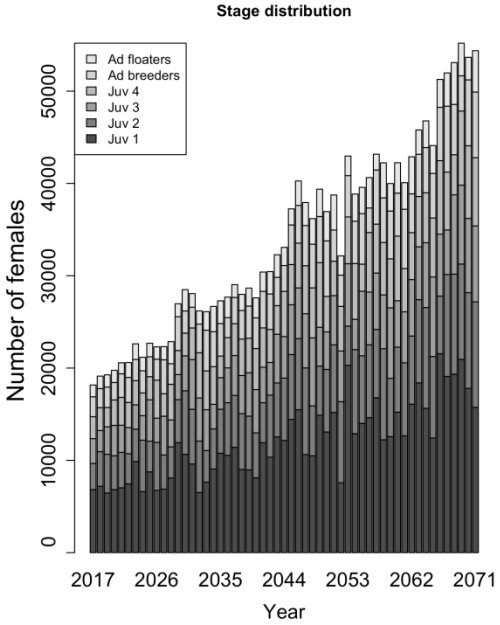


Guillemot
Forth Islands SPA
NnG alone
Displacement
Wind farm(s) constructed in 2021

Guillemot	Firth of Forth	S0	0.542
Guillemot	Firth of Forth	S0sd	0.04
Guillemot	Firth of Forth	S1	0.782
Guillemot	Firth of Forth	S1sd	0.02
Guillemot	Firth of Forth	S2	0.922
Guillemot	Firth of Forth	S2sd	0.02
Guillemot	Firth of Forth	S3	0.9
Guillemot	Firth of Forth	S3sd	0.02
Guillemot	Firth of Forth	S4	0.9
Guillemot	Firth of Forth	S4sd	0.02
Guillemot	Firth of Forth	Sad	0.935
Guillemot	Firth of Forth	Sadsd	0.03
Guillemot	Firth of Forth	R	0.68
Guillemot	Firth of Forth	F0	R * 0.5
Guillemot	Firth of Forth	F0sd	0.075
Guillemot	Firth of Forth	B1	6.6
Guillemot	Firth of Forth	I_ad	38573

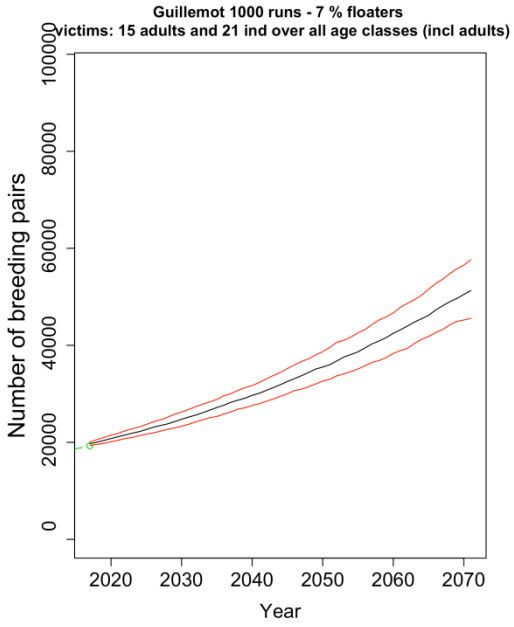


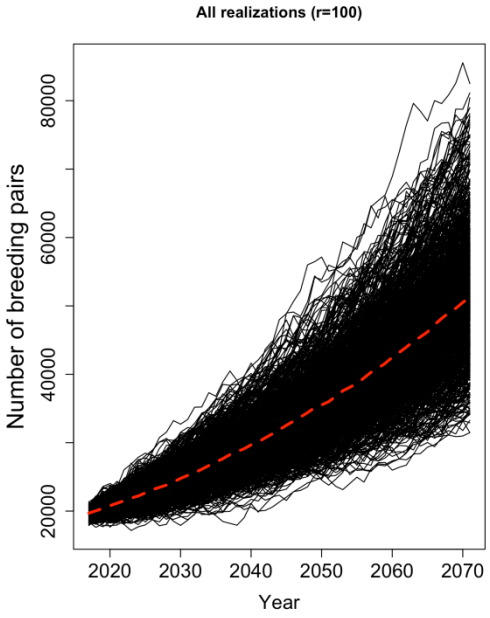


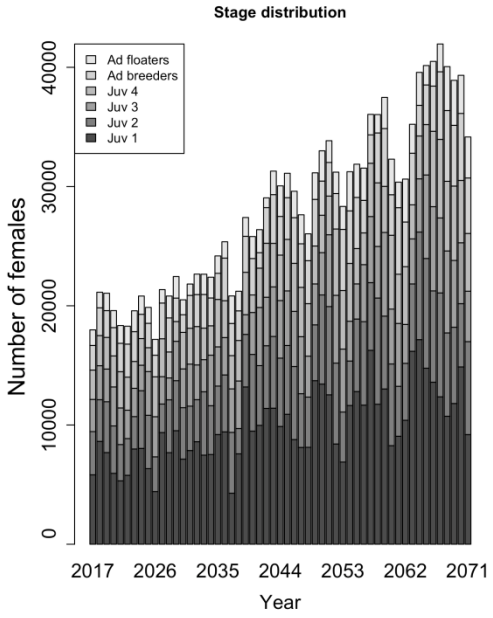


Guillemot
Forth Islands SPA
NnG with F&T projects
Displacement
Wind farm(s) constructed in 2021

Guillemot	Firth of Forth	S0	0.542
Guillemot	Firth of Forth	S0sd	0.04
Guillemot	Firth of Forth	S1	0.782
Guillemot	Firth of Forth	S1sd	0.02
Guillemot	Firth of Forth	S2	0.922
Guillemot	Firth of Forth	S2sd	0.02
Guillemot	Firth of Forth	S3	0.9
Guillemot	Firth of Forth	S3sd	0.02
Guillemot	Firth of Forth	S4	0.9
Guillemot	Firth of Forth	S4sd	0.02
Guillemot	Firth of Forth	Sad	0.935
Guillemot	Firth of Forth	Sadsd	0.03
Guillemot	Firth of Forth	R	0.68
Guillemot	Firth of Forth	F0	R * 0.5
Guillemot	Firth of Forth	F0sd	0.075
Guillemot	Firth of Forth	B1	6.6
Guillemot	Firth of Forth	I_ad	38573

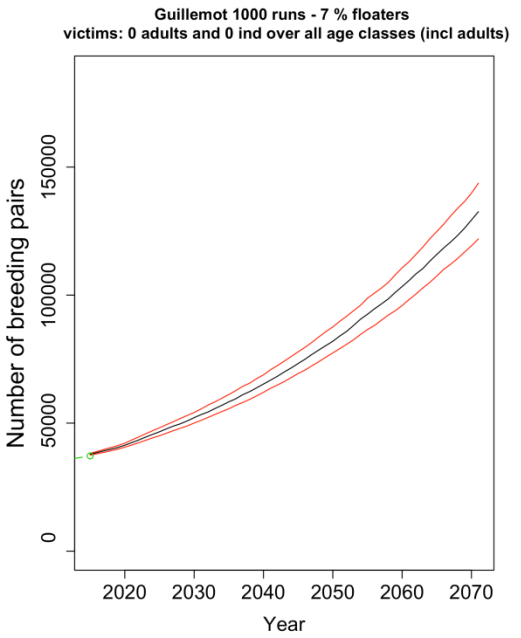


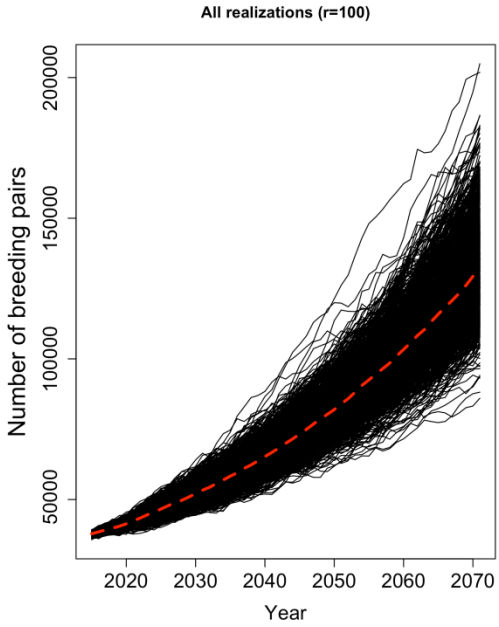


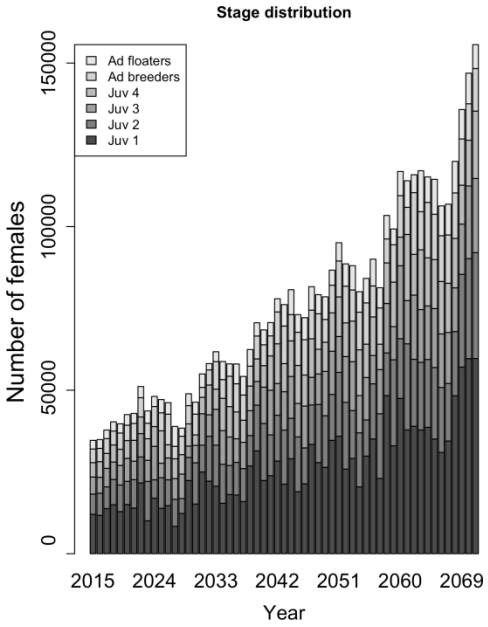


Guillemot
Fowlsheugh SPA
Baseline

Guillemot	Fowlsheugh	S0	0.56
Guillemot	Fowlsheugh	S0sd	0.013
Guillemot	Fowlsheugh	S1	0.792
Guillemot	Fowlsheugh	S1sd	0.034
Guillemot	Fowlsheugh	S2	0.917
Guillemot	Fowlsheugh	S2sd	0.022
Guillemot	Fowlsheugh	S3	0.93
Guillemot	Fowlsheugh	S3sd	0.015
Guillemot	Fowlsheugh	S4	0.93
Guillemot	Fowlsheugh	S4sd	0.015
Guillemot	Fowlsheugh	Sad	0.93
Guillemot	Fowlsheugh	Sadsd	0.015
Guillemot	Fowlsheugh	R	0.68
Guillemot	Fowlsheugh	F0	R * 0.5
Guillemot	Fowlsheugh	F0sd	0.075
Guillemot	Fowlsheugh	B1	6.6
Guillemot	Fowlsheugh	I_ad	74379

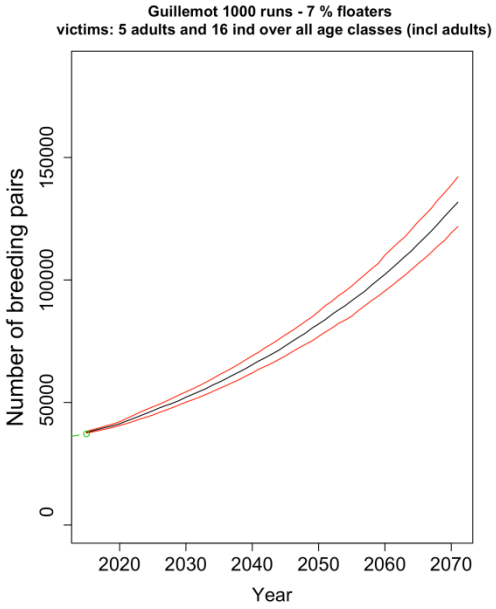


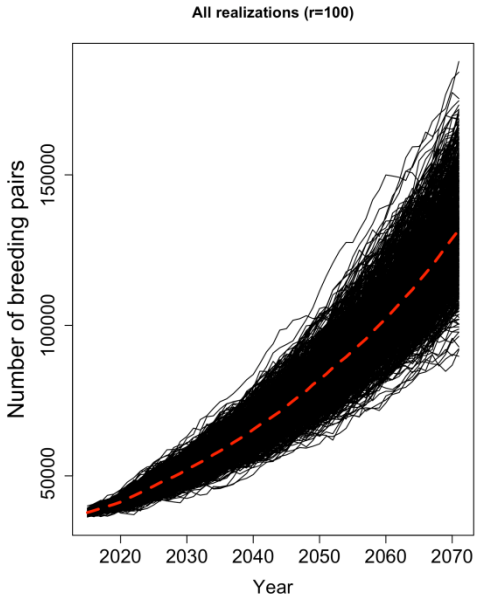


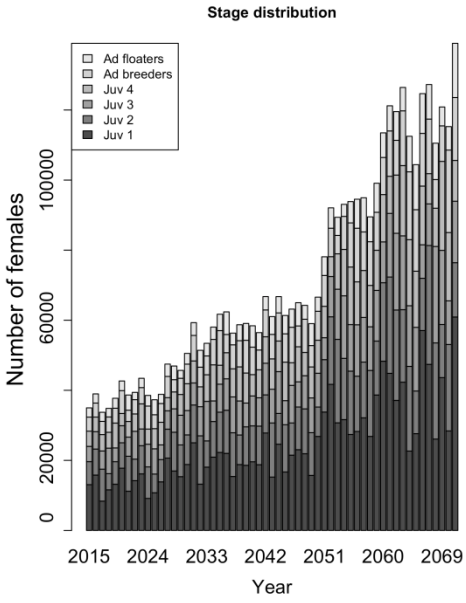


Guillemot
Fowlsheugh SPA
NnG alone
Displacement
Wind farm(s) constructed in 2021

Guillemot	Fowlsheugh	S0	0.56
Guillemot	Fowlsheugh	S0sd	0.013
Guillemot	Fowlsheugh	S1	0.792
Guillemot	Fowlsheugh	S1sd	0.034
Guillemot	Fowlsheugh	S2	0.917
Guillemot	Fowlsheugh	S2sd	0.022
Guillemot	Fowlsheugh	S3	0.93
Guillemot	Fowlsheugh	S3sd	0.015
Guillemot	Fowlsheugh	S4	0.93
Guillemot	Fowlsheugh	S4sd	0.015
Guillemot	Fowlsheugh	Sad	0.93
Guillemot	Fowlsheugh	Sadsd	0.015
Guillemot	Fowlsheugh	R	0.68
Guillemot	Fowlsheugh	F0	R * 0.5
Guillemot	Fowlsheugh	F0sd	0.075
Guillemot	Fowlsheugh	B1	6.6
Guillemot	Fowlsheugh	I_ad	74379

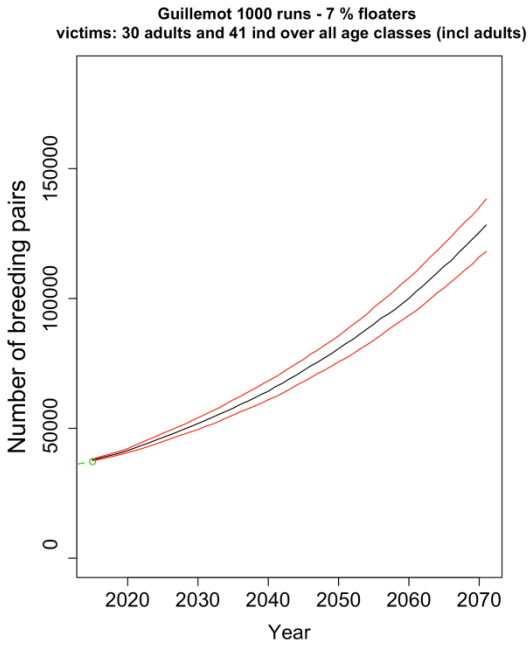


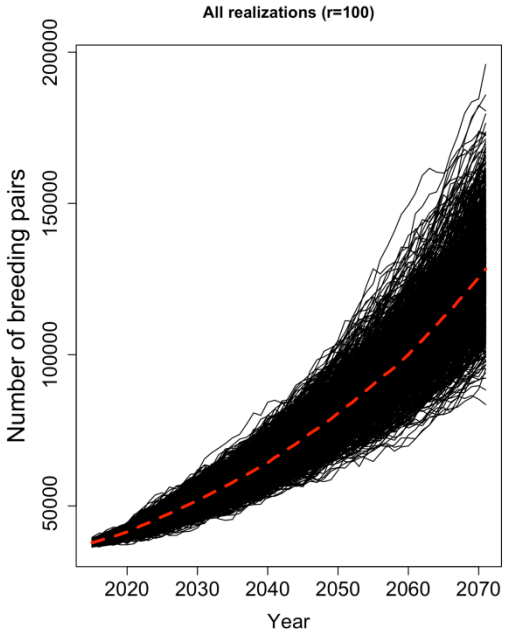


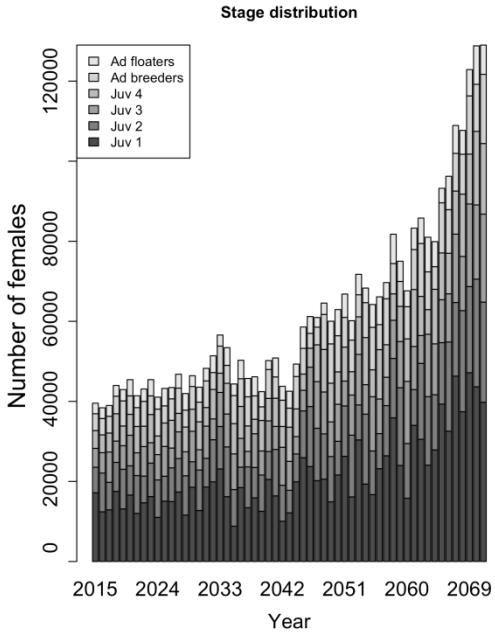


Guillemot
Fowlsheugh SPA
NnG with F&T projects
Displacement
Wind farm(s) constructed in 2021

Guillemot	Fowlsheugh	S0	0.56
Guillemot	Fowlsheugh	S0sd	0.013
Guillemot	Fowlsheugh	S1	0.792
Guillemot	Fowlsheugh	S1sd	0.034
Guillemot	Fowlsheugh	S2	0.917
Guillemot	Fowlsheugh	S2sd	0.022
Guillemot	Fowlsheugh	S3	0.93
Guillemot	Fowlsheugh	S3sd	0.015
Guillemot	Fowlsheugh	S4	0.93
Guillemot	Fowlsheugh	S4sd	0.015
Guillemot	Fowlsheugh	Sad	0.93
Guillemot	Fowlsheugh	Sadsd	0.015
Guillemot	Fowlsheugh	R	0.68
Guillemot	Fowlsheugh	F0	R * 0.5
Guillemot	Fowlsheugh	F0sd	0.075
Guillemot	Fowlsheugh	B1	6.6
Guillemot	Fowlsheugh	I_ad	74379

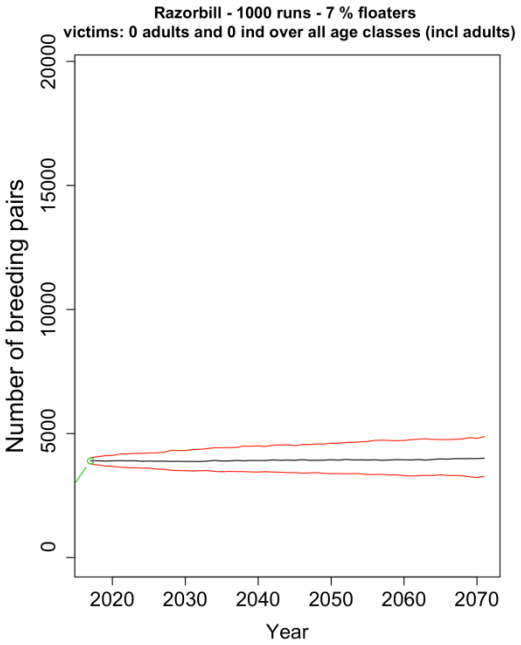


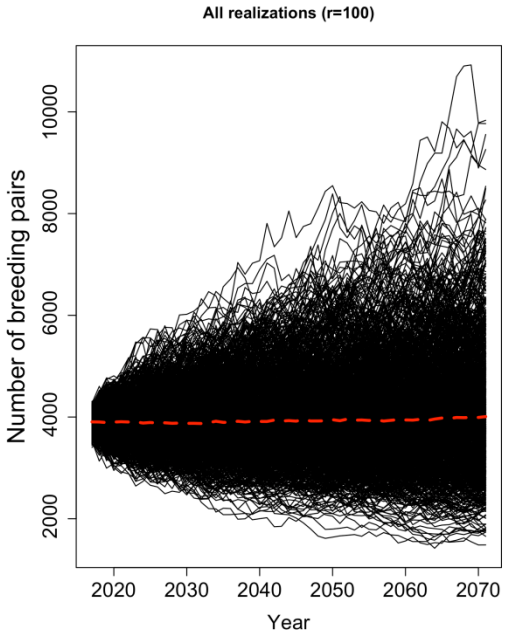


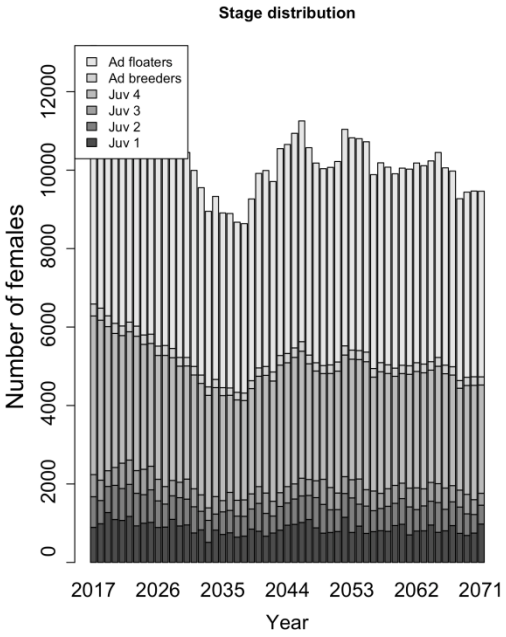


Razorbill
Forth Islands SPA
Baseline

Razorbill	Firth of Forth	S0	0.725
Razorbill	Firth of Forth	S0sd	0.05
Razorbill	Firth of Forth	S1	0.725
Razorbill	Firth of Forth	S1sd	0.05
Razorbill	Firth of Forth	Sad	0.905
Razorbill	Firth of Forth	Sadsd	0.05
Razorbill	Firth of Forth	R	0.56
Razorbill	Firth of Forth	F0	R * 0.5
Razorbill	Firth of Forth	F0sd	0.035
Razorbill	Firth of Forth	B1	4
Razorbill	Firth of Forth	I_ad	7792

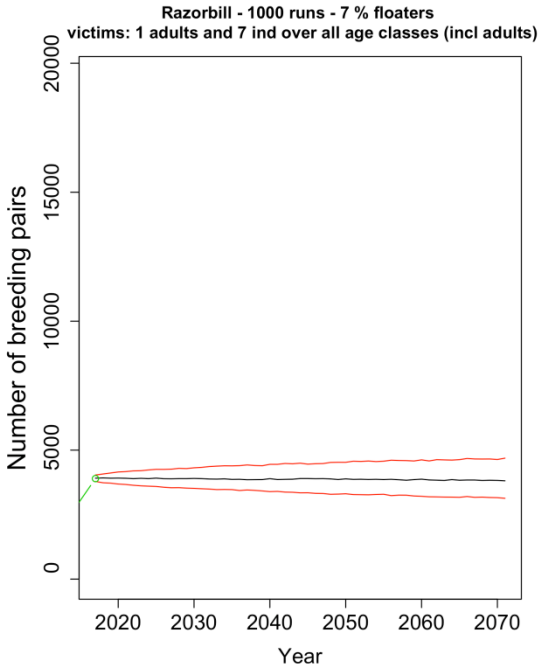


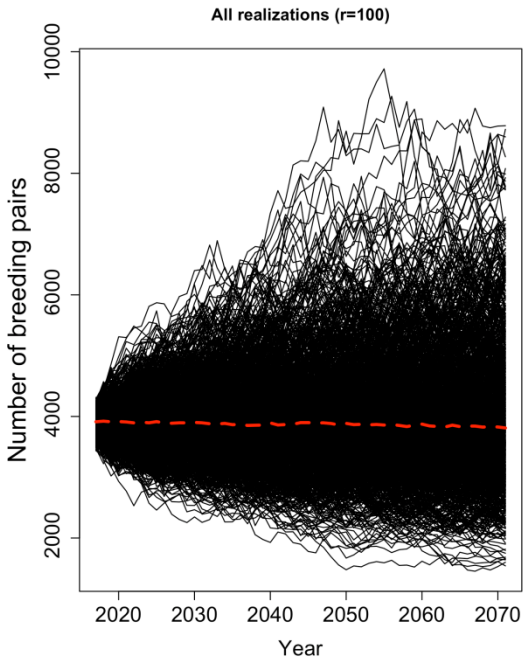


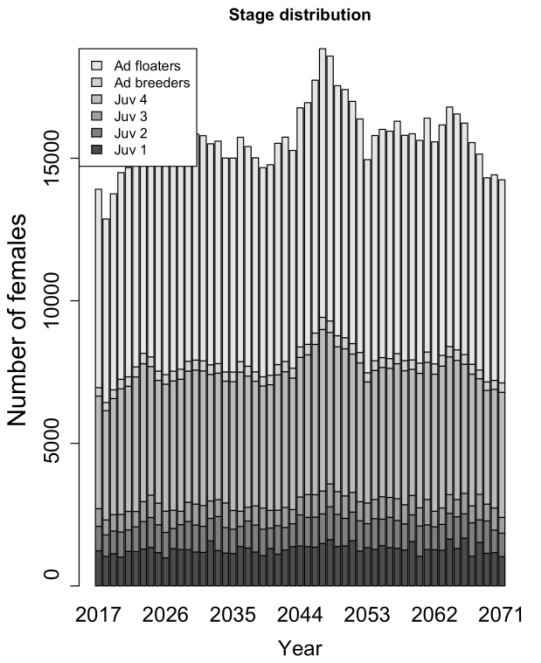


Razorbill
Forth Islands SPA
NnG alone
Displacement
Wind farm(s) constructed in 2021

Razorbill	Firth of Forth	S0	0.725
Razorbill	Firth of Forth	S0sd	0.05
Razorbill	Firth of Forth	S1	0.725
Razorbill	Firth of Forth	S1sd	0.05
Razorbill	Firth of Forth	Sad	0.905
Razorbill	Firth of Forth	Sadsd	0.05
Razorbill	Firth of Forth	R	0.56
Razorbill	Firth of Forth	F0	R * 0.5
Razorbill	Firth of Forth	F0sd	0.035
Razorbill	Firth of Forth	B1	4
Razorbill	Firth of Forth	I_ad	7792

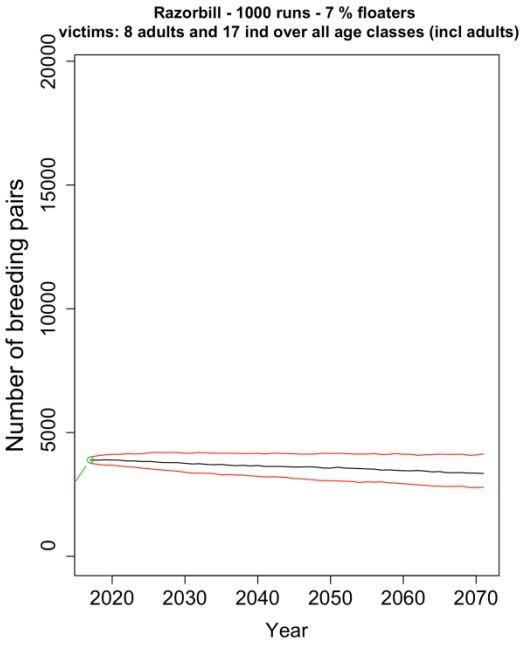


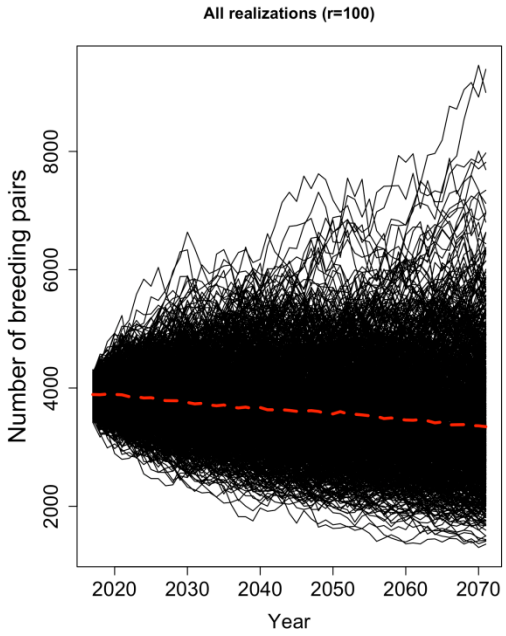


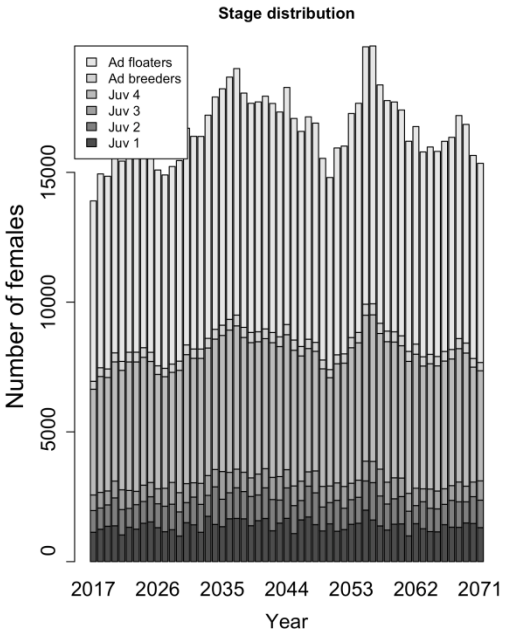


Razorbill
Forth Islands SPA
NnG with F&T projects
Displacement
Wind farm(s) constructed in 2021

Razorbill	Firth of Forth	S0	0.725
Razorbill	Firth of Forth	S0sd	0.05
Razorbill	Firth of Forth	S1	0.725
Razorbill	Firth of Forth	S1sd	0.05
Razorbill	Firth of Forth	Sad	0.905
Razorbill	Firth of Forth	Sadsd	0.05
Razorbill	Firth of Forth	R	0.56
Razorbill	Firth of Forth	F0	R * 0.5
Razorbill	Firth of Forth	F0sd	0.035
Razorbill	Firth of Forth	B1	4
Razorbill	Firth of Forth	I_ad	7792

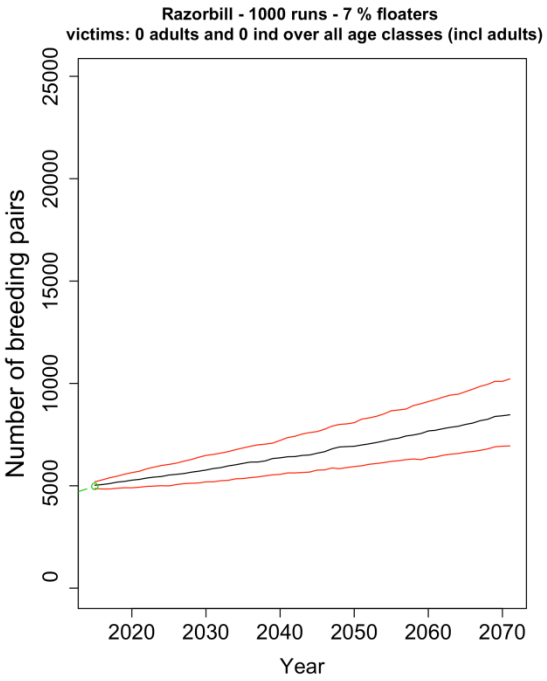


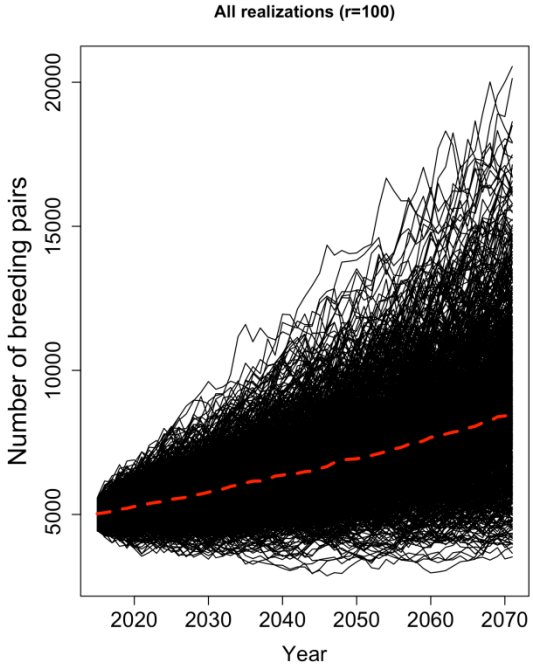


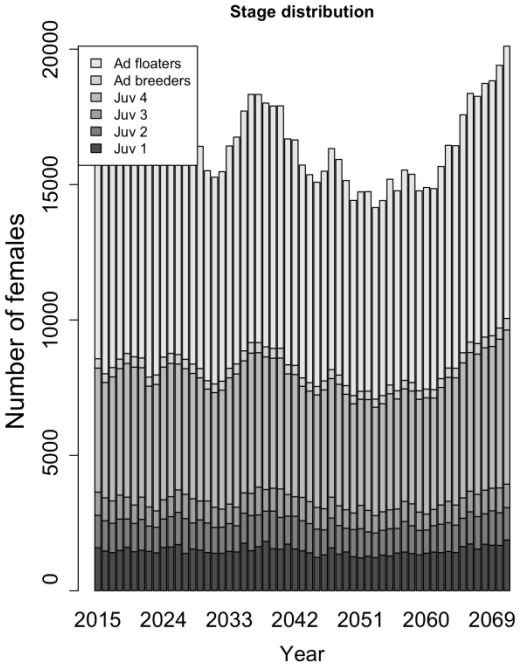


Razorbill
Fowlsheugh SPA
Baseline

Razorbill	Fowlsheugh	S0	0.725
Razorbill	Fowlsheugh	S0sd	0.05
Razorbill	Fowlsheugh	S1	0.725
Razorbill	Fowlsheugh	S1sd	0.05
Razorbill	Fowlsheugh	Sad	0.9
Razorbill	Fowlsheugh	Sadsd	0.05
Razorbill	Fowlsheugh	R	0.65
Razorbill	Fowlsheugh	F0	R * 0.5
Razorbill	Fowlsheugh	F0sd	0.02
Razorbill	Fowlsheugh	B1	4
Razorbill	Fowlsheugh	I_ad	9950

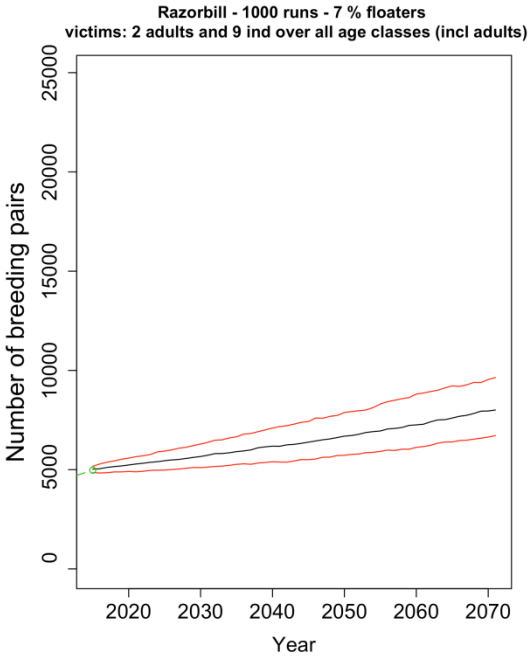


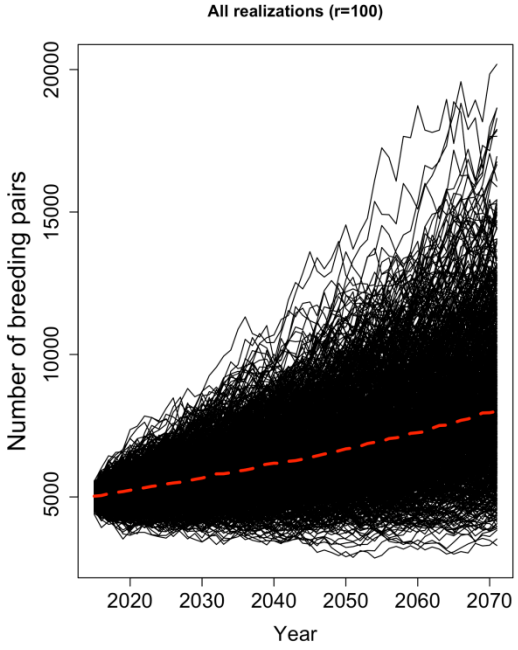


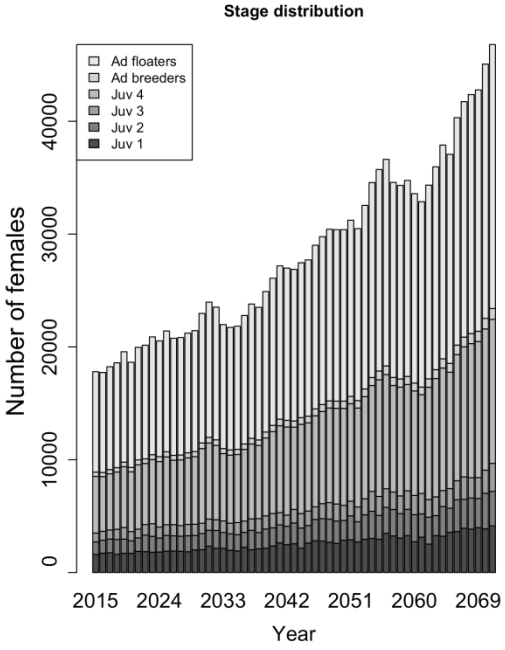


Razorbill
Fowlsheugh SPA
NnG alone
Displacement
Wind farm(s) constructed in 2021

Razorbill	Fowlsheugh	S0	0.725
Razorbill	Fowlsheugh	S0sd	0.05
Razorbill	Fowlsheugh	S1	0.725
Razorbill	Fowlsheugh	S1sd	0.05
Razorbill	Fowlsheugh	Sad	0.9
Razorbill	Fowlsheugh	Sadsd	0.05
Razorbill	Fowlsheugh	R	0.65
Razorbill	Fowlsheugh	F0	R * 0.5
Razorbill	Fowlsheugh	F0sd	0.02
Razorbill	Fowlsheugh	B1	4
Razorbill	Fowlsheugh	I_ad	9950







Razorbill
Fowlsheugh SPA
NnG with F&T projects
Displacement
Wind farm(s) constructed in 2021

Razorbill	Fowlsheugh	S0	0.725
Razorbill	Fowlsheugh	S0sd	0.05
Razorbill	Fowlsheugh	S1	0.725
Razorbill	Fowlsheugh	S1sd	0.05
Razorbill	Fowlsheugh	Sad	0.9
Razorbill	Fowlsheugh	Sadsd	0.05
Razorbill	Fowlsheugh	R	0.65
Razorbill	Fowlsheugh	F0	R * 0.5
Razorbill	Fowlsheugh	F0sd	0.02
Razorbill	Fowlsheugh	B1	4
Razorbill	Fowlsheugh	I_ad	9950