Supplementary online material

Article: Defaunation effects on plant recruitment depend on size matching and size trade-offs in seed-dispersal networks

Authors: Isabel Donoso, Matthias Schleuning, Daniel García, Jochen Fründ.

Journal: Proceedings of the Royal Society B

Appendix S2. Influence of undercompensation parameter, matching strength and niche shape on defaunation curves

Versions of Fig.2-4 after selecting different values for the undercompensation parameter (β) (Fig.S1-S6), specialization parameter (s) (Fig.S7-S12), and a different niche shape (Fig.S13-S15).

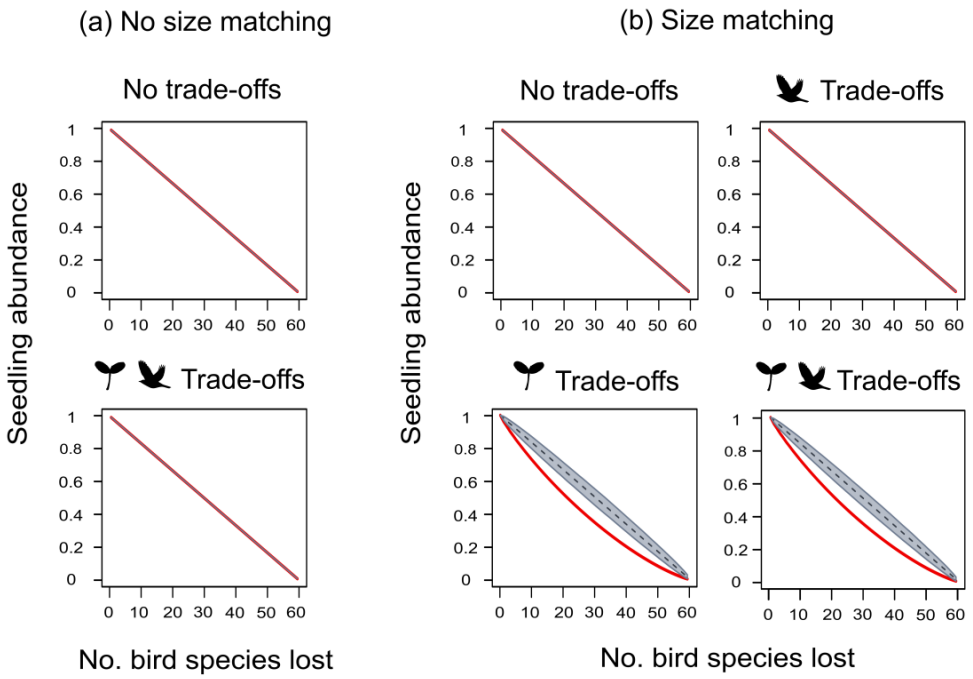

Figure S1. Defaunation effects on seedling **abundance** under different scenarios of *size matching* and *size trade-offs* using a **skewed** niche shape, specialization parameter ***s*=10** and **no undercompensation** parameter β. We compared consequences of size-structured bird extinction (red line; defaunation) and random extinction (black dashed line, with grey areas representing the confidence intervals). Model scenarios were defined as explained in Fig. 2 of the main text.

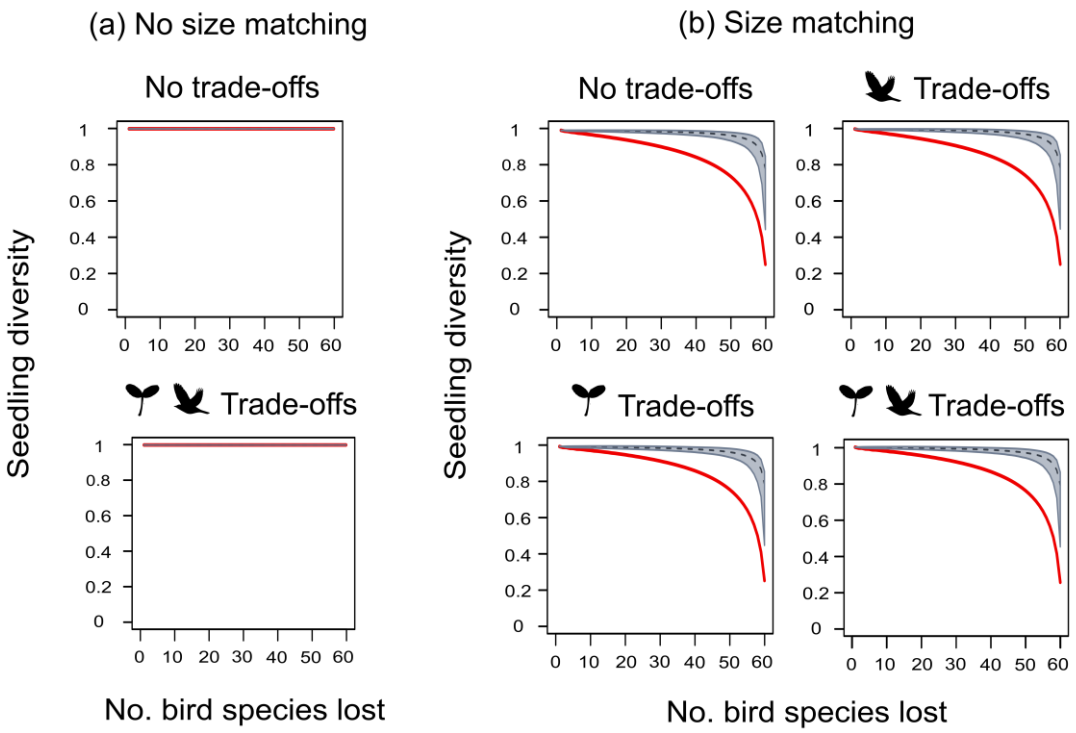

Figure S2. Defaunation effects on seedling **diversity** under different scenarios of *size matching* and *size trade-offs* using a **skewed** niche shape, specialization parameter ***s*=10** and **no undercompensation** parameter β. We compared consequences of size-structured bird extinction (red line; defaunation) and random extinction (black dashed line, with grey areas representing the confidence intervals). Model scenarios were defined as explained in Fig. 2 of the main text.

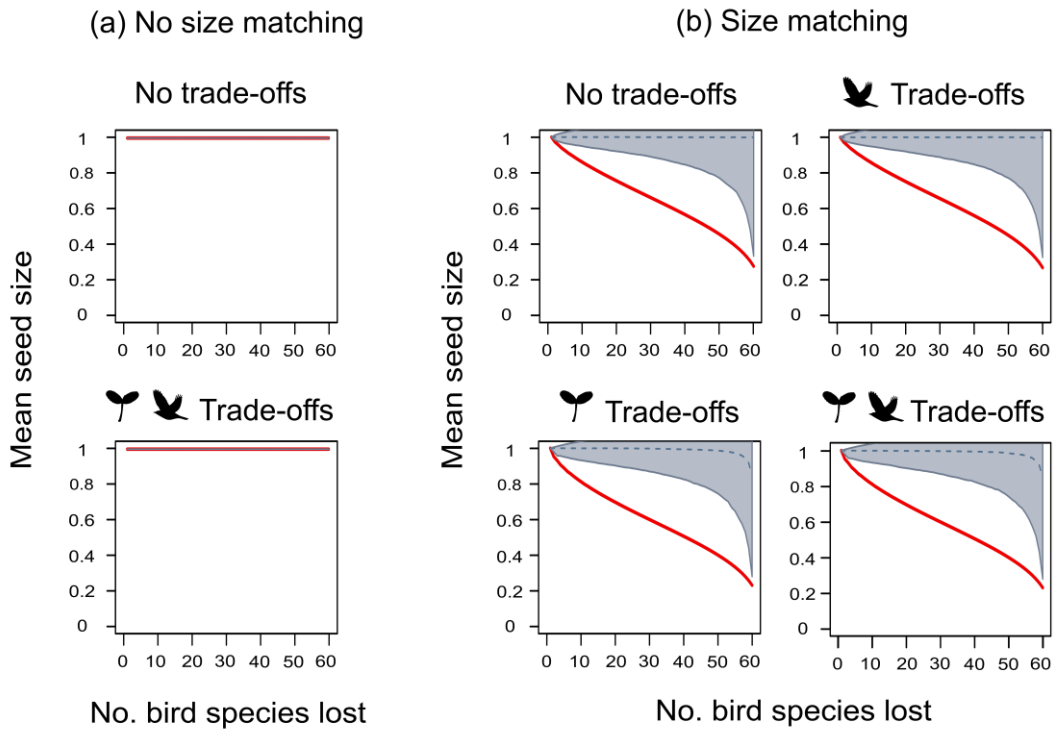

Figure S3. Defaunation effects on **mean seed size** of recruited seedlings under different scenarios of *size matching* and *size trade-offs* using a **skewed** niche shape, specialization parameter ***s*=10** and **no undercompensation** parameter β. We compared consequences of size-structured bird extinction (red line; defaunation) and random extinction (black dashed line; grey areas representing the confidence intervals, which extend to outside the plotting area). Model scenarios were defined as explained in Fig 2. of the main text.

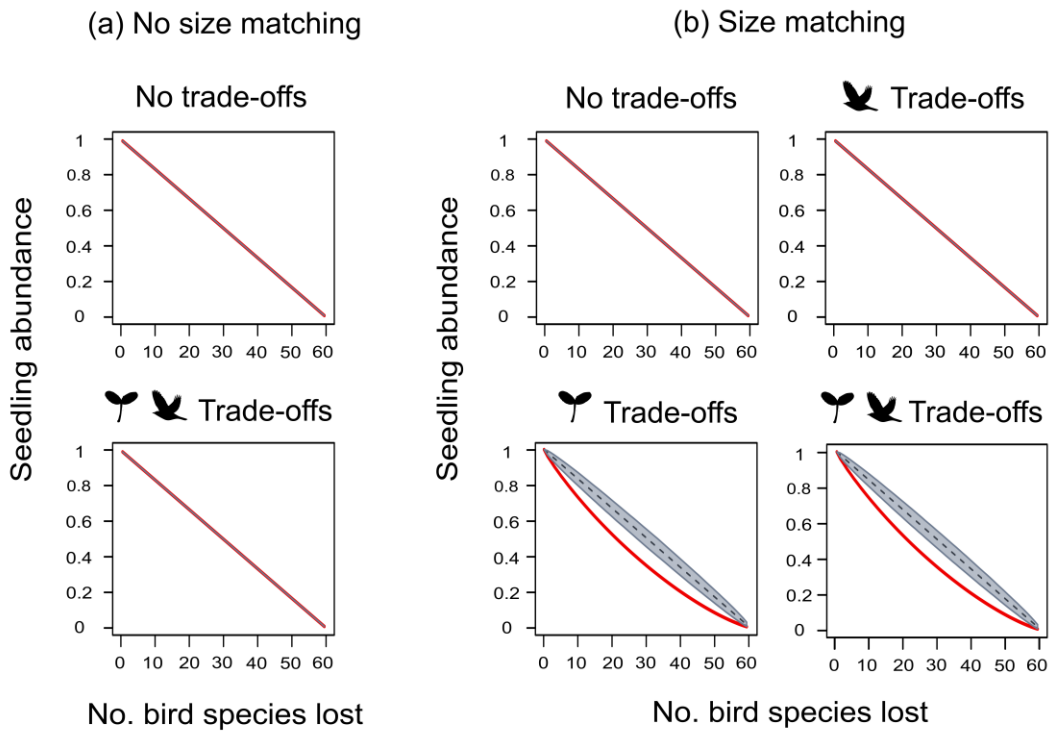

Figure S4. Defaunation effects on seedling **abundance** under different scenarios of *size matching* and *size trade-offs* using a **skewed** niche shape, specialization parameter ***s*=10** and undercompensation parameter β set to **50% of the maximum value 1/** x_j. We compared consequences of size-structured bird extinction (red line; defaunation) and random extinction (black dashed line, with grey areas representing the confidence intervals). Model scenarios were defined as explained in Fig. 2 of the main text.

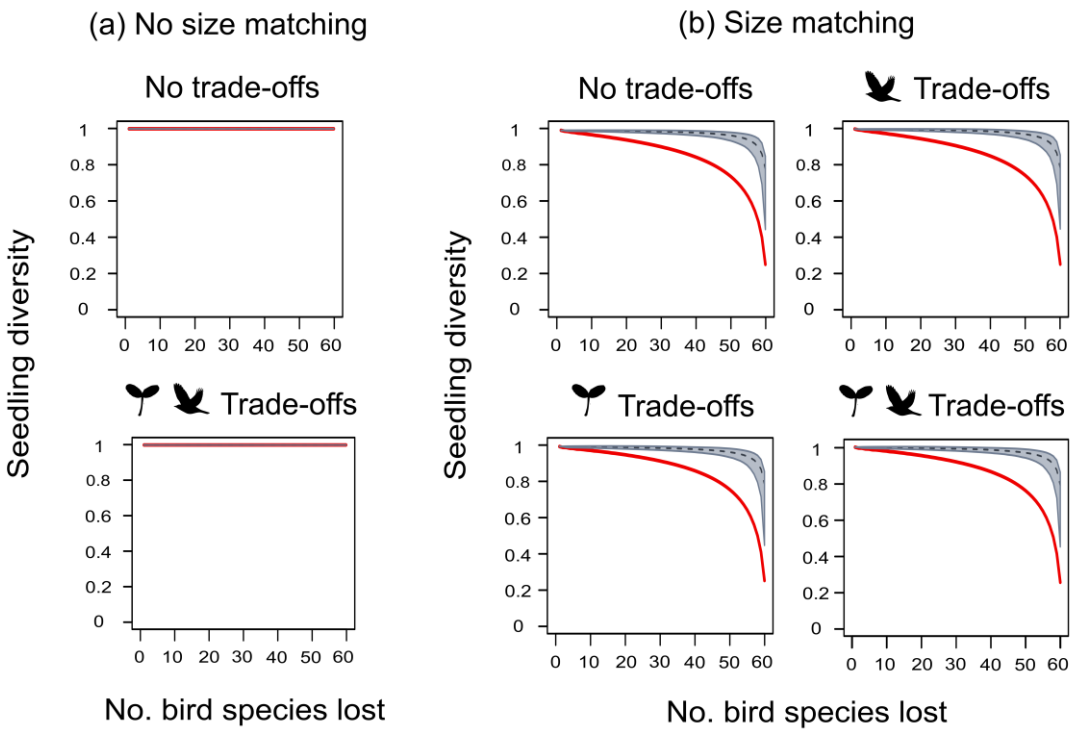

Figure S5. Defaunation effects on seedling **diversity** under different scenarios of *size matching* and *size trade-offs* using a **skewed** niche shape, specialization parameter ***s*=10** and undercompensation parameter β set to **50% of the maximum value 1/ x_j**. We compared consequences of size-structured bird extinction (red line; defaunation) and random extinction (black dashed line, with grey areas representing the confidence intervals). Model scenarios were defined as explained in Fig. 2 of the main text.

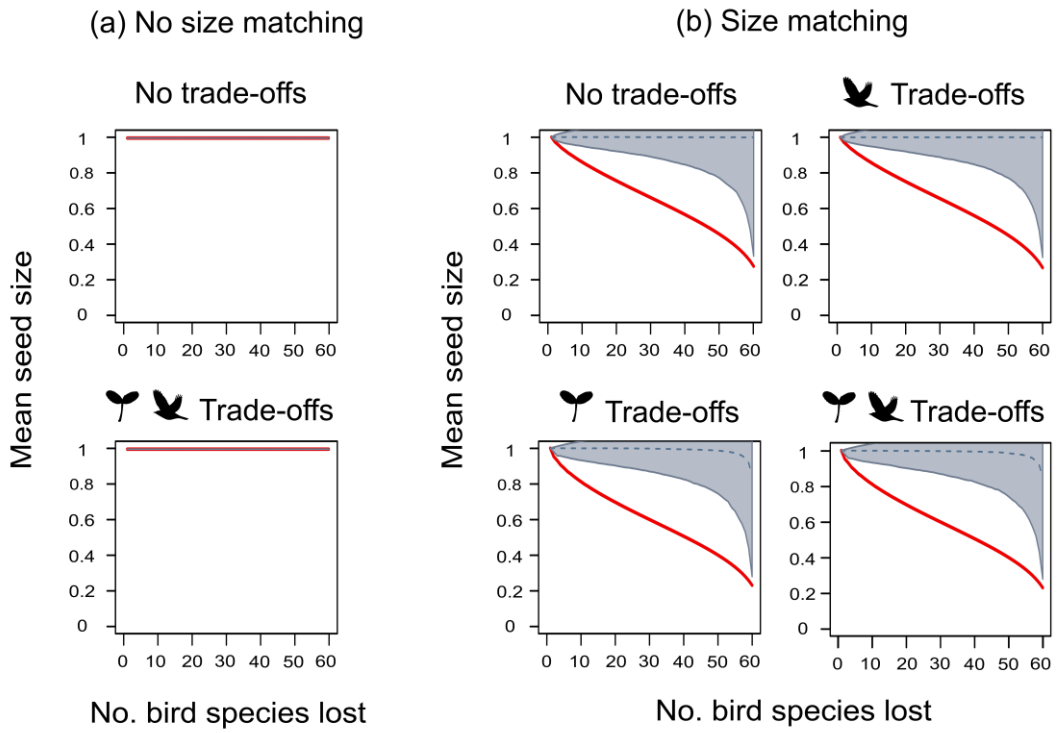

Figure S6. Defaunation effects on **mean seed size** of recruited seedlings under different scenarios of *size matching* and *size trade-offs* using a **skewed** niche shape, specialization parameter s**=10** and undercompensation parameter β set to **50% of the maximum value 1/** x_j. We compared consequences of size-structured bird extinction (red line; defaunation) and random extinction (black dashed line; grey areas representing the confidence intervals, which extend to outside the plotting area). Model scenarios were defined as explained in Fig. 2 of the main text.

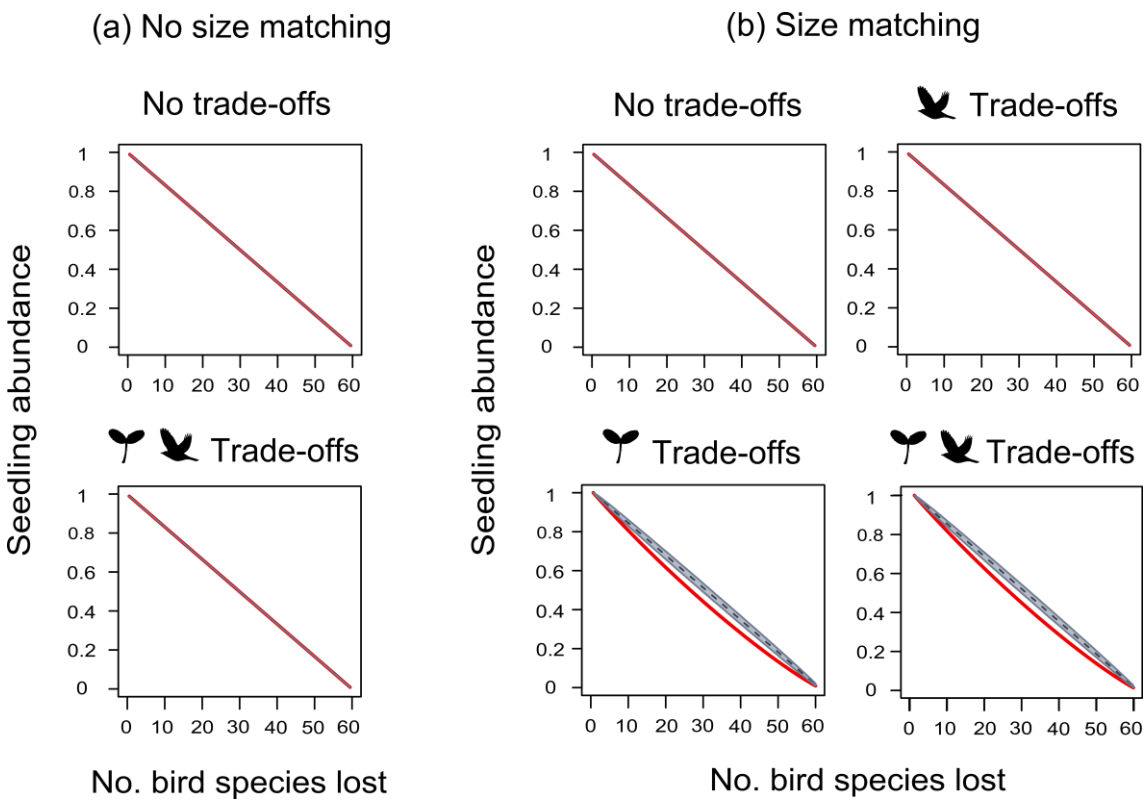

Figure S7. Defaunation effects on seedling **abundance** under different scenarios of *size matching* and *size trade-offs* using a **skewed** niche shape, specialization parameter $\boldsymbol{s}$**=2** and undercompensation parameter $\boldsymbol{\beta}$ set to **10% of the maximum value 1/** $\boldsymbol{x_j}$. We compared consequences of size-structured bird extinction (red line; defaunation) and random extinction (black dashed line, with grey areas representing the confidence intervals). Model scenarios were defined as explained in Fig. 2 of the main text.

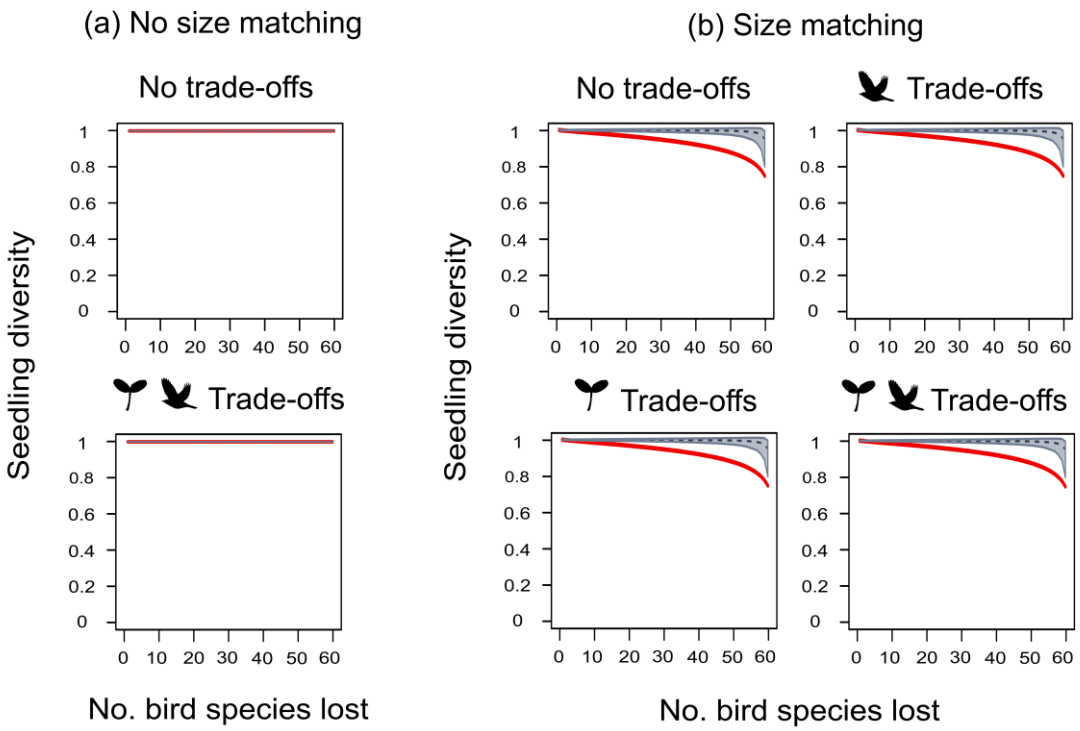

Figure S8. Defaunation effects on seedling **diversity** under different scenarios of *size matching* and *size trade-offs* using a **skewed** niche shape, specialization parameter ***s*=2** and undercompensation parameter β set to **10% of the maximum value 1/** x_j. We compared consequences of size-structured bird extinction (red line; defaunation) and random extinction (black dashed line, with grey areas representing the confidence intervals). Model scenarios were defined as explained in Fig. 2 of the main text.

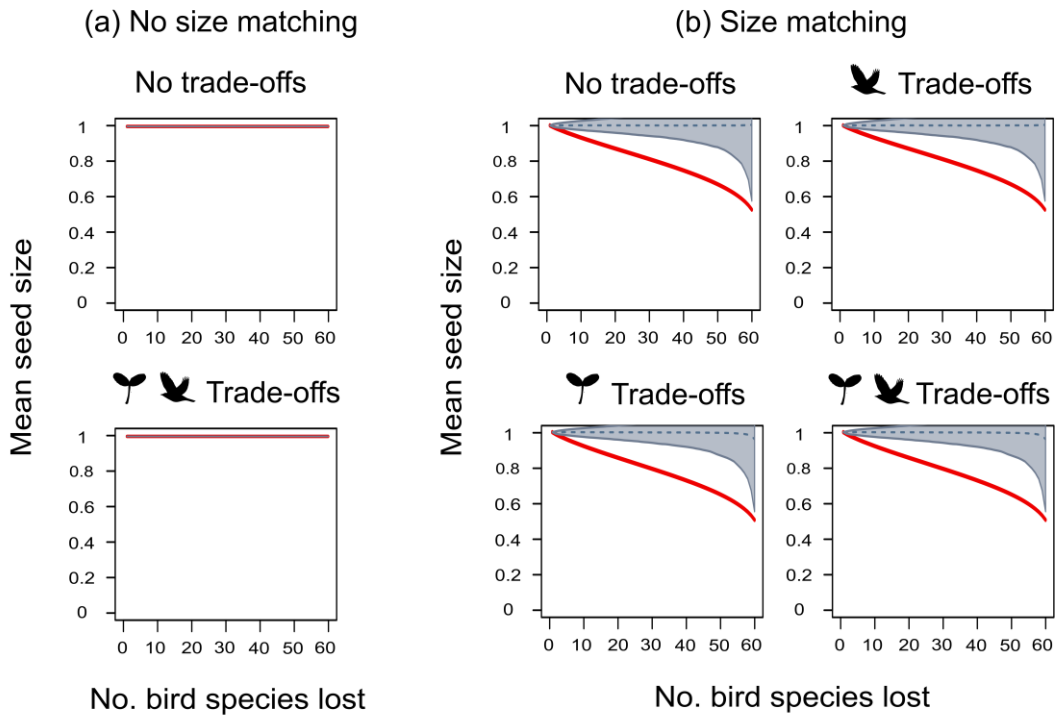

Figure S9. Defaunation effects on **mean seed size** of recruited seedlings under different scenarios of *size matching* and *size trade-offs* using a **skewed** niche shape, specialization parameter s**=2** and undercompensation parameter β set to **10% of the maximum value 1/** x_j. We compared consequences of size-structured bird extinction (red line; defaunation) and random extinction (black dashed line; grey areas representing the confidence intervals, which extend to outside the plotting area). Model scenarios were defined as explained in Fig. 2 of the main text.

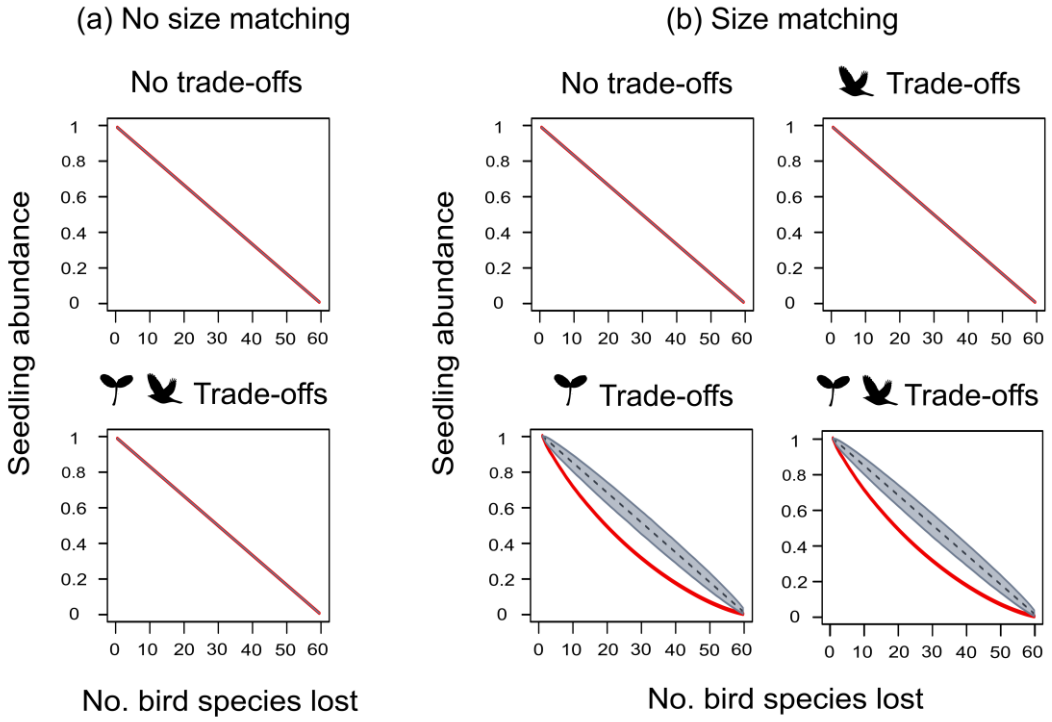

Figure S10. Defaunation effects on seedling **abundance** under different scenarios of *size matching* and *size trade-offs* using a **skewed** niche shape, specialization parameter ***s*=50** and undercompensation parameter β set to **10% of the maximum value 1/** x_j. We compared consequences of size-structured bird extinction (red line; defaunation) and random extinction (black dashed line, with grey areas representing the confidence intervals). Model scenarios were defined as explained in Fig. 2 of the main text.

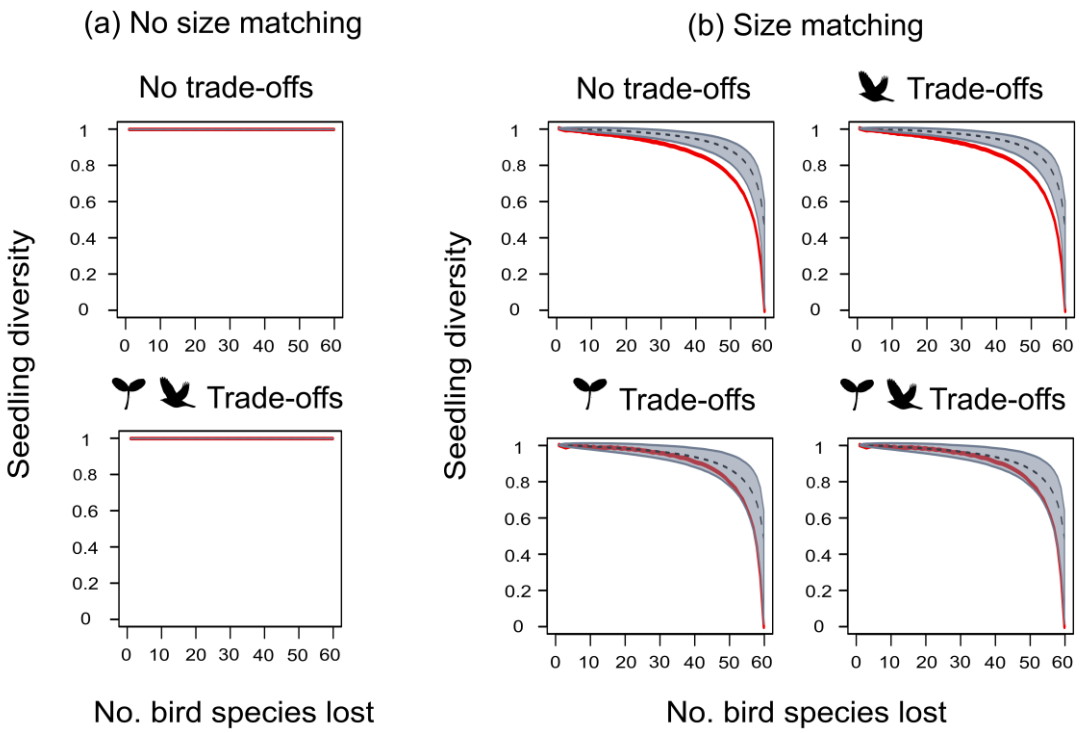

Figure S11. Defaunation effects on seedling **diversity** under different scenarios of *size matching* and *size trade-offs* using a **skewed** niche shape, specialization parameter ***s*=50** and undercompensation parameter β set to **10% of the maximum value 1/** x_j. We compared consequences of size-structured bird extinction (red line; defaunation) and random extinction (black dashed line, with grey areas representing the confidence intervals). Model scenarios were defined as explained in Fig. 2 of the main text.

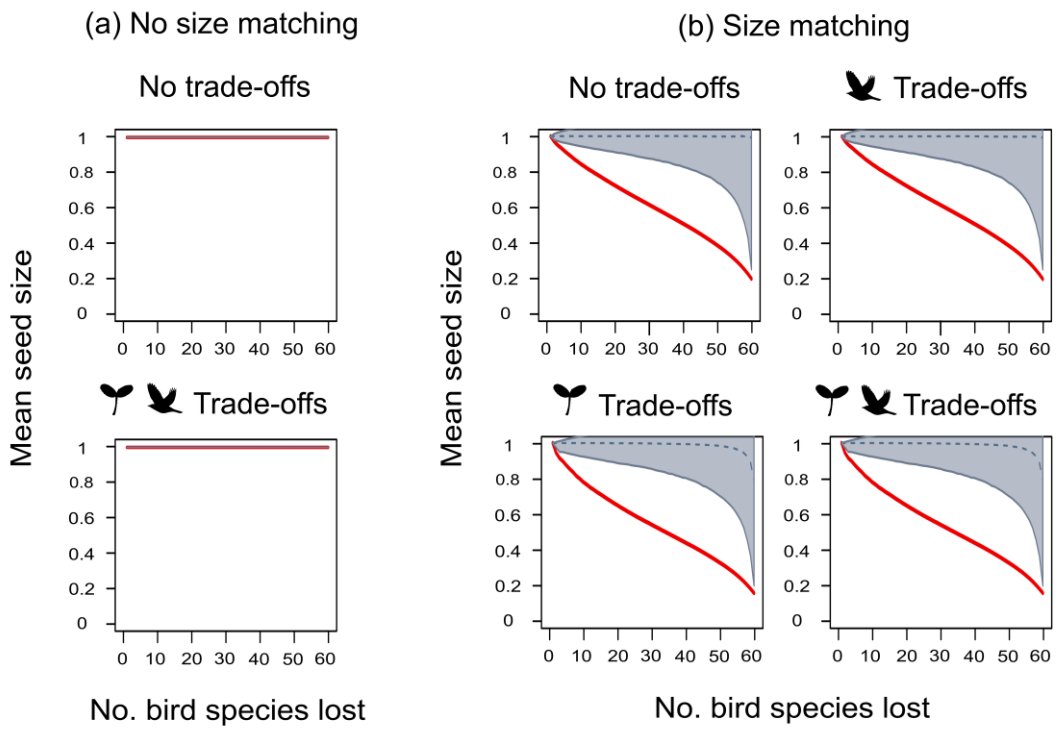

Figure S12. Defaunation effects on **mean seed size** of recruited seedlings under different scenarios of *size matching* and *size trade-offs* using a **skewed** niche shape, specialization parameter s**=50** and undercompensation parameter β set to **10% of the maximum value 1/** x_j. We compared consequences of size-structured bird extinction (red line; defaunation) and random extinction (black dashed line; grey areas representing the confidence intervals, which extend to outside the plotting area). Model scenarios were defined as explained in Fig. 2 of the main text.

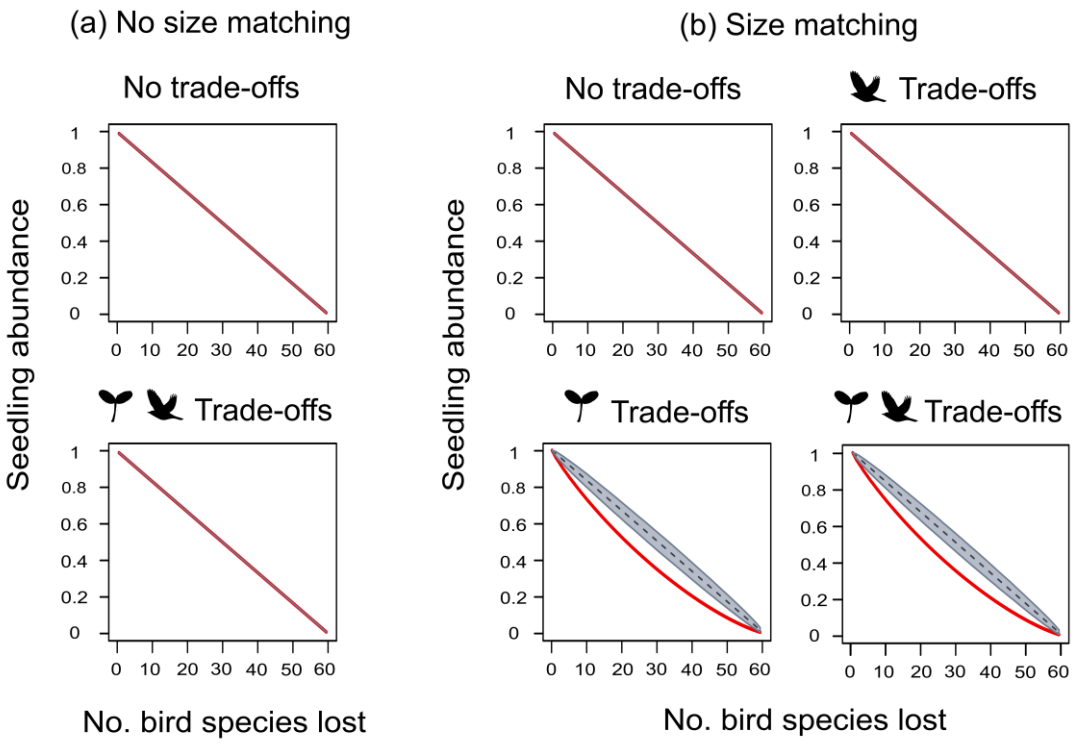

Figure S13. Defaunation effects on seedling **abundance** under different scenarios of *size matching* and *size trade-offs* using a symmetric (**Gaussian)** niche shape, specialization parameter s**=10** and undercompensation parameter β set to **10% of the maximum value 1/** x_j. We compared consequences of size-structured bird extinction (red line; defaunation) and random extinction (black dashed line, with grey areas representing the confidence intervals). Model scenarios were defined as explained in Fig. 2 of the main text.

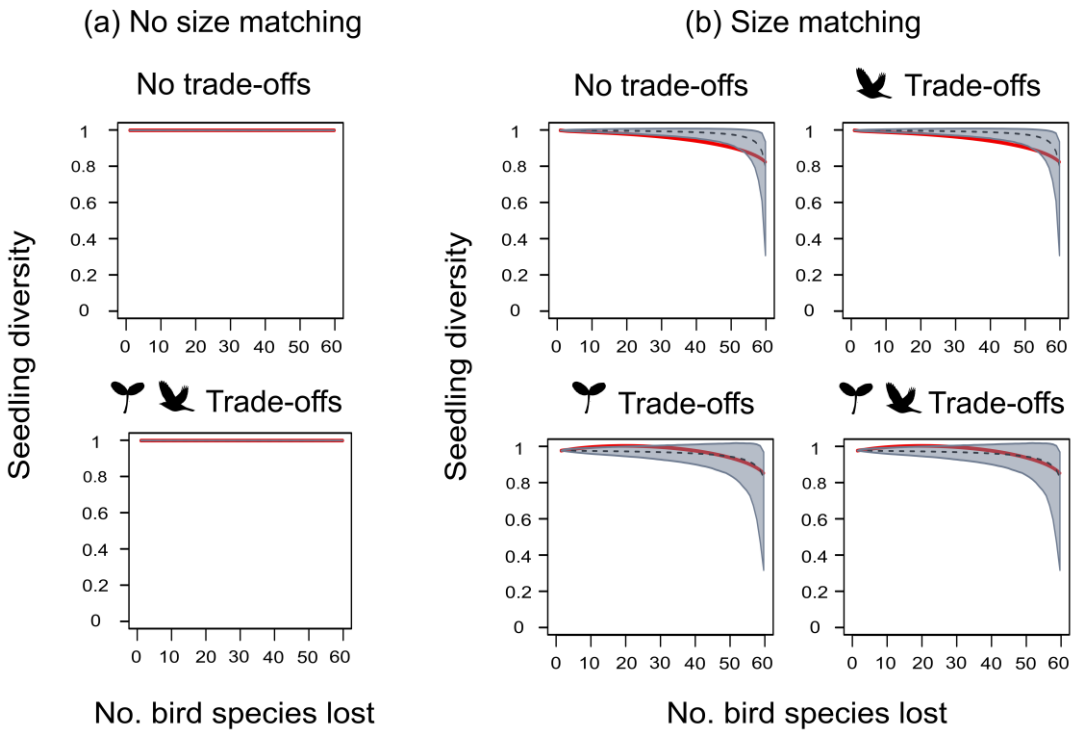

Figure S14. Defaunation effects on seedling **diversity** under different scenarios of *size matching* and *size trade-offs* using a symmetric (**Gaussian)** niche shape, specialization parameter s**=10** and undercompensation parameter β set to **10% of the maximum value 1/** x_j. We compared consequences of size-structured bird extinction (red line; defaunation) and random extinction (black dashed line, with grey areas representing the confidence intervals). Model scenarios were defined as explained in Fig. 2 of the main text.

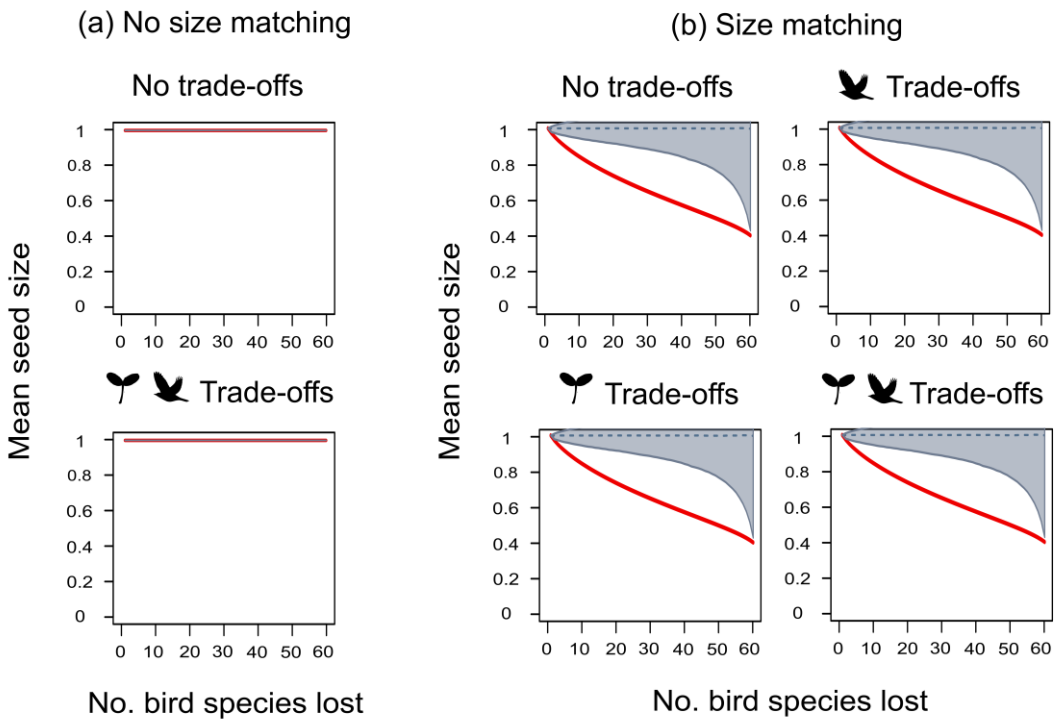

Fig S15. Defaunation effects on **mean seed size** of recruited seedlings under different scenarios of *size matching* and *size trade-offs* using a symmetric (**Gaussian)** niche shape, specialization parameter s**=10** and undercompensation parameter β set to **10% of the maximum value 1/** x_j. We compared consequences of size-structured bird extinction (red line; defaunation) and random extinction (black dashed line; grey areas representing the confidence intervals, which extend to outside the plotting area). Model scenarios were defined as explained in Fig. 2 of the main text.