**­Using population dynamics modelling to evaluate potential success of restoration: a case study of a Hawaiian vine in a changing climate**

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**APPENDIX 1**

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**Figure S1** Study area: (*a*) restored populations at National Tropical Botanical Garden (NTBG) Limahuli Preserve; (*b*) wild population at NTBG Limahuli Preserve; and (*c*) wild population at Koke‘e State Park.

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**Figure S2** *A. stellata* life cycle graph.

**Tables S1–6** Lefkovich stage-structured transition matrices.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Wild population**Year 1 Limahuli* | *Seedling* | *Juvenile* | *Small adult* | *Large adult* |
| Seedling | 0.5667 | 0.1000 | 0.1117 | 0.1993 |
| Juvenile | 0.1333 | 0.6333 | 0.0000 | 0.0000 |
| Small adult | 0.0000 | 0.1000 | 0.7500 | 0.1000 |
| Large adult | 0.0000 | 0.0000 | 0.0833 | 0.8000 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Wild population**Year 1 Koke‘e* | *Seedling* | *Juvenile* | *Small adult* | *Large adult* |
| Seedling | 0.1333 | 0.0000 | 0.0000 | 0.1000 |
| Juvenile | 0.1333 | 0.7097 | 0.0345 | 0.0000 |
| Small adult | 0.0000 | 0.0645 | 0.9655 | 0.0333 |
| Large adult | 0.0000 | 0.0000 | 0.0000 | 0.9000 |

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| --- | --- | --- | --- | --- |
| *Wild population**Year 2 Limahuli* | *Seedling* | *Juvenile* | *Small adult* | *Large adult* |
| Seedling | 0.3333 | 0.0000 | 0.6393 | 0.8616 |
| Juvenile | 0.4000 | 0.6522 | 0.0000 | 0.0000 |
| Small adult | 0.0000 | 0.1304 | 0.6471 | 0.0370 |
| Large adult | 0.0000 | 0.0000 | 0.1765 | 0.8888 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Wild population**Year 2 Koke‘e* | *Seedling* | *Juvenile* | *Small adult* | *Large adult* |
| Seedling | 0.2857 | 0.0000 | 0.2591 | 0.3321 |
| Juvenile | 0.5714 | 0.8519 | 0.0000 | 0.0000 |
| Small adult | 0.0000 | 0.0740 | 0.9354 | 0.0000 |
| Large adult | 0.0000 | 0.0000 | 0.0322 | 0.9629 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Restoration population**Closed canopy* | *Seedling* | *Juvenile* | *Small adult* | *Large adult* |
| Seedling | 0.0189 | 0.0000 | 0.2523 | 0.3733 |
| Juvenile | 0.6792 | 0.6986 | 0.0085 | 0.0000 |
| Small adult | 0.0000 | 0.0822 | 0.7600 | 0.0425 |
| Large adult | 0.0000 | 0.0000 | 0.0728 | 0.8880 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Restoration population**Open canopy* | *Seedling* | *Juvenile* | *Small adult* | *Large adult* |
| Seedling | 0.0000 | 0.0000 | 0.2523 | 0.3733 |
| Juvenile | 0.2759 | 0.5294 | 0.0085 | 0.0000 |
| Small adult | 0.0000 | 0.1324 | 0.6413 | 0.0425 |
| Large adult | 0.0000 | 0.0000 | 0.0728 | 0.8880 |

**APPENDIX 2**

**Study site precipitation**

Using National Oceanic and Atmospheric Administration (NOAA) weather station precipitation data, we calculated total annual precipitation in cm and 50-year means based on the 12 months between our census dates. We calculated wet season precipitation and 50-year means. Site status was indicated as: (1) significantly dry if precipitation was > 1SD below the 50-year mean; (2) average if in the range of the 50-year mean ± 1SD; (3) and significantly wet if it was > 1SD above the 50-year mean.