

SUPPLEMENTARY MATERIAL

Table S3

Vortex PVA State variables and model structure

Population state variable ID	Initialization function	Transition function	
PS1	$=(45.588+(18.429*NRAND))/100$	$=(45.588+(18.429*NRAND))/100$	
PS2	$=ITOT3$	$=ITOT3$	
PS3	$=ITOT4$	$=ITOT4$	
PS4	$=ITOT6$	$=ITOT6$	
PS5	$=(20.41+(5.01*NRAND))$	$=(20.41+(5.01*NRAND))$	

Individual state variable ID – Label	Initialization function	Birth function	Transition function
IS1 – MATE	$=-1$	$=-1$	$=IS1$
IS2 – PREVBRDR	$=IS3$	$=0$	$=IS3$
IS3 – BRDR	$=(IS1>0)$	$=0$	$=(NMATES>0)$
IS4 – FBRDR	$=(S='F')*IS3$	$=0$	$=(S='F')*IS3$
IS5 – MBRDR	$=(S='M')*IS3$	$=0$	$=(S='M')*IS3$
IS6 – ADULTF	$=(S='F')*(A>0)$	$=0$	$=(S='F')*(A>0)$
IS7 – FPOOL	$=(IS4=1)$	$=0$	$=(S='F')*(A>1)*(A<11)*[(ROUND(P51*P54)<P53)*((IS3=1)OR((IS3=0)AND(IS2=1)))*(((P51*P54)/P53)>=RAND)+(ROUND(P51*P54)=P53)*((IS3=1)OR((IS3=0)AND(IS2=1)))+(ROUND(P51*P54)>P53)*((IS3=1)+(IS3=0)*(IS2=1)+(IS3=0)*(IS2=0)*(((P51*P54)-P53)/(P54-P53))>RAND)]$
IS8 – MPOOL	$=(IS5=1)$	$=0$	$=(S='M')*[(IS3=1)OR(A<7)*(IS3=0)*(IS2=1)OR(IS3=0)*(IS2=0)*(A>1)*(A<7)*(((ROUND(P51*P54)<(P52-P53))*{(((2*P55*P53)+(P51*P54)>P53)*2*((P51*P54)-P53))-((P52-P53)-(0.71*P53))})/((M+0.01)-(P52-P53))>=RAND)+((ROUND(P51*P54))=(P52-P53))*((1.2*P55*0.01*(P52-P53))/((M+0.01)-(P52-P53))>=RAND)+((ROUND(P51*P54))>(P52-P53))*(((2*((P51*P54)-(P52-P53)))+(1.2*P55*(P52-P53)))/((M+0.01)-(P52-P53))>=RAND)]$

IS7 and IS8 were built as done for IS22 and IS23 respectively, in Carrol et al. [52], describing “probability to breed” computation for adult females and males

References

52. Carroll, C.; Fredrickson, R.J.; Lacy, R.C. Developing Metapopulation Connectivity Criteria from Genetic and Habitat Data to Recover the Endangered Mexican Wolf. *Conserv. Biol.* **2013**, *28*, 76–86. <https://doi.org/10.1111/cobi.12156>.