Text S1 – Breeding status and brood patch

To improve the heat transfer from the parents to the egg, breeding petrels develop a single brood patch in the middle of the ventral part about the size of the single egg they lay (Fig. S2). The brood patch develops from early incubation (end of December to early February) to hatching (mid-February to late March) (Militão et al. 2017 and this study). We examined and/or photographed the brood patch of almost all mistnetted individuals (missing information on 1.6% captures) and we used the degree of development of the brood patch of the individuals mistnetted from 2nd January until 21st March to distinguish between adults and immature individuals (Militão et al. 2017 and Fig. S2). That is, a bird with a well-developed brood patch scored within that period was considered an adult, given that this was the degree of development of the brood patches from breeders at a nest and from mistnetted adults (i.e., birds that were known to have bred at least once before being recaptured in the mistnet). Birds with no patch (typically young immature birds from 1-3 years old; Fig. S3) or with half-developed brood patch (old immature birds older >3 years old) were considered immature individuals as none of the breeders from nests showed this type of brood patch within the referred period (Fig. S4). A 'no brood patch' condition was characterized by a fully (or nearly fully) covered brood patch, indicating either an undeveloped or completely regrown state. A 'half-developed patch' was characterized by a variable partial loss of down feathers, typically in the central region of the two hemi-brood patches, while still retaining down in a central thick line. A 'well-developed patch' was characterized by the complete absence of down feathers or the presence of only a thin line of down feathers in the central portion of the patch. In some individuals, half-developed or well-developed patch started re-growing feathers (a brood patch that varied from having some sheaths of new down feathers appearing until most of the down feathers of the brood patch already broke out of sheaths) but could still be distinguished from a bird with no patch (undeveloped or completely re-grown) until mid-March. From mid-March on, information from the developmental stage of the brood patch became uninformative because some birds (including breeding birds at nest) completely re-grew the feathers of the brood patch (Fig. S4), and therefore no mistnetted birds were considered for demographic analyses out of the interval ranging from 2nd January to 21st March. To complete the information of the age of the individuals with doubtful brood patches scores or with missing data (6.5%), we inferred their age (adult or immature bird) based on the capture history of each individual, e.g., if an individual was considered adult in a certain year it was assigned as adult in the subsequent years.

References

Militão, T., H. A. Dinis, L. Zango, P. Calabuig, L. M. Stefan, and J. González-Solís. 2017. Population size, breeding biology and on-land threats of Cape Verde petrel (*Pterodroma feae*) in Fogo Island, Cape Verde. PLoS ONE 12:e0174803.

Figure S1 – Cape Verde petrel photographed in flight at night at the courtship area of Monte Fontainhas, Fogo Island, Cabo Verde, on March 2022 by Bart Vercruysse, "Petrels by Night" project, using infrared equipment.

Figure S2 – Photographic examples of each brood patch score of Cape Verde petrels. Credit for all photographs: Jacob González-Solís.

Brood patch score	Example 1	Example 2	Example 3	Example 4 (regrowing)
No brood patch				
Half-developed				
Well developed				

Figure S3 – Brood patch scores of Cape Verde petrels of known age when they were recaptured in the Bordeira courtship area. Please note that the petrel 5500706 was recaptured at the end of December when the brood patch may not be completely developed even in breeders. Credit for all photographs: Jacob González-Solís.

5500815
Ringed: 03/06/2014
Recaptured: 02/03/2016
Age: 2 years
Score: No brood patch

5500393
Ringed: 25/06/2013
Recaptured: 07/03/2016
Age: 3 years
Score: No brood patch

5500706
Ringed: 03/06/2016
Recaptured: 23/12/2019
Age: 4 years
Score: Half-developed

5500382
Ringed: 12/06/2012
Recaptured: 16/02/2017
Age: 5 years
Score: Half-developed (regrowing)

Figure S4 – Boxplot of the variation of the brood patch scores of Cape Verde petrels from January to mid-May segregated by those individuals that were captured in a nest (breeders) or mist-net. The brood patch scores are represented by different symbols: no brood patch in circles, half-developed in triangles, well developed in squares. The white symbols represented those brood patches that were already showing signs of feather regrowing, but it was still possible to distinguish the brood patch score.

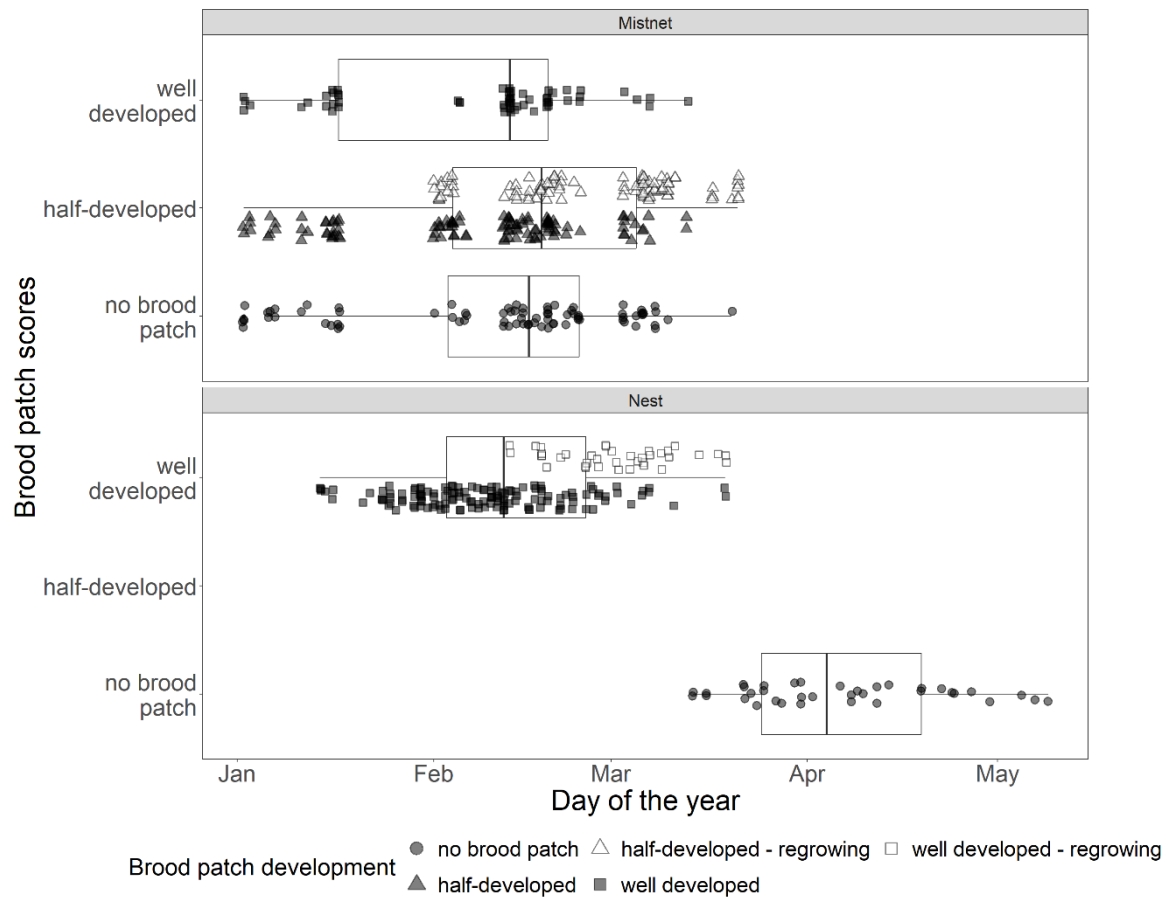Figure S5 – Remains of adult (a-c) and chick (d) Cape Verde petrels predated by cats near their nests across Cabo Verde islands. Credit for all photographs: Associação Projecto Vitó.

Figure S6 – Annual population size estimation of Cape Verde petrels based on the best POPAN capture-mark-recapture model obtained on individuals mist-netted in "Bordeira", inside Fogo Natural Park, Cabo Verde, from 2007-2021.
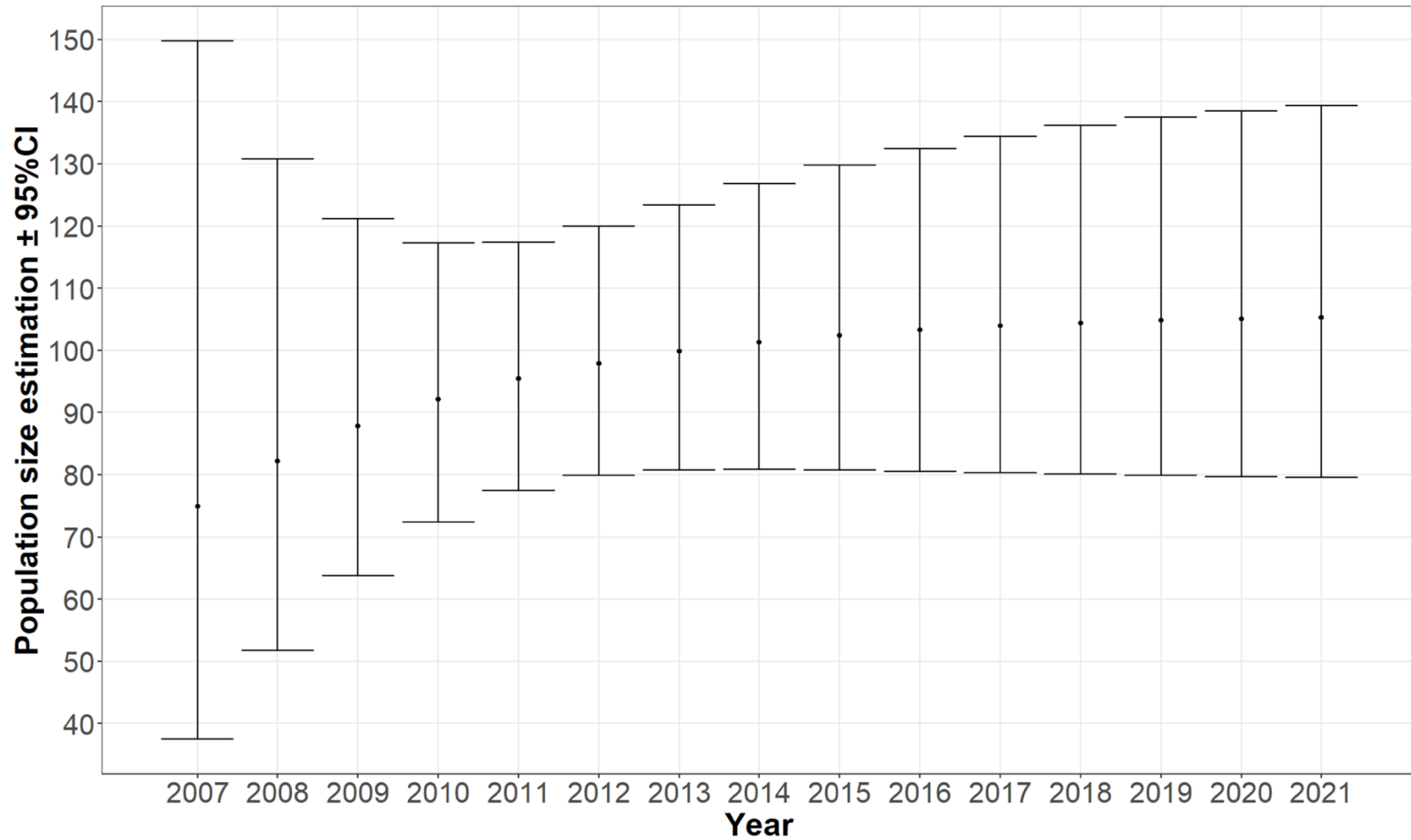
Figure S7 – Median and 50% and 90% highest posterior intervals of apparent growth rates distribution estimated from vital rates and the transition matrix for the integrated models with uncertainty derived from the parameters posterior distributions. The models were constructed using flat or informative priors and with or without considering sex segregation.
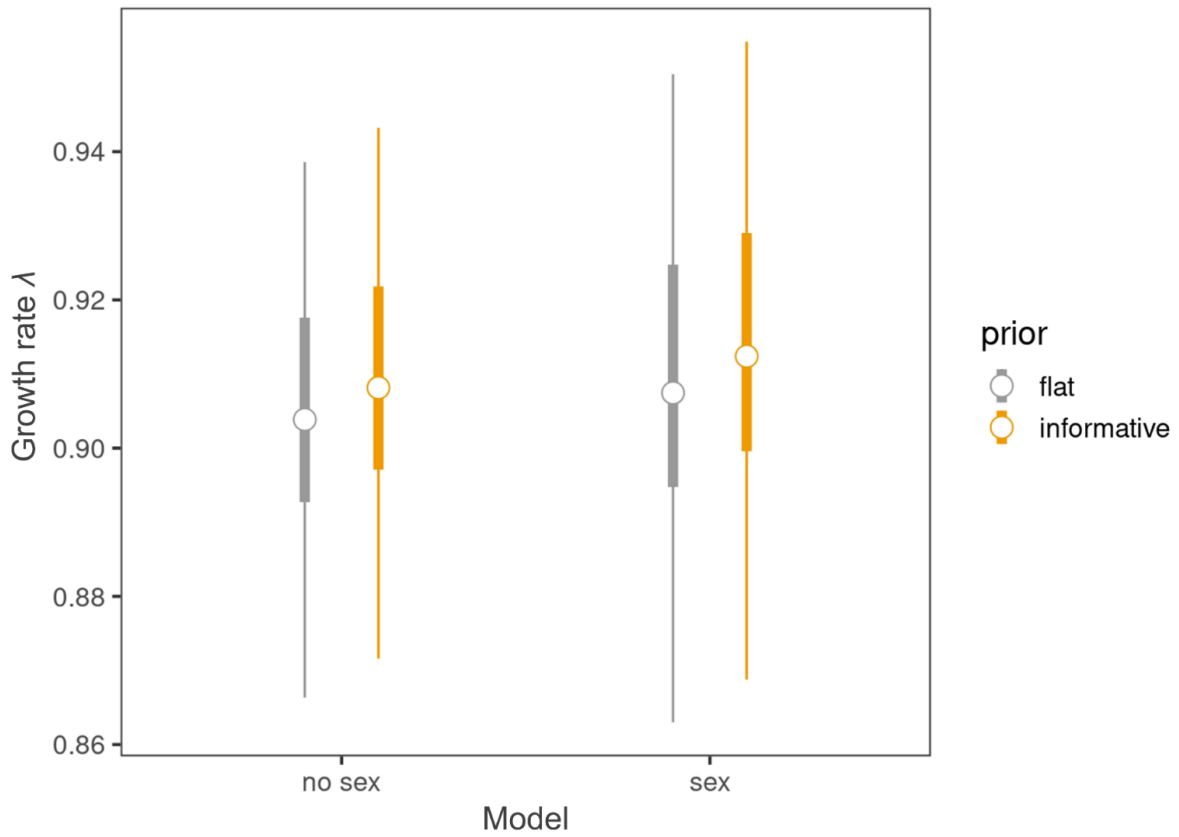
Figure S8 – Sensitivity analysis of each of the vital parameter estimates based on the Bayesian model including mistnet and nest data. α - the probability that an immature bird starts breeding, recruitment rate; β - the probability that an adult breeds in the following year; ϕ_f – survival rate of fledglings; ϕ_{13} - survival rate of juveniles (from 1st to 3rd year); ϕ_i - survival rate of immatures; ϕ_{ad} - survival rate of adults; γ – surplus of mortality; and f - fecundity rate. The survival of adults is the vital parameter with higher values of sensitivity and thus even small changes in this parameter may have an important influence on the population growth rate.
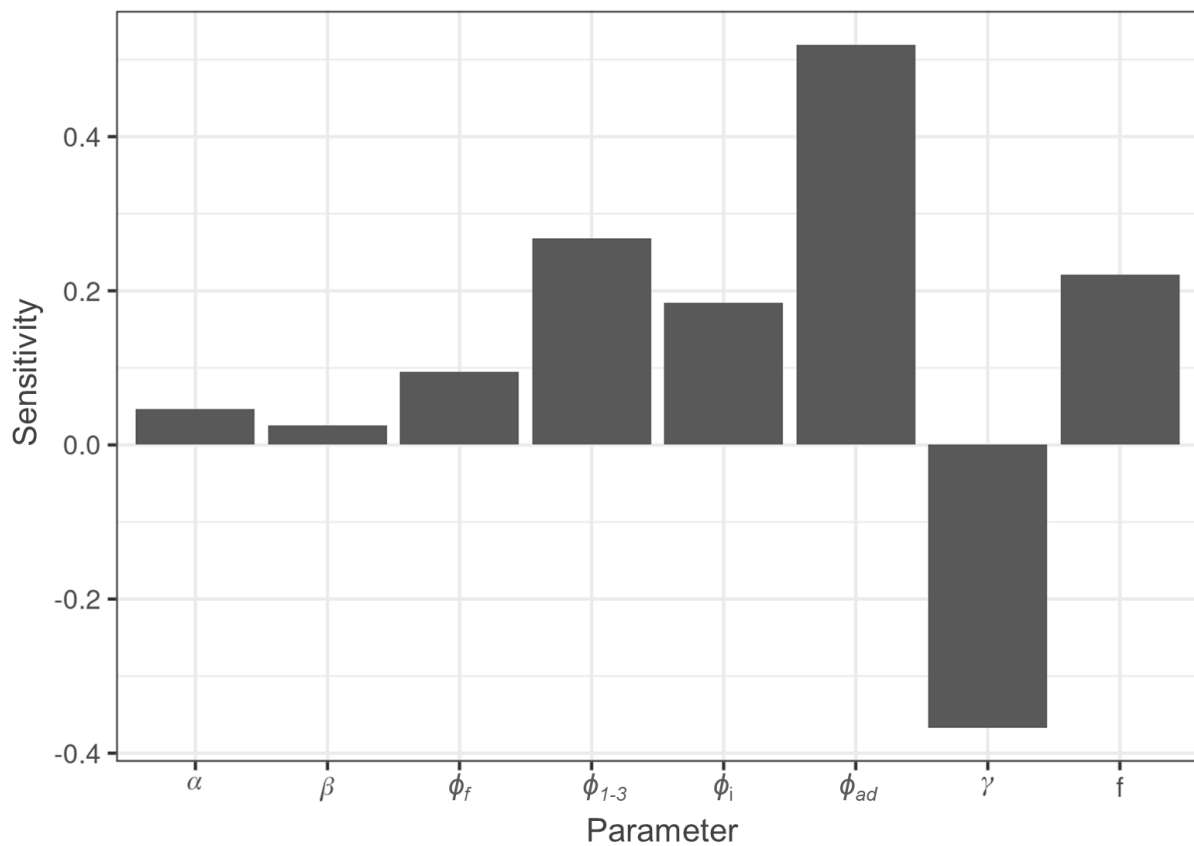
Figure S9 – Variability of the median apparent growth rate (lambda, λ) of Cape Verde petrels from Fogo Island depending on the value of the surplus of mortality that adult breeders are exposed to while on land. The horizontal line represents the value of growth rate of a stable population (λ=1); below this value the population is declining and above is increasing.
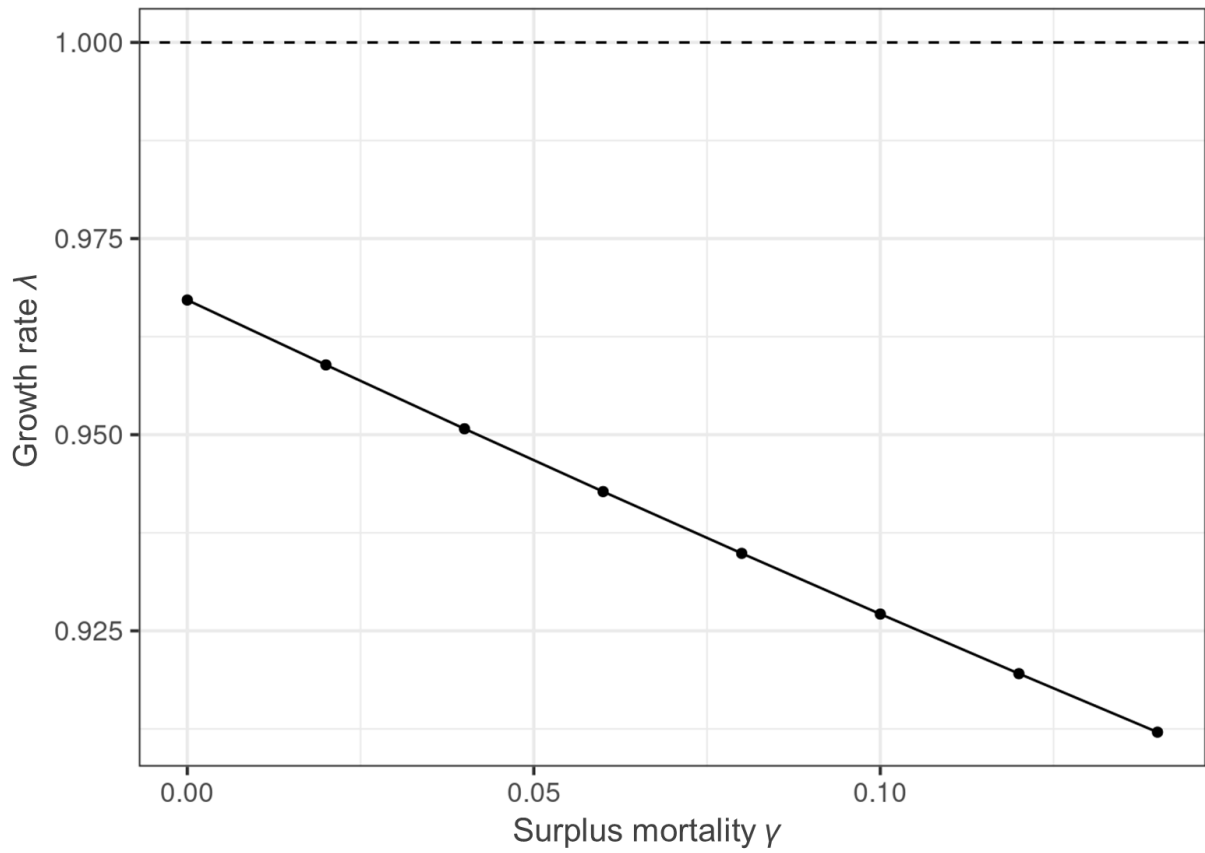
Figure S10 – Proportion of Cape Verde petrels in the population estimated for each stage based on the Bayesian model that integrates the data from mistnet and net and with prior information. Numbers from 1 to 8 represent the age (in years) of immature birds before recruitment. We considered that after 9 years of age, all birds were adults and had bred at least once. br – adult breeder; sab – adult in sabbatical year
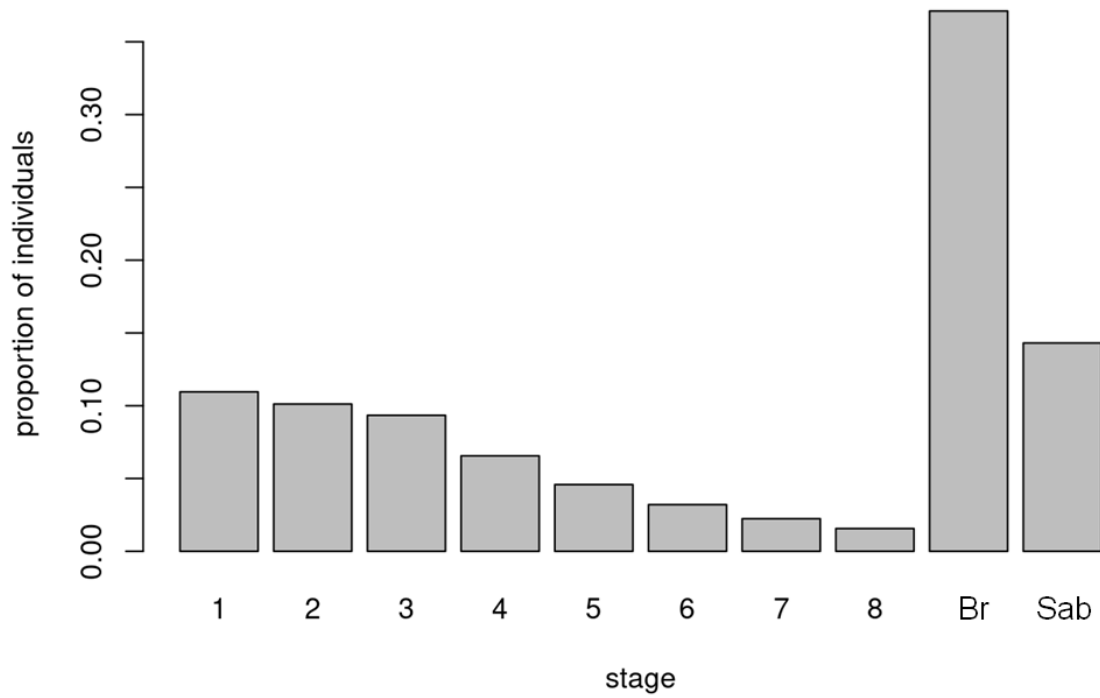
Figure S11 – Recapture probability of immature birds on mistnet by recapture occasion (in years) since the first capture. The black line represents expected mean values from a binomial model of recapture probability on time after the first capture, the grey circles and vertical lines represent, respectively, the mean value and 95% interval for individual models performed for each occasion.
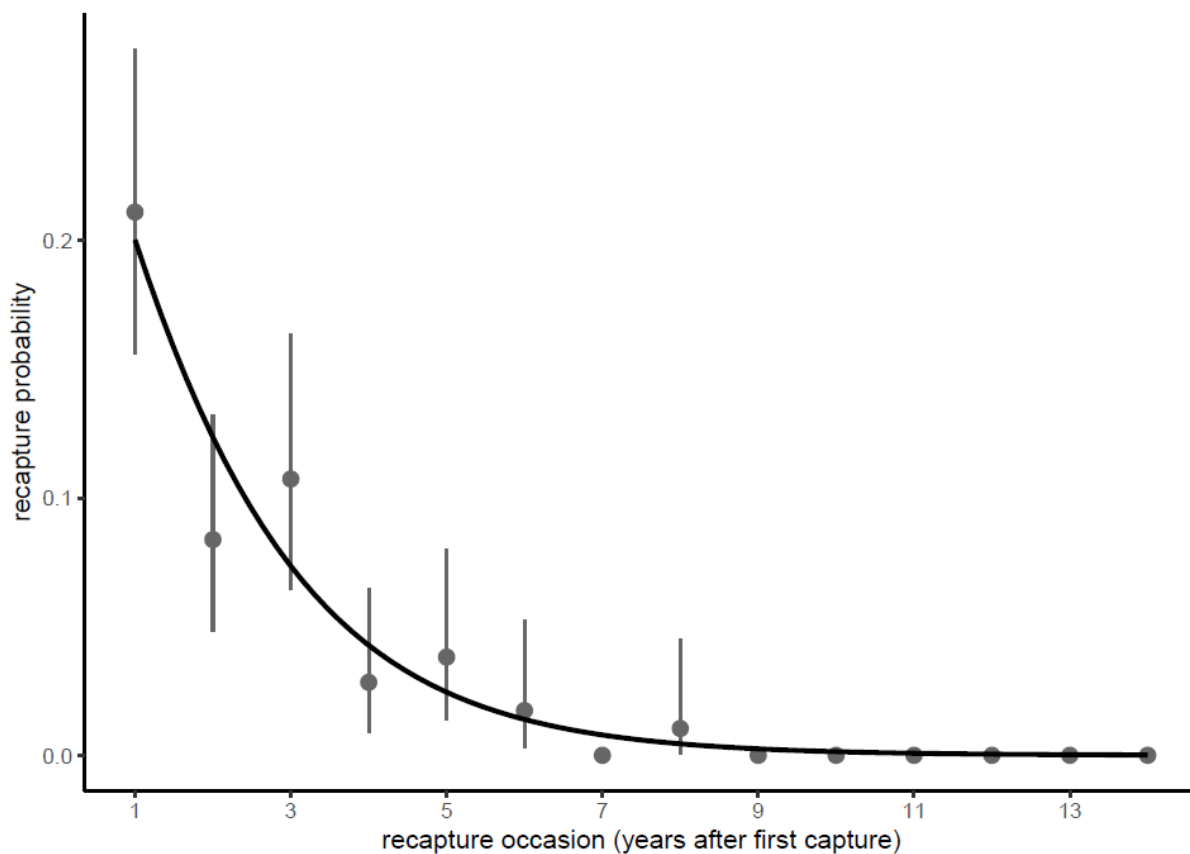
Figure S12 – A sequence of photographs from a camera trap set up at the entrance of a Cape Verde petrel nest on 27th February 2024 captures the predation of a chick by a rat, which occurred only three hours after the adult departed from the nest.

Figure S13 – Frequency of males and females captured on the mistnet at the Bordeira courtship area (Fogo Island) versus the remaining courtship areas (Fogo, Santiago, São Nicolau and Santo Antão) throughout the breeding period (all years combined). Numbers above each bar represent the total sample size per month. Some individuals were captured in more than one month.
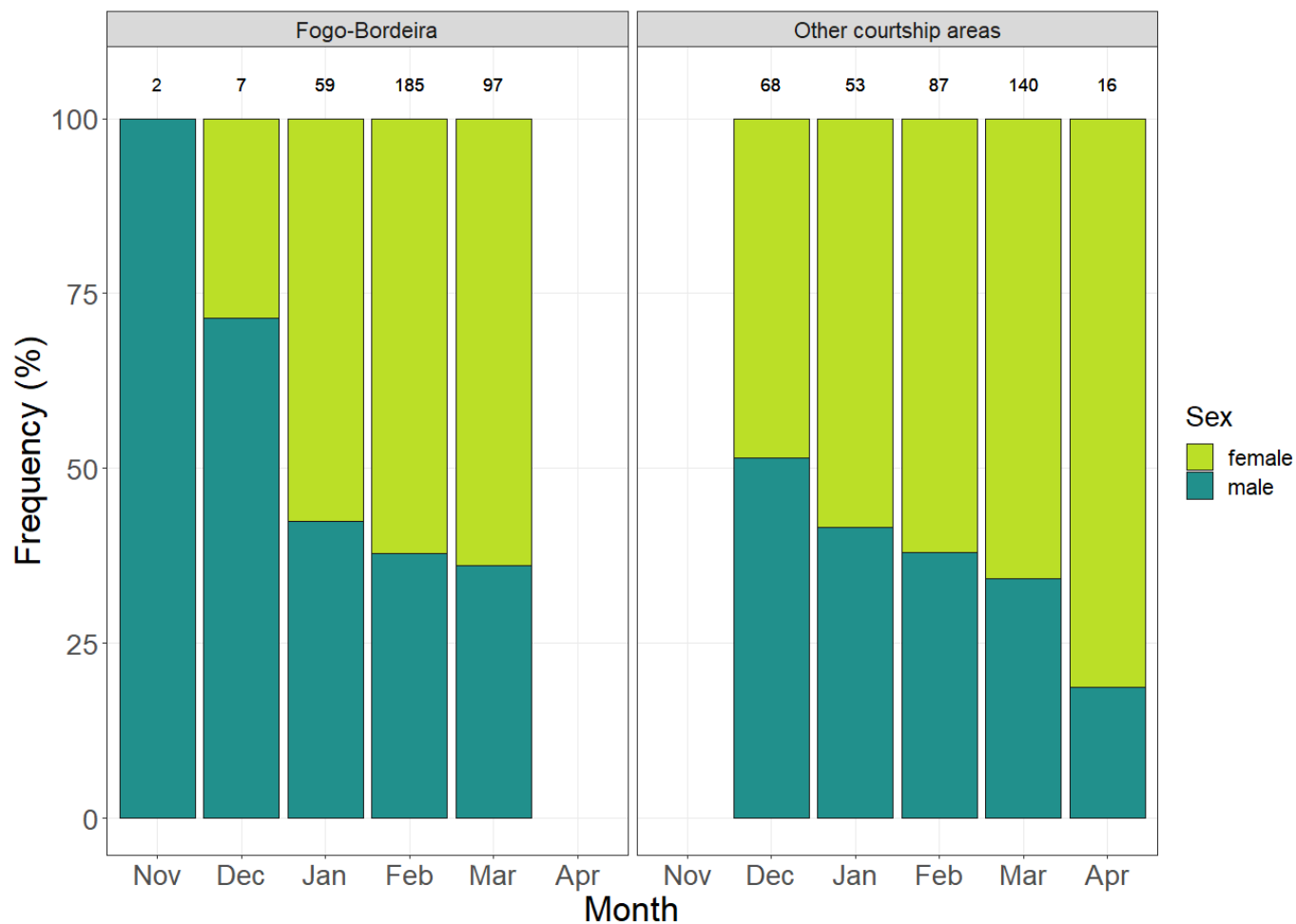
Table S1 - Reduced m-array summarising the capture-mark-recapture data of the Cape Verde petrels mistnetted in "Bordeira", inside Fogo Natural Park, Cabo Verde, from 2007-2021. It describes the number of birds released on each occasion (i.e., those ringed or recaptured on that occasion) and when and how many birds were recaptured for the first time on subsequent occasions.

Occasion	Released	Year of first recapture (2008-2021)														Number of released birds on each occasion and never recaptured
		08	09	10	11	12	13	14	15	16	17	18	19	20	21	
2007	20	1	1	6	0	0	0	0	0	0	0	0	0	0	0	12
2008	18		2	4	3	0	2	0	0	0	0	0	0	0	0	7
2009	19			7	1	2	0	0	0	0	0	0	0	0	0	9
2010	33				4	4	0	2	0	0	0	0	0	0	1	22
2011	15					4	0	0	1	0	0	0	0	0	0	10
2012	32						5	9	0	4	0	1	0	1	0	12
2013	14							3	1	0	1	0	0	0	0	9
2014	30								2	2	4	0	0	1	1	20
2015	9									3	0	0	1	0	0	5
2016	27										7	0	2	1	0	17
2017	24											5	2	1	0	16
2018	16												1	4	1	10
2019	31													6	2	23
2020	32														6	26
2021	34															-
Total	354	1	3	17	8	10	7	14	4	9	12	6	6	14	11	198

Table S2. Ringing (age, date, and location) and recapture information of those Cape Verde petrels that were recaptured at least once in a different location (different island, different courtship area, or moved from courtship area to a nest or vice-versa). Potential nests are those which we were not able to confirm a breeding event. * this is a second movement of this individual, but it was within the same year as the first movement.

Ringing information				First movement				Second movement			
Ring	Age	Date	Ringing location	Type movement	Age	Date	Recapture location	Type movement	Age	Date	Recapture location
Movement between islands											
5500934	Adult	07/02/2016	Santiago-Serra Malagueta	between courtship areas	Adult	31/01/2019	Fogo-Monte Fontainhas				
Movements between years within Fogo Island											
5500818	Adult	23/12/2014	Bordeira	between courtship areas	Adult	01/02/2019	Monte Fontainhas	between courtship areas	Adult	16/01/2020	Bordeira
5500964	Adult	19/02/2017	Bordeira	between courtship areas	Adult	23/12/2019	Monte Fontainhas				
5501857	Adult	02/01/2019	Bordeira	between courtship areas	Adult	04/12/2020	Monte Fontainhas				
5501861	Adult	03/01/2019	Bordeira	between courtship areas	Adult	04/12/2020	Monte Fontainhas	between courtship areas, within the same year*	Adult	13/02/2021	Bordeira
5500058	Adult	18/03/2007	Bordeira	courtship-nest	Adult	25/02/2014	Nest in Chã das Caldeiras				
5500061	Adult	21/03/2007	Bordeira	courtship-nest	Adult	18/02/2014	Nest in Chã das Caldeiras	nest-courtship	Adult	03/03/2016	Bordeira

Ringing information				First movement				Second movement			
Ring	Age	Date	Ringing location	Type movement	Age	Date	Recapture location	Type movement	Age	Date	Recapture location
5500063	Adult	23/03/2007	Bordeira	courtship-nest	Adult	01/02/2020	Nest in Chã das Caldeiras				
5500067	Adult	20/03/2007	Bordeira	courtship-nest	Adult	19/02/2017	Nest in Chã das Caldeiras				
5500068	Adult	21/03/2007	Bordeira	courtship-nest	Adult	27/03/2019	Nest in Chã das Caldeiras				
5500071	Adult	21/03/2007	Bordeira	courtship-nest	Adult	12/02/2012	Nest in Chã das Caldeiras				
5500074	Adult	21/03/2007	Bordeira	courtship-nest	Adult	07/03/2013	Nest in Chã das Caldeiras				
5500083	Adult	05/03/2008	Bordeira	courtship-nest	Adult	13/02/2012	Nest in Chã das Caldeiras				
5500092	Adult	06/03/2008	Bordeira	courtship-nest	Adult	19/03/2019	Nest in in Chã das Caldeiras				
5500328	Adult	12/02/2012	Bordeira	courtship-nest	Adult	16/01/2020	Nest in Chã das Caldeiras				
5500341	Adult	13/02/2012	Bordeira	courtship-nest	Adult	13/02/2020	Nest in Chã das Caldeiras				
5500399	Adult	19/02/2014	Bordeira	courtship-nest	Adult	01/02/2020	Nest in Chã das Caldeiras				

Ringing information				First movement				Second movement			
Ring	Age	Date	Ringing location	Type movement	Age	Date	Recapture location	Type movement	Age	Date	Recapture location
5500408	Adult	02/02/2010	Bordeira	courtship-nest	Adult	11/03/2013	Nest in Chã das Caldeiras				
5500414	Adult	04/02/2010	Bordeira	courtship-nest	Adult	28/01/2021	Nest in Chã das Caldeiras				
5500415	Adult	04/02/2010	Bordeira	courtship-nest	Adult	07/05/2018	Nest in Chã das Caldeiras	nest-courtship	Adult	15/02/2021	Bordeira
5500486	Adult	06/03/2011	Bordeira	courtship-nest	Adult	21/02/2015	Nest in Chã das Caldeiras	nest-courtship	Adult	17/01/2018	Bordeira
5500488	Adult	08/03/2011	Bordeira	courtship-nest	Adult	07/02/2016	Nest in Chã das Caldeiras				
5500643	Adult	02/03/2016	Bordeira	courtship-nest	Adult	11/02/2020	Nest in Chã das Caldeiras				
5500822	Adult	23/02/2015	Bordeira	courtship-nest	Adult	18/02/2021	Potential nest in Chã das Caldeiras				
5501303	Adult	17/01/2018	Bordeira	courtship-nest	Adult	23/01/2020	Nest in Chã das Caldeiras				
5502512	Adult	15/01/2020	Bordeira	courtship-nest	Adult	18/02/2021	Potential nest in Chã das Caldeiras				
5501582	Adult	23/12/2019	Monte Fontainhas	courtship-nest	Adult	02/03/2021	Nest in Monte Vaca				

Ringing information				First movement				Second movement			
Ring	Age	Date	Ringing location	Type movement	Age	Date	Recapture location	Type movement	Age	Date	Recapture location
5501590	Adult	23/12/2019	Monte Fontainhas	courtship-nest	Adult	05/02/2021	Potential nest in Monte Vaca				
5502557	Adult	18/02/2020	Monte Fontainhas	courtship-nest	Adult	05/02/2021	Nest in Monte Vaca				
5500381	Chick	25/05/2012	Nest in Chã das Caldeiras	nest-courtship	Adult	23/12/2014	Bordeira				
5500382	Chick	12/06/2012	Nest in Chã das Caldeiras	nest-courtship	Adult	24/02/2014	Bordeira				
5500393	Chick	25/06/2013	Nest in Chã das Caldeiras	nest-courtship	Adult	06/03/2016	Bordeira				
5500552	Chick	27/04/2016	Nest in Chã das Caldeiras	nest-courtship	Adult	17/01/2020	Bordeira				
5500706	Chick	06/03/2016	Nest in Chã das Caldeiras	nest-courtship	Adult	23/12/2019	Monte Fontainhas				
5500815	Chick	03/06/2014	Nest in Chã das Caldeiras	nest-courtship	Adult	02/03/2016	Bordeira				
5500347	Adult	16/02/2012	Nest in Chã das Caldeiras	nest-courtship	Adult	06/01/2019	Bordeira				
5500809	Adult	24/02/2014	Nest in Chã das Caldeiras	nest-courtship	Adult	12/01/2021	Bordeira				
5500811	Adult	25/02/2014	Nest in Chã das Caldeiras	nest-courtship	Adult	06/01/2019	Bordeira				
5502527	Adult	22/01/2020	Nest in Monte Vaca	nest-courtship	Adult	04/12/2020	Monte Fontainhas				
5502533	Adult	27/01/2020	Nest in Monte Vaca	nest-courtship	Adult	04/12/2020	Monte Fontainhas				

Movements within year in Fogo Island								
Movements within year in Fogo Island								
5502581	Adult	13/02/2021	Bordeira	courtship-nest	Adult	24/03/2021	Potential nest in Chã das Caldeiras	
5502723	Adult	04/12/2020	Monte Fontainhas	courtship-nest	Adult	26/01/2021	Potential nest in Monte Vaca	

Table S3. Nest monitoring of those nests that were active (with egg or chick) for at least two years and that the rings of both partners are known as well as the number of times that the same couple was found in the same nest (in the previous year or in a previous breeding attempt for which we have the ring information of the couple) and when a divorced occurred. For each year, the numbers represent the ring ID of the adults found in each nest; "Active" means that an egg or chick was detected, while "Inactive" means that the nest was visited by no egg or chick detected; "Not visited" means that the nest was not visited in that year. The symbol "-" was used to mark in the years before the nest was found. The symbols after the ring number represent the following: * this bird was not recaptured anymore; ** this bird was alive but not breeding (recaptured later in a following year in a mistnet or visiting the nest); *** this bird is alive and was recaptured in a following year breeding in another nest. We considered that a divorce occurred only when in the same year both individuals of the same nest were found alive but in different locations (in different nests or one in a nest and another in the courtship area), in contrast, if we never recaptured one partner, we considered that the divorce was uncertain.

| Nest ID | Ring ID of adults found in each nest and year | | | | | | | | | | Number of occurrences | | |
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Same couple as the previous year	Same couple as the previous breeding attempt	Widowed or divorced
1	5500481	Active	5500481	5500481	5500481	5500481	5500481	5500481	5500481	5500481	4	6	Widowed or divorced
	5500348	5500348	5500348	5500348	Active	5500348	5500348	5500348	5500348 *	5500414			
3	5500083	5500083	5500083	5500083	Active	5500083	5500083	5500083	5500083	5500083	5	6	
	Active	Active	5500058	5500058	Active	5500058	5500058	5500058	5500058	5500058			
5	5500347	5500347	5500347	5500347	5500347 **	Inactive	Not visited	Not visited	Inactive	Inactive		1	Divorced
		5500524		5500524 ***		Inactive	Not visited	Not visited	Inactive	Inactive			
6	-		Not visited	5500953	5500953	5500953						1	
	-		Not visited	5500546		5500546							
9	-	Active	5500061	5500061 **	Inactive	Inactive	Not visited	Not visited	Not visited	Not visited	1	1	Divorced

21

Nest ID	Ring ID of adults found in each nest and year										Number of occurrences		
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Same couple as the previous year	Same couple as the previous breeding attempt	Widowed or divorced
	-	5500074	5500074	5500074 ***	Inactive	Inactive	Not visited	Not visited	Not visited	Not visited			
10	-	5500408	Inactive	5500408	Active	5500408 *	Not visited	Not visited	Not visited	Not visited		1	Widowed or divorced
	-	Active	Inactive	5500811	Active	5500811 **	Not visited	Not visited	Not visited	Not visited			
12	-	-	5500809	5500809	Not visited	5500809	Inactive	5500809	5500809 **	Inactive		1	Widowed or divorced
	-	-	Active	5500548	Not visited	Active	Inactive	5500548 *	Active	Inactive			
14	-	-	-	-	5500074	5500074	Not visited	Not visited	Not visited	Not visited	1	1	
	-	-	-	-	5500488	5500488	Not visited	Not visited	Not visited	Not visited			
15	-	-	-	-	-	5500581	5500581	Not visited	Inactive	Not visited	1	1	
	-	-	-	-	-	5500961	5500961	Not visited	Inactive	Not visited			
18	-	-	-	-	-	5500067	Active	Active	5500067	5500067	1	1	
	-	-	-	-	-	Active	Active	5500092	5500092	5500092			
19	-	-	-	-	-	5500583	5500583	5500583	Inactive	Active	1	1	Widowed or divorced
	-	-	-	-	-	5500968	5500968 *	5501887	Inactive	Active			
28	-	-	-	-	-	-	5500415	5500415	5500415 **	Inactive			Divorced

| Nest ID | Ring ID of adults found in each nest and year | | | | | | | | | | Number of occurrences | | |
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Same couple as the previous year	Same couple as the previous breeding attempt	Widowed or divorced
	-	-	-	-	-	-	Active	**5500068**	**5500068 ****	Inactive			
59	-	-	-	-	-	-	-	-	**5502509**	**5502509**	1	1	
	-	-	-	-	-	-	-	-	**5502525**	**5502525**			
66	-	-	-	-	-	-	-	-	**5502532**	**5502532**	1	1	
	-	-	-	-	-	-	-	-	**5502537**	**5502537**			
67	-	-	-	-	-	-	-	-	**5502539**	**5502539**	1	1	
	-	-	-	-	-	-	-	-	**5502545**	**5502545**			
Total											**17**	**24**	**3 (certain)**

Table S4. Percentage of nest fidelity per individual between a breeding year and the following year a breeding attempt was detected and the weighted mean of nest fidelity of all individuals. In bold are marked those occasions when the bird changed nest or was recaptured in the mistnet (abbreviated as "Net"). Dashed cells mean the bird was alive (it was recaptured later) but no information was available for that year.

Ring	ID nest in each breeding year											Number paired years used to calculate nesting fidelity	Number of paired years in the same nest	Nesting fidelity (%)
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021			
5500058				3	3	-	3	3	3	3	3	6	6	100
5500061				9	9	**Net**						1	1	100
5500063										40	40	1	1	100
5500067							18	-	-	18	18	2	2	100
5500068									28	-	28	1	1	100
5500074			9	9	**14**	14	14					4	3	75
5500083		3	3	3	3	-	3	3	3	3	3	8	8	100
5500092									18	18	18	2	2	100
5500341										46	46	1	1	100
5500347		5	5	5	5	5	-	-	**Net**	**Net**		4	4	100
5500348		1	1	1	1	-	1	1	1	1		7	7	100
5500408			10	-	10	-	10					2	2	100
5500415								28	28	-	**Net**	1	1	100
5500481	1	1	-	1	1	1	1	1	1	1	1	9	9	100
5500488						14	14					1	1	100
5500524		5	-	5	-	-	-	-	**40**			2	1	50
5500546					6	-	6					1	1	100
5500548					12	-	-	-	12			1	1	100
5500581							15	15				1	1	100
5500583							19	19	19			2	2	100
5500809				12	12	-	12	-	12	12	**Net**	4	4	100

Ring	ID nest in each breeding year											Number paired years used to calculate nesting fidelity	Number of paired years in the same nest	Nesting fidelity (%)
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021			
5500811				10	10	-	10	-	**Net**			2	2	100
5500953					6	6	6					2	2	100
5500961							15	15				1	1	100
5500968							19	19				1	1	100
5501359								27	27			1	1	100
5501360								30	-	30		1	1	100
5501495									17	17		1	1	100
5502509										59	59	1	1	100
5502513										43	43	1	1	100
5502525										59	59	1	1	100
5502528										45	45	1	1	100
5502530										64	64	1	1	100
5502532										66	66	1	1	100
5502537										66	66	1	1	100
5502539										67	67	1	1	100
5502540										57	57	1	1	100
5502541										63	63	1	1	100
5502545										67	67	1	1	100
Weighted mean (%)														97.5

Table S5. Breeding history of breeders that were recaptured in mist-net at the Bordeira courtship area.

Ring	Sex	Last year recorded as a breeder	Breeding success of last year's breeding	Date of recapture in mist-net	Fate of the partner	Reason for returning to the courtship area
5500061	Female	2015	Failed	03/03/2016	Changed nest	Divorced
5500347	Female	2016	Failed	06/01/2019	Changed nest	Divorced
5500415	Female	2020	Failed	15/02/2021	Alive in the same nest	Divorced
5500486	Male	2015	Failed	17/01/2018	Unknown	Widowed or divorced
5500809	Female	2020	Failed	12/01/2021	Unknown	Widowed or divorced
5500811	Female	2017	Success	06/01/2019	Unknown	Widowed or divorced

Table S6 – POPAN capture–mark–recapture models performed to estimate the population size of non-breeding Cape Verde petrels (i.e., 3-year immature birds or older and sabbatical adults) mistnetted inside the Fogo Natural Park. Models are ranked according to AICc values, with the model highlighted in bold being the most parsimonious model, i.e., the model which best explains the variation in the data while using the fewest parameters. ΔAICc corresponds to the difference between the AICc of each model and the AICc of the model selected. AICc weight is the normalized Akaike weight which can be interpreted as the proportion support in the data for a given model. The symbol ϕ, p and b represent respectively the apparent survival, the capture probability and the probability of entrance into the population. The symbols "t" and "." stand for time-dependent and constant through time, respectively.

Model design	Nº of parameter	AICc	ΔAICc	AICc weight
ϕ(.) p(t) b(.) N	**18**	**846.84**	**0.00**	**0.994**
ϕ(.) p(t) b(t) N	30	858.42	11.57	0.003
ϕ(.) p(.) b(t) N	17	860.31	13.47	0.001
ϕ(t) p(t) b(.) N	30	860.66	13.82	0.000
ϕ(.) p(.) b(.) N	4	860.95	14.10	0.000
ϕ(t) p(.) b(.) N	17	865.23	18.39	0.000
ϕ(t) p(.) b(t) N	30	870.07	23.22	0.000
ϕ(t) p(t) b(t) N	42	877.65	30.81	0.000

Table S7. Number of active nests and breeding adults of Cape Verde petrel predated by cats in the four islands where this species breeds in different breeding years. The cat predation rate was calculated as the ratio between the number of breeding adults of Cape Verde petrel predated by cats divided by the number of active nests multiplied by two (to obtain the total number of breeding adults for a given island and year) and multiplied by 100 to obtain the rate as a percentage.

Island / breeding year	Total number of active nests	Total number of breeding adults predated by cats	Cat predation rate ((N breeding adult predated) / (N active nest *2)) *100
Fogo	163	14	4.3
2017/2018	12	0	0.0
2018/2019	20	0	0.0
2019/2020	34	3	4.4
2020/2021	38	11	14.5
2021/2022	59	0	0.0
Santiago	32	7	10.9
2017/2018	8	4	25.0
2019/2020	9	2	11.1
2020/2021	15	1	3.3
Santo Antão	76	1	0.7
2017/2018	7	0	0.0
2018/2019	12	0	0.0
2019/2020	11	0	0.0
2020/2021	22	1	2.3
2021/2022	24	0	0.0
São Nicolau	32	2	3.1
2020/2021	15	0	0.0
2021/2022	17	2	5.9
All islands	303	24	4.0

Table S8. Number of active nests and fledge chicks (i.e., successful nests) and the corresponding breeding success of Cape Verde petrels segregated by breeding area and year.

Breeding area	Breeding year	Number of active nests	Number of fledged chicks	Breeding success (%)
Chã das Caldeiras	2011/2012	2	2	100
Chã das Caldeiras	2012/2013	7	6	85.71
Chã das Caldeiras	2014/2015	7	4	57.14
Chã das Caldeiras	2016/2017	7	4	57.14
Chã das Caldeiras	2017/2018	6	4	66.67
Chã das Caldeiras	2018/2019	11	9	81.82
Chã das Caldeiras	2019/2020	11	4	36.36
Chã das Caldeiras	2020/2021	6	6	100
Chã das Caldeiras	Total	57	39	68.42
Monte Vaca	2019/2020	11	7	63.64
Monte Vaca	2020/2021	11	6	54.55
Monte Vaca	Total	22	13	59.09
Mosteiros	2016/2017	2	2	100
Mosteiros	2017/2018	3	0	0
Mosteiros	2018/2019	9	1	11.11
Mosteiros	2019/2020	11	2	18.18
Mosteiros	2020/2021	10	2	20
Mosteiros	Total	35	7	20
Ribeira Ilhéu	2020/2021	10	7	70
Ribeira Ilhéu	Total	10	7	70
Topo	2017/2018	3	0	0
Topo	2019/2020	1	1	100
Topo	2020/2021	1	0	0
Topo	Total	5	1	20

Table S9. Median estimation and upper and lower 50% and 95% highest posterior density intervals (HPDI) of vital rates posterior distributions from integrated Bayesian models constructed using misnet and nest monitoring data with flat or informative priors and with or without considering sex segregation. Model names differ by whether or not they include sex in survival estimates (ϕ(x) vs. $\phi(\cdot)$, respectively) and whether or not they use informative priors (inf vs. flat, respectively). All models included year random effects of capture probability, p(t).

Parameter	Median	Lower 95% HPDI	Lower 50% HPDI	Upper 50% HPDI	Upper 95% HPDU
p(t) ϕ(x) flat					
Surplus mortality rate **(γ)**	0.147	0.000	0.102	0.230	0.277
Male sabbatical adult survival *(Φad male)*	0.886	0.778	0.838	0.865	1.000
Female sabbatical adult survival *(Φad female)*	0.875	0.764	0.829	0.928	0.999
Male immature bird survival *(Φi male)*	0.711	0.566	0.651	0.753	0.868
Female immature bird survival *(Φi female)*	0.837	0.724	0.777	0.865	0.977
p(t) $\phi(\cdot)$ flat					
Surplus mortality rate **(γ)**	0.156	0.000	0.126	0.265	0.292
Sabbatical adult survival *(Φad)*	0.894	0.790	0.838	0.941	1.000
Immature bird survival *(Φi)*	0.797	0.687	0.739	0.820	0.931
p(t) ϕ(x) inf					
Surplus mortality rate **(γ)**	0.160	0.029	0.119	0.221	0.282
Male sabbatical adult survival *(Φad male)*	0.892	0.790	0.853	0.942	1.000
Female sabbatical adult survival *(Φad female)*	0.883	0.780	0.839	0.929	1.000
Male immature bird survival *(Φi male)*	0.723	0.569	0.666	0.770	0.871
Female immature bird survival *(Φi female)*	0.854	0.743	0.802	0.892	0.984
p(t) ϕ(.) inf					
Surplus mortality rate **(γ)**	0.170	0.029	0.125	0.237	0.297
Sabbatical adult survival *(Φad)*	0.899	0.801	0.859	0.951	1.000
Immature bird survival *(Φi)*	0.813	0.694	0.757	0.843	0.948