TABLE 1: Summary of data sets used to estimate parameters.

Parameter data	Description	Data set	Time span
SEED VITAL RATES	—	—	—
Seed survival and germination	Seed bag burial	$\mathbf{Y}_1$	2006-2009
Seed viability	Viability trials	$\mathbf{Y}_2$	2006-2009
Seed survival and germination	Seed pots	$\mathbf{Y}_3$	2013-2019
SEEDLING SURVIVAL	—	—	—
Seedling survival to fruiting	Field surveys	$\mathbf{Y}_4$	2006-2019
FRUITS PER PLANT	—	—	—
Total fruit equivalents per plant	Field surveys	$\mathbf{Y}_5$	2006-2012
Undamaged and damaged fruits per plant	Field surveys	$\mathbf{Y}_6$	2013-2019
SEEDS PER FRUIT	—	—	—
Seeds per undamaged fruit	Lab counts	$\mathbf{Y}_7$	2006-2019
Seeds per damaged fruit	Lab counts	$\mathbf{Y}_8$	2013-2019

TABLE 2: Description of key parameters.

Parameter	Description
θ_1	Probability of survival of seeds from October in year t to January in year $t+1$, for seeds produced in year t
θ_2	Probability of emergence of seeds in January in year $t+1$, conditional on being intact or a germinant in January in year $t+1$, for seeds produced in year t
θ_3	Probability of survival of seeds from January in year $t+1$ to October in year $t+1$, conditional on being intact in January in year $t+1$, for seeds produced in year t
θ_4	Probability of survival of seeds from October in year t to January in year $t+2$, for seeds produced in year t
θ_5	Probability of emergence of seeds in January in year $t+2$, conditional on being intact or a germinant in January in year $t+2$, for seeds produced in year t
ν_1	Probability of viability for seeds in October of year $t+1$, for seeds produced in year t
ν_2	Probability of survival for seeds in October of year $t+2$, for seeds produced in year t
σ	Probability of survival of seedlings to fruiting plants
F	Number of fruits per plant
ϕ	Number of seeds per undamaged fruit

TABLE 3: Summary of dataset from seed bag burial experiment. [Data set $\mathbf{Y}_1$]

	Age 1			Age 2		Age 3
Population	2007	2008	2009	2008	2009	2009
BG	7	10	10	6	10	3
BR	10	10	10	9	10	9
CF	10	10	10	10	10	10
CP3	7	10	8	9	5	7
DEM	8	9	10	7	7	6
DLW	9	9	8	8	9	6
EC	9	9	10	8	10	8
FR	9	7	10	8	9	3
GCN	10	10	10	9	9	6
KYE	10	10	10	9	9	9
LCE	10	10	9	9	7	7
LCW	10	10	5	9	7	8
LO	10	9	10	10	11	9
MC	10	10	10	8	9	9
OKRE	10	11	10	9	7	9
OKRW	10	10	8	9	9	7
OSR	10	10	10	8	9	9
S22	9	10	10	8	10	8
SM	9	10	9	8	10	9
URS	7	9	9	5	9	3

TABLE 4: Summary of dataset on viability of seeds from seed bag burial experiment. [Data set $\mathbf{Y}_2$]

	Age 1			Age 2		Age 3
Population	2007	2008	2009	2008	2009	2009
BG	7	10	10	6	10	3
BR	10	9	10	10	10	9
CF	10	10	10	9	10	10
CP3	7	10	9	8	7	7
DEM	8	9	10	6	7	5
DLW	8	9	9	8	9	7
EC	9	10	10	8	10	6
FR	8	8	10	8	10	4
GCN	9	10	10	8	9	7
KYE	10	10	10	9	9	9
LCE	10	10	9	9	6	9
LCW	10	10	5	9	7	7
LO	11	9	10	9	10	9
MC	9	9	10	8	9	9
OKRE	10	11	10	9	7	9
OKRW	9	10	8	8	9	7
OSR	10	10	10	8	9	9
S22	9	10	10	8	10	8
SM	8	10	9	8	10	11
URS	7	9	9	5	8	4

TABLE 5: Summary of dataset on seedling survival to fruiting. [Data set $\mathbf{Y}_4$]

Population	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
BG	18	21	22	26	24	26	20	23	3	26
BR	19	30	29	30	30	30	29	30	9	27
CF	20	21	28	29	29	21	23	27	15	15
CP3	18	19	19	13	19	8	NA	10	1	7
DEM	18	17	14	21	24	25	18	22	3	9
DLW	16	18	13	15	17	22	16	19	1	13
EC	20	28	30	30	30	30	30	24	2	10
FR	20	28	27	27	30	30	24	25	7	15
GCN	18	20	15	20	28	29	22	27	5	17
KYE	18	28	28	30	29	30	27	28	1	27
LCE	20	12	18	19	19	1	1	3	1	8
LCW	16	27	27	27	21	4	NA	15	NA	1
LO	12	15	28	29	27	2	1	19	5	11
MC	17	11	22	25	27	30	29	27	6	18
OKRE	14	10	8	19	21	17	7	19	6	10
OKRW	19	19	22	20	19	12	9	13	NA	3
OSR	15	13	9	9	23	26	18	20	1	14
S22	17	10	21	18	28	17	27	26	NA	17
SM	15	8	13	18	23	25	18	24	NA	19
URS	4	17	10	7	12	14	3	5	2	1

The data

TABLE 6: Summary of undercounting in the dataset on seedling survival to fruiting.

site	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
BG	0	0.14	0.09	0	0.12	0	0.05	0	0	0
BR	0	0.03	0.10	0	0.33	0	0.03	0	0.44	0
CF	0	0.10	0.07	0.03	0.17	0.10	0	0	0.07	0
CP3	0	0.05	0.21	0.15	0	0.12	NA	0	1.00	0
DEM	0	0.35	0.14	0	0.29	0.04	0	0	0	0
DLW	0	0.11	0.08	0.13	0.29	0.05	0.06	0	0	0
EC	0	0.29	0.30	0	0.20	0	0	0.21	0.50	0
FR	0	0.04	0.07	0.04	0	0	0	0	0.43	0
GCN	0	0	0.27	0	0.29	0.17	0	0	1.00	0
KYE	0	0.04	0.29	0	0.45	0.03	0	0.04	1.00	0.04
LCE	0	0.50	0.06	0.37	0	0	0	0	0	0
LCW	0	0.04	0	0	0.05	0.25	NA	0	NA	0
LO	0	0.33	0.07	0.07	0	1.00	0	0	0	0.09
MC	0	0.27	0.05	0.08	0.07	0	0	0	0.33	0
OKRE	0	0.20	0.12	0.11	0.14	0.18	0	0	0.17	0
OKRW	0	0.05	0	0.05	0.37	0.33	0	0	NA	0
OSR	0	0.08	0.11	0	0.39	0.15	0	0	1.00	0
S22	0	0	0.19	0.06	0.18	0.18	0.04	0	NA	0
SM	0	0	0.23	0	0.61	0.20	0	0.04	NA	0
URS	0	0.06	0	0.14	0.17	0.07	0	0	0	0

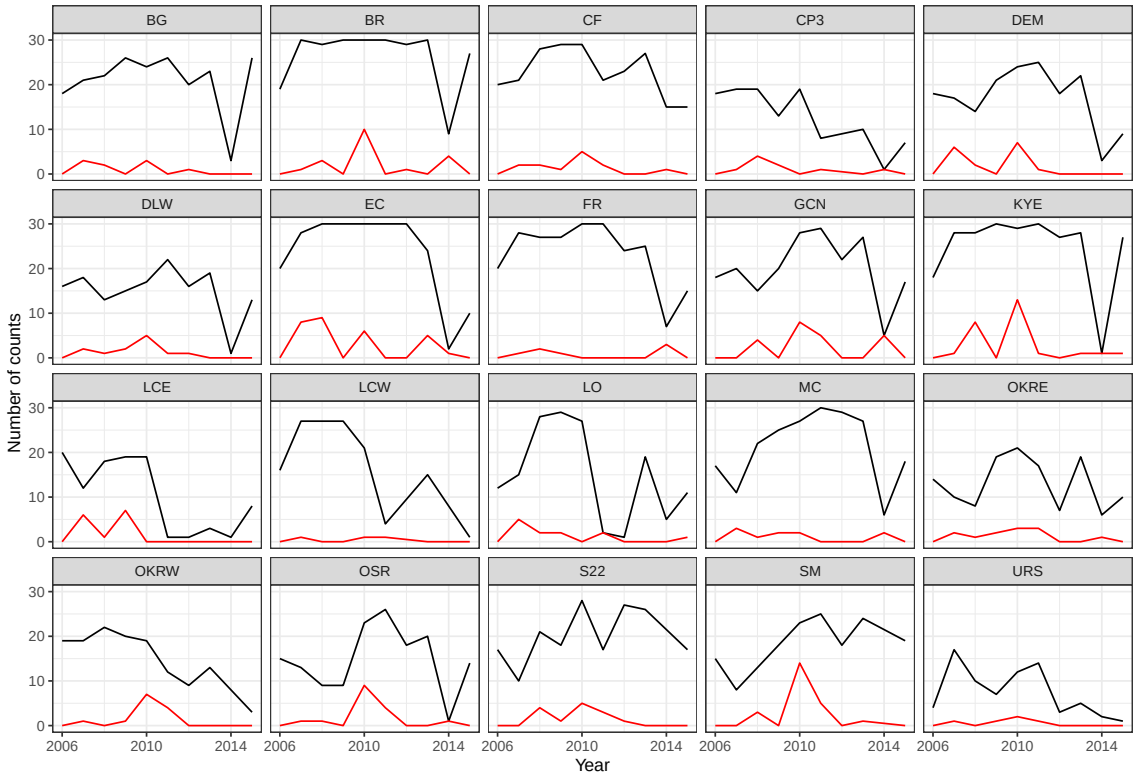

FIGURE 1: Graphical summary of undercounting in the dataset on seedling survival to fruiting. Each panel summarizes the datasets on seedling survival to fruiting (Tables 5 and 6). The black lines correspond to total plots with data on seedling survival. The red lines correspond to the number of plots with fewer seedlings than fruiting plants in a plot (corresponding to undercounting).

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TABLE 7: Summary of dataset on seeds per undamaged fruit. [Data set $\mathbf{Y}_8$]

Population	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
BG	21	21	41	30	30	28	1	29	30	29
BR	20	20	32	30	29	18	1	29	31	31
CF	20	20	30	29	34	30	3	27	30	26
CP3	20	20	41	30	30	29	9	21	30	21
DEM	20	20	29	30	32	27	3	27	24	28
DLW	20	20	22	30	31	28	5	25	1	30
EC	20	20	29	30	31	26	8	22	31	31
FR	20	20	31	30	31	31	20	10	46	30
GCN	20	20	29	30	32	30	1	29	28	29
KYE	20	20	30	30	30	30	2	28	30	29
LCE	20	20	30	30	32	12	NA	NA	30	38
LCW	20	20	28	30	35	32	26	4	1	NA
LO	32	32	30	30	37	2	28	2	30	NA
MC	20	20	29	30	35	30	4	26	46	35
OKRE	20	20	26	30	30	28	27	3	18	24
OKRW	20	20	33	30	34	28	26	4	9	NA
OSR	20	20	32	30	30	28	1	29	30	37
S22	20	20	33	30	28	23	NA	30	23	30
SM	20	20	31	29	32	30	3	27	3	8
URS	18	30	25	30	30	27	25	5	1	NA