Wildlife Biology

WLB-00391

Fontaine, A., Reed, T. T., Rodrigue, J., and Giroux, J.-F. 2018. Hatch date influences pre-fledging survival of temperate-nesting Canada geese. - Wildlife Biology 2018: wlb.00391.

Appendix 1

Table A1. Transition states.

AGE CLASS	Pre-fledged juvenile (a_0)						Post-fledged juvenile (a_1)								Yearling (a_2)								Adult (a_3)
TIME[1]	$t_{0.5}$		t_1				t_2								t_3								...
ENC. TYPE[2]	Wt		Capture		Banding		Capture		Banding		Recapture				Capture		Banding		Recapture				
LOCATION[3]	VAR	REP	VAR	REP	VAR	REP	VAR	REP	VAR	REP	VAR		REP		VAR	REP	VAR	REP	VAR		REP		
WT[4]											P	A	P	A					P	A	P	A	
STATE	A	B	C	D	E	F	G	H	I	J	I	K	J	L	M	N	O	P	O	Q	P	R	

[1] TIME: time between $t_{0.5}$ and t_1 is 1.5 months, t_1 is 10.5 months, and time between t_i and t_{i+1} is 12 months

[2] ENC. TYPE : Encounter type [Web-tagging (Wt), Banding, Capture, Recapture]

[3] LOCATION : VARennes or REPentigny

[4] WT : Web-tag (Present or Absent)

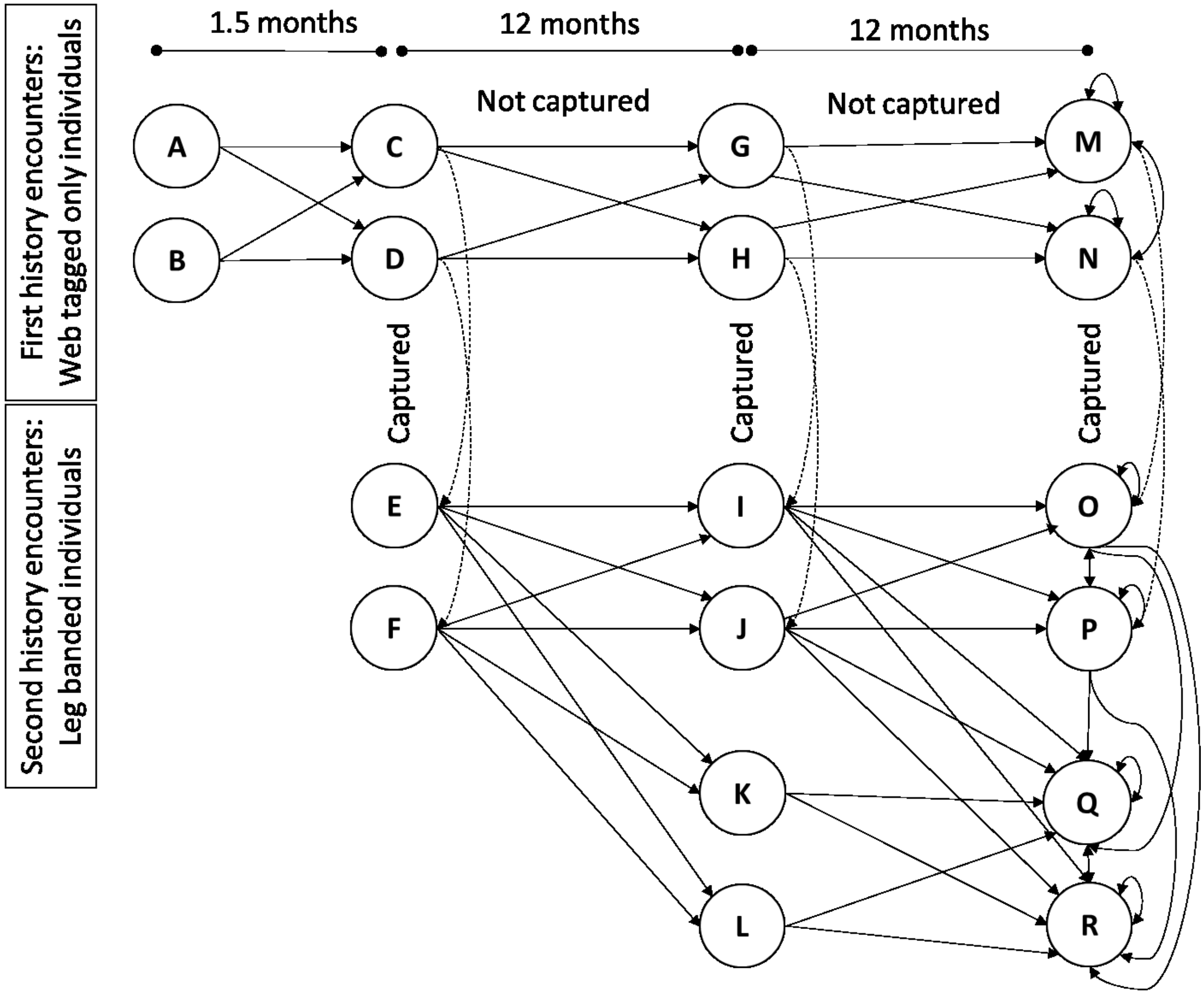

Figure A1. Transition state posibilities for a given cohort. Letters represent transition states shown in Table A1. Arrows represent transition probabilities. To take into account the multi-cohort reality of this 10-years study, there were 2 intervals per year: intervals of 1.5 months between web-tagging and banding events and 10.5 months between banding and the next web-tagging event which are not represented on the diagram, for a total of 20 intervals. Details of transition probabilities are shown in Tables A6 and A7.

Table A2. Survival probability matrix for web-tagged only individuals*. States represent a combination of time, age, location, and the presence or absence of a web-tag (see Table A1 for details).

States\Time intervals	Wt_1-C_1	Wt_1-C_2	Wt_2-C_2	Wt_2-C_3	Wt_3-C_3	Wt_3-C_4	Wt_4-C_4	…
A	S^A	0	0	0	0	0	0	
B	S^B	0	0	0	0	0	0	
C	0	S^C	S^C	0	0	0	0	
D	0	S^D	S^D	0	0	0	0	
E	0	0	0	0	0	0	0	
F	0	0	0	0	0	0	0	
G	0	0	0	S^G	S^G	0	0	
H	0	0	0	S^H	S^H	0	0	
I	0	0	0	0	0	0	0	
J	0	0	0	0	0	0	0	
K	0	0	0	0	0	0	0	
L	0	0	0	0	0	0	0	
M	0	0	0	0	0	S^M	S^M	
N	0	0	0	0	0	S^N	S^N	
O	0	0	0	0	0	0	0	
P	0	0	0	0	0	0	0	
Q	0	0	0	0	0	0	0	
R	0	0	0	0	0	0	0	

*Wt= web-tagging event at time *i* and C= capture event for banding just before fledging at time *i*. S= survival probabilities assessed by MARK.

Table A3. Survival probability matrix for leg banded individuals*. States represent a combination of time, age, location, and the presence or absence of a web-tag (see Table A1 for details).

States\Time intervals	Wt_1-C_1	Wt_1-C_2	Wt_2-C_2	Wt_2-C_3	Wt_3-C_3	Wt_3-C_4	Wt_4-C_4	…
A	0	0	0	0	0	0	0	
B	0	0	0	0	0	0	0	
C	0	0	0	0	0	0	0	
D	0	0	0	0	0	0	0	
E	0	S^E	S^E	0	0	0	0	
F	0	S^F	S^F	0	0	0	0	
G	0	0	0	0	0	0	0	
H	0	0	0	0	0	0	0	
I	0	0	0	S^I	S^I	0	0	
J	0	0	0	S^J	S^J	0	0	
K	0	0	0	S^K	S^K	0	0	
L	0	0	0	S^L	S^L	0	0	
M	0	0	0	0	0	S^M	S^M	
N	0	0	0	0	0	S^N	S^N	
O	0	0	0	0	0	S^O	S^O	
P	0	0	0	0	0	S^P	S^P	
Q	0	0	0	0	0	S^Q	S^Q	
R	0	0	0	0	0	S^R	S^R	

*Wt= web-tagging event at time *i* and C= capture event for banding just before fledging at time *i*. S= survival probabilities assessed by MARK.

Table A4. Recapture probability matrix for web-tagged only individuals*. States represent a combination of time, age, location, and the presence or absence of a web-tag (see Table A1 for details).

States\Times	*Wt $_1$*	*C*	*Wt $_2$*	*C $_2$*	*Wt $_3$*	*C $_3$*	…
A	0	0	0	0	0	0	
B	0	0	0	0	0	0	
C	0	p^C	0	0	0	0	
D	0	p^D	0	0	0	0	
E	0	0	0	0	0	0	
F	0	0	0	0	0	0	
G	0	0	0	p^G	0	0	
H	0	0	0	p^H	0	0	
I	0	0	0	0	0	0	
J	0	0	0	0	0	0	
K	0	0	0	0	0	0	
L	0	0	0	0	0	0	
M	0	0	0	0	0	p^M	
N	0	0	0	0	0	p^N	
O	0	0	0	0	0	0	
P	0	0	0	0	0	0	
Q	0	0	0	0	0	0	
R	0	0	0	0	0	0	

*Wt= web-tagging event at time *i* and C= capture event for banding just before fledging at time *i*. p= recapture probabilities assessed by MARK.

Table A5. Recapture probability matrix for leg banded individuals*. States represent a combination of time, age, location, and the presence or absence of a web-tag (see Table A1 for details).

States\Times	Wt_1	C_1	Wt_2	C_2	Wt_3	C_3	…
A	0	0	0	0	0	0	
B	0	0	0	0	0	0	
C	0	0	0	0	0	0	
D	0	0	0	0	0	0	
E	0	0	0	0	0	0	
F	0	0	0	0	0	0	
G	0	0	0	0	0	0	
H	0	0	0	0	0	0	
I	0	0	0	p^I	0	0	
J	0	0	0	p^J	0	0	
K	0	0	0	p^K	0	0	
L	0	0	0	p^L	0	0	
M	0	0	0	0	0	0	
N	0	0	0	0	0	0	
O	0	0	0	0	0	p^O	
P	0	0	0	0	0	p^P	
Q	0	0	0	0	0	p^Q	
R	0	0	0	0	0	p^R	

*Wt= web-tagging event at time *i* and C= capture event for banding just before fledging at time *i*. p= recapture probabilities assessed by MARK.

Table A6. Transition probability matrix for web-tagged only individuals. States represent a combination of time, age, location and the presence or absence of a web-tag (see Table A1 for details).

States\Time intervals by states	$Wt^A_x - C^A_x$	$F^A_x - Wt^A_{x+1}$	$Wt^B_x - C^B_x$	$C^B_x - Wt^B_{x+1}$	$Wt^C_x - C^C_x$	$C^C_x - Wt^C_{x+1}$	$Wt^D_x - C^D_x$	$C^D_x - Wt^D_{x+1}$	$Wt^E_x - C^E_x$	$C^E_x - Wt^E_{x+1}$	$Wt^F_x - C^F_x$	$C^F_x - Wt^F_{x+1}$	$Wt^G_x - C^G_x$	$C^G_x - Wt^G_{x+1}$	$Wt^H_x - C_x$	$C^H_x - Wt^H_{x+1}$
A	0	0	0	0	Ψ^{AC}	0	Ψ^{AD}	0	0	0	0	0	0	0	0	0
B	0	0	0	0	Ψ^{BC}	0	Ψ^{BD}	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	1	0	0	0	0	0	0	Ψ^{CG}	0	Ψ^{CH}	0
D	0	0	0	0	0	0	0	1	0	0	0	0	Ψ^{DG}	0	Ψ^{DH}	0
E	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
J	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
L	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Q	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table A6 (Continued)

States\Time intervals by states	$Wt^I_x - C^I_x$	$C^I_x - Wt^I_{x+1}$	$Wt^J_x - C^J_x$	$C^J_x - Wt^J_{x+1}$	$Wt^K_x - C^K_x$	$C^K_x - Wt^K_{x+1}$	$Wt^L_x - C^L_x$	$C^L_x - Wt^L_{x+1}$	$Wt^M_x - C^M_x$	$C^M_x - Wt^M_{x+1}$	$Wt^N_x - C^N_x$	$C^N_x - Wt^N_{x+1}$	$Wt^O_x - C^O_x$	$C^O_x - Wt^O_{x+1}$	$Wt^P_x - C^P_x$	$C^P_x - Wt^P_{x+1}$	$Wt^Q_x - C^Q_x$	$C^Q_x - Wt^Q_{x+1}$	$Wt^R_x - C^R_x$	$C^R_x - Wt^R_{x+1}$
A	0	0	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0
G	0	0	0	0	0	0	0	0	Ψ^{GM}	0	Ψ^{GN}	0	0	0	0	0	0	0	0	0
H	0	0	0	0	0	0	0	0	Ψ^{HM}	0	Ψ^{HN}	0	0	0	0	0	0	0	0	0
I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
J	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
L	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M	0	0	0	0	0	0	0	0	Ψ^{MM}	1	Ψ^{MN}	0	0	0	0	0	0	0	0	0
N	0	0	0	0	0	0	0	0	Ψ^{NM}	0	Ψ^{NN}	1	0	0	0	0	0	0	0	0
O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Q	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*Wt= web-tagging event at time *i* and C= capture event for banding just before fledging at time *i* (i.e. $Wt_x - C_x$= 1.5 months interval and $C_x - Wt_{x+1}$= 10.5 months interval). Ψ= Transition probabilities assessed by MARK.

Table A7. Transition probability matrix for leg banded individuals. States represent a combination of time, age, location and the presence or absence of a web-tag (see Table A1 for details).

States\Time intervals by states	$Wt^{A}_{x} - C^{ax}$	$F^{A}_{x} - Wt^{A}_{x+1}$	$Wt^{B}_{x} - C^{B}_{x}$	$C^{B}_{x} - Wt^{B}_{x+1}$	$Wt^{C}_{x} - C^{C}_{x}$	$C^{C}_{x} - Wt^{C}_{x+1}$	$Wt^{D}_{x} - C^{D}_{x}$	$C^{D}_{x} - Wt^{D}_{x+1}$	$Wt^{E}_{x} - C^{E}_{x}$	$C^{E}_{x} - Wt^{E}_{x+1}$	$Wt^{F}_{x} - C^{F}_{x}$	$C^{F}_{x} - Wt^{F}_{x+1}$	$Wt^{G}_{x} - C^{G}_{x}$	$C^{G}_{x} - Wt^{G}_{x+1}$	$Wt^{H}_{x} - C_{x}$	$C^{H}_{x} - Wt^{H}_{x+1}$
A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
J	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
L	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Q	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table A7 (Continued)

States\Time intervals by states	$Wt^{I}_{x} - C^{I}_{x}$	$C^{I}_{x} - Wt^{I}_{x+1}$	$Wt^{J}_{x} - C^{J}_{x}$	$C^{J}_{x} - Wt^{J}_{x+1}$	$Wt^{K}_{x} - C^{K}_{x}$	$C^{K}_{x} - Wt^{K}_{x+1}$	$Wt^{L}_{x} - C^{L}_{x}$	$C^{L}_{x} - Wt^{L}_{x+1}$	$Wt^{M}_{x} - C^{M}_{x}$	$C^{M}_{x} - Wt^{M}_{x+1}$	$Wt^{N}_{x} - C^{N}_{x}$	$C^{N}_{x} - Wt^{N}_{x+1}$	$Wt^{O}_{x} - C^{O}_{x}$	$C^{O}_{x} - Wt^{O}_{x+1}$	$Wt^{P}_{x} - C^{P}_{x}$	$C^{P}_{x} - Wt^{P}_{x+1}$	$Wt^{Q}_{x} - C^{Q}_{x}$	$C^{Q}_{x} - Wt^{Q}_{x+1}$	$Wt^{R}_{x} - C^{R}_{x}$	$C^{R}_{x} - Wt^{R}_{x+1}$
A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E	Ψ^{EI}	0	Ψ^{EJ}	0	Ψ^{EK}	0	Ψ^{EL}	0	0	0	0	0	0	0	0	0	0	0	0	0
F	Ψ^{FI}	0	Ψ^{FJ}	0	Ψ^{FK}	0	Ψ^{FL}	0	0	0	0	0	0	0	0	0	0	0	0	0
G	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I	0	0	0	0	0	0	0	0	0	0	0	0	Ψ^{IO}	0	Ψ^{IP}	0	Ψ^{IQ}	0	Ψ^{IR}	0
J	0	0	0	0	0	0	0	0	0	0	0	0	Ψ^{JO}	0	Ψ^{JP}	0	Ψ^{JQ}	0	Ψ^{JR}	0
K	0	0	0	0	0	0	0	0	0	0	0	0	Ψ^{KO}	0	Ψ^{KP}	0	Ψ^{KQ}	0	Ψ^{KR}	0
L	0	0	0	0	0	0	0	0	0	0	0	0	Ψ^{LO}	0	Ψ^{LP}	0	Ψ^{LQ}	0	Ψ^{LR}	0
M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
O	0	0	0	0	0	0	0	0	0	0	0	0	Ψ^{OO}	0	Ψ^{OP}	0	Ψ^{OQ}	0	Ψ^{OR}	0
P	0	0	0	0	0	0	0	0	0	0	0	0	Ψ^{PO}	0	Ψ^{PP}	0	Ψ^{PQ}	0	Ψ^{PR}	0
Q	0	0	0	0	0	0	0	0	0	0	0	0	Ψ^{QO}	0	Ψ^{QP}	0	Ψ^{QQ}	0	Ψ^{QR}	0
R	0	0	0	0	0	0	0	0	0	0	0	0	Ψ^{RO}	0	Ψ^{RP}	0	Ψ^{RQ}	0	Ψ^{RR}	0

*Wt= web-tagging event at time *i* and C= capture event for banding just before fledging at time *i* (i.e. Wt_x - C_x= 1.5 months interval and C_x - Wt_{x+1}= 10.5 months interval). Ψ= Transition probabilities assessed by MARK.

Table A8. Recovery probability matrix for web-tagged only individuals*. States represent a combination of time, age, location and the presence or absence of a web-tag (see Table A1 for details).

States\Time intervals	Wt_1-C_1	Wt_1-C_2	Wt_2-C_2	Wt_2-C_3	Wt_3-C_3	Wt_3-C_4	Wt_4-C_4	…
A	r^A	0	0	0	0	0	0	0
B	r^B	0	0	0	0	0	0	0
C	0	r^C	r^C	0	0	0	0	0
D	0	r^D	r^D	0	0	0	0	0
E	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0
G	0	0	0	r^G	r^G	0	0	0
H	0	0	0	r^H	r^H	0	0	0
I	0	0	0	0	0	0	0	0
J	0	0	0	0	0	0	0	0
K	0	0	0	0	0	0	0	0
L	0	0	0	0	0	0	0	0
M	0	0	0	0	0	r^M	r^M	0
N	0	0	0	0	0	r^N	r^N	0
O	0	0	0	0	0	0	0	0
P	0	0	0	0	0	0	0	0
Q	0	0	0	0	0	0	0	0
R	0	0	0	0	0	0	0	0

*Wt= web-tagging event at time *i* and C= capture event for banding just before fledging at time *i*. r = recovery probabilities assessed by MARK.

Table A9. Recovery probability matrix for leg banded individuals*. States represent a combination of time, age, location and the presence or absence of a web-tag (see Table A1 for details).

States\Time intervals	Wt_1-C_1	Wt_1-C_2	Wt_2-C_2	Wt_2-C_3	Wt_3-C_3	Wt_3-C_4	Wt_4-C_4	…
A	0	0	0	0	0	0	0	
B	0	0	0	0	0	0	0	
C	0	0	0	0	0	0	0	
D	0	0	0	0	0	0	0	
E	0	r^E	r^E	0	0	0	0	
F	0	r^F	r^F	0	0	0	0	
G	0	0	0	0	0	0	0	
H	0	0	0	0	0	0	0	
I	0	0	0	r^I	r^I	0	0	
J	0	0	0	r^J	r^J	0	0	
K	0	0	0	r^K	r^K	0	0	
L	0	0	0	r^L	r^L	0	0	
M	0	0	0	0	0	0	0	
N	0	0	0	0	0	0	0	
O	0	0	0	0	0	r^O	r^O	
P	0	0	0	0	0	r^P	r^P	
Q	0	0	0	0	0	r^Q	r^Q	
R	0	0	0	0	0	r^R	r^R	

*Wt= web-tagging event at time *i* and C= capture event for banding just before fledging at time *i*. r = recovery probabilities assessed by MARK.

Parameters	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	S int	age	age	t1	t2	t3	t4	t5	t6	t7	t8	t9
1: Fixed to 0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:S^{A}_{1}	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3: S^{A}_{2}	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4: S^{A}_{3}	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5: S^{A}_{4}	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6: S^{A}_{5}	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7: S^{A}_{6}	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8: S^{A}_{7}	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9: S^{A}_{8}	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10: S^{A}_{9}	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11: S^{A}_{10}	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12: S^{B}_{1}	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13: S^{B}_{2}	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14: S^{B}_{3}	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15: S^{B}_{4}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16: S^{B}_{5}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17: S^{B}_{6}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18: S^{B}_{7}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19: S^{B}_{8}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20: S^{B}_{9}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
21: S^{B}_{10}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
22: S^{a1}_{1}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0
23: S^{a1}_{2}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0
24: S^{a1}_{3}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0
25: S^{a1}_{4}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0
26: S^{a1}_{5}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0
27: S^{a1}_{6}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0
28: S^{a1}_{7}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0
29: S^{a1}_{8}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0
30: S^{a1}_{9}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1
31: S^{a1}_{10}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
32: S^{a2}_{2}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0
33: S^{a2}_{3}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0
34: S^{a2}_{4}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0
35: S^{a2}_{5}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0
36: S^{a2}_{6}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0
37: S^{a2}_{7}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	0
38: S^{a2}_{8}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0
39: S^{a2}_{9}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
40: S^{a2}_{10}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
41: S^{a3}_{3}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0
42: S^{a3}_{4}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0
43: S^{a3}_{5}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0
44: S^{a3}_{6}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0
45: S^{a3}_{7}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0
46: S^{a3}_{8}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
47: S^{a3}_{9}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
48: S^{a3}_{10}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0

Figure A2. Design matrix specification for survival parameters. Superscripts refer to the state and subscript to the time period. States represent a combination of time, age, location, and the presence or absence of a web-tag (see Table A1 for details). *Int = intercept, t = time.

Parameters	p int	Banding	l	age	age	t1	t2	t3	t4	t5	t6	t7	t8	t9	l*t1	l*t2	l*t3	l*t4	l*t5	l*t6	l*t7	l*t8	l*t9
49: p^{C}_{1}	1	1	1	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
50: p^{C}_{2}	1	1	1	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
51: p^{C}_{3}	1	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
52: p^{C}_{4}	1	1	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
53: p^{C}_{5}	1	1	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0
54: p^{C}_{6}	1	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0
55: p^{C}_{7}	1	1	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0
56: p^{C}_{8}	1	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
57: p^{C}_{9}	1	1	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
58: p^{C}_{10}	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59: p^{D}_{1}	1	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60 : p^{D}_{2}	1	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
61: p^{D}_{3}	1	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
62: p^{D}_{4}	1	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
63: p^{D}_{5}	1	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
64: p^{D}_{6}	1	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
65: p^{D}_{7}	1	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
66: p^{D}_{8}	1	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
67: p^{D}_{9}	1	1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
68: p^{D}_{10}	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
69: p^{G}_{2}	1	1	1	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
70: p^{G}_{3}	1	1	1	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
71: p^{G}_{4}	1	1	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
72: p^{G}_{5}	1	1	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0
73: p^{G}_{6}	1	1	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0
74: p^{G}_{7}	1	1	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0
75: p^{G}_{8}	1	1	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
76: p^{G}_{9}	1	1	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
77: p^{G}_{10}	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
78: p^{H}_{2}	1	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
79: p^{H}_{3}	1	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
80: p^{H}_{4}	1	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81: p^{H}_{5}	1	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
82: p^{H}_{6}	1	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
83: p^{H}_{7}	1	1	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
84 : p^{H}_{8}	1	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
85: p^{H}_{9}	1	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
86: p^{H}_{10}	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
87: p^{I}_{2}	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
88: p^{I}_{3}	1	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
89: p^{I}_{4}	1	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
90: p^{I}_{5}	1	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0
91: p^{I}_{6}	1	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0
92: p^{I}_{7}	1	0	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0
93: p^{I}_{8}	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
94: p^{I}_{9}	1	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
95: p^{I}_{10}	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
96: p^{J}_{2}	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
97: p^{J}_{3}	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
98: p^{J}_{4}	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99: p^{J}_{5}	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
100 : p^{J}_{6}	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
101: p^{J}_{7}	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
102: p^{J}_{8}	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
103: p^{J}_{9}	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
104: p^{J}_{10}	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
105: p^{M}_{3}	1	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
106: p^{M}_{4}	1	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
107: p^{M}_{5}	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0
108: p^{M}_{6}	1	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0
109: p^{M}_{7}	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0
110: p^{M}_{8}	1	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
111: p^{M}_{9}	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
112: p^{M}_{10}	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113: p^{N}_{3}	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
114: p^{N}_{4}	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
115: p^{N}_{5}	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
116: p^{N}_{6}	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
117: p^{N}_{7}	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
118: p^{N}_{8}	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
119: p^{N}_{9}	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
120: p^{N}_{10}	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
121: p^{O}_{3}	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
122: p^{O}_{4}	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
123: p^{O}_{5}	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0
124: p^{O}_{6}	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0
125: p^{O}_{7}	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0
126: p^{O}_{8}	1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
127: p^{O}_{9}	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
128: p^{O}_{10}	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
129: p^{P}_{3}	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130: p^{P}_{4}	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
131: p^{P}_{5}	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
132: p^{P}_{6}	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
133: p^{P}_{7}	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
134: p^{P}_{8}	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
135: p^{P}_{9}	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
136: p^{P}_{10}	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure A3. Design matrix specification for recapture parameters. Superscripts refer to the state and subscript to the time period. States represent a combination of time, age, location, and the presence or absence of a web-tag (see Table A1 for details) *int = intercept, l = location, t = time, * = interaction between two parameters.

Parameters	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104
137:Psi^{AC}_{1}	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
138:Psi^{AC}_{2}	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
139:Psi^{AC}_{3}	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140:Psi^{AC}_{4}	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141:Psi^{AC}_{5}	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
142:Psi^{AC}_{6}	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
143:Psi^{AC}_{7}	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
144:Psi^{AC}_{8}	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
145:Psi^{AC}_{9}	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
146:Psi^{AC}_{10}	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
147:Psi^{BD}_{1}	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
148:Psi^{BD}_{2}	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
149:Psi^{BD}_{3}	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
150:Psi^{BD}_{4}	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
151:Psi^{BD}_{5}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
152:Psi^{BD}_{6}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
153:Psi^{BD}_{7}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
154:Psi^{BD}_{8}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155:Psi^{BD}_{9}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
156:Psi^{BD}_{10}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
157:Psi^{DH}_{2}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
158:Psi^{DH}_{3}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
159:Psi^{DH}_{4}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
160:Psi^{DH}_{5}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
161:Psi^{DH}_{6}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
162:Psi^{DH}_{7}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
163:Psi^{DH}_{8}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
164:Psi^{DH}_{9}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
165:Psi^{DH}_{10}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
166:Psi^{CG}_{2}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
167:Psi^{CG}_{3}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
168:Psi^{CG}_{4}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
169:Psi^{CG}_{5}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170:Psi^{CG}_{6}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
171:Psi^{CG}_{7}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
172:Psi^{CG}_{8}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
173:Psi^{CG}_{9}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
174:Psi^{CG}_{10}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
175:Psi^{EI}_{2}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
176:Psi^{EI}_{3}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
177:Psi^{EI}_{4}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
178:Psi^{EI}_{5}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
179:Psi^{EI}_{6}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
180:Psi^{EI}_{7}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
181:Psi^{EI}_{8}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
182:Psi^{EI}_{9}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
183:Psi^{EI}_{10}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

Figure A4. Design matrix specification for transition and recovery parameters. Superscripts refer to the state and subscript to the time period. States represent a combination of time, age, location and the presence or absence of a web-tag (see Table A1 for details).

*int = intercept.

Parameters	T int	age	age	loc V-V	loc V-R	loc R-R	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139
184:Psi^{EK}	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
185:Psi^{EK}	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
186:Psi^{EK}	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
187:Psi^{EK}	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
188:Psi^{EK}	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
189:Psi^{EK}	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
190:Psi^{EK}	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
191:Psi^{EK}	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
192:Psi^{EK}	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
193:Psi^{EL}	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
194:Psi^{EL}	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
195:Psi^{EL}	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
196:Psi^{EL}	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
197:Psi^{EL}	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
198:Psi^{EL}	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
199:Psi^{EL}	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
200:Psi^{EL}	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
201:Psi^{EL}	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
202:Psi$^{FJ}_{2}$	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
203:Psi$^{FJ}_{3}$	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
204:Psi$^{FJ}_{4}$	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
205:Psi$^{FJ}_{5}$	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
206:Psi$^{FJ}_{6}$	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
207:Psi$^{FJ}_{7}$	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
208:Psi$^{FJ}_{8}$	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
209:Psi$^{FJ}_{9}$	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
210:Psi$^{FJ}_{10}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
211:Psi^{FK}	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
212:Psi^{FK}	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
213:Psi^{FK}	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
214:Psi^{FK}	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
215:Psi^{FK}	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
216:Psi^{FK}	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
217:Psi^{FK}	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
218:Psi^{FK}	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
219:Psi^{FK}	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
220:Psi^{FL}	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
221:Psi^{FL}	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
222:Psi^{FL}	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
223:Psi^{FL}	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
224:Psi^{FL}	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
225:Psi^{FL}	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
226:Psi^{FL}	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
227:Psi^{FL}	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
228:Psi^{FL}	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
229:Psi$^{KQ}_{3}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
230:Psi$^{KQ}_{4}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
231:Psi$^{KQ}_{5}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
232:Psi$^{KQ}_{6}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
233:Psi$^{KQ}_{7}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
234:Psi$^{KQ}_{8}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
235:Psi$^{KQ}_{9}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
236:Psi$^{KQ}_{10}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
237:Psi$^{LR}_{3}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
238:Psi$^{LR}_{4}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
239:Psi$^{LR}_{5}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
240:Psi$^{LR}_{6}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
241:Psi$^{LR}_{7}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
242:Psi$^{LR}_{8}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
243:Psi$^{LR}_{9}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
244:Psi$^{LR}_{10}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
245: Fixed to 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
246:r^{a0}	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
247:r$^{a123}_{wt\ only}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
248:r$^{a123}_{band}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

Figure A4 (Continued).

Parameters	T int	age	age	loc V-V	loc V-R	loc R-R	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139
249:Psi ^{IQ}	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
250:Psi ^{IQ}	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
251:Psi ^{IQ}	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
252:Psi ^{IQ}	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
253:Psi ^{IQ}	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
254:Psi ^{IQ}	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
255:Psi ^{IQ}	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
256:Psi ^{IQ}	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
257:Psi ^{IR}	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
258:Psi ^{IR}	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
259:Psi ^{IR}	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
260:Psi ^{IR}	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
261:Psi ^{IR}	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
262:Psi ^{IR}	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
263:Psi ^{IR}	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
264:Psi ^{IR}	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
265:Psi ^{JQ}	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
266:Psi ^{JQ}	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
267:Psi ^{JQ}	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
268:Psi ^{JQ}	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
269:Psi ^{JQ}	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
270:Psi ^{JQ}	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
271:Psi ^{JQ}	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
272:Psi ^{JQ}	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
273:Psi ^{JR}	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
274:Psi ^{JR}	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
275:Psi ^{JR}	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
276:Psi ^{JR}	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
277:Psi ^{JR}	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
278:Psi ^{JR}	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
279:Psi ^{JR}	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
280:Psi ^{JR}	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281:Psi ^{OQ}	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
282:Psi ^{OQ}	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
283:Psi ^{OQ}	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
284:Psi ^{OQ}	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285:Psi ^{OQ}	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
286:Psi ^{OQ}	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
287:Psi ^{OQ}	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
288:Psi ^{OR}	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
289:Psi ^{OR}	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
290:Psi ^{OR}	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
291:Psi ^{OR}	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
292:Psi ^{OR}	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
293:Psi ^{OR}	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
294:Psi ^{OR}	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
295:Psi ^{PQ}	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
296:Psi ^{PQ}	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
297:Psi ^{PQ}	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
298:Psi ^{PQ}	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
299:Psi ^{PQ}	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
300:Psi ^{PQ}	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
301:Psi ^{PQ}	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
302:Psi ^{PR}	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
303:Psi ^{PR}	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
304:Psi ^{PR}	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
305:Psi ^{PR}	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
306:Psi ^{PR}	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
307:Psi ^{PR}	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
308:Psi ^{PR}	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure A4 (Continued).

Table A10. Full model selection of pre-fledging survival of Canada Geese in southern Quebec, 2005-2014.

Model					ΔAICc	AICc weight	K	Deviance
Survival (Sa_0)	Survival ($Sa_1a_2a_3$)	Recapture (p)	Transition (Ψ)	Recovery (r)				
Sa_0(t*l)	$Sa_1a_2a_3$(a+t)	$pa_1a_2a_3$(a+t*l)	Ψ (t*l)	ra_0(.), a_1=a_2=a_3(.)	0.00	0.73	135	35104.31
Sa_0(t+l)			Ψ (t*l)		2.78	0.18	126	35125.43
Sa_0(t)			Ψ(t*l)		4.27	0.08	125	35128.94
Sa_0(l)			Ψ(t*l)		68.24	1.1271^{E}-15	117	35264.28
Sa_0(.)			Ψ(t*l)		69.23	6.8888^{E}-16	116	35267.30
Sa_0(l*AB)			Ψ(t*l)		70.01	4.6618^{E}-16	119	35254.55
Sa_0(t*l)			Ψ(a*t*l)		98.28	3.3852^{E}-22	210	35104.56
Sa_0(t+l)			Ψ(a*t*l)		98.80	2.6103^{E}-22	201	35122.56
Sa_0(t)	$Sa_1a_2a_3$(a+t)	$pa_1a_2a_3$(a+t*l)	Ψ(a*t*l)	ra_0(.), a_1=a_2=a_3(.)	100.58	1.0733^{E}-22	200	35126.92
Sa_0(l)			Ψ(a*t*l)		163.64	2.1754^{E}-36	192	35206.42
Sa_0(.)			Ψ(a*t*l)		170.22	8.0843^{E}-38	191	35215.06
Sa_0(t)			Ψ(t)		221.18	6.9379^{E}-49	89	35481.62
Sa_0(t+l)			Ψ(t)		228.78	1.5514^{E}-50	90	35480.09
Sa_0(t*l)			Ψ(t)		229.28	1.2104^{E}-50	99	35453.76
Sa_0(t+l)			Ψ(l)		232.18	2.8340^{E}-51	62	35543.70
Sa_0(t)			Ψ(a*l)		234.43	9.2245^{E}-52	71	35528.53
Sa_0(t*l)			Ψ(l)		236.30	3.6152^{E}-52	71	35521.42
Sa_0(t)			Ψ(l)		236.71	2.9549^{E}-52	61	35546.12
Sa_0(t*l)			Ψ(a*l)		238.35	1.2963^{E}-52	81	35503.45
Sa_0(t+l)			Ψ(a*l)		239.30	8.0837^{E}-53	72	35525.57
Sa_0(.)			Ψ(a*t)		262.15	8.8116^{E}-58	118	35507.23
Sa_0(t+l)			Ψ(a*t)		262.79	6.4139^{E}-58	127	35438.49
Sa_0(l)			Ψ(t)		284.18	1.4480^{E}-62	81	35554.16

Table A10 (Continued).

Model					ΔAICc	AICc weight	K	Deviance
Survival (Sa_0)	Survival ($Sa_1a_2a_3$)	Recapture (p)	Transition (Ψ)	Recovery (r)				
Sa_0(l)			Ψ(l)		285.03	9.4877^E-63	5	35611.73
Sa_0(.)			Ψ(t)		285.14	8.9822^E-63	80	35555.23
Sa_0(.)			Ψ(a*l)		285.74	6.6565^E-63	62	35593.13
Sa_0(l)			Ψ(a*l)		286.14	5.4414^E-63	63	35591.52
Sa_0(.)			Ψ(l)		286.19	5.3013^E-63	52	35612.58
Sa_0(t)			Ψ(a)		290.71	5.5568^E-64	62	35602.98
Sa_0(t+l)			Ψ(a)		295.58	4.8514^E-65	63	35601.92
Sa_0(t*l)			Ψ(a)		296.54	3.0065^E-65	72	35577.92
Sa_0(t*l)			Ψ(a*t)		311.20	1.9751^E-68	136	35686.82
Sa_0(l)			Ψ(a*t)		312.53	1.0144^E-68	119	35506.53
Sa_0(.)			Ψ(a)		337.38	4.0628^E-74	53	35662.92
Sa_0(l)	$Sa_1a_2a_3$(a+t)	$pa_1a_2a_3$(a+t*l)	Ψ(a)	ra_0(.), a_1=a_2=a_3(.)	339.36	1.5109^E-74	54	35662.88
Sa_0(t)			Ψ(a*t)		529.45	7.9785^E-116	126	35439.89
Sa_0(t+l)			Ψ(.)		614.11	3.2946^E-134	58	35936.61
Sa_0(t*l)			Ψ(.)		621.15	9.7787^E-136	67	35911.42
Sa_0(t)			Ψ(.)		625.21	1.2822^E-136	57	35942.68
Sa_0(l)			Ψ(.)		682.30	5.1377^E-149	49	36015.89
Sa_0(.)			Ψ(.)		686.14	7.5285^E-150	48	36021.74

Note: Only pre-fledging survival and transition for all age classes varied. A_0= pre-fledged juvenile; a_1= post-fledged juvenile; a_2= yearling; a_3= adult; AB= age at banding. For all models, survival probability (*S*) for a_1, a_2 and a_3 was modeled like $Sa_1a_2a_3$(t+a), recapture probability (*p*) was modeled like p(t+a*l) and recovery probability (*r*) was modeled like r(.) for a0 and r($a_{1=}a_{2=}a_{3=}$.) for other age classes. + indicates an additive effect and * indicates an interaction. K= number of estimable parameters.

Table A11. Model selection used for the validation of the best model to assess pre-fledging survival of the subsample of goslings with known-aged mothers.

Model					ΔAICc	AICc weight	K	Deviance
Survival (Sa_0)	Survival ($Sa_1a_2a_3$)	Recapture (p)	Transition (ψ)	Recovery (r)				
S_{a0}(t*l)	$Sa_1a_2a_3$(a+t)	$pa_1a_2a_3$(a+t*l)	ψ(t*l)	ra_0(.), a_1=a_2=a_3(.)	0.00	0.55	135	10142.88
S_{a0}(t+l)			ψ(t*l)		0.42	0.44	126	10162.34
S_{a0}(t)			ψ(t*l)		9.52	4.70^E-03	125	10173.56
S_{a0}(.)			ψ(t*l)		10.70	2.60^E-03	116	10193.70
S_{a0}(l)			ψ(t*l)		14.40	4.08^E-04	117	10195.30
S_{a0}(t*l)			ψ(a*l)		44.77	1.04^E-10	81	10300.80
S_{a0}(t+l)			ψ(a*l)		45.78	6.26^E-11	72	10320.42
S_{a0}(t*l)			ψ(t)		57.33	1.95^E-13	99	10275.95
S_{a0}(t+l)			ψ(t)		58.02	1.38^E-13	90	10295.39
S_{a0}(t+l)			ψ(a*t*l)		97.46	3.75^E-22	201	10098.24
S_{a0}(t*l)			ψ(a*t*l)		104.10	1.36^E-23	210	10261.98
S_{a0}(t+l)			ψ(a*t)		102.17	3.57^E-23	127	10085.17

Note: Only pre-fledging survival and transition for all age classes varied. A_0= pre-fledged juvenile; a_1= post-fledged juvenile; a_2= yearling; a_3= adult. For all models, survival probability (*S*) for a_1, a_2 and a_3 was modeled like $Sa_1a_2a_3$(t+a), recapture probability (*p*) was modeled like p(t+a*l) and recovery probability (*r*) was modeled like r(.) for a_0 and r(a_1=a_2=a_3= .) for other age classes. + indicates an additive effect and * indicates an interaction. K= number of estimable parameters. Best model with the subsample of goslings with known-aged mothers was the same than for the full sample of goslings [S_{a0}(t*l)]. The model was therefore used to test the effect of mother age as shown in Table 3.

Table A12. Full estimates for the best model
$Sa_0(t*l),a_1a_2a_3(a+t)$ $pa_1a_2a_3(a+t*l)$ $\Psi(t*l)$ $ra_0(.)$, $a_1=a_2=a_3(.)$

Parameter	Estimate	Standard Error	Lower	Upper
1: Fixed to 0	0.0000	0.0000	0.0000	0.0000
2:S^A_1	0.7577	0.0220	0.7121	0.7981
3: S^A_2	0.7735	0.0195	0.7330	0.8094
4: S^A_3	0.8248	0.0199	0.7822	0.8605
5: S^A_4	0.7652	0.0201	0.7235	0.8023
6: S^A_5	0.6937	0.0200	0.6531	0.7314
7: S^A_6	0.7339	0.0207	0.6914	0.7725
8: S^A_7	0.6582	0.0253	0.6071	0.7059
9: S^A_8	0.6366	0.0175	0.6017	0.6702
10: S^A_9	0.5889	0.0218	0.5457	0.6308
11: S^A_{10}	0.6767	0.0284	0.6187	0.7297
12: S^B_1	0.6724	0.0578	0.5511	0.7743
13: S^B_2	0.7199	0.0508	0.6107	0.8081
14: S^B_3	0.8009	0.0304	0.7346	0.8540
15: S^B_4	0.8000	0.0284	0.7385	0.8500
16: S^B_5	0.7594	0.0244	0.7085	0.8039
17: S^B_6	0.7820	0.0296	0.7184	0.8346
18: S^B_7	0.8667	0.0460	0.7488	0.9341
19: S^B_8	0.6348	0.0308	0.5727	0.6927
20: S^B_9	0.6182	0.0420	0.5332	0.6966
21: S^B_{10}	0.6821	0.0563	0.5633	0.7812
22: S^{a1}_1	0.9880	0.0036	0.9783	0.9934
23: S^{a1}_2	0.9770	0.0029	0.9706	0.9821
24: S^{a1}_3	0.9770	0.0023	0.9719	0.9812
25: S^{a1}_4	0.9829	0.0019	0.9786	0.9863
26: S^{a1}_5	0.9766	0.0022	0.9718	0.9806
27: S^{a1}_6	0.9726	0.0024	0.9674	0.9769
28: S^{a1}_7	0.9848	0.0019	0.9806	0.9881
29: S^{a1}_8	0.9820	0.0021	0.9773	0.9857
30: S^{a1}_9	0.9790	0.0025	0.9734	0.9834
31: S^{a1}_{10}	0.8959	0.0000	0.8959	0.8959
32: S^{a2}_2	0.9628	0.0046	0.9528	0.9708
33: S^{a2}_3	0.9628	0.0038	0.9546	0.9695

Table A12 (Continued).

Parameter	Estimate	Standard Error	Lower	Upper
34: S^{a2}_{4}	0.9722	0.0030	0.9657	0.9774
35: S^{a2}_{5}	0.9621	0.0034	0.9549	0.9682
36: S^{a2}_{6}	0.9557	0.0038	0.9476	0.9626
37: S^{a2}_{7}	0.9753	0.0029	0.9689	0.9804
38: S^{a2}_{8}	0.9707	0.0036	0.9627	0.9770
39: S^{a2}_{9}	0.9660	0.0041	0.9570	0.9732
40: S^{a2}_{10}	0.8398	0.0000	0.8398	0.8398
41: S^{a3}_{3}	0.9655	0.0035	0.9579	0.9718
42: S^{a3}_{4}	0.9742	0.0027	0.9684	0.9790
43: S^{a3}_{5}	0.9649	0.0029	0.9587	0.9701
44: S^{a3}_{6}	0.9589	0.0032	0.9522	0.9647
45: S^{a3}_{7}	0.9771	0.0025	0.9717	0.9816
46: S^{a3}_{8}	0.9729	0.0029	0.9666	0.9780
47: S^{a3}_{9}	0.9685	0.0035	0.9609	0.9746
48: S^{a3}_{10}	0.8501	0.0000	0.8501	0.8501
49: p^{C}_{1}	1.0000	0.0000	1.0000	1.0000
50: p^{C}_{2}	0.9437	0.0207	0.8864	0.9730
51: p^{C}_{3}	0.7613	0.0292	0.6995	0.8137
52: p^{C}_{4}	0.7939	0.0241	0.7426	0.8372
53: p^{C}_{5}	0.7691	0.0254	0.7157	0.8151
54: p^{C}_{6}	0.7370	0.0271	0.6806	0.7866
55: p^{C}_{7}	0.7151	0.0290	0.6551	0.7684
56: p^{C}_{8}	0.7777	0.0243	0.7263	0.8217
57: p^{C}_{9}	0.7126	0.0315	0.6471	0.7703
58: p^{C}_{10}	0.7725	0.0383	0.6889	0.8389
59: p^{D}_{1}	1.0000	0.0000	1.0000	1.0000
60 : p^{D}_{2}	0.5239	0.0666	0.3948	0.6500
61: p^{D}_{3}	0.8861	0.0311	0.8097	0.9343
62: p^{D}_{4}	0.7732	0.0305	0.7080	0.8274
63: p^{D}_{5}	0.8899	0.0206	0.8426	0.9243
64: p^{D}_{6}	0.8321	0.0241	0.7794	0.8743
65: p^{D}_{7}	0.7930	0.0304	0.7271	0.8464
66: p^{D}_{8}	0.8214	0.0295	0.7561	0.8722
67: p^{D}_{9}	0.7087	0.0427	0.6187	0.7849
68: p^{D}_{10}	0.5931	0.0576	0.4772	0.6994
69: p^{G}_{2}	0.6511	0.0939	0.4537	0.8075
70: p^{G}_{3}	0.2620	0.0394	0.1924	0.3460

Table A12 (Continued).

Parameter	Estimate	Standard Error	Lower	Upper
71: p^G_4	0.3001	0.0398	0.2283	0.3833
72: p^G_5	0.2705	0.0370	0.2044	0.3487
73: p^G_6	0.2378	0.0334	0.1787	0.3091
74: p^G_7	0.2185	0.0314	0.1632	0.2861
75: p^G_8	0.2803	0.0377	0.2126	0.3596
76: p^G_9	0.2163	0.0325	0.1594	0.2867
77: p^G_{10}	0.2744	0.0473	0.1918	0.3759
78: p^H_2	0.1092	0.0285	0.0646	0.1787
79: p^H_3	0.4641	0.0817	0.3128	0.6224
80: p^H_4	0.2752	0.0418	0.2012	0.3640
81: p^H_5	0.4737	0.0588	0.3617	0.5883
82: p^H_6	0.3557	0.0478	0.2683	0.4539
83: p^H_7	0.2991	0.0459	0.2173	0.3960
84 : p^H_8	0.3387	0.0533	0.2432	0.4494
85: p^H_9	0.2131	0.0403	0.1447	0.3026
86: p^H_{10}	0.1396	0.0320	0.0878	0.2147
87: p^I_2	0.5460	0.0984	0.3557	0.7237
88: p^I_3	0.1862	0.0226	0.1459	0.2346
89: p^I_4	0.2165	0.0225	0.1756	0.2638
90: p^I_5	0.1929	0.0195	0.1575	0.2340
91: p^I_6	0.1674	0.0178	0.1354	0.2051
92: p^I_7	0.1526	0.0162	0.1235	0.1872
93: p^I_8	0.2006	0.0191	0.1657	0.2407
94: p^I_9	0.1510	0.0160	0.1222	0.1852
95: p^I_{10}	0.1959	0.0299	0.1438	0.2611
96: p^J_2	0.0732	0.0175	0.0454	0.1159
97: p^J_3	0.3582	0.0695	0.2357	0.5024
98: p^J_4	0.1965	0.0258	0.1509	0.2519
99: p^J_5	0.3670	0.0444	0.2851	0.4574
100 : p^J_6	0.2624	0.0284	0.2106	0.3217
101: p^J_7	0.2156	0.0276	0.1665	0.2745
102: p^J_8	0.2481	0.0331	0.1889	0.3186
103: p^J_9	0.1486	0.0231	0.1087	0.1999
104: p^J_{10}	0.0947	0.0188	0.0636	0.1386
105: p^M_3	0.4294	0.0535	0.3291	0.5359
106: p^M_4	0.4762	0.0508	0.3788	0.5754
107: p^M_5	0.4401	0.0491	0.3472	0.5375

Table A12 (Continued).

Parameter	Estimate	Standard Error	Lower	Upper
108: p^{M}_{6}	0.3981	0.0471	0.3104	0.4929
109: p^{M}_{7}	0.3721	0.0462	0.2867	0.4662
110: p^{M}_{8}	0.4522	0.0496	0.3579	0.5501
111: p^{M}_{9}	0.3691	0.0487	0.2797	0.4686
112: p^{M}_{10}	0.4449	0.0630	0.3271	0.5693
113: p^{N}_{3}	0.6474	0.0777	0.4850	0.7816
114: p^{N}_{4}	0.4459	0.0558	0.3408	0.5562
115: p^{N}_{5}	0.6561	0.0568	0.5381	0.7576
116: p^{N}_{6}	0.5392	0.0554	0.4306	0.6443
117: p^{N}_{7}	0.4749	0.0575	0.3653	0.5870
118: p^{N}_{8}	0.5205	0.0621	0.4000	0.6387
119: p^{N}_{9}	0.3648	0.0585	0.2593	0.4850
120: p^{N}_{10}	0.2559	0.0526	0.1669	0.3714
121: p^{O}_{3}	0.3266	0.0327	0.2660	0.3935
122: p^{O}_{4}	0.3694	0.0301	0.3126	0.4301
123: p^{O}_{5}	0.3362	0.0263	0.2867	0.3896
124: p^{O}_{6}	0.2988	0.0252	0.2518	0.3505
125: p^{O}_{7}	0.2763	0.0242	0.2314	0.3262
126: p^{O}_{8}	0.3472	0.0259	0.2984	0.3995
127: p^{O}_{9}	0.2738	0.0253	0.2271	0.3261
128: p^{O}_{10}	0.3406	0.0439	0.2604	0.4310
129: p^{P}_{3}	0.5419	0.0758	0.3940	0.6828
130: p^{P}_{4}	0.3415	0.0371	0.2728	0.4175
131: p^{P}_{5}	0.5514	0.0480	0.4566	0.6427
132: p^{P}_{6}	0.4299	0.0356	0.3618	0.5007
133: p^{P}_{7}	0.3682	0.0370	0.2991	0.4432
134: p^{P}_{8}	0.4116	0.0422	0.3320	0.4961
135: p^{P}_{9}	0.2701	0.0358	0.2059	0.3456
136: p^{P}_{10}	0.1814	0.0322	0.1265	0.2533
137:Psi^{AC}_{1}	0.9944	0.0055	0.9617	0.9992
138:Psi^{AC}_{2}	0.9944	0.0056	0.9610	0.9992
139:Psi^{AC}_{3}	0.7844	0.0240	0.7338	0.8277
140:Psi^{AC}_{4}	0.8423	0.0207	0.7974	0.8787
141:Psi^{AC}_{5}	0.8250	0.0216	0.7786	0.8633
142:Psi^{AC}_{6}	0.8305	0.0222	0.7824	0.8697
143:Psi^{AC}_{7}	0.8352	0.0262	0.7773	0.8804
144:Psi^{AC}_{8}	0.8383	0.0180	0.8000	0.8705

Table A12 (Continued).

Parameter	Estimate	Standard Error	Lower	Upper
145:Psi^{AC}_{9}	0.8125	0.0224	0.7647	0.8525
146:Psi^{AC}_{10}	0.5939	0.0368	0.5202	0.6635
147:Psi^{BD}_{1}	0.7778	0.0800	0.5855	0.8966
148:Psi^{BD}_{2}	0.7427	0.0599	0.6095	0.8423
149:Psi^{BD}_{3}	0.9890	0.0110	0.9259	0.9985
150:Psi^{BD}_{4}	0.8807	0.0281	0.8137	0.9258
151:Psi^{BD}_{5}	0.8167	0.0320	0.7457	0.8713
152:Psi^{BD}_{6}	0.9333	0.0228	0.8723	0.9663
153:Psi^{BD}_{7}	0.8954	0.0442	0.7723	0.9558
154:Psi^{BD}_{8}	0.9508	0.0196	0.8946	0.9778
155:Psi^{BD}_{9}	0.9892	0.0107	0.9273	0.9985
156:Psi^{BD}_{10}	1.0000	0.0000	1.0000	1.0000
157:Psi^{DH}_{2}	1.0000	0.0000	1.0000	1.0000
158:Psi^{DH}_{3}	1.0000	0.0000	1.0000	1.0000
159:Psi^{DH}_{4}	0.7375	0.1978	0.2749	0.9542
160:Psi^{DH}_{5}	1.0000	0.0000	1.0000	1.0000
161:Psi^{DH}_{6}	0.9352	0.2395	0.0062	1.0000
162:Psi^{DH}_{7}	1.0000	0.0000	1.0000	1.0000
163:Psi^{DH}_{8}	1.0000	0.0000	1.0000	1.0000
164:Psi^{DH}_{9}	1.0000	0.0000	1.0000	1.0000
165:Psi^{DH}_{10}	1.0000	0.0000	1.0000	1.0000
166:Psi^{CG}_{2}	0.0000	0.0000	0.0000	0.0000
167:Psi^{CG}_{3}	0.9223	0.0931	0.4821	0.9934
168:Psi^{CG}_{4}	0.8994	0.0566	0.7242	0.9682
169:Psi^{CG}_{5}	1.0000	0.0000	1.0000	1.0000
170:Psi^{CG}_{6}	0.9023	0.0567	0.7236	0.9702
171:Psi^{CG}_{7}	0.9437	0.0506	0.7215	0.9909
172:Psi^{CG}_{8}	1.0000	0.0000	1.0000	1.0000
173:Psi^{CG}_{9}	0.9259	0.0652	0.6597	0.9878
174:Psi^{CG}_{10}	1.0000	0.0000	1.0000	1.0000
175:Psi^{EI}_{2}	0.1832	0.0628	0.0897	0.3380
176:Psi^{EI}_{3}	0.7410	0.0566	0.6160	0.8361
177:Psi^{EI}_{4}	0.7665	0.0493	0.6568	0.8492
178:Psi^{EI}_{5}	0.8217	0.0304	0.7543	0.8738
179:Psi^{EI}_{6}	0.7214	0.0393	0.6383	0.7917
180:Psi^{EI}_{7}	0.8247	0.0270	0.7654	0.8715
181:Psi^{EI}_{8}	0.8386	0.0249	0.7836	0.8817

Table A12 (Continued).

Parameter	Estimate	Standard Error	Lower	Upper
182:Psi$^{EI}_{9}$	0.8848	0.0439	0.7676	0.9470
183:Psi$^{EI}_{10}$	0.7490	0.0659	0.6002	0.8557
184:Psi ^{EK}	0.0347	0.0070	0.0233	0.0515
185:Psi ^{EK}	0.0347	0.0070	0.0233	0.0515
186:Psi ^{EK}	0.0347	0.0070	0.0233	0.0515
187:Psi ^{EK}	0.0347	0.0070	0.0233	0.0515
188:Psi ^{EK}	0.0347	0.0070	0.0233	0.0515
189:Psi ^{EK}	0.0347	0.0070	0.0233	0.0515
190:Psi ^{EK}	0.0347	0.0070	0.0233	0.0515
191:Psi ^{EK}	0.0347	0.0070	0.0233	0.0515
192:Psi ^{EK}	0.0347	0.0070	0.0233	0.0515
193:Psi ^{EL}	0.0064	0.0024	0.0031	0.0133
194:Psi ^{EL}	0.0064	0.0024	0.0031	0.0133
195:Psi ^{EL}	0.0064	0.0024	0.0031	0.0133
196:Psi ^{EL}	0.0064	0.0024	0.0031	0.0133
197:Psi ^{EL}	0.0064	0.0024	0.0031	0.0133
198:Psi ^{EL}	0.0064	0.0024	0.0031	0.0133
199:Psi ^{EL}	0.0064	0.0024	0.0031	0.0133
200:Psi ^{EL}	0.0064	0.0024	0.0031	0.0133
201:Psi ^{EL}	0.0064	0.0024	0.0031	0.0133
202:Psi $^{FJ}_{2}$	1.0000	0.0000	1.0000	1.0000
203:Psi $^{FJ}_{3}$	0.2603	0.0876	0.1260	0.4620
204:Psi $^{FJ}_{4}$	0.7349	0.0602	0.6019	0.8356
205:Psi $^{FJ}_{5}$	0.6834	0.0631	0.5494	0.7926
206:Psi $^{FJ}_{6}$	0.7922	0.0428	0.6962	0.8638
207:Psi $^{FJ}_{7}$	0.7106	0.0576	0.5864	0.8096
208:Psi $^{FJ}_{8}$	0.7387	0.0564	0.6145	0.8338
209:Psi $^{FJ}_{9}$	0.7541	0.0514	0.6404	0.8409
210:Psi $^{FJ}_{10}$	0.8460	0.0521	0.7149	0.9232
211:Psi ^{FK}	0.0049	0.0032	0.0014	0.0175
212:Psi ^{FK}	0.0049	0.0032	0.0014	0.0175
213:Psi ^{FK}	0.0049	0.0032	0.0014	0.0175
214:Psi ^{FK}	0.0049	0.0032	0.0014	0.0175
215:Psi ^{FK}	0.0049	0.0032	0.0014	0.0175
216:Psi ^{FK}	0.0049	0.0032	0.0014	0.0175
217:Psi ^{FK}	0.0049	0.0032	0.0014	0.0175
218:Psi ^{FK}	0.0049	0.0032	0.0014	0.0175

Table A12 (Continued).

Parameter	Estimate	Standard Error	Lower	Upper
219:Psi ^{FK}	0.0049	0.0032	0.0014	0.0175
220:Psi ^{FL}	0.0476	0.0111	0.0299	0.0747
221:Psi ^{FL}	0.0476	0.0111	0.0299	0.0747
222:Psi ^{FL}	0.0476	0.0111	0.0299	0.0747
223:Psi ^{FL}	0.0476	0.0111	0.0299	0.0747
224:Psi ^{FL}	0.0476	0.0111	0.0299	0.0747
225:Psi ^{FL}	0.0476	0.0111	0.0299	0.0747
226:Psi ^{FL}	0.0476	0.0111	0.0299	0.0747
227:Psi ^{FL}	0.0476	0.0111	0.0299	0.0747
228:Psi ^{FL}	0.0476	0.0111	0.0299	0.0747
229:Psi ^{KQ_3}	1.0000	0.0000	1.0000	1.0000
230:Psi ^{KQ_4}	1.0000	0.0000	1.0000	1.0000
231:Psi ^{KQ_5}	0.5976	0.2673	0.1439	0.9292
232:Psi ^{KQ_6}	0.5079	0.2415	0.1345	0.8727
233:Psi ^{KQ_7}	1.0000	0.0000	1.0000	1.0000
234:Psi ^{KQ_8}	1.0000	0.0000	1.0000	1.0000
235:Psi ^{KQ_9}	0.8113	0.1160	0.4934	0.9500
236:Psi $^{KQ_{10}}$	0.7185	0.1619	0.3470	0.9246
237:Psi ^{LR_3}	1.0000	0.0000	1.0000	1.0000
238:Psi ^{LR_4}	0.0000	0.0000	0.0000	0.0000
239:Psi ^{LR_5}	0.0000	0.0000	0.0000	0.0000
240:Psi ^{LR_6}	0.9355	0.2875	0.0013	1.0000
241:Psi ^{LR_7}	0.8683	0.1995	0.1776	0.9951
242:Psi ^{LR_8}	0.8363	0.1336	0.4301	0.9719
243:Psi ^{LR_9}	0.8997	0.0933	0.5418	0.9855
244:Psi $^{LR_{10}}$	0.8754	0.1106	0.4906	0.9808
245: Fixed to 1	1.0000	0.0000	1.0000	1.0000
246:r^{a0}	0.0013	0.0014	0.0069	
247:$r^{a123}{}_{wt\ only}$	0.0209	0.0399	0.1250	
248:$r^{a123}{}_{band}$	0.0229	0.5105	0.6002	
249:Psi ^{IQ}	0.0307	0.0096	0.0166	0.0561
250:Psi ^{IQ}	0.0307	0.0096	0.0166	0.0561
251:Psi ^{IQ}	0.0307	0.0096	0.0166	0.0561
252:Psi ^{IQ}	0.0307	0.0096	0.0166	0.0561
253:Psi ^{IQ}	0.0307	0.0096	0.0166	0.0561
254:Psi ^{IQ}	0.0307	0.0096	0.0166	0.0561

Table A12 (Continued).

Parameter	Estimate	Standard Error	Lower	Upper
255:Psi ^{IQ}	0.0307	0.0096	0.0166	0.0561
256:Psi ^{IQ}	0.0307	0.0096	0.0166	0.0561
257:Psi ^{IR}	0.0057	0.0025	0.0024	0.0133
258:Psi ^{IR}	0.0057	0.0025	0.0024	0.0133
259:Psi ^{IR}	0.0057	0.0025	0.0024	0.0133
260:Psi ^{IR}	0.0057	0.0025	0.0024	0.0133
261:Psi ^{IR}	0.0057	0.0025	0.0024	0.0133
262:Psi ^{IR}	0.0057	0.0025	0.0024	0.0133
263:Psi ^{IR}	0.0057	0.0025	0.0024	0.0133
264:Psi ^{IR}	0.0057	0.0025	0.0024	0.0133
265:Psi ^{JQ}	0.0043	0.0030	0.0011	0.0166
266:Psi ^{JQ}	0.0043	0.0030	0.0011	0.0166
267:Psi ^{JQ}	0.0043	0.0030	0.0011	0.0166
268:Psi ^{JQ}	0.0043	0.0030	0.0011	0.0166
269:Psi ^{JQ}	0.0043	0.0030	0.0011	0.0166
270:Psi ^{JQ}	0.0043	0.0030	0.0011	0.0166
271:Psi ^{JQ}	0.0043	0.0030	0.0011	0.0166
272:Psi ^{JQ}	0.0043	0.0030	0.0011	0.0166
273:Psi ^{JR}	0.0422	0.0121	0.0239	0.0733
274:Psi ^{JR}	0.0422	0.0121	0.0239	0.0733
275:Psi ^{JR}	0.0422	0.0121	0.0239	0.0733
276:Psi ^{JR}	0.0422	0.0121	0.0239	0.0733
277:Psi ^{JR}	0.0422	0.0121	0.0239	0.0733
278:Psi ^{JR}	0.0422	0.0121	0.0239	0.0733
279:Psi ^{JR}	0.0422	0.0121	0.0239	0.0733
280:Psi ^{JR}	0.0422	0.0121	0.0239	0.0733
281:Psi ^{OQ}	0.1065	0.0133	0.0831	0.1355
282:Psi ^{OQ}	0.1065	0.0133	0.0831	0.1355
283:Psi ^{OQ}	0.1065	0.0133	0.0831	0.1355
284:Psi ^{OQ}	0.1065	0.0133	0.0831	0.1355
285:Psi ^{OQ}	0.1065	0.0133	0.0831	0.1355
286:Psi ^{OQ}	0.1065	0.0133	0.0831	0.1355
287:Psi ^{OQ}	0.1065	0.0133	0.0831	0.1355
288:Psi ^{OR}	0.0210	0.0068	0.0111	0.0394
289:Psi ^{OR}	0.0210	0.0068	0.0111	0.0394
290:Psi ^{OR}	0.0210	0.0068	0.0111	0.0394
291:Psi ^{OR}	0.0210	0.0068	0.0111	0.0394

Table A12 (Continued).

Parameter	Estimate	Standard Error	Lower	Upper
292:Psi ^{OR}	0.0210	0.0068	0.0111	0.0394
293:Psi ^{OR}	0.0210	0.0068	0.0111	0.0394
294:Psi ^{OR}	0.0210	0.0068	0.0111	0.0394
295:Psi ^{PQ}	0.0160	0.0099	0.0047	0.0529
296:Psi ^{PQ}	0.0160	0.0099	0.0047	0.0529
297:Psi ^{PQ}	0.0160	0.0099	0.0047	0.0529
298:Psi ^{PQ}	0.0160	0.0099	0.0047	0.0529
299:Psi ^{PQ}	0.0160	0.0099	0.0047	0.0529
300:Psi ^{PQ}	0.0160	0.0099	0.0047	0.0529
301:Psi ^{PQ}	0.0160	0.0099	0.0047	0.0529
302:Psi ^{PR}	0.1419	0.0208	0.1059	0.1876
303:Psi ^{PR}	0.1419	0.0208	0.1059	0.1876
304:Psi ^{PR}	0.1419	0.0208	0.1059	0.1876
305:Psi ^{PR}	0.1419	0.0208	0.1059	0.1876
306:Psi ^{PR}	0.1419	0.0208	0.1059	0.1876
307:Psi ^{PR}	0.1419	0.0208	0.1059	0.1876
308:Psi ^{PR}	0.1419	0.0208	0.1059	0.1876