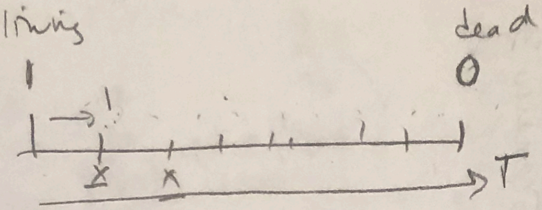
$\ldots^{T_1} + ps_1^{T_1} ps_2^{T_2} \;]$

(2)

(1)

ps = daily prob survival

T = interval length (days)



$$\underline{(1-ps)} + ps\,\underline{(1-ps)} + ps^2\,\underline{(1-ps)} + \cdots ps^{T-1}\,\underline{(1-ps)}$$

$$= \sum_{t=1}^{T} ps^{t-1}\,\underline{(1-ps)}$$

$$= (1-ps)\sum_{t=1}^{T} ps^{t-1}$$

$$\cancel{= (1-ps)(T-1)}$$

$$= (1-ps)\left(ps^{T}-1\right.$$

$$= (1-ps)\left(\frac{ps^{T}-1}{ps-1}\right)$$

$$= \cancel{(1-ps)}\left(\frac{ps^{T}-1}{-\cancel{(1-ps)}}\right)$$

$$= 1 - ps^{T}$$

if $y=0$

$p(y=0) =$

$$(1-ps)\left(\frac{ps^{T}-1}{ps-1}\right)$$

$$= 1 - ps^{T}$$

if $y=1$

$p(y=1) = ps^{T}$

2

nest 1 $y = 0$ $p(y=0) = \underbrace{\overset{\overset{10}{T_1}}{ps_{t=1}}}_{1}\ \overset{\overset{12}{T_2}}{ps_{t=2}}\ (1 - \overset{\overset{3}{T_3}}{ps_{t=3}})$

nest 2 $y = 1$ $p(y=1) = \overset{\overset{9}{T_1}}{ps_{t=1}}\ \overset{\overset{11}{T_2}}{ps_{t=2}}\ \overset{\overset{10}{T_3}}{ps_{t=3}}$

nest 3 $y = 0$ $p(y=0) = 1 - \overset{\overset{8}{T_1}}{ps_{t=1}}$

nest 4 $y = 0$ $p(y=0) = \overset{T_1}{ps_{t=1}}\ (1 - \overset{T_2}{ps_{t=2}})$

$p(y=1) = 1 - *$

intervals

for i in 1:Nnests

$y_i \sim bern(p_i)$ $p(y=1)$

i = nest i

P_i = pr next page

for j in 1: Ninterval[i]

prob. $ps[i,j] = \ldots$ logit function

$P_T[i,j] = ps[i,j]^{T[i,j]}$

$1 - ps_1^{T_1} (1 - ps_2^{T_2})$

$1 - ps_1^{T_1} + \underbrace{ps_1^{T_1} ps_2^{T_2}}$

if $y = 0$ & $\underline{Ninterval = 1}$ $\qquad p_i = p(y=1) = 1 - p(y=0)$

for all nest w/ > 1 interval

P1 $\quad \underline{p_i} = 1 - (1 - ps_i^{T_i}) = \underline{ps^{T_i}}$

$= pT[i, 1]$

for all nests w/ 1 interval

if $y = 1$

P2 $\quad \underline{p_i} = \text{prod}(\underline{pT[i, 1:Ninterval[i]]})$

if $y = 0$ & $Ninterval > 1$

P3 $\quad \underline{p_i} = 1 - \text{prod}(pT[i, 1:(Ninterval[i]-1)]) \times$
$(1 - \underline{pT[i, Ninterval[i]]})$

$p_i = (y[i] == 0) \cdot (Ninterval[i] == 1) \cdot P1 +$

$(y[i] == 1) \cdot P2 +$

$(y[i] == 0) \times (Ninterval[i] > 1) \cdot P3$