Appendix 8

Posterior mean (SD), 95% CI and prior used of the parameter explaining bonobo occurrence probability ψ as estimated by model 2 "M2". Parameter are indexed by method (SCNC: Standing Crop Nest Counts; RECCES: Reconnaissance Walk), by period (P1: period 1 [2002-2008]; P2: period 2 [2012-2018]), by sub-sector (1: Etate; 2: Iyaelima; 3: Lokofa; 4: Lomela; 5: Corridor; 6: Mondjoku; 7: Monkoto; 8: South-West; 9: Watshikengo) and by distance to a ranger patrol post (yes: patrol post within 15 km; no: patrol post further than 15 km).

Parameter description	Parameter name and indexing	Prior	Mean (SD)	95% CI
Intercept of detection probability (by method and period)	$\alpha_{SCNC,P1}$	*Normal*(0,1.4)	-1.22 (0.40)	(-2.04 – -0.54)
	$\alpha_{RECCES,P1}$		-1.59 (0.16)	(-1.90 – -1.29)
	$\alpha_{SCNC,P2}$		-0.80 (0.14)	(-1.07 – -0.51)
	$\alpha_{RECCES,P2}$		-1.71 (0.28)	(-2.27 – -1.15)
Effort control parameter (by method and period)	$\varepsilon_{SCNC,P1}$	*Normal*(0,2)	0.26 (0.08)	(0.14 – 0.46)
	$\varepsilon_{RECCES,P1}$		1.33 (0.19)	(0.99 – 1.74)
	$\varepsilon_{SCNC,P2}$		0.66 (0.12)	(0.46 – 0.95)
	$\varepsilon_{RECCES,P2}$		0.26 (0.09)	(0.11 – 0.45)
Varying intercept (by sub-sector and period) of occurrence probability	$\alpha1_{1, P1}$		-0.13 (0.89)	(-1.80 – 1.59)
	$\alpha1_{1, P2}$		0.02 (0.55)	(-1.05 – 1.10)
	$\alpha1_{2, P1}$		0.93 (0.62)	(-0.27 – 2.08)
	$\alpha1_{2, P2}$		1.30 (0.49)	(0.39 – 2.33)
	$\alpha1_{3, P1}$		-1.35 (0.64)	(-2.64 – -0.16)
	$\alpha1_{3, P2}$		-0.11 (0.55)	(-1.23 – 0.97)
	$\alpha1_{4, P2}$		0.41 (0.58)	(-0.66 – 1.58)
	$\alpha1_{4, P2}$		0.84 (0.47)	(-0.10 – 1.78)
	$\alpha1_{5, P1}$		-1.65 (0.62)	(-2.86 – -0.37)
	$\alpha1_{5, P2}$		-0.19 (0.49)	(-1.19 – 0.76)
	$\alpha1_{6, P2}$		-0.92 (0.47)	(-1.86 – -0.06)
	$\alpha1_{7, P2}$		-1.62 (0.56)	(-2.70 – -0.56)
	$\alpha1_{8, P2}$		-1.71 (0.54)	(-2.76 – -0.65)
	$\alpha1_{9, P2}$		0.05 (0.49)	(-0.84 – 1.03)
Varying slope (by sector, distance to patrol post and period) of forest cover *F*	$\beta1_{P1}$		0.62 (0.10)	(0.43 – 0.83)
	$\beta1_{P2}$		0.87 (0.08)	(0.72 – 1.02)
Varying slope (by sector, distance to patrol post and period) of distance to cities *C*	$\beta2_{1, no, P1}$	*Normal*(0,0.5)	0.15 (0.50)	(-0.86 – 1.12)
	$\beta2_{1, no, P2}$		0.13 (0.45)	(-0.70 – 1.02)
	$\beta2_{1, yes, P1}$		-0.45 (0.44)	(-1.34 – 0.38)
	$\beta2_{1, yes, P2}$		-0.10 (0.44)	(-0.89 – 0.81)
	$\beta2_{2, no, P1}$		0.77 (0.28)	(0.25 – 1.30)
	$\beta2_{2, no, P2}$		-0.29 (0.25)	(-0.78 – 0.17)
	$\beta2_{2, yes, P1}$		0.13 (0.24)	(-0.34 – 0.59)
	$\beta2_{2, yes, P2}$		-0.03 (0.26)	(-0.55 – 0.45)
	$\beta2_{3, no, P1}$		0.04 (0.36)	(-0.67 – 0.74)
	$\beta2_{3, no, P2}$		-0.77 (0.38)	(-1.53 – -0.06)
	$\beta2_{3, yes, P1}$		0.22 (0.37)	(-0.49 – 0.96)
	$\beta2_{3, yes, P2}$		0.37 (0.46)	(-0.52 – 1.26)
	$\beta2_{4, no, P1}$		-0.09 (0.32)	(-0.68 – 0.54)
	$\beta2_{4, no, P2}$		0.38 (0.36)	(-0.38 – 1.07)
	$\beta2_{4, yes, P1}$		0.00 (0.47)	(-0.87 – 0.93)
	$\beta2_{4, yes, P2}$		-0.58 (0.41)	(-1.40 – 0.16)
	$\beta2_{5, no, P1}$		0.28 (0.33)	(-0.33 – 0.94)
	$\beta2_{5, no, P2}$		0.17 (0.24)	(-0.30 – 0.66)
	$\beta2_{5, yes, P1}$		0.20 (0.34)	(-0.47 – 0.86)

	$\beta 2_{5,\text{ yes, P2}}$	-0.24 (0.32)	(-0.88 – 0.37)
	$\beta 2_{6,\text{ no, P2}}$	-0.08 (0.21)	(-0.50 – 0.34)
	$\beta 2_{6,\text{ yes, P2}}$	-1.09 (0.34)	(-1.75 – -0.42)
	$\beta 2_{7,\text{ no, P2}}$	0.63 (0.30)	(0.05 – 1.19)
	$\beta 2_{7,\text{ no, P2}}$	-0.46 (0.40)	(-1.25 – 0.29)
	$\beta 2_{8,\text{ no, P2}}$	-0.93 (0.29)	(-1.49 – -0.40)
	$\beta 2_{8,\text{ yes, P2}}$	-0.05 (0.33)	(-0.71 – 0.56)
	$\beta 2_{9,\text{ no, P2}}$	-0.16 (0.20)	(-0.56 – 0.22)
	$\beta 2_{9,\text{ no, P2}}$	-0.22 (0.43)	(-1.08 – 0.59)
Varying slope (by sector, distance to patrol post and period) of distance to villages *V*	$\beta 3_{1,\text{ no, P1}}$	-0.01 (0.48)	(-0.98 – 0.9)
	$\beta 3_{1,\text{ no, P2}}$	0.06 (0.46)	(-0.84 – 0.92)
	$\beta 3_{1,\text{ yes, P1}}$	-0.39 (0.42)	(-1.24 – 0.34)
	$\beta 3_{1,\text{ yes, P2}}$	-0.62 (0.41)	(-1.43 – 0.14)
	$\beta 3_{2,\text{ no, P1}}$	0.24 (0.27)	(-0.29 – 0.79)
	$\beta 3_{2,\text{ no, P2}}$	-0.48 (0.31)	(-1.07 – 0.16)
	$\beta 3_{2,\text{ yes, P1}}$	0.35 (0.30)	(-0.25 – 0.95)
	$\beta 3_{2,\text{ yes, P2}}$	0.57 (0.36)	(-0.10 – 1.28)
	$\beta 3_{3,\text{ no, P1}}$	0.34 (0.34)	(-0.34 – 1.00)
	$\beta 3_{3,\text{ no, P2}}$	0.27 (0.41)	(-0.49 – 1.05)
	$\beta 3_{3,\text{ yes, P1}}$	-0.10 (0.35)	(-0.77 – 0.57)
	$\beta 3_{3,\text{ yes, P2}}$	-0.37 (0.44)	(-1.16 – 0.49)
	$\beta 3_{4,\text{ no, P1}}$	1.43 (0.29)	(0.89 – 2.00)
	$\beta 3_{4,\text{ no, P2}}$	0.12 (0.27)	(-0.39 – 0.65)
	$\beta 3_{4,\text{ yes, P1}}$	-0.11 (0.37)	(-0.82 – 0.63)
	$\beta 3_{4,\text{ yes, P2}}$	-0.33 (0.31)	(-0.92 – 0.26)
	$\beta 3_{5,\text{ no, P1}}$	0.65 (0.34)	(0.00 – 1.3)
	$\beta 3_{5,\text{ no, P2}}$	1.18 (0.26)	(0.68 – 1.66)
	$\beta 3_{5,\text{ yes, P1}}$	1.33 (0.35)	(0.65 – 2.01)
	$\beta 3_{5,\text{ yes, P2}}$	1.00 (0.31)	(0.44 – 1.64)
	$\beta 3_{6,\text{ no, P2}}$	-0.07 (0.17)	(-0.41 – 0.27)
	$\beta 3_{6,\text{ yes, P2}}$	0.61 (0.34)	(-0.04 – 1.26)
	$\beta 3_{7,\text{ no, P2}}$	-0.01 (0.36)	(-0.70 – 0.72)
	$\beta 3_{7,\text{ no, P2}}$	0.21 (0.47)	(-0.68 – 1.17)
	$\beta 3_{8,\text{ no, P2}}$	0.69 (0.24)	(0.25 – 1.16)
	$\beta 3_{8,\text{ yes, P2}}$	-0.40 (0.37)	(-1.16 – 0.28)
	$\beta 3_{9,\text{ no, P2}}$	-0.23 (0.16)	(-0.52 – 0.10)
	$\beta 3_{9,\text{ no, P2}}$	-0.48 (0.30)	(-1.08 – 0.08)
Varying slope (by sector, distance to patrol post and period) of distance to rivers *R*	$\beta 4_{1,\text{ no, P1}}$	0.14 (0.50)	(-0.88 – 1.08)
	$\beta 4_{1,\text{ no, P2}}$	0.16 (0.46)	(-0.73 – 1.02)
	$\beta 4_{1,\text{ yes, P1}}$	0.00 (0.48)	(-0.92 – 0.96)
	$\beta 4_{1,\text{ yes, P2}}$	0.44 (0.38)	(-0.34 – 1.17)
	$\beta 4_{2,\text{ no, P1}}$	0.64 (0.23)	(0.20 – 1.11)
	$\beta 4_{2,\text{ no, P2}}$	0.19 (0.21)	(-0.21 – 0.60)
	$\beta 4_{2,\text{ yes, P1}}$	0.75 (0.25)	(0.28 – 1.28)
	$\beta 4_{2,\text{ yes, P2}}$	-0.28 (0.24)	(-0.77 – 0.19)
	$\beta 4_{3,\text{ no, P1}}$	0.50 (0.29)	(-0.08 – 1.07)
	$\beta 4_{3,\text{ no, P2}}$	0.31 (0.34)	(-0.32 – 1.01)
	$\beta 4_{3,\text{ yes, P1}}$	0.57 (0.27)	(0.06 – 1.08)
	$\beta 4_{3,\text{ yes, P2}}$	-0.05 (0.37)	(-0.75 – 0.73)
	$\beta 4_{4,\text{ no, P1}}$	0.51 (0.21)	(0.12 – 0.98)
	$\beta 4_{4,\text{ no, P2}}$	-0.01 (0.17)	(-0.36 – 0.33)
	$\beta 4_{4,\text{ yes, P1}}$	0.41 (0.34)	(-0.27 – 1.08)
	$\beta 4_{4,\text{ yes, P2}}$	0.13 (0.27)	(-0.40 – 0.67)
	$\beta 4_{5,\text{ no, P1}}$	-0.15 (0.23)	(-0.60 – 0.31)
	$\beta 4_{5,\text{ no, P2}}$	0.56 (0.16)	(0.24 – 0.89)

	$\beta4_{5, yes, P1}$		-0.39 (0.29)	(-0.98 – 0.18)
	$\beta4_{5, yes, P2}$		0.41 (0.29)	(-0.14 – 0.96)
	$\beta4_{6, no, P2}$		-0.06 (0.13)	(-0.33 – 0.20)
	$\beta4_{6, yes, P2}$		0.06 (0.42)	(-0.73 – 0.89)
	$\beta4_{7, no, P2}$		0.00 (0.29)	(-0.57 – 0.55)
	$\beta4_{7, no, P2}$		0.07 (0.48)	(-0.87 – 1.02)
	$\beta4_{8, no, P2}$		-0.32 (0.26)	(-0.83 – 0.16)
	$\beta4_{8, yes, P2}$		0.42 (0.35)	(-0.28 – 1.12)
	$\beta4_{9, no, P2}$		-0.12 (0.11)	(-0.34 – 0.09)
	$\beta4_{9, yes, P2}$		0.01 (0.30)	(-0.57 – 0.61)
Varying intercept (by period) of proximity to a patrol post *K*	$\beta5_{no, P1}$	*Normal*(0,1.4)	-1.30 (0.57)	(-2.39 – -0.20)
	$\beta5_{yes, P1}$		-0.66 (0.60)	(-1.77 – 0.61)
	$\beta5_{no, P2}$		-1.43 (0.41)	(-2.26 – -0.63)
	$\beta5_{yes, P2}$		-0.91 (0.42)	(-1.73 – -0.08)