

Appendix 11

Utility values calculated in Bayesian decision networks. Twenty owners of large, forested properties (at least 20 ha in total area with at least 4 ha of forest) in Macon County, North Carolina, participated in a structured decision making (SDM) process consisting of two series of workshops (a = Series 1, b = Series 2) with ten landowners each. In each series, landowners evaluated what they can do to their forest to maximize the achievement of their land use objectives. Utility values indicate the relative suitability of decision options by combining the probability of outcomes and the landowners' satisfaction with outcomes. Utility values were calculated using all combinations of objective weights and attribute scores, resulting in four scenarios for Series 1 and 24 scenarios for Series 2 (Appendices 5 and 6). Scenario 1 uses the mean objective weight and mean attribute score combinations. Personal use of the forest could involve harvesting firewood or using recreational trails. The three commercial harvesting methods (thinning, group selection, and shelterwood) would occur through the Present-Use Value program (Appendix 7). The no modification, personal use, and commercial harvesting decision options could also be combined with having a conservation easement (Appendix 7).

Table A11.1

a)

Decision options	Scenario 1	Scenario 2	Scenario 3	Scenario 4
No modification	65.39	81.99	56.88	76.16
Personal use	63.50	80.55	54.67	74.72
Thinning	72.62	84.09	62.61	79.68
Group selection	71.61	82.44	60.94	78.66
Shelterwood	72.84	82.38	62.25	79.39
Easement with no modification	65.39	81.99	56.88	76.16
Easement with personal use	63.76	80.74	54.85	74.87
Easement with thinning	70.14	82.97	60.39	78.31
Easement with group selection	69.88	81.63	59.67	77.89
Easement with shelterwood	71.62	81.79	61.44	78.90
Sell 1 ha, remainder personal use	68.21	77.70	58.21	76.32

b)

Decision options	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
No modification	62.05	37.30	52.42	49.14	48.27
Personal use	58.44	34.71	48.76	46.20	46.29
Thinning	63.40	38.34	51.52	48.25	53.00
Group selection	59.20	34.69	45.67	43.47	51.34
Shelterwood	57.96	33.82	43.82	41.97	51.45
Easement with no modification	62.05	37.30	52.42	49.14	48.27
Easement with personal use	58.44	34.71	48.76	46.20	46.29
Easement with thinning	61.81	37.18	50.44	47.42	51.15
Easement with group selection	57.84	33.84	44.85	42.80	49.76
Easement with shelterwood	56.91	33.19	43.19	41.46	50.22
Sell 1 ha, remainder personal use	54.61	33.00	42.08	39.67	51.00

Decision options	Scenario 6	Scenario 7	Scenario 8	Scenario 9	Scenario 10
No modification	54.60	59.66	64.34	50.18	63.23
Personal use	52.08	56.41	61.40	47.16	59.59
Thinning	57.62	60.36	63.43	61.69	70.12
Group selection	54.89	56.05	59.31	60.07	66.79
Shelterwood	54.76	54.85	58.05	61.21	66.23
Easement with no modification	54.60	59.66	64.34	50.18	63.23
Easement with personal use	52.08	56.41	61.40	47.16	59.59
Easement with thinning	56.02	59.08	62.62	57.80	67.11
Easement with group selection	53.76	55.12	58.71	56.75	64.02
Easement with shelterwood	53.94	54.17	57.60	58.65	64.04
Sell 1 ha, remainder personal use	53.32	53.14	54.94	60.64	63.72

Decision options	Scenario 11	Scenario 12	Scenario 13	Scenario 14	Scenario 15
No modification	70.49	69.60	44.82	59.88	67.22
Personal use	65.85	65.42	41.91	56.28	62.57
Thinning	73.03	70.00	55.88	61.86	66.36
Group selection	67.19	64.48	54.26	57.60	59.85
Shelterwood	65.15	62.69	55.28	56.57	57.51
Easement with no modification	70.49	69.60	44.82	59.88	67.22
Easement with personal use	65.85	65.42	41.91	56.28	62.57
Easement with thinning	70.78	68.43	52.13	60.13	64.98
Easement with group selection	65.11	63.06	51.05	56.24	58.74
Easement with shelterwood	63.50	61.57	52.80	55.56	56.66
Sell 1 ha, remainder personal use	62.33	58.47	54.68	54.49	54.91

Decision options	Scenario 16	Scenario 17	Scenario 18	Scenario 19	Scenario 20
No modification	65.87	46.30	51.32	61.16	61.61
Personal use	61.66	43.70	47.92	56.58	57.55
Thinning	64.37	56.65	57.64	63.56	61.58
Group selection	58.46	55.17	54.35	57.69	56.07
Shelterwood	56.49	55.95	55.38	56.86	54.78
Easement with no modification	65.87	46.30	51.32	61.16	61.61
Easement with personal use	61.66	43.70	47.92	56.58	57.55
Easement with thinning	63.26	53.18	55.01	61.46	60.20
Easement with group selection	57.55	52.15	52.95	56.49	55.18
Easement with shelterwood	55.80	53.60	54.52	56.08	54.17
Sell 1 ha, remainder personal use	52.21	55.26	54.65	55.18	51.11

Decision options	Scenario 21	Scenario 22	Scenario 23	Scenario 24
No modification	49.32	56.64	60.69	41.05
Personal use	46.87	53.48	56.73	38.45
Thinning	59.01	65.89	65.21	50.61
Group selection	57.80	63.45	60.90	48.98
Shelterwood	58.81	63.86	59.80	49.61
Easement with no modification	49.32	56.64	60.69	41.05
Easement with personal use	46.87	53.48	56.73	38.45
Easement with thinning	55.77	62.34	62.73	47.34
Easement with group selection	55.03	60.59	58.76	46.13
Easement with shelterwood	56.68	61.65	58.15	47.40
Sell 1 ha, remainder personal use	58.37	61.90	57.72	48.92