

Appendix 1

Table A1. A comparison of classification based on using the Bunnefeld et al. (2011) method with our visual assignment. Both methods use the same nonlinear model as a basis. The Bunnefeld method uses AIC to separate models, while the visual assignment approach is based directly on nonoverlapping seasonal ranges as the definition of migration.

Bunnefeld method		Visual assignment (used)			
		ambiguous	stationary, fall excursion	migratory	stationary
	asymmetric migration	8		59	3
	migration	7	2	14	7
	dispersal	6			1
	random walk	11		2	19
	stationary				2

Table A2. Results from model selection of factors explaining variation in migration (0/1) of female red deer in Norway with mixed model logistic regression with municipality as random term. All spatial terms are measured at the municipality scale. x = factor included in model. AIC = Akaike information criterion; Δ AIC/ Δ BIC = difference in AIC/BIC value for the given model in that row and the most parsimonious model (lowest AIC/BIC). AICw = AIC weights.

Density	Topographic diversity	Proportion of high altitude habitat	Distance from the coast	Latitude	island/mainland	Year (as factor)	BIC	Δ BIC	AIC	Δ AIC	AICw
x	x						132.700	0.000	122.000	0.000	0.456
x	x	x					137.100	4.400	123.600	1.600	0.205
x	x	x	x				139.800	7.100	123.700	1.700	0.195
x	x	x	x	x			144.500	11.800	125.700	3.700	0.072
x	x	x	x	x	x		148.700	16.000	127.200	5.200	0.034
	x						135.500	2.800	127.400	5.400	0.031
x							138.400	5.700	130.300	8.300	0.007
x	x	x	x	x	x	x	173.700	41.000	133.300	11.300	0.002

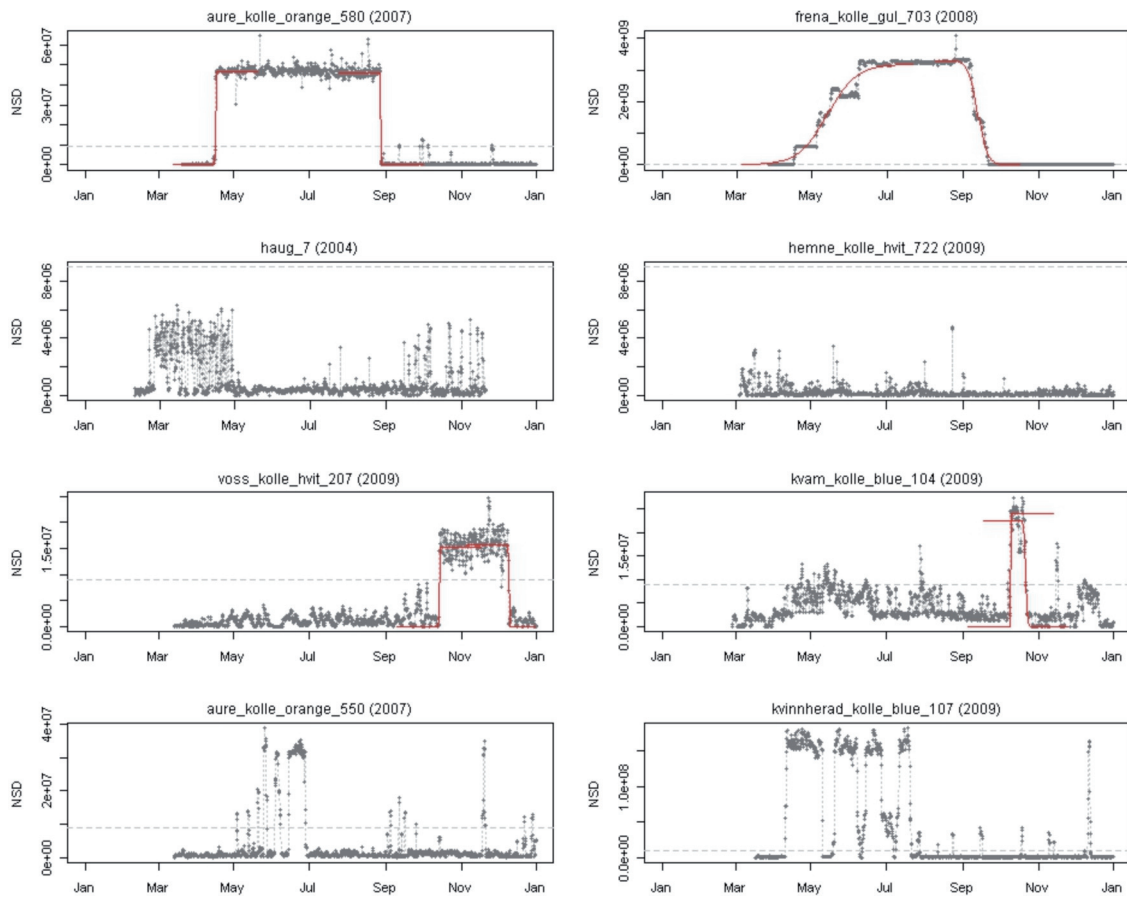


Figure. A1. Examples of individual red deer NSD patterns assigned to 4 different space use categories: migratory (row 1), stationary (row 2), stationary with fall excursion (row 3) and ambiguous or irregular (row 4). Individual ID and the year are shown above each graph. Red lines show the logistic functions fitted to the migrations away from and returning to the winter range. As a reference, the horizontal grey dotted line indicates a distance of 3 km from the starting location.

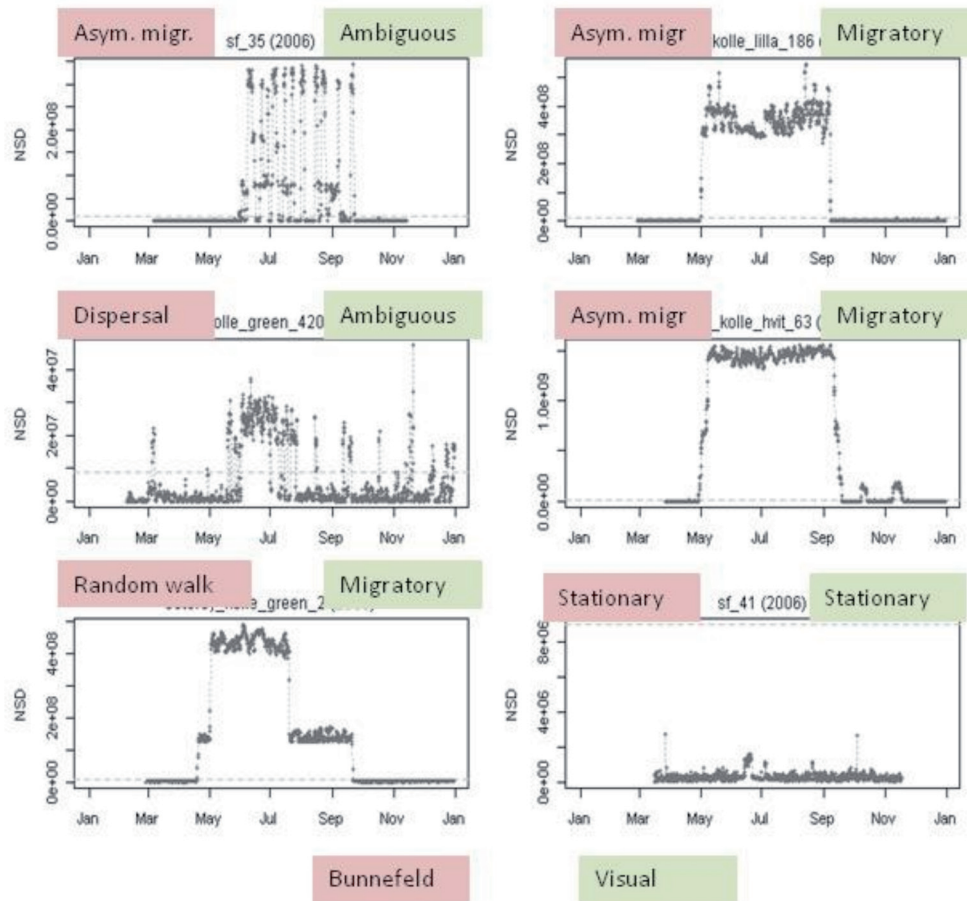


Figure. A2. The visual assignment used to enhance the Bunnefeld et al. (2011) method identify the 3 cases in the left column differently than visual assignment, while the three cases in the right column are examples of clear cases from both methods.