Supporting information for the paper
Ullerud et al. “Consistency in land cover mapping: influence of fieldworkers, spatial scale and classification system.” *Applied Vegetation Science.*

Appendix S2. Details of the NiN system, and the update from the preliminary system to the revised system.

Nature in Norway (NiN) is a classification system made and owned by the Norwegian Biodiversity Information Centre for the Norwegian Government with the purpose of making one common system that can be used by all sectors involved in management of nature in Norway. Version 1 of the system was published in 2009, and Version 2 was published in 2015. That year the Norwegian Parliament sanctioned a bill which states that the NiN system should be the base for all publicly funded mapping of landscapes, ecosystems and microhabitats in Norway.

The NiN system is rooted in the theory of gradient analysis (e.g. Whittaker, 1967). At the ecosystem level the NiN system has a set of standard principles and criteria that are used to divide naturally continuous nature into 7 major type groups and further into 92 major types. Within each of these major types, gradient analysis is used to identify the most important environmental complex gradients that drive species compositional turnover. These environmental complex gradients are then used to divide the major types into pieces (basic types) that each represents a species turnover of approximately 25 % (Halvorsen et al., 2015). A total of 741 basic types are identified in the NiN system.

For applied mapping with the NiN system, the types are aggregated to five different scale specific mapping units. Currently such units are only published for the terrestrial major type groups at ecosystem level (Bryn & Halvorsen, 2015). There are 443 basic types within the terrestrial major type groups, and for mapping at a scale of 1:500 all basic types are used as mapping units. For mapping at the scale of 1:5,000 the basic types that are ecologically related and typically vary at a small spatial scale are merged to create mapping units.

As the mapping units were published in 2015, they could not be used for fieldwork in 2014, but the major types and the environmental complex gradients were ready for use (Table 1). Therefore, instead of mapping units directly, the delineated polygons were, in a standardized way, assigned positions within pieces of the environmental complex gradients. These positions were subsequently converted into mapping units in 2015 (Table 2). The conversion implied merging of neighboring polygons that were assigned the same mapping unit to a single polygon; otherwise, no delineations were changed. In this study the major types is termed ‘groups’ and the mapping units termed ‘units’. Only terrestrial nature, not permanently covered in snow and ice, was studied, thus 59 groups and 277 units were included.

The mappers made the following preliminary mapping guidelines before fieldwork:

General rules
Minimum size 100 m2
Minimum polygon width 5 m

How to handle variation nature variations smaller than the minimum size—two solutions:
1 Combined element polygons (Used to make note of nature types with a cover smaller than minimum size and larger than 10 m^2)
2 Mosaic (Used when two or three nature types repeatedly occur together in patches smaller than the minimum area)

Coverage of trees
Mapped for all polygons
Woody plants higher than 2 m are defined as trees. Any area with tree cover greater than 10% is considered forest. A change in tree cover does not mean there should be a new polygon.

Table 1. The preliminary system from 2014 with groups and environmental complex gradients.

Group code and name	**Environmental complex gradients (name and abbreviation) used for each group and the number of positions along them**		
T1 Bare rock	Lime richness Exposure for drought	KA UE	5 4
T3 Mountain heaths	Lime richness Risk of severe drought	KA UF	4 3
T4 Forest	Lime richness Risk of severe drought Spring water influence	KA UF KI	4 4 2
T7 Snow beds	Lime richness Duration of snow cover	KA SV	5 4
T14 Ridges	Vulnerability to wind Lime richness	VI KA	2 2
T13 Scree	Lime richness Vulnerability to landslides Exposure for drought	KA S1 UE	3 3 2
T18 Open flood plain	Dominating grainsize Lime richness	S1 KA	3 2
T27 Boulder areas	Duration of snow cover Lime richness	SV KA	3 2
V1 Mire	Lime richness Mire gradient	KA MF	5 2
V2 Wetland forest	Lime richness	KA	3
V3 Ombrotrophic mire	Mire gradient	MF	2
V4 Spring water	Lime richness Spring water influence	KA KI	3 2

Table 2. The translation of group and positions along gradients to NiN units.

Group	Registered positions along environmental complex gradients			NiN unit code	NiN unit name
T1	KA1	UE3		T1-C2	Drought-prone lime-poor rock
	KA1	UE4			
T3	KA1	UF1		T3-C1	Lime-poor lee side
	KA1	UF2		T3-C2	Lime-poor mountain heathlands
	KA1	UF3		T3-C3	Lime-poor mountain lichen heathlands
	KA2	UF1		T3-C4	Intermediate lee side
	KA2	UF2		T3-C5	Intermediate mountain heathlands
T4	KA1	UF1	KI1	T4-C1	Bilberry forest
	KA2	UF1	KI1	T4-C2	Sparse low-herb forest
	KA1	UF2	KI1	T4-C5	Heather-bilberry forest
	KA2	UF2	KI1	T4-C6	Sparse low-herb heather-bilberry forest
	KA1	UF3	KI1	T4-C9	Heather forest
	KA2	UF1	KI2	T4-C17	Fern forest
	KA3	UF1	KI2	T4-C18	Tall-herb forest
T7	KA1	SV1		T7-C1	Very lime-poor moderate snowbed
T13	KA1	S1	UV2	T13-C2	Lime-poor scree
T14	VI1	KA1		T14-C1	Lime-poor and intermediate ridge
T18	S1 1	KA2		T18-C3	Open flood plain on lime-rich coarse sand and rock
T27	SV1	KA1		T27-C1	Lime-poor and intermediate boulder areas
V1	KA1	MF2		V1-C1	Very lime-poor mire
	KA2	MF2		V1-C2	Fairly lime-poor mire
	KA1	MF1		V1-C5	Very lime-poor mire edge
	KA2	MF1		V1-C6	Lime-poor mire edge
	KA3	MF1		V1-C7	Intermediate mire edge
V2	KA1			V2-C1	Lime-poor wetland forest
	KA2			V2-C2	Intermediate wetland forest
	KA3			V2-C3	Lime-rich wetland forest
V3	MF2			V3-C1	Ombrotrophic mire
	MF1			V3-C2	Ombrotrophic mire edge
V4	KA1	KI1		V4-C1	Fairly lime-poor and intermediate spring water

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