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TWINS PAN

Ruscus PCA
Asperula odorata, Viola odorata, Hypericum androsaemum, hyrcanus
Oplismenus undulatifolia, Dryopteris filix-mass
Rumex sanguineus, Solanum kiseritzcki, Mespilus germanica Cyclamen caucasicum

TWINS PAN

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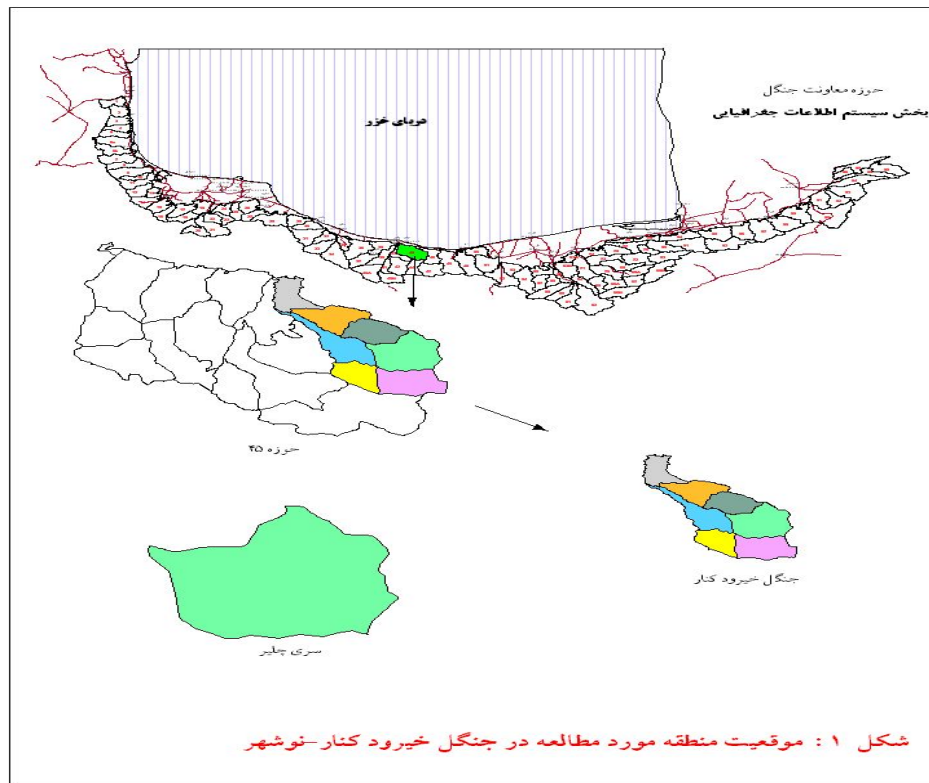
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Green
Klinka

Braun - Blanquet
Elenberg
Rogister
Noirfalis

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TWINSpan
Dombois - Ellenberg
Pseudospecies

Minimal area

SCORE		()	()	Cut Level
R			/	
+		/	/	
	>	/	/	/
a				
b				
			/	
			/	
			/	

TWINSpan () TWINSpan ()

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Pc – Ordwin TWINSpan

Principle Components Analysis (PCA)

Hierarchical
Eigen value

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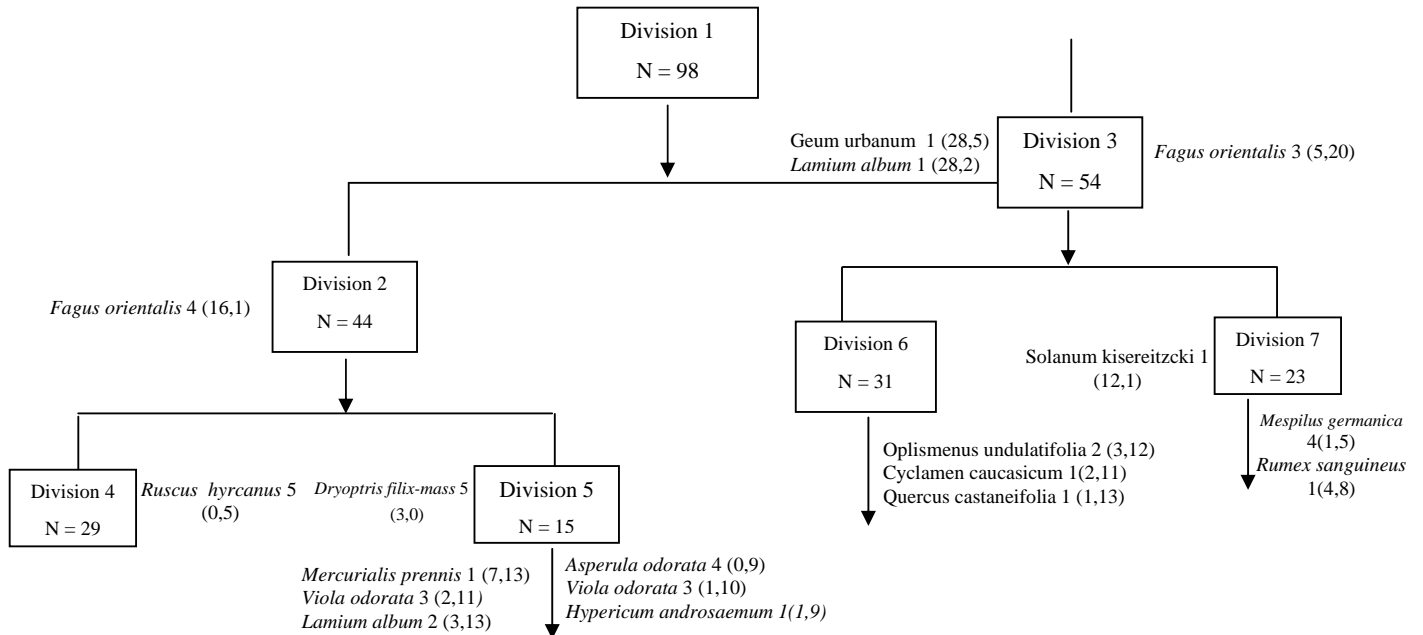
Geum Lamium album, Fagus orientalis urbanum

Ruscus hyrcanus .()

Asperula () (Positive or Negative Groups)
odorata, Viola odorata, Hypericum androsaemum, Dryoptris filix-mass

Carex sylvaticas,
Brachypodium sylvaticum, Fragaria vesca, Mespilus germanica
Oplismenus undulatifolia,
Cyclamen caucasicum, Quercus castaneifolia
Mespilus ,
Rumex sanguineus, Solanum germanica kisereitzcki
Fagus orientalis, Mercurialis prennis, Viola odorata, Lamium album,

Carex sylvatica 2 (7,52)
Brachypodium sylvaticum 3 (1,46)
Fragaria vesca 2 (2,37)
Mespilus germanica 1 (7,44)
Crataegus microphylla 1 (7,42)



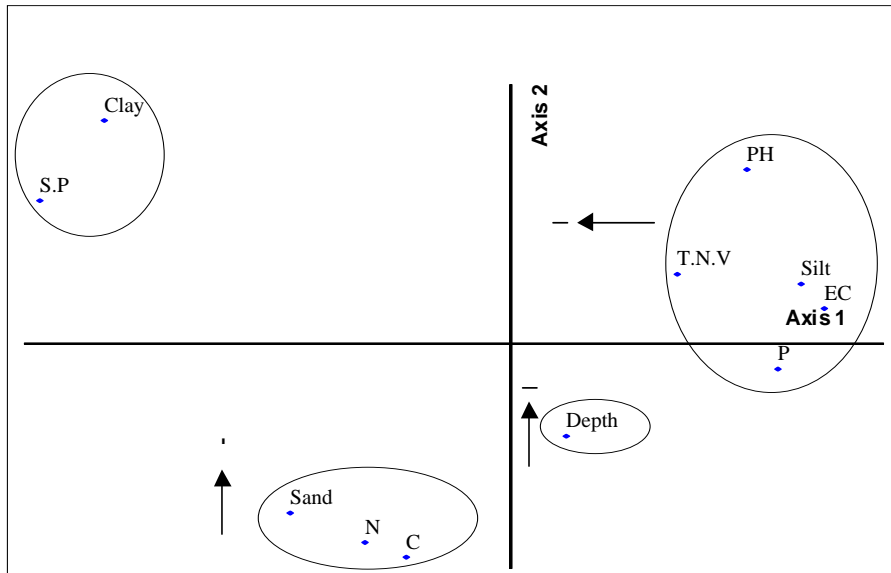
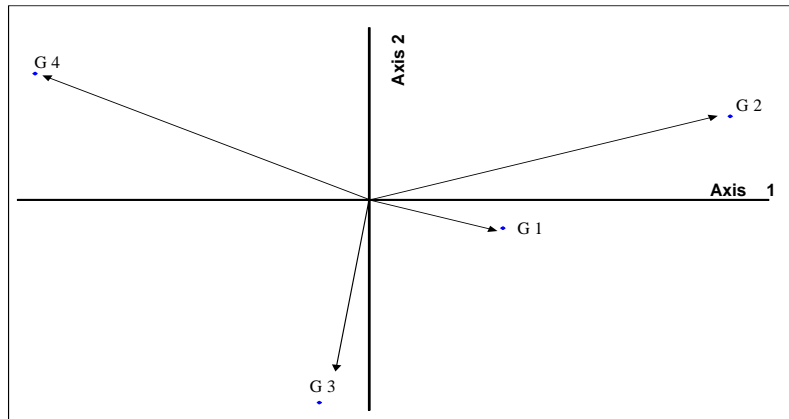
PCA

Clay SP

Sand C, N

pH, T.N.V, P,
SP Clay

Silt



(pH)

N, C, P

(.)

PCA

Ruscus hyrcanus

T.N.V, pH, P, C N,

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Relationship between Plant Ecological Groups and Stand Edaphical Conditions (Case study, Kheiroudkenar Forest – Noshahr)

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Abstract

In a natural ecosystem, vegetation elements of similar ecological needs constitute ecological groups. In fact, through distinguishing different ecological groups, the differences among environmental variables in various sites can be realized. The aim of this research, done in University of Tehran 's educational – research forest located in Kheiroudkenar forest – Noshahr, was to explore ecological groups and their relationship with soil characteristics. In order to determine plot (releve) area, minimal area method was employed. To study vegetation cover, 151 plots of 400 m² area were collected according to Braun-Blanquet combinational method. Following data collection, plant community was separated and classified using Two Way Indicator Species Analysis (TWINSPAN), differential species being indicated in each group. Based on ecological groups and the presence of differential species, 36 points were assigned to introduce physical and chemical characteristics of soil, and the resulting sample were analyzed. In order to analyze soil characteristics in relation to vegetation cover changes, multi – variable analysis, e.g. principal components analysis (PCA) was exploited. The results illustrated that the first ecological group, namely *Ruscus hyrcanus*, and second group including *Asperula odorata*, *Viola odorata*, *Hypericum androsaemum*, *Dryopteris filix-mass*, were related to soil chemical properties. The third group with *Oplismenus undulatifolia*, *Cyclamen caucasicum*, along with the fourth group, including *Mespilus germanica*, *Rumex sanguineus*, *Solanum kisereitzeki* were mainly in relation to physical properties. Also, it was found that soil fertility in the first and second groups is more suitable and higher than in the others.

Keywords: Plant ecological groups, Principal components analysis (PCA), TWINSPAN, Stand conditions

