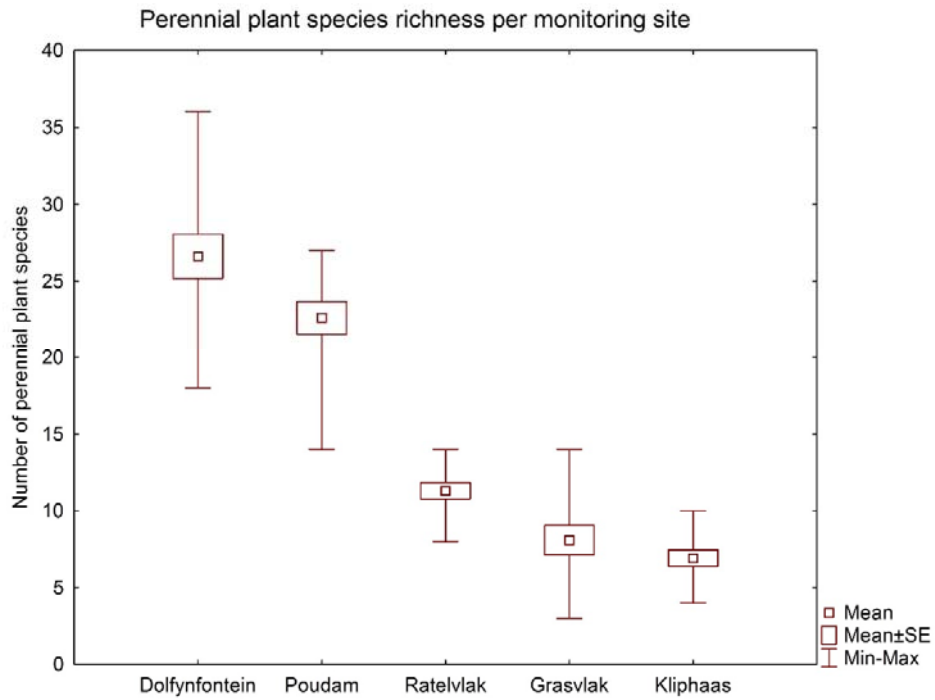


## Supplementary A

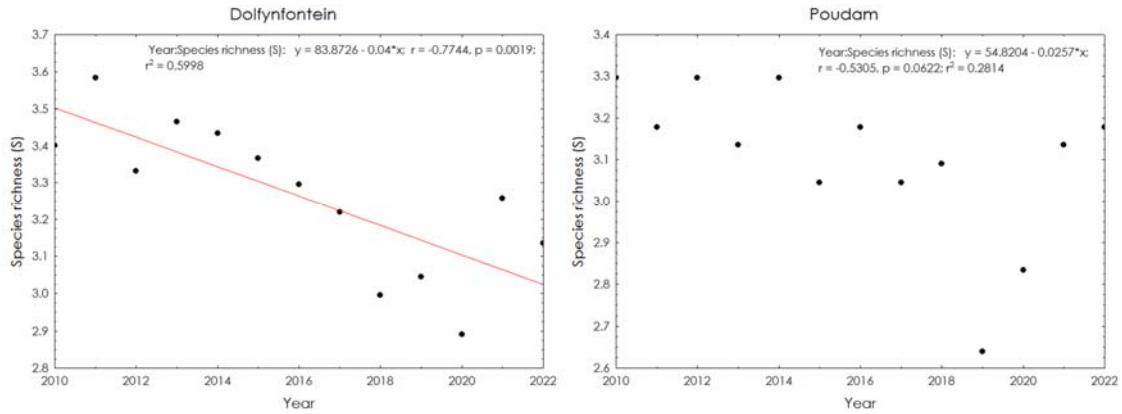
Perennial plant species richness over the study period per monitoring site.



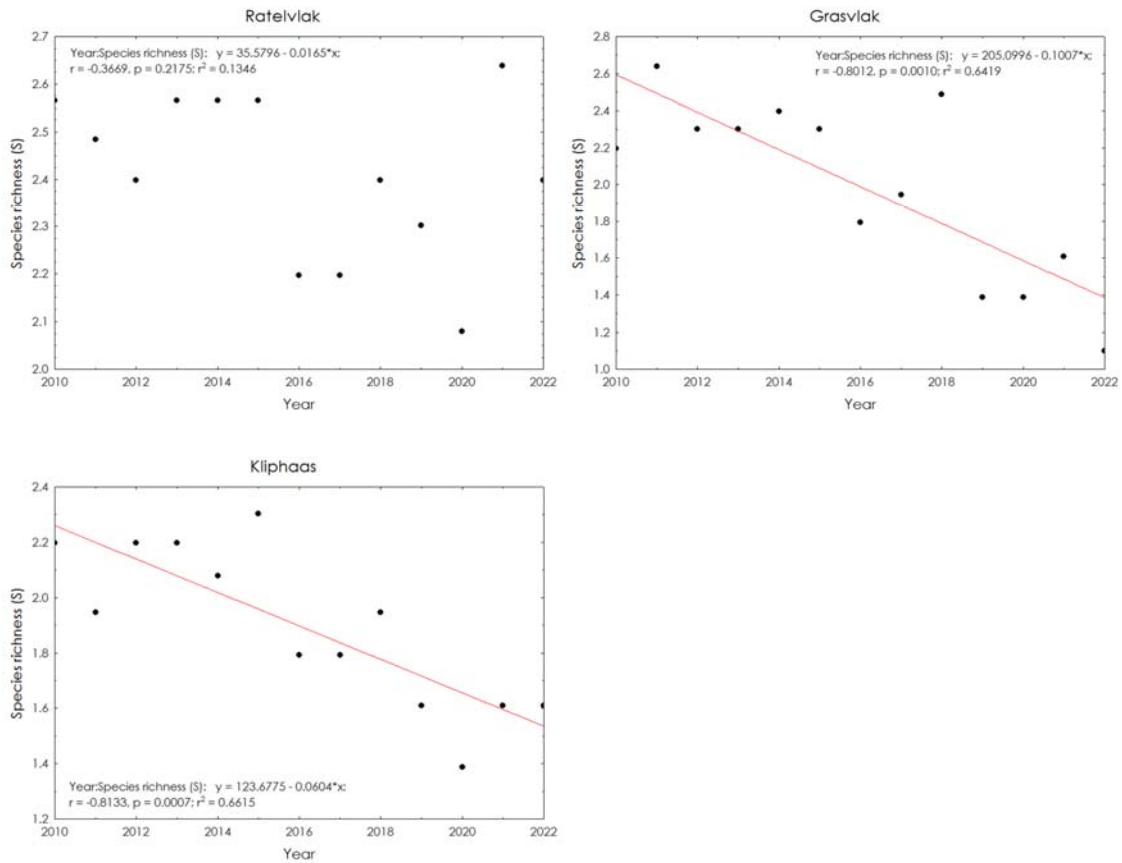
**Figure 1** Perennial plant species richness over the study period per monitoring site. Dolfynfontein and Poudam are located in mountainous habitat and Ratevlak, Grasvlak and Kliphaas in plains habitat.

## Supplementary B

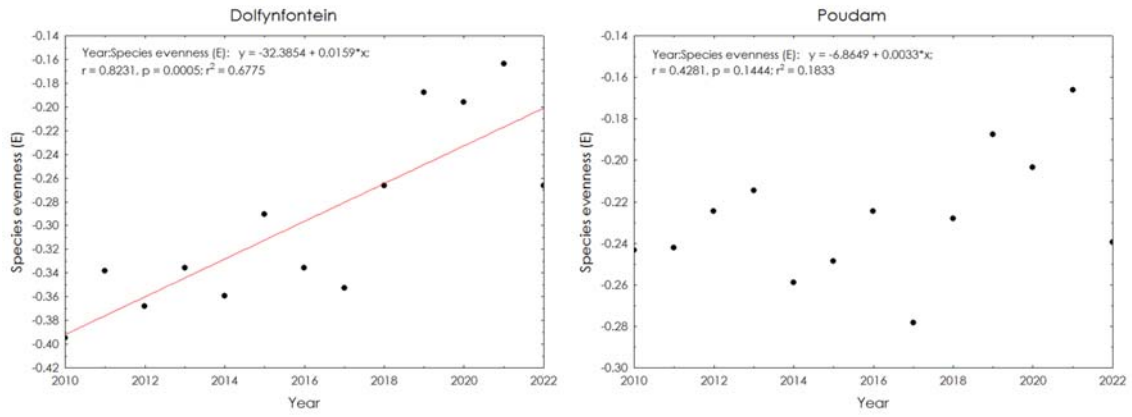
Trends in perennial plant diversity parameters over time per habitat. Natural logarithm (ln) transformations were applied to all diversity variables.



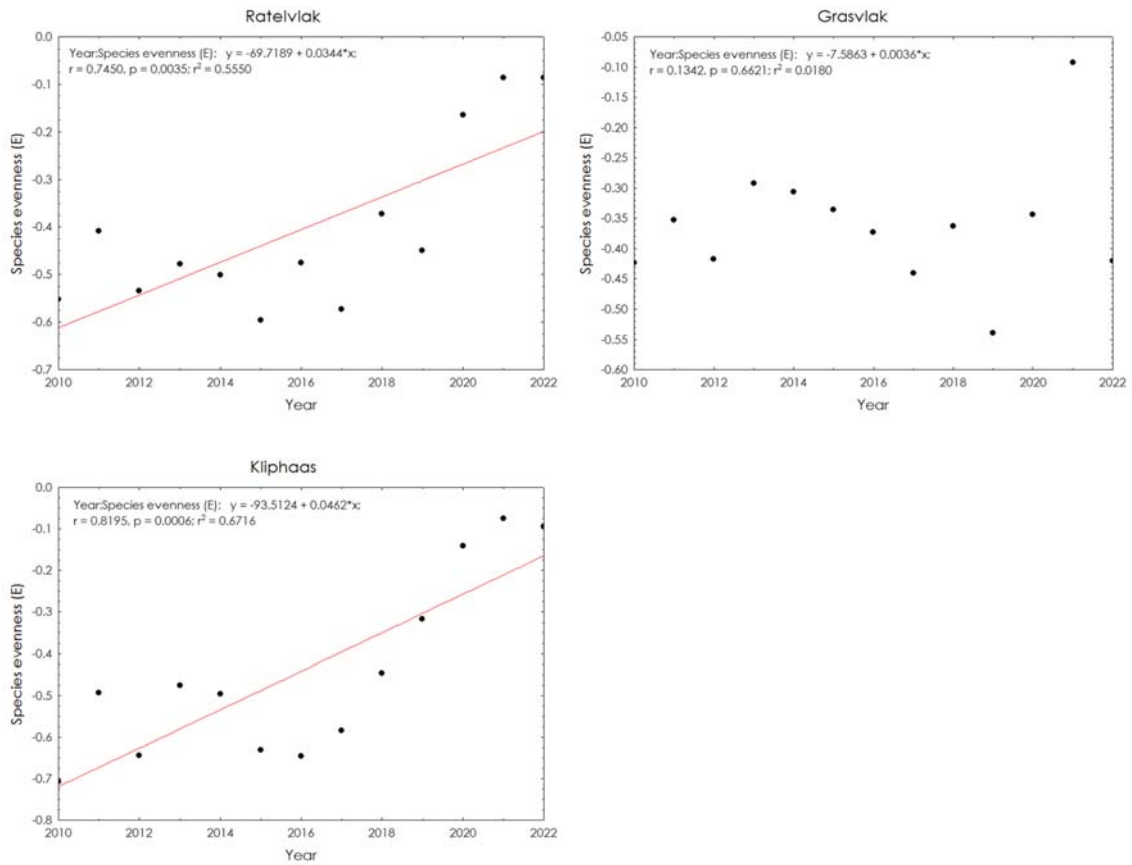
**Figure 2** Perennial plant species richness change in the two mountainous habitat monitoring sites.



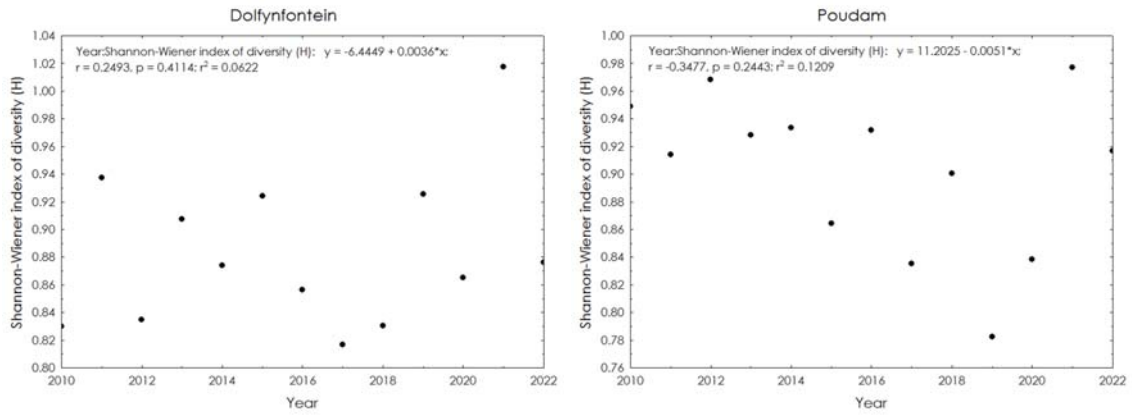
**Figure 3** Perennial plant species richness change in the three plains habitat monitoring sites.



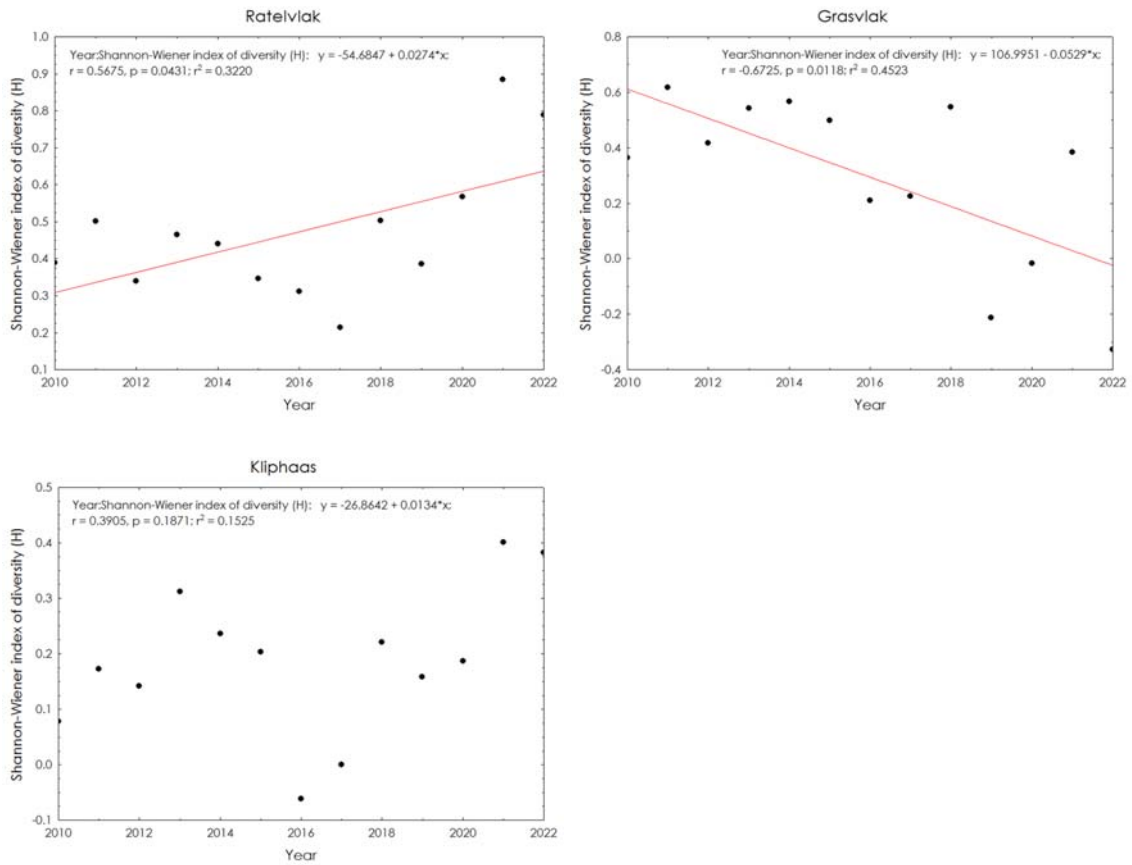
**Figure 4** Perennial plant species evenness change in the two mountainous habitat monitoring sites.



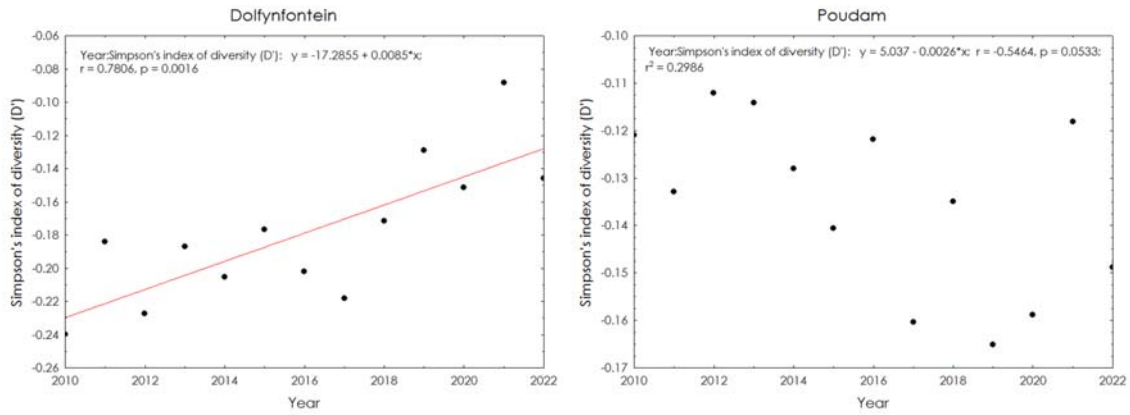
**Figure 5** Perennial plant species evenness change in the three plains habitat monitoring sites.



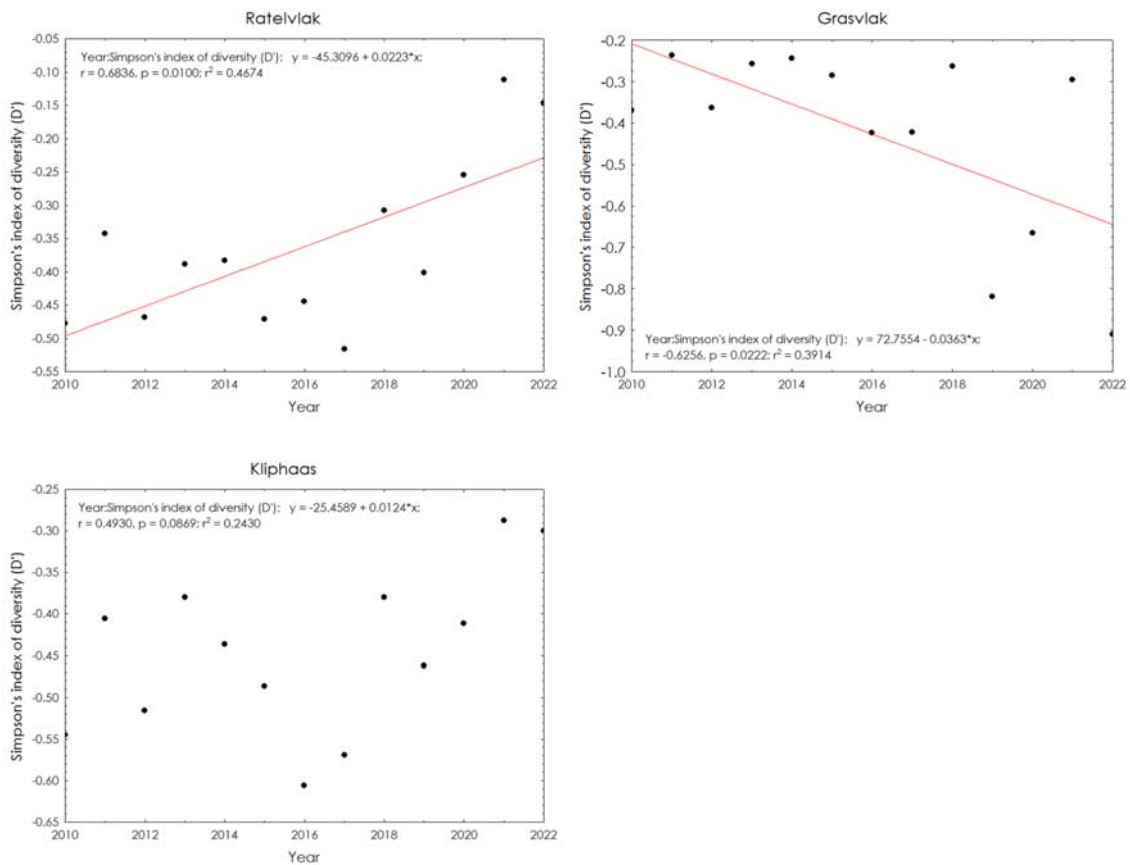
**Figure 6** Perennial plant Shannon-Wiener index of diversity change in the two mountainous habitat monitoring sites.



**Figure 7** Perennial plant Shannon-Wiener index of diversity change in the three plains habitat monitoring sites.



**Figure 8** Perennial plant Simpson's index of diversity change in the two mountainous habitat monitoring sites.



**Figure 9** Perennial plant Simpson's index of diversity change in the three plains habitat monitoring sites.

## Supplementary C

**Table 1** Dolfynfontein Pearson's Product Moment Correlation matrix for range condition score, perennial plant cover and perennial plant diversity indices

	RCS	PC	SR	E	H	D'
RCS	1.0000	0.9941***	0.8764***	-0.8703***	-0.2003 <sup>NS</sup>	-0.7201***
PC	0.9941***	1.0000	0.8666***	-0.8524***	-0.1761 <sup>NS</sup>	-6.811**
SR	0.8674***	0.8666***	1.0000	-0.6739**	0.2053 <sup>NS</sup>	-0.4507 <sup>NS</sup>
E	-0.8703***	-0.8524***	-0.6739**	1.0000	0.5843**	0.9434***
H	-0.2003 <sup>NS</sup>	-0.1761 <sup>NS</sup>	0.2053 <sup>NS</sup>	0.5843*	1.0000	0.7588***
D'	-0.7201***	-0.6811**	-0.4507 <sup>NS</sup>	0.9434***	0.7588***	1.0000

Abbreviations: range condition score (RCS); plant cover (PC); species richness (SR); Species evenness (E); Shannon Wiener Index of Diversity (H); Simpson's Index of Diversity (D'). Significance levels are  $p < 0.05$  (\*),  $p < 0.02$  (\*\*),  $p < 0.01$  (\*\*\*).

**Table 2** Poudam Pearson's Product Moment Correlation matrix for range condition score, perennial plant cover and perennial plant diversity indices

	RCS	PC	SR	E	H	D'
RCS	1.0000	0.9983***	0.6784**	-0.6850**	0.3854 <sup>NS</sup>	0.5003 <sup>NS</sup>
PC	0.9983***	1.0000	0.6996***	-0.6707**	0.4163 <sup>NS</sup>	0.5232 <sup>NS</sup>
SR	0.6784**	0.6996***	1.0000	-0.4238 <sup>NS</sup>	0.8825***	0.7753***
E	-0.6850**	-0.6707**	-0.4238 <sup>NS</sup>	1.0000	0.0502 <sup>NS</sup>	0.1134 <sup>NS</sup>
H	0.3854 <sup>NS</sup>	0.4163 <sup>NS</sup>	0.8825***	0.0502 <sup>NS</sup>	1.0000	0.9133***
D'	0.5003 <sup>NS</sup>	0.5232 <sup>NS</sup>	0.7753***	0.1134 <sup>NS</sup>	0.9133***	1.0000

Abbreviations: range condition score (RCS); plant cover (PC); species richness (SR); Species evenness (E); Shannon Wiener Index of Diversity (H); Simpson's Index of Diversity (D'). Significance levels are  $p < 0.05$  (\*),  $p < 0.02$  (\*\*),  $p < 0.01$  (\*\*\*).

**Table 3** Kliphaas Pearson's Product Moment Correlation matrix for range condition score, perennial plant cover and perennial plant diversity indices

	RCS	PC	SR	E	H	D'
RCS	1.0000	0.9987***	0.8144**	-0.9075***	-0.5147 <sup>NS</sup>	-0.5734*
PC	0.9987***	1.0000	0.8148***	-0.8890***	-0.4839 <sup>NS</sup>	-0.5362 <sup>NS</sup>
SR	0.8144***	0.8148***	1.0000	-0.7860 <sup>NS</sup>	-0.1195 <sup>NS</sup>	-0.3255 <sup>NS</sup>
E	-0.9075***	-0.8890***	-0.7860***	1.0000	0.7058***	0.8148***
H	-0.5147 <sup>NS</sup>	-0.4839 <sup>NS</sup>	-0.1195 <sup>NS</sup>	0.7058***	1.0000	0.9478***
D'	-0.5734*	-0.5362 <sup>NS</sup>	-0.3255 <sup>NS</sup>	0.8148***	0.9478***	1.0000

Abbreviations: range condition score (RCS); plant cover (PC); species richness (SR); Species evenness (E); Shannon Wiener Index of Diversity (H); Simpson's Index of Diversity (D'). Significance levels are  $p < 0.05$  (\*),  $p < 0.02$  (\*\*),  $p < 0.01$  (\*\*\*).

**Table 4** Grasvlak Pearson's Product Moment Correlation matrix for range condition score, perennial plant cover and perennial plant diversity indices

	RCS	PC	SR	E	H	D'
RCS	1.0000	0.9988***	0.8900***	-0.1851 <sup>NS</sup>	0.7319***	0.6927***
PC	0.9988***	1.0000	0.9009***	-0.1686 <sup>NS</sup>	0.7445***	0.7022***
SR	0.8900***	0.9009***	1.0000	0.1308 <sup>NS</sup>	0.9299***	0.8796***
E	-0.1851 <sup>NS</sup>	-0.1686 <sup>NS</sup>	0.1308 <sup>NS</sup>	1.0000	0.4730 <sup>NS</sup>	0.5271 <sup>NS</sup>
H	0.7319***	0.7445***	0.9299***	0.4730 <sup>NS</sup>	1.0000	0.9864***
D'	0.6927***	0.7022***	0.8796***	0.5271 <sup>NS</sup>	0.9864***	1.0000

Abbreviations: range condition score (RCS); plant cover (PC); species richness (SR); Species evenness (E); Shannon Wiener Index of Diversity (H); Simpson's Index of Diversity (D'). Significance levels are  $p < 0.05$  (\*),  $p < 0.02$  (\*\*),  $p < 0.01$  (\*\*\*).

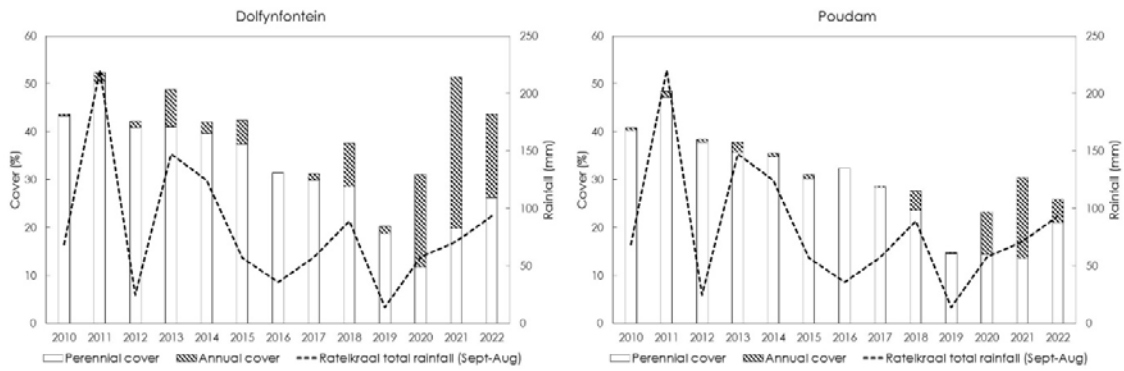
**Table 5** Radelvjak Pearson's Product Moment Correlation matrix for range condition score, perennial plant cover and perennial plant diversity indices

	RCS	PC	SR	E	H	D'
RCS	1.0000	0.9973***	0.2698 <sup>NS</sup>	-0.9147***	-0.7649***	-0.8214***
PC	0.9973***	1.0000	0.3047 <sup>NS</sup>	-0.8911***	-0.7282***	-0.7843***
SR	0.2698 <sup>NS</sup>	0.3047 <sup>NS</sup>	1.0000	-0.0868 <sup>NS</sup>	0.3116 <sup>NS</sup>	0.1283 <sup>NS</sup>
E	-0.9147***	-0.8911***	-0.0868 <sup>NS</sup>	1.0000	0.9195***	0.9675***
H	-0.7649***	-0.7282***	0.3116 <sup>NS</sup>	0.9195***	1.0000	0.9741***
D'	-0.8214***	-0.7843***	0.1283 <sup>NS</sup>	0.9675***	0.9741***	1.0000

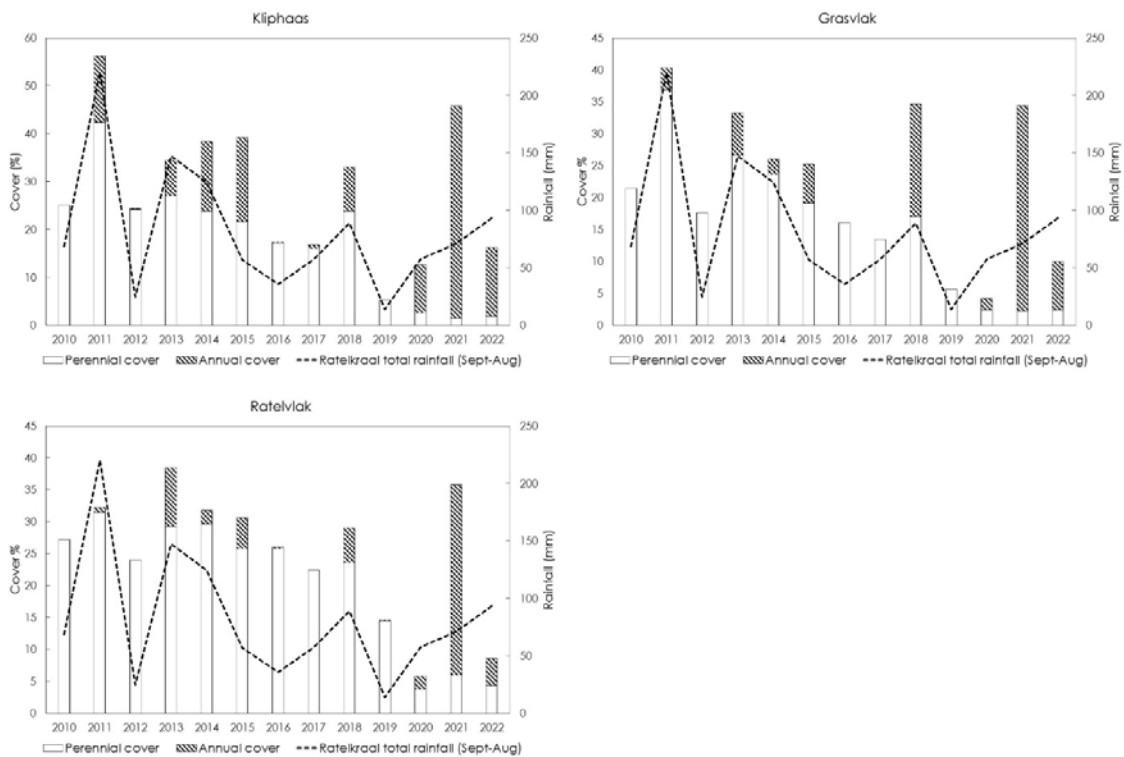
Abbreviations: Range condition score (RCS); plant cover (PC); species richness (SR); Species evenness (E); Shannon Wiener Index of Diversity (H); Simpson's Index of Diversity (D'). Significance levels are  $p < 0.05$  (\*),  $p < 0.02$  (\*\*),  $p < 0.01$  (\*\*\*).

## Supplementary D

Perennial and annual plant cover change in relation to rainfall (September to August) showing the strong connection between annual plant emergence and inter-annual rainfall variability, even during a drought period.



**Figure 10** Perennial plant cover and annual plant cover change in relation to rainfall in mountainous habitats (September to August).



**Figure 11** Perennial plant cover and annual plant cover change in relation to rainfall in plains habitats (September to August).