

ELECTRONIC SUPPLEMENTARY MATERIAL

FOLIA GEOBOTANICA

Recovery of a plant community in the central Anatolian steppe after small-scale disturbances

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Table S1. The list of taxa collected at the study site. The taxonomic families, growth forms, and regeneration strategies of each taxon are given. “+” and “-” indicate one taxon has or has not a specific regeneration strategy according to field observations; “?” means unknown.

Taxa	Growth Form	Regeneration strategy	
		Seeding	Resprouting
Amaryllidaceae			
<i>Allium scorodoprasum</i> L. subsp. <i>rotundum</i> (L.) Stearn	Perennial herb	-	+
<i>Allium</i> sp.	Perennial herb	-	+
Apiaceae			
<i>Bupleurum sulphureum</i> Boiss. & Balansa	Annual herb	+	-
<i>Eryngium campestre</i> L.	Perennial herb	-	+
<i>Ferulago</i> sp.	Perennial herb	?	?
<i>Malabaila secacul</i> (Mill.) Boiss.	Perennial herb	+	?
<i>Scandix iberica</i> M.Bieb.	Annual herb	+	-
<i>Torilis arvensis</i> (Huds.) Link subsp. <i>arvensis</i>	Annual herb	+	-
Apocinaceae			
<i>Vinca herbacea</i> Waldst. & Kit.	Perennial herb	?	?
Asparagaceae			
<i>Muscari neglectum</i> Guss. ex Ten.	Perennial herb	-	+
<i>Ornithogalum sigmoideum</i> Freyn & Sint.	Perennial herb	-	+
Asteraceae			
<i>Anthemis cretica</i> L. subsp. <i>anatolica</i> (Boiss.) Grierson	Perennial herb	?	?
<i>Anthemis tinctoria</i> (L.) J.Gay var. <i>tinctoria</i>	Perennial herb	?	?
<i>Anthemis wiedemannia</i> (Fisch. & C.A.Mey.) Holub	Annual herb	+	-
<i>Artemisia taurica</i> Willd.	Woody	+	+
<i>Centaurea urvillei</i> DC.	Perennial herb	?	?
<i>Centaurea virgata</i> Lam.	Perennial herb	?	?
<i>Chardinia orientalis</i> (L.) Kuntze	Annual herb	+	-
<i>Cnicus benedictus</i> L.	Annual herb	+	-
<i>Crepis foetida</i> L.	Annual herb	+	-
<i>Crepis sancta</i> (L.) Bornm.	Annual herb	+	-
<i>Crupina crupinastrum</i> (Moris) Vis.	Annual herb	+	-
<i>Lactuca</i> sp.	Biennial herb	?	?
<i>Leontodon</i> sp.	Perennial herb	?	?

<i>Logfia arvensis</i> (L.) Holub	Annual herb	+	-
<i>Scorzonera suberosa</i> K. Koch	Perennial herb	?	?
<i>Senecio vernalis</i> Waldst. & Kit.	Annual herb	+	-
<i>Tragopogon aureus</i> Boiss.	Perennial herb	?	?
<i>Tripleurospermum</i> sp.	Annual herb	+	-
<i>Xeranthemum annuum</i> L.	Annual herb	+	-

Boraginaceae

<i>Lappula barbata</i> (M.Bieb.) Gürke	Biennial herb	?	?
<i>Myosotis minutiflora</i> Boiss. & Reut.	Annual herb	+	-
<i>Onosma</i> sp.	Perennial herb	?	?

Brassicaceae

<i>Alyssum simplex</i> Rudolph	Annual herb	+	-
<i>Alyssum sibiricum</i> Willd.	Perennial herb	+	+
<i>Arabis nova</i> Vill.	Annual herb	+	-
<i>Camelina rumelica</i> Velen.	Annual herb	+	-
<i>Clypeola johnthlaspi</i> L.	Annual herb	+	-
<i>Erophila verna</i> L.	Annual herb	+	-
<i>Erysimum diffusum</i> Ehrh.	Biennial herb	-	+
<i>Neslia apiculata</i> Fisch., C.A.Mey. & Avé-Lall.	Annual herb	+	-
<i>Microthlaspi perfoliatum</i> (L.) F.K.Mey.	Annual herb	+	-

Caryophyllaceae

<i>Arenaria serpyllifolia</i> L.	Annual herb	+	-
<i>Dianthus strictus</i> Banks & Sol.	Perennial herb	-	+
<i>Dianthus zonatus</i> Fenz.	Perennial herb	?	?
<i>Eremogone ledebouriana</i> (Fenzl) Ikonn. var. <i>ledebouriana</i>	Perennial herb	?	?
<i>Holosteum umbellatum</i> L.	Annual herb	+	-
<i>Minuartia hamata</i> (Hauskn.) Mattf.	Annual herb	+	-
<i>Petrorhagia cretica</i> (L.) P.W.Ball & Heywood	Annual herb	+	-
<i>Velezia rigida</i> L.	Annual herb	+	-

Cistaceae

<i>Helianthemum ledifolium</i> (L.) Mill.	Annual herb	+	-
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Cuscutaceae

<i>Cuscuta balanseae</i> Boiss. & Reuter ex Yunk.	Annual herb	+	-
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Dipsacaceae

<i>Pterocephalus plumosus</i> (L.) Coulter	Perennial herb	?	?
<i>Scabiosa argentea</i> L.	Biennial herb	?	-

Euphorbiaceae

<i>Euphorbia ledebourii</i> Boiss.	Perennial herb	?	?
<i>Euphorbia anacampseros</i> Boiss.	Perennial herb	?	?

Fabaceae

<i>Astragalus anthylloides</i> Lam.	Woody	?	?
<i>Astragalus microcephalus</i> Willd.	Woody	?	+
<i>Astragalus strictifolius</i> Boiss.	Woody	-	+
<i>Astragalus</i> sp.	Woody	?	?
<i>Medicago biflora</i> (Griseb.) E.Small	Annual herb	+	-
<i>Medicago rigidula</i> (L.) All. var. <i>cinarescens</i> (Jord.) Rouy	Annual herb	+	-
<i>Onobrychis</i> sp.	Woody	?	?
<i>Trifolium</i> sp.	Annual herb	+	-
<i>Trigonella fischeriana</i> Ser.	Annual herb	+	-
<i>Trigonella foenicum-graecum</i> L.	Annual herb	+	-
<i>Vicia</i> sp.	Annual herb	+	-

Geraniaceae

<i>Erodium cicutarium</i> (L.) L Hér.	Annual herb	+	-
<i>Geranium rotundifolium</i> L.	Annual herb	+	-

Globulariaceae

<i>Globularia orientalis</i> L.	Woody	-	+
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Iridaceae

<i>Crocus danfordiae</i> Maw.	Perennial herb	-	+
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Lamiaceae

<i>Clinopodium graveolens</i> (M.Bieb.) Kuntze	Annual herb	+	-
<i>Lamium amplexicaule</i> L.	Annual herb	+	-

<i>Lamium orientale</i> (Fisch. & C.A.Mey.) E.H.L.Krause	Annual herb	+	-
<i>Phlomis armeniaca</i> Willd.	Perennial herb	-	+
<i>Stachys woronowii</i> (Schischk. ex Grossh.) R.R.Mill	Annual herb	+	-
<i>Teucrium polium</i> L.	Perennial herb	?	+
<i>Teucrium chamedrys</i> L.	Perennial herb	?	?
<i>Thymus sipyleus</i> Boiss.	Woody	?	-
<i>Ziziphora taurica</i> M.Bieb.	Annual herb	+	-

Oleaceae

<i>Jasminum fruticans</i> L.	Woody	-	+
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Papaveraceae

<i>Fumaria asepalae</i> Boiss.	Annual herb	+	-
<i>Papaver argemone</i> L.	Annual herb	+	-
<i>Roemeria hybrida</i> (L.) DC. subsp. <i>hybrida</i>	Annual herb	+	-

Poaceae

<i>Aegilops triuncialis</i> L.	Annual herb	+	-
<i>Aegilops umbellulata</i> Zhuk.	Annual herb	+	-
<i>Bothriochloa ischaemum</i> (L.) Keng	Perennial herb	-	+
<i>Bromus intermedius</i> Guss.	Annual herb	+	-
<i>Bromus tectorum</i> L.	Annual herb	+	-
<i>Echinaria capitata</i> (L.) Desf.	Annual herb	+	-
<i>Elymus hispidus</i> (Opiz) Melderis	Perennial herb	?	?
<i>Festuca valesiaca</i> Schleich. ex Gaudin	Perennial herb	-	+
<i>Koeleria macrantha</i> (Ledeb.) P.Schult.	Perennial herb	-	+
<i>Melica ciliata</i> L. subsp. <i>ciliata</i>	Perennial herb	?	?
<i>Poa bulbosa</i> L.	Perennial herb	?	?
<i>Stipa ehrenbergiana</i> Trin. & Rupr.	Perennial herb	?	?
<i>Taenatherium caput-medusae</i> (L.) Nevski	Annual herb	+	-

Primulaceae

<i>Androsace maxima</i> L.	Annual herb	+	-
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Ranunculaceae

<i>Adonis flammea</i> Jacq.	Annual herb	+	-
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<i>Ceratocephala falcata</i> (L.) Pers.	Annual herb	+	-
<i>Nigella arvensis</i> L. var. <i>glauca</i> Boiss.	Annual herb	+	-
<i>Ranunculus illyricus</i> L.	Perennial herb	?	?
<i>Ranunculus</i> sp.	Perennial herb	?	?

Rosaceae

<i>Potentilla recta</i> L.	Perennial herb	?	?
<i>Sanguisorba minor</i> Scop.	Perennial herb	?	?

Rubiaceae

<i>Asperula arvensis</i> L.	Annual herb	+	-
<i>Callipeltis cucullaris</i> (L.) Rothm.	Annual herb	+	-
<i>Galium floribundum</i> Sm.	Annual herb	+	-
<i>Galium verum</i> L. subsp. <i>verum</i>	Perennial herb	-	+

Scrophulariaceae

<i>Veronica grisebachii</i> Walters	Annual herb	+	-
<i>Veronica multifida</i> L.	Perennial herb	?	?
<i>Linaria simplex</i> DC.	Annual herb	+	-

Valerianaceae

<i>Valerianella carinata</i> Loisel.	Annual herb	+	-
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Violaceae

<i>Viola occulta</i> Lehm.	Perennial herb	?	?
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Unidentified plant 1	Annual herb	+	-
Unidentified plant 2	Annual herb	+	-

Table S2. List of taxa that were only detected in disturbance quadrats but not at the beginning sampling of the study and in control quadrats. The sampling period when a plant taxon was detected is given for each disturbance type (hoeing and cut) and frequency (1, 2, and 3). All taxa are annual herbs, except *Allium* sp. and *B. ischaemum*.

	Hoeing			Mowing		
	1	2	3	1	2	3
<i>Allium</i> sp.	2014/06			2014/06		
<i>Bothriochloa ischaemum</i>	2012/09 2013/06 2014/06					
<i>Camelina rumelica</i>	2014/06			2013/06		
<i>Lamium orientale</i>				2014/06		
<i>Linaria simplex</i>	2014/06			2014/06		
<i>Medicago biflora</i>	2014/06			2013/06 2014/06		
<i>Medicago rigidula</i> var. <i>cinarescens</i>	2013/04 2013/06 2014/06			2014/06		
<i>Microthlaspi perfoliatum</i>	2013/04					
<i>Neslia apiculata</i>				2014/06		
<i>Roemeria hybrida</i> subsp. <i>hybrida</i>				2013/06		
<i>Trigonella foenicum-</i> <i>graecum</i>	2013/06			2014/06		
<i>Vicia</i> sp.	2014/06					
Unidentified plant 2				2013/04		

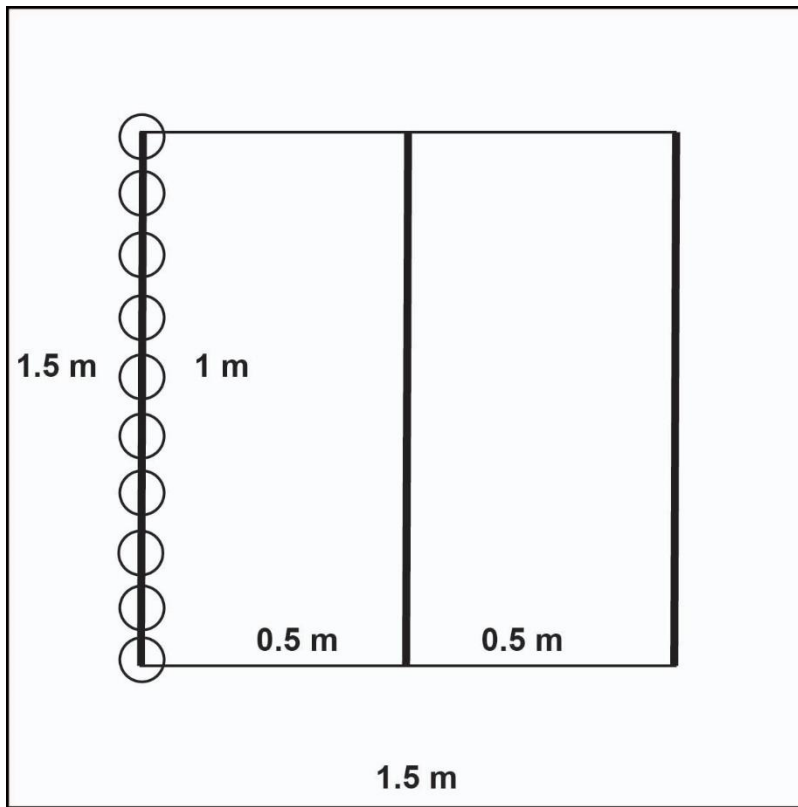


Figure S1. Schematic representation of the sampling quadrat and point-intercept method. The central square (1×1 m) represents the quadrat studied, and the surrounding area out of the central square is the buffer zone. Three bold lines indicate the transects, and circles locate the sampling points on the transects. See Material and methods for further details.

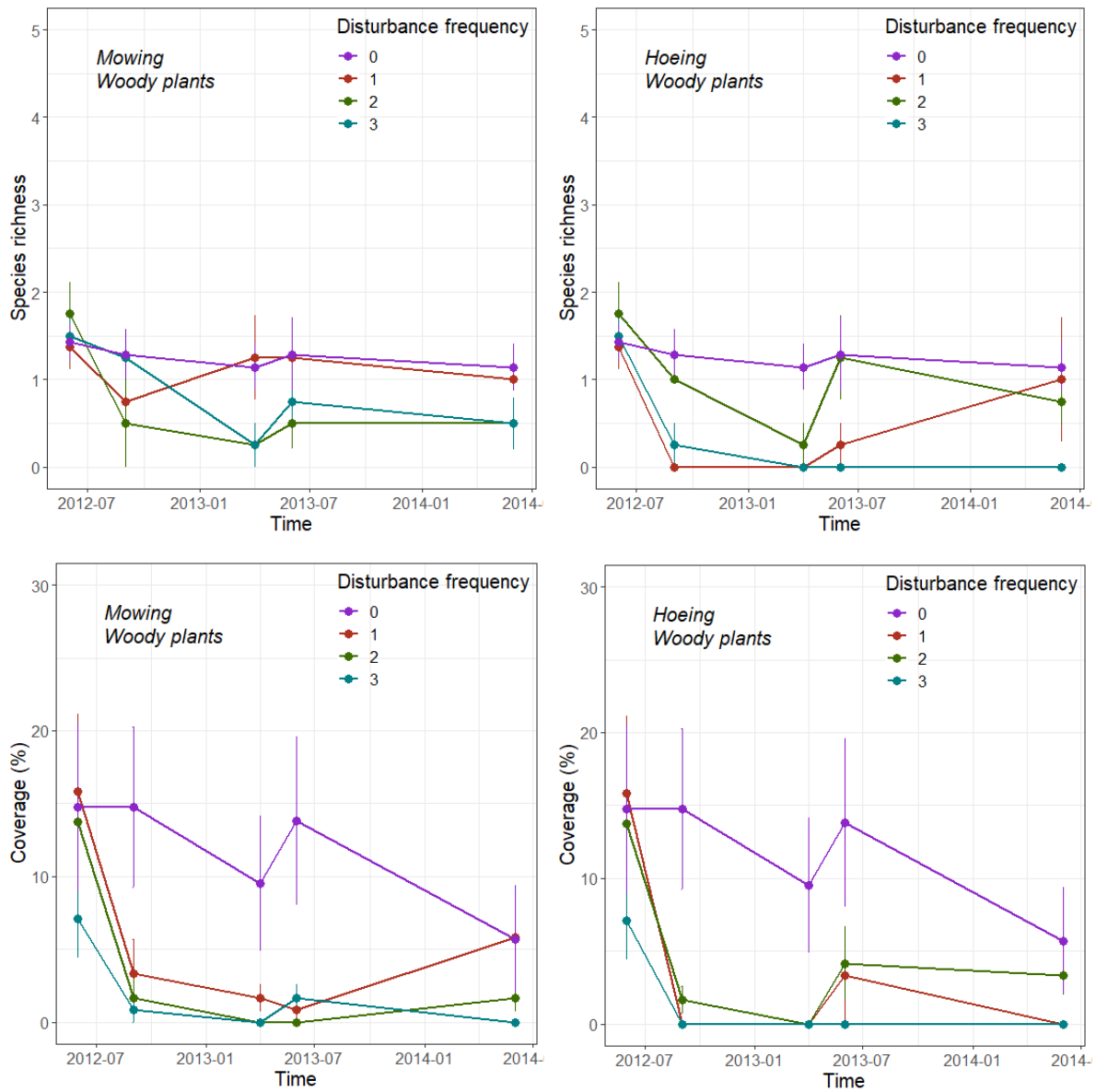


Figure S2. Coverage (%) and species richness of woody plants throughout the study period under different disturbance treatments. Points represent mean values of quadrats, and error bars are the standard error of the mean.

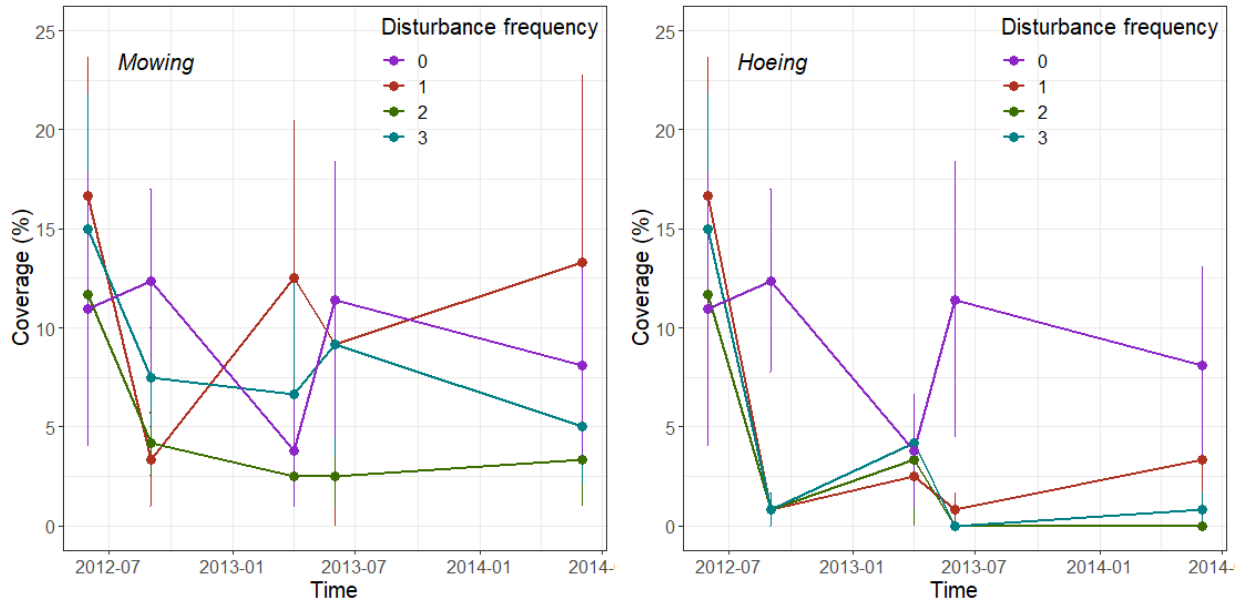


Figure S3. Coverage (%) of *Festuca valesiaca* throughout the study period under different disturbance treatments. Points represent mean values of quadrats, and error bars are the standard error of the mean.

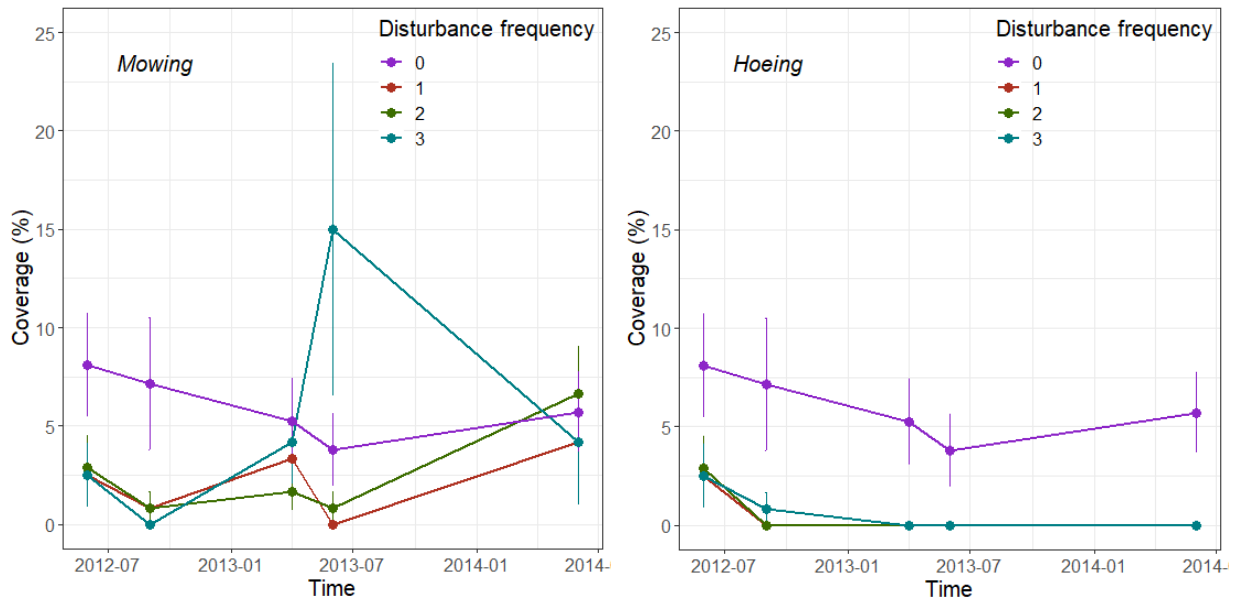


Figure S4. Coverage (%) of *Koeleria macrantha* throughout the study period under different disturbance treatments. Points represent mean values of quadrats, and error bars are the standard error of the mean.

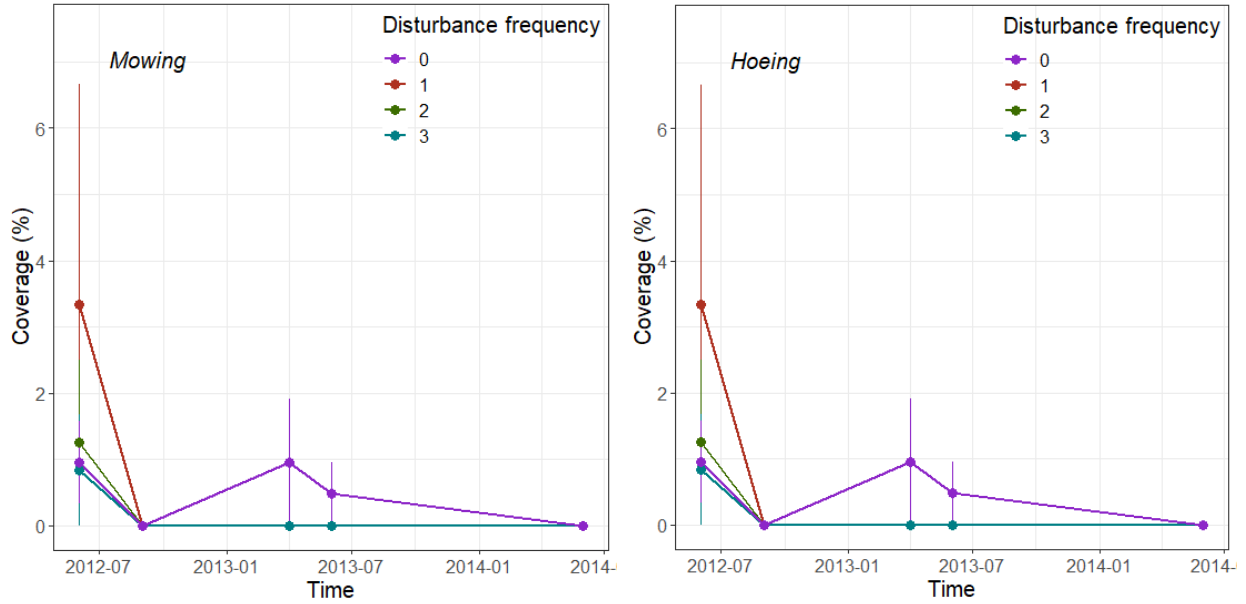


Figure S5. Coverage (%) of *Thymus sipyleus* throughout the study period under different disturbance treatments. Points represent mean values of quadrats, and error bars are the standard error of the mean.

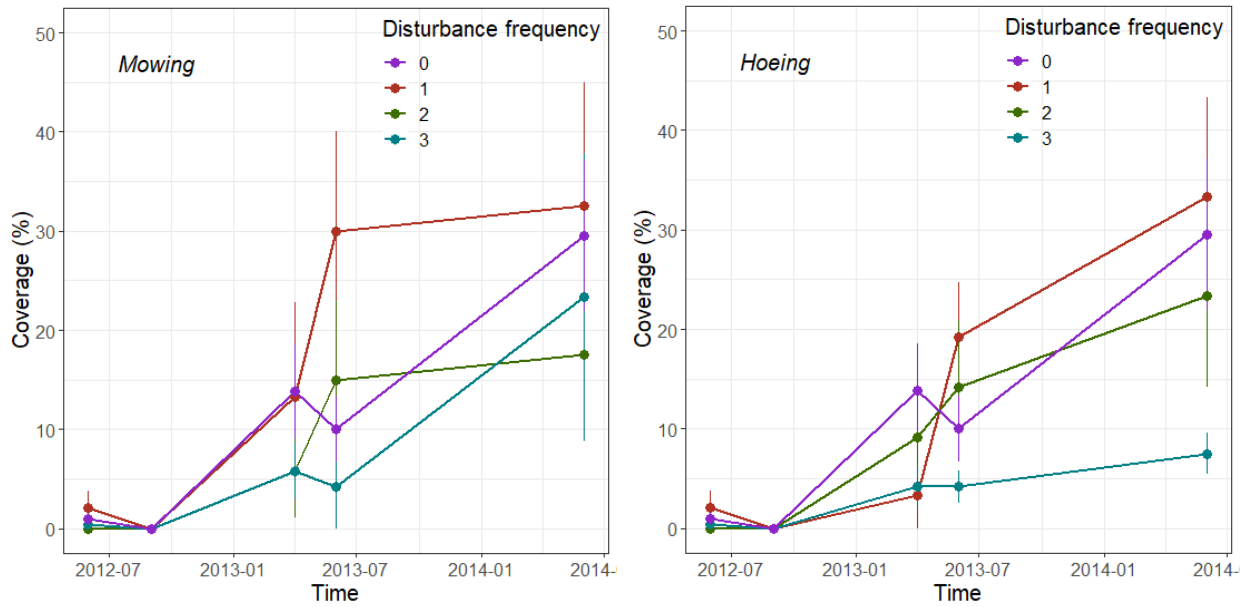


Figure S6. Coverage (%) of *Trigonella fischeriana* throughout the study period under different disturbance treatments. Points represent mean values of quadrats, and error bars are the standard error of the mean.