Title	Pound Hill disturbance timing experiment
General metadata	
Abstract	The composition of plant communities is in part determined by seedling recruitment, which depends on seed germination and seedling survival. Because species differ in the optimal environmental conditions for germination it is expected that variations in timing and severity of disturbances have an effect on the relative abundance of plant species and the composition of the seed bank. The Pound Hill experiment aims to assess the effect of the timing of cultivation and soil disturbance on grasslands diversity and biomass. It was established in 1991 in an area of Silwood Park that had been maintained for the conservation of arable weeds through an annual cultivation at various times of the year for at least a decade. This regime transformed a wheat-cultivated land into a species-rich community of ruderal plants, mostly annuals. The experimental area, which is protected from rabbits' damage, is divided in plots that since October 1992 have been cultivated in March, May or October.
Keywords	Soil disturbance, plant communities, plant recruitment
Links	https://www.imperial.ac.uk/silwood-park/ https://www.ecologicalcontinuitytrust.org/poundhill
DOI	**10.5281/zenodo.13362621**
Is this part of a larger study?	No
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Funding	Department of Life Sciences, Imperial College London
Data set status and accessibility	
Status	
Latest update	November 2023
Latest archive date	November 2023
Metadata status	August 2024
Accessibility	

Storage location and medium	"Research group space: SilwoodLTE", Imperial College London, ICT department
Usage rights	Open Access
Geographic metadata	
Geographic description	The study site is Silwood Park Campus from Imperial College London, Buckhurst Road, Ascot, Berkshire SL5 7PY, United Kingdom. Silwood Park campus, with 78 ha, contains acid grasslands, scrubland, ancient woodlands and few decades old oak-dominated woodlands. Silwood Park experiences an average annual rainfall of 698mm with little seasonal pattern (1987-2022). Mean hourly temperature is 10ºC with July max of 23 ºC and January min of 1.4 ºC (1987-2022). The experiment is located at Pound Hill Field. It lies on acid, sandy soil of the Bagshot Series and is surrounded by naturally regenerated Oak, Sycamore and Birch wood.
Bounding coordinates	
Latitude	51.41486
Longitude	-0.65178
UK National grid	
Square	SU
Easting	93855
Northing	69289
Temporal metadata	
Temporal description	Cultivation treatments have been done annually in March, May or October since 1991. Two data sets are available for this experiment: 1. Data of aboveground standing biomass of each plant species present in all plots collected in July 2003 (PoundHillDist_biomass.csv) 2. Data of percentage of cover of each plant species collected in 2014, 2016, 2017, 2019-2021 (PoundHillDist_cover.csv).
Begin	1991
End	Ongoing
Taxonomic metadata	
Taxonomic authority	
Type	Book
Author	Stace, Clive
Title	New Flora of the British Isles
Edition	Second
Date	1997
Publisher	Cambridge University Press
City	Bath
General Information	
Taxonomic level:	Angiospermae & Gymnospermae
Taxonomic level: species	Table: PoundHillDist_taxa.csv
Methods metadata	
General experimental design	A rabbit-prof fence separates an area of 100 x 40 m. Inside; four blocks (A-D) of 36 x 36 m are divided into three plots of 36 x 8 m, which are cultivated in

March, May or October. The three cultivation treatments are then replicated four times. Disturbance treatments consist of cutting the vegetation followed by rotovating the ground to smooth soil.

PLOTTREAT

Plot	Block	Cultivation	UK grid	Latitude	Longitude
1	A	October	SU9387569299	51.41495	-0.6515
2	A	May	SU9387069308	51.41503	-0.65157
3	A	March	SU9386869316	51.4151	-0.65159
4	B	May	SU9386569322	51.41516	-0.65163
5	B	March	SU9386469330	51.41523	-0.65165
6	B	October	SU9386169337	51.41529	-0.65168
7	C	March	SU9386169345	51.41536	-0.65168
8	C	October	SU9385969352	51.41543	-0.65171
9	C	May	SU9385669359	51.41549	-0.65175
10	D	March	SU9385369369	51.41558	-0.65179
11	D	October	SU9385269374	51.41563	-0.65181
12	D	May	SU9384969381	51.41569	-0.65184

In 1996, 1999 and 2002 all plots were treated with herbicide after the annuals seed production to control for perennial grass species.

In 2002-2003 the whole experiment was split in half and all plots were cultivated at the same time. The eastern part of each plot was ploughed and rotovated in autumn 2002, and the western half of each plot in spring 2003 (see justification in Crawley, Ecology (2004) 85: 3277–3288)

Data collection	In July 2003 aboveground standing biomass was estimated in 12 50 x 25 cm quadrats located within each 36 x 8 m plot (avoiding 1-m area from plot margins). Six quadrats were chosen in the eastern half of each plot that had been cultivated in autumn 2002, and six in the western half that had been cultivated in spring 2003. All plants in each quadrat were uprooted and the roots were cut and discharged. Samples were sorted by species, dried 80°C for 24hrs and weighing to the nearest 0.01 g. The percentage coverage of each plant species present in a plot (36 x 8 m) is estimated to the nearest 1% percent for each species rooted within the plot. If the percentage of cover is lower than 1% a qualitative score of "+", "++" or "+++" is recorded. In the data table "+" was converted to 0.1%, "++" to 0.2% and +++ to 0.3%. Total cover typically exceeds 100% because cover is estimated independently for each species.
Quality control	Professor Mick Crawley has managed this experiment since 1991. He has been directly involved in the collection of data and training of people involved in all aspects of the project. This guarantee the accuracy of plant identification and consistency in the methods applied. Table NAMECOL Curation of data files and creation of metadata has been done by Catalina Estrada starting June 2016. Please read README_PoundHillDist.txt to see

Table NAMECOL

Code	Name	Email address
M_Crawley	Mick Crawley	m.crawley@imperial.ac.uk

	specific changes.
Data table metadata	
Number of tables	3
	PoundHillDist_biomass.csv
	PoundHillDist_cover.csv
	PoundHillDist_taxa.csv
Format	.csv, .txt

File name	PoundHillDist_biomass.csv & .txt		
Description	Data for 2003 aboveground standing biomass estimated in 12 50 x 25 cm quadrats located within each 36 x 8 m plot		
Size	176KB		
Case sensitive	No		
Number or records	2154		
Number of attributes	10		
Orientation	Variables (attributes) included as columns		
Data table structure and attribute description			
Attribute name	Definition	Type	Attribute description
site	The location code of experimental plots at Siwlood Park	String	Nominal Pound Hill Disturbance
year	Year data was collected	Integer	Date YYYY format 2003
block	A letter given to a block that contain each of the 3 cultivation treatments	Character	Nominal letters a, b, c, d Code included in table PLOTTREAT
plot	A number given to each 36 x 8 m plot	Integer	Numbers 1 to 12 Code included in table PLOTTREAT
month	The month in the year that cultivation is typically done in a plot	String	Nominal october, may, march
cultivation	Season when extra cultivation happened to half of all plots in 2002-2003	Character	Nominal autumn: eastern part of each plot cultivated in autumn 2002 spring: western part of each plot cultivated in spring 2003
replicate	A number given to each of the six 50 x 25 cm quadrats sampled in each half plot	Integer	Numbers 1 to 6
taxa	Code name of species for which biomass data was collected	String	Text Code names as table: PoundHillDist_taxa.csv
mass	Aboveground biomass of	Floating point	Unit: g/dry weight/1,250

	plant species included in a 50 x 25 cm quadrat.		cm^2 Precision: 0.01 Type: real
collectors	Name code of person responsible for collection and entry of data	String	Nominal Code included in table NAMECOL

File name	PoundHillDist_cover.csv & .txt		
Description	Data of percentage coverage of each plant species present in a plot (36 x 8 m) estimated to the nearest 1% percent for each species rooted within the plot		
Size	89KB		
Case sensitive	No		
Number or records	1070		
Number of attributes	10		
Orientation	Variables (attributes) included as columns		
Data table structure and attribute description			
Attribute name	Definition	Type	Attribute description
site	The location code of experimental plots at Siwlood Park	String	Nominal Pound Hill Disturbance
year	Year data was collected	Integer	Date YYYY format 2003
block	A letter given to a block that contain each of the 3 cultivation treatments	Character	Nominal letters a, b, c, d Code included in table PLOTTREAT
plot	A number given to each 36 x 8 m plot	Integer	Numbers 1 to 12 Code included in table PLOTTREAT
month	The month in the year that cultivation is typically done in a plot	String	Nominal october, may, march
taxa	Code name of species for which biomass data was collected	String	Text Code names as table: PoundHillDist_taxa.csv
cover	Percentage of 36 x 8 m plot covered by plant species	Floating point	Precision: 0.0 but values 0.1, 0.2 and 0.3 included. Type: real Min: 0 Max: 100
collectors	Name code of person responsible for collection and entry	String	Nominal Code included in table NAMECOL

	of data		
note_cover	Notes	String	Text

File name	**PoundHillDist_taxa.csv & .txt**		
Description	Taxonomic information of species found in this experimetn		
Size	15KB		
Case sensitive	No		
Number or records	103		
Number of attributes	14		
Orientation	Variables (attributes) included as columns		
Data table structure and attribute description			
Attribute name	Definition	Type	Attribute description
site	The location code of experimental plots at Siwlood Park	String	Nominal Pound Hill Disturbance
taxa	Code name used in cover and biomass tables	String	Name e.g. Agrostis_capillaris for *Agrostis capillaris*
common_name	One common name for the species in England (NBN atlas)	String	Text
kingdom	Taxonomic kingdom the species belongs to	String	Text Plantae
division	Taxonomic (plant) division the species belongs to	String	Text
family	Taxonomic family the species belongs to	String	Text
genus	Taxonomic genus the species belongs to	String	Text
species	Taxonomic species the species belongs to	String	Text
variety	Taxonomic subspecies classification	String	Text
lifeform	Lifeform group the plant belongs too	String	Text Herb, Shrub, Tree,
lifespan	Whether the plant species is an annual, biennial or perennial	String	Text Perennial, Annual, Biennial
provenance	Whether species is native or introduced to the United Kingdom	String	Text Native, Introduced (naturalised or not)
local.name	Name use at site if different than the standard NBN name. This field is to help link data with local databases and raw data	String	Text
note_taxa	Notes (including synonyms used in raw data)	String	Text

Data anomalies	

Supplemental descriptors	
Affiliations	EPJ soil (https://ejpsoil.eu/) and Ecological Continuity Trust (https://www.ecologicalcontinuitytrust.org/)
Publications	3
Order	By year of publication
	Crawley MJ (2004) Timing of disturbance and coexistence in a species-rich ruderal plant community. Ecology 85: 3277–3288. doi: 10.1890/03-0804 Keywords: biomass; coexistence; cultivation; disturbance; phenology; regeneration niche; ruderal plant community; seed bank; Silwood Park (UK); species richness; temporal heterogeneity
	Crawley MJ (2005). Silwood Park and its history. In: Crawley MJ, ed. The Flora of Berkshire. Harpenden, Hertfordshire, UK: Brambleby Books, 215–253
	Crawley MJ (2021) The rise of Vulpia myuros (Poaceae) and the impact of cultivation-timing on plant community structure. British & Irish Botany 3(3): 362-372 Keywords: phenology, timing of cultivation, seed bank, disturbance
How to cite database	Crawley, MJ, & Estrada, C. (2024). Pound Hill disturbance timing experiment, Silwood Park [Data set]. Zenodo. https://doi.org/10.5281/zenodo.13362621
How to acknowledge dataset	Department of Life Sciences, Imperial College London.
Additional information	- A map is available (PounHillDist_map.pdf) - Species taxonomic information is available in the file Silwood_species.csv