

Nomenclature harmonization

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2026-01-07

```
# setup -----

library(tidyverse)

## -- Attaching core tidyverse packages ----- tidyverse 2.0.0 --
## v dplyr      1.1.4      v readr      2.1.6
## v forcats    1.0.1      v stringr   1.6.0
## v ggplot2    4.0.1      v tibble    3.3.0
## v lubridate  1.9.4      v tidyr     1.3.2
## v purrr      1.2.0
## -- Conflicts ----- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()     masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors

library(readxl)

# taxonomic harmonization -----

#with TNRS
speciesharm <- read_csv("data/tnrs_result.csv") |>
  select(c("Name_submitted", "Accepted_species", "Accepted_family"))

## Rows: 148 Columns: 48
## -- Column specification -----
## Delimiter: ","
## chr (25): Name_submitted, Name_matched, Name_matched_rank, Author_submitted,...
## dbl (10): Overall_score, Name_matched_id, Name_score, Author_score, Genus_sc...
## num (2): ID, unique_id
## lgl (11): Family_submitted, Family_matched, Family_score, Infraspecific_rank...
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.

speciesharm[146,2] <- "Cyclamen repandum" #not accepted yet
speciesharm[146,3] <- "Primulaceae"
speciesharm[147,2] <- "Stellaria nemorum" #error because of subsp.

specieslist <- read_excel("data/Species_list.xlsx")
specieslist <- specieslist |>
```

```

left_join(speciesharm, by = join_by("Species name"=="Name_submitted")) |>
rename(species = "Accepted_species") |>
rename(code = Code) |>
rename(family = "Accepted_family") |>
filter(!is.na(species)) |>
select(!"Species name")

```

Here is the output. The reference species list is larger than the list for the transect, so some species don't have a transect code.

```
print(specieslist, n = 150)
```

```

## # A tibble: 143 x 3
##   code species                family
##   <chr> <chr>                    <chr>
## 1 AB   Abies alba                 Pinaceae
## 2 ACE  Acer opalus                Sapindaceae
## 3 PLA  Acer platanoides          Sapindaceae
## 4 PSE  Acer pseudoplatanus       Sapindaceae
## 5 ACH  Achillea millefolium      Asteraceae
## 6 <NA> Aconitum lycoctonum      Ranunculaceae
## 7 <NA> Actaea spicata           Ranunculaceae
## 8 AUS  Adenostyles australis     Asteraceae
## 9 ADO  Adoxa moschatellina       Viburnaceae
## 10 AEG  Aegopodium podagraria     Apiaceae
## 11 AJU  Ajuga reptans             Lamiaceae
## 12 AL   Alliaria petiolata        Brassicaceae
## 13 URS  Allium ursinum            Amaryllidaceae
## 14 ANE  Anemonoides nemorosa      Ranunculaceae
## 15 A    Aremonia agrimonoides    Rosaceae
## 16 ARP  Arisarum proboscideum     Araceae
## 17 ARU  Arum maculatum            Araceae
## 18 PHY  Asplenium scolopendrium   Aspleniaceae
## 19 <NA> Asplenium trichomanes    Aspleniaceae
## 20 <NA> Athyrium filix-femina    Aspleniaceae
## 21 AVE  Avenella flexuosa         Poaceae
## 22 BRA  Brachypodium sylvaticum   Poaceae
## 23 CAM  Campanula trachelium      Campanulaceae
## 24 <NA> Cardamine amara         Brassicaceae
## 25 BUL  Cardamine bulbifera       Brassicaceae
## 26 CHE  Cardamine chelidonia      Brassicaceae
## 27 HEPT Cardamine heptaphylla     Brassicaceae
## 28 CIMP Cardamine impatiens       Brassicaceae
## 29 TRI  Cardamine trifolia        Brassicaceae
## 30 CARD Carduus personata         Asteraceae
## 31 <NA> Carex divulsa           Cyperaceae
## 32 CRE  Carex remota              Cyperaceae
## 33 CAR  Carex sylvatica           Cyperaceae
## 34 <NA> Cephalanthera rubra     Orchidaceae
## 35 <NA> Chaerophyllum temulum   Apiaceae
## 36 CIR  Circaea lutetiana         Onagraceae
## 37 <NA> Cirsium erisithales     Asteraceae
## 38 CLE  Clematis vitalba          Ranunculaceae

```

##	39	CLI	Clinopodium nepeta	Lamiaceae
##	40	COS	Calystegia sepium	Convolvulaceae
##	41	CRA	Crataegus monogyna	Rosaceae
##	42	CRU	Cruciata glabra	Rubiaceae
##	43	CYC	Cyclamen repandum	Primulaceae
##	44	<NA>	Cystopteris fragilis	Cystopteridaceae
##	45	CY	Cytisus scoparius	Fabaceae
##	46	DAC	Dactylis glomerata	Poaceae
##	47	<NA>	Dactylorhiza incarnata	Orchidaceae
##	48	DA	Daphne laureola	Thymelaeaceae
##	49	DIG	Digitalis lutea	Plantaginaceae
##	50	<NA>	Dioscorea communis	Dioscoreaceae
##	51	FX	Festuca altissima	Poaceae
##	52	DRY	Dryopteris filix-mas	Dryopteridaceae
##	53	MONT	Epilobium montanum	Onagraceae
##	54	EPI	Epipactis helleborine	Orchidaceae
##	55	<NA>	Epipactis purpurata	Orchidaceae
##	56	EQ	Equisetum ramosissimum	Equisetaceae
##	57	ELA	Euonymus latifolius	Celastraceae
##	58	EU	Euphorbia amygdaloides	Euphorbiaceae
##	59	EDU	Euphorbia dulcis	Euphorbiaceae
##	60	FA	Fagus sylvatica	Fagaceae
##	61	FE	Festuca heterophylla	Poaceae
##	62	FRA	Fragaria vesca	Rosaceae
##	63	FRAX	Fraxinus excelsior	Oleaceae
##	64	GT	Galeopsis tetrahit	Lamiaceae
##	65	APA	Galium aparine	Rubiaceae
##	66	GAR	Galium aristatum	Rubiaceae
##	67	G	Galium odoratum	Rubiaceae
##	68	ROT	Galium rotundifolium	Rubiaceae
##	69	NOD	Geranium nodosum	Geraniaceae
##	70	ROB	Geranium robertianum	Geraniaceae
##	71	HEX	Hedera helix	Araliaceae
##	72	HEL	Helleborus viridis	Ranunculaceae
##	73	HEP	Hepatica nobilis	Ranunculaceae
##	74	<NA>	Hesperis matronalis	Brassicaceae
##	75	H	Hieracium murorum	Asteraceae
##	76	AND	Hypericum androsaemum	Hypericaceae
##	77	<NA>	Hypericum montanum	Hypericaceae
##	78	<NA>	Hypericum perforatum	Hypericaceae
##	79	<NA>	Ilex aquifolium	Aquifoliaceae
##	80	IMP	Impatiens noli-tangere	Balsaminaceae
##	81	ISO	Isopyrum thalictroides	Ranunculaceae
##	82	CORY	Isopyrum thalictroides	Ranunculaceae
##	83	LAB	Laburnum alpinum	Fabaceae
##	84	LAM	Lamium album	Lamiaceae
##	85	<NA>	Lapsana communis	Asteraceae
##	86	LAT	Lathyrus vernus	Fabaceae
##	87	LIL	Lilium martagon	Liliaceae
##	88	LU	Luzula forsteri	Juncaceae
##	89	NIV	Luzula nivea	Juncaceae
##	90	MEL	Melica uniflora	Poaceae
##	91	ME	Mercurialis perennis	Euphorbiaceae
##	92	MIL	Milium effusum	Poaceae

##	93	STEX	Moehringia trinervia	Caryophyllaceae
##	94	<NA>	Monotropa hypopitys	Ericaceae
##	95	MON	Monotropa hypopitys	Ericaceae
##	96	MY	Lactuca muralis	Asteraceae
##	97	<NA>	Myosotis decumbens	Boraginaceae
##	98	<NA>	Neottia nidus-avis	Orchidaceae
##	99	<NA>	Ostrya carpinifolia	Betulaceae
##	100	O	Oxalis acetosella	Oxalidaceae
##	101	<NA>	Parietaria officinalis	Urticaceae
##	102	POA	Poa nemoralis	Poaceae
##	103	MUL	Polygonatum multiflorum	Asparagaceae
##	104	POLY	Polystichum aculeatum	Dryopteridaceae
##	105	SET	Polystichum setiferum	Dryopteridaceae
##	106	PRE	Prenanthes purpurea	Asteraceae
##	107	P	Primula vulgaris	Primulaceae
##	108	PRU	Prunella vulgaris	Lamiaceae
##	109	AVI	Prunus avium	Rosaceae
##	110	PT	Pteridium aquilinum	Dennstaedtiaceae
##	111	QU	Quercus cerris	Fagaceae
##	112	RO	Rosa arvensis	Rosaceae
##	113	RU	Rubus hirtus	Rosaceae
##	114	IDE	Rubus idaeus	Rosaceae
##	115	GLU	Salvia glutinosa	Lamiaceae
##	116	SAM	Sambucus nigra	Viburnaceae
##	117	SAN	Sanicula europaea	Apiaceae
##	118	SAX	Saxifraga rotundifolia	Saxifragaceae
##	119	SCRO	Scrophularia nodosa	Scrophulariaceae
##	120	SED	Sedum cepaea	Crassulaceae
##	121	<NA>	Sedum monregalense	Crassulaceae
##	122	S	Senecio ovatus	Asteraceae
##	123	<NA>	Senecio squalidus	Asteraceae
##	124	SIL	Silene dioica	Caryophyllaceae
##	125	SOL	Solanum dulcamara	Solanaceae
##	126	SOV	Solidago virgaurea	Asteraceae
##	127	SOR	Sorbus aria	Rosaceae
##	128	AUC	Sorbus aucuparia	Rosaceae
##	129	STE	Stellaria media	Caryophyllaceae
##	130	NEM	Stellaria nemorum	Caryophyllaceae
##	131	<NA>	Thalictrum aquilegiifolium	Ranunculaceae
##	132	TIG	Tilia platyphyllos	Malvaceae
##	133	<NA>	Trifolium repens	Fabaceae
##	134	<NA>	Ulmus glabra	Ulmaceae
##	135	U	Urtica dioica	Urticaceae
##	136	VC	Veronica chamaedrys	Plantaginaceae
##	137	VE	Veronica montana	Plantaginaceae
##	138	VO	Veronica officinalis	Plantaginaceae
##	139	VCR	Vicia cracca	Fabaceae
##	140	VIC	Vicia sepium	Fabaceae
##	141	VA	Viola alba	Violaceae
##	142	V	Viola odorata	Violaceae
##	143	VR	Viola reichenbachiana	Violaceae

```
write_csv(specieslist, "data/specieslookup_harm.csv")
```

```
# session info -----
```

```
sessionInfo()
```

```
## R version 4.5.2 (2025-10-31)
## Platform: x86_64-redhat-linux-gnu
## Running under: Nobara Linux 43 (KDE Plasma Desktop Edition)
##
## Matrix products: default
## BLAS/LAPACK: FlexiBLAS OPENBLAS-OPENMP; LAPACK version 3.12.1
##
## locale:
##  [1] LC_CTYPE=it_IT.UTF-8      LC_NUMERIC=C
##  [3] LC_TIME=it_IT.utf8       LC_COLLATE=it_IT.UTF-8
##  [5] LC_MONETARY=it_IT.utf8   LC_MESSAGES=it_IT.UTF-8
##  [7] LC_PAPER=it_IT.utf8      LC_NAME=C
##  [9] LC_ADDRESS=C             LC_TELEPHONE=C
## [11] LC_MEASUREMENT=it_IT.utf8 LC_IDENTIFICATION=C
##
## time zone: Europe/Rome
## tzcode source: system (glibc)
##
## attached base packages:
## [1] stats      graphics  grDevices datasets  utils      methods    base
##
## other attached packages:
## [1] readxl_1.4.5    lubridate_1.9.4 forcats_1.0.1    stringr_1.6.0
## [5] dplyr_1.1.4     purrr_1.2.0     readr_2.1.6     tidyr_1.3.2
## [9] tibble_3.3.0    ggplot2_4.0.1   tidyverse_2.0.0
##
## loaded via a namespace (and not attached):
## [1] bit_4.6.0      gtable_0.3.6    crayon_1.5.3     compiler_4.5.2
## [5] tidyselect_1.2.1 parallel_4.5.2   scales_1.4.0     yaml_2.3.12
## [9] fastmap_1.2.0  R6_2.6.1        generics_0.1.4   knitr_1.50
## [13] pillar_1.11.1  RColorBrewer_1.1-3 tzdb_0.5.0       rlang_1.1.6
## [17] utf8_1.2.6     stringi_1.8.7   xfun_0.55        S7_0.2.1
## [21] bit64_4.6.0-1  timechange_0.3.0 cli_3.6.5        withr_3.0.2
## [25] magrittr_2.0.4 digest_0.6.39    grid_4.5.2       vroom_1.6.7
## [29] rstudioapi_0.17.1 CoprManager_0.5.7 hms_1.1.4        lifecycle_1.0.4
## [33] vctrs_0.6.5    evaluate_1.0.5  glue_1.8.0       cellranger_1.1.0
## [37] farver_2.1.2   rmarkdown_2.30  tools_4.5.2      pkgconfig_2.0.3
## [41] htmltools_0.5.9
```