**Supplementary File 1.** Origin of *Erysimum* species and seed material, and year of original collection where available. Four species from mislabeled seed stocks are referred to as accessions ER1-4, with false species name provided in quotation marks. Chromosome numbers and ploidy levels are inferred from chromosome counts in literature reports (reference provided in square brackets). For species with multiple ploidy levels, numbers are provided for sampled populations where known (highlighted by \*). Leaf material for each species or accession was collected in one of three experiments, and RNA was extracted from pooled tissue of 2-5 individual plants that were sampled at 1-2 time points (TP).

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Species code | Species | Region/country of origin | Seed origin | Original collection | Chromosomes (2n) | Ploidy | Source experiment | Pooled individuals |
| ALI | *E. allionii*  (*E.* x. *marshallii*A) | n/a | Botanical Garden Kiel, Germany | 1985 | n/a | n/a | 2017-2 | 5 / 2TP |
| AMO | *E. amoenum* | Colorado, USA | Alplains, CO, USA | 2014 | 36[[11](#_ENREF_11)] | 4x | 2017-1 | 5 / 1 TP |
| AND | *E. andrzejowskianum* | Austria | Collected | 2009 | 70[[9](#_ENREF_9)] | 10x | 2017-1 | 5 / 2TP |
| BAE | *E. baeticum* | Spain | Collected | 2006 | 56[[1](#_ENREF_1)] | 8x\* | 2016 | 5 / 1TP |
| BAS | *E. bastetanum* | Spain | Collected | 2007 | 42[15] | 6x\* | 2017-2 | 5 / 2TP |
| BIC | *E. bicolor* | Canary Islands, Spain | Botanical Garden Konstanz, Germany | unknown | 28[[6](#_ENREF_6)] | 4x | 2017-2 | 5 / 2TP |
| CAP | *E. capitatum* | USA | B&T World Seeds, France | unknown | 36[[11](#_ENREF_11)] | 4x | 2017-1 | 4 / 2TP |
| CHR | *E. cheiri* | Netherlands | Collected | 2016 | 12[[13](#_ENREF_13)] | 2x | 2017-2 | 5 / 2TP |
| COL | *E. collinum*B | Iran | Botanical Garden Madrid, Spain | 1993 | 14[[10](#_ENREF_10)] | 2x | 2017-1 | 3 / 1TP |
| CRA | *E. crassicaule* | Iran | Botanical Garden Madrid, Spain | unknown | 14[[10](#_ENREF_10)] | 2x | 2017-2 | 2 / 2TP |
| CRE | *E. crepidifolium* | Czechia | Botanical Garden Berlin-Dahlem, Germany | 1996 | 14[[13](#_ENREF_13)] | 2x | 2017-1 | 5 / 2TP |
| CSS | *E. crassipes* | Iran | Botanical Garden Madrid, Spain | 1993 | 14[[10](#_ENREF_10)] | 2x | 2017-2 | 5 / 2TP |
| CUS | *E. cuspidatum* | Greece | Botanical Garden Berlin-Dahlem, Germany | 1980 | 16[[10](#_ENREF_10)] | 2x | 2017-2 | 5 / 2TP |
| DIF | *E. diffusum* | Czechia | Botanical Garden Plzen, Czechia | 2013 | 28[[13](#_ENREF_13)] | 4x | 2017-2 | 5 / 2TP |
| ECE | *E. cheiranthoides* | Germany | Collected | 2015 | 16[[13](#_ENREF_13)] | 2x | 2017-1 | 5 / 1TP |
| ER1 | *Erysimum* sp. 1  *‘E. crepidifolium’* | n/a | Botanical Garden Berlin-Dahlem, Germany | unknown | n/a | n/a | 2017-1 | 4 / 1TP |
| ER2 | *Erysimum* sp. 2  *‘E. rhaeticum’* | n/a | Botanical Garden Nantes, France | unknown | n/a | n/a | 2017-2 | 5 / 2TP |
| ER3 | *Erysimum* sp. 3  ‘*E. asperum*’ | n/a | B&T World Seeds, France | unknown | n/a | n/a | 2017-1 | 5 / 2TP |
| ER4 | Erysimum sp. 4  ‘*E. suffrutescens*’ | n/a | B&T World Seeds, France | unknown | n/a | n/a | 2017-2 | 5 / 2TP |
| FIZ | *E. fitzii* | Spain | Collected | 2008 | 14[[7](#_ENREF_7)] | 2x\* | 2017-2 | 2 / 2TP |
| FRA | *E. franciscanum* | California, USA | B&T World Seeds, France | unknown | 36[[11](#_ENREF_11)] | 4x | 2017-1 | 5 / 2TP |
| HIE | *E. hieraciifolium* | Romania | Botanical Garden Jibou, Romania | unknown | 32[[2](#_ENREF_2)] | 4x | 2017-2 | 5 / 2TP |
| HOR | *E. horizontale* | Greece | Botanical Garden Berlin-Dahlem, Germany | unknown | 24[[10](#_ENREF_10)] | 4x | 2016 | 4 / 1TP |
| HUN | *E. hungaricum* | Romania | Botanical Garden Jibou, Romania | unknown | 48[[9](#_ENREF_9),[13](#_ENREF_13)] | 6x | 2017-2 | 5 / 2TP |
| INC | *E. incanum* | Spain | Botanical Garden Madrid, Spain | unknown | 16[[7](#_ENREF_7)] | 2x | 2017-2 | 4 / 2TP |
| KOT | *E. kotschyanum* | Turkey | Botanical Garden Tübingen, Germany | unknown | 14[[10](#_ENREF_10)] | 2x | 2017-2 | 5 / 2TP |
| LAG | *E. lagascae* | Spain | Botanical Garden Madrid, Spain | unknown | 14[[7](#_ENREF_7)] | 2x\* | 2017-1 | 5 / 2TP |
| MAJ | *E. majellense* | Italy |  | unknown | 28[[5](#_ENREF_5)] | 4x | 2016 | 5 / 1TP |
| MED | *E. mediohispanicum* | Spain | Collected | 2007 | 14[[4](#_ENREF_4)] | 2x\* | 2017-2 | 5 / 2TP |
| MEX | *E. merxmuelleri* | Spain | Collected | 2007 | 14[[7](#_ENREF_7)] | 2x\* | 2017-2 | 5 / 2TP |
| MEZ | *E. menziesii* | California, USA | B&T World Seeds, France | unknown | 36[[3](#_ENREF_3)] | 4x | 2017-1 | 5 / 2TP |
| MIC | *E. microstylum* | Greece | Botanical Garden Berlin-Dahlem, Germany | 1980 | 14[[8](#_ENREF_8)] | 2x | 2017-1 | 5 / 2TP |
| NAX | *E. naxense* | Greece | Balkan Botanic Garden of Korussia, Greece | unknown | 12[[14](#_ENREF_14)] | 2x | 2016 | 5 / 1TP |
| NER | *E. nervosum* | Morocco | Collected | 2008 | 28[[12](#_ENREF_12)] | 4x\* | 2017-1 | 5 / 1TP |
| NEV | *E. nevadense* | Spain | Collected | 2007 | 14[[7](#_ENREF_7)] | 2x\* | 2017-2 | 3 / 2TP |
| ODO | *E. odoratum* | Austria | Botanical Garden Bern, Switzerland | 2015 | 32[[13](#_ENREF_13)] | 4x | 2017-1 | 5 / 2TP |
| PIE | *E. pieninicum* | Romania | Botanical Garden Jibou, Romania | unknown | 48[[13](#_ENREF_13)] | 6x | 2017-2 | 5 / 2TP |
| PSE | *E. pseudorhaeticum* | Italy | Botanical Garden Nantes, France | unknown | 14[[5](#_ENREF_5)] | 2x | 2017-2 | 5 / 2TP |
| PUL | *E. pulchellum* | Turkey | Botanical Garden Koursk, Russia | unknown | 56[[10](#_ENREF_10)] | 8x | 2017-2 | 5 / 2TP |
| REP | *E. repandum* | Spain | Botanical Garden Madrid, Spain | unknown | 16[[7](#_ENREF_7)] | 2x | 2017-2 | 5 / 2TP |
| RHA | *E. rhaeticum* | Switzerland | Collected | 2016 | 56[[13](#_ENREF_13)] | 8x | 2017-1 | 5 / 2TP |
| RUS | *E. ruscinonense* | Spain | Collected | 2007 | 14[[7](#_ENREF_7)] | 2x | 2016 | 5 / 1TP |
| SCO | *E. scoparium* | Canary Islands, Spain | B&T World Seeds, France | unknown | 28[[6](#_ENREF_6)] | 4x | 2017-1 | 4 / 1TP |
| SEM | *E. semperflorens* | Morocco | Collected | 2008 | 14[[12](#_ENREF_12)] | 2x | 2017-1 | 5 / 2TP |
| SYL | *E. sylvestre* | Slovenia | B&T World Seeds, France | unknown | 14[[13](#_ENREF_13)] | 2x | 2017-1 | 5 / 2TP |
| VIR | *E. virgatum* | Switzerland | Botanical Garden St Gallen, Switzerland | 1962 | 48[[13](#_ENREF_13)] | 6x | 2017-2 | 5 / 2TP |
| WIC | *E. wilczekianum* | Morocco | Collected | 2008 | 16[[12](#_ENREF_12)] | 4x\* | 2017-2 | 5 / 2TP |
| WIT | *E. witmannii* | Slovenia | Botanical Garden Berlin-Dahlem, Germany | 2010 | 14[[13](#_ENREF_13)] | 2x | 2017-1 | 5 / 2TP |

A horticultural hybrid; B synonymous for *E. passgalense* and *E. aucherianum*

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