**Supplemental Materials**

**Table S.1.** Full species list from all study sites in Yellowstone National Park. Species codes and scientific names from PLANTS Database (USDA NRCS, 2020). Lifeform: P = perennial, A = annual; Nativity: N = native, I = non-native. Species found in soil seedbank and aboveground indicated with “\*”, and species found only in soil seedbank indicated with “\*\*”.

**Figure S.2.** Perennial graminoid and perennial forb mean (± SE) richness after indaziflam treatment (control = grey, sprayed = black) in two levels of Alyssum spp. invasion (low = Δ solid, high = **•** dashed) across an elevation gradient in Yellowstone National Park.

**Table S.1.** Full species list from all study sites in Yellowstone National Park. Species codes and scientific names from PLANTS Database (USDA NRCS, 2020). Lifeform: P = perennial, A = annual; Nativity: N = native, I = non-native. Species found in soil seedbank and aboveground indicated with “\*”, and species found only in soil seedbank indicated with “\*\*”.

|  |  |  |  |
| --- | --- | --- | --- |
| PLANTS Code | Name | Lifeform | Nativity |
|  | Forbs |  |  |
| ACMI2 \* | *Achillea millefolium* | P | N |
| AGGL | *Agoseris glauca* | P | N |
| AGPA | *Agoseris parviflora* | P | N |
| ALCE2 | *Allium cernuum* | P | N |
| ALAL3 | *Alyssum alyssoides* | A | I |
| ALDE \* | *Alyssum desertorum* | A | I |
| ALSI8 | *Alyssum simplex* | A | I |
| ALTE | *Allium textile* | P | N |
| ANDI2 | *Antennaria dimorpha* | P | N |
| ANMI3 \* | *Antennaria microphylla* | P | N |
| ANMU | *Anemone multifida* | P | N |
| ANRO2 | *Antennaria rosea* | P | N |
| ANSE4 \* | *Androsace septentrionalis* | A | N |
| ARCO5 | *Arenaria congesta* | P | N |
| ARNU \* | *Arabis nuttallii* | P | N |
| ARSO2 | *Arnica sororia* | P | N |
| ASAD | *Astragalus adsurgens* | P | N |
| ASAG2 | *Astragalus agrestis* | P | N |
| ASMI9 | *Astragalus miser* | P | N |
| ASPU9 | *Astragalus purshii* | P | N |
| BEWY | *Besseya wyomingensis* | P | N |
| BORE6 | *Boechera retrofracta* | P | N |
| BODI4 | *Boechera divaricarpa* | P | N |
| BOMI3 | *Boechera microphylla* | P | N |
| BOPE \* | *Boechera pendulocarpa* | P | N |
| BOST4 | *Boechera stricta* | P | N |
| CADR | *Cardaria draba* | P | I |
| CAMI2 | *Camelina microcarpa* | A | I |
| CAPI3 | *Castilleja pallescens* | P | N |
| CARO2 | *Campanula rotundifolia* | P | N |
| CEAR4 \* | *Cerastium arvense* | P | N |
| CHDO | *Chaenactis douglasii* | P | N |
| CHLE4 \*\* | *Chenopodium leptophyllum* | A | N |
| CIUM | *Cistanthe umbellata* | P | N |
| COLI2 \* | *Collomia linearis* | A | N |
| COPA3 \* | *Collinsia parviflora* | A | N |
| COUM | *Comandra umbellata* | P | N |
| CRAC2 | *Crepis acuminata* | P | N |
| CRAT | *Crepis atribarba* | P | N |
| CRMO4 | *Crepis modocensis* | P | N |
| DEBI \* | *Delphinium bicolor* | P | N |
| DESO \* | *Desurainia sophia* | P | I |
| DOCO \* | *Dodecatheon conjugens* | P | N |
| DRAR | *Drymocallis arguta* | P | N |
| DRNE \* | *Draba nemorosa* | A | N |
| DRTH \* | *Dracocephalum thymiflorum* | P | N |
| ERAS2 \*\* | *Erysimum asperum* | P | N |
| EPBR3 | *Epilobium brachycarpum* | A | N |
| ERCO4 | *Erigeron compositus* | P | N |
| ERLA6 | *Eriophyllum lanatum* | P | N |
| EROC | *Erigeron ochroleucus* | P | N |
| EROV | *Eriogonum ovalifolium* | P | N |
| ERPU2 | *Erigeron pumilis* | P | N |
| ERSU2 | *Erigeron subtrinervis* | P | N |
| ERUM | *Eriogonum umbellatum* | P | N |
| FIAR | *Filago arvense* | A | I |
| FRAT | *Fritillaria atropurpurea* | P | N |
| FRPU2 | *Fritillaria pudica* | P | N |
| FRVI \* | *Fragaria virginiana* | P | N |
| GABI | *Galium bifolium* | A | N |
| GARA | *Gayophytum racemosum* | A | N |
| GARA2 | *Gayophytum ramosissimum* | A | N |
| GETR | *Geum triflorum* | P | N |
| HACKE | *Hackelia sp.* | P | N |
| HEVI4 | *Heterotheca villosa* | P | N |
| IOAL | *Ionactis alpina* | P | N |
| LERE7 | *Lewisia rediviva* | P | N |
| LESE17 | *Leptosiphon septentrionalis* | A | N |
| LEAL \*\* | *Lesquerella alpina* | P | N |
| LIDA | *Linnaria dalmatica* | P | I |
| LILE3 | *Linum lewisii* | P | N |
| LIPA5 | *Lithophragma parviflorum* | P | N |
| LIRU4 | *Lithospermum ruderale* | P | N |
| LOTR2 | *Lomatium triternatum* | P | N |
| LUAR3 | *Lupinus argenteus* | P | N |
| LULE3 | *Lupinus leucophyllus* | P | N |
| LUPI | *Lupine* sp. | P | N |
| LUSE4 | *Lupinus sericeus* | P | N |
| MACA2 | *Machaeranthera canescens* | P | N |
| MEDI | *Medicago sativa* | A | I |
| MELU \* | *Medicago lupulina* | A | I |
| MIGR \* | *Microsteris gracilis* | A | N |
| MINA | *Mimulus nana* | A | N |
| MISU | *Mimulus suksdorfii* | A | N |
| MUDI | *Musineon divaricatum* | P | N |
| MYMI | *Myosotis micrantha* | A | I |
| OXLA2 | *Oxytropis lagopus* | P | N |
| PEMO7 | *Perideridia montana* | P | N |
| PERA2 | *Penstemon radicosus* | P | N |
| PHHA | *Phacelia hastata* | P | N |
| PHFR \*\* | *Phacelia franklinii* | A | N |
| PHHO | *Phlox hoodii* | P | N |
| PHLO2 | *Phlox longifola* | P | N |
| PHMU3 | *Phlox multiflora* | P | N |
| PODID | *Potentilla diversifolia* var. *diversifolia* | P | N |
| PODO4 | *Polygonum douglasii* | A | N |
| POGR9 | *Potentilla gracilis* | P | N |
| POMI | *Polemonium micranthum* | A | N |
| PYLA | *Pyrrocoma lanceolata* | P | N |
| RAGL \* | *Ranunculus glaberrimus* | P | N |
| RATE | *Ranunculus testiculatus* | A | I |
| RUPA | *Rumex paucifolius* | P | N |
| SEINE | *Senecio integerrimus* var. *exaltalus* | P | N |
| SELA | *Sedum lanceolatum* | P | N |
| SESE | *Senecio serra var. serra* | P | N |
| SEST2 \* | *Sedum stenopetalum* | P | N |
| SIAL \* | *Sisymbrium altissimum* | A | I |
| SIDRD | *Silene drummondii* var. *drummondii* | P | N |
| STAC | *Stenotus acaulis* | P | N |
| SYCA | *Symphyotrichum ascendens* | P | N |
| TALA2 | *Taraxacum laevigatum* | P | I |
| TAOF | *Taraxacum officinale* | P | I |
| TRCA5 | *Trifolium campestre* | A | I |
| TRDU | *Tragopogon dubius* | P | I |
| TRHY | *Trifolium hybridum* | P | I |
| TRLO | *Trifolium longipes* | P | N |
| VAED | *Valeriana edulis* | P | N |
| VEVE | *Veronica verna* | A | I |
| VINU \* | *Viola nuttallii* | P | N |
| Viola\_1 |  | P | N |
| Viola\_2 |  | P | N |
| Aster\_1 |  | P |  |
| Aster\_2 |  | P |  |
| Aster\_3 |  | P |  |
| Aster\_4 |  | P |  |
| Aster\_5 |  | P |  |
| Fabac\_1 |  | P |  |
| Fabac\_2 |  | P |  |
| Forb\_1 |  | P |  |
| Forb\_2 |  | P |  |
| Forb\_3 |  | P |  |
| Forb\_4 |  | P |  |
| Forb\_5 |  | P |  |
|  | Graminoids |  |  |
| ACNEN2 | *Achnatherum nelsonii ssp. nelsonii* | P | N |
| ACOCO | *Achnatherum occidentale ssp. occidentale* | P | N |
| ACRI8 | *Achnatherum richardsonii* | P | N |
| AGSM | *Agropyron smithii* | P | N |
| AGSP | *Agropyron spicatum* | P | N |
| AGTR | *Agropyron trachycaulum* | P | N |
| BRCA | *Bromus carinatus* | P | N |
| BRIN2 | *Bromus inermus* | P | I |
| BRTE | *Bromus tectorum* | A | I |
| CADO | *Carex douglasii* | P | N |
| CAEL | *Carex eleocharis* | P | N |
| CAFI | *Carex filifolia* | P | N |
| CAIN | *Carex inops* | P | N |
| CAPE | *Carex pellita* | P | N |
| CAPR7 | *Carex praticola* | P | N |
| CAPR5 | *Carex praegracilis* | P | N |
| CASI | *Carex simluata* | P | N |
| DACA3 | *Danthonia californica* | P | N |
| DANTH | *Danthonia intermedia* | P | N |
| ELEL | *Elymus elymoides* | P | N |
| FEID | *Festuca idahoensis* | P | N |
| HECO26 | *Hesperostipa comata* | P | N |
| JUBA | *Juncus balticus* | P | N |
| KOMA | *Koeleria macrantha* | P | N |
| MEBU | *Melica bulbosa* | P | N |
| MURI | *Muhlenbergia richardsonis* | P | N |
| PHPR3 | *Phleum pratense* | P | I |
| NAVI4 | *Nassella viridula* | P | N |
| POAR | *Poa arida* | P | N |
| POCO | *Poa compressa* | P | I |
| POFE | *Poa fendleriana* | P | N |
| POPR | *Poa pratensis* | P | I |
| POSE | *Poa secunda* | P | N |
| THIN6 | *Thinopyrum intermedium* | P | N |
|  | Shrubs | Shrubs |  |
| ARCA13 | *Artemisia cana* | P | N |
| ARFR4 \* | *Artemisia frigida* | P | N |
| ARLU | *Artemisia ludoviciana* | P | N |
| ARTRV \* | *Artemisia tridentata* ssp. *vaseyana* | P | N |
| CHVI8 | *Chrysothamnus viscidiflorus* | P | N |
| DAFR6 | *Dasiphora fruticosa* | P | N |
| ERNA10 | *Ericameria nauseosa var. nauseosa* | P | N |
| KRLA2 | *Krascheninnikovia lanata* | P | N |
| TECA2 | *Tetradymia canescens* | P | N |



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