Supplementary Material 1. List of historical introduction reports of terrestrial alien non-native species to Antarctica (includes uncertain species/records)

Species	Location	Status	Last record	Reference
Magnoliophyta				
Poa annua	Multi-sites	Persistent	2015	Galera et al. (2016)
P. pratensis	Cierva Pt.	Eradicated	2015	Pertierra et al. 2017b
Nassauvia magellanica	Deception I	Eradicated	2010	UK (2010)
Gamochaeta nivalis	Deception I	Perished	2009	UK (2010)
Puccinella svalbardiensis	Syowa St.	Eradicated	2006	Tsujimoto et al. 2010
Alopecurus geniculatus, Puccinellia distans, Rumex pulcher, Stellaria media & Chenopodium rubrum	Progress St. II	Eradicated	1999	Russia (1999)
Cerastium sp.	Fildes Pen.	Eradicated	2005	Hughes and Convey (2010)
Poaceae (unidentified)	Fildes Pen.	Eradicated	2008	Peter et al. (2008, 2013)
Juncus bufonius (pollen, seeds)	Fildes Pen.	Unknown	2009	Cuba-Diez et al. 2012
Acaena magellanica, A. tenera, Achiellea millefolium, Callitriche antarctica, Colobanthus subulatus, Festuca contracta, Hymenophyllum falklandicum, Juncus scheuchzerioides, Montia fontana, Phleum alpinum, Poa annua, P. flabellata, P. pratensis, Polystichum mohrioides, Ranunculus biternatus, R. repens, Rostkovia magellanica, Trifolium repens, Uncinia meridensis	Signy I.	Perished	1968	Edwards (1980)
Nothofagus antarctica	Cierva Pt.	Perished	1957	Corte (1961)
Diptera				
Eretmoptera murphyi	Signy I.	Locally abundant	2020	Bartlett et al. 2020
Trichocera maculipennis	King George I.	Spreading	2020	Volonterio et al. 2013
Lycoriella sps.	Casey St.	Synantropic	2005	Houghton et al. 2016
Mecoptera				
Boreas sp.	Cierva Pt.	Unknown.	1996	Convey and Quintana (1997)
Collembolla				
Hypogastrura viatica	Multi-sites	Spreading?	2020	Present study
Ceratophysella succinea	Deception I	Locally present	2017	Enriquez et al. 2019
Proisotoma minuta	Deception I	Locally present	2015	Enriquez et al. 2019
Protaphorura fimata	Deception I	Locally present	2017	Enriquez et al. 2019
Deuteraphorura cebennaria	Deception I	Unknown	2015	Enriquez et al. 2019
Mesaphorura macrochaeta	Deception I	Unknown	2015	Enriquez et al. 2020
Folsomia candida	Deception I	Unknown	1965	Greenslade & Wise (1984)
Acari				
Coccotydaeolus krantzi	Multi-sites	Spreading?	2011	Rusell et al. (2014)
Terpnacarus gibbosus	Multi-sites	Spreading?	2011	Rusell et al. (2014)
Alicorhagia sp.	Deception I	Unknown	2010	Rusell et al. (2014)
Speleorchestes sp.	Multi-sites	Spreading?	2011	Rusell et al. (2014)
Oligochaete				
Christensenidrilus blocki	Signy I.	Uncertain	2010	Hughes and Worland (2010)

Supplementary Material 2. Filtered bibliometric research from WoS on Antarctic invasion science (excluding sub-antarctic focused works)

AU	PY	SO	TI
Bartlett, Jesamine C.; Conv	2021	POLAR BIOLOGY	Ocean currents as a potential dispersal pathway for Antarctica's most persistent non-native terrestrial insect
Bartlett, Jesamine C.; Rad	2021	ANTARCTIC SCIENCE	The effectiveness of Virkon (R) S disinfectant against an invasive insect and implications for Antarctic biosecurity practices
Holland, Oakes; Shaw, Jus	2021	DIVERSITY AND DISTRII	Hull fouling marine invasive species pose a very low, but plausible, risk of introduction to East Antarctica in climate change scenarios
Bokhorst, Stef; Convey, Pe	2021	Communications biolog	Warming impacts potential germination of non-native plants on the Antarctic Peninsula.
Galera, Halina; Rudak, Agr	2021	POLAR BIOLOGY	Influence of the population spatial structure on seed rain distribution of an invasive plant under harsh environment
Leon, Monica Remedios-D	2021	Environmental manage	International Response under the Antarctic Treaty System to the Establishment of A Non-native Fly in Antarctica.
PERTIERRA, L.R.; ESCRIBAI	2021	POLAR BIOLOGY	The alien winter crane fly Trichocera maculipennis in Antarctica withstands similar subzero temperatures to the winged native midge Pa
Avila, Conxita; Angulo-Pre	2020	SCIENTIFIC REPORTS	Invasive marine species discovered on non-native kelp rafts in the warmest Antarctic island
Baird, Helena P.; Moon, Ka	2020	EVOLUTIONARY APPLIC	Springtail phylogeography highlights biosecurity risks of repeated invasions and intraregional transfers among remote islands
Bartlett, Jesamine C.; Conv	2020	INSECT CONSERVATIOI	An insect invasion of Antarctica: the past, present and future distribution of Eretmoptera murphyi (Diptera, Chironomidae) on Signy Islan
Bartlett, Jesamine C.; Conv	2020	INSECTS	Surviving the Antarctic Winter-Life Stage Cold Tolerance and Ice Entrapment Survival in The Invasive Chironomid Midge Eretmoptera mu
Pertierra, Luis R.; Bartlett,	2020	JOURNAL OF BIOGEOG	Combining correlative and mechanistic niche models with human activity data to elucidate the invasive potential of a sub-Antarctic insec
Rosa, Luiz Henrique; da Sil	2020	SCIENTIFIC REPORTS	DNA metabarcoding uncovers fungal diversity in soils of protected and non-protected areas on Deception Island, Antarctica
Rosa, Luiz Henrique; Pinto	2020	MICROBIAL ECOLOGY	DNA Metabarcoding to Assess the Diversity of Airborne Fungi Present over Keller Peninsula, King George Island, Antarctica
Vlasov, D. Yu.; Kirtsideli, I.	2020	RUSSIAN JOURNAL OF	Anthropogenic Invasion of Micromycetes to Undisturbed Ecosystems of the Larsemann Hills Oasis (East Antarctica)
Chwedorzewska, Katarzyn	2020	GLOBAL CHANGE BIOL	Is Antarctica under threat of alien species invasion?
Hughes, Kevin A.; Pescott,	2020	GLOBAL CHANGE BIOL	Invasive non-native species likely to threaten biodiversity and ecosystems in the Antarctic Peninsula region
Malfasi, Francesco; Conve	2020	BIODIVERSITY AND CO	Establishment and eradication of an alien plant species in Antarctica: Poa annua at Signy Island
Potocka, Marta; Krzemins	2020	MOLECULAR BIOLOGY	Molecular identification of Trichocera maculipennis, an invasive fly species in the Maritime Antarctic
Cárdenas, Leyla; Leclerc, J	2020	SCIENTIFIC REPORTS	First mussel settlement observed in Antarctica reveals the potential for future invasions
Baird, Helena P.; Janion-Sc	2019	JOURNAL OF BIOGEOG	The ecological biogeography of indigenous and introduced Antarctic springtails
Enriquez, Natalia; Pertierr	2019	POLAR BIOLOGY	The importance of long-term surveys on species introductions in Maritime Antarctica: first detection of Ceratophysella succinea (Collemb
Bartlett, Jesamine C.; Conv	2019	POLAR BIOLOGY	Life cycle and phenology of an Antarctic invader: the flightless chironomid midge, Eretmoptera murphyi
Bartlett, Jesamine; Convey	2019	POLAR BIOLOGY	Not so free range? Oviposition microhabitat and egg clustering affects Eretmoptera murphyi (Diptera: Chironomidae) reproductive succe
Duffy, Grant A.; Lee, Jasmi	2019	BIOLOGICAL CONSERV/	Ice-free area expansion compounds the non-native species threat to Antarctic terrestrial biodiversity
Hughes, Kevin A.; Convey,	2019	JOURNAL OF ENVIRON	Human-mediated dispersal of terrestrial species between Antarctic biogeographic regions: A preliminary risk assessment
Wauchope, Hannah S.; Sha	2019	NATURE COMMUNICA	A snapshot of biodiversity protection in Antarctica
Atala, Cristian; Pertierra, L	2019	BIOLOGICAL INVASION	Positive interactions among native and invasive vascular plants in Antarctica: assessing the "nurse effect" at different spatial scales
Galera, Halina; Rudak, Agr	2019	GLOBAL ECOLOGY ANI	The role of the soil seed store in the survival of an invasive population of Poa annua at Point Thomas Oasis, King George Island, maritime
Molina-Montenegro, Mar	2019	NEOBIOTA	Increasing impacts by Antarctica's most widespread invasive plant species as result of direct competition with native vascular plants
Rudak, Agnieszka; Wodkie	2019	POLAR BIOLOGY	Plastic biomass allocation as a trait increasing the invasiveness of annual bluegrass (Poa annua L.) in Antarctica
McCarthy, Arlie H.; Peck, L	2019	GLOBAL CHANGE BIOL	Antarctica: The final frontier for marine biological invasion
Enriquez, Natalia; Tejedo,	2018	POLAR BIOLOGY	Collembola of Barrientos Island, Antarctica: first census and assessment of environmental factors determining springtail distribution
Hughes, Kevin A.; Misiak, I	2018	ANTARCTIC SCIENCE	Importation of psychrotolerant fungi to Antarctica associated with wooden cargo packaging
Fraser, Ceridwen, I; Morris	2018	NATURE CLIMATE CHA	Antarctica's ecological isolation will be broken by storm-driven dispersal and warming
Galera, Halina; Chwedorze	2018	BIODIVERSITY AND CO	What affects the probability of biological invasions in Antarctica? Using an expanded conceptual framework to anticipate the risk of alien
Newman, Jana; Poirot, Cei	2018	BIOLOGICAL INVASION	A decade of invertebrate colonization pressure on Scott Base in the Ross Sea region
Cavieres, Lohengrin A.; Ka	2018	BIOLOGICAL INVASION	Competition between native Antarctic vascular plants and invasive Poa annua changes with temperature and soil nitrogen availability
Rudak, Agnieszka; Galera,	2018	ACTA SOCIETATIS BOT/	Seed germination and invasion success of Poa annua L. in Antarctica
Wodkiewicz, Maciej; Chwe	2018	ECOLOGY AND EVOLU1	How much of the invader's genetic variability can slip between our fingers? A case study of secondary dispersal of Poa annua on King Geo

Potocka, Marta; Krzemins	2018	PEERJ	Trichocera maculipennis (Diptera)-an invasive species in Maritime Antarctica
Bergstrom, Dana M.; Shar	2018	BIOLOGICAL INVASION	Detection and eradication of a non-native Collembola incursion in a hydroponics facility in East Antarctica
Held, Benjamin W.; Blanch	2017	FUNGAL BIOLOGY	Deception Island, Antarctica, harbors a diverse assemblage of wood decay fungi
Hughes, Kevin A.; Greensl	2017	POLAR BIOLOGY	The fate of the non-native Collembolon, Hypogastrura viatica, at the southern extent of its introduced range in Antarctica
Hughes, Kevin A.; Ashton,	2017	AQUATIC CONSERVATI	Breaking the ice: the introduction of biofouling organisms to Antarctica on vessel hulls
Fuentes-Lillo, Eduardo; Cu	2017	POLAR SCIENCE	Morpho-physiological response of Colobanthus quitensis and Juncus bufonius under different simulations of climate change
Fuentes-Lillo, Eduardo; Cu	2017	ANTARCTIC SCIENCE	Seeds of non-native species in King George Island soil
Duffy, Grant A.; Coetzee, E	2017	DIVERSITY AND DISTRII	Barriers to globally invasive species are weakening across the Antarctic
Agostini, Karnila da Matta	2017	REVIEW OF PALAEOBO	Analysis of exotic pollen grains and spores from thawing lakes of King George Island, Antarctic Peninsula
Galera, Halina; Wodkiewic	2017	POLAR BIOLOGY	First step to eradication of Poa annua L. from Point Thomas Oasis (King George Island, South Shetlands, Antarctica)
Pertierra, Luis R.; Aragon,	2017	GLOBAL CHANGE BIOL	Global thermal niche models of two European grasses show high invasion risks in Antarctica
Pertierra, Luis R.; Hughes,	2017	ENVIRONMENTAL SCIE	Eradication of the non-native Poa pratensis colony at Cierva Point, Antarctica: A case study of international cooperation and practical ma
Tejedo, Pablo; Benayas, Ja	2016	JOURNAL OF ENVIRON	Assessing environmental conditions of Antarctic footpaths to support management decisions
Fuentes-Lillo, Eduardo; Mi	2016	REVISTA CHILENA DE H	Pollen record of disturbed topsoil as an indirect measurement of the potential risk of the introduction of non-native plants in maritime A
Houghton, Melissa; McQu	2016	POLAR BIOLOGY	Pathways of alien invertebrate transfer to the Antarctic region
Molina-Montenegro, Mar	2016	BIOLOGICAL INVASION	Adaptive phenotypic plasticity and competitive ability deployed under a climate change scenario may promote the invasion of Poa annua
McGeoch, Melodie A.; Sha	2015	GLOBAL ENVIRONMEN	Monitoring biological invasion across the broader Antarctic: A baseline and indicator framework
Hughes, Kevin A.; Pertierra	2015	BIODIVERSITY AND CO	Biological invasions in terrestrial Antarctica: what is the current status and can we respond?
Chwedorzewska, K. J.; Gie	2015	POLAR RECORD	Poa annua L. in the maritime Antarctic: an overview
Gielwanowska, Irena; Kell	2015	POLISH POLAR RESEAR	Generative reproduction of Antarctic grasses, the native species Deschampsia antarctica Desv. and the alien species Poa annua L.
Molina-Montenegro, Mar	2015	POLAR BIOLOGY	A recolonization record of the invasive Poa annua in Paradise Bay, Antarctic Peninsula: modeling of the potential spreading risk
Everatt, Matthew J.; Conv	2014	ECOLOGICAL ENTOMO	Can the Antarctic terrestrial midge, Eretmoptera murphyi, tolerate life in water?
Hughes, Kevin A.; Convey,	2014	INVASIVE SPECIES AND	Non-native Species in Antarctic Terrestrial Environments: The Impacts of Climate Change and Human Activity
Huiskes, Ad H. L.; Gremme	2014	BIOLOGICAL CONSERV/	Aliens in Antarctica: Assessing transfer of plant propagules by human visitors to reduce invasion risk
Molina-Montenegro, Mar	2014	POLAR RESEARCH	Assessing the importance of human activities for the establishment of the invasive Poa annua in Antarctica
Wodkiewicz, Maciej; Ziem	2014	BIODIVERSITY AND CO	Spatial structure of the soil seed bank of Poa annua L.-alien species in the Antarctica
Hughes, Kevin A.; Worland	2013	BIOLOGICAL INVASION	The non-native chironomid Eretmoptera murphyi in Antarctica: erosion of the barriers to invasion
Hirose, Dai; Tanabe, Yukik	2013	POLAR BIOLOGY	Microfungi associated with withering willow wood in ground contact near Syowa Station, East Antarctica for 40 years
Chwedorzewska, Katarzyn	2013	POLISH POLAR RESEAR	Alien invertebrates transported accidentally to the Polish Antarctic Station in cargo and on fresh foods
Cuba-Diaz, Marely; Max Tr	2013	ANTARCTIC SCIENCE	Juncus bufonius, a new non-native vascular plant in King George Island, South Shetland Islands
Wodkiewicz, Maciej; Galer	2013	ARCTIC ANTARCTIC AN	Diaspores of the Introduced Species Poa annua L. in Soil Samples from King George Island (South Shetlands, Antarctica)
Pertierra, Luis R.; Lara, Fra	2013	POLAR BIOLOGY	Poa pratensis L., current status of the longest-established non-native vascular plant in the Antarctic
Volonterio, Odile; de Leon	2013	POLAR BIOLOGY	First record of Trichoceridae (Diptera) in the maritime Antarctic
Park, Chae Haeng; Jeong,	2012	ANTARCTIC SCIENCE	Possible multiple introductions of Cladonia borealis to King George Island
Greenslade, Penelope; Pot	2012	JOURNAL OF INSECT SC	Global Collembola on Deception Island
Everatt, M. J.; Worland, M	2012	JOURNAL OF INSECT PH	Pre-adapted to the maritime Antarctic? - Rapid cold hardening of the midge, Eretmoptera murphyi
ALLEGRUCCI, G.; CARCHIN	2012	Biological Journal of th	Evolutionary geographic relationships among chironomid midges from maritime Antarctic and sub-Antarctic islands
Osyczka, Piotr; Mleczko, P	2012	BIOLOGICAL INVASION	Timber transported to Antarctica: a potential and undesirable carrier for alien fungi and insects
Hughes, Kevin A.; Convey,	2012	JOURNAL OF ENVIRON	Determining the native/non-native status of newly discovered terrestrial and freshwater species in Antarctica - Current knowledge, meth
Tsujimoto, Megumu; Imur	2012	ANTARCTIC SCIENCE	Does a new transportation system increase the risk of importing non-native species to Antarctica?
McCoy, K. D.; Beis, P.; Barl	2012	MARINE ECOLOGY PRC	Population genetic structure and colonisation of the western Antarctic Peninsula by the seabird tick Ixodes uriae
Chown, Steven L.; Huiskes	2012	PROCEEDINGS OF THE	Continent-wide risk assessment for the establishment of nonindigenous species in Antarctica

Chwedorzewska, Katarzyn	2012	POLISH POLAR RESEAR	Genetic and epigenetic variation in a cosmopolitan grass Poa annua from Antarctic and Polish populations
Molina-Montenegro, Mar	2012	CONSERVATION BIOLO	Occurrence of the Non-Native Annual Bluegrass on the Antarctic Mainland and Its Negative Effects on Native Plants
Headland, R. K.	2012		History of exotic terrestrial mammals in Antarctic regions
Farrell, R. L.; Arenz, B. E.; I	2011	POLAR BIOLOGY	Introduced and indigenous fungi of the Ross Island historic huts and pristine areas of Antarctica
Hughes, Kevin A.; Lee, Jen	2011	BIOLOGICAL CONSERV/	Food for thought: Risks of non-native species transfer to the Antarctic region with fresh produce
Lee, Jennifer E.; Chown, St	2011	ANTARCTIC SCIENCE	Quantification of intra-regional propagule movements in the Antarctic
Cowan, Don A.; Chown, St	2011	TRENDS IN MICROBIOL	Non-indigenous microorganisms in the Antarctic: assessing the risks
Smith, Ronald I. Lewis; Ric	2011	BIOLOGICAL INVASION	Fuegian plants in Antarctica: natural or anthropogenically assisted immigrants?
Olech, Maria; Chwedorzev	2011	ANTARCTIC SCIENCE	The first appearance and establishment of an alien vascular plant in natural habitats on the forefield of a retreating glacier in Antarctica
Greenslade, Penelope	2010	ANTARCTIC SCIENCE	Collembola fauna of the South Shetland Islands revisited
Worland, Michael Roger	2010	PHYSIOLOGICAL ENTOI	Eretmoptera murphyi: pre-adapted to survive a colder climate
Hughes, Kevin A.; Convey,	2010	GLOBAL ENVIRONMEN	The protection of Antarctic terrestrial ecosystems from inter- and intra-continental transfer of non-indigenous species by human activitie
Hughes, Kevin A.; Worland	2010	ANTARCTIC SCIENCE	Spatial distribution, habitat preference and colonization status of two alien terrestrial invertebrate species in Antarctica
Osyczka, Piotr	2010	POLAR BIOLOGY	Alien lichens unintentionally transported to the "Arctowski" station (South Shetlands, Antarctica)
Chwedorzewska, Katarzyn	2010	POLISH POLAR RESEAR	Human impact upon the environment in the vicinity of Arctowski Station, King George Island, Antarctica
Hughes, K. A.; Convey, P.;	2010	BIOLOGICAL INVASION	Accidental transfer of non-native soil organisms into Antarctica on construction vehicles
Hughes, K. A.; Lee, J. E.; W	2010	POLAR BIOLOGY	Impact of anthropogenic transportation to Antarctica on alien seed viability
Lee, Jennifer E.; Chown, St	2009	ANTARCTIC SCIENCE	Quantifying the propagule load associated with the construction of an Antarctic research station
Chwedorzewska, Katarzyn	2009	POLISH POLAR RESEAR	Terrestrial Antarctic ecosystems in the changing world: An overview
Raso, J. E. Garcia; Munoz,	2008	POLAR BIOLOGY	First record of Munidopsis albatrossae (Crustacea : Decapoda : Galatheidae) from Antarctic waters
Chwedorzewska, Katarzyn	2008	POLAR BIOLOGY	Poa annua L. in Antarctic: searching for the source of introduction
Bridge, P. D.; Denton, G. J.	2007	POLAR BIOLOGY	Isolation of diverse viable fungi from the larvae of the introduced chironomid Eretmoptera murphyi on Signy Island
Whinam, J; Chilcott, N; Be	2005	BIOLOGICAL CONSERV/	Subantarctic hitchhikers: expeditioners as vectors for the introduction of alien organisms
Frenot, Y; Chown, SL; Whi	2005	BIOLOGICAL REVIEWS	Biological invasions in the Antarctic: extent, impacts and implications
Hughes, KA; Walsh, S; Con	2005	POLAR BIOLOGY	Alien fly populations established at two Antarctic research stations
Lewis, Patrick N.; Riddle, M	2004		Management of exogenous threats to Antarctica and the sub-Antarctic Islands: balancing risks from TBT and non-indigenous marine orga
Tavares, Marcos; De Melo	2004		Discovery of the first known benthic invasive species in the Southern Ocean: the North Atlantic spider crab Hyas araneus found in the An
DÓZSA-FARKAS, K.; CONV	1997	Polar Biology, 17, 482-4	Christensenia, a new terrestrial enchytraeid genus from Antarctica. Polar Biology, 17, 482-486.
Convey, P; Quintana, RD	1997	EUROPEAN JOURNAL C	The terrestrial arthropod fauna of Cierva Point SSSI, Danco Coast, northern Antarctic Peninsula
Convey, P; Block, W	1996	EUROPEAN JOURNAL C	Antarctic diptera: Ecology, physiology and distribution
Smith, RIL	1996	BIOLOGICAL CONSERV/	Introduced plants in Antarctica: Potential impacts and conservation issues
PUGH, PJA	1994	ZOOLOGICAL JOURNAL	NON-INDIGENOUS ACARI OF ANTARCTICA AND THE SUB-ANTARCTIC ISLANDS
CONVEY, P	1992	POLAR BIOLOGY	ASPECTS OF THE BIOLOGY OF THE MIDGE, ERETMOPTERA-MURPHYI SCHAEFFER (DIPTERA, CHIRONOMIDAE), INTRODUCED TO SIGNY IS
WORLAND, M.R.; BLOCK, '	1986	Journal of Insect Physic	Survival and water loss in some Antarctic arthropods.
BLOCK, W; CHRISTENSEN,	1985	BRITISH ANTARCTIC SU	TERRESTRIAL ENCHYTRAEIDAE FROM SOUTH GEORGIA AND THE MARITIME ANTARCTIC
CRANSTON, PS	1985	BRITISH ANTARCTIC SU	ERETMOPTERA-MURPHYI SCHAEFFER (DIPTERA, CHIRONOMIDAE), AN APPARENTLY PARTHENOGENETIC ANTARCTIC MIDGE
GREENSLADE, P.; WISE, K.	1984	Transactions of the Roy	Additions to the Collembolan fauna of the Antarctic. Transactions of the Royal Society of South Australia, 108, 203-205.
BLOCK, W; BURN, AJ; RICH	1984	BIOLOGICAL JOURNAL	AN INSECT INTRODUCTION TO THE MARITIME ANTARCTIC
BLOCK, W; BURN, AJ; RICH	1983	CRYOBIOLOGY	COLD RESISTANCE OF AN INSECT INTRODUCED TO THE ANTARCTIC
EDWARDS, J.A.	1980	British Antarctic Survey	An experimental introduction of vascular plants from South Georgia to the maritime Antarctic.
ROUNSEVELL, D	1978	PACIFIC INSECTS	POPULATIONS OF INTRODUCED ARTHROPODS AT AUSTRALIAN ANTARCTIC STATIONS
LONGTON, R.E.	1966	British Antarctic Survey	Alien vascular plants on Deception I. South Shetland Is.

CORTE, A.	1961	Contribución del Instit La primera fanerógama adventicia hallada en el continente antártico.
Hack, WH	1949	Nota sobre un colémbolo de la Antartida Argentina Achorutes viaticus Tullberg

Table S3. Global distribution of examined terrestrial non-native case studies reported in Antarctica (extant and extinct)

Clade & Species	Distribution Excluding Antarctic	GBIF global occurrences	Primary driver of introduction (assigned)	Primary reference
Magnoliophyta				
Poa annua	Cosmopolitan	468,196	Globalization	Pertierra et al. 2017a
P. pratensis	Cosmopolitan	466,982	Globalization	"
Nassauvia magellanica	Andean range	143	High connectivity	Smith and Richardson (2011)
Gamochaeta nivalis	Andean range	85	High connectivity	"
Diptera				
Eretmoptera murphyi	Sub-Antarctic	14	Nat. Program (UK)	Hughes et al. (2013)
Trichocera maculipennis	Holarctic	369	Synanthropic	Volonterio et al. (2013)
Collembolla				
Hypogastrura viatica	Cosmopolitan	941	Globalization	Collembola.org (2020)
Mesaphorura macrochaeta	Cosmopolitan	5477	Globalization	"
Proisotoma minuta	Cosmopolitan	1,339	Globalization	"
Ceratophysella succinea	Holarctic	648	Unknown	"
Protaphorura fimata	Holarctic	528	Unknown	"
Deuteraphorura cebennaria	Centro-European	6	Unknown	"
Acari				
Coccotydaeolus krantzi	Holarctic	Missing	Unknown	Pugh (2008)
Terpnacarus gibbosus	Cosmopolitan	Missing	Unknown	Walter (2001)
Oligochaete				
Christensenidrilus blocki	Sub-Antarctic	Missing	Nat. Program (UK)	Dózsa-Farkas and Convey (1997)

Table S4. Invasion status and propagule density records of examined non-native plant and invertebrate species in Antarctica

Clade & Species	Alien non-native Status	Propagule Pressure	Primary Reference
Magnoliophyta			
Poa annua	Naturalized multi-sites	Persistent seedbank	Galera et al. (2019)
P. pratensis	Eradicated locally	Single colony, no flowering	Pertierra et al. (2017b)
Nassauvia magellanica	Eradicated locally	Few plants	Hughes and Convey (2012)
Gamochaeta nivalis	Extinct locally	Single plant	"
Diptera			
Eretmoptera murphyi	Locally naturalized	Very high numbers in soils	Bartlett et al. (2020)
Trichocera maculipennis	Invasive (spreading)	Abundant larvae/adults around stations	Remedios et al. in review
Collembolla			
Hypogastrura viatica	Invasive (spreading)	Very high numbers in soils	Greenslade et al. (2012)
Mesaphorura macrochaeta	Introduced multi-sites	Low numbers in soils	"
Proisotoma minuta	Naturalized (locally)	Low numbers in soils	"
Ceratophysella succinea	Introduced locally	Rare	Enriquez et al. (2019)
Protaphorura fimata	Introduced locally	Rare	"
Deuteraphorura cebennaria	Introduced locally	Very rare	"
Acari			"
Coccotydaeolus krantzi	Naturalized (uncertain)	Moderate numbers in soils	Russell et al. (2014)
Terpnacarus gibbosus	Naturalized (uncertain)	Low to moderate numbers in soils	"
Oligochaeta			
Christensenidrilus blocki	Locally naturalized	Low densities in soils	Hughes and Worland (2010)

Table S5. Examination of potential climate-matching of non-native species in Antarctica from their native biome and available cold tolerance ecophysiological data. LT50 refers to the temperatures at which 50% survival is achieved and CTmin refers to the critical thermal minimum for activity. SCP refers to supercooling point.

Clade & Species	**Biome of the native range (centroid)**	**Ecophysiological data**	**Primary reference**
Magnoliophyta			
Poa annua	Temperate (Centroeuropean)	LT50: -31ºC	Dionne et al. (2001)
P. pratensis	Alpine tundra / Temperate	LT50: -14ºC	Gudleifson et al. (1986)
Nassauvia magellanica	Andean steppe	No data	
Gamochaeta nivalis	Andean steppe	No data	
Diptera			
Eretmoptera murphyi	Polar sub-Antarctic (S. Georgia I.)	SCP: -19ºC	Worland (2010)
Trichocera maculipennis	Temperate (Centroeuropean)	CTmin: -5ºC	Pertierra et al. (2021)
Collembolla			
Hypogastrura viatica	Taiga-Tundra (Scandinavian)	CTmin: -7ºC (adults)	Phillips et al. (2020)
Mesaphorura macrochaeta	Taiga-Tundra (Scandinavian)	No data	
Proisotoma minuta	Taiga-Tundra (Scandinavian)	LT50: -10.8ºC	Bahrndorff et al. (2019)
Ceratophysella succinea	Temperate (Centroeuropean)	No data	
Protaphorura fimata	Temperate (Centroeuropean)	CTmin: -5.4ºC	Liu et al. (2020)
Deuteraphorura cebennaria	Temperate (Centroeuropean)	No data	
Acari			
Coccotydaeolus krantzi	American steppe	No data	
Terpnacarus gibbosus	Temperate (Centroeuropean)	No data	
Oligochaeta			
Christensenidrilus blocki	Polar sub-Antarctic (S. Georgia)	No data	

Table S6. Evidence of genetic exchange resulting from multiple site entries and estimated minimum time of persistence of examined non-native species in Antarctica

Clade & Species	**Multiple entries for single sites (hybridization)**	**Lag phase Timespan (first record)**	**Primary Reference**
Magnoliophyta			
Poa annua	Yes, suspected	+40 years in King George I.	Chwedorzewska et al. (2014)
P. pratensis	No, single record	+60 years in Cierva Pt.	Corte (1961)
Nassauvia magellanica	No, single record	+1 year before eradication	Hughes and Convey (2012)
Gamochaeta nivalis	No, single record	+1 year, did not survive	“ ”
Diptera			
Eretmoptera murphyi	No, but possible	+40 years on Signy I.	Block et al. 1984
Trichocera maculipennis	No, evidence of single origin	+17 years since first record	Volonterio et al. 2006
Collembolla			
Hypogastrura viatica	Yes, suspected	+70 years in Deception I.	Hack (1949)
Mesaphorura macrochaeta	No evidence	+10 years since first record	Greenslade et al. (2012)
Proisotoma minuta	No evidence	+10 years since first record	“ ”
Ceratophysella succinea	No evidence	+5 years since first record	Enriquez et al. (2017)
Protaphorura fimata	No evidence	+35 years since first record	Greenslade & Wise (1984)
Deuteraphorura cebennaria	No, single record	+10 years since first record	Greenslade et al. (2012)
Acari			
Coccotydaeolus krantzi	Possible	Unknown	Russell et al. (2014)
Terpnacarus gibbosus	Possible	Unknown	“ ”
Oligochaeta			
Christensenidrilus blocki	No, but possible	+40 years in Signy I.	Dózka-Farkas and Convey (1997)

Table S7. Number of confamilial native species present in Maritime Antarctica. Examples of known enemies, either from predation or competition, described for the native range.

Clade & Species	**Number of confamilial competitors in Antarctic**	**Absent enemies**	**Primary Reference**
Magnoliophyta			
Poa annua	Poaceae (1)	Bent grasses	Silvertown et al. (1994)
P. pratensis	Poaceae (1)	Other meadow grasses	Gilbert & Fraser (2013)
Nassauvia magellanica	Asteraceae (0)	Unknown	
Gamochaeta nivalis	Asteraceae (0)	Unknown	
Diptera			
Eretmoptera murphyi	Chironomidae (2)	Beetles, S. Georgia pipit	Pers. obs.
Trichocera maculipennis	Trichoceridae (0)	Unknown	
Collembolla			
Hypogastrura viatica	Hypogastruridae (2), none co-occurring	Beetle, spider, amphibian	Hagvar (2010)
Mesaphorura macrochaeta		"	"
Proisotoma minuta	Isotomidae (6)	"	"
Ceratophysella succinea	Hypogastruridae (2), none co-occurring	"	"
Protaphorura fimata	Onychuridae (3)	"	"
Deuteraphorura cebennaria		"	"
Acari			
Coccotydaeolus krantzi	Iolinidae (0)	Coccinellidae beetles	Biddinger et al. (2009)
Terpnacarus gibbosus	Iolinidae (0)	"	Biddinger et al. (2009)
Oligochaete			
Christensenidrilus blocki	Enchytraidae (1), none co-occurring, native species intertidal	Unknown	

Table S8. Dominant activities in areas of terrestrial non-native species occurrence in Antarctica. The number of sites of occurrence (extant, doubtful and/or extinct) per species at 1x1 Km resolution is estimated from literature along with their spatial spreading (local area refers to closely adjacent occurrences within an island or promontory, and distant sites refers to spread over largely disconnected ice-free sites).

Clade & Species	**Number of sites** (1x1 Km)	**Habitat**	**Primary Reference**
Magnoliophyta			
Poa annua	7 (distant sites)	Coastal grounds near various stations in Shetland I. and Ant. Pen.	Molina-Montenegro et al. 2012
P. pratensis	1 (local area)	Bedrock outcrop near Primavera Station, Cierva Point.	Pertierra et al. 2013
Nassauvia magellanica	1 (local area)	Coastal terrace close to visitor site (Whalers Bay, Deception I)	Smith and Richardson 2011
Gamochaeta nivalis	1 (local area)	Coastal terrace close to visitor site (Whalers Bay, Deception I)	"
Diptera			
Eretmoptera murphyi	1 (local area)	Surroundings of Signy Station, South Orkney I.	Bartlett et al. 2019, 2020
Trichocera maculipennis	4 (local area)	Station grounds and vicinity in King George I.	Potocka and Krzemińska (2018)
Collembolla			
Hypogastrura viatica	>10 (distant sites)	Coastal terraces in multiple areas of Shetland I. and Ant. Pen.	Hughes et al. 2015
Mesaphorura macrochaeta	3 (distant sites)	Coastal terraces of two visitor sites (Deception I., Barrientos I.)	Enriquez et al. 2019
Proisotoma minuta	2 (local area)	Coastal terraces (Deception I.)	Hughes et al. 2015
Ceratophysella succinea	1 (local area)	Coastal terraces (Deception I.)	Enriquez et al. 2019
Protaphorura fimata	2 (local area)	Coastal terraces (Deception I.)	"
Deuteraphorura cebennaria	1 (local area)	Coastal terraces of visitor site (Pendulum Cove, Deception Island)	"
Acari			
Coccotydaeolus krantzi	5 (distant sites)	Coastal terraces near various stations/visitor sites	Russell et al. 2014
Terpnacarus gibbosus	3 (distant sites)	Coastal terraces near various stations/visitor sites	"
Oligochaeta			
Christensenidrilus blocki	1 (local area)	Surroundings of Signy Station, South Orkney I.	Hughes and Worland (2010)