

*Poa annua* [简体中文](#) [正體中文](#)

**System:** Terrestrial

Kingdom	Phylum	Class	Order	Family
Plantae	Magnoliophyta	Liliopsida	Cyperales	Poaceae

**Common name** plains bluegrass (English), poa (English), annual poa (English), walkgrass (English), low spear grass (English), annual blue grass (English), dwarf meadow gold (English), annual meadow grass (English), annual spear grass (English), Rispengras (German, Germany), dwarf spear grass (English), annual bluegrass (English), six weeks grass (English), spear grass (English), turin annuel (French), common meadow grass (English), winter grass (English), hierba de punta (Spanish), espiguilla (Spanish)

**Synonym** *Poa annua*, var. *reptans*

**Similar species** *Poa pratensis*

**Summary** Annual bluegrass (*Poa annua*) is an annual grass species native to Eurasia. It has become naturalised around the globe and its introduced range includes Africa, Australia, New Zealand, North America, South America and all major sub-Antarctic islands. It is a problematic weed in natural ecosystems and in golf courses. Its high genetic variability and tolerance of low mowing heights make it a superior competitor.



[view this species on IUCN Red List](#)

## Species Description

Annual bluegrass is a tufted grass that grows in dense clumps and has a low, spreading growth form. Erect or bending stems grow up to 30cm in length. Leaves are light green to yellowish green in colour, and are paler and softer than most grass species. Leaf blades are flat and hairless, measuring 1-14cm by 1-5mm and have characteristic canoe-shaped tips. Flowerheads are triangular and whitish green in colour. Spikelets are solitary, oblong, flat, 3-10mm long, with 2-10 florets and unequal glumes. Lemmas are rounded to pointed, 2.5-4mm long, smooth, keeled and hairy at base. Margins of glumes and lemmas are purplish on some plants. Ligules are prominent, rounded and membranous, 0.5-5mm long (GOERP, 2009; Massey University, 2008). Root system is shallow, horizontal and penetrates two to three centimetres below the ground (Frenot *et al.*, 1998). *Poa annua* found on sub-Antarctic islands are frequently found with leaves and inflorescences coloured with a dark reddish-purple pigment (Walton 1975).

## Notes

*Poa annua* is a tetraploid hybrid between *P. infirma*, *P. supine* and another species (Tutin, 1957 in Mitich, 1998). *Poa annua* is a highly variable species. There are hundreds or thousands of biotypes of this grass around the world. Different biotypes have even been found on the same golf course, which types that are best suited for fairways, greens or tees. While *P. annua* is usually classified as an annual species, there are also types that are perennial. *P. annua* var. *annua* is a bunch grass that acts as a true winter annual. *P. annua* var. *reptans* (Hauskn) Timm., on the other hand acts as a weak perennial and may have stolons, meaning it is not technically a bunch grass. There are many biotypes between these two extremes. Different biotypes respond differently to environmental stresses and to herbicides (Christian, 2006).

## Lifecycle Stages

*Poa annua* is an annual or sometimes perennial grass. In temperate locations it is usually annual, while in the sub-antarctic the plant takes on a perennial habit (Scott & Kirkpatrick, 2005). The annual variety is one of the first grasses to flower. Flowering begins early in spring with maximum seedhead production in May and June (Northern hemisphere) (Mitich, 1998). Seeds germinate in late summer to early autumn. The perennial variety can germinate at almost any time of year, when soil temperatures fall below 20°C (GOERP, 2009). Establishment of new plants can occur at any time of the year, though it is less likely under dry conditions. This weed is usually an annual, dying once it has set seed. The typical life cycle in New Zealand is to establish in late autumn and to finish seeding and die off in spring once it starts getting too dry. Annual bluegrass may be found in lawns at any time of the year if summer irrigation is sufficient to allow it (Massey University 2008).

## Uses

This plant has medium palatability as cattle fodder (USDA, 2002).

## Habitat Description

*Poa annua* is found routinely in gardens, paths and general waste areas. It grows aggressively under conditions of soil compaction and prefers good moisture levels. It prefers good levels of nitrogen and phosphate in the soil and is not adversely affected by most mowing heights (Massey University, 2008).

Annual bluegrass colonises disturbed habitats and is not generally found in natural communities. Typical habitats include open forests, streambanks, lawns, gardens, agricultural fields and roadsides (GOERP, 2009). It prefers sites sheltered from wind including depressions, building sites, dumps, earthworks and old caterpillar tracks (Olech, 1996). It may also colonise bare soil on new landslips and sites heavily grazed by rabbits, but it tends to be outcompeted by native species within several years on these sites if disturbance is not continued (Scott & Kirkpatrick, 2005). It may also be found around water, including springs, streams and lagoons and may colonise steep rocky moraines (glacial debris) and gravel flats (Scott & Kirkpatrick, 2005).

*Poa annua* tolerates a wide range of severe climatic conditions, making it a potentially invasive species for the Sub-Antarctic region. On one volcanic island in the region annual bluegrass was noted to occur on volcanic ash (ash has a low organic content and is both unstable and porous with a pH of about 6.8) (Longton, 1966). *Poa annua* is also noted to thrive on disturbed well trodden ground, for example, in and around gentoo penguin rookeries in the Falklands (Davies, 1939 in Moore & Sladen, 1966), and at sites of reindeer trampling and elephant seal wallowing (Pratt & Smith, 1982).

## Reproduction

Seed heads can form in plants that are six weeks old, and viable seed production can begin a few days after pollination. *Poa annua* is a prolific seed producer. Individual plants can produce 1,050 to 2,250 seeds per plant (Holm *et al.*, 1997 in Mitich, 1998). Even plants mowed heights of 0.5cm can produce up to 360 seeds (Beard, 1973 in Mitich, 1998).

Seed densities are commonly 200 000 per square metre in infested lawns, which is equivalent to 20 seeds in every square centimetre (Massey University 2008). Seed production can occur even when the plant is mowed as low as 1mm (GOERP, 2009). Seeds can lie dormant and viable for up to six years. (GOERP, 2009).

## Nutrition

Annual bluegrass can grow in all soil textures with pH 4.8 – 8.0 (USDA, 2002). It can survive in poorly aerated, compact soils but cannot tolerate acidic soils or those with high pollution levels (GOERP, 2009; Mitich, 1998). It has low nutrient requirements, although grows best in moist areas with high light. It can withstand temperatures as low as 8°C. It has low drought and fire tolerance (USDA, 2002). It has poor tolerance of extremes of temperature or moisture (Mitich, 1998).

## General Impacts

*Poa annua* is listed as a harmful organism, crop pest and potential seed contaminant (USDA-ARS, 2008). Annual bluegrass is known as a "pioneer" introduced species in the Ampere Valley, Kerguelen Island (Sub-Antarctic) in that it colonises moraines (glacial debris) left behind by recently de-glaciated land. However, it is believed to play only a minor role in primary succession (Frenot et al., 1998). In addition is uncertain whether the species acts invasively. Frenot and colleagues (2001) describe the species as naturalised and widely distributed growing in native communities and apparently not inducing strong changes in these communities. Scott & Kirkpatrick (2005) tested whether there is any indication that *P. annua* might displace native species and found no direct evidence that *P. annua* displaces other plant species in undisturbed vegetation. *P. annua* usually requires ongoing biotic disturbance to provide bare ground through trampling, and nutrient enrichment through manuring and (seal) molting, to become a locally dominant component in subantarctic vegetation. An increase in human activities in the sub-Antarctic may increase the spread of this species. The interaction between *P. annua* and other invasive species may be significant. Reindeer have major impacts on the vegetation of the sub-Antarctic islands and may encourage the dispersal and establishment of the resilient invasive grass *P. annua* (Frenot et al. 1998).

*P. annua* is a major weed in golf courses, which are usually composed of creeping bentgrass (*Agrostis stolonifera*) and Kentucky bluegrass (*Poa pratensis*). Annual bluegrass reduces the aesthetics, functionality and quality of these grasses due to its lighter green colour, unsightly seedheads and shallow root system (Hart & McCullough, 2007). It also has poor disease, drought and wear tolerances that create unsightly patches in creeping bentgrass and Kentucky bluegrass. Thus golf courses infested with *P. annua* often require more water, fungicides and management (McCullough & Hart, 2009).

## Management Info

Most management strategies for *Poa annua* have been developed in the context of managed turfgrass such as golf courses, rather than in natural ecosystems.

**Chemical:** High genetic variability in *P. annua* means that herbicides may be effective on some varieties, but other varieties are tolerant making complete control challenging. Rimsulfuron (TranXit GTA) may be effective at controlling infestations in Bermudagrass (*Cynodon* spp.) turf in the Southern United States. Bispyribac-sodium (Velocity) has had some success as a selective control of *P. annua* in bentgrass fairways (Christian, 2006). Ethofumesate (Nortron or Expo 500) can be used to kill annual bluegrass in ryegrass turf. Pendimethalin (Stomp) can be fairly safely applied over most turf to kill annual bluegrass as it germinates. A growth regulator called paclobutrazol is now being marketed in Australia to help with management of annual bluegrass in turf. In gardens, paths and waste areas annual bluegrass is susceptible to most herbicides. Selective grass herbicides such as fluazifop (Fusilade) can give very poor control of this particular grass; haloxyfop (Gallant) is the best to use (Massey University, 2008).

**Physical:** Manual removal by hand pulling or hoeing can be effective in early spring, but is very labour intensive and only feasible when infestations are small (GOERP, 2009).

**Biological control:** The bacteria *Xanthomonas campestris* pv. *poae* and *Pseudomonas putida* have had some successes in managing annual bluegrass infestations. A negative relationship between annual bluegrass and the amount of arbuscular mycorrhizal fungi in soil has been reported, although the opposite trend has been reported for another weed species *Agrostis stolonifera* (Gange et al., 1999).

**Cultural:** Good cultural practices tend to be the best way of dealing with annual bluegrass on turfs. Techniques to relieve soil compaction and aerate the soil will help desirable species compete well with annual bluegrass. Summer irrigation may assist annual bluegrass. Excess phosphate should be avoided. Dense swards of the desired turf species will stop new seedlings establishing, especially in autumn when germination of new annual bluegrass seedlings will be greatest (Massey University, 2008).

## Pathway

The number of tourists visiting the Antarctic Treaty Area is growing every year, and now well exceeds the number of scientists and support staff (Stonehouse 1992, in Chwedorzewska 2008).

## Principal source:

**Compiler:** IUCN/SSC Invasive Species Specialist Group (ISSG) with support from the EU-funded South Atlantic Invasive Species project, coordinated by the Royal Society for the Protection of Birds (RSPB)  
Updates with support from the Overseas Territories Environmental Programme (OTEP) project XOT603, a joint project with the Cayman Islands Government - Department of Environment

## Review:

**Publication date:** 2010-08-23

## ALIEN RANGE

[4] ANTARCTICA  
[1] AUSTRALIA  
[1] BRITISH ANTARCTIC TERRITORY (BAT)  
[1] FALKLAND ISLANDS (MALVINAS)  
[1] HEARD ISLAND AND MCDONALD ISLANDS  
[4] SAINT HELENA  
[1] SOUTH GEORGIA AND THE SOUTH SANDWICH ISLANDS

[1] ARGENTINA  
[1] BERMUDA  
[1] CANADA  
[5] FRENCH SOUTHERN TERRITORIES  
[2] NEW ZEALAND  
[4] SOUTH AFRICA

## BIBLIOGRAPHY

**43** references found for *Poa annua*

### Management information

Bergstrom, Dana M. and V.R. Smith., 1990. Alien vascular flora of Marion and Prince Edward Islands: new species present distribution and status. *Antarctic Science*, Volume 2, Issue 04, Dec 1990, pp 301-308

[Bokhorst, Stef., Ad Huiskes., Peter Convey and Rien Aerts., 2007. The effect of environmental change on vascular plant and cryptogam communities from the Falkland Islands and the Maritime Antarctic. \*BMC Ecol.\* 2007; 7: 15. Published online 2007 December 19. doi: 10.1186/1472-6785-7-15.](#)

**Summary:** Available from: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2234391> [Accessed 28 August 2008]

Christians, N. 2006. Control options: What's next for *Poa annua* control? *Grounds Maintenance* March 2006: 28-31.

Chwedorzewska, Katarzyna J., 2008. *Poa annua* L. in Antarctic: searching for the source of introduction. *Polar Biol* (2008) 31:263-268. DOI 10.1007/s00300-007-0353-4

Cooper, J. & Ryan, P.G. 1994. Management Plan for the Gough Island Wildlife Reserve. Published by the Government of Tristan da Cunha, Edinuvrgh, Tristan da Cunha

[de Villiers, Marianne S., John Cooper, Noel Carmichael, James P. Glass, Gordon M. Liddle, Ewan Mclvor, Thierry Micol and Andy Roberts., 2006. Conservation Management at Southern Ocean Islands: towards the Development of Best-Practice Guidelines. \*Polarforschung\* 75 \(2-3\), 113-131, 2005 \(erschienen 2006\)](#)

**Summary:** Available from: [http://epic.awi.de/Publications/Polarforsch2005\\_2-3\\_6.pdf](http://epic.awi.de/Publications/Polarforsch2005_2-3_6.pdf) [Accessed 25 October 2009]

Gange, A. C., D. E. Lindsay, and L. S. Ellis. 1999. Can arbuscular mycorrhizal fungi be used to control the undesirable grass *Poa annua* on golf courses? *Journal of Applied Ecology* 36: 909-919.

[Garry Oaks Ecosystem Recovery Team \(GOERT\). 2009. Annual bluegrass \*Poa annua\*.](#)

**Summary:** Available from: <http://www.goert.ca/documents/P.annua.pdf> [Accessed 23 August, 2010]

Hart, S.E. & McCullough, P.E. 2007. Annual bluegrass (*Poa annua*) control in Kentucky bluegrass (*Poa pratensis*) with Bispyribac-Sodium, Primisulfuron, and Sulfosulfuron. *Weed Technology*, 21: 702-708.

[IUCN/SSC Invasive Species Specialist Group \(ISSG\)., 2010. A Compilation of Information Sources for Conservation Managers.](#)

**Summary:** This compilation of information sources can be sorted on keywords for example: Baits & Lures, Non Target Species, Eradication, Monitoring, Risk Assessment, Weeds, Herbicides etc. This compilation is at present in Excel format, this will be web-enabled as a searchable database shortly. This version of the database has been developed by the IUCN SSC ISSG as part of an Overseas Territories Environmental Programme funded project XOT603 in partnership with the Cayman Islands Government - Department of Environment. The compilation is a work under progress, the ISSG will manage, maintain and enhance the database with current and newly published information, reports, journal articles etc.

[Massey University New Zealand Weeds. 2008. Annual poa \*Poa annua\*. Weed database](#)

**Summary:** Available from: <http://weeds.massey.ac.nz/weeds.asp?pid=85&sf=common> [Accessed 25 October 2008]

McCullough, P.E. & Hart, S.E. 2009. Creeping Bentgrass (*Agrostis stolonifera*) Putting Green Tolerance to Bispyribac-Sodium. *Weed Technology*, 23: 425-430.

Moen, Jon & Hector MacAlister., 1994. Continued range expansion of introduced reindeer on South Georgia *Polar Biol* (1994) 14:459-462

Olech, Maria., 1996. Human Impact on Terrestrial Ecosystems in West Antarctica. *Proc. NIPR Symp. Polar Biol.*, 9, 299-306, 1996

Rothwell, A. 2004 pers. comm. Royal Society for the Protection of Birds

Smith, R. I. Lewis., 1996. Introduced plants in Antarctica: Potential impacts and conservation issues. *Biological Conservation*. Volume 76, Issue 2, 1996, Pages 135-146



# GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: *Poa annua*

Vargas Jr., J.M. & Turgeon, A.J. 2004. *Poa annua*: physiology, culture and control of annual bluegrass. John Wiley & Sons, Inc.: Hoboken, New Jersey.

## General information

[Alaska Natural Heritage Program. 2004. Non-Native Plant Species of Alaska: Annual bluegrass \*Poa annua\* L.](#)

**Summary:** Available from: [http://akweeds.uaa.alaska.edu/pdfs/species\\_bios\\_pdfs/Species\\_bios\\_POAN.pdf](http://akweeds.uaa.alaska.edu/pdfs/species_bios_pdfs/Species_bios_POAN.pdf) [Accessed 23 August, 2010]

Battaglia, Bruno., Jos Valencía, D. W. H. Walton., 1997. Antarctic Communities: Species, Structure, and Survival. International Council of Scientific Unions Scientific Committee on Antarctic Research. Published by Cambridge University Press, 1997 ISBN 0521480337, 9780521480338 464 pages

Bermuda Natural History Museum, undated. Bermuda species database Bermuda Natural History Museum, PO Box FL 145, Flatts, FL BX, Bermuda.

Dean, W. R. J., S. J. Milton., P. G. Ryan and C. L. Moloney., 1994. The role of disturbance in the establishment of indigenous and alien plants at Inaccessible and Nightingale Islands in the South Atlantic Ocean. *Vegetatio* 113: 13-23, 1994.

Edwards, J. A., 1979. An Experimental Introduction of Vascular Plants from South Georgia to the Maritime Antarctic. *British Antarctic Survey Bulletin.*, No 49, 1979, p 73-80.

Edwards, J. A and Dorothy M. Greene., 1973. The Survival of Falkland Islands Transplants at South Georgia and Signy Island, South Orkney Islands. *British Antarctic Survey Bulletin.*, No 33 & 34, 1973, p 33-45.

[Falklands Conservation, undated. Falkland Islands Wildlife. A Check List of Mammals, Freshwater Fish, Birds and Plants](#)

**Summary:** Available from: <http://www.falklandsconservation.com/wildlife/chklist.html> [Accessed 25 October 2009]

[Frenot, Y., Chown, S.L., Whinam, J., Selkirk, P., Convey, P., Skotnicki, M., & Bergstrom, D. 2005. Biological invasions in the Antarctic: extent, impacts and implications. \*Bio. Rev.\* 80, 45-72.](#)

**Summary:** Article de synthèse sur les invasions biologiques (plantes, invertébrés et vertébrés) en antarctique.

Available from: <http://www.anta.canterbury.ac.nz/resources/non-native%20species%20in%20the%20antarctic/Talk%20%20Frenot.pdf> [Accessed 4 April 2008]

Frenot, Y., Gloaguen, J., Massé, L., & Lebouvier, M. 2001. Human activities, ecosystem disturbance and plant invasions in subantarctic Crozet, Kerguelen and Amsterdam Islands. *Biological Conservation*, 101, 33-50.

**Summary:** Cette article propose une liste des plantes exotiques pour 3 des îles subantarctiques françaises. Le rôle passé et présent des activités humaines dans les phénomènes d'invasions est discuté.

Frenot, Y., J. C. Gloaguen, M. Cannavacciuolo and A. Bellido, 1998. Primary Succession on Glacier Forelands in the Subantarctic Kerguelen Islands. *Journal of Vegetation Science*, Vol. 9, No. 1 (Feb., 1998), pp. 75-84

[Gaston, K.J., S.L. Chown & P. Bradley., 31 October 2002. Invertebrate diversity and endemism at Gough Island and threats from introduced species Final Project Report Project Ref. 162/8/253 Darwin Initiative for the Survival of Species 7th Round](#)

**Summary:** Available from: <http://darwin.defra.gov.uk/documents/8253/2294/08-253%20FR%20-%20edited.pdf> [Accessed 20 August 2008]

Huntley B. J, 1971. Vegetation. In: Zinderen Bakker E. M van, Winterbottom J. M, Dyer R. A (eds) Marion and Prince Edward Islands. Balkema, Cape Town, pp 98-160

[ITIS \(Integrated Taxonomic Information System\), 2009. Online Database \*Poa annua\* L.](#)

**Summary:** An online database that provides taxonomic information, common names, synonyms and geographical jurisdiction of a species. In addition links are provided to retrieve biological records and collection information from the Global Biodiversity Information Facility (GBIF) Data Portal and bioscience articles from BioOne journals.

Available from: [http://www.itis.gov/servlet/SingleRpt/SingleRpt?search\\_topic=TSN&search\\_value=41107](http://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=41107) [Accessed 25 October 2008]

Kelley, A.D. & Bruns, V.F. 1975. Dissemination of Weed Seeds by Irrigation Water. *Weed Science*, 23(6): 486-493.

Longton, R. E., 1966. Alien Vascular Plants on Deception Island, South Shetland Islands. *British Antarctic Survey Bulletin.*, No 9 1966, p 55-60.

Mitich, L. 1998. Annual Bluegrass (*Poa annua* L.). *Weed Technology*, 12(2): 414-416.

Moore, D. M & W. J. L Sladen., 1966. Some Recent Records of Native and Alien Flowering Plants from the Falkland Islands. *British Antarctic Survey Bulletin.*,

[New Zealand Plant Conservation Network \(NZPCN\). 2010. \*Poa annua\*.](#)

**Summary:** Available from: [http://www.nzpcn.org.nz/flora\\_details.asp?ID=3106](http://www.nzpcn.org.nz/flora_details.asp?ID=3106) [Accessed 23 August, 2010]

Pratt, R. M. and R. I. Lewis Smith., 1982. Seasonal Trends in Chemical Composition of Reindeer Forage Plants on South Georgia. *Polar Biol* (1982) 1:13-32

Scott, J. J. & J. B. Kirkpatrick., 2005. Changes in Subantarctic Heard Island Vegetation at Sites Occupied by *Poa annua*, 1987-2000. *Journal Arctic, Antarctic, and Alpine Research*. Volume 37, Number 3 / August 2005

[Shanklin, Jonathan., March 29 2006. The flora of King Edward Point & Grytviken](#)

**Summary:** Available from: [http://www.antarctica.ac.uk/met/jds/natural\\_history/bird\\_island/KEP\\_FLORA.htm](http://www.antarctica.ac.uk/met/jds/natural_history/bird_island/KEP_FLORA.htm) [Accessed 19 January 2009]

Summers, Ronald W., 1983. The life cycle of the Upland Goose *Chloephaga picta* in the Falkland Islands *IBIS* 125: 524-544 1983

[United States Department of Agriculture - Agricultural Research Service \(USDA-ARS\). 2008. Taxon: \*Poa annua\* L. National Genetic Resources Program. Germplasm Resources Information Network - \(GRIN\) \[Online Database\]. National Germplasm Resources Laboratory, Beltsville, Maryland.](#)

**Summary:** Available from: <http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?28904> [Accessed 25 October 2009]

[USDA. 2002. PLANTS Profile: \*Poa annua\* L. Annual bluegrass.](#)

**Summary:** Available from: <http://plants.usda.gov/java/nameSearch?keywordquery=Poa+annua&mode=science&submit.x=0&submit.y=0> [Accessed 23 August, 2010]

Vidal, Eric, Pierre Jouventin & Yves Frenot, 2003. Contribution of alien and indigenous species to plant-community assemblages near penguin rookeries at Crozet archipelago. *Polar Biol* (2003) 26: 432-437 DOI 10.1007/s00300-003-0500-5

Walton, D.W.H., 1975. European weeds and other alien species in the Subantarctic. *Weed Research*, 1975, Volume 15, 271-282