

**Hordeum murinum L. (Poaceae)**  
**Rabbit Barley**

**Description.** Annuals, 1-8 dm tall, often tufted, stems erect, glabrous, often bent at the nodes. Leaves alternate, ligules 0.5-1.5 mm long, truncate, entire to erose or ciliolate; auricles present, linear; sheaths glabrous; blades linear, flat to folded, 2-10 mm wide, glabrous to scabrous or short-hairy. Inflorescence 3 to 12 cm long, a dense, terminal, somewhat flattened spike, internodes between spikelets 1-3 mm long. Spikelets in sets of 3's, each with 1 floret, the central one sessile, fertile, the floret short-pedicellate, the lateral ones sterile or staminate, florets short-pedicellate, glumes 13-25(40) mm long, those of the central spikelet and inner ones of the lateral spikelets ciliate, slightly broadened below, the outer glumes of the lateral spikelets linear and awn-like; lemma of the fertile, central spikelet 6-10 (12) mm long, faintly 5-nerved, those of the lateral spikelets 10-18 mm, all 3 lemmas tapering to stout awns 15-25 (45) mm long. In California, flowering from March to June. (Arnou 1987, Barkworth 1993, Hitchcock 1944, Holmgren and Holmgren 1977, Humphries 1980, Munz 1959).

**Note:** *Hordeum murinum* is composed of 3 morphological races, ssp. *rnurinum*, ssp. *glaucum*, and ssp. *leporinum*, each of which has been treated as separate species (Covas 1949, Holmgren and Holmgren 1977) or subspecies (Arnou 1987, Barkworth 1993, Baum and Bailey 1989, Giles and Lefkovich 1986, Humphries 1980, Konishi 1989, Tselev 1984).

**Geographic distribution.** A native of Europe, rabbit barley has been reported as a waif in eastern North America, and has become naturalized in western North America, South America, Asia, Australia, southern Africa, and Hawaii (Arnold and de Wet 1993, Arnou 1987, Chapman 1991, Clapham et al. 1962, Gibbs Russell et al. 1955, Gleason and Cronquist 1991, Humphries 1980, Holmgren and Holmgren 1977, Koyama 1987, Munz 1959, Ohwi 1965, Wagner et al. 1990).

*Hordeum murinum* was first reported from California (San Diego, San Francisco) by Watson (1880), but probably was present near settlements as early as the end of the 18th century (Hendry and Bellue 1925). It had become widely established in California before the end of the 19th century (Robbins 1940, Burtt Davy 1902). Only subspp. *glaucum* and *leporinum* have been reported from the northern California Channel Islands (Junak et al. 1997). *Hordeum murinum*, including all 3 subspecies, has been reported from most California counties at elevations below 1000 m (Anonymous 1998, Barkworth 1993).

**Reproductive and vegetative biology.** Like most species of grasses, *Hordeum* spp. are wind-pollinated (Proctor et al. 1996). *Hordeum murinum* is self-compatible and largely self-pollinating in Great Britain (Booth and Richards 1978). In California vernal pools, *H. murinum* ssp. *leporinum* generally germinates in the fall and flowers and fruits by April (Lin 1970).

**Ecological distribution.** *Hordeum murinum* occurs in disturbed sites, roadsides, fallow fields, dry grasslands, waste places (Arnou, 1987, Chapman 1991, Holmgren and Holmgren 1977, Humphries 1980, and Munz 1959). *Hordeum murinum* ssp. *leporinum* is a common element in understory vegetation of blue oak woodland (Holland 1974), in vernal pools (Lin 1970), and coastal bluff grasslands of the Channel Islands (Philbrick and Haller 1990).

**Weed status.** *Hordeum murinum* is not considered a noxious weed in agricultural or horticultural practice, at least at a global level (not listed by Holm et al. 1977), nor is it considered a noxious weed by the State Dept. of Food and Agriculture (Anonymous 1996). It is not listed for the United States in Lorenzi and Jeffery (1987).

**Microbial pathogens.** *Hordeum murinum* has been reported as a unaffected host to wheat streak virus and several fungi (*Erysiphe graminis*, *Rhynchosporium secalis*) that infest cultivated barley (Andrivon, D. and C. De Vallavielle-Pope 1992, Giles and Barrett 1993, Jarosz and Burdon 1996, Rabenstein et al. 1992).

**Insect pathogens.** Strains of *Hordeum murinum* have been found to be resistant to the Russian wheat aphid (*Diuraphis noxia*), which is a serious pest of cultivated barley (Kindler and Springer 1991).

**Herbicide control.** Several herbicides have been effectively used to control strains of *Hordeum murinum*, including diquat, fluazifop, simazine, paraquat (Leys and Plater 1993, Preston et al. 1991, Stephenson and Mitchell 1993, Tucker and Powles 1991). Resistance to diquat and paraquat has been reported among populations in cultivated fields (Preston et al. 1991, 1992, Purba et al. 1993, Tucker and Powles 1991).

### Literature Cited

- Andrivon, D. and C. De Vallavielle-Pope. 1992. Infection attempts of cultivated barley (*Hordeum vulgare*) with isolates of *Erysiphe graminis* collected from *Hordeum murinum* in southwestern Europe. *Mycological Research*. 96:1029-1032.
- Anonymous. 1998. USDA Plants Database, Baton Rouge, LA. URL = usda.plants.gov.
- Arnold, T. and B. de Wet. 1993. Memoir 62. Plants of southern Africa: names and distribution. National Botanical Institute, Pretoria. 825 pp.
- Arnow, L. 1987. Gramineae. pp.684-788. In Welsh et al. A Utah Flora. Great Basin Naturalist Memoirs 9:1-894.
- Barkworth, M. 1993. *Hordeum*. pp.1264-1266. In In Hickman, J. (ed.). The Jepson manual: Vascular plants of California. University of California Press, Berkeley. 1400 pp.
- Baum, B. and L. Bailey. 1989. Species relationships in the *Hordeum murinum* aggregate viewed from chloroplast DNA restriction fragment patterns. *Theoretical and Applied Genetics*. 78:311-317.
- Booth, T. and A. Richards 1978. Studies in the *Hordeum murinum* aggregate: disk electrophoresis of seed proteins. *Botanical Journal, Linnaean Society* 76:115-125.
- Chapman, A. 1991. Australian plant name index. D-J. Australian Government Publishing Service, Canberra. pp.899-1709.
- Covas, G. 1949. Taxonomic observations on the North American species of *Hordeum*. *Madroño* 10:1-21.
- Gibbs Russell, G., L. Watson, M. Koekemore, L. Smook, N. Barker, H. Anderson, and M. Dallwitz. 1955. Grasses of southern Africa. *Memoirs of the Botanical Survey of South Africa* No.58. 437 pp.

- Giles, B. and J. Barrett. 1983. *Erysiphe graminis* resistance in the *Hordeum murinum* complex. Barley Genetics Newsletter. 13: 78-82.
- Giles, B. and L. Lefkovitch. 1986. A taxonomic investigation of the *Hordeum murinum* complex (Poaceae). Plant Systematics and Evolution. 153:181-197.
- Hendry, G. and M. Bellue. 1925. The plant content of adobe bricks. California Historical Society Quarterly 4: 361-373.
- Hitchcock, A. Poaceae. pp.103-255. In Abrams, L. Illustrated flora of the Pacific States. 1. Ophioglossaceae to Aristolochiaceae, Stanford University Press, Stanford, California. 538 pp.
- Holland, V. 1974. A study of soil and vegetation under *Quercus douglasii*. H. & A. compared to open grassland. Ph.D. dissertation, University of California, Berkeley. 369 pp.
- Holmgren, A. and N. Holmgren. 1977. Poaceae. pp.175-462. In Cronquist et al. Intermountain Flora. Volume 6. The monocotyledons. New York Botanical Garden and Columbia University Press, New York. 584 p.
- Humphries, C. 1980. *Hordeum*. In Tutin et al. (eds). Flora Europaea. Volume 5. Alismataceae to Orchidaceae. Cambridge University Press, Cambridge. 452 pp.
- Jarosz, A. and J. Burdon. 1996. Resistance to barley scald (*Rhynchosporium secalis*) in wild barley grass (*Hordeum glaucum* and *Hordeum leporinum*) populations in southeastern Australia. Australian Journal of Agricultural Research. 47: 413-425.
- Kindler, S. and T. Springer. 1991. Resistance to Russian wheat aphid in wild *Hordeum* species. Crop Science. 31: 94-97.
- Konishi, T. 1989. Biosystematic studies on the *Hordeum murinum* aggregate. Berichte des Ohara Instituts für Landwirtschaftliche Biologie, Okayama Universität. 19:189-198.
- Koyama, T. 1987. Grasses of Japan and its neighboring regions. Kodansha, Tokyo, Japan. 570 pp.
- Leys, A. and B. Plater. 1993. Simazine mixtures for control of annual grasses in pastures. Australian Journal of Experimental Agriculture. 33:319-326.
- Lin, J. 1970. The floristic and plant succession in vernal pools vegetation. M.A. thesis, San Francisco State University, San Francisco, California. 99 pp.
- Munz, P. 1959. A flora of California. University of California Press, Berkeley. 1681 pp.
- Ohwi, J. 1965. Flora of Japan. Smithsonian Institution, Washington D.C. 1066 pp.
- Philbrick, R. and J. Haller. 1990. The southern California islands. pp.893-896. In Barbour, M. and J. Major. (eds). Terrestrial vegetation of California. Special Publication No.9. California Native Plant Society, Sacramento, California. 1002 pp.
- Preston, C., J. Holtum, S. Powles. 1991. Resistance to the herbicide paraquat and increased tolerance to photoinhibition are not correlated in several weed species. Plant Physiology. 96: 314-318.
- Preston, C., J. Holtum, and S. Powles. 1992. On the mechanism of resistance to paraquat in *Hordeum glaucum* and *H. leporinum*: Delayed inhibition of photosynthetic O<sub>2</sub> evolution after paraquat application. Plant Physiology. 100: 630-636.
- Proctor, M., P. Yeo, and A. Lack. 1996. The natural history of pollination. Timber Press, Portland, Oregon. 479 pp.
- Purba, E., C. Preston, and S. Powles. 1993. Inheritance of bipyridyl herbicide resistance in *Arctotheca calendula* and *Hordeum leporinum*. Theoretical and Applied Genetics. 87: 598-602.
- Rabenstein, F., A. Stanarius, and G. Proeseler. 1982. Identifizierung des Weizenstrichelmosaik-

- Virus (wheat streak mosaic virus) an *Hordeum murinum* L. in der DDR. Archiv für Phytopathologie und Pflanzenschutz. 18: 301-318.
- Robbins, W. 1940. Alien plants growing without cultivation in California. Agricultural Experiment Station. Bulletin 637. University of California, Berkeley. 128 pp.
- Stephenson, D. and G. Mitchell. 1993. Barley grass control with herbicides in subterranean clover pasture: 1. Effect on pasture in the year of spraying. Australian Journal of Experimental Agriculture. 33: 737-741.
- Tselev, N. 1984. Grasses of the Soviet Union. Part 1. Balkema, Rotterdam, The Netherlands. pp.1-568.
- Tucker, E. and S. Powles. 1991. A biotype of hare barley (*Hordeum leporinum*) resistant to paraquat and diquat. Weed Science. 39: 159-162.
- Wagner, W., D. Herbst, and S. Sohmer. 1990. Manual of the flowering plants of Hawaii. 1853 pp.
- Watson, S. 1880. Geological Survey of California. Botany. Volume 2. John Wilson, University Press, Cambridge, Massachusetts. 559 pp.