The Eurasian *Poa bulbosa* L. (bulbous bluegrass, Poaceae) is unique among North American grasses in its combination of tufted culms with bulbous bases and florets proliferating into bulbils (subspecies *vivipara* (Koeler) Arcangeli). *Poa bulbosa* grows in a variety of open, anthropogenic habitats, such as weedy fields, freshly-disturbed earth, campgrounds, and roadsides. This species is especially common in the western United States, but is widespread in the northeastern U.S. as well. The first published report of bulbous bluegrass in North America was by Piper (1924), from Virginia and Washington state. The species was being grown by the USDA as early as 1907 (both subspecies *bulbosa* and subspecies *vivipara*), and was known as a weedy species as early as 1915 (Schoth & Halperin 1932; Vinall & Westover 1928). Bulbous bluegrass is sometimes cultivated as a turf grass (Diesburg et al. 1997; Mangess et al. 1971), though it may go dormant in hot, dry periods (Ofir & Kerem 1982; Ofir 1986; Ofir & Kigel 1999). Oldham et al. (1995) provide a summary of the North American distribution of *P. bulbosa* ssp. *vivipara*. Novak & Welfley (1997) examined the genetic diversity of *Poa bulbosa* populations in the northwestern United States, and concluded that the high rate of diverse genotypes may be due to multiple introductions of the species, or due to sexual reproduction. Kartesz & Meacham (1999) map bulbous bluegrass as occurring in 43 of the lower 48 states in the United States, and in 3 Canadian provinces.

The nomenclaturally typical subspecies of *Poa bulbosa* has perfect flowers, rather than having the florets proliferating into bulbils. This typical variant has apparently been reported outside cultivation from North America only by one author (Halperin 1931), who reported subspecies *bulbosa* from California. It does not appear that the presence of subspecies *bulbosa* has been recognized as occurring in North America by any subsequent author. In the grass treatments by Weishaupt in Braun (1967) and by Weishaupt (1985), it is clear from the context that the scant references to *Poa bulbosa* in Ohio were entirely to *Poa bulbosa* subspecies *vivipara*, even though the subspecific nomenclature was not used in either work.

We have discovered that *Poa bulbosa* ssp. *bulbosa* not only grows in Indiana and Ohio, but is quite common in a specific habitat in those states. We were collecting at the Butler County fairgrounds in the city of Hamilton, Ohio, 29 April
1998, when we noted numerous clumps of a *Poa* with bulbous bases and perfect flowers. Later that same day, we found the same plant at the Darke County fairgrounds in Greenville, Ohio. Our collections were determined as *Poa bulbosa* ssp. *bulbosa* by Dr. Robert Soreng at the Smithsonian Institution.

We broadened our survey to other counties of Indiana and Ohio. Eventually, we had found the typical subspecies in four Indiana and 13 Ohio counties. All these collections were made in agricultural fairgrounds, most often at the racetracks on those sites. A search of fairgrounds in adjacent counties of Kentucky, Michigan, Pennsylvania and West Virginia located no populations of the subspecies *bulbosa*. Many of the Indiana and Ohio populations are quite vigorous with thousands of clumps over broad stretches of land.

We also searched for *Poa bulbosa* ssp. *vivipara*. We turned up numerous new county records of this subspecies in Indiana and Ohio. However, at no place did the two subspecies grow together or occur adjacent to one another. Also, we never found subspecies *vivipara* on a fairground. The subspecies *bulbosa* was restricted to that habitat. The results of our survey are presented in Figure 1. See Appendix A for a list of representative specimens of *Poa bulbosa* ssp. *bulbosa* from Indiana and Ohio.

![Distribution of *Poa bulbosa* L. in Indiana and Ohio. Solid dots represent ssp. *bulbosa*. Open circles represent ssp. *vivipara* (distribution in the four northwestern Indiana counties follows Swink & Wilhelm [1994]).](image-url)
Poa bulbosa ssp. vivipara obviously is more widespread in Indiana and Ohio than the typical subspecies. It, of course, grows in many more types of habitats than ssp. bulbosa. It also has been noted in the floras of those states for a longer time than the typical subspecies. The first Ohio collection of ssp. vivipara dates from 1963 (specimen at OS). The first Indiana reports of this subspecies are post-1991 (Swink & Wilhelm 1994).

Perfect flowering vs. proliferation of bulbils in Poa bulbosa has been linked to environmental factors. Kennedy (1929) describes proliferation in this species, as did Halperin (1933), who also discussed the nomenclature of the proliferous form. Younger (1960) induced proliferation of bulbils in this species by increasing air temperature and day length. This result, however, may not be typical for the strains of Poa bulbosa found in North America. Younger did not identify which subspecies of P. bulbosa he used in his studies. His experiments were conducted entirely on strains of P. bulbosa from Afghanistan. Plants in the Indiana and Ohio populations of this species were exclusively perfect-flowered or viviparous. No change in this status was observed over the course of the season.

Two obvious questions need to be addressed. Where did these plants of Poa bulbosa ssp. bulbosa originate and how do they spread from site to site? The question of origin is more difficult to answer. It seems unlikely that plants of this subspecies were introduced into Indiana and Ohio directly from Eurasia. Dr. Soreng (pers. comm., 1998) offers the following suggestion: “It is the nature of subspecies, in my opinion, to occasionally reform out of the genetic mix of other subspecies. Thus, it may be that your populations have arisen from subsp. vivipara and not from introductions of Old World populations of sexually reproducing plants of P. bulbosa subsp. bulbosa.” Certainly, the uniformity of the populations over an extensive area argues for a single source of introduction.

It is much easier to account for the means by which the plants of ssp. bulbosa spread from site to site. The key here is the common factor of racetracks. Seeds, if any are produced, and loose bulbous bases may easily travel in caked earth or mud on the hooves of horses or the wheels of vehicles. Many racecourses on county fairgrounds are used for tractor-pulling competitions. The tractors are an obvious vector as they travel from fairground to fairground. The distribution and spread of Poa bulbosa ssp. bulbosa parallels that of Sclerochloa dura (L.) P. Beauv. (Cusick et al. in prep.), another characteristic species of racetracks and fairgrounds.

Broader surveys of suitable habitats may reveal the true geographical extent of Poa bulbosa ssp. bulbosa in North America.

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LITERATURE CITED


APPENDIX A: COLLECTIONS OF POA BULBOSA SSP. BULBOSA FROM INDIANA AND OHIO.