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VEGETATIVE PROLIFERATION IN *POLYPOGON MONSPELIENSIS* (GRAMINEAE)

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Vegetative proliferation is well documented in the Gramineae. The term vegetative proliferation is here used to describe the transformation of spikelet parts into vegetative shoots (or plantlets) (Beetle 1980). Three subfamilies of grasses (*Pooideae*, *Chloridoideae*, and *Panicoideae*) have documented cases of viviparous reproduction (including vegetative proliferation) by some of their members, with these modifications most common in the pooid tribes *Poeae* and *Aveneae* (Gould and Shaw 1983). Twenty-eight genera of grasses, including some 75 species, are known to have some form of spikelet modification into plantlets (Beetle 1980). Several summaries of vivipary and vegetative proliferation have been compiled (Stebbins 1941; Gustafsson 1946, 1947; Nygren 1954; Beetle 1980), but Rabbitfoot grass, *Polypogon monspeliensis* (L.) Desf., an introduced European grass common in moist areas throughout the United States, is not included in these lists. A population of *P. monspeliensis* with vegetatively proliferating spikelets was found growing with *Nymphaea*, *Typha*, *Hydrocotyle*, *Salvinia*, and *Festuca* on the edge of a man-made pond on the campus of New Mexico State University in Las Cruces, New Mexico. The collection (Roalson 1205, NMCR) was made on 3 November 1994. Rabbitfoot grass has persisted along this pond for many years, but vegetative proliferation has not been noted for this population until now.

The normal spikelet of Rabbitfoot grass bears two awned glumes and a single, fertile floret. The floret is composed of a lemma and palea, both of which are thin, hyaline, and much shorter than the glumes. The lemma is terminated by a delicate, deciduous awn ap-

proximately 1 mm long. In the spikelets modified into plantlets, the lemma, palea, and flower are transformed into a plantlet arising from inside two normal glumes. The plantlets are identical to normal seedlings of *P. monspeliensis* except that the first leaf bears an awn on the tip of the blade similar to the awn of the lemma in normal spikelets. Viviparous and normal spikelets were found in the same inflorescence of the same plant. It is doubtful that these plantlets develop and produce new plants, and young plants were not seen in the population to indicate otherwise. Vegetative proliferation occurred at the end of the growing season when most of the plants of *P. monspeliensis* already had matured.

The cause of vegetative proliferation is not entirely clear. Beetle (1980) gives several possible reasons, including rapid change in the environment, mechanical injury, or pathology. Perhaps rapid environmental change (e.g., a sharp drop in temperature) caused proliferation in *P. monspeliensis* reported here. There was no evidence of insect damage to the plants nor was there any noticeable smutting or fungal growth on the plants or plantlets.

LITERATURE CITED

- BEETLE, A. A. 1980. Vivipary, proliferation, and phyllody in grasses. *J. Range Manage.* **33**: 256–261.
- GOULD, F. W., AND R. B. SHAW. 1983. Grass systematics. Texas A & M University Press, College Station.
- GUSTAFSSON, A. 1946. Apomixis in higher plants, I. The mechanisms of apomixis. *Lunds Univ. Arsskr. N. F. Avd. 2*, **43**: 1–66.
- . 1947. Apomixis in higher plants, II. The causal aspect of apomixis. *Lunds Univ. Arsskr. N. F. Avd. 2*, **43**: 71–178.
- NYGREN, A. 1954. Apomixis in the angiosperms. II. *Bot. Rev.* **20**: 577–649.
- STEBBINS, G. L. 1941. Apomixis in the angiosperms. *Bot. Rev.* **7**: 507–542.

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