

teriora straminea, rostro corpore subaequilongo, pappo cervino.

Type: Washington. Whitman County: in fertile bottom land, Pullman, June 9, 1949, *Owney 3195*, in Herbarium of the State College of Washington, Pullman.

Tragopogon miscellus Ownbey, sp. nov.—Herbae biennes primum obscure floccosae deinde glabrae viridesque. Folia lineari-lanceolata semi-amplexicaulia usque ad 3 cm. lata abrupte attenuata, marginibus crispis, apicibus cirrosis. Capitula pluriflora, pedunculis inflatis fistulosis usque ad 10 mm. crassis. Bracteae involucri lineari-lanceolatae in plantis robustioribus plerumque 13, marginibus purpureis. Ligulae flavae bractea dimidia subaequilongae. Achenia rostraque conjuncta 25-35 mm. longa, exteriora fusca, interiora straminea, rostro corpore subaequilongo vel longiore, pappo cinereo.

Type: Idaho. Latah County: in fertile bottom land, Moscow, June 10, 1949, *Owney 3196*, in Herbarium of the State College of Washington, Pullman.

SUMMARY

Three diploid ($n=6$) species of the Old World genus *Tragopogon* (Compositae), *T. dubius*, *T. porrifolius*, and *T. pratensis*, have become widely naturalized in North America. In southeastern Washington and adjacent Idaho, where all three occur, extensive natural hybridization is taking place. Each species crosses readily with both of the others, and wherever two or more grow together, easily detected F_1 hybrids are frequent. These dip-

loid hybrids for all three species combinations are highly sterile, not more than 1-2 per cent of the flowers producing fruits with embryos. They are intermediate only in the sense that they recombine certain dominant characteristics of the parental species involved. F_2 and back-cross individuals are absent or nearly so. Meiosis in the hybrids is fairly regular, although some multivalents and univalents are formed, particularly in *T. dubius* \times *T. porrifolius*. Four small amphiploid populations were discovered in 1949. These represent apparently four recent and independent instances of the doubling of the chromosome sets, two cases each for the *T. dubius* \times *T. porrifolius* and *T. dubius* \times *T. pratensis* hybrids. These two tetraploid entities ($n=12$) are fairly regular meiotically, usually forming bivalents at metaphase I in pollen mother cells. They are moderately fertile, on the average from 52-66 per cent of the flowers producing fruits with embryos. They are established and true-breeding entities, although population size is still precariously small. Morphologically, they are like the corresponding diploid hybrids except for conspicuous "gigas" features and their very evident fertility. Their cell volume, as revealed by measurement of the spherical pollen grains, is almost precisely the summation of the cell volumes of the two parental genomes. They are accorded species rank, described and named *T. mirus* (amphiploid *T. dubius* \times *T. porrifolius*) and *T. miscellus* (amphiploid *T. dubius* \times *T. pratensis*).

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