

TABLE 1.—NUMBER AND LOCATION OF SMALL, INTERMEDIATE-SIZED AND LARGE *FRANKENIA JOHNSTONII* POPULATIONS—Continued

Number of individual plants	Starr County, TX	Zapata County, TX	Webb County, TX	Mexico
Unknown # of plants .....	9	0	0	2
Total number of Populations .....	16	35	7	4

Of the 7 *Frankenia johnstonii* populations confirmed in Webb County, 4 have greater than 5,000 individual plants, and 1 of the 4 is described as containing “hundreds of thousands of plants” (Janssen 1999). Two of the 7 populations consist of between 2,000 and 5,000 plants, and 1 has less than 2,000 plants.

Thirty-five *Frankenia johnstonii* populations are documented in Zapata County, 13 of which have greater than 5,000 plants, with several of the 13 composed of more than a million individuals (Janssen 1999). Six of the 35 populations have between 2,000 and 5,000 plants, and 16 have less than 2,000 plants.

For the 16 *Frankenia johnstonii* populations reported from Starr County, only 7 were confirmed by Janssen’s site visits (Janssen 1999). One of the 16 had approximately 10,000 plants, 1 had approximately 2,000 plants, and 5 had less than 2,000 plants. For the 9 Starr County populations not visited by the TPWD principal investigator, locality information was provided by another biologist who furnished no data on numbers of individuals or condition of the plants (Janssen 1999).

A total of 5,600 individual plants were estimated from two of the four Mexican *Frankenia johnstonii* populations. Although the individual plant numbers are not available for the remaining two populations, one was described by a Mexican botanist as being “Abundante!” (Janssen 1999).

In Texas, approximately 80% of potential habitat has been surveyed for *Frankenia johnstonii* (Gena Janssen, Janssen Biological, pers. comm. 2001). Landowner permission for access was one of the primary factors affecting the extent of potential habitat covered by surveys, since parts of all populations located to date occur on privately owned land. Within Texas, a greater extent of suitable habitat, defined by the presence of the correct types of soils, exists in Zapata County rather than in the neighboring Starr or Webb Counties (Janssen, pers. comm. 2000). Zapata was the county most intensively surveyed by Janssen between 1993 and 1996, and the relatively higher numbers of landowners willing to grant access in this county

may be correlated with an extensive landowner outreach campaign conducted by TPWD (Janssen 1996, 1999). In some cases in Zapata County, there was high potential for the presence of additional populations on land that adjoined ranches with known populations, however permission to access these areas was not attainable, therefore presence/absence could not be confirmed. Landowner contacts were not as readily available for Starr and Webb Counties, and additional population locations are possible in those counties. In Mexico, the level of effort to survey for *Frankenia johnstonii* has been limited. It is probable that populations remain undiscovered throughout suitable habitat in all three Texas counties, with the highest potential in Zapata County, and in Mexico (Janssen, pers. comm. 2001). Although only locality data has been documented thus far for plants in the nine Starr County populations, further assessment of these plants (such as their numbers and condition) is a possibility in the future.

At the time of listing, we considered *Frankenia johnstonii* to be vulnerable to extinction due to the following: (1) The low number and restricted distribution of populations; (2) low numbers of individual plants; (3) threats to the integrity of the species’ habitat such as clearing and planting to improve pasture species, including introduced grasses; and (4) direct loss from construction associated with highways, residential development, and oil- and natural gas-related activities; and (5) the species’ low reproductive potential.

The intensive survey effort by TPWD in South Texas has shown *Frankenia johnstonii* to be much more widespread and abundant than was known at the time of listing or when the recovery plan was prepared. Initial fears regarding the species’ vulnerability to competition from exotic plant species such as buffelgrass (*Pennisetum ciliare*) have been alleviated by the results of biological and ecological research on this species. Analysis of data collected for soils, structural characteristics, and composition of the surrounding plant community show *Frankenia johnstonii* to be well adapted to the harsh

environment in which it is a dominant vegetative component. This plant is a halophytic (salt-loving) perennial, suited to life in hyper-saline soils in which the elevated salinity and sodium levels are likely to exclude buffelgrass, the grass species that is most frequently planted for pasture improvement purposes in Webb, Zapata, and Starr Counties (John Lloyd-Reilly, U.S. Department of Agriculture, Natural Resource Conservation Service, pers. comm. 2001). In fact, *Frankenia johnstonii* is the dominant woody species within the plant community where it is found (Janssen 1999).

Mechanical and chemical brush-clearing practices that are commonly used prior to planting pasture grasses can, however, adversely impact *Frankenia johnstonii* populations or portions thereof by uprooting or damaging plants. In order to address conservation concerns associated with land management practices, TPWD conducted an extensive endangered and rare species education and outreach campaign in Webb, Zapata, and Starr Counties that encompassed activities such as landowner meetings, coordination with the U.S. Department of Agriculture’s (USDA) Natural Resource Conservation Service (NRCS), county fair exhibits, development of printed information, and school presentations. This campaign promoted conservation of *Frankenia johnstonii*, in part by sharing the results of Janssen’s field studies on the ecology and biology of this species. In October 2000, a presentation was made to NRCS District Conservationists from Webb, Zapata, and Starr Counties to emphasize their agency’s role in helping landowners identify and avoid impacts to *Frankenia johnstonii* population sites, especially in light of the futility of converting the land on these hyper-saline sites to pastures of buffelgrass. The inability of buffelgrass to tolerate the high soil salinities typically found at *Frankenia johnstonii* sites results in the failure of grass plantings to thrive, the associated loss of time, energy, and money in trying to establish the grass, and an increased potential for soil erosion since the site is left without vegetative cover (Janssen 1999).