***Isocoma tenuisecta* Greene** burro weed
ASTERACEAE

Synonyms: *Haplopappus tenuisectus* (Greene) Blake
A*plopappus tenuisectus* (Greene) Blake

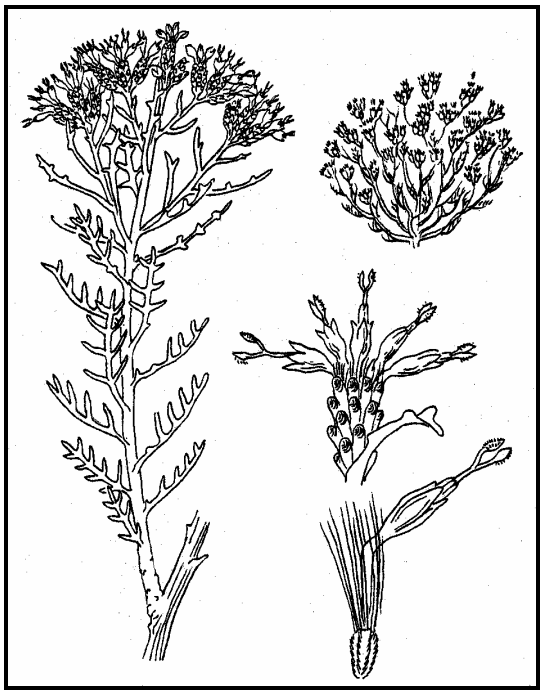

Illustration credit: Robert DeWitt Ivey

General Description.—Burro weed is a compact, rounded shrub, sometimes referred to as a sub-shrub, growing to approximately 1 m high and approximately 1 m wide. Its grayish-green, glandular leaves are pinnately cleft (deeply lobed) into four to eight linear acute lobes. The yellow flowers are discoid, having no ray flowers ("petals"), and are arranged in dense terminal clusters. The flowers dry and turn a light brown color while remaining on the stems (PCC 2001). The bracts around the flowers are also glandular (Martin and Hutchins 1980). Other members of the same genus are called golden weeds or yellow bush (Dayton 1931). Historically, *Haplopappus* was a large and variable genus that was a depository for loosely related "yellow daisies" that shared a limited number of characteristics (Taylor 1998). However, with the aid of molecular (DNA) data and more powerful computer analyses, taxonomists have placed members of *Haplopappus* into different genera, such as *Isocoma, Ericameria, Stenotus and Machaeranthera* (Nesom 1991, Lane and Hartman 1996).

Range.—Burro weed occurs in southwestern Texas, southern New Mexico, southern Arizona and northern Mexico (Kearney and others 1960, Martin and Hutchins 1980, Ivey 1995).

Ecology.—Burro weed grows on dry slopes and mesas between 600 and 2,000 m in elevation. It is a member of various vegetation communities including desert scrub, desert grassland, and pine-oak woodland (Bowers and McLaughlin 1987). Although burro weed can be moderately long lived, up to 20 years, long-term monitoring studies indicate as few as 2 percent survive more than 7 years (Goldberg and Turner 1986). Burro weed has a deep (3 to 6 m long), relatively unbranched, root system but is susceptible to drought and often dies during drought periods (Schmutz and others 1992). However, following droughts burro weed shrubs often increase in number (Schmutz and others 1992). Similar to other species within the *Isocoma* genus, fire easily kills burro weed, but burned sites will eventually become reoccupied (White 1969, Cable 1967). For example, fire reduced a pre-burn shrub density of 3,762 plants per acre to 327 plants per acre that was reduced even further to 87 plants per acre in the following year. Those plants that survived were in unburned or light burned patches within the burn area (Cable 1967). However, the numbers of shrubs gradually increased in subsequent years to number 7,175 shrubs per acre 13 years after the burn. The spatial association between different three-awn grass species and burro weed is an interesting example of the tradeoffs between protection and liability of a potentially advantageous microclimate and refuge. Santa Rita three-awn (*Aristada glabrata (*Vasey*)* Hitchc.) grows between burro weed individuals, whereas some other three-awn species, such as *Aristida hamulosa* Henr. and *Aristida ternipes* Cav., grow within the burro weed crowns. The latter species are subjected to greater heat in the smoldering, resinous crowns than in the open areas and, in combination with the shallow subsurface buds that characterize all three-awns, suffer a higher mortality rate than the Santa Rita three-awn (Blydenstein 1966, Cable 1967, McPherson 1995).

Reproduction.—Burro weed flowers from August into October (Martin and Hutchins 1980). The seeds (achenes) are partially covered by silky hairs (Martin and Hutchins 1980). The long hairs that comprise the pappus at one end of the seed aid dispersal (Parker 1990).

Growth and Management.—Burro weed is a resilient species that can flourish on highway shoulders, parking lots, dirt roads, vacant lots and other disturbed areas. It tends to be sporadically scattered on range covered by perennial bunch grasses. However, on disturbed ranges, with even a good stand of annual grasses, it can become one of the principal plant species (USDA FS 1988). Burro weed foliage is poisonous to livestock (AVDL 1998, Bowers 1993). Horses are most sensitive while sheep are least sensitive. If livestock eat large amounts of the vegetation they suffer from "trembles," "alkali sickness," or "milk-sickness" and humans can become ill after drinking the milk from affected cows (Dayton 1931, Epple 1995). The toxic substance transmitted by the milk is called tremetol (AVDL 1998, Kingsbury 1964). Many other species of *Isocoma* contain the same toxic constituent (AVDL 1998, Kingsbury 1964). As a consequence of its toxic properties, livestock avoid it unless there is nothing else to eat. In overgrazed land burro weed behaves as an invasive weed (Whitfield and Anderson 1938, Parker 1990).

Benefits.—Burro weed provides cover and stabilizes soils that are denuded by overgrazing or other disturbance. It adds to the biodiversity of communities of which it is part and may be important for pollinators and other arthropods in areas that are depauperate in native species.

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