

four years earlier "in a sheltered dell south of Black Mountain" on Santa Rosa Island (Eastwood 1934). Abrams (1951) synonymized the taxon with *Arctostaphylos subcordata*; eight years later, Munz published the new combination *Arctostaphylos subcordata* var. *confertiflora* (Munz and Keck 1973). However, in treatments of the genus, including the most recent, Wells (1968, 1993) has continued to uphold the original taxonomy.

*Arctostaphylos confertiflora* is a perennial shrub in the heath (Ericaceae) family that grows 0.1 to 2.0 m (4 in to 6.5 ft) high (Wells 1993). The plant has smooth, dark red-purple bark, densely hairy branchlets, bracts, and pedicels, and light green, round-ovate leaves. The flowers are borne in numerous dense panicles that mature into flattened reddish-brown fruits (McMinn 1951). The only other manzanita that occurs on Santa Rosa Island, *Arctostaphylos tomentosa*, forms a fire-resistant burl at the base of the stems; *Arctostaphylos confertiflora* is not burl-forming and is considered an obligate seeder, requiring fire for regeneration. It occurs in prostrate and upright forms, the former most likely due to climatic and herbivorous influences (McMinn 1951).

*Arctostaphylos confertiflora* is known only from two areas on Santa Rosa Island. In the northeast portion of the island near, and east of, Black Mountain, individual plants have been observed at scattered sites from upper Lobos Canyon east to the Torrey pine groves along Becher's Bay, a distance of about 5 km (3 mi). The plant occurs on sedimentary substrates, which consist of Monterey shales and soft volcanoclastic sediments derived from San Miguel volcanics (Weaver *et al.* 1969). Near the southern tip of the island, a few individuals are scattered on the slopes above South Point on sandstone outcrops. The taxon occurs as a component of mixed chaparral, mixed woodland, Torrey pine woodland, and island pine woodland communities. Junak estimated that total habitat for the plant comprises only a few acres (S. Junak, pers. comm. 1994); Clark *et al.* (1990) noted that it occurs in very low numbers. The major threats to *Arctostaphylos confertiflora* are soil loss, habitat alteration and predation caused by cattle grazing and elk and deer browsing, which have resulted in reproductive failure. Because of the small numbers of isolated populations and individuals, the taxon is also vulnerable to stochastic extinction by such events as storms, drought, or fire. Small numbers of populations and individuals also make the taxon

vulnerable to reduced reproductive vigor.

Island barberry (*Berberis pinnata* ssp. *insularis*) was first described by Munz and Roos (1950) as *Berberis pinnata* ssp. *insularis* based on a specimen collected by Carl B. Wolf in 1932 "west of summit of Buena Vista Grade (also known as Centinela Grade), interior of Santa Cruz Island." In 1981, James Roof realigned this taxon with the genus *Mahonia* because the leaves are compound, in contrast with the simple leaves of *Berberis* (Roof 1981). However, Moran (1982) made the case that this one character was insufficient to defend *Mahonia* as a distinct natural group; subsequent treatments have included all North American taxa previously referred to *Mahonia* as *Berberis*. Therefore, this taxon has been referred to as *Berberis pinnata* ssp. *insularis* by Munz (1974), Smith (1976), and Williams (1993).

*Berberis pinnata* ssp. *insularis* is a perennial shrub in the barberry family (Berberidaceae). The plant has spreading stems that reach 2 to 8 m (5 to 25 ft) high, with large leaves divided into 5 to 9 glossy green leaflets. Clusters of yellow flowers at the branch tips develop into blue berries covered with a white bloom (waxy coating). Because new shoots can sprout from underground rhizomes, many stems may actually represent one genetic clone (Hochberg *et al.* 1980b, California Native Plant Society (CNPS) 1984, Williams 1993).

*Berberis pinnata* ssp. *insularis* is found in moist, shaded canyons on Santa Cruz and West Anacapa Island. Hoffmann found several individuals "in Elder canyon that runs from west into Canada de la Casa" on Santa Rosa Island in 1930 (California Natural Diversity Data Base (CNDDB) 1993); however, in spite of recent surveys, no plants have been found on the island since that time. Dunkle collected *Berberis pinnata* ssp. *insularis* on West Anacapa Island in 1940; the plant was not found there again until 1980. One clone is found in Summit Canyon associated with chaparral species, including poison oak (*Toxicodendron diversilobum*), monkeyflower (*Diplaucus parviflorus*), coyote bush (*Baccharis* sp.), goldenbush (*Haplopappus detonsus*), island alum-root (*Heuchera maxima*) and wild cucumber (*Marah macrocarpus*). Four populations occur on Santa Cruz Island. One population on the north slope of Diablo Peak comprises 24 large "stems" and 75 small "stems" (Klinger 1994c); this number of stems may represent one or several clonal individuals. In 1979, the two populations near Campo Raton were estimated to be less than 10 individuals; in 1985, only one plant was

seen (CNDDB 1994). The size of the population at Hazard's Canyon has not been determined due to inaccessibility.

*Berberis pinnata* ssp. *insularis* is threatened by soil loss and habitat alteration caused by feral pig rooting. Because of the small numbers of populations and individuals, the taxon is also vulnerable to stochastic extinction by such events as storms, drought, or fire. Small numbers of isolated populations and individuals also make the taxon vulnerable to reduced reproductive vigor.

Soft-leaved paintbrush (*Castilleja mollis*) was first described by Francis W. Pennell as *Castilleja mollis* in 1947, based on material collected on Santa Rosa Island in 1939 (Ingram 1990, Heckard and Ingram 1991). Munz and Keck (1973) and Hoover (1970) included plants of coastal sand dunes of San Luis Obispo County in the description of this taxon. However, Ingram (1990) has concluded that the taxon is endemic to Santa Rosa Island.

*Castilleja mollis* is a presumably partially parasitic perennial herb in the figwort (Scrophulariaceae) family. The plant has semi-prostrate branches that reach 40 cm (16 in) in length, with bracts and upper leaves that are grayish, fleshy, broad and rounded and crowded at the apex, and the bract and calyx are yellow to yellowish green above (Heckard and Ingram 1991). Ingram's studies outlined a number of morphological differences between *Castilleja mollis* and the similar *Castilleja affinis*, including the indument (covering) of distinctive branched hairs and rounded stem leaves in the former taxon.

Two collections of *Castilleja mollis* were also made by F.H. Elmore from Point Bennett on San Miguel Island in 1938 (Heckard and Ingram 1991); despite recent searches, the taxon has not been seen on the island since then (S. Junak, pers. comm. 1994). *Castilleja mollis* is known from two areas on Santa Rosa Island: Carrington Point in the northeast corner of the island, and west of Jaw Gulch and Orr's Camp (this location also referred to as Pocket Field) along the north shore of the island. At Carrington Point, the plant is associated with stabilized dune scrub vegetation that is dominated by goldenbush (*Isocoma venetus* var. *sedoides*), lupine (*Lupinus albifrons*), and Pacific ryegrass (*Leymus pacificus*). At the Pocket Field location, the paintbrush is associated with the non-native iceplant (*Carpobrotus* spp. and *Mesembryanthemum* spp.), native milkvetch (*Astragalus miguelensis*), and alien grasses.