

*mollispinis* (Virgin spinedace). The Pahranaagat spinedace is considered extinct (Miller and Hubbs, 1960; Valdez et al., 1991). Extant members of the tribe Plagopterini are rare. The woundfin and White River spinedace are listed as endangered (35 CFR 16047 and 50 FR 37198 respectively). The spikedace (51 FR 23781), Big Springs spinedace (50 FR 12302) and the Little Colorado River spinedace (52 FR 35040) are listed as threatened.

Spinedace get their name from the fusion of two anterior, hardened spiny rays of the dorsal fin and a similar structure located in the pelvic fin. The Virgin spinedace derives its specific name from the latin words *mollis*, meaning soft, and *spinis*, meaning spine, both referring to the soft-tipped second dorsal spine (Miller and Hubbs, 1960).

The body of the Virgin spinedace is silvery with a brassy sheen and occasionally with light sooty blotches on the dorso-lateral half. During breeding, bases of the paired fins are reddish-orange. The Virgin spinedace is characterized by a terminal mouth, rounded head and belly, and a body size typically ranging from 60 mm to 120 mm (2.4 to 4.7 in SL) (Rinne, 1971; Addley and Hardy, 1993). The species has a well-scaled body, with 77-91 scales on the lateral line and two rows of pharyngeal teeth which typically number 2, 5-4, 2 (Addley and Hardy, 1993; Sigler and Miller, 1963; Valdez et al., 1991). The dorsal fin has eight rays and the anal fin usually includes nine rays, but may vary from eight to ten rays.

#### ***Life History***

The life history of the Virgin spinedace was described by Rinne (1971). Having a life-span of about three years, the fish reaches sexual maturity at about one year. Populations typically are comprised mostly of young-of-the-year (YOY) and one-year-old fish. Because of the mild climate of Virgin spinedace habitat, age determination after one year can be difficult. However, Rinne (1971) indicated that fairly accurate estimates could be made using SL: young-of-the-year <55 mm, age 1 55-76 mm, age 2 77-85 mm, age 3 >85 mm.

Although sexual dimorphism is not apparent most of the year, sexes can be distinguished during peak breeding season. Females tend to be more robust and plump, while males remain streamlined. Furthermore, the vent of the female becomes swollen and the ovipositor becomes a reddish color (Rinne, 1971). Both sexes exhibit the reddish-orange coloration at the bases of the paired fins.

Annual spawning of the Virgin spinedace has been observed from April through June at mean daily water temperatures of 13-17°C and day lengths of about 13 hrs. Rinne (1971) found that one-year-old females had the lowest mean relative fecundity averaging