

Observation of mating behavior of the Santa Ana speckled dace

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The speckled dace (*Rhinichthys osculus*) is one of the most widely distributed native fish in the western United States (Girard 1856, Moyle 2002). There are numerous forms of speckled dace and Moyle (2002) lists 7 undescribed subspecies in California. The Santa Ana speckled dace (*R. osculus* ssp.) is a small, rare, stream-dwelling cyprinid endemic to the mountains and foothills of coastal southern California. Mueller (1984) described the spawning activity of speckled dace in a small stream in New Mexico and Kaya (1991) described reproduction of the species in captivity. Little is known, however, of the life history of the Santa Ana speckled dace, and spawning activity has not been described.

On 8 May 2012, while conducting snorkel surveys in Bear Creek, tributary to the West Fork San Gabriel River (34° 16' N, 117° 53' W), Los Angeles County, California, I observed a small group of Santa Ana speckled dace congregated at the head of a lateral scour pool. Approximately 12 males, as characterized by their red snouts, were pursuing several females around the base of a small boulder in 0.5 m of water. The males repeatedly swam over, under and adjacent to the females while occasionally coming into contact with one another and forming a small tightly spaced group. This activity appeared to be communal and not territorial, although occasionally a male would give a brief chase to another male. Although gamete release was not noted, the females had distended bellies, and were observed coming into contact with a crevice near the base of the boulder and presumably releasing ova.

This behavior was observed for approximately 45 minutes beginning at 1430 and was confined to an area of 1 m² at the head of the pool where water velocity was greatest. The substrate at the site was primarily gravel and boulder with a near absence of fines or algae, and no aquatic vegetation. Ambient temperature was 29° C, and surface water characteristics at the site were as follows: temperature 19° C; dissolved oxygen 8.3 mg/L; pH 8.5; specific conductance 0.3 µS/cm; turbidity 1.5 NTU. The water was clear with a velocity of 0.8 m/s and a flow of 0.3 m³/s (CMS). Rainbow trout (*Oncorhynchus mykiss*), the only other fish species detected in Bear Creek, were also present in the pool and were more abundant than dace.

I returned to the site after seven days and, although dace and trout were still present in the pool, mating or spawning activity was not observed. Flow had decreased to 0.2 CMS and dace were dispersed throughout the pool. Ova were attached to the base of the upstream face of the boulder where the mating behavior was centered during the week prior. The boulder was exposed to sunlight, and canopy closure was estimated at 50% for the entire pool.

Spawning of speckled dace has been associated with rising water temperatures (John 1963, Mueller 1984) and high flow events (John 1963). Water temperatures were slightly higher and flows were decreasing on the subsequent visit. A late-season rain event occurred in late April, which likely increased the flow in Bear Creek and may have triggered the observed mating behavior.

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