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Threatened fishes of the world: *Etheostoma lugoi* Norris & Minckley, 1997 (Percidae)

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Common names: Perca (dardo, dardito) de toba (S), Perca (dardo, dardito) de Cuatro Ciénegas (S), Tufa darter (E), Conservation status: Endangered (Williams et al., 1989), listed as 'dardo de Cuatro Ciénegas, Etheostoma sp.' which confounded this darter with E. segrex Norris & Minckley (1997). Identification: Small darter, rarely exceeding 35 mm SL. Seven pairs of branchiostegal rays. Nuptial males with orange dorsal and anal fins, scattered orange spots on body and blue throat. Photograph by SMN, adult male (above) and female (below). Distribution: Restricted to the spring fed and formerly isolated Río Mesquites drainage in western Cuatro Ciénegas basin in Coahuila, México, in southern headwaters of the Río Salado de los Nadadores, tributary to Río Bravo del Norte (Rio Grande). Abundance: There are no hard data regarding abundance. Tufa darters occur in low densities in preferred habitat.



Habitat and ecology: This species occupies unvegetated bottoms of gravel- to cobble-sized fragments of tufa and tufa stromatolites. Natural channels where *E. lugoi* has been observed and caught are from 1.5 to 15 m wide and 30 cm to 1.2 m deep with moderate currents. Tufa darters feed on invertebrates. This small darter is remarkably cryptic in its preferred habitat. **Reproduction:** Little is known. Nuptial males have been collected and apparent spawning acts observed in April (Norris & Minckley 1997). **Threats:** Natural range of the tufa darter is highly restricted (one of the smallest natural ranges for any darter), in habitat dependant on consistent spring flow. Habitat in significant portions of its range is relatively intact; however, water extraction for human use (both through wells and canals) remains the prime threat. In August 1996, the cichlid *Hemichromis guttatus* was first observed in an isolated system in the basin and has since been spreading (D.A. Hendrickson & M. Stephens personal communication, Contreras-Balderas 2001). This indefensible and inexplicable introduction underlines the constant danger from alien organisms faced by inhabitants of isolated systems such as those in the Cuatro Ciénegas basin. **Conservation action:** The floor of the Cuatro Ciénegas basin, including all the aquatic systems, has been designated as a biological preserve (Secretaría de Desarrollo Social 1994); this may alleviate some potential threats. **Conservation recommendations:** An ecological and status survey must be altered. Introduction of alien organisms must be halted. **Remarks:** The western Cuatro Ciénegas basin – a series of formerly independent spring-fed systems – holds a diverse and highly endemic aquatic fauna (including fishes, molluscs and crustaceans) (Minckley 1992 and works cited therein). Basin inhabitants are threatened by careless development within the basin, particularly extraction of its water resources and introduction of exotic species.

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