

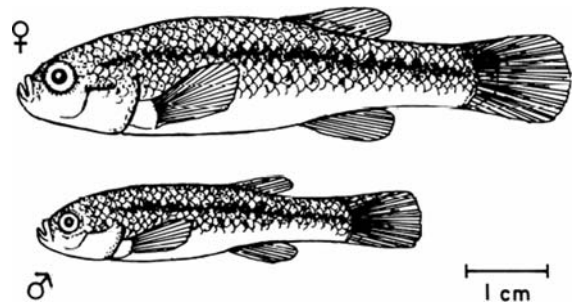
Threatened fishes of the world: *Orestias ascotanensis* Parenti, 1984 (Cyprinodontidae)

Irma Vila · Marco A. Mendez · Sergio Scott ·
Pamela M. Morales · Elie Poulin

Received: 19 June 2006 / Accepted: 17 September 2006 / Published online: 24 November 2006
© Springer Science+Business Media B.V. 2006

Keywords *Orestias* · Killifish · Salt lake ·
Conservation

Common name: Killifish; Karachi. **Conservation status:** Endangered—Chilean Endangered Species List, Boletín Museo Nacional de Historia Natural, Chile, 1998. **Identification:** *Orestias ascotanensis* Parenti is a small, robust, fusiform, sexually dimorphic species. Females have more complete lateral scale rows than males. *Orestias* are generally irregularly scaled. Head length 35% of SL. Juvenile color mottled, adults light to dark brown with pale yellow to cream ventrum. Ventrums and basal zone of the pectoral, dorsal and anal fins are unscaled, caudal fin truncate, lower jaw upturned. Outer teeth of jaw are unicuspid, unpigmented and protruding beyond epithelium (Parenti 1984;



Martínez et al. 1999). Fins are relatively longer than other southern species (D13, A13, P18). Head sensory pattern of clear lyre-shaped neuromasts on the dorsal head surface, continuing laterally along the preopercle and mandible. Adults reach 90 mm SL, females significantly larger as most *Orestias* species (Figure by Cecilia Fernández). *O. ascotanensis* differs from the other southern Altiplano species by the combination of: (1) the longest head, (2) a more upturned mouth, (3) 48 chromosomes, (4) 31–32 vertebrae, and (5) 29–34 lateral line scales (Arratia 1982; Parenti 1984; Vila and Pinto 1986; Costa 1997, 2003; Lüssen et al. 2003; Vila 2006). **Distribution:** *Orestias ascotanensis* is endemic to the Chilean Altiplano, restricted to springs of Ascotán salt lake, at 3,700 m a.s.l., presently distributed in

I. Vila · S. Scott · P. M. Morales · E. Poulin
Departamento de Ciencias Ecológicas, Facultad
de Ciencias, Universidad de Chile, Las Palmeras 3425,
Casilla 653, CP 780-0024 Ñuñoa, Santiago, Chile

M. A. Mendez
Laboratorio de Genómica Evolutiva, INTA,
Universidad de Chile, Macul 5540, Casilla 138-11,
Santiago, Chile

P. M. Morales · E. Poulin (✉)
Institute of Ecology and Biodiversity, Universidad
de Chile, Santiago, Chile
e-mail: epoulin@uchile.cl

small isolated populations of a few hundreds individuals, tolerating salinities no higher than 2–4 g l⁻¹ of total dissolved solids (Keller and Soto 1998). **Habitat and ecology:** *Orestias ascotanensis* is a schooling fish, individuals cluster independent of size. A diurnally-active, surface, and mid-waters dweller, feeding among shallower water macrophytes, especially *Potamogeton* sp., which provides protection from bird predation. They feed on snails, aquatic insect larvae and microcrustaceans. **Reproduction:** Matures at 1 year of age, lives 3 or 4 years, spawning small egg batches all year long. Females lay 2.0–2.5 mm diameter eggs, each with 20 long adhesive filaments that stick to macrophytes. Hatching occurs after 12–14 days. Eggs, embryos and yolk sacs are highly pigmented in response to high irradiance. Larvae feeding on hatching and remain among macrophytes. **Threats:** The negative hydrological water balance (Keller and Soto 1998), and the increasing demand for water mainly for mining, are responsible for the progressive drying of springs, increased salinity of waters and consequent reduction of populations. **Conservation actions:** Restoration of vegetation and hydrology, together with artificial reproduction, are proposed to recover populations (Jara et al. 1995). **Conservation recommendations:** Secure volumes of freshwater and continued management of the remaining isolated populations as genetically-distinct forms to increase numbers.

Acknowledgements This work was supported by grant MULT 05/04-2 Universidad de Chile and ICM P05-002.

References

- Arratia G (1982) Peces del Altiplano de Chile. In: Veloso A, Bustos E (eds) El hombre y los ecosistemas de montaña MAB-6. El ambiente natural y las poblaciones humanas de Los Andes del Norte Grande de Chile, Volumen I. La vegetación y los vertebrados inferiores de los pisos altitudinales entre Arica y El Lago Chungará. ROST-LAC, UNESCO, Montevideo, Uruguay, pp 93–133
- Costa W (1997) Phylogeny and classification of the Cyprinodontidae revisited (Teleostei: Cyprinodontiformes): are Andean and Anatolian killifishes sister taxa? *J Comp Biol* 2:1–17
- Costa W (2003) Family Cyprinodontidae (Pupfishes). In: Reis R, Kullander S, Ferraris K (eds) Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre, pp 549–554
- Jara F, Soto D, Palma R (1995) Reproduction in captivity of the endangered killifish *Orestias ascotanensis*, (Teleostei: Cyprinodontidae). *Copeia* 1995:226–228
- Keller B, Soto D (1998) Hydrogeologic influences on the preservation of *Orestias ascotanensis* (Teleostei: Cyprinodontidae) in Salar de Ascotán, northern Chile. *Rev Chil Hist Nat* 71:147–156
- Lüssen A, Falk TM, Villwock W (2003) Phylogenetic patterns in populations of Chilean species of the genus *Orestias* (Teleostei: Cyprinodontidae): results of mitochondrial DNA analysis. *Mol Phylogenet Evol* 29:151–160
- Martínez G, Bugeño N, Vila I (1999) *Orestias ascotanensis* en el Salar de Ascotán. *Not Mens Mus Nac Hist Nat* 339:7–12
- Parenti LR (1984) A taxonomic revision of the Andean Killifish genus *Orestias* (Cyprinodontiformes, Cyprinodontidae). *Bull Am Mus Nat Hist* 178:107–214
- Vila I (2006) A new species of killifish in the genus *Orestias* (Teleostei: Cyprinodontiformes) from the Southern High Andes, Chile. *Copeia* 3:471–476
- Vila I, Pinto M (1986) A new species of Killifish (Pisces, Cyprinodontidae) from the Chilean altiplano. *Rev Hydrobiol Trop* 19:233–239