

# Status of *Algansea aphanea* (Cyprinidae), a Rare Mexican Fish

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**T**he freshwater fish genus *Algansea* (Cyprinidae) is endemic to central México, and seven species are currently recognized (Barbour and Miller, 1978, 1994). Four species, *A. avia*, *A. lacustris*, *A. monticola*, and *A. tincella*, apparently remain relatively common, but three, *A. aphanea*, *A. barbata*, and *A. popoche*, have become rare. *Algansea aphanea* is listed as threatened by the Mexican government, and *A. barbata* and *A. popoche* are listed as endangered (Norma Oficial Mexicana NOM-ECOL-059-94). All three species have declined substantially in abundance over the last 20 years, and their future is uncertain. *Algansea barbata*, restricted to the extreme upper portion of the Río Lerma basin, had been thought to be extinct (Lyons et al., 1998; Soto-Galera et al, 1998), but it has recently been rediscovered (Figueroa-Lucero and Ontiveros-López, 2000). *Algansea popoche*, endemic to Lago de Chapala and adjacent areas of tributaries, has become extremely scarce and is on the verge of extinction (Lyons et al., 1998). *Algansea aphanea*, known only from the upper Río Armería and Río Coahuayana basins on the Pacific slope, may have disappeared from the Armería basin (Lyons et al., 1998), and its present condition in the Coahuayana basin is unknown. In this note, I provide information on the current status of *A. aphanea*. Based on recent surveys, I document the continued occurrence of *A. aphanea* at only two localities in the Río Coahuayana basin (see also Lyons, 2003), and recommend that it now be considered endangered.

*Algansea aphanea* (Fig. 1) is known historically from a total of five localities in the Armería and Coahuayana basins in the state of Jalisco in west-central México (Fig. 2). The only record from the Armería basin is the type locality, located on the Río Ayutla, a headwater of the Río Armería (Barbour and Miller, 1978). This site is at the bridge 5 km southeast of the town of

Ayutla and 10 km west of México Highway 80. Before 1970 the species was common here, with 78 specimens collected in 1955 and 272 in 1968. However, by the time of the 1990 and 1991 surveys the species had disappeared, perhaps owing to a combination of water diversions and establishment of exotic "tilapia" *Oreochromis aureus* (Lyons et al., 1998). The upper Armería basin has been well-sampled at over 25 localities since 1986, and no other populations of *A. aphanea* have been discovered.

Four historical records of *A. aphanea* exist for the Río Coahuayana basin, all from tributaries to Río Tuxpan/Naranjo, a headwater of the Río Coahuayana in Jalisco. In 1955, 32 specimens were taken from an unnamed tributary that crossed México Highway 110 at the village of San José de Tule about 8 km north of the town of Pihuamo (Barbour and Miller, 1978). Another unnamed tributary (locally known as the Río Terrero) located in the village 21 de Noviembre about 16 km north of Pihuamo on Highway 110 yielded one individual in 1970 and seven in 1976. However, no specimens were captured from either stream when they were re-sampled in 1978 (University of Michigan Museum of Zoology, Ann Arbor [UMMZ] collections). The 1978 sampling did reveal two new records of *A. aphanea*. The first new record was an unnamed tributary at the San Pedro bridge about 26 km north of Pihuamo and 7 km southwest of Tecalitlán on Highway 110 that produced five individuals (UMMZ 202609). The second new record was the Río San Jerónimo near the village of Ferrería about 15 km north of Highway 110 where 16 specimens were captured (UMMZ 202619). This species has been encountered only in deep runs and rapids of steep rocky streams (Barbour and Miller, 1978).

Beginning in 1995, I assessed the status of *A. aphanea* in



Fig. 1.

*Algansea aphanea*, riffle chub, collected from Río San Jerónimo, Jalisco, 26 Feb 1999. Photo © John Lyons.

the Coahuayana basin. All four of the *A. aphanea* localities in the basin were re-sampled in either 1995 or 1999, along with four other nearby sites. Five adult *A. aphanea* were encountered in the Río San Jerónimo on 26 February 1999 (University of Wisconsin Zoological Museum, Madison [UWZM] 11141; Universidad de Guadalajara, Centro Universitaria de la Costa del Sur, Aytlán [CUCSUR] uncataloged), and 10 adults and 41 young-of-year were found in the San Pedro bridge stream on 27 February 1999 (UWZM 11136; CUCSUR uncataloged). The Río San Jerónimo population appeared to be small, as the five individuals were the result of over an hour of thorough sampling of 150 m of good-quality habitat. In contrast, the San Pedro bridge stream yielded its 51 specimens in 45 minutes of sampling 150 m of good habitat. Reasons for the absence of *A. aphanea* from the San José de Tule and 21 de Noviembre streams were unclear; both had good water quality and habitat and lacked exotic species, although flow in the 21 de Noviembre stream was reduced to a trickle in the February 1995 and 1999 visits.

With only two known populations, one possibly small, the future of *Algansea aphanea* is precarious. I recommend that the species be given endangered status and that an active conservation program be undertaken. The first goal of this program should be to protect the two remaining sites where *A. aphanea* persists. Protection must include maintaining good water and habitat quality and avoiding establishment of exotic species. The second goal should be to search for additional occurrences of *A. aphanea*. The upper Coahuayana basin has a few remote and poorly explored areas that may contain other populations. Indeed, there are unconfirmed reports

from the 1970s of additional *A. aphanea* collections from remote (4+ hour walk) canyon reaches of the Río Naranjo, and the current status of these populations should be determined. The third phase should be to establish self-sustaining captive populations as an insurance policy in case the wild populations are lost. Several Mexican universities, most notably the Universidad Michoacana de San Nicolas de Hidalgo in Morelia and the Universidad Autónoma del Estado de Morelos in Cuernavaca, now maintain and propagate rare species (e.g., Domínguez-Domínguez et al., 2000), and *A. aphanea* should be added to their holdings. If effective culture mechanisms can be developed, it may be possible to establish new wild populations in areas of suitable habitat in the Armería and Coahuayana basins.

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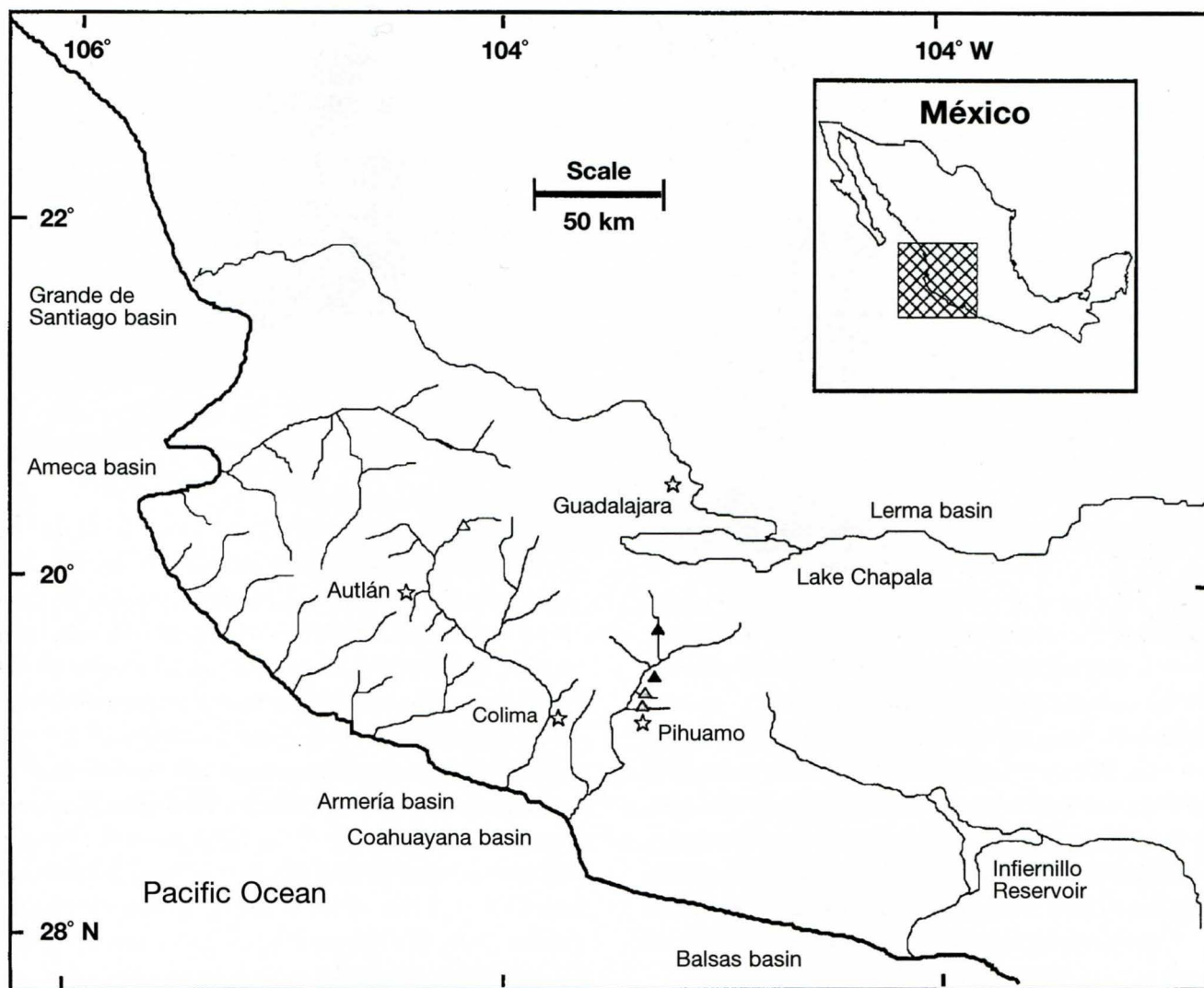


Fig. 2.

Map of west-central México, showing major rivers and larger cities. Triangles represent the distribution of *A. aphaenea*; open triangles indicate historical localities and closed triangles recent records.

#### Literature Cited

- Barbour, C. D., and R. R. Miller. 1978. A revision of the Mexican cyprinid fish genus *Algansea*. Museum of Zoology, University of Michigan, Ann Arbor, Miscellaneous Publication No. 155.
- , and ———. 1994. Diversification in the Mexican cyprinid fish *Algansea monticola* (Pisces: Cyprinidae), with description of a new subspecies. *Copeia* 1994: 662-676.
- Dominguez-Dominguez, O., L. H. Escalera-Vazquez, B. Capilla-Bartolo, and M. Cornejo-Gallegos. 2000. Manejo de a colección via de Goodeidos Mexicanos de la U.M.S.N.H. con fines de conservación. *Proceedings of the VII Congreso Nacional de Ictiología*. 21-24 Nov. 2000. México, D. F.: 286-287.
- Figuroa-Lucero, G., and G. Ontiveros-López. 2000. *Algansea barbata* (Pisces: Cyprinidae) in the state of Mexico, Mexico. *Revista de Biología Tropical* 48: 272.
- Lyons, J. 2003. *Algansea aphaenea* (Pisces: Cyprinidae) in the state of Jalisco, México. *Revista de Biología Tropical* 51: 283.
- , G. González-Hernández, E. Soto-Galera, and M. Guzmán-Arroyo. 1998. Decline of freshwater fishes and fisheries in selected drainages of west-central México. *Fisheries* 23 (4): 10-18.
- Soto-Galera, E., E. Díaz-Pardo, E. López-López, and J. Lyons. 1998. Fish as indicators of environmental quality in the Río Lerma basin, México. *Aquatic Ecosystem Health and Management* 1: 267-276. ←