

**The Identity of *Alburnus maculatus*
Keyserling, a Cyprinid Fish from
Esfahan Province, Iran**

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Graf Eugen Keyserling travelled through Persia in 1858 and the first half of 1859 attached to the scientific expedition of the Imperial Russian government under the direction of N. Chanikoff. Difficulties with baggage transport prevented him from bringing back specimens of fishes but he made drawings and measurements of the cyprinid species he found (Keyserling, 1861). He described a new species, *Alburnus maculatus*, from "Wasserleitung bei Gaes einige Meilen von Isphahan," a locality which I interpret as a canal (probably a qanat) near Gaz (which is at 32°48'N, 51°37'E) northwest of Esfahan. In the absence of type material and more accurate locality data the fish fauna of the Esfahan area must be examined to determine the identity of Keyserling's species.

The only other report of this species is a brief description by Saadati (1977) based on two samples comprising 25 specimens from the Esfahan endorheic drainage basin. Saadati (1977) placed these specimens in the genus *Alburnus* but noted, as did Berg (1949b), that *A. maculatus* is a primary homonym of *Alburnus maculatus* Kessler, 1859 (= *Alburnoides bipunctatus fasciatus* (Nordman, 1840) according to Berg (1949a)). Through the courtesy of Dr. R. J. Behnke, Colorado State University, Fort Collins, I have been able to re-examine Saadati's specimens and compare them with material collected by me and listed below. This latter material is deposited at the National Museum of Natural Sciences, National Museums of Canada, Ottawa (NMC).

Material. NMC 79-0244, (3, 60.6~74.6 mm SL), Shahrestan-e Bakhtiari va Chahar Mahall, spring at Shahr Kord, 32°19'N, 50°52'E, 9 June 1977, B. W. Coad and Sh. Mansoorabadi. NMC 79-0249, (1, 106.7 mm SL), Esfahan Province, stream at Dizaj, 31°55'N, 51°30'E, 9 June 1977, B. W. Coad and Sh. Mansoorabadi. NMC 79-0250, (28, 26.2~88.4 mm SL), Esfahan

Province, stream tributary to Pelasegan River, 33°01'N, 50°29'E, 10 June 1977, B. W. Coad and Sh. Mansoorabadi. NMC 79-0251, (134, 22.1~83.7 mm SL), Esfahan Province, stream tributary to Pelasegan River, 32°59'N, 50°26'E, 10 June 1977, B. W. Coad and Sh. Mansoorabadi. Saadati's material: (15, 55.6~84.0 mm SL), Esfahan Province, "Pahehrahneh" qanat, 100 km east of Esfahan, ca. 32°43'N, 52°40'E, 29 November 1974, R. J. Behnke. (10, 43.9~74.0 mm SL), Esfahan Province, Zayandeh River at Tanderan, 32°47'N, 51°02'E, 30 November, 1974, R. J. Behnke.

Description. In the following description counts and measurements as given by Keyserling (1861) are followed by range and mean (and in innermost parentheses the mode or modes for meristic data) for 12 males and 12 females of *Leuciscus lepidus* (Heckel, 1843) examined by me from the Esfahan endorheic basin and the adjacent upper Tigris River tributaries basin.

Counts: Dorsal fin rays III, 8 (III, 8), anal fin rays III, 11 (III, 9~12; III, 10.2 (III, 10)), ventral fin rays I, 7 (I, 7~9; I, 7.9 (I, 8)), pectoral fin rays I, 14~15 (I, 13~16; I, 14.6 (I, 14)), caudal fin branched rays 17 (17), lateral line scales 52~54 (45~55; 49.9 (51, 52)), scales above lateral line 8 (9~11; 9.6 (9, 10)), scales between lateral line and ventral fin 4 (3~6; 4.5 (4)), scales between dorsal fin insertion and lateral line 7 (6~10; 7.5 (7, 8)).

Measurements: Head length in total length 5.0 (4.6~5.4, 5.1), orbit diameter in head length 3.7 (or 3.5 later in Keyserling's text) (3.2~3.8, 3.4), dorsal fin base length in head length 2.2 (or 2.0 later in text) (1.8~2.5, 2.1), anal fin base length in head length 1.7 (1.4~2.3, 1.9), body depth in total length 5.0 (4.5~5.6, 4.9), orbit diameter in interorbital width 1.0 (1.0~1.3, 1.1), pectoral fin length in head length 1.4 (1.0~1.4, 1.3), dorsal fin base length in dorsal fin ray length 1.5 (1.2~1.8, 1.5), anal fin base length in anal fin ray length 0.3 (0.8~1.2, 1.0).

Other characters cited by Keyserling for *A. maculatus* which agree with specimens of *L. lepidus* include the anal fin origin lying under the end of the dorsal fin, body depth equalling head length, lower jaw protruding somewhat, pectoral fin not reaching the much shorter ventral fins which are attached almost one eye diameter

before a level with the dorsal fin origin, anal fin margin rounded, caudal fin forked to half its length, preopercle margin one third eye diameter in front of occiput, few anterior and more numerous posterior scale radii, and silvery colouration. The nape and anterior part of the back were higher than the dorsal fin origin in Keyserling's description but this character was only approached in the larger specimens seen by me.

Remarks. Only minor differences were noted between Keyserling's (1861) *A. maculatus* and *L. lepidus*. These include a higher number of scales above the lateral line in *L. lepidus* but my counts incorporate the scale overlapping the dorsal fin origin which Keyserling may not have counted. There are 3~4 rather than the 2 scales above and below the lateral line on the caudal peduncle described by Keyserling. The black spots reported by Keyserling were not found as a normal pigmentation of *L. lepidus* but some fish had heavy pigmentation around sites of parasite infestation which give the body a spotted appearance. Keyserling cites a value of 0.3 for anal fin base length in anal fin ray length but this appears to be a textual error since Keyserling's Fig. 7 may be measured to give a value of 0.8, within the range cited by me.

Keyserling (1861) gives no indication of the presence of a naked ventral keel in front of the anal fin in his *A. maculatus*. Both Saadati's material and mine lack this typical *Alburnus* character and have the rounded belly found in *Leuciscus*.

On the basis of the above observations I consider *Alburnus maculatus* Keyserling, 1861 a synonym of *Leuciscus lepidus* (Heckel, 1843).

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イラン産のコイ科 *Alburnus maculatus* Keyserling の同定

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Keyserling (1861) はイランからコイ科の *Alburnus maculatus* を新種として記載している。模式標本は存在しない。著者は Saadati (1977) の標本を再調査して自己の標本と比較し、同時に原記載を再検討した結果、*A. maculatus* は *Leuciscus lepidus* と形態的に有意な差がなく、従って *A. maculatus* Keyserling, 1861 は *L. lepidus* (Heckel, 1843) のジュニアースノニムであるという結論に達した。