

**ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM**

Animal Abstract

Element Code: AFCJC02110

Data Sensitivity: No

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Catostomus latipinnis*

COMMON NAME: Flannelmouth Sucker

SYNONYMS: *Acomus latipinnis*, *Catostomus latipinnis discobolus*, *Catostomus*
(*Catostomus*) *latipinnis*

FAMILY: Catostomidae

AUTHOR, PLACE OF PUBLICATION: Baird, S.F., and C. Girard. 1854. Proceedings of the Academy of Natural Sciences, Philadelphia (1852-53) 6:387-390.

TYPE LOCALITY: San Pedro River, Cochise Co., Arizona

TYPE SPECIMEN: Collected by J.H. Clark

TAXONOMIC UNIQUENESS: 21 species in genus (including subgenus *Pantosteus*), 21 species in North America, 5 species in Arizona (including 2 *Pantosteus*), 1 undescribed Arizona form (possibly synonymous with *C. latipinnis*).

DESCRIPTION: Adults can exceed 0.5 m (19.7 in.) in length and 1.5 kg (3.3 lbs.). "Body elongated, thicker anteriorly, thin posteriorly. Head relatively short, but thick. Lower lips markedly enlarged, with large, fleshy lobes. Fins large. Dorsal fin falcate, with 10 to 14 (usually 12 or more) fin-rays. Scales relatively small, sometimes embedded on anterior parts of body, 90 to 116 in lateral line.

Coloration typically light gray or tan dorsally, lighter beneath. Dorsolateral scales sometimes markedly outlined with melanophores. No bright breeding colors have been noted in Arizona populations, but are known in fish from the upper Colorado basin. Fins rarely with dark pigmentation, typically transparent. Young often silvery over-all" (Minckley 1973).

AIDS TO IDENTIFICATION: "Diagnostic characteristics of *C. latipinnis* include elongate, posteriorly fimbriate lobes of the lower lip; high lateral line scale count (89-116); and falcate distal margin of the dorsal fin" (Sublette et al. 1990).

ILLUSTRATIONS: B&W photo (Minckley 1973:156)
Line drawing (Page and Burr 1991:170)
Color drawing (Page and Burr 1991:170)
Color photo (Rinne and Minckley 1991:30)
Line drawings (Sublette et al. 1990:202, 203)
B&W photos (Sublette et al. 1990:203)

TOTAL RANGE: Historically ranged in the Colorado River Basin in moderate to large rivers, including parts of Wyoming, Utah, Colorado, New Mexico, Nevada, California, and Arizona. The species has been extirpated from the Gila River Basin in Arizona.

RANGE WITHIN ARIZONA: The Colorado River and its larger tributaries in Glen and Grand canyons, to include the Virgin River. Minckley's (1973) *Catostomus* sp. (Little Colorado Sucker) occurs in the upper portions of the Little Colorado River drainage above Lyman Reservoir. Introduced by the Arizona Game and Fish Department below Davis Dam in the mid 1970's, from stock taken at the Paria River (Riley 1995). The population still persists today based off of samples taken the last few years (1993-1995), and has recently been taken during sampling on Lake Havasu (Riley 1995).

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY:

REPRODUCTION: Reproduction typically occurs in March-July at water temperatures ranging from 6°C to greater than 20°C (McAda 1977, Weiss 1993, Angradi et al. 1992, Clarkson and Robinson 1993, AGFD data). Larvae have also been captured from the Little Colorado River in Grand Canyon in February 1994 during a period of base flow (AGFD data). In Glen Canyon, Arizona, flannelmouth suckers "run" upstream into the Paria River from winter residence in the Colorado and Little Colorado rivers to spawn, and immediately leave to return to mainstem or other tributary locations (Weiss 1993). Fins of both sexes often become orange during spawning, and the anal and lower lobe of the caudal fin in males become tuberculate (Sublette et al. 1990). Flannelmouth suckers in the Paria River spawn in shallow water over sand/gravel substrates in current velocities between 0.3 and 0.6 m/s (Weiss 1993). Based on regression equations, fecundity ranges from 4,000 to 40,000 ova in fish ranging from 450-500 mm total length (McAda and Wydoski 1985). In the upper Colorado River, flannelmouth suckers account for approximately 30% of the total fish drift (Valdez et al. 1985); in the Little Colorado River, flannelmouth drift is rarer (Clarkson et al. 1994). Catches of juvenile flannelmouth in Glen Canyon (Maddux et al. 1987, Weiss 1993) and the Little Colorado River (Angradi et al. 1992, Clarkson and Robinson 1993) are relatively rare, but are common in the lower reaches of the Colorado River in Grand Canyon (Angradi et al. 1992, Persons and Kinsolving 1993, Valdez and Hugentobler 1993). Flooding events during spawning negatively affect reproductive success (Clarkson and Robinson 1993, Weiss 1993).

FOOD HABITS: Larvae examined for gut contents from the Little Colorado River (Clarkson and Robinson 1993) and other tributary and mainstem areas in Grand Canyon (Maddux et al. 1987) contained Chironomidae larvae, unidentified organics, planktonic cladocerans and copepods, and inorganic material. Juvenile guts from the Little Colorado River contained similar materials, but also ostracods and vascular plants (Clarkson and Robinson 1993). In the Colorado River in Grand Canyon, flannelmouth of unreported size

consumed primarily *Gammarus lacustris* and immature dipterans, with similar diets recorded from Grand Canyon tributaries (Carothers and Minckley 1981). Flannelmouth suckers of unreported size from the Virgin River, Arizona, fed on mostly debris and detritus, followed by filamentous algae and macroinvertebrates (Gregor and Deacon 1988).

HABITAT: Primarily restricted to large and moderately large rivers, larvae inhabit shallow, slow-flowing nearshore areas (Minckley 1973, AGFD data). Rinne and Minckley (1991) state that they prefer deeper water when not feeding. In the Colorado River in Grand Canyon, subadults are found in eddies and runs over sand (Maddux et al. 1987). In the Little Colorado River, juvenile through adult flannelmouth use slow velocity, nearshore habitats with significant amounts of cover during daylight hours, and increase use of faster, more exposed midchannel habitats at night (Gorman 1994).

ELEVATION: Based on records in the Heritage Data Management System (HDMS), elevation ranges from 1,540 - 3,160 ft. (480 - 964 m) (AGFD, unpublished data accessed 2001).

PLANT COMMUNITY:

POPULATION TRENDS: Extirpated from the Gila River Basin and Colorado River below Lake Mead. Upper Basin studies have concentrated on federally endangered species, but presumably the species remains common there. Possible aging of the Glen/Grand Canyon population due to reduced recruitment, at least in the Paria River area (Weiss 1993).

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None (USDI, FWS 1996)
[C2 USDI, FWS 1994]
[C2 USDI, FWS 1991]

STATE STATUS: None

OTHER STATUS: No NESL Status (NNDFW, NESL 2000)
[Group 4, NNDFW, NESL 1994]
Forest Service Sensitive (USDA, FS
Region 3 1999)
Bureau of Land Management Sensitive
(USDI, BLM AZ 2005, 2008)

MANAGEMENT FACTORS: **Threats:** Alteration of hydrologic and thermal characteristics of river habitats by emplacement of hydroelectric dams; blockage of migration (Chart and Bergersen 1992) and genetic isolation of populations by emplacement of dams; predation by and competition with introduced aquatic organisms; hybridization with other *Catostomus* species. **Management needs:** ameliorate effects of reservoirs and nonnative fish species in flannelmouth waters; monitor status of populations.

PROTECTIVE MEASURES TAKEN: Grand Canyon Protection Act of 1992 reduced stage fluctuation of water releases from Glen Canyon Dam. Glen Canyon Environmental Studies Phase I (1984-1987) and Phase II (1990-1995) research data used in development of Glen Canyon Dam Environmental Impact Statement and Biological Opinion.

SUGGESTED PROJECTS: Continued study of effects of water temperature on ecology and life history; determine effects of fluctuating flows on movements and fate of early life stages in the Colorado River below Glen Canyon Dam; determine food web relationships in the Little Colorado and Colorado rivers using stable isotope analysis.

LAND MANAGEMENT/OWNERSHIP: BIA - Navajo Nation and Hualapai Reservation; BLM - Arizona Strip Field Office; NPS - Grand Canyon National Park and Glen Canyon National Recreation Area; Private.

SOURCES OF FURTHER INFORMATION

REFERENCES:

- Angradi, T.R., R.W. Clarkson, D.A. Kinsolving, D.M. Kubly, S.A. Morgensen. 1992. Glen Canyon Dam and the Colorado River: responses of the aquatic biota to dam operations. Prepared for the Bureau of Reclamation, Upper Colorado Region, Glen Canyon Environmental Studies, Flagstaff, AZ. Cooperative Agreement No. 9-FC-40-07940. Arizona Game and Fish Department, Phoenix. pp. 155.
- Baird, S.F. and C. Girard. 1854. Description of new species of fishes collected by Mr. John H. Clark, on the U.S. and Mexican Boundary Survey, under Lt. Col. Jas. D. Graham. Proceedings of the Academy of Natural Sciences, Philadelphia (1852-53) 6:387-390.
- Carothers, S.W. and C.O. Minckley. 1981. A survey of the fishes, aquatic invertebrates and aquatic plants of the Colorado River and selected tributaries from Lee's Ferry to Separation Rapids. Final Report, U.S. Bureau of Reclamation Contract 7-07-30-X0026, Lower Colorado Region, Boulder City, NV. Museum of Northern Arizona, Flagstaff. pp. 401.
- Chart, T.E. and E.P. Bergersen. 1992. Impact of mainstream impoundment on the distribution and movements of the resident flannelmouth sucker (Catostomidae: *Catostomus latipinnis*) population in the White River, Colorado. The Southwestern Naturalist 37:9-15.
- Clarkson, R.W. and A.T. Robinson. 1993. Little Colorado River native fishes. Chapter 4 in Arizona Game and Fish Department. Glen Canyon Environmental Studies Phase II 1992 Annual Report. Prepared for the Bureau of Reclamation, Upper Colorado Region, Glen Canyon Environmental Studies, Flagstaff, AZ. Cooperative Agreement No. 9-FC-40-07940.
- Clarkson, R.W., T.L. Hoffnagle, and A.T. Robinson. 1994. Transport and fate of early life stage native fishes in Grand Canyon, Arizona. Proceedings of the 1994 Annual Meeting of the American Fisheries Society Western Division, Northern Arizona University, Flagstaff (abstract).

- Douglas, M.R. et. al. 2000. Phylogeography of *Catostomus latipinnis* (Flannelmouth Sucker) in the Colorado River Basin of Western North America. Final Report, AGFD Heritage Grant # I97021. pp 18.
- Gorman, O.T. 1994. Habitat use by humpback chub, *Gila cypha*, in the Little Colorado River and other tributaries of the Colorado River. Prepared for U.S. Bureau of Reclamation, Glen Canyon Environmental Studies, Flagstaff, AZ. U.S. Fish and Wildlife Service, Arizona Fishery Resources Office, Flagstaff. pp. 129.
- Gregor, P.D. and J.E. Deacon. 1988. Food partitioning among fishes of the Virgin River. *Copeia* 1988:314-323.
- Maddux, H.R., D.M. Kubly, J.C. deVos, Jr., W.R. Persons, R. Staedicke and R.L. Wright. 1977. Effects of varied flow regimes on aquatic resources of Glen and Grand canyons. Prepared for the Bureau of Reclamation, Contract No. 4-AG-40-01810. Arizona Game and Fish Department, Phoenix. pp. 291.
- McAda, C.W. 1977. Aspects of the life history of catostomids native to the Upper Colorado River Basin. Unpublished M.S. Thesis, Utah State University, Logan, UT. pp. 103.
- McAda, C.W. and R.S. Wydoski. 1985. Growth and reproduction of the flannelmouth sucker, *Catostomus latipinnis*, in the Upper Colorado River Basin, 1975-76. *Great Basin Naturalist* 45:281-286.
- Minckley, W.L. 1973. Fishes of Arizona. Arizona Game and Fish Department, Phoenix. pp. 145-146, 156-157.
- Navajo Nation Department of Fish and Wildlife. 1994. Navajo Endangered Species List. p. 4.
- Navajo Nation Department of Fish and Wildlife. 2000. Navajo Endangered Species List. p. 4.
- Page, L.M. and B. M. Burr. 1991. A field guide to freshwater fishes: North America, north of Mexico. Houghton Mifflin Co., Boston. pp. 170, 172.
- Persons, W.R. and D.A. Kinsolving. 1993. Mainstem Colorado River native fishes. Chapter 3 in Arizona Game and Fish Department. Glen Canyon Environmental Studies Phase II 1992 Annual Report. Prepared for the Bureau of Reclamation, Upper Colorado Region, Glen Canyon Environmental Studies, Flagstaff, Arizona. Cooperative Agreement No. 9-FC-40-07940.
- Riley, L. 1995. Personal communication, inter-office memo to B. Spicer. Arizona Game and Fish Department, Phoenix, Arizona.
- Rinne, J.N. and W.L. Minckley. 1991. Native fishes of arid lands: a dwindling resource of the desert southwest. U.S. Department of Agriculture, Forest Service, General Technical Report RM-206. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado. pp. 29, 30.
- Sublette, J.E., M.D. Hatch, and M. Sublette. 1990. The fishes of New Mexico. University of New Mexico Press, Albuquerque. pp. 202-204.
- Thieme, M.L. and C.c. McIvor, 1998. Final Report, AGFD Heritage Grant # I95038, pp135.
- USDA, Forest Service Region 3. 1999. Regional Forester's Sensitive Species List.
- USDI, Bureau of Land Management. 2005. Arizona BLM Sensitive Species List.
- USDI, Fish and Wildlife Service. 1991. Endangered and Threatened Wildlife and Plants; Animal Candidate Review for Listing as Endangered or Threatened Species; Proposed Rule. *Federal Register* 56(225):58814.

- USDI, Fish and Wildlife Service. 1994. Endangered and Threatened Wildlife and Plants; Animal Candidate Review for Listing as Endangered or Threatened Species; Proposed Rule. Federal Register 59(219):58996.
- USDI, Fish and Wildlife Service. 1996. Endangered and Threatened Wildlife and Plants: Review of Plant and Animal Taxa that are Candidates for Listing as Endangered or Threatened Species. Federal Register 61(40):7596-7613.
- Valdez, R.A., J.G. Carter and R.J. Ryel. 1985. Drift of larval fishes in the Upper Colorado River. Proceedings of the Western Association of Fish and Wildlife Agencies and the Western Division American Fisheries Society, July 15-18, 1985:171-185.
- Valdez, R.A. and M. Hugentobler (eds). 1993. Characterization of the life history and ecology of the humpback chub (*Gila cypha*) in the Grand Canyon. Annual Report-1992 to Bureau of Reclamation, Contract No. 0-CS-40-09110. BIO/WEST Report No. TR-250-06. pp. 168 + appendices.
- Weiss, S.J. 1993. Spawning, movement and population structure of flannelmouth sucker in the Paria River. Unpublished M.S. Thesis, University of Arizona, Tucson. pp. 153.

MAJOR KNOWLEDGEABLE INDIVIDUALS:

- C.W. McAda - USDI, Fish and Wildlife Service, Grand Junction, Colorado.
S.J. Weiss - UV, Austria (E-mail: h524p2@edv1.boku.ac.at).

ADDITIONAL INFORMATION:

Revised: 1994-07-28 (RWC)
1995-01-29 (KLY)
1997-03-04 (SMS)
2001-10-10 (SMS)

To the user of this abstract: you may use this entire abstract or any part of it. We do request, however, that if you make use of this abstract in plans, reports, publications, etc. that you credit the Arizona Game and Fish Department. Please use the following citation:

Arizona Game and Fish Department. 20XX (= **year of last revision as indicated at end of abstract**). X...X (= **taxon of animal or plant**). Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. X pp.