

# Status and Distribution of the Neosho Madtom (*Noturus placidus*) in Oklahoma

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Extant Oklahoma populations of the Neosho madtom, *Noturus placidus* Taylor, are restricted to the Neosho River upstream from Grand Lake O' The Cherokees (1). A population documented in 1946 in the lower Illinois River is now presumed to be extirpated (2). The U.S. Fish and Wildlife Service listed the Neosho madtom as threatened effective 21 June 1990 (1). Neosho madtoms inhabit riffle areas with gravel-sized substrate particles (diameter 2-64 mm) and moderate current (2). In Kansas and Missouri, this species is known from the Cottonwood, Neosho, and Spring rivers (3,4); one record exists from a small Neosho River tributary (5). Prior to the collections reported herein, Neosho madtoms were known from only two localities in the Neosho River of Oklahoma (6). Presumably, limited collecting and ineffective sampling techniques prevented documentation of additional populations in the Neosho and Spring rivers of Oklahoma (1).

During a low flow period in July 1991, we floated down the Spring and Neosho rivers by boat from the Kansas-Oklahoma state line to Grand Lake O' The Cherokees. We sampled all main-stem riffles that we encountered in the Neosho (nine) and Spring rivers (five). Subsequently, we sampled nine sites on eight Neosho River tributaries, two sites on Spring River tributaries, and one site on Sycamore Creek downstream from the confluence of the Spring and Neosho rivers (6). We used kicksets of a 4.6-m (4.8-mm mesh) heavily leaded seine to sample riffle habitats during daylight hours. Museum voucher collections were made for 23 of the 26 sites, and were deposited in the Oklahoma State University Collection of Vertebrates (OSUS).

Fourteen Neosho madtoms were captured; all were taken in Neosho River main stem riffles. Populations persisted at both sites of historic occurrence (6). Seven specimens (one retained; OSUS 20345) were taken 7.2 km west of Commerce, Ottawa Co., 0.8 km downstream from the Stepps Ford bridge (T28N R22E S08) and two specimens (OSUS 20557) were taken 4.0 km west and 0.8 km north of Miami, Ottawa Co., near the confluence of Cow Creek (T28N R22E S27). Neosho madtoms were taken at four previously unrecorded localities in the Neosho River, Ottawa Co. One specimen (OSUS 20279) was taken near the confluence of Mud Creek (T28N R22E S01). Two specimens (OSUS 20298) were taken 1.0 km further downstream near the confluence of Four Mile Creek (T28N R22E S01). One specimen (OSUS 20325) was taken 0.4 km upstream from the Stepps Ford Bridge west of Commerce (T28N R22E S05). One specimen (OSUS 20364) was taken 3.4 km downstream from the Stepps Ford Bridge at a pipeline crossing (T28N R22E S17).

Population densities were low at all six localities where Neosho madtoms occurred in this survey; the largest collection contained seven specimens. Collections of this species from Oklahoma have yielded small numbers (1 to 11) of specimens (1,7), except for one collection of 85 specimens in 1976 from (T28N R22E S08) below the Stepps Ford Bridge (2). A paucity of uncompacted gravel substrates, the preferred habitat of the Neosho madtom (2), appears to limit its distribution and abundance in the Neosho River of Oklahoma. Lack of knowledge about spawning habitat requirements and vagility of young and adults impedes recovery efforts for the species (1).

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### REFERENCES

1. U.S. Fish & Wildlife Service, *Neosho madtom Recovery Plan*. U.S. & Wildlife Service, Denver, CO (1990).
2. Moss, R.E., *Life History Information for the Neosho madtom*, *Noturus placidus*. Kansas Fish & Game Comm. Contract No. 38 (1981).
3. Cross, F.B. and Collins, J.T., *Fishes in Kansas*. Univ. Kansas Mus. Nat. Hist. Pub. Educ. Ser. No. 3. Lawrence, KS. (1975).
4. Pflieger, W.L., *The Fishes of Missouri*. Missouri Dept. of Conserv., Jefferson City, MO (1975).
5. Ernsting, G.W., Eberle, M.E., and Wenke, T.L., Range Extensions for Three Species of Madtoms (*Noturus*: Ictaluridae) in Kansas. *Trans. Kans. Acad. Sci.* **92**, 206-207 (1989).
6. Luttrell, G.R., Echelle, A.A., and Zale, A.V., *Status of the Neosho Madtom in Oklahoma*. Project Performance Report. Oklahoma Dept. of Wildlife Conserv. Project No. E-8 Job No. 2 (1991).
7. Wenke, T.L., Eberle, M.E., Ernsting, G.W., and Stark, W.J., Winter Collections of the Neosho Madtom (*Noturus placidus*). *Southwest. Nat.* (in press).