

NEOSHO MADTOM DISTRIBUTION AND ABUNDANCE IN THE SPRING RIVER

CHRIS WILKINSON, DAVID EDDS,
JOSEPH DORLAC, MARK L. WILDHABER,
CHRISTOPHER J. SCHMITT, AND ANN ALLERT

*Division of Biological Sciences, Emporia State University,
Emporia, KS 66801 (CW, DE, JD)*
*National Biological Service, Midwest Science Center,
4200 New Haven Road, Columbia, MO 65201 (MLW, CJS, AA)*

The Neosho madtom, *Noturus placidus*, is a species of catfish listed as threatened by the U.S. Fish and Wildlife Service (55 F.R. 21148). Its distribution is restricted to the Neosho River basin upstream from Lake o' the Cherokees (Grand Lake), Oklahoma. Although its historical range extended over a larger area prior to construction of mainstream impoundments, the Neosho madtom is now found almost exclusively in the Neosho and Cottonwood rivers of Kansas (USFWS, 1991). The species persists at low densities, however, in two other areas. These are a short stretch of the Neosho (Grand) River in Oklahoma upstream from Lake o' the Cherokees (Luttrell et al., 1992; Wenke et al., 1992) and a portion of the Spring River in extreme southwestern Missouri and southeastern Kansas (Fig. 1).

The Neosho madtom was first documented in the Spring River in 1963, but past records documented only 15 individuals from eight collections at four mainstream sites, two in Missouri and two in Kansas (Pflieger, 1971; USFWS, 1991). The historical population of Spring River Neosho madtoms is separated from conspecifics in the Neosho River by three dams, more than 50 river km, and the upper portion of Lake o' the Cherokees, impounded in 1941. Physico-chemical factors, including a paucity of suitable habitat, have been suggested as potential limiting factors for the Neosho madtom in the Spring River (Moss, 1983; USFWS, 1991).

Additionally, the Spring River in Cherokee Co., Kansas, and Jasper Co., Missouri, drains EPA

Superfund cleanup sites where abandoned lead, zinc, and coal mines have polluted surface and ground waters in the drainage (Spruill, 1984). The Neosho madtom recovery plan (USFWS, 1991) called for an intensive survey for the Neosho madtom in the Spring River of Missouri, Kansas, and Oklahoma. The objectives of our study were to assess Neosho madtom distribution and abundance in this river.

We sampled 106 locations along the Spring River in Missouri (53 sites), Kansas (39 sites), and Oklahoma (14 sites). Sample sites were chosen to represent the variety of habitats available from headwaters to tailwaters, and were sampled in haphazard fashion along the mainstream. Sites typically encompassed at least one riffle/run/pool series, but occasionally consisted of only one gravel bar. One crew sampled from March to September 1993 (70 sites), another from July to August 1994 (18 sites), and a third from September to October 1994 (18 sites). Sampling was performed by kick-seining with a heavily-weighted 4.7 mm-mesh seine during daylight hours. In 1993 and July through August 1994, the area of each haul (11.5 m²; 4.6-m seine with substrate disturbed starting 2.5 m upstream) was greater than that in September and October 1994 (4.5 m²; 1.5-m seine with substrate disturbed 3.0 m upstream). All fishes were identified and counted; Neosho madtoms were measured, photographed, and released alive at the site of capture following the completion of sampling at each location.

The total number of kick-hauls performed at

