Persistence of the Longnose Darter (*P. nasuta*) in Lee Creek, Oklahoma

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INTRODUCTION

The longnose darter *Percina nasuta* (Bailey) is one of Oklahoma's rarest fish species (1) and is listed by the state as endangered. Throughout the rest of its range, which includes Missouri, Arkansas and the far eastern portion of Oklahoma, the longnose darter is classified as "rare" or "threatened" (2, 3, 4, 5, 6, 1). This species inhabits both slow- and fast-water habitats with cobble and gravel substrates in medium to large streams (7, 8, 1).

Oklahoma populations of longnose darter are known to occur only in the Poteau River and Lee Creek drainages in Le Flore and Sequoyah counties, respectively (9, 10). Cross and Moore (9) collected longnose darters from the Poteau River in 1947. The species was not collected in a subsequent survey of the Poteau River in 1974 (11), possibly because of the effects from the Wister Dam, which was completed in 1949. Darters are especially susceptible to flow alterations from dams (2, 12). This, together with the 1992 completion of Lee Creek Reservoir in Arkansas, has raised concern for the Lee Creek population of longnose darters (13).

Lee Creek is one of Oklahoma's six rivers designated as "scenic" by the Oklahoma Legislature. Lee Creek is located on the Oklahoma-Arkansas border in far eastern Oklahoma. The headwaters originate in northwestern Arkansas and flow south towards the Arkansas River. While the majority of the stream is in Arkansas, a portion flows into Oklahoma northwest of Uniontown, AR and continues for 28.2 river-km before crossing back into Arkansas near Van Buren, AR. The hydrology of lower Lee Creek has been altered by Lee Creek Reservoir near Van Buren, AR. It was believed that pre-impounded Lee Creek had the largest existing population of longnose darters (8). However, the most recent fish surveys in Lee Creek were conducted approximately twenty years ago. Robinson (8) surveyed Lee Creek in Arkansas, upstream of the Oklahoma border, and found longnose darters upstream of Natural Dam, AR. Wagner et al. (10) were the last to document longnose darter presence in the Oklahoma segment of Lee Creek. No efforts to collect this species in Oklahoma have occurred since the completion of Lee Creek Reservoir. Our objective was to determine whether the species persist in this segment of its historic range since impoundment.

METHODS

Our sample site was located approximately 10 river-km above the Oklahoma State Highway 101 bridge in Sequoyah County, OK near the town of Short (35° 36′43.73″N, 94° 29′ 16.81″W) and was roughly 28 river-km above the lacustrine habitat created by Lee

Creek Reservoir in Arkansas. Sampling was conducted using a Smithroot® LR-24 backpack electrofishing unit with a metal-ring anode and "rattail" type cathode (AC voltage settings varied in an attempt to maintain 4 amp output) on August 11th, 2010 at the downstream portion of a large pool in clear, slow-moving water (0.40-m^3/sec) about 0.5-m deep. The substrate was dominated by cobble and large gravel. Single-pass electrofishing was employed in a zig-zag pattern over a 10-m by 10-m area for ten minutes. All fishes captured were placed into a live well for identification.

RESULTS AND DISCUSSION

We collected 15 longnose darters. Previous surveys of longnose darters produced fewer numbers than we found in this short survey. For example, Wagner et al. (10) required a combined sampling effort of 2.75 hours by seining and electrofishing to obtain only three individuals. Notably, their sampling was conducted in deep pools (~ 1 m in depth) at two public access sites, where darter habitat might have been relatively poor. During an Arkansas Department of Environmental Quality (ADEQ) fish survey in 1985, conducted upstream of our sampling site, nine longnose darters were found after three hours of electrofishing (14). Our relatively high catch rate might reflect higher habitat quality. Robison (8) suggested that longnose darters are most abundant at the tail end of large pools, where our effort was focused.

Because we only sampled one site along Lee Creek, no true comparison of abundance can be derived at this time nor can associations with habitat be made. More extensive sampling would better determine the current status of longnose darters and their associated habitat in Lee Creek, Oklahoma. However, our study concretely demonstrates that this species still persists in the system.

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