



FIGURE 2. Distribution of *Notropis amnis* in Illinois. Data include year of collection(s) followed by the number of specimens taken. A, Des Plaines River; B, Rock River; C, Kankakee River; D, Iroquois River; E, Sangamon River; F, Kaskaskia River; G, Little Wabash River; H, Big Muddy River; I, Saline River.

MATERIALS EXAMINED

The following are collection data for all known Illinois specimens of *H. amblops* and *N. amnis*. Numbers of specimens examined are in parentheses, followed by their range in standard length (mm). Institutional acronyms are given in the Acknowledgments.

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ILLINOIS. Champaign County: INHS 86531 (5, 44-54), Salt Fork [Vermilion River] (Wabash drainage), E Homer, 13 November 1899; INHS 84327 (2, 49-60), Salt Fork [Vermilion River] (Wabash drainage), St. Joseph to Sidney, 1 November 1899; INHS 84362 (8, 51-61), Salt Fork [Vermilion River] (Wabash drainage), Urbana to St. Joseph, 31 October-1 November 1899; INHS 84375 (2, 46-56), Salt Fork [Vermilion River] (Wabash drainage), Homer, 13 November 1899. Clark County: INHS 84435 (4, 40-42), North Fork Embarras River (Wabash drainage), SW Clark County, 27 September 1900. Clay County: INHS 84444 (9, 41-61), Little Wabash River (Wabash drainage), Flora, 22 August 1884. Coles County: INHS 84498 (3, 53-58), Kickapoo Creek (Embarras drainage), Charleston, 25 September 1900; CU 799 (4, 37-51), Embarras River (Wabash drainage), Charleston, 8 November 1904; ANSP 46421 (3, 46-54), Kickapoo [=Kickapoo] Creek (Embarras drainage), at mouth, Charleston, 20 May 1905. Cumberland County: INHS 16913 (1, 48), Hurricane Creek (Embarras drainage), 8 km (5 mi) N Greenup, 2 July 1950; INHS 16644 (15, 48-68), Little Wabash River (Wabash drainage), 3.2 km (2 mi) NNW Neoga, 23 July 1950. Edgar County: INHS 3006 (2, 54), Brouillets Creek (Wabash drainage), 9.6 km (6 mi) NE Paris, summer 1950; INHS 2973 (4, 35-39), North Fork Brouillets Creek (Wabash drainage), 11.2 km (7 mi) NE Paris, 1 October 1950. Effingham County: INHS 7504 (7, 47-54), Little Wabash River

(Wabash drainage), 4 km (2.5 mi) W Effingham, 30 July 1950. Moultrie County: INHS 86004 (7, 45-54), Crab Apple Creek (Kaskaskia drainage), 22 November 1899. Shelby County: INHS 21692 (5, 45-52), West Branch Little Wabash River (Little Wabash drainage), 4 km (2.5 mi) NE Strasburg, 23 July 1950; INHS 86299 (2, 43-49), Little Beaver Creek (Kaskaskia drainage), Cowden, 27 November 1899; FMNH 88905 (14, 42-49), Little Wabash River (Wabash drainage), 1.6 km (1 mi) W, 0.8 km (0.5 mi) S Trowbridge, 23 July 1950. Vermilion County: INHS 86520 (1, 52), North Fork [Vermilion River] (Wabash drainage), Hoopeston, 6 June 1901; INHS 86543 (6, 48-58), Middle Fork [Vermilion River] (Wabash drainage), Armstrong, 8 November 1899; INHS 11911 (1, 44), Salt Fork [Vermilion River] (Wabash drainage), 3.2 km (2 mi) E Oakwood, 21 June 1961; INHS 11760 (10, 40-43), Stony Creek (Salt Fork Vermilion drainage), 1.6 km (1 mi) E Muncie, 2 November 1950; UMMZ 144596 (2, 38-51), Stony Brook [Creek] (Salt Fork Vermilion drainage), at Route 10, W Oakwood, 18 October 1947; INHS 11855 (6, 51-68), Middle Fork [Vermilion River] (Wabash drainage), 4 km (2.5 mi) E Collison, 1 October 1957.

INDIANA. Sullivan County: UT 44.3859 (1, 34), Wabash River (Ohio drainage), river mile 183.7 [11.2 km (7 mi) NNE York, adjacent Clark County, Illinois], 5 July 1977.

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ILLINOIS. Carroll County: INHS 21843 (1, 34), Mississippi River, 6.4 km (4 mi) W Blackhawk, 19 August 1963. Champaign County: INHS 87962 (2, 31-34), Sangamon River (Illinois drainage), 3.2 km (2 mi) W Dewey, 17 August 1928; INHS 87960 (1, 30), Sangamon River (Illinois drainage), 2.4 km (1.5 mi) S Fisher, 17 August 1928; INHS 87961 (2, 32), Sangamon River (Illinois drainage), 1.6 km (1 mi) E Fisher, 18 August 1928. Clay County: UMMZ 213953 (3, 36-37), Little Wabash River (Wabash drainage), 6.4 km (4 mi) N Iola, 6.4 km (4 mi) E bridge, 29 September 1940; UMMZ 213952 (64, 22-37), Little Wabash River (Wabash drainage), 8 km (5 mi) E Iola, 23 August 1940. Cook County: FMNH 61753 (3, 40-44), [Des Plaines River drainage] Berwyn, 1900. Fayette County: INHS 84693 (5, 38-41), Kaskaskia River (Mississippi drainage), Vandalia, 25 November 1899. Franklin County: INHS 84748 (17, 33-36), Big Muddy River (Mississippi drainage), Benton, 18 October 1900. Henderson County: UMMZ 213980 (2, 38-40), Mississippi River, Oquawka, 2 May 1946. Iroquois County: INHS 85058 (1, 41), Iroquois River (Kankakee drainage), 6.4 km (4 mi) N Watseka, 1 June 1901. Jefferson County: UMMZ 163053 (2, 38-39), Little Muddy River (Big Muddy drainage), 8 km (5 mi) E Tamaroa, September 1940. Rock Island County: INHS 27091 (1, 43), Mississippi River, 3.2 km (2 mi) N Cordova, 12 April 1979; UMMZ 213981 (1, 31), Mississippi River, Andalusia, 17 September 1946. Saline County: INHS 86223 (6, 40-43), South Fork [Saline River] (Ohio drainage), Mitchellville, 6 October 1900. Shelby County: INHS 86285 (1, 42), Kaskaskia River (Mississippi drainage), Cowden, 27 November 1899. Whiteside County: UMMZ 213983 (4, 22-26), Mississippi River, Fulton, 31 July 1946. Will County: INHS 4860 (9, 41-43), Kankakee River (Illinois drainage), 8.8 km (5.5 mi) ESE Ritchie, October 1963; INHS 27071 (1, 31), Kankakee River (Illinois drainage), 0.6-1.2 km (0.4-0.75 mi) N Custer Park, 9 August 1978; same locality data as preceding for following 12 collections: INHS 27078 (1, 34), 9 November 1978; INHS 27603 (1, 28), 9 August 1979; INHS 27602 (8, 22-32), 15 August 1979; INHS 87557 (2, 24-26), 6 August 1981; INHS 87559 (1, 14), 11 August 1981; INHS 87959 (2, 25-28), 2 August 1982; INHS 88416 (1, 30), 9 August 1983; INHS 67960 (49, 19-27), 30 July 1984; INHS 69175 (10, 29-32), 29 July 1985; INHS 69176 (5, 16-35), 6 August 1985; INHS 69177 (1, 35), 8 August 1985; INHS 62292 (4, 25-26), 14 August 1986. Williamson County: INHS 86702 (14, 39-44), Crab Orchard Creek (Big Muddy drainage), Marion, 16 October 1900.

IOWA. Dubuque County: UMMZ 213986 (8, 31-43), Mississippi River near Dubuque at bridge [adjacent Jo Daviess County, Illinois], 13 September 1946. Jackson County: UMMZ 213985 (18, 19-32), Mississippi River, Bellevue [adjacent Jo Daviess County, Illinois], 26 August 1946; UMMZ 213984 (8, 25-33), Mississippi River, Sabula [adjacent Carroll County, Illinois], 17 August 1946. Muscatine County: FMNH 858 (2, 38-39), [Mississippi River] Muscatine [adjacent Rock Island County, Illinois], ca. 1891. Scott County: UMMZ 213982 (1, 38), Mississippi River, Pleasant View [adjacent Rock Island County, Illinois], 3 July 1946.

RESULTS AND DISCUSSION

The Illinois distributions of *H. amblops* and *N. amnis*, as judged from examination of extant specimens (Figs. 1 and 2), differ from previously published accounts (Forbes and Richardson 1908, Hubbs 1951, Smith 1971, 1979, Clemmer 1980a, 1980b, Burr and Page 1986). Even though subsequent collections have revealed new localities, much of the confusion apparently stemmed from misidentification of *N. amnis* and the uncritical acceptance of these erroneous records by others. In Illinois, *H. amblops* is known in the Ohio River drainage only from Wabash River tributaries, with most records concentrated in the upper reaches of the Little Wabash, Embarras, and Vermilion rivers. Extant specimens reported as *H. amblops* from the Saline (Ohio drainage) (Smith 1971, 1979, Clemmer 1980a, Burr and Page 1986) and Big Muddy (Mississippi drainage) (Forbes and Richardson 1908, Smith 1971, 1979, Clemmer 1980a, Burr and Page 1986) river systems were all based on *N. amnis*. Within the Mississippi River drainage of Illinois, *H. amblops* is known with certainty from only two pre-1900 localities in the upper Kaskaskia River drainage. Specimens reported as *H. amblops* by Forbes and Richardson (1908; repeated by Smith 1971, 1979, Clemmer 1980a, Burr and Page 1986) from the Kankakee, Mackinaw, and Sangamon river systems (all Illinois River drainage) are not extant but, given the reassessed distributions (Figs. 1 and 2), were almost certainly based on *N. amnis*.

The distributional reassessment of *N. amnis* in Illinois resulted in the discovery of several localities not reported by others (Hubbs 1951, Smith 1979, Skelly and Sule 1983, Clemmer 1980b), including the first Illinois records of the species in the Wabash and Saline (Ohio drainage) river systems. *Notropis amnis* and *H. amblops* were sympatric in the Little Wabash (Wabash drainage) and Kaskaskia (Mississippi drainage) river systems. In 1928, C. L. Hubbs, then of UMMZ, transferred several lots of fishes from MCZ to UMMZ. Among these was a specimen, collected by L. Agassiz in May, 1853 from the Mississippi River at St. Louis (K. E. Hartel, pers. comm.), which Hubbs (1951) identified as *N. amnis*. This and one other Mississippi River record mapped by Hubbs (1951; repeated by Clemmer 1980b) could not be located at UMMZ (D. W. Nelson, pers. comm.).

We did not conduct field searches specifically for *N. amnis*, but as noted in Figure 2 and reported by others (Skelly and Sule 1983), the species is consistently taken in the Kankakee River and occasionally in the Mississippi River adjacent Rock Island County, Illinois. Its persistence in other drainages of the state is equivocal, but dramatic changes (e.g., siltation, reservoir construction) in former habitats suggest that it no longer exists in those drainages.

In an effort to locate viable populations of *H. amblops* in Illinois, we surveyed during the summers of 1986 and 1987 at or near 20 historical sites in the Wabash River drainage and one in the Kaskaskia River, with concentrated efforts in the Vermilion River system (Fig. 1). We were unable to document the continued presence of the species in any of the streams surveyed.

The last collection of *H. amblops* within the political boundaries of the state was in 1961 in the Salt Fork Vermilion River (Smith 1979); a single specimen was also taken in the mainstream of the Wabash River, Sullivan County, Indiana, adjacent Clark County, Illinois in 1977 (D. A. Etnier, pers. comm.). As depicted in Figure 1 and summarized by Smith (1979), the species disappeared from most Illinois rivers by the late 1950s. Its demise was most likely the result of excessive siltation (Smith 1979, Trautman 1981, Burr and Page 1986), decreased base flow, and other habitat modifications associated with land clearing, drainage, and development.

As judged from our field work, the destruction of appropriate habitat, and the historical distribution of *H. amblops* in Illinois, we cannot be optimistic about the presence of viable populations in the state. If the species persists at all, it is most likely in very low numbers. The single specimen taken in 1977 from the Wabash River may afford some hope that the species persists in Wabash River tributaries of the state, but more likely the specimen was a waif from a population in Indiana.

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