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D. B. McCarraher
Nebraska Game, Forestation and Parks Commission, Bassett, Nebraska

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Pike Hybrids (*Esox lucius* x *E. vermiculatus*) in a Sandhill Lake, Nebraska[1]

In the sandhill region of Nebraska both northern pike, *Esox lucius*, and grass pickerel, *Esox vermiculatus*, are abundant in several shallow natural lakes. Both species are known to utilize the same vegetative habitat for spawning during March and April. The pike is an important game species but the smaller pickerel is of little value to fishermen although in winter is at times taken by angling through the ice.

Hybridization in the pike family, Esocidae, has been noted several times in the past. Underhill (1939) and Embody (1918) produced an artificial cross between the northern pike and chain pickerel, *Esox lucius* × *E. niger*. Eddy (1941) reported on hybrids between northern pike and the muskellunge (*E. masquinongy*). Greeley (1939) observed a cross between the chain pickerel and redfin pickerel, *E. niger* × *E. americanus*. Raney (1957) examined many hybrids of the *niger* × *americanus* cross including back crosses. He found that in almost all instances the back crosses to a parent species were intermediate between the hybrid and the parent species. But it appears from a review of the available literature that a description of the *lucius* × *vermiculatus* cross has not been recorded.

[1]A contribution of Federal Aid to Fisheries, F-4-R, Job No. 2.

EVIDENCE OF HYBRIDIZATION

In several sandhill lakes the grass pickerel attains lengths up to 14.0 inches, although the average size of mature fish is probably around 8.0 inches. The pickerel has been found to mature and enter spawning grounds at 4.0 inches in length. Most male northern pike reach maturity at 18.0 inches in Nebraska and are directly associated with the pickerel during the spawning season. It is not unlikely, therefore, that hybridization could occur if the two species are genetically compatible.

The first probable *lucius* × *vermiculatus* hybrid found in Nebraska was taken during the ice-fishing season of 1958-59. It was caught on hook and line in Watts Lake, a 230-acre lake on the Valentine National Wildlife Refuge. During the ice-fishing season two other hybrids are known to have been caught from this same lake. Several other pike, also reported as "queer" looking, were taken by anglers but were not seen by state fishery biologists. The northern pike population in this lake is mostly of Age II and III fish since winter kill in 1955-56 nearly eliminated older fish.

Trammel and fyke netting on Watts Lake in the early spring of 1959 produced three additional hybrid fish. These fish were netted in conjunction with the northern pike spawn-taking project at the lake. Spawning populations of both species appeared to be high at this time.

TABLE 1.—*Characteristics of four hybrid pike (Esox lucius × E. vermiculatus) from Watts Lake, Nebraska*

Item	Hybrid				Northern pike	Grass pickerel
	Number 1	Number 2	Number 3	Number 4		
Total length (inches)	18.8	19.2	20.0	18.2	—	—
Weight (pounds)	1.9	2.0	2.2	1.4	—	—
Sex	Female	Female	Female	Female	—	—
Sensory pores	5	4	4	5	5	4
Subocular bar	None	None	None	None	None	Present
Branchiostegals (one side)	12	12	13	14	14-16	11-13
Lateral line scales	98	—	120	102	120-125	90-110
Dorsal ray counts	15	16	16	15	14-16	17-18
Body markings	Dark, oblique bars	Dark, oblique bars	Dark, oblique bars	Dark, oblique bars	Light spots	Dark, oblique bars
Cheeks	Fully scaled	Fully scaled	Fully scaled	Fully scaled	Fully scaled	Fully scaled
Opercle	¼ scaled	¼ scaled	¼ scaled	½ scaled	½ scaled	Fully scaled
Age	II	II	II	II	—	—
Gonad development[1]	Immature	Immature	Immature	—	—	—
Distance from tip of upper jaw to center of eye less than twice the distance from center of eye to posterior edge of opercle.						

[1]Histological examinations were not made.

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DESCRIPTION OF HYBRID PIKE

Coloration and marking of the Nebraska hybrids resembles closely that of grass pickerel. Alternating dark and light bars extend obliquely forward and ventrally to the lateral margin of the belly. The bars are irregular with slight fuzzing or blotching along the dorsal body surface in two of the specimens. Body color is generally dark. Other characteristics of the Watts Lake hybrids are listed in Table 1.

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D. B. MCCARRAHER
Nebraska Game, Forestation and Parks Commission
Bassett, Nebraska