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Growth of Hybrid Sunfishes and Channel Catfish at Low Temperatures¹

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ABSTRACT

The growth of hybrid sunfish (male bluegill, *Lepomis macrochirus* × female green sunfish, *L. cyanellus*) and channel catfish (*Ictalurus punctatus*) below 15 C was determined in ponds on natural food and in cages on artificial feed. In all cases, the hybrids gained weight, while the channel catfish lost weight.

In an earlier popular paper (Lewis and Heidinger 1971), it was suggested that hybrid sunfishes exhibit better growth at a lower temperature than does the channel catfish, *Ictalurus punctatus*. At latitudes having a very short period when the air temperature is above 21 C, the hybrid sunfishes may be more economical to raise for either a food fish or pay fishing than the channel catfish. The present investigation was undertaken to accumulate data to more clearly demonstrate the extent to which some of the hybrid sunfish and channel catfish would grow at water temperatures below 15 C.

MATERIALS AND METHODS

The growth of hybrid sunfish (male bluegill, *Lepomis macrochirus* × female green sunfish, *L. cyanellus*) and channel

catfish below 15 C was determined in ponds on natural food and in cages on artificial feed. Two 0.35-hectare ponds were each stocked with 50 fingerling hybrid sunfish and two with 50 fingerling channel catfish. The fish were individually weighed before stocking, and again after 135 days when the ponds were drained.

Eight cages, each having a volume of 1 m³, were placed in the warm water discharge of a fossil fuel power plant. During the 75 days of this experiment the water temperature ranged between 10 and 15 C. Two cages were each stocked with 6.8 kg of yearling hybrid sunfish; three cages each with 45.4 kg of yearling channel catfish; and three cages each with 6.8 kg of hybrid sunfish and 45.4 kg of channel catfish. Purina Trout Chow was fed in excess to all fish once each day.

RESULTS AND DISCUSSION

In all cases, the bluegill × green sunfish hybrids gained weight, while the channel

TABLE 1.—Growth of young of the year hybrid sunfish and channel catfish held in 0.35-hectare ponds from 20 October to 6 March at water temperatures below 13 C

Pond	Species	Initial		Final		Change in weight (%)
		Number of fish	Average weight (g)	Number of fish	Average weight (g)	
2	B × C ^a	50	2.8	42	3.8	36
2	Channel catfish	50	2.0	34	1.7	-15
7	B × C ^a	50	2.8	38	3.5	25
7	Channel catfish	50	2.0	33	1.6	-20

^aBluegill (male) × green sunfish (female).

TABLE 2.—*Growth of hybrid sunfish and channel catfish fed on artificial feed in cages for 75 days at a water temperature of 10 to 15 C*

Cage	Bluegill (male) × green sunfish (female)					Channel catfish				
	Initial		Final		Change weight (%)	Initial		Final		Change weight (%)
	Number of fish	Average weight (g)	Number of fish	Average weight (g)		Number of fish	Average weight (g)	Number of fish	Average weight (g)	
1	200	34	163	52	53					
2	200	35	196	49	40					
3	200	34	116	45	32	109	418	54	395	- 5
4	200	34	161	38	12	133	340	25	313	- 8
5	200	35	117	43	23	126	359	21	354	- 1
6						108	418	35	409	- 2
7						109	418	51	372	-11
8						120	377	63	322	-14

catfish lost weight. Fingerling hybrids increased approximately 30% in weight in the ponds, while fingerling channel catfish lost approximately 17% of their stocked weights (Table 1).

Hybrid sunfish stocked in cages averaged 32% increase in weight. During the same period channel catfish lost approximately 7% of their weights (Table 2). Survival of hybrids (75%) was considerably higher than the survival of channel catfish (35%).

Hybrids stocked alone gained more than hybrids stocked with channel catfish. There was no significant difference in the weight loss of channel catfish stocked by

themselves as opposed to those stocked with hybrid sunfish (Table 2).

The results indicate that there may be competition between hybrid sunfish and channel catfish when they are stocked together in cages, and that the growth rate of the hybrid sunfish may be reduced. On basis of temperature requirements, the hybrid sunfish is much better adapted than is the channel catfish for use in areas having short periods when the average air temperature is above 21 C.

LITERATURE CITED

- LEWIS, W. M., AND R. C. HEIDINGER. 1971. Aquaculture potential of hybrid sunfish. *The American Fish Farmer*, April 1971, p. 14-16.