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A COMPARISON OF GROWTH BETWEEN
PELLET-FED AND MINNOW-FED LARGEMOUTH BASS FINGERLINGS

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Artificial feeding of fish with dry-pelleted foods has proven to be highly practical and economical for rearing trout and catfish and may be useful with other species. Knowing its value for other species, a trial feeding of a pelleted ration used for catfish was initiated with largemouth bass at the Woodruff Fish Hatchery. A summary of the results of this experiment is the subject of this report.

Two identical ponds were selected for feeding experiments with largemouth bass. Each pond was .7 acre in size and had an average depth of 3 feet (max. 5 ft.). Pond bottoms are predominantly sand and mud. The water sources were separate screened intake pipes from a moderately hard-water stream (45 p.p.m. total alkalinity). No fertilizers were used in either pond.

In late July, each pond was completely drained, refilled and stocked with 600 largemouth bass fingerlings. The fish were from a single source and were hand selected to assure a uniform size. The introduced fish averaged 45 mm. standard length* (range 38 to 55 mm.). They weighed approximately 2 grams apiece.

The bass in one pond were fed a commercially prepared pellet-type feed while the other pond received minnows as feed. The pellets were 32% crude protein, 7% crude fiber and 4% crude fat. The sizes of the pellets ranged from fine powder to 5 mm. diameter, but most pieces were 1 to 4 mm. diameter. The pellets were introduced daily at a rate of about 1/2 pound per acre. Small minnows were fed in the other pond. Fathead minnows (*Pimephales promelas*), mimic shiners (*Notropis volucellus*), sand shiners (*Notropis deliciosus*) and bluntnose minnows (*Pimephales notatus*) were the species used. The minnows average 35 mm. total length and ranged from 16 to 60 mm. A total of 100 pounds of minnows was fed at an average of 14 pounds per week.

The feeding behavior of the two groups of fish differed markedly. The bass with minnows pursued the minnows actively and fed upon them heavily. Some of the bass near sinking pellet particles swam up to the feed, but only a few were observed taking any during the entire study. It appears that curiosity was the attracting force.

On September 13, 1967, the ponds were drained and the fish were counted, measured and weighed. The results were as follows:

	<u>Pellet-Fed Pond</u>	<u>Minnow-Fed Pond</u>
No. bass surviving	595	405
Total weight of bass surviving	11.8 lbs.	21.4 lbs.
Average std. length of bass	67 mm.	94 mm.
Average growth increment	22 mm.	49 mm.
Range of std. lengths	57-93	65-120
Average weight of bass	9.2 g.	24 g.
Average weight increment	7.2 g.	22 g.

*Tip of snout to end of vertebral column. Reference point was anterior end

When the minnow-fed pond was drained, there were approximately 5 pounds of minnows remaining.

Other fish which accidentally appeared in each pond were as follows:

Pellet-Fed Pond

3 bluegills (30, 35, 40 mm. total length)
15 brown bullheads (48 to 65 mm. total length)

Minnow-Fed Pond

1 young-of-year of each:
Yellow Perch, Walleye, White
Sucker, Pumpkinseed

The greater growth and production of the minnow-fed fish are evident. Apparently, the artificial feed was unattractive to the bass. Possibly, other prepared feed of different ingredients, smell, color or texture could be more successful. On the other hand, the psychology of bass may involve a preference for other attractive factors such as swimming-type movements.

The lower number of bass surviving on a minnow diet may be due to several factors. Diseases, etc., may have been passed on to some bass from their feed. A few freshly dead bass fingerlings were found that had eaten well-fungused minnows. Cannibalism may also have occurred among the minnow-fed bass. Some of these bass were much smaller than others at the end of the summer. Possibly, some of the smaller bass were poor competitors for the live feed and were preyed upon by their own species. While survival was much lower in the minnow-fed group, total production was significantly higher than the pellet-fed group.

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