

NEW WHITING PRODUCTS TESTED AT UNIVERSITY OF MASSACHUSETTS ANNUAL SCHOOL-LUNCH CONFERENCE

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ABSTRACT

In its efforts to assist the whiting industry, the U. S. Bureau of Commercial Fisheries has learned that a need exists for product diversification in that industry. Competition in the traditional markets and variable quality of the product have had a depressing effect on the important New England whiting fishery.

This article reports on the results of eliciting opinions of supervisors and managers of school-lunch programs as to the acceptability in school lunches of whiting served in fish portions, fish sticks, fishburgers, fish jelly roll, and fish croquettes.

INTRODUCTION

The announcement shown on this page was distributed to 150 supervisors and managers of school-lunch programs as they registered at the University of Massachusetts in Amherst, Mass., for their annual state-wide School-Lunch Conference which took place in July 1962.

A NEW TWIST--THE TEST IS IN THE TASTE

Will the children eat it?

The School Lunch Program and the fishing industry have one thing in common. Both are trying to come up with new ideas for menus that will appeal to the children of the Nation. The U. S. Bureau of Commercial Fisheries has developed a number of fishery products with a new twist. The Bureau thinks these are the type of products you would like to serve. It is not the Bureau's intention to attempt to sell these products to you at this meeting but rather to show them to you, ask you to sample them, and then have you give an honest opinion as to their possible acceptability in the School-Lunch Program. You are the experts. The Bureau wants your ideas concerning the types of new products that you want.

This program will be presented by Kevin J. Allen, Fishery Marketing Specialist, Branch of Marketing, and Edward H. Cohen, Chemist, both of the Bureau of Commercial Fisheries.

Fig. 1 - Announcement distributed to school-lunch personnel at Massachusetts state-wide School-Lunch Conference.

In addition to their regular business sessions, the school-lunch people each attended one of the following six "Special Interest Sessions:"

- Type "A" Lunch Analysis
- The Ups and Downs of Recipe Adjusting
- Timely Tips on Equipment
- A New Twist--The Test is in The Taste
- Meeting the Needs of our School-Lunch Customers
- Accounting Clinic to Relieve Record-keeping Headaches

Of the 150 registered supervisors and managers of school-lunch programs, 74 (or 49 percent) attended the special session called "A New Twist--The Test is in The Taste." The

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Bureau's purpose in requesting their aid at that session was to determine the acceptability and marketing feasibility of new whiting products.

The products evaluated were: (1) fish portions, (2) fish sticks, (3) fishburgers, (4) fish jelly roll, and (5) fish croquettes. The purpose of this article is to report the reaction of the school-lunch people to those five whiting products.

FISH PORTIONS

Fish portions were made from skinless whiting fillets frozen in a 13½-pound block, cut with a band saw, battered and breaded, deep-fried, and packaged.

The reaction of the school lunch supervisors and managers to this product is shown in table 1. The portions were the most popular of the five products served, and they received the fewest adverse comments. The general feeling was that the portions would be readily acceptable by children. A few small bones were found in the samples and there was immediate objection to this. Most of the comments were as follows: "the best I have ever tasted," "excellent," "tasty," and "would be accepted."

Rating	Number Choosing Indicated Rating	Relative Number Choosing Indicated Rating
	No.	%
Like extremely	18	24
Like very much	33	45
Like moderately	17	23
Like slightly	3	4
Neither like nor dislike	2	3
Dislike slightly	-	-
Dislike moderately . . .	-	-
Dislike very much . . .	-	-
Dislike extremely . . .	-	-
Not rated	-	-
Total	74	100

FISH STICKS

Fish sticks were made from skinless whiting fillets frozen in a 13½-pound block, cut with a band saw, battered and breaded, deep-fried, and packaged.

The reaction to this product is shown in table 2. The participants were unanimous in their opinion that the fish sticks would be acceptable to the children. They felt, however, that the fish sticks should be served with tartar sauce or ketchup. The main complaint regarding the samples was lack of seasoning. A



Fig. 2 - Children being served fish sticks in a school lunchroom in Manchester, Mass. The school-lunch programs are a large potential market for new types of fishery products provided they are developed to appeal to children.

Rating	Number Choosing Indicated Rating	Relative Number Choosing Indicated Rating
	No.	%
Like extremely	9	12
Like very much	39	53
Like moderately	14	19
Like slightly	7	10
Neither like nor dislike	3	4
Dislike slightly	1	1
Dislike moderately . . .	-	-
Dislike very much . . .	1	1
Dislike extremely . . .	-	-
Total	74	100

few small bones were found in the samples, and again testers objected to this. Some thought the fish sticks were the best they had ever tasted and were better than the products now on the market. Because fish sticks are readily available and popular in the school lunch, the participants thought that fish sticks made from whiting would be readily acceptable.

FISHBURGERS

Fishburgers were made from the flakes of steamed whiting fillets. The other ingredients consisted of onions, butter, fish liquid or milk, bread crumbs, eggs, parsley, mustard, and salt. The product was shaped into burgers, rolled in crumbs, and pan-fried for 4 minutes on each side.

The reaction to this product is shown in table 3. Participants were unanimous in their opinion that the fishburgers contained too much onion and not enough salt. There was a difference of opinion regarding the acceptability by the children. The primary reason that children would reject them was the amount of onion. Many of the school-lunch people felt that the burgers, though not acceptable to the small children, would be readily accepted by older children and by high school students.

Table 3 - How Fishburgers Were Rated by Supervisors and Managers of School-Lunch Programs

Rating	Number Choosing Indicated Rating	Relative Number Choosing Indicated Rating
	No.	%
Like extremely	18	24
Like very much	25	34
Like moderately	17	23
Like slightly	7	9
Neither like nor dislike	2	9
Dislike slightly	3	4
Dislike moderately	-	-
Dislike very much	2	3
Dislike extremely	-	-
Total	74	100

FISH JELLY ROLL

Table 4 - How Fish Jelly Roll Was Rated by Supervisors and Managers of School-Lunch Programs

Rating	Number Choosing Indicated Rating	Relative Number Choosing Indicated Rating
	No.	%
Like extremely	3	4
Like very much	4	5
Like moderately	8	11
Like slightly	7	10
Neither like nor dislike	6	8
Dislike slightly	8	11
Dislike moderately	13	18
Dislike very much	24	32
Dislike extremely	1	1
Total	74	100

Fish jelly roll was prepared by cutting whiting fillets into 1-inch chunks, adding olives, pimentos, carrots, salt, gelatin, spices, vinegar, and water. The mixture was stuffed into a casing, heat processed, and then refrigerated.

The reaction to this product is shown in table 4. The participants were unanimous in their dislike for fish rolls. All agreed it would not be accepted in the schools, though a few thought it had possibility as an hors d'oeuvres for adults only.

FISH CROQUETTES

Fish croquettes were made from the flakes of steamed whiting fillets. The other ingredients were onions, butter, flour, milk, eggs, salt, pepper, parsley, and bread crumbs. These ingredients were mixed and shaped into croquettes and then were deep-fried for 3-4 minutes.

The reaction to this product is shown in table 5. Although the participants readily accepted the croquettes and liked them, there was a difference of opinion on whether the children would accept them. Some of the participants who thought the children would accept them suggested that the croquettes be served with a sauce. Participants who thought the children would not accept fish croquettes based their opinion on the fact the children did not like chicken croquettes.

Table 5 - How Fish Croquettes Were Rated by Supervisors and Managers of School-Lunch Programs

Rating	Number Choosing Indicated Rating	Relative Number Choosing Indicated Rating
	No.	%
Like extremely	14	19
Like very much	35	47
Like moderately	10	14
Like slightly	7	9
Neither like or dislike	2	3
Dislike slightly	6	8
Dislike moderately	-	-
Dislike very much	-	-
Dislike extremely	-	-
Total	74	100

SUMMARY AND CONCLUSIONS

1. Most of the supervisors and managers of school-lunch programs who participated in the test were receptive to the new products. The participants felt that the products, with the

exception of the jelly roll, were good and that little trouble would be found in marketing them.

2. Opinions varied with respect to the desired optimum amount of seasoning required in each product. Onion and salt were the seasonings in question. (To overcome these objections, we will adjust the recipes used in future tests.)

3. Participants pointed out that all portions must contain at least 2 ounces of cooked fish meat per serving for use in the school-lunch program.

4. The participants felt that the initial introduction of new whiting products should be limited to portions and sticks. They based their opinion on the fact that other portion and fish stick products were widely acceptable in the school-lunch program.

5. Participants all agreed that products that contained bones would not be accepted by small children.

6. The participants were of the opinion that fish sticks and fish portions would be most acceptable to the younger children. Croquettes and burgers would find greater acceptance by older children than by younger ones.

7. Participants suggested that the products be tested by school-lunch personnel in other states to get a complete picture of their acceptability.

8. The group participating in this testing was small and represents a minute percentage of school-lunch supervisors and managers throughout the country. The results, however, were encouraging enough to warrant further testing of the products in other areas.



SALMON SPAWNED IN FRESH WATER ADAPT TO SALT WATER

The quick adaptation to salt water by salmon spawned in fresh water that return to the sea is due to their gill systems, research by a zoologist of the University of California, Los Angeles, has indicated.

Theoretically, when the fish go from fresh water into the high salinity of the sea, they should normally be expected to dehydrate. Studies of salmon tagged with radioactive sodium chloride have shown that they are able to change the permeability of the gill system so they lose very little water in the change-over from fresh to salt water. Because of that, the salt concentration does not build up in their blood.

Certain sea-going frogs in Thailand, as well as European toads, also can adapt to a salt-water environment. Their tolerance to increased salt concentration in their body, the University zoologist said, is largely through regulation of their kidney mechanism. Unlike the salmon, however, the body fluids of the European toad become almost equal in salt concentration to the water in which they live.

The zoologist has been doing research on salmon under a grant from the National Science Foundation. (Science News Letter, August 11, 1962.)