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Amount of  
Fish and Shrimp  
Found in Frozen  
Breaded Products

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A cooperative study by The Connecticut  
Agricultural Experiment Station and  
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## Amount of Fish and Shrimp Found in Frozen Breaded Products

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Various breaded and frozen seafoods are offered for sale to consumers. Among such products are fish fillets, fish sticks and shrimp.

The Food and Drug Administration (FDA) has no standards for the minimum amount of fish flesh required, or the amount of breading allowed in breaded and frozen fish products. The United States Department of Commerce, National Marine Fisheries Service (USDC) has a standard of a minimum of 50% fish flesh in breaded fish products, but this standard applies only to USDC inspected plants. A USDC seal may be imprinted on the label; but this is at the discretion of the processor.

Both the USDC and FDA have standards for the minimum amount of shrimp required in breaded shrimp (USDC, CFR). If the shrimp product is labeled as breaded it must contain not less than 50% shrimp, and if labeled as lightly breaded, it must contain not less than 65% shrimp.

This report details the percentage of fish flesh and shrimp in a variety of types and brands of frozen breaded shrimp and fish products sold in food stores in Connecticut. The data allow consumers to have a better understanding of exactly how much fish flesh or shrimp is actually received when frozen breaded products are purchased.

### METHODS

Samples of frozen breaded fish and shrimp products were collected from April through June 1991 at food stores in Connecticut by inspectors of the Food Division of the Connecticut Department of Consumer Protection. Samples were delivered to the laboratory and kept frozen until tested. After slight thawing, breading and batter were manually removed from each unit and the percentage of fish flesh or shrimp was calculated on a weight, as received, basis.

### RESULTS AND DISCUSSION

Sixty samples, including shrimp and four kinds of fish, representing eight different brands were tested for percentage of fish flesh or shrimp. The four kinds of fish (Cod, Flounder/Sole, Haddock, Pollock) were represented by fillets, sticks, and minced fish frozen pieces. Table 1 shows the percentage of fish flesh by brand name, type of product, and other information such as number of pieces per package.

Some brands and types were tested more than once. These results show processing variability and allow consumers to judge variations between different batches of the same product. The average percentage and standard deviation of fish flesh and shrimp among brands are shown in Table 2. The lower the standard deviation the more precise quality control in the manufacturing process.

All eight samples of breaded shrimp tested failed to meet FDA or USDC standards for minimum percent of shrimp (Table 1). The average percent of shrimp was 33.5% (Table 2), considerably below the 50% minimum standard.

### REFERENCES

USDC Approved List Of Fish Establishments and Products. Vol. 6, no. 1, April 1991. U.S. Department of Commerce, National Marine Fisheries Service, Pascagoula, MS.

Code of Federal Regulations. Title 21, revised as of April 1, 1990. Office of the Federal Register, Washington, DC.

Table 1. Percent of fish flesh and shrimp in breaded frozen products.

Brand/type	Label	% fish or shrimp
<b>A &amp; P</b>		
Cod, minced	16 light & crunchy fish sticks	48.4
Cod, minced	16 light & crunchy fish sticks	52.8
Cod, minced	6 light & crunchy fish fillets	49.1
Cod, minced	6 light & crunchy fish fillets	53.6
<b>FINAST</b>		
Pollack	4 crunchy fish fillets	46.3
Pollack	4 crunchy fish fillets	55.9
Pollack	4 crunchy fish fillets	59.4
Pollock	4 crunchy fish fillets	45.5
Pollock	4 crunchy fish fillets	51.6
<b>FOOD CLUB</b>		
Pollock	16 fish sticks crispy crunchy breaded	41.6
Pollock	16 fish sticks crispy crunchy breaded	44.2
Pollock	16 fish sticks crispy crunchy breaded	43.4
Pollock	16 fish sticks crispy crunchy breaded	47.3
Pollock	7 fish fillets crunchy light batter	43.4
Pollock	7 fish fillets crunchy light batter	45.2
Pollock	7 fish fillets crunchy light batter	42.0
Pollock	7 fish fillets crunchy light batter	42.6
<b>GORTON'S</b>		
Cod	1 baked Scrod with toasted bread crumbs	78.9
Flounder	4 natural cut crispy batter fillets	42.3
Flounder	4 natural cut crispy batter fillets	43.6
Pollock	12 crunchy fish sticks	40.6
Pollock	12 crunchy fish sticks	47.2
Pollock	4 crunchy fish fillets more fish-less breading	57.0
Pollock	4 crunchy fish fillets more fish-less breading	57.0
Pollock	4 crunchy fish fillets more fish-less breading	61.3
Pollock	18 fish sticks with real potato coating	49.1
Pollock	18 fish sticks with real potato coating	52.1
Pollock	4 fish fillets crunchy	43.7
Pollock	4 fish fillets crunchy	43.9
Pollock	4 fish fillets crunchy	54.1
Shrimp	14 or more whole shrimp breaded	33.4
Shrimp	14 or more whole shrimp breaded	34.5
Shrimp	14 or more whole shrimp crunchy	27.5
Shrimp	14 or more whole shrimp crunchy	32.8
Shrimp	14 or more whole shrimp crunchy	35.7
Shrimp	14 or more whole shrimp crunchy	38.7
Shrimp	14 or more whole shrimp crunchy	39.4
Shrimp	25 or more whole shrimp	25.6
<b>MRS. PAUL'S</b>		
Haddock	4 crunchy batter fillets	52.7
Pollock, Alaskan	4 fish fillets crispy crunchy breaded	60.2
Pollock, minced	10 breaded fish sticks budget line	41.1
Pollock, minced	10 breaded fish sticks budget line	44.7
Pollock, minced	20 battered fish sticks budget line	43.9
Pollock, minced	20 battered fish sticks budget line	46.2
Pollock, minced	4 breaded fish portions budget line	53.0
Pollock, minced	4 breaded fish portions budget line	56.8

Table 1. Percent of fish flesh and shrimp in breaded frozen products (continued).

Brand/type	Label	% fish or shrimp
Pollock, minced	4 breaded fish portions budget line	58.2
Sole	2 light sole fillets	57.6
<b>STOP &amp; SHOP</b>		
Haddock	4 light & crispy fillets crunchy taste	44.5
Haddock	4 light & crispy fillets crunchy taste	46.1
Haddock	4 light & crispy fillets crunchy taste	47.0
Haddock	4 light & crispy fillets crunchy taste	47.2
Haddock	4 light & crispy fillets crunchy taste	48.1
Haddock	4 light & crispy fillets crunchy taste	49.9
Haddock	4 light & crispy fillets crunchy taste	62.2
<b>TASTE O' SEA</b>		
Pollock	4 fish fillets batter dipped	39.3
Pollock	4 fish fillets batter dipped	43.4
Pollock	4 fish fillets crunchy	63.5
<b>VAN DE KAMP'S</b>		
Pollock	12 breaded fish sticks now crispier	51.6
Pollock	7 breaded fish fillets now crispier	56.1

Table 2. Average percentage of fish flesh and shrimp found among brands.

Brand	No. Samples	Average % fish or shrimp
A & P, fish	4	51.0 ± 2.3 <sup>a</sup>
Finast, fish	5	51.7 ± 5.4
Food Club, fish	8	43.7 ± 1.7
Gorton's, fish	13	51.6 ± 10.1
Gorton's, shrimp	8	33.5 ± 4.6
Mrs. Paul's, fish	10	51.4 ± 6.6
Stop & Shop, fish	7	49.3 ± 5.5
Taste O' Sea, fish	3	48.7 ± 10.6
Van de Kamp's, fish	2	53.9 ± 2.3

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<sup>a</sup> Standard deviation



The Connecticut Agricultural Experiment Station, founded in 1875, is the first experiment station in America. It is chartered by the General Assembly to make scientific inquiries and experiments regarding plants and their pests, insects, soil and water, and to perform analyses for State agencies. The laboratories of the Station are in New Haven and Windsor; its Lockwood Farm is in Hamden. Single copies of bulletins are available free upon request to Publications; Box 1106; New Haven, Connecticut 06504.

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