A Sustainable Future:

Fish Processing Byproducts

Peter J. Bechtel and Scott Smiley, editors

Proceedings of the symposium:
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Introduction

The first major symposium on byproducts from Alaska seafood processing, the International Conference of Fish By-Products, was organized by the Alaska Fisheries Development Foundation (AFDF) in 1990, and the proceedings volume was published by the Alaska Sea Grant College Program (1). The symposium was held only a few years after the Bering Sea fisheries were Americanized, with the implementation of the 200 mile Exclusive Economic Zone through the Magnuson Fisheries Conservation and Management Act of 1976. By 1990, shoreside processing plants had been built to handle the fisheries resources of the eastern Bering Sea. These dwarfed other fish processing plants in Alaska, with capacities ranging up to 4.5 million pounds per day.

The Alaska Department of Environmental Conservation, through the authority of the Environmental Protection Agency (Region 10) and the Clean Water Act, set standards for the high-capacity shoreside plants. They mandated the plants to handle seafood processing waste in a way similar to that accomplished by the City of Kodiak, after it was designated a seafood processing center in 1974. Raw fish processing waste generated from human food processing lines are ground, cooked, and made into four standard coproducts: fish protein meal, fish oil, bone meal, and stickwater.

Twelve years after AFDF conducted the first byproducts symposium, leaders concluded that a second conference on byproduct advances was warranted. The rationalization of the Bering Sea fisheries, though the American Fisheries Act of 1998, reduced the at-sea fleet of factory trawlers and changed the allocation of harvests with a significantly greater percentage going to shoreside plants. World fish production from commercial aquaculture was increasing rapidly, especially in China, and there were concerns about the continued availability of fish protein meals and oils for aquaculture feeds. The 2nd International Seafood Byproduct Conference, held in 2002 in Anchorage, focused on the status of Alaska's fisheries, feeds, fertilizers, and alternative fuels as well as food supplements and pharmaceuticals, among other topics. The Alaska Sea Grant College Program published the proceedings volume (2).

Following the 2002 byproducts symposium, huge changes accompanying the exponential growth of aquaculture in China and the influence of global fish markets available through the Internet substantially altered the character of fish processing and the handling of fish processing byproducts. Additionally, seven years after the 2002 symposium, our group had published more than 50 new research papers on Alaska fisheries processing byproducts and made numerous presentations at scientific meetings. Significant changes in global marketing of seafood had occurred and the focus of the Alaska seafood industry had changed markedly. As a consequence, we decided to field another symposium, this time seeking a substantial increase in participation of the Alaska fishing industry.

This book is a result of the symposium A Sustainable Future: Fish Processing Byproducts, held February 25-26, 2009, in Portland, Oregon, immediately after the 60th Pacific Fisheries Technologists annual meeting. The byproducts symposium was well attended and discussions were both extensive and productive. We have divided the material in the book into plenary talks and four major sections: New Products and Uses; Stickwater and Wash Water; Storage, Stabilizing, and Processing; and finally Proteins, Hydrolysates, and Oils.

Acknowledgments

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Conclusion

At the conclusion of the conference, virtually all the participants were in agreement that the third international seafood byproduct conference was a real success and that the interactions between the national and international components of the processing sector and a diverse collection of researchers were both exhilarating and meaningful. This was truly an international conference; 85 people attended, including strong participation from the seafood industries, with 29 oral presentations and an industry forum and a poster session. Thank you for sharing information and the needs of our industries as we strive to increase the economic and responsible utilization of our fishery resources.

—Peter Bechtel, Jim Browning, and Scott Smiley, Steering Committee

References

1. Keller, S. (ed.) 1990. Making profits out of seafood wastes. Proceedings of the International Conference on Fish By-products, April 25-27, 1990, Anchorage, Alaska. Alaska Sea Grant College Program, University of Alaska Fairbanks. 239 pp.
2. Bechtel, P.J. (ed.). 2003. Advances in seafood byproducts: Proceedings of the 2nd International Seafood Byproduct Conference, November 10-13, 2002, Anchorage, Alaska. Alaska Sea Grant College Program, University of Alaska Fairbanks. 556 pp.

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