

# 2001 Pacific Fisheries Technologists Report

Submitted by Michael Morrissey , OSU Seafood Laboratory on sabbatical at CIBNOR.

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This year's PFT was held in La Paz, Baja California Sur, Mexico and hosted by the Center for Biological Investigation for Northwest Mexico (CIBNOR). Dr. Fernando Garcia of CIBNOR was PFT president and he was assisted by Patricia Hernandez (CIBNOR) as treasurer and Ramon Pacheco of the Center for Investigations of Food and Development (CIAD) in Hermosillo) as secretary. There were 87 in attendance representing Mexico, US, Canada, Spain, and Germany. CIBNOR did an excellent job in setting up the venue with the first day's session at the research institute itself and then followed by Tuesday and Wednesday's sessions at the Crowne Plaza Hotel. Besides well-rounded program of presentations and posters some of the more memorable features of this year's PFT were: president's reception with a backdrop of a Baja sunset, fish (also shrimp, octopus, and oyster) tacos under the CIBNOR palapa, the variety of Baja beaches, the Tuesday banquet with the folkloric ballet of Mexico followed by dancing till midnight with music from the 50s to 90s. La Paz itself added to the festivities with their own version of Carnival being held on the streets.

The sessions were divided into 5 categories including processing, biochemistry, aquaculture, safety, fisheries and education/training. The following is a list of the presentations. If you are interested in receiving more information about the paper, please contact the author directly. There were five student awards which were made available through donations from TELMEX and Manuel Romo. The awardees were Hermenegildo Olivas-Burrola of University of Sonora-Hermosillo, Jacek Jaczynski of the Oregon State University Seafood Laboratory, Adriana Muhlia-Almazan of CIBNOR, Julio Cordova-Murueta of CIBNOR, and Gabriela Sanchez-Brambila of CIAD.

**Processing Session: Chairmen:** Michael Morrissey, OSU Seafood Lab and Kate Abraham, Ocean Fisheries, Ltd.

**New packaging system for frozen surimi** - Jae W. Park, Angie Hunt, and Jacek Jaczynski, Oregon State University Seafood Laboratory, Astoria, OR

**Functional characterization of a protein concentrate from bristly sardine made under acidic conditions** - J.A. Cortés-Ruiz, Ramon Pacheco-Aguilar, R., García-Sánchez, G., and Lugo-Sánchez, M.E. Center for Investigation of Food and Development (CIAD), Hermosillo, Sonora

**E-Beam as a novel technology for surimi seafood pasteurization** - Jacek Jaczynski, Jae W. Park and Carl Zinn, Oregon State University Seafood Laboratory, Astoria, OR

**Development of a restructured like-ham fish product employing salt and microbial transglutaminase**

- Ocio M. Uresti, Jose A. Ramirez, Simón J. Téllez, Manuel Vázquez, Universidad Autónoma de Tamaulipas, Tamaulipas.

**Application of ozone as a disinfectant in seafood processing** - Jenny Hansen, Brian Himelbloom, and Michael T. Morrissey, Oregon State University Seafood Laboratory, Astoria, OR

**Ozone as a Sanitizer?** - Chuck Crapo, Brian Himelbloom, Susan Vitt, and Leo Pedersen, University of Alaska Fairbanks, Fish Tech Center, Kodiak, AK.

**Proposal for mandatory nutritional labeling in Canada** - Maria Andruczyk, Canadian Food Inspection Agency

**Benefits sought and attitudes on shellfish by Spanish and British consumers** - Sylvia Gomez-Jimenez and Gillian Rodriguez, Center for Investigation of Food and Development, Hermosillo, Sonora.

**Vacuum microwave dehydration of fish feed ingredients** - Tim Durance - Univ. of British Columbia, Vancouver, B.C.

**Tour of CIBNOR Facilities** - After a great lunch of fish tacos and cerveza most of us joined in for a tour of CIBNOR's facilities which were quite extensive. There was a lot of interest in their shrimp and mollusks aquaculture operations. The Centro de Investigaciones Biológicas del Noroeste (CIBNOR) (in English: Northwest Biological Research Center) is a public institution of the SEP-CONACyT system, with the mission of carrying out activities in scientific research, technological innovation and human

resource development at the postgraduate level. Research is oriented towards the solution of problems relating to the use and management of natural resources to promote sustainable development, with priority toward the northwestern region of Mexico. CIBNOR is one of 27 centers of the Department of Education and the National Council of Science and Technology of Mexico. It offers unique opportunities for scientific research due to its location in the southern part of the Baja Peninsula, in direct contact with the Sea of Cortés and the Sonoran Desert. The Center has 119 researchers in the fields of aquaculture, dry-lands agriculture, environmental protection, global change, evaluation of natural resources, marine and terrestrial biotechnology and other important facets of biology of the region and the world. More information can be found on their web page at <http://www.cibnor.mx>

**BIOCHEMISTRY SESSION.** Chairman: Dr. Fernando L. García-Carreño, CIBNOR.

**Proteolytic enzyme activity in hepatopancreas of jumbo squid (*Dosidicus gigas*)** - Josafat Marina Ezquerro Brauer; Norman F. Haard; Carlos J. Velázquez S.; Hermenegildo Olivás-Burrola. Universidad de Sonora, Hermosillo, Sonora.

**Purification of a carboxypeptidase from the hepatopancreas of Atlantic short finned squid (*Illex illecebrosus*)** - R. Raksakulthai and Norman F. Haard, University of California, Davis, CA

**Identification and characterization of the off flavor in mantle muscle of giant squid** - Gabriela Y Sánchez Brambila., Gerardo Alvarez Manilla, Norman Haard, and Ramón Pacheco Aguilar, Centro de Investigaciones Alimentos y Desarrollo, Hermosillo, Sonora

**Identification of proteinases during ontogenetic development of the white shrimp *Penaeus schmitti*** - Antonio Hernández, Patricia Hernández, Daniel Lemos and Fernando García. Centro de Investigaciones Biológicas del Noroeste, La Paz, Baja California Sur

**SAFETY. Chairman:** Dr. Ramón Pacheco. CIAD.

**Validation of a dig-labelled gene probe method for the detection and enumeration of *Vibrio parahaemolyticus* in environmental oyster samples** - Enrico Buenaventura, Danielle Oakes, Margaret Green, Kathleen Felton, Alvin Chong, Alison Napper, Keiko Fitz-Earle, Keith Wollenberg, Candice Hilder McLeavy, Chantal Mutanda and Dave Graham, Canadian Food Inspection Agency, Burnaby, B.C.

**Implementation of a risk reduction strategy to minimize illnesses from *Vibrio parahaemolyticus* from commercially harvested oysters in British Columbia** - Klaus Schallié, Canadian Food Inspection Agency, Burnaby, B.C.

**The use of high pressure processing to control vibrios in oysters** - Michael Morrissey, Haken Calik, Haejung An and Paul Reno, Oregon State University Seafood Laboratory, Astoria, OR

**Canadian position on the use of tasteless smoke and carbon monoxide on seafoods** - Maria Andruczyk, Canadian Food Inspection Agency, Ottawa, CA

**Methyl mercury and dioxins – significance for seafoods** - Ken Lum, National Food Processors Association, Seattle, WA

**AQUACULTURE. Chairman:** Dr. Patricia Hernández, CIBNOR.

**Enzymatic responses of *Penaeus vannamei* fed supplemented feeds with different sources of protein** - Julio Humberto Córdova Murueta and Fernando Luis Garcia Carreño, Centro de Investigaciones Biológicas del Noroeste, La Paz, Baja California Sur.

**An easy methodology for detection of protease inhibitors in aquafeeds** - Francisco J. Alarcón, Manuel Díaz, Francisco J. Moyano & Fernando García-Carreño Universidad de Almería, La Cañada de San Urbano, Spain.

**How digestive proteases activity is regulated during molting, starvation and feeding processes in the midgut gland of white shrimp *Penaeus vannamei*** - Adriana T. Muhlia-Almazán and Fernando L. García-Carreño. Centro de Investigaciones Biológicas del Noroeste, La Paz, B.C.S.

**Baja California Fisheries Workshop – Chairmen: Dr. Fernando Garcia, CIBNOR and Dr. Ramon Pacheco (CIAD).**

This was a 3-hour workshop for those interested in knowing more about the state of Baja California fisheries and discussions of present issues and problems. There were about 20 in attendance at the workshop, mostly all from the region, and they were evenly divided between representatives from the fishing industry, local and state agencies, and academia. Dr. Garcia gave introductory

remarks and commented that if Baja California is to develop and improve its fisheries and explore new market opportunities then both industry and institutions need to work closely together. This hasn't happened very often in the past as researchers have focused mostly on publications and not applications of their research, and the industry has not been too forthcoming in terms requesting help and showing a willingness to share expenses. Dr. Pacheco also stressed that it would be a much more fruitful situation if industry would come to researchers and granting agencies more often to identify their needs and work with researchers to undertake some problem solving. Dr. Morrissey observed that industry-researcher collaboration is more difficult in Mexico and in many non-US countries because they do not have an extension system that can bridge the gap between industry and university researchers. There was general agreement that a round-table discussion such as this is needed as a first step in getting researchers and industry together at the table to discuss what research is needed for both the long-term and the short-term. Some specific research needs were identified which were specific to the industry representatives at the workshop and these included: alternative market forms and improved quality for the giant squid industry in the Sea of Cortez. Industry would like to focus on domestic markets as the international markets are saturated. However, domestic markets in Mexico are difficult to open since there is little history of squid consumption among most Mexicans. Another area was the use of algae in aquaculture. New technologies are needed or information about technologies for harvesting macroalgas and using them for feed supplements in the growing aquaculture industry. Another group was interested in developing new markets for yellow-fin tuna. Most of the yellow-fin currently goes into the can when there are opportunities for other market forms. However the quality and safety aspects of these products needs to significantly improve for this to happen. Help with quality and safety (i.e. HACCP) is available at several institutes. Dr. Arturo Muhlia of CIBNOR outlined several potential research opportunities and avenues to obtain funding for applied research projects especially cooperative projects between universities and industry. M.C. Evangelina Guzmán from the Agency of Fisheries Development of Baja California Sur, presented her work on collecting information related with the state of the Baja California Fishery Industry in terms of both capture and processing.

**FISHERIES. Chairman:** Dr. Arturo Muhlia. CIBNOR.

**Sources of variation in marine biomass and the need for new management strategies** - Salvador Lluch Cota, Centro de Investigaciones Biológicas del Noroeste, La Paz, BCS.

**Squid quality in the California fisheries** - Robert J. Price and Voranuch Suvanich, University of California, Davis, CA

**Adaptive mechanisms of enzymatic food utilization in Antarctic krill (*Euphausia superba*) and Northern krill (*Meganyctiphanes norvegica*)** - Reinhard Saborowski, Biologische Anstalt Institute, Helgoland, Germany.

**Education and Training. Chairman:** Robert Price, University of California, Davis

**Seafood education and training needs on the West Coast and Alaska** - Ken Hilderbrand, Oregon Sea Grant, Oregon State University, Hatfield Marine Science Center, Newport, OR

Panelists: Don Kramer, Univ. Alaska, Robert Price, Univ. California-Davis, Michael Morrissey, Oregon State Univ., Chuck Crapo, Univ. Alaska – Kodiak, Jae Park, Oregon State Univ. Seafood Lab.

This was a round table discussion of different panelists brought together by Ken Hildebrand of Oregon Sea Grant. Ken opened the session by reviewing the concepts of extension and its development in land-grant colleges throughout the US over the past 100 years and more recently Sea Grant extension. He stated that over the next five years there will be changes in Sea Grant extension brought about, in part, by several retirements that would occur in Oregon and California. This will also present new opportunities and he called on the panelists to give an overview of extension in their area and what they see the future will be. Don Kramer from Alaska started things off by reviewing a series of short-courses that Alaska extension has developed for the seafood industry. These have been successful and he sees Alaska extension continuing to hold courses and be heavily involved in training. Michael Morrissey of Oregon saw extension being more involved in research that it has been in the past. He noted that traditionally processors/fishermen would use extension agents to be a liaison between the industry and the researchers. Now industry is going directly to the researchers themselves to get information, which should mean that the new extension agent should be a part-time researcher himself. Morrissey also stated that he would like to see the new position in Oregon be more involved with consumer education and be a liaison between the industry and the consumer who is often getting mixed messages about fisheries. Bob Price from California agreed that more extension positions carry a research component, but he also feels that is the transfer of information, in a general sense, is a key role for Sea Grant extension agents. He cited the Seafood NIC (<http://seafood.ucdavis.edu>) web page as an example as a web site that facilitates this information transfer. Chuck Crapo from Alaska said that he was in agreement with pretty much what has been said and that industry involvement is key to successful outreach programs. Jae Park, although not having an official extension position, is involved in training through his Surimi School which focuses on training middle management on surimi and surimi Seafood now-how and methods. He said that he will be adding a Surimi forum to his Surimi School this year that will gear more to upper management to bring them up-to-date with new ideas and directions. Ken opened it up to the audience and Denise DeLeebeeck from B.C. Institute of Technology stated that there is a great need for more training in the BC industry but there are few people available to run the programs. She reviewed what was going on at present. Liz Brown from Sheldon Jackson College in Sitka reviewed their short-course training programs that are partially funded through industry. Both Ramon Pacheco from CIAD and Fernando Garcia and

Arturo Muhlia from CIBNOR stated the lack of good extension programs through universities or research institutes in Mexico and the need to begin these programs. They cited the Baja Fisheries workshop, which was held on Tuesday as a good first step. Ken Hilderbrand noted that the last 25 years there has been a good working relationship between the West Coast industry and extension because there were people in the industry that knew seafood technology and the value of research. Many of these people from industry are retiring as well and it will be interesting to see who steps to the plate. Ken thanked everyone for his or her participation.

**The Year in Review: FDA Issues - Q & A** – Chris Rezendes, FDA, Seattle Office

## POSTERS

**Characteristics of the fishing industry of Baja California Sur; challenges and opportunities** - J. S. Sánchez Hernández, G. Ponce Díaz and J.M. Green Olachea, Universidad Autónoma de Baja California Sur. La Paz, Baja California Sur.

**Chemical evaluation of species captured in deep waters, in the coast of the North Pacific of the state of Baja California Sur** - R. Lauterio García, An. I. Beltrán Lugo, J.L. Cervantes Díaz, R. Torres Cerna, Universidad Autónoma de Baja California Sur, La Paz, Baja California Sur.

**Estimation of Equilibrium Moisture Content of a Food with base in Partial Information of Drying**  
A. Flores Irigollen, Chagoyán J. Serrano José and R. Lauterio García, Universidad Autónoma de Baja California Sur, La Paz, Baja California Sur.

**Control of browning during storage of the Mediterranean sea shrimp (*Parapenaeus longirostris*) using combinations based on 4-hexyl resorcinol and sodium disulphite** - M.I. Martínez, M. Díaz, T.F. Martínez, F.J. Alarcón and F.J. Moyano, Escuela Politécnica Superior, Universidad de Almería, Almería, Spain.

**Mantle proteolytic activity and their relationship with the texture of jumbo squid (*Dosidicus gigas*)** – R. Ramírez-Olivas, J.M. Ezquerro Brauer. N. F. Haard, Universidad of Sonora, Hermosillo, Sonora.

**Partial characterization of trypsin-like enzyme from digestive tract of the tropical sierra (*Scomberomorus concolor*)** - H. Olivas-Burrola<sup>1</sup>; J. M. Ezquerro Brauer; R. Pacheco Aguilar, Universidad de Sonora, Hermosillo, Sonora.

**Effect of protein level of feed on proteolytic activity, thermal denaturation of muscle protein and texture of the muscle of *litopenaeus stylirostris* during frozen storage** - M.E. Rivas-Vega, J.M. Ezquerro Brauer, and O. Rouzaud-Sandez, Universidad de Sonora. Hermosillo, Sonora.

**Effect of salt and microbial transglutaminase on mechanical properties of a restructured fish product** - S. J. Téllez, J. A. Ramírez, R. M. Uresti, M. Vázquez, Universidad Autónoma de Tamaulipas, Tamaulipas.

**Effect of low or high metoxhyl pectins on mechanical properties of surimi gels** - A.M Barrera, O.G. Morales, J.A. Ramirez, and M. Vázquez, Universidad Autónoma de Tamaulipas, Tamaulipas.

**Assessment of the inhibitory effect of anti-browning agents on hepatopancreas proteases of two species of shrimp: *Parapenaeus longirostris* and *Penaeus japonicus*** - M.I. Martínez, M. Díaz, T.F. Martínez, F.J. Alarcón and F.J. Moyano, Escuela Politécnica Superior, Universidad de Almería, Almería, Spain.

**Effect of the insecticide cypermethrin in a model system: action on a sardine's (*Sardinops sagax caerulea*) oil** - C. O. García-Sifuentes, and A. Burgos-Hernández, Universidad de Sonora, Hermosillo, Sonora.

**Effect of the type of wood used during smoking on the concentration of benzo[a]pyrene and mutagenic potential of smoked yellowtail fish (*Seriola lalandi*)**- M. F. Moreno-Ochoa, M. Peña-Sarmiento, and A. Burgos-Hernández, Universidad de Sonora, Hermosillo, Sonora.

**Detección and partial isolation of antimutagenic compounds in fresh and smoked fish species** – M. Peña-Sarmiento, M.F. Moreno-Ochoa, and A. Burgos-Hernández, Universidad de Sonora, Hermosillo, Sonora.

**Effect of the lipid content of fish species in the deposition of benzo[a]pyrene during smoking and their mutagenic potential** - M. Peña-Sarmiento, M.F. Moreno-Ochoa, and A. Burgos-Hernández, Universidad de Sonora, Hermosillo, Sonora.

**Effect of plant protease inhibitors on digestive proteases in two fish species with aquafarming potential** - F.J. Alarcón, F.L. García-Carreño and M.A. Navarrete del Toro. Universidad de Almería, Almería, Spain.

**Business Meeting** – The PFT group thank Fernando and his organizing committee for the great job they did in hosting PFT. They also liked the PFT logo developed by CIBNOR so much that a vote was taken and the logo has been adopted as the official PFT logo. George Pigott had two copies of a very thick volume that represented PFT history from 1948 on. This will be edited and then will be available to PFTers who are interested. It was also noted that the first official meeting of PFT was in 1950. Joe McGrath was elected PFT president for the year 2001-02 and Norman Haard will be the PFT Program Chairman. The 53<sup>rd</sup> PFT will be held in Reno, Nevada, February 24-27, 2002.

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Sea Grant Extension Program, University of California, Davis

Updated 3/7/01