

# Contents

<b>I. Opening Remarks</b> .....	<i>xi</i>
<b>II. Abstracts of Presented Papers</b>	
<i>Oral Presentations</i>	
<b><i>I. Session 1: Keynote Address</i></b> (Convenor: Lisa Seeb)	
Evaluation of carrying capacity of Pacific salmon in the North Pacific Ocean for ecosystem-based sustainable conservation management Masahide KAERIYAMA .....	1
Climate change and salmon: Some thoughts from outside the box Robert C. FRANCIS .....	5
<b><i>II. Session 2: Perspective Reviews</i></b> (Convenor: Richard Wilmot)	
<i>Canadian Perspective Review</i>	
A sea change: Genetics in conservation of the rich and strange Ruth E. WITHLER, Kristina M. MILLER, John R. CANDY, and Terry D. BEACHAM.....	7
<i>Japanese Perspective Review</i>	
Stock identification studies of high seas salmon in Japan: A review and future plan Shigehiko URAWA .....	9
<i>Russian Perspective Review</i>	
The perspectives of the Pacific salmon stock investigations in Russia Natalia V. VARNAVSKAYA .....	11
<i>U.S. Perspective Review</i>	
International data bases help resolve migration and survival of Pacific salmon in the North Pacific Ocean and Bering Sea James E. SEEB, Christian T. SMITH, and Lisa W. SEEB.....	13
A history of U.S. high seas salmon and steelhead stock identification research Katherine W. MYERS, Robert V. WALKER, Nancy D. DAVIS, and Robert L. BURGNER .....	16
Status of the Bering-Aleutian Salmon International Survey (BASIS) John H. HELLE, Toru NAGASAWA, and Olga S. TEMNYKH.....	18
The problem of Pacific salmon stock identification during the marine period of life (results and prospects) Oleg F. GRITSENKO, Vladimir I. KARPENKO, Natalia V. KLOVATCH, and A.K. GRUZEVICH .....	19
<b><i>III. Session 3: Chum Salmon-1</i></b> (Convenor: Shigehiko Urawa)	
Origin of juvenile chum salmon from Gulf of Alaska coastal waters, 2000 and 2001 determined from genetic variation and hatchery thermal marks Christine M. KONDZELA, Edward V. FARLEY, Jr., and Richard L. WILMOT .....	22

Spatial distributions of juvenile chum salmon in the coastal waters of eastern Hokkaido determined with otolith-marking in relation to zooplankton community Mitsuhiro NAGATA, Hiroki ASAMI, Yasuyuki MIYAKOSHI, and Daisei ANDO .....	24
<b>IV. Session 4: Chum Salmon-2</b> (Convenor: Shigehiko Urawa)	
Stock-specific distribution and migration of juvenile chum salmon along the eastern Bering Sea shelf Edward V. FARLEY, Jr., Christine M. KONZELA, James M. MURPHY, and Angela MIDDLETON.....	27
Development of DNA microarray for rapid detection of mitochondrial DNA haplotypes of chum salmon Shogo MORIYA, Akihisa URANO, Shigehiko URAWA, Osamu SUZUKI, and Syuiti ABE.....	28
Population structure and stock identification of chum salmon ( <i>Oncorhynchus keta</i> ) based upon microsatellite analysis Terry D. BEACHAM, Khai D. LE, and John R. CANDY .....	31
Recent analyses of chum salmon homing migration from the Bering Sea to Japan Hideji TANAKA, Tomoko KITANI, Masafumi AMANO, Yuzo YAMAMOTO, Takayuki SHOJI, Shigehiko URAWA, Masatoshi BAN, Masa-aki FUKUWAKA, Yasuhiko NAITO, and Hiroshi UEDA .....	34
Identification of stocks and environmental characteristics of North Pacific chum salmon, <i>Oncorhynchus keta</i> , by chemical analysis of otolith Sukyung KANG, Suam KIM, Kevin TELMER, David WELCH, John H. HELLE, Youn-Ho LEE, and Kazuya NAGASAWA .....	37
<b>V. Session 5: Statistics</b> (Convenor: Terry Beacham)	
Which genetic markers and GSI methods are more appropriate for defining marine distribution and migration of salmon? Michael A. BANKS and David P. JACOBSON .....	39
Determining accuracy of a Bayesian approach to estimate individual identification to stock-of-origin for Pacific salmon in marine fisheries using microsatellite and MHC loci John R. CANDY and Terry D. BEACHAM .....	43
<b>VI. Session 6: Chinook and Coho Salmon</b> (Convenor: Terry Beacham)	
Development of 5'-nuclease reactions for high-throughput SNP genotyping in salmon Christian T. SMITH, James E. SEEB, and Lisa W. SEEB .....	45
Genetic mixed stock analysis of juvenile chinook salmon in coastal areas of western North America David J. TEEL .....	47
Parasite community composition: Insights on the ecology and migration of juvenile salmon Kym C. JACOBSON, Rebecca E. BALDWIN, and David J. TEEL .....	49
Using genetic markers to understand the coastal migration of juvenile coho ( <i>Oncorhynchus kisutch</i> ) and chinook salmon ( <i>Oncorhynchus tshawytscha</i> ) Marc TRUDEL, David W. WELCH, John F.T. MORRIS, John R. CANDY, and Terry D. BEACHAM.....	52
Patterns of genetic diversity in Alaskan coho salmon Jeffrey B. OLSEN, Steven J. MILLER, William J. SPEARMAN, and John K. WENBURG .....	55

**VII. Session 7: Sockeye Salmon** (Convenor: Natalia Varnavskaya)

Identification local stocks of sockeye salmon (*Oncorhynchus nerka*) by scale pattern analysis in the Russian economic zone  
 Alexander V. BUGAEV..... 58

Microsatellites, allozymes, and SNPs describe the population structure and identify spatial distribution of mixture components of sockeye salmon in the Bering Sea  
 Christopher HABICHT, Chuck GUTHRIE, Richard WILMOT, and James SEEB ..... 62

DNA-based stock identification of coastal sockeye salmon: Evidence for stock-specific migration behaviour of central coast (Rivers Inlet) sockeye salmon  
 David W. WELCH, Marc TRUDEL, Terry D. BEACHAM, John F.T. MORRIS, and John R. CANDY ..... 65

**Poster Presentations**

Three genetic stocks of upriver bright fall chinook salmon detected in the Columbia River basin, USA  
 Shawn R. NARUM, Andre TALBOT, Doug HATCH, John WHITEAKER, and Matt POWELL ..... 67

Conservation and genetic stock identification: A study investigating the stock-specific distribution and performance of juvenile chinook salmon in the Columbia River estuary  
 Tricia A. LUNDRIGAN, Paul MORAN, David J. TEEL, Anne R. MARSHALL, Sewall F. YOUNG, and Dan L. BOTTOM ..... 70

Clues to chinook salmon nearshore migration in southeast Alaska from estimates of stock composition in troll harvests  
 William D. TEMPLIN and Lisa W. SEEB ..... 72

Stock origins of chinook salmon in incidental catches by groundfish fisheries in the eastern Bering Sea, 1997–1999  
 Katherine W. MYERS, Robert V. WALKER, Janet L. ARMSTRONG, Nancy D. DAVIS, and William S. PATTON ..... 74

Genetic stock identification of chinook salmon, *Oncorhynchus tshawytscha* (Walbaum)  
 Natalia VARNAVSKAYA and Nina SHPIGALSKAYA..... 76

Scale criteria identify chum salmon, *Oncorhynchus keta* (Walbaum) stocks in gillnet catches within economic zone of Russia  
 Lidiya O. ZAVARINA, Nikolay P. ANTONOV, and Alexander V. BUGAEV ..... 79

Stock identification of chum salmon by mitochondrial DNA sequence analysis  
 Syuiti ABE, Shunpei SATO, Rizalita R. EDPALINA, Hironori ANDO, Masahide KAERIYAMA, Shigehiko URAWA, and Akihisa URANO ..... 82

Identification of two ecological forms of chum salmon by analyzing microstructure of otoliths  
 Elena AKINICHEVA, Igor IZERGIN, and Vladimir VOLOBUEV ..... 84

Juvenile chum salmon in the Okhotsk Sea: Their origins estimated by genetic and otolith marks  
 Shigehiko URAWA, Jiro SEKI, Morihiko KAWANA, Penelope A. CRANE, Lisa W. SEEB, Konstantin GORBATENKO, and Masa-aki FUKUWAKA ..... 87

Hatchery and wild stock interactions of juvenile chum salmon in marine waters of southeastern Alaska: A bioenergetics approach

Joe A. ORSI, Alex C. WERTHEIMER, Molly V. STURDEVANT, Emily A. FERGUSSON, Donald G. MORTENSEN, and Bruce L. WING.....	89
Emerging baselines to estimate the migration patterns of Dolly Varden charr in nearshore and on the high-seas Penelope CRANE, Vladimir BRYKOV, Fred DECICCO, Tim VIAVANT, Mark LISAC, and John WENBURG	91
The quality of marks obtained under different regimes of salmon otolith marking Marina A. KUDZINA and Nikolay A. CHEBANOV .....	94
Strontium chloride (SrCl – 6H <sub>2</sub> O) as a mass-marker for salmonid otoliths in Alaska Dion OXMAN, Beverly AGLER, Peter HAGEN, Ron JOSEPHSON, Gary MARTINEK, Jim NOLTE, and Joseph CASHEN .....	98
Post-cephalic white spot syndrome in salmonids William R. HEARD.....	100
Identification of source populations of mixture individuals from their genotypes Michele MASUDA and Jerome PELLA .....	103
Reducing bias in mixture estimates: a computer program to bin alleles Jeffrey BROMAGHIN and Penelope CRANE .....	106
Diel feeding and gastric evacuation of juvenile pink and chum salmon in Icy Strait, southeastern Alaska, May–September 2001 Molly V. STURDEVANT, Emily A. FERGUSSON, Joe A. ORSI, and Alex C. WERTHEIMER .....	107
Even-year pink salmon Pacific Rim allozyme baseline and origin of juveniles from Gulf of Alaska coastal waters, 2003 Sharon L. HAWKINS and Richard L. WILMOT.....	110
Stock abundance dynamics of Azabachye Lake and Dvukhyurtochnoye Lake sockeye salmon ( <i>Oncorhynchus nerka</i> ) from the results of sockeye salmon origin identification in the coastal and river catches of Kamchatka River basin Victor F. BUGAYEV .....	111
Results of identification of sockeye salmon ( <i>Oncorhynchus nerka</i> ) secondary local stocks and secondary groups of local stocks in the coastal and river catches of Kamchatka River for 1978–2001 Victor F. BUGAYEV .....	114
The use of otolith mass marking to estimate adult hatchery sockeye salmon returns in Bolshaya River (Kamchatka) Nikolay A. CHEBANOV and Marina A. KUDZINA .....	117
The use of the method of mass marking of salmon for the studies of age structure of wild and hatchery adult sockeye salmon Marina A. KUDZINA.....	120
DNA analysis increases the utility of other stock identification methods in sockeye fisheries management Stephen J. LATHAM, Mike LAPOINTE, Jim GABLE, John R. CANDY, and Terry D. BEACHAM .....	123
Evaluating the efficacy of probabilistic neural networks to determine stock structure in sockeye salmon using Fourier transformed luminance profiles of scale circuli Simon G. ROBERTSON, Peter T. HAGEN, John A. WILCOCK, and Richard BLOOMQUIST .....	125
Population structure and history of steelhead trout in California John Carlos GARZA, Libby GILBERT-HORVATH, Joe ANDERSON, Tommy WILLIAMS, Brian SPENCE	

and Heidi FISH..... 129

**III. Workshop Review ..... 133**

**APPENDIX 1 – List of Participants ..... 135**