

**ACCSP 2006 EXTERNAL PEER REVIEW
BALTIMORE, MARYLAND
RADISSON PLAZA LORD BALTIMORE
SEPTEMBER 19-21, 2006**

FINAL MEETING AGENDA

Tuesday, September 19

- 9:00 AM Introduction and Overview – M. Osborn
- 10:30AM Break
- 10:45 AM ACCSP Committee Presentations
- 10:45 AM Operations Committee – C. Patterson
 - 11:15 AM Advisory Committee – D. Stone
 - 11:45 AM Commercial Technical Committee – C. Patterson
- 12:15 PM Lunch
- 1:30 PM ACCSP Committee Presentations, Continued
- 1:30 PM Recreational Technical Committee – K. Knowlton
 - 2:00 PM Information Systems Committee – M. Cahall
 - 2:30 PM Biological Review Panel – R. Wiggers
 - 3:00 PM Bycatch Committee – J.Lake
- 3:30 PM Break
- 3:45 PM ACCSP Committee Presentations, Continued
- 3:45 PM Committee on Economic and Social Sciences – R.Robertson
 - 4:15 PM Outreach Committee – F.Darby
- 4:45 PM General Q&A, Wrap-up
- 5:00 PM Adjourn

Wednesday, September 20

- 9:00 AM Partner Perspectives
- 9:00 AM Atlantic States Marine Fisheries Commission – B.Beal
 - 9:30 AM South Atlantic Fishery Management Council – M.Osborn
- 10:00AM Break
- 10:00 AM Discussions about Partner Projects and Implementation – Participants: Peer Review Panel; Greg Power (NMFS NERO); Dave Van Voorhees (NMFS HQ); Bob Beal (ASMFC); Bruce Joule (ME); Cheri Patterson (NH); Harley Speir (MD); Dee Lupton (NC); Kathy Knowlton (GA); Maury Osborn and Mike Cahall (ACCSP)

12:00 PM	Lunch
1:15 PM	Panel Deliberations, ACCSP staff and Operations Committee Chair available for questions
3:30 PM	Break
3:45 PM	Panel Deliberations, ACCSP staff and Operations Committee Chair available for questions
5:00 PM	Adjourn

Thursday, September 21

9:00 AM	Panel Deliberations, ACCSP staff and Operations Committee Chair available for questions
10:30AM	Break
10:45 AM	Panel Deliberations, ACCSP staff and Operations Committee Chair available for questions
12:00 PM	Lunch
1:30 PM	Preparation of Panel Report, ACCSP Staff available with Word files and computers
3:30 PM	Break
3:45 PM	Preparation of Panel Report, ACCSP Staff available with Word files and computers
5:00 PM	Adjourn

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DRAFT MEETING MINUTES

Robert Beal, ASMFC Representative	ASMFC	202-289-6400	rbeal@asmfc.org
Darrell Brannan, Panel Member	Economist working with NPFMC & GMFMC	352-466-0936	d.brannan@hughes.net
Harry Blanchet, Panel Member	Louisiana DW&F	225-765-2889	hblanchet@wlf.louisiana.gov
Megan Caldwell, ASMFC Representative	ASMFC	202-289-6400	mcaldwell@asmfc.org
Dan Georgianna, Panel Member	UMass Dartmouth	508-999-8414	dgeorgianna@umassd.edu
Bruce Joule, ACCSP Recreational Technical Committee Member	Maine DMR	207-633-9500	Bruce.joule@maine.gov
Kathy Knowlton, ACCSP Recreational Technical Committee Chair	Georgia DNR	912-262-3122	Kathy_knowlton@dnr.state.ga.us
John Lake, ACCSP Bycatch Committee Chair	Rhode Island DFW	401-423-1942	John.lake@accsp.org
Dee Lupton, ACCSP Operations Committee Vice Chair	North Carolina DMF	252-726-7021	Dee.lupton@ncmail.net
Don Orth, Panel Member	Virginia Tech	540-231-5919	dorth@vt.edu
Cheri Patterson, ACCSP Operations Committee Chair	New Hampshire F&G	603-868-1095	cpatterson@nhfgd.org
Greg Power, ACCSP Operations Committee Member	NMFS NERO	978-281-9143	greg.power@noaa.gov
Robert Robertson, Representative of ASMFC - CESS	UNH – Dept. of Research Economics	603-862-2711	robertr@christa.unh.edu
Karen Sender, Panel Member	NMFS - PIFSC	808-985-5387	Karen.sender@noaa.gov
Eric Smith, ACCSP Coordinating Council Vice-Chair	Connecticut DMF	860-434-6043	Eric.smith@po.state.ct.us
Harley Speir, ACCSP Partner Member from Maryland	Maryland DNR	410-260-8303	hspeir@dnr.state.md.us
Dick Stone, ACCSP Advisory Committee Chair	ACCSP Advisory Cte	910-454-9888	Dstone9958@aol.com
Robert Wiggers, ACCSP Biological Review Panel Chair	South Carolina DNR	843-953-9363	Wiggersr@dnr.sc.gov
▼	▼	▼	▼

David VanVoorhees, ACCSP Operations Committee Member	NOAA HQ	301-713-2328	Dave.van.voorhees@noaa.gov
Jon Volstad, Panel Member	Versar, Inc., ESM Operations	410-740-6085	Jvolstad@versar.com

ACCSP Staff in Attendance: Maury Osborn, Mike Cahall, Benjamin Baron-Taltre, Ellen Lovelidge

The external peer review panel was finalized in late July and consisted of 6 members with expertise in a variety of disciplines relevant to the ACCSP (Attachments A and B). They were sent the following materials in early August: MOU & addendums; First 10 Years Report; 2002-2006 Strategic Plan; Program Design, Second Edition; 2004-2008 Implementation Plan; Funding Decision Document; ACCSP Web Site url; and Minutes of Coordinating Council August 2005 meeting. An Executive Summary of the August Coordinating Council meeting was provided to the panelists at the meeting.

The ACCSP External Peer Review was held September 19-21, 2006, at the Radisson Plaza Lord Baltimore, Baltimore, MD. The first day and the morning of the second day of the External Peer Review included: an overview of the program's history, governance, and achievements; presentations by each standing committee of the ACCSP; a presentation by the ASMFC Committee on Economic and Social Sciences, which is used by the ACCSP; and perspectives from two ACCSP partners - the South Atlantic Fisheries Management Council and the Atlantic States Marine Fisheries Commission; and a panel of representatives from selected partners that have been involved in implementing program standards. There was time for questions and answers following each presentation.

Following the presentations and panel discussion, the peer review panelists met privately to deliberate and make recommendations (with the assistance of E.Lovelidge taking notes). The last afternoon the Operations Committee Chair and Director were present to answer final questions from the panel and the panel crafted a draft report. The panel will deliver the final report the week of September 25-29, and will hold a conference call if needed.

The meeting adjourned at 4PM Thursday, September 21.

Attachment A. ACCSP External Peer Review Panel Members

Harry Blanchet.
Louisiana Department of Wildlife and Fisheries,
Marine Fisheries Finfish Program Manager
P.O. Box 98000
Baton Rouge, LA 70898-9000
225-765-2889
hblanchet@wlf.louisiana.gov

Darrell Brannan
Retired/Consultant, was chief economist for NPFMC, did a lot of work with AKFIN and trip tickets.
17307 Southeast County Road 234
Micanopy, FL 32667
352-466-0936
Darrell.Brannan@noaa.gov

Dan Georgianna
Chancellor Professor of Economics at the University of Massachusetts, Dartmouth, with one of his fields of concentration being marine resource economics.
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Fairhaven, MA 02719
508-999-8414
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Donald Orth
Department Head for Fisheries and Wildlife Department of Virginia Polytechnic University.
Department of Fisheries and Wildlife Sciences
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Karen Sender
NMFS Pacific Islands Fishery Science Center
Attn: Karen Sender
2570 Dole Street
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Jon Helge Volstad
Principal Biometrician
Versar, Inc., ESM Operations
9200 Rumsey Road
Columbia, MD 21045-1936
410-740-6085
Jvolstad@versar.com, JHVolstad@comcast.net

Attachment B. Peer Review Panel Member CV/Resumes

Robert Harrington Blanchet

Louisiana Department of Wildlife and Fisheries
Marine Fisheries Division
P.O. Box 98000
Baton Rouge, LA 70898-9000

Telephone: (225)765-2889
Fax: (225)765-2489
e-mail: hblanchet@wlf.louisiana.gov

Fields of Competence: Estuarine Ecology, Fishery Science, Meroplankton Biology,
Biological Oceanography

Experience Summary: Joined LDWF in March, 1983, as a biologist in the LOOP monitoring program, with duties including identification and analysis of meroplankton and aerial surveys of the pipeline routes. In October, 1985 was advanced to position in the Saltwater Finfish Management Section, responsible for finfish monitoring surveys in the Vermilion/Cote Blanche/Atchafalaya Bay area, and contributing to management plans for finfish species. In December 1991, detailed into current position, responsible for statewide operations of Saltwater Finfish Management Program. From 1999-2004, took position as Natural Resources Agent with Penn State College of Agricultural Sciences, before returning to current position. Returned to Finfish Programs Manager position in 2004. Current duties include overseeing of sampling programs, development of Fishery Management plans and stock assessments, drafting of proposed legislation and rules, assisting in budget preparation, writing of reports and other informational materials, recommending research needed for finfish management.

Prior to joining LDWF, was a Senior Staff Biologist at Mote Marine Lab, involved in conducting a wide variety of studies, including baseline environmental assessments in estuarine and offshore environments, studies of mortality of fishes and decapods due to power plants, and other topics. Past major experience also includes a study of meroplankton (primarily decapod larvae) in Tampa Bay, and a survey of larval fishes in Apalachicola Bay.

Research Projects:

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|--------------|--|
| 1985-present | Finfish stock assessment and monitoring studies in the Louisiana coastal zone (program manager, 1991-1999, 2004-present) |
| 1987-1989 | Fishery-independent data on coastal herrings, carangids, and red drum from the northern Gulf of Mexico (co-P.I.) |

- 1985 Benthos biology studies, LOOP offshore oil port monitoring studies, Barney B. Barrett, P.I.
- 1984-1985 Aerial monitoring surveys, LOOP offshore oil port monitoring studies, Barney B. Barrett, P.I.
- 1983-1985 Zooplankton identification and analysis, LOOP offshore oil port monitoring studies, Barney B. Barrett, P.I.
- 1981-1983 Field surveys in Louisiana wetlands for NMFS Environmental Assessment Branch (P.I.)
- 1980 A study of the availability of meroplankton forms and effects of their impingement on fine mesh screens at a prototype power plant intake in Tampa Bay, FL (Co-P.I.)
- 1980 Ecology of artificial reefs off Pinellas Co., FL (P.I.)
- 1979 A collection of field data on the larval stages of selected meroplankton types in the Big Bend, Tampa Bay, FL (P.I.)
- 1979 A study of the settlement of oyster spat in the Big Bend, Tampa Bay, FL (P.I.)
- 1976-1977 A study of the composition of the invertebrate meroplankton in the Big Bend, Tampa Bay, FL (P.I.)
- 1973-1976 A study of the distribution and abundance of ichthyoplankton in the Apalachicola Bay, FL (P.I.)
- 1973-1976 Long-term studies of fish and invertebrate populations in Apalachicola Bay, FL (Dr. R. J. Livingston, P.I.)
- 1971 Community metabolism on some Louisiana oligohaline waters (Drs. H. D. Hoese and D. F. Kapraun, co-P.I.'s)
- 1971 A study of the ecology of a thermal waste pond in a power plant impact study, St. Landry Parish, LA (Dr. Richard Stone, P.I.)
- 1970 Distribution of freshwater clams (Family Sphaeriidae) in Louisiana waters

Committees, etc. :

1993-1999 Gulf of Mexico Fishery Management Council Special Coastal Pelagics SSC member

1989-present Gulf of Mexico Fishery Management Council – Finfish Stock Assessment Panel member

Selected Publications, Papers, Reports:

2005 Incorporating Release Mortality Into Assessments – And Other Notes. Presented to National Academy of Sciences, Ocean Studies Board, Committee on Review of Recreational Fisheries Survey Methods. New Orleans LA, July, 2005.
http://dels.nas.edu/osb/Blanchet-Rec_Rel_Mort_and_Assess.pdf

2005 Stock Assessment for Striped Mullet in Louisiana. LDWF Fishery Management Series No.5, Pt. 2 (update).

2005 Assessment Update for Southern Flounder in Louisiana. Report to the Louisiana Legislature from the LA Wildlife and Fisheries Commission

2005 Stock Assessment Update for Sheepshead in Louisiana. LDWF Fishery Management Series No. 7, Pt. 2 (update).

2001 Alternative perception of gray triggerfish stock status – A minority report from one member of the GMFMC Reef Fish Stock Assessment Panel. 5 pp.

2000 Swistock, B.R., R.W. Soderberg, H. Blanchet, and W.E. Sharpe. Management of Fish Ponds in Pennsylvania. Penn State Univ., Coll. of Ag. Sci., School of Forest Resources # Uh 137. 30 pp. <http://pubs.cas.psu.edu/FreePubs/pdfs/uh137.pdf>

1998 Schexnayder, M., R.H. Blanchet, D.R. Lavergne and R. Pausina. A biological and fisheries profile for sheepshead, *Archosargus probatocephalus* in Louisiana. LDWF Fishery Management Series No. 7, Pt. 1.

1998 Luquet, C.P Jr., R. H. Blanchet, D.R. Lavergne, D.W. Beckman, J.M. Wakeman, and D.L. Nieland. A biological and fisheries profile for black drum, *Pogonias cromis* in Louisiana. LDWF Fishery Management Series No. 3, Pt. 1.

1998 Blanchet, R.H. and J.A. Shepard. Striped Mullet Stock Assessment. LDWF Fishery Management Series No. 5, Pt. 2.

1997 Blanchet, R.H. and J.A. Shepard. Profile, stock assessment and biological condition. Part 1 in: La. Dept. of Wildlife and Fisheries. 1997 Report on the Status of Red Drum prepared for La. Wildlife and Fisheries Commission.

- 1997 Blanchet, R.H. and J.A. Shepard. Profile, stock assessment and biological condition. Part 1 in: La. Dept. of Wildlife and Fisheries. 1997 Report on the Status of Spotted Seatrout prepared for La. Wildlife and Fisheries Commission.
- 1993 Rogers, B.D., R.F. Shaw, W.H. Herke and R.H. Blanchet. Recruitment of postlarval and juvenile brown shrimp (*Penaeus aztecus* Ives) from offshore to estuarine waters of the Northwestern Gulf of Mexico. *Estuarine, Coastal & Shelf Science* 36:377-394.
- 1991 H.D. Hoese, D.W. Beckman, R.H. Blanchet, D. Drullinger and D. L. Nieland. A biological and fisheries profile of Louisiana red drum, *Sciaenops ocellatus*. LDWF Fishery Management Series No. 4, Pt. 1.
- 1991 J.A. Shepard and R.H. Blanchet. A stock assessment for Louisiana red drum, *Sciaenops ocellatus*. LDWF Fishery Management Series No. 4, Pt. 2.
- 1985 J. G. Ditty, R. J. Ganzak, R. H. Blanchet, and T. Boullion. Seasonal composition and relative abundance of ichthyoplankton in neritic Gulf waters off Louisiana, November 1981-October, 1982. 9th Ann. Larval Fish Conf., Univ. of Texas, Port Aransas (Abstract)
- 1984 A guide to the identification of postlarval *Penaeus* spp. (Decapoda:Penaeidae). Mimeo, 6pp.
- 1979 The Distribution and Abundance of Ichthyoplankton, Apalachicola Bay, Florida. M.S. Thesis, Florida State University, Tallahassee.

- **Darrell R. Brannan**

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- **OBJECTIVE**

To work in the area of fisheries management solving problems related to the implementation and development of programs that will contribute to the efficient and equitable use of fisheries resources.

- **PROFESSIONAL PROFILE**

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- Experienced researcher with extensive training and expertise in fisheries management, fisheries economics, and computers.
- Possess solid understanding of the North Pacific groundfish fisheries, the North Pacific Crab fisheries, and Gulf of Mexico reef fish fisheries.
- Dedicated scientist with exceptional organizational, troubleshooting, problem solving, and communication skills.
- Computer-proficient in Microsoft Word, Microsoft Excel, Microsoft Access, SAS, WordPerfect, and various other PC based programs.

- **EDUCATION**

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- **Master of Science, Food and Resource Economics**, University of Florida, Gainesville, FL, August 1989
- **Bachelor of Science, Food and Resource Economics**, University of Florida, Gainesville, FL, December 1986

- **PROFESSIONAL EXPERIENCE**

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- **Economist on IPA**, North Pacific Fishery Management Council (NPFMC), August 2000 - Present

- Developing RIR/IRFA for Gulf of Alaska halibut charter vessel moratorium.
- Drafted a report for the U.S. Congress describing the impacts of the American Fisheries Act.
- Working closely with the Council's Senior Economist in developing portions of the Bering Sea/Aleutian Islands Crab Rationalization Program.
- Drafting sections of an Amendment that would develop cooperatives for the Non-AFA Trawl CP sector.
- Working on other projects assigned to me by the Council's Executive Director.
- Worked with the National Marine Fisheries Service (Alaska Fisheries Science Center in Seattle, Washington - Dr. Joe Terry was contract monitor) to help develop a mandatory economic data collection program for the Bering Sea/Aleutian Islands crab fisheries.
- Gave oral presentations to the NPFMC describing the results of analysis.

Contract Economist, Gulf of Mexico Fishery Management Council, June 2004 – Present

- Drafted sections of Amendment 18a to the Reef Fish FMP.
- Drafted sections of the Amendment for the red snapper IFQ amendment.

Senior Economist, North Pacific Fishery Management Council, February 1998-August 2000.

- Worked as a lead author, presenter, and coordinator with teams of diverse professionals tasked with analyzing high profile issues in the North Pacific Fisheries.
- Directed the work of staff economists, social scientists, and computer/IT staff.
- Worked as a lead author with the Deputy Director on the Inshore-Offshore 3 (I-O 3) analysis, an allocation of the largest fishery by volume in the U.S.
- Developed RIR analysis that was used to implement the 1998 American Fisheries Act. This project was completed on a very short time line and addressed several unique and controversial issues, including development of cooperatives (which included limited entry permits for the qualified vessels and processors) and limits on pollock vessel and processor owner's participation in other groundfish, crab, and scallop fisheries.
- Analysis of the Bering Sea/Aleutian Island fixed gear Pacific cod limited entry program adopted by the Council in April 2000, and the FMP amendment which divided the BSAI Pacific cod fishery among gear types in the fixed gear sector of the fishery.
- Worked as part of the analysis team that developed the halibut charter IFQ amendment package.
- Worked on a variety of other issues assigned by the NPFMC Executive Director.
- Member of the Alaska Fisheries Information Network (AKFIN) steering committee.
- Served as support staff for NPFMC committees
- Represented the Council as a liaison to the fishing industry, press, and state and federal agencies.

Economist, North Pacific Fishery Management Council, November 1992-February 1998.

- Assisted in developing the analysis of the License Limitation Program for Groundfish and Crab, BSAI the Pacific Cod Allocation by Gear Type, the Vessel Moratorium, and the Comprehensive Rationalization program.
- Designed and developed the databases that were used for analyzing specific projects.
- Analyzed the data for specific projects.
- Drafted portions of documents.
- Developed the QSAM catch history program that was used for IFQ calculation.
- Presented analysis results to the Council.
- Oversaw purchases and installation of the NPFMC computer system and network.
- Worked towards the development of a Comprehensive Database that would incorporate State of Alaska, NMFS Alaska Region, Observer, and U.S. Coast Guard data.
- Provide guidance so AdTech Consulting, Inc. could develop a high-level data model to link data collected by State of Alaska and NOAA Fisheries.

Research Associate, Louisiana State University, January 1990 – April 1992.

- Helped develop questionnaire and collected data for a research project on alligator farming.
- Assisted in a study of Louisiana's leasing of water bottoms for oyster production.
- Developed methodology and conducted economic analysis of firm growth and entry-exit in the Southeast seafood processing industry.
- Oversaw student workers.

Independent Consulting, May 1990

- Conducted financial analysis of an experimental shrimp farming operation.

Research Assistant, University of Florida, January 1987 – August 1989.

- Assisted in a MARFIN funded project studying mullet marketing channels.
- Mainframe computer analysis of data
- Analysis of survey data
- Presentation of results to the project research team.

• **PUBLICATIONS & PRESENTATIONS**

NPFMC. 2005. Draft Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Act Analysis for Amendment 80 to the Fishery Management plan for the groundfish fishery of the Bering Sea and Aleutian Islands area. Sector allocation and cooperative development for the Non-AFA Trawl Catcher Processor Sector. North Pacific Fishery Management Council, 605 W. 4th Avenue, Suite 306, Anchorage, AK. 99501. June 2006.

GMFMC 2005.

NPFMC. 2004. Regulatory Impact Review for the Crab Rationalization Program of the BSAI King and Tanner Crab Fisheries. North Pacific Fishery Management Council, 605 W. 4th Avenue, Suite 306, Anchorage, AK. 99501.

NPFMC. 2004. Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Act Analysis for the halibut fishery of the Gulf of Alaska and Bering Sea Aleutian Islands Areas. Halibut Charter IFQ Amendment. North Pacific Fishery Management Council, 605 W. 4th Avenue, Suite 306, Anchorage, AK. 99501.

NPFMC. 2003. Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Act Analysis for the halibut fishery of the Gulf of Alaska and Bering Sea Aleutian Islands Areas. Guideline Harvest Level Amendment. North Pacific Fishery Management Council, 605 W. 4th Avenue, Suite 306, Anchorage, AK. 99501.

NMFS. 2002. Final Environmental Impact Statement for American Fisheries Act Amendments 61/61/13/8. NOAA. National Marine Fisheries Service. Alaska Region. February 2002.

NPFMC. 2000. Analysis of AFA Processing Sideboard Limits for Groundfish and Excessive Share Caps for BSAI Pollock Processing. North Pacific Fishery Management Council, 605 W. 4th Avenue, Suite 306, Anchorage, AK. 99501. July 2000.

NPFMC. 2001. Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Act Analysis for Amendment 69 to the Fishery Management plan for the groundfish fishery of the Bering Sea and Aleutian Islands area: To allow an inshore pollock cooperative to contract with American Fisheries Act catcher vessels that are qualified for the inshore sector, but outside their cooperative, for the purpose of harvesting the cooperative's BS/AI pollock allocation. North Pacific Fishery Management Council, 605 W. 4th Avenue, Suite 306, Anchorage, AK. 99501. May 2001.

NPFMC. 2000. Draft Environmental Assessment/Regulatory Impact Review for American Fisheries Act Sideboard Measures. North Pacific Fishery Management Council, 605 W. 4th Avenue, Suite 306, Anchorage, AK. 99501. January 2000.

NPFMC. 2001. Report to Congress on the Impacts of the American Fisheries Act. North Pacific Fishery Management Council, 605 W. 4th Avenue, Suite 306, Anchorage, AK. 99501. September 2001.

NPFMC. 2000. Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Act Analysis for Amendment 64 to the Fishery Management plan for the groundfish fishery of the Bering Sea and Aleutian Islands area: Allocation of Pacific Cod Among Fixed Gear Sectors. North Pacific Fishery Management Council, 605 W. 4th Avenue, Suite 306, Anchorage, AK. 99501. March 2000.

NPFMC. 2000. Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Act Analysis for Amendment 67 to the Fishery Management plan for the groundfish fishery of the Bering Sea and Aleutian Islands area: Pacific Cod License Limitation Requirements for Fixed Gear Vessels and Establishment of Gear and Species Endorsements. North Pacific Fishery Management Council, 605 W. 4th Avenue, Suite 306, Anchorage, AK. 99501. July 2000.

NPFMC. 2000. Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Act Analysis for Amendment 68 to the Fishery Management plan for the groundfish fishery of the Bering Sea and Aleutian Islands area: Allocation of Pacific Cod Among Pot Gear Sectors. North Pacific Fishery Management Council, 605 W. 4th Avenue, Suite 306, Anchorage, AK. 99501. September 2000.

NPFMC. 1999. Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Act Analysis for Amendments 58/60 to the Fishery Management plans for the groundfish fishery of the Gulf of Alaska and Bering Sea and Aleutian Islands area: Analysis of Proposed License Limitation Package. North Pacific Fishery Management Council, 605 W. 4th Avenue, Suite 306, Anchorage, AK. 99501. July 1999.

NPFMC. 1998. Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Act Analysis for Amendments 51/51 to the Fishery Management plans for the groundfish fishery of the Gulf of Alaska and Bering Sea and Aleutian Islands area: Inshore-Offshore Processing Allocations and Pollock CDQ Program. North Pacific Fishery Management Council, 605 W. 4th Avenue, Suite 306, Anchorage, AK. 99501. June 1999.

NPFMC. 1996. Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Act Analysis for Amendment 46 to the Fishery Management plan for the groundfish fishery of the Bering Sea and Aleutian Islands area: Pacific Cod Allocations. North Pacific Fishery Management Council, 605 W. 4th Avenue, Suite 306, Anchorage, AK. 99501. May 1996.

NPFMC. 1995. Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Act Analysis for Amendments 39/41/5 to the Fishery Management plan for the groundfish fisheries of the Gulf of Alaska/Bering Sea and Aleutian Islands area and the BSAI King and Tanner Crab fisheries: License Limitation Program and Community Development Quota (CDQ). North Pacific Fishery Management Council, 605 W. 4th Avenue, Suite 306, Anchorage, AK. 99501.

NPFMC. 1995. Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Act Analysis for Amendments 38/40 to the Fishery Management plans for the groundfish fishery of the Gulf of Alaska and Bering Sea and Aleutian Islands area: Inshore-Offshore Processing Allocations and Pollock CDQ Program. North Pacific Fishery Management Council, 605 W. 4th Avenue, Suite 306, Anchorage, AK. 99501. August 1995.

- PUBLICATIONS

Brannan, Darrell, Kenneth Roberts, and Walter Keithly. 1991. Louisiana Alligator Farming: 1990 Economic Impacts. Louisiana Sea Grant. <http://nsgl.gso.uri.edu/lsu/lsug91003.pdf>. p. 12

Walter R. Keithly, Jr., Kenneth J. Roberts and Darrell Brannan. Oyster lease transfers and lending: roles in rehabilitation of Louisiana's oyster industry. *Journal of Shellfish Research*. June 1992. Volume 11, Number 1. pp. 125-131

• CURRICULUM VITAE

Daniel Lee Georgianna
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Fields of Concentration: Marine Resource Economics, History of Economic Thought,
Labor History.

• Education

1972-1977 University of Massachusetts, Amherst, MA, Ph.D. Economics.
1961-1965 College of the Holy Cross, Worcester, MA, B.S. Mathematics.

• Honors and Offices

2003 member of the Search and Screen Committee for President of UMass.
2000-Present & 1992-1998: President, UMass Faculty Federation Local 1895, AFT,
AFL-CIO.
2000-2001: member, Multispecies Overfishing Definition Committee, New England
Fishery Management Council, U.S. Department of Commerce
2000- Present and 1994-1998, member: Higher Education Program and Policy Council,
American Federation of Teachers (AFT), AFL-CIO.
1999 Yvonne Sandstroem University Service Award
1998 Chancellor's Distinguished Service Award
1998-present: member, Social Science Advisory Committee, New England Management
Council, U.S. Department of Commerce
1996-2001: member, Winter Flounder Technical Committee, Atlantic States Marine
Fisheries Commission
1993-present: Vice President, Massachusetts Federation of Teachers, AFT, AFL-CIO.
1991 Leo Sullivan Teacher of the Year Award.
1989 Richard Fontera Memorial Award for Community Service, Dubin Labor Education
Center.
1989 Fulbright Scholar. Summer Program in Bulgaria

• Professional Experience

1977-present. Chancellor Professor (1999) and Chairperson of Economics Department
(2004). University of Massachusetts Dartmouth, North Dartmouth, MA.
2006-Present. Investigator. Assessment of Ocean and Coastal Economy in the
Commonwealth of Massachusetts. Massachusetts Office of Coastal Zone Management

- 2005-Present. Principal Investigator. Employment, Income, Working Conditions, and Vessel Safety before and after Amendment 13 to the Multispecies Plan. The Northeast Consortium.
- 2004-Present. Principal Investigator. The Flexibility of Fresh Groundfish Processing to Respond to Variation in Local Landings. Cooperative Marine Education and Research Program (CMER) NA03NMF4550368, U.S. Department of Commerce.
- 2003-2005. Principal Investigator. Full-time Employment and Income in New Bedford before and after Days at Sea Management, Saltonstall-Kennedy (S-K) Grant Award NA03NMF4270265, U.S. Department of Commerce.
- 2001-2002. Principal Investigator. The Effects of Mesh Shapes and Excluder Devices on Species and Size Selectivity in the Multispecies Fishery, 50-EANF-1-00022, CMER, U.S. Department of Commerce.
- 1998-2001. Principal Investigator. Massachusetts' Marine Economy. UMass Economic Project.
- 1998-2001. Principal Investigator. A Baseline Study of the Northeast Herring, Mackerel, Butterfish and Squid Fisheries. NA97FE0023, U.S. Department of Commerce, NMFS.
- 1997-1999. Principal Investigator. Impact of Reduced Groundfish Supply on Processors. S-K Grant Award, NA76FD0108, U.S. Department of Commerce, National Marine Fisheries Service (NMFS)
- 1996-1999 Principal Investigator. A Baseline Study of the Northeast Hook and Scallop Fisheries. CMER Program, NA67FE0420, U.S. Department of Commerce, NMFS.
- 1993-1995 Principal Investigator. An Umbrella Model of the North American Lobster Industry, subcontract under University of Maine, S2EANF-2-00066, U.S. Department of Commerce, NMFS.
- 1992-1993 Principal Investigator. The Groundfish, Scallop, and Herring Processing Sectors in New England. Contract 50EANF-2-00065 with the U.S. Department of Commerce, NMFS.
- 1991-1992 Fellow, Institute of Social and Economic Research, Memorial University of Newfoundland, St. Johns, Newfoundland.
- 1984-1985 Guest International Scholar. Economics Faculty, Zagreb, Yugoslavia.

- 1982-1984 Principal Investigator. The Institutional and Market Framework for Imported Groundfish and Scallops from Canada into the U.S. Contract NA-82-FA-C-00059 with the U.S. Department of Commerce, NMFS.
- 1980-1982 Principal Investigator. The Industrial Organization and Cost Structure of Fish Processing. Contract 80-FA-C-00045 with U.S. Department of Commerce, NMFS
- 1977-1979 Project Director. The Estimation of Fish Processing Capacity in Massachusetts and New Hampshire. Contract 03-07-043-35132 with the New England Fisheries Development Program.
- 1976 Visiting Lecturer. Smith College, Northampton, MA.
- 1975-1976 Lecturer and Teaching Associate. Economics Department, University of Massachusetts, Amherst, MA.
- 1974-1975 Research Associate. Econometric Model of Massachusetts, Principal Investigators: Professors George Treyz (University of Massachusetts) and Ann Friedlaender (M.I.T.).
- 1971-1972 Systems Analyst and Manager of Operations. Computer Center, UMD, North Dartmouth, MA.
- 1969-1971 Programmer Analyst and Business Consultant. Time Share Corporation, Hanover, NH.
- 1966-1969 Programmer. John Hancock Life Insurance Company, Boston, MA.
- 1965-1966 Teacher. Higgins Classical Institute, Charleston, ME.

- **Books, Chapters in Books, & Journal Articles**

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Ph.D. - Oklahoma State University, 1980

M.S. - Oklahoma State University, 1977

B.S. - Eastern Illinois University, 1975

Academic Interests:

Fisheries management; stream fish ecology; bioethics; population dynamics; instream flow and habitat assessment

Courses Taught:

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Professional Achievements:

Certificate of Teaching Excellence (1999); Outstanding Faculty Award (1998); W.F. Thompson Award American Institute of Fishery Research Biologists (1993); Student Paper; Outstanding Faculty Award, School of Forestry and Wildlife Resources, VPI (1989); Best Paper Award, Transactions of the American Fisheries Society (1982); Fellow, American Institute of Fisheries Research Biologists; Invited keynote lecturer at International Symposium on Fish and their Habitat, Lyon France (1995); Editorial Board Member for Rivers: Studies in the Science, Environmental Policy and Law of Instream Flow (since 1988); Transactions of the American Fisheries Society (1984-86); North American Journal of Fisheries Management (1989-91); President, Education Section, American Fisheries Society (1991-92)

Projects:

Influences of Fluctuating Releases on Stream Habitats for Brown Trout in the Smith River Below Philpott Dam

<http://www.fw.vt.edu/newcombt/smithriver/srhome.htm>

Streambed Dynamics and Fish Reproduction in the Upper Roanoke River, Virginia. (USGS Regional Competitive Grants, 1996-1998)

Streambed particles are moved and redistributed during high flow events. Because stream fish are so closely tied to the streambed during many life stages, this bed turnover is likely to have adaptive significance in enhancing habitat quality. Fishes must select suitable reproductive habitats in order to avoid physical destruction of highly vulnerable eggs and larvae. Such adaptation to bed dynamics is likely to be influenced by human modifications of streams that cause alteration of the channel. We also characterized vulnerability of habitats to bed turnover with substrate and hydraulic parameters, such as shear stress, bed roughness, and particle size distributions, and response to varying levels of sedimentation.

From Landscapes to Waterscapes: Integrating Framework for Urban Watersheds (NSF/EPA 1997-2000) <http://landscapes.ce.vt.edu>

The general goal is to develop procedures for integrated assessment of the hydrologic, ecological, and economic consequences of alternative landscape scenarios that occur during the urbanization/suburbanization processes. Principal investigators from six departments at Virginia Tech will develop linkages among existing computer models, field collections, and physical modeling of stream and watershed processes. Specific goals of the fisheries aspect are to integrate the hydrologic and hydraulic models in such a way to predict effects on stability of flow refugia and other requisite stream habitats. A case study focusing on the Upper Roanoke River Watershed will be employed to test the operation of the system of linked models and to use stakeholder input to insure relevancy to actual community watershed management.

Current Students and Postdocs:

Matthew Chan, Ph.D. Ecomorphological guilds: Improving our ability to predict stream flow changes on whole fish communities.

Jason Persinger, M.S., Habitat suitability criteria for stream fauna of the Shenandoah River.

Douglas C. Novinger, Post doctoral research associate. Impacts of hydropeaking dam releases on tailwater fishes.

Publications:

Vadas, R. L., and D. J. Orth. 2000. Formulation of habitat-use guilds for fish assemblages in a Virginia stream system. *Environmental Biology of Fishes*. In press.

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Orth, D. J. 1983. Aquatic habitat measurements. Pages 61-84 in L. A. Nielsen and D. L. Johnson, eds. Fisheries Techniques. American Fisheries Society, Bethesda, Maryland.

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Orth, D. J. 1982. Book review of Fisheries Biology, 2nd Edition. Transactions of the American Fisheries Society 111:251-252.

Orth, D. J., and O. E. Maughan. 1982. Evaluation of the incremental methodology for recommending instream flows for fishes. Transactions of the American Fisheries Society 111:413-445.

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Orth, D. J., R. N. Jones, and O. E. Maughan. 1982. Considerations in the development of curves for habitat suitability criteria. Symposium on Acquisition and Utilization of Aquatic Habitat Inventory Information, Western Division, American Fisheries Society. pp. 124-133.

Orth, D. J., and O. E. Maughan. 1981. Estimated stream flow requirements for fishes of the Washita River below Foss Reservoir, western Oklahoma. *Water Resources Bulletin* 17:831-843.

Orth, D. J., and O. E. Maughan. 1981. Evaluation of the "Montana method" for recommending instream flows in Oklahoma streams. *Proceedings of the Oklahoma Academy of Science* 61:62-66.

Orth, D. J., 1981. Book review of *Principles of Fishery Science*, 2nd Edition. *Quarterly Review Biology* 56:489-490.

Orth, D. J. 1980. Applications of operations research and systems science in aquaculture. *Fisheries* 5(1):7-9.

Orth, D. J. 1980. Changes in the fish community of Lake Carl Blackwell, Oklahoma (1967-77), and a test of the reproductive guild concept. *Proceedings of the Oklahoma Academy of Science* 60:10-17.

Orth, D. J., and R. N. Jones. 1980. Range extensions of the orangethroat darter, *Etheostoma spectabile*, and the freckled madtom, *Noturus nocturnus*, into western Oklahoma. *Proceedings of the Oklahoma Academy of Science* 60:98-99.

Orth, D. J. 1979. Computer simulation model of the population dynamics of largemouth bass in Lake Carl Blackwell, Oklahoma. *Transactions of the American Fisheries Society* 108:227-238.

Orth, D. J. 1978. Computer simulation models for predicting population trends of largemouth bass in large reservoirs. *Proceedings of the Oklahoma Academy of Science* 58:35-43.

Curriculum Vitae

Karen L. Sender

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EDUCATION:

Bachelor of Science Degree, Geology and Geophysics
University of Hawaii, Honolulu, Hawaii 96822
School of Ocean and Earth Science and Technology
Abbott Award for most outstanding graduating senior
Extensive course work in computer science and biology

EMPLOYMENT:

2000 September – Present. Database Administrator, National Marine Fisheries Service/NOAA/JIMAR, Honolulu Laboratory.

Responsibilities: Development of data systems and software tools for access and display of scientific information on the world-wide web.

Accomplishments: Team leader in the design and implementation of a web-based metadata catalog that will provide data managers and scientists information on the development, management, and history of their data collections. Developed a data administration plan for the organization, including the authoring policies and guidelines for information management. Team member of regional work group to redesign Longline Observer Data System, using a total quality management approach. Developed improved database and data entry application with integrated work-flow, data and user auditing, and system administration tools for managing reference codes, system documentation, task lists, data issues management and data validation management.

Wrote and submitted numerous proposals to obtain funding for IT/IM projects which resulted in \$350K for equipment and personnel costs in 2003 and \$250K for 2004.

Regional and National Team participation: National Fisheries Information System (FIS) Co-Chairs; FIS System Design and Integration Professional Specialty Group; Highly Migratory Species (HMS) Standards Workgroup.

Numerous presentations to regional and national fisheries groups on data management and data quality, including a presentation at NOAA Tech2004. A principal in the planning for the FIS Fall 2003 national meeting.

1999 February – 2000 September. Systems Specialist (UNIX), Kuakini Health Systems, Information Systems Department.

Responsibilities: UNIX systems administration (24/7 support, UNIX/Oracle enterprise client/server systems, print server and firewall), including OS and application upgrades, backup and recovery. Oracle database and technical administrator for two UNIX/WinNT client/server enterprise systems. Member of disaster recovery planning team.

Accomplishments: Team member in implementation of Lawson Insight enterprise financial system. Development of database and system monitoring and alerting tools for OS and application performance.

1977-1999 February. Data Archive Manager/Computer Specialist, Hawaii Mapping Research Group (HMRG, previously SeaMARC II), Hawaii Institute of Geophysics and Planetology

Responsibilities: All aspects of acquisition, processing, analysis, imaging, interpretation, archiving and documentation of complex data sets, especially sidescan sonar, bathymetry and navigation, using a variety of state-of-the-art image processing and GIS packages. Duties include mobilization/demobilization of computer and imaging systems on marine research vessels around the world. Responsible for systems development and training in UNIX/C environment. Graphic Arts Specialist and Operations Manager for digital imaging facility. Additional duties include technical writing and image production for scientific proposals, publications and conference presentations. Projects with Office of Naval Research required DoD Secret Clearance.

Accomplishments: A principal in the development of the SeaMarc II seafloor mapping project serving as data manager, data processing systems developer and liaison between scientists and technical groups in data acquisition, processing, and image production of seafloor maps. Designed and implemented an intranet for on-line access of project oriented data archives, images and documentation. Key player in locating the aircraft carrier Yorktown, which sank in the Battle of Midway, using sidescan sonar and bathymetric data analysis. Nominated RCUH employee of the year, 1998.

1977-1981. Marine Technician, Hawaii Institute of Geophysics.

Responsibilities: Shipboard Scientific Laboratory Officer aboard the primary University of Hawaii marine research vessel. Responsible for training of scientists and students in the operation of sophisticated electronic equipment and computers. Responsible for processing and analysis of navigation and marine geophysical data. Concurrently responsible for data management and processing of the extensive Ocean Bottom Seismometer Program at the Institute.

Accomplishments: Team member of one of the first shipboard marine technical groups within UNOLS to produce final integrated navigation and geophysical data in near real-time.

PUBLICATIONS:

Moore, G.F. and Sender, K.L. 1995, Fracture zone collision along the South Panama margin, in Mann, P., ed., Geologic and Tectonic Development of the Caribbean Plate Boundary in Southern Central America: Boulder, Colorado, Geological Society of America Special Paper 295.

Lundberg, N., Liu, C.S., Reed, D., Sender, K.L., 1994, Reprocessed SeaMARC II Sidescan Imagery of the Submarine Taiwan Collision, Eos, 75, No. 44:672 (abstract).

Sender, K.L., Martinez, F., and Shor, A.N., 1992, Scientific Visualization Techniques Using Enhanced SeaMARC II Bathymetry and Side-scan, Eos, 73, No. 43:543 (abstract).

Sender, K.L., 1991, Enhanced SeaMARC II Side-Scan Imagery of the South Panama Collision Zone, Eos, 72, No. 44:487 (abstract).

Johnson, Lynn E., Fryer, P., Sender, K., 1990, Tectonic Effects of Seamount Subduction on the Inner Trench Wall and Outer Forearc in the Northern Mariana Subduction Zone, Eos, 71 (abstract).

Sender, K.L., Shor, A., and Hagan, R., 1989, SeaMARC II side-scan processing techniques, Eos, 70: 1304 (abstract).

Karen Sender and Janet Pappas, 2001, Data Management Scope and Strategies, NMFS Honolulu Lab (MS PowerPoint).

Karen Sender and Janet Pappas, 2003, Total Quality Management through Total Team Effort, National Observer Advisory Team, Nov 2003 Meeting (MS PowerPoint).

Karen Sender and Janet Pappas, 2003, Designing and Managing Fisheries Data Systems that Support the NOAA Data Quality Act: A Case Study Using the Hawaii Longline Observer Program, NOAA Tech2004 (MS PowerPoint).

JON HELGE VØLSTAD, Principal Biometrician & Program Manager

Versar, Inc.

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EDUCATION:

Dr.Scient. (Ph.D.) Quantitative Fisheries Biology (Biometrics), University of Bergen (Norway), 1990. (Dissertation: Some Aspects of the Design and Analysis of Marine Abundance Surveys).

British Council Fellow, Biomathematics/Statistics, Oxford University (U.K.), 1987.

Cand.real. (M.Sc.) Fisheries Biology including Management, University of Bergen, 1985.

Graduate Courses in Mathematical Statistics (Inference Theory), University of Bergen, 1983

Cand.mag. (B.S.) Double majors in Mathematics/Statistics and Biology, University of Bergen, 1982.

AREAS OF QUALIFICATIONS:

Statistical Survey Methods; Design and Analysis of Monitoring Programs; Quantitative Fisheries Biology; Fisheries Stock Assessment and Management; Angler Survey Methods; Ecological and Environmental Statistics; Spatial Statistics.

EXPERIENCE SUMMARY:

Dr. Vølstad has over 20years of international research and consulting experience in quantitative fisheries biology and ecological statistics, specializing in statistical survey methods, experimental design, and fisheries stock assessment. Dr. Vølstad is Versar leader for fisheries and statistics, and adjunct faculty member (biometrics) at the Department of Animal and Avian sciences, University of Maryland (UMD). He is Co-PI for a joint project with UMD to conduct an ecological risk assessment for oysters in the Chesapeake Bay for the States of Maryland and Virginia. He was an invited member of the expert group at the workshop on survey design and data analysis held by the International Council for the Exploration of the Sea from June 21-25 in Aberdeen, Scotland. He was on a review team selected by the American Fisheries Society's Marine Fisheries Section, assessing three potential programs for sampling for-hire fisheries (i.e., charter and party/head boats) on the Atlantic Coast. The panel's recommendations were the basis for implementing a new coastwide methodology for collecting catch and effort data from for-hire vessels beginning in the spring of 2003. The Center of Independent Experts (CIE), at the Rosenstiel School of Marine and Atmospheric Science, University of Miami, contracted Dr. Vølstad as outside peer reviewer to provide input to the Groundfish Assessment Review Meeting (GARM) for 20 northeast USA stocks

conducted by Northeast Fisheries Science Center in 2002. He also served as CIE peer reviewer on the Second SEDAR (South East Data, Assessment and Review) on the assessments of the Status of the Stocks of Vermilion Snapper and Black Sea Bass from the south east of the U.S. in 2003, and on the 2004 SEDAR on the assessment of Gulf and South Atlantic King mackerel. Dr. Vølstad has directed the development and implementation of multiple large-scale research surveys and field experiments for ecological studies and the monitoring and assessment of fisheries in marine, estuary and river systems. His research and consulting experience involves working with scientists and managers from universities and multiple federal and state agencies. He was lead statistician in the development of a decision process for identification of estuarine benthic impairments in the Chesapeake Bay under the U.S. Clean Water Act. Dr. Vølstad was Principal Investigator (PI) for a project funded by the National Marine Fisheries Service to conduct analytical and statistical review of procedures for collection and analysis of commercial data used for inseason management of fisheries resources in the U.S. Exclusive Economic Zone off Alaska. Dr. Vølstad has extensive field experience onboard scientific and commercial fishing vessels in temporal and tropical waters in addition to his strong quantitative background.

LANGUAGES:

Scale: 1 (basic) to 3 (fluent)
Reading, Writing, Speaking:
Norwegian: (3,3,3)
English: (3,3,3)
Portuguese: (3,1,2)
German: (2,1,1)

COMPUTER SKILLS:

SAS; SUDAAN; Proc-StatXact; S-Plus; GLIM; APL; Microsoft and Corel Office Suites; Access; MapInfo; Surfer.

PROFESSIONAL EXPERIENCE:

October 4, 1999 to present
Versar, Inc.
Columbia, Maryland
Principal Biometrician/Program Manager, Ecological Sciences and Analysis Div.

Dr. Vølstad is Versar's Technical Services Area Leader in Statistics & Fisheries. He is Principal investigator (PI) on the University of Maryland and Versar Ecological Risk Assessment for Oysters in Chesapeake Bay. He was Co-PI for a project to develop a decision process for identification of estuarine benthic impairments in the Chesapeake Bay under the U.S. Clean Water Act. Dr. Vølstad was PI for the 2002 Delaware River Creel Survey, a large-scale access-point and aerial survey of the recreational fishing activity that occurs on the Delaware River, with focus on the estimation of numbers of

fish kept and harvested. He was Co-PI on a joint University of Maryland and Versar project conducted for the Maryland Department of Natural Resources (DNR) to estimate effort in the Maryland commercial blue crab pot and trotline fisheries. He was Co-PI (jointly with University of Maryland scientists) on a research program to develop and implement the Chesapeake Bay fishery-independent multispecies survey (CHESFIM) in support of ecosystem based fisheries management (funded by NOAA). He recently completed a joint study with the DNR to develop a fisheries-dependent survey to estimate the characteristics of the blue crab landings in Chesapeake Bay (funded by NOAA). He has conducted several reviews for the Center of Independent Experts (CIE), at the Rosenstiel School of Marine and Atmospheric Science, University of Miami. As CIE reviewer, he provided input to the Groundfish Assessment Review Meeting (GARM) for 20 northeast USA stocks conducted by Northeast Fisheries Science Center in 2002. He was reviewer on SEDAR (South East Data, Assessment and Review) workshops to evaluate assessments of the Status of the Stocks of Vermilion Snapper, and Black Sea Bass from the south east of the U.S. (in 2003), and of Gulf and South Atlantic King mackerel (2004), and on the 2005 Stock Assessment Review of the Assessments of the Status of US West Coast Stocks of English Sole, Petrale Sole, and Starry Flounder. As member of an expert review team selected by the American Fisheries Society's Marine Fisheries Section, he assessed three potential programs for sampling for-hire fisheries (i.e., charter and party/head boats) on the Atlantic Coast. Dr. Vølstad designed a winter dredge survey combined with gear efficiency studies for the U.S. Army Corps of Engineers (USACE) to evaluate potential impact of Channel deepening projects on the blue crab in Delaware Bay. He contributed to the development of a study design for monitoring and assessment of the impact of beach nourishment at multiple beaches in North Carolina for the USACE. Dr. Vølstad developed analytical methods to integrate information from multiple surveys for assessing the ecological status of freshwater streams based on indices of biotic integrity. Dr. Vølstad was scientific advisor to the Maryland Water Quality Monitoring Council in their effort to develop and implement biocriteria for assessing and monitoring the ecological status and trends of freshwater streams in Maryland. He developed methods for assessing cumulative impacts of point and non-point sources on the biotic integrity of Maryland streams, and played an integral role in the development of a new design for the Maryland Biological Stream Survey (MBSS) for 2000-2004, a statewide survey with focus on effective assessment of the ecological status of biological resources in non-tidal watersheds of Maryland. Dr. Vølstad conducted statistical analysis of historic data to optimize sampling surveys for assessing potential disruption to commercial, recreational and ecologically important benthic communities at offshore sand borrow areas along the Atlantic Coast of New Jersey.

July 1, 1996-October 1, 1999

Institute of Marine Research, Bergen, Norway, and
Instituto de Investigação Pesqueira (IIP), Maputo, Mozambique,
Senior scientist/Scientific Advisor
(On Leave of Absence from Versar, Inc.)

As scientific advisor to the director of the Fisheries Research Institute (IIP) in Mozambique, Dr. Vølstad provided supervision and guidance in broad areas of fisheries research and management, and helped improve the Institute's capacity to conduct independent research and provide management advice to the Directorate of Fisheries in Mozambique. He provided advice on institutional development, with focus on the development and implementation of effective methods for assessing commercially exploited marine resources in Mozambican waters. This project was funded by the Norwegian Agency for Development Cooperation (NORAD), as part of a foreign aid program to enhance Mozambique's capability for scientific-based management of their fisheries resources. Dr. Vølstad developed cost-effective statistical survey techniques for estimating vital parameters for the management of the small-scale fisheries in Mozambique while providing on-the-job- training for local scientists. He played an integral role in the development and implementation of the "National System for Statistics" for monitoring small-scale fisheries. Dr. Vølstad initiated and directed the development of a relational database for managing the data collected from this sampling program. He was member of a working group to develop a new national management system for shallow water shrimp. This shrimp fishery is the major source of foreign exchange income for Mozambique.

Dr. Vølstad has had several expert assignments in marine resources assessment for FAO, and has given presentations at numerous seminars and workshops held by the ICES and other International organizations. Dr. Vølstad had a FAO Consultancy to teach statistical survey techniques for scientists at the National Marine Research Laboratory in Swakopmund, Namibia (April 25 to May 10, 1998). He was a member of an Expert Panel at an "International workshop to evaluate the scientific methods used in the assessment and management of the hake stocks in Namibian waters", held at the National Marine Research Laboratory in Swakopmund, Namibia (October, 1997).

1994-1996

Versar, Inc., Columbia, Maryland, U.S.,
Senior Scientist, Ecological Sciences and Analysis Div.

Dr. Vølstad was Principal Investigator (PI) for a project to conduct analytical and statistical review of procedures for collection and analysis of commercial data used for inseason management of fisheries resources in the U.S. Exclusive Economic Zone off Alaska, funded by the U.S. Department of Commerce, National Marine Fisheries Service. This study resulted in alternative methods for estimating total removals of multiple species. Dr. Vølstad was PI for the Maryland Biological Stream Survey (MBSS), a comprehensive research and monitoring program conducted by the Maryland Department of Natural Resources, Research and Monitoring Division, to assess the effects of acid deposition on the biological integrity of the Maryland non-tidal streams. Dr. Vølstad was lead statistician for the development of the survey design used in MBSS 1995-1997 (In a review conducted by Dr. James R. Karr, the MBSS was rated the best statewide stream survey in the country).

Dr. Vølstad was Statistician for a project to assess the condition of the coastal bays of Delaware and Maryland, sponsored by the U.S. Environmental Protection Agency (EPA) Region III and the States of Delaware and Maryland. He estimated the extent and magnitude of ecological degradation in the study area, using design-based and model-based estimators. He provided statistical support to the EPA's Environmental Monitoring and Assessment Program (EMAP). EMAP was an integral part of the risk assessment strategy developed by EPA's Office of Research and Development for the 1990's.

Dr. Vølstad optimized the sampling design, and conducted data analysis for a long-term benthic monitoring program (LTB) in Chesapeake Bay, and its major tributaries, for the Maryland Power Plant and Environmental Review Division and the Maryland Department of the Environment.

As part of an EIS for licensing three hydroelectric projects in the Lower Penobscot River Basin, Dr. Vølstad reviewed and applied appropriate statistical methods for testing differences in water temperature among river segments (for FERC). Used the ASAL model, a suite of deterministic and stochastic computer programs, to predict if and when the population of Atlantic salmon will reach the initial population level necessary for restoration under different scenarios, and estimated the probability that restored populations can be maintained.

1992-1994

University of Maryland, Center for Environmental and Estuarine Studies, Maryland, U.S.
Applied Mathematician/Statistician (Research Scientist)

Dr. Vølstad was Co-principal investigator (with Dr. B. J. Rothschild) of an inter-state research program for the assessment of the blue crab stock in the Chesapeake Bay. He developed the survey design implemented during the winter of 1992/1993 that became the standard. He advised the Maryland Department of Natural Resources (MDNR) on survey sampling methodology for estimating recruitment indices for river herring in tributaries of the Chesapeake Bay. Dr. Vølstad advised the U.S. Fish and Wildlife Service on design and procedures for estimating contributions of hatchery-reared striped bass to recreational and commercial fisheries.

1990-1992

Institute of Marine Research, Bergen, Norway,
Senior Scientist

Dr. Vølstad won a research fellowship from the Norwegian Fisheries Research Council, and initiated several cooperative research projects in the design, analysis, and optimization of large-scale marine research and monitoring programs. He developed cost-effective designs, planned and implemented multiple sampling surveys of fisheries resources, including a yearly synoptic survey of cod and haddock stocks in the Barents Sea that involved the participation of two research vessels and up to 16 factory trawlers. Dr. Vølstad was visiting scientist at the Northeast Fisheries Science Center, Woods Hole Laboratory, Woods Hole, MA, for 6 months. Dr. Vølstad provided analytical support to a

research program for multi-species modeling of fish stocks in the Barents Sea; the Norwegian Ministry of Fisheries used the model to manage fisheries for commercially important cod and capelin stocks. Dr. Vølstad developed and implemented resampling techniques for quantifying uncertainties in model-output. He designed, served as advisor during field operations, and conducted data analysis of an exploratory survey assessing the deep-water fishery resources in the Mozambique Channel (sponsored by NORAD/FAO).

1987-1990

Norwegian Fisheries Research Council,
Research Fellow

Dr. Vølstad held a three-year research fellowship in fisheries science affiliated with Institute of Marine Research. He was visiting scientist at National Marine Fisheries Services, Woods Hole Laboratory, Woods Hole, Massachusetts (18 months total); research focused on: (1) the development of cost-effective designs and methods of analysis for marine abundance surveys; and (2) techniques for mapping the spatial distribution of marine populations, and determining the effects of environmental factors. He won a one-year fellowship from the British Council, and was visiting scientist at Oxford University, Department of Biomathematics (two semesters), conducting research on methods for analyzing spatial patterns and model based estimation of abundance in Iceland scallops, including development of techniques for kriging. He frequently worked as field biologist on-board research vessels.

1985-1987

Institute of Marine Research, Bergen, Norway,
Research Fellow

Dr. Vølstad was member of the steering committee for a research program to assess the effects of commercial harvest and environmental factors on the Iceland scallop stocks in the Barents Sea, in cooperation with the Directorate of Fisheries and the University of Tromsø, Norway. Results provided the basis for management of the Iceland scallop fishery by the Norwegian Directorate of Fisheries. He was fisheries biologist onboard R/V "Dr. Fridtjof Nansen during two 2-month cruises, as part of a research program in western Africa sponsored by the Norwegian Agency for International Development (NORAD) and the United Nations Food and Agricultural Organization (FAO).

ACTIVE MEMBERSHIP IN PROFESSIONAL SOCIETIES:

The American Fisheries Society
The American Statistical Association
The International Biometric Society

PEER REVIEW ACTIVITIES:

Aquatic Living Resources; Bull. Mar. Sci.; Can. J. Fish. Aquat. Sci.; Fish. Bull.; ICES J. Mar. Sci.; ICES Mar. Sci. Symp.; North Am. J. Fish Management; Sequential Analysis; Trans. Am. Fish. Soc.; JNABS

PEER REVIEWED PUBLICATIONS:

Vølstad, J.H., Pollock, K. H., and Richkus, W. 2006. Comparing and combining effort and catch estimates from aerial-access designs, with applications to a large-scale angler survey in the Delaware River North American Journal of Fisheries Management. In Press.

Richkus, W.R., J.H. Vølstad, J. Miller, A. Lupine, J. Dew, K. Pollock, and J. Brown. 2006. Recreational Fishing Effort, Catch and Harvest in the Delaware River in 2002 and Inter-annual Changes in the American Shad Fishery [To appear in North American Journal of Fisheries Management]

Southerland, M.T., R.E. Jung, D.P. Baxter, I.C. Chellman, G. Mercurio, and J.H. Vølstad. 2004. Streamside salamanders as indicators of stream quality in Maryland. Applied Herpetology 2:1-24.

Vølstad, J.H., N.E. Roth, G. Mercurio, M.T. Southerland, and D. Strebel 2003. Using environmental stressor information to predict the ecological status of Maryland non-tidal streams as measured by biological indicators. Environmental Monitoring and Assessment 84 (3): 219-242.

Vølstad, J.H., N.K. Neerchal, N.E. Roth and M.T. Southerland. 2003. Combining biological indicators of watershed condition from multiple sampling programs - A case study from Maryland, USA. Ecological Indicators 3: 13-25.

Sharov, A.F., J.H. Vølstad, G.R. Davis, B.K. Davis, R.N. Lipcius, and M.M. Montane. 2003. Abundance and exploitation rate of the blue crab (*Callinectes sapidus*) in Chesapeake Bay. Bulletin of Marine Science Bulletin of Marine Science 72 (2): 543-565.

Llansó, R. J., D. M. Dauer, J. H. Vølstad, and L. C. Scott. 2003. Application of the benthic index of biotic integrity to environmental monitoring in Chesapeake Bay. Environmental Monitoring and Assessment 81:163-174.

Vølstad, J.H., A.F. Sharov, G. Davis, and B. Daugherty. 2000. A method for estimating dredge catching efficiency for blue crabs, *Callinectes sapidus*, in Chesapeake Bay. Fishery Bulletin 98: 410-420.

Heimbuch, D.G., H.T. Wilson, S.B. Weisberg, J.H. Vølstad, and P.F. Kazyak. 1997. Estimating fish abundance in stream surveys by using double-pass removal sampling. Transactions of the American Fisheries Society 126: 795-803.

- Strand, Ø. and J.H. Vølstad. 1997. The Molluscan Fisheries and Culture of Norway, p. 7-24. *In* The history, present condition, and future of the molluscan fisheries of North and Central America and Europe, Volume 3, Europe. Edited by Clyde L. MacKenzie, Jr., Victor G. Burrell, Jr., Aaron Rosenfield, and Willis L. Hobart. NTIS number: PB97-164859. U.S. Dep. Commer., NOAA Tech. Rep. NMFS 129.
- Bogstad, B., Pennington, M. and J.H. Vølstad. 1995. Cost-efficient survey designs for estimating the food consumption by fish. *Fisheries Research* 23: 37-46.
- Pennington, M. and J.H. Vølstad. 1994. The effect of intra-haul correlation and variable density on estimates of population characteristics from trawl surveys. *Biometrics* 50: 725-732.
- Pennington, M. and J.H. Vølstad. 1994. Local homogeneity of marine populations and its implications for the design of sampling surveys. Invited paper for the Biometrics Society Conference on Sampling Issues in Ecology, Cleveland, April 1994.
- Polacheck, T. and J.H. Vølstad. 1993. Analysis of spatial variability of George Bank haddock (*Melanogrammus aeglefinus*) from trawl survey data using a linear regression model with spatial interaction. *ICES Journal of Marine Science* 50: 1-8.
- Pennington, M. and J.H. Vølstad. 1991. Optimum size of sampling unit for estimating the density of marine populations. *Biometrics* 47: 717-723.
- Godø, O.R., M. Pennington and J.H. Vølstad. 1990. Effect of tow duration on length composition of trawl catches. *Fisheries Research* 9: 165-179.

PAPERS IN PREPARATION:

- Vølstad, J.H., A.P. Baloi, P. Santana Afonso, N. de Premegi, and J. Meisfjord. In Prep. Probability-based survey techniques for monitoring catch and effort in the coastal small-scale fisheries in Mozambique. [Fisheries Research]
- Christman, M.C., J.H. Vølstad, C.J. Giffen, L.W. Fegley. In Prep. Design and implementation of transect and aerial surveys of commercial blue crab effort in the Maryland portion of the Chesapeake Bay. [North American Journal of Fisheries Management]
- Sharov, A. and J.H. Vølstad. In. prep. Evaluation of sampling methods for improving estimates of the biological characteristics of commercial blue crab harvest in the Chesapeake Bay. [North American Journal of Fisheries Management]

Vølstad, J.H. J. Dew, and M. Tarnowski. In Prep. Estimation of annual mortality rates for eastern oysters (*Crassostrea virginica*) in Chesapeake Bay based on box counts and application of those rates for population growth projections. [Journal of Shellfish Research]

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