



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
**National Marine Fisheries Service**  
Alaska Fisheries Science Center  
7600 Sand Point Way N.E.  
Seattle, Washington 98115-6349

7 November 2017

Dan Hull, Chair  
North Pacific Fishery Management Council  
605 W 4th Ave  
Anchorage, AK 99501

Dear Mr. Hull:

The Alaska Fishery Science Center (AFSC) recommends the appointment of Dr. Kresimir Williams as a member of the Gulf of Alaska (GOA) Plan Team.

Dr. Williams has worked in the AFSC Midwater Assessment and Conservation Engineering (MACE) Program for 15 years. During this time, he has participated in all aspects of the MACE acoustic-trawl survey effort including survey design, execution, and data analysis. He has also participated in multiple areas of survey-related research. Kresimir received his Ph.D. in 2013 from the University of Washington (UW), School of Aquatic and Fishery Sciences. His dissertation research addressed the impact of trawl selectivity on acoustic-trawl survey abundance estimates for pollock, and the impact that this survey bias can have to the actual GOA pollock stock assessment model results. Kresimir has also been a member of the NOAA Office of Science and Technology Automated Image Analysis Strategic Initiative since 2014, and is an affiliate faculty member in the UW, Department of Electrical Engineering based on his impressive research in the field of underwater optics, including how this innovative technology can be integrated into existing stock assessment survey methods.

Kresimir is familiar with the Plan Team activities, and has regularly attended Plan Team meetings as an audience member or to present to the Plan Team. He has presented results to the GOA Plan Team on several occasions regarding MACE acoustic-trawl survey research related to the stock assessment. His most recent presentation occurred during the October 2018 Plan Team meeting when he and a co-worker (C. Rooper) presented preliminary plans to develop an innovative acoustics-camera based GOA-wide survey to assess rockfishes in untrawlable habitats.

Kresimir's expertise in survey methods and stock assessment processes based on his many years of survey work and survey-related research make him well qualified to join the Plan Team. We are confident that his background and expertise will enable Kresimir to make many valuable contributions to the GOA Plan Team now and in the years to come.

Sincerely,

Dr. Douglas P. Demaster,  
Director for Science & Research



## Kresimir Williams

NOAA Fisheries  
Alaska Fisheries Science Center  
7600 Sand Point Way, Bldg 4  
Seattle, WA 98115  
206-526-4133  
[kresimir.williams@noaa.gov](mailto:kresimir.williams@noaa.gov)

### Education:

2007 – 2013	University of Washington Ph.D., School Fisheries and Aquatic Sciences <u>Dissertation:</u> Evaluation of Midwater Trawl Selectivity and its Influence on Acoustic-Based Fish Population Surveys	Seattle, WA
2000-2002	Auburn University M.S., School of Fisheries, Aquaculture and Aquatic Studies <u>Thesis:</u> Development of Yolk-Sac Larvae of Red Snapper, <i>Lutjanus campechanus</i> , and the Effect of Temperature	Auburn, AL
1991 – 1995	Samford University, B.S., Major: Biology, Minor: Marine Science	Birmingham, AL

### Professional Experiences:

Research Fishery Biologist, Midwater Assessment and Conservation Engineering, Alaska Fisheries Science Center (AFSC), National Marine Fisheries Service, National Oceanic and Atmospheric Administration (NOAA), 2003-present

Fisheries Observer, Alaskan Observes, Inc. 1997-2000

### Research Interests:

- Influence of fish behavior on survey design and uncertainty, innovative sampling technology and underwater instruments for fish observation and enumeration.
- Extending fisheries acoustics survey methodology using innovative technologies
- Quantitative use of image data for surveying marine habitats, fisheries management, population modeling
- Development of low-cost stereo camera systems, Open source analysis software and automated image analysis for fisheries science

**Awards:**

- Bronze medal, NOAA, 2014 – for development of CamTrawl device for non-lethal sampling of pelagic marine life
- Bronze medal, NOAA, 2008 – for development of open design high precision fish measurement device

**Open source software:**

- DIDSON imaging sonar automated tracking software (Matlab, 2004)
- CLAMS electronic fish data collection system (Python, 2010)
- SEBASTES stereo image analysis, stereo calibration, and tracking software (Python 2015)

**Professional Service:**

AFSC Representative, Automated Image Analysis Strategic Initiative, Office of Science and Technology, NOAA, 2014 - present

Co-Chair, 2014 International Council for the Exploration of the Sea (ICES) Fisheries Acoustics Science and Technology/ Fishing Technology and Fish Behaviour joint session, New Bedford, Massachusetts

Affiliate Professor, Department of Electrical Engineering, University of Washington, 2013-present

Lead Organizer, Automated Image Processing Workshop, NOAA 2010, Seattle, Washington

Dissertation Committee member: University of Washington (Electrical Engineering Dept.); University of Massachusetts, Dartmouth (School Mar. Sci. & Technology)

**Selected publications:**

Williams, K., Lauffenburger, N., Chuang, M.C., Hwang, J.N. and Towler, R., 2016. Automated measurements of fish within a trawl using stereo images from a Camera-Trawl device (CamTrawl). *Methods in Oceanography*, 17:138-152.

De Robertis, A., Taylor, K., Williams, K. and Wilson, C.D., 2015. Species and size selectivity of two midwater trawls used in an acoustic survey of the Alaska Arctic. *Deep Sea Research, Part II: Topical Studies in Oceanography*.

Rooper, C. N.; Williams, K.; De Robertis, A; Tuttle, V. J. 2015. Effect of underwater lighting on observations of density and behavior of rockfish during camera surveys. *Fisheries Research* 172:157-167.

- Williams, K.; De Robertis, A.; Berkowitz, Z; Rooper, C. N.; Towler, R. 2015. An underwater stereo-camera trap. *Methods in Oceanography* 11:1-12.
- Sigler, M.; DeMaster, D.; Boveng, P.; Cameron, M.; Moreland, E.; Williams, K.; Towler, R. 2015. Advances in Methods for Marine Mammal and Fish Stock Assessments: Thermal Imagery and CamTrawl. *Marine Technology Society Journal*, 49(2):99-106.
- Williams, K; Horne, J. K.; Punt, A. E. 2015. Examining influences of environmental, trawl gear, and fish population factors on midwater trawl performance using acoustic methods. *Fisheries Research* 164:94-101.
- Williams, K; Wilson, C.; Horne, J. K. 2013. Walleye pollock (*Theragra chalcogramma*) behavior in midwater trawls. *Fisheries Research* 143:109-118.
- Williams, K.; Rooper, C. N.; Harms, J. 2012. Report of the National Fisheries Service Automated Image Processing Workshop. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-F/SPO-121, 48 p.
- Somerton, D. A.; Williams, K; von Szalay, P. G.; Rose, C. S. 2011. Using acoustics to estimate the fish-length selectivity of trawl mesh. *ICES Journal of Marine Science* 68(7): 1558-1565.
- Williams, K.; Punt, A. E.; Wilson, C. D.; Horne, J. K. 2011. Length-selective retention of walleye pollock, *Theragra chalcogramma*, by midwater trawls. *ICES Journal of Marine Science* 68:119-129.
- Williams, K., Rooper, C. N., Towler, R. 2010. Use of stereo camera systems for assessment of rockfish abundance in untrawlable areas and for recording pollock behavior during midwater trawls. *Fisheries Bulletin* 108(3): 352-362.
- Williams, K.; Towler, R.; Wilson, C. 2010. Cam-trawl: a combination trawl and stereo-camera system. *Sea Technology* 51(12): 45-48.
- De Robertis, A.; Williams, K. 2008. Weight-length relationships in fisheries studies: The standard allometric model should be applied with caution. *Transactions of the American Fisheries Society* 137 (3): 707-719.
- Handegard, N. O.; Williams, K. 2008. Automated tracking of fish in trawls using the DIDSON (Dual frequency IDentification SONar). *ICES Journal of Marine Science* 65: 636-644.
- Williams, K. 2007. Evaluation of the macroscopic staging method for determining maturity of female walleye pollock ( ) in Shelikof Strait, Alaska. *Alaska Fishery Research Bulletin* 12 (2): 252-263.
- Williams, K; Papanikos, N; Phelps, RP; Shardo, JD. 2004. Development, growth, and yolk utilization of hatchery-reared red snapper *Lutjanus campechanus* larvae. *Marine Ecology Progress Series* 275: 231-239.

#### **Recent Collaborators:**

Chris Rooper, Alaska Fisheries Science Center, Seattle, WA  
 Jenq-Neng Hwang, University of Washington, Seattle, WA

Jennifer Boldt, Department of Fisheries and Oceans, Nanaimo, Canada  
David Somerton, Alaska Fisheries Science Center, Seattle, WA  
Nils Handegard, Institute of Marine Research, Bergen, Norway