

## Department of Fish and Game

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THE STATE  
of **ALASKA**  
GOVERNOR BILL WALKER

September 27, 2016

Mr. Dan Hull, Chair  
North Pacific Fishery Management Council  
605 West 4<sup>th</sup> Avenue, Suite 306  
Anchorage, Alaska 99501

Dear Chairman Hull:

I would like to nominate Mr. Ben Daly for appointment to the Council's Crab Plan Team to replace Doug Pengilly, who has retired from the Alaska Department of Fish and Game. Mr. Daly has replaced Doug Pengilly as the Westward Region shellfish/groundfish research coordinator in the Division of Commercial Fisheries. Ben is currently responsible for oversight of all shellfish and groundfish research activities in the Westward Region. He has also worked as a research biologist for National Oceanic and Atmospheric Administration leading research of commercially important crab species in the eastern Bering Sea. Ben has also participated in Crab Plan Team meetings and understands the complex stock assessments and unique state and federal management overlap. With his interest and experience, Mr. Daly will be a valuable addition to the Crab Plan Team.

Thank you for considering his appointment at the upcoming October 2016 Council meeting, attached is his CV for your review.

Sincerely,

A handwritten signature in blue ink that reads "Sam Cotten".

Sam Cotten  
Commissioner

## **Benjamin J. Daly, Ph.D.**

Shellfish/Groundfish Research Coordinator  
Alaska Department of Fish and Game, Westward Region  
351 Research Court, Kodiak, AK 99615  
Phone: 907-486-1865, Email: benjamin.daly@alaska.gov

### **EDUCATION**

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- 2008-2012 **Doctor of Philosophy, Fisheries**, University of Alaska Fairbanks (UAF), Juneau, Alaska  
GPA: 4.0/4.0, Semester hours: 44, Advisor: Dr. Ginny Eckert
- Dissertation: Red king crab (*Paralithodes camtschaticus*) hatchery culture and ecological requirements: Applications for stock enhancement.
  - Evaluated the feasibility of king crab stock enhancement in Alaska by addressing hatchery bottlenecks associated with cannibalism and potential morphological and behavioral deficiencies.
  - Evaluated field predation for developing release strategies.
  - Supervised undergraduate students to ensure research integrity and compliance with UAF standards for occupational safety, animal care use, and dive safety.
  - *Relevant coursework*: Management of renewable marine resources, fisheries oceanography, statistical computing, modern applied statistics
- 2004-2007 **Master of Science, Marine Biology**, University of Alaska Fairbanks, Fairbanks, Alaska  
GPA: 3.8/4.0, Semester hours: 53, Advisor: Dr. Brenda Konar
- Thesis: Temporal variation and habitat use of nearshore crab populations in Kachemak Bay, Alaska.
  - Investigated temporal and spatial variation in crab population dynamics in kelp habitats.
  - *Relevant coursework*: Professional development, marine biology, oceanography, statistics
- 1999-2003 **Bachelor of Science, Biology**, Hobart and William Smith Colleges, Geneva, New York  
GPA: 3.1/4.0, Semester hours: 32.6, Major: Biology, Minor: Environmental Studies
- *Relevant coursework*: Management and conservation, terrestrial ecology, marine ecology, field biology, oceanography, biostatistics

### **PROFESSIONAL EXPERIENCE**

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- 2016-present **Research Coordinator**, Alaska Department of Fish and Game, Westward Region, Kodiak, Alaska. Supervisor: Nick Sagalkin
- Oversight of all shellfish and groundfish research activities in the Westward Region.
  - Develop, coordinate, and/or lead research projects encompassing state-managed fisheries within state waters and fisheries that are managed under a cooperative state-federal management regime.
  - Prepare and manage annual budgets.
- 2012-2016 **Research Fishery Biologist (ZP3)**, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Alaska Fisheries Science Center, RACE Division, Kodiak Laboratory, Kodiak, Alaska. Supervisor: Dr. Robert Foy
- Lead research projects supporting the assessment of commercially important crab species in the eastern Bering Sea on topics such as recruitment, larval advection, behavior, and benthic production.
  - Publish results in peer reviewed literature.
  - Lead crab biologist in annual eastern Bering Sea bottom trawl surveys, which assess the distribution and abundance commercially important crab species.
  - Member of At-Sea-Safety Committee, which provides instruction and guidance for safe scientific operations at sea.
  - Safety Lead on annual eastern Bering Sea bottom trawl surveys.

- Lead author of the annual Bering Sea Crab Survey Report, used to aid the fishing industry in locating productive fishing grounds and help managers regulate takes to improve viability of future stocks.
- Working group lead for development of crab stock ecosystem indicators used by Crab Plan Team members and stock assessment authors.
- Coordinate collection, transportation, and maintenance of live specimens.
- Serve as an expert in my field by providing professional reviews of manuscripts submitted for publication to ensure scientific integrity.
- Oversee public outreach of Kodiak Fisheries Research Center display aquaria including specimen collection, permitting requirements, tank husbandry, and leadership of Kodiak Borough outreach employees.
- Provide research proposal reviews for external agencies seeking grant funding.
- Conduct outreach activities for a range of audiences including the general public, marine researchers, management agencies, commercial fisherman, teachers, and students.
- Certified NOAA scientific SCUBA diver.

2007-2012

**Research Biologist**, Alaska Sea Grant, University of Alaska Fairbanks, Seward, Alaska  
Supervisor: Dr. David Christie

- Served as Seward-based lead for the Alaska King Crab Research Rehabilitation and Biology (AKCRRAB) program to assess the feasibility of king crab stock enhancement as a resource management tool in Alaska.
- Planned, developed, and executed this multi-tiered resource management program in collaboration with various partner agencies for both short and long-term strategic plans resulting in the first and only king crab aquaculture program in the United States.
- Assisted in the development, management, and implementation of a multi-year budget exceeding \$300,000 involving work schedules, personnel needs, materials, and equipment needs.
- Collaborated with the scientific leadership team, steering committee, and lobbyists to solicit mutually beneficial research.
- Provided oversight on scientific research projects with respect to technical assistance, research protocols, experimental design, and compliance with program objectives.
- Prepared project proposals and budget requests for various funding agencies to continue program research.
- Planned, scheduled, and directed the work of multiple tiers within the AKCRRAB program that has resulted in the successful development of hatchery culture at the Alutiiq Pride Shellfish Hatchery, field studies with the University of Alaska Fairbanks, and laboratory studies conducted by the National Oceanic and Atmospheric Administration (NOAA).
- Collaborated with geneticists and the Alaska Department of Fish and Game to evaluate potential stock enhancement consequences and understand possible environmental change associated with large-scale hatchery releases.
- Communicated research findings and stock enhancement potential, both verbally and written, to a varied audience at public comment meetings and state and national symposia to gain program support.
- Published research in international peer reviewed journals.
- Served as an expert in my field by providing professional reviews of manuscripts submitted for publication to ensure scientific integrity.
- Identified scientific research needs and implemented program directives and research objectives that led to increased production of juvenile crabs and expanded partnership base.

- Coordinated specimen collection and transportation criteria among government agencies and scientists.
  - Managed and ensured specimen collection permit requirements, compliance, and reporting.
  - Managed data collection, project updates, and completion reports for program meetings, web-based media, permitting agencies, and manuscript publication.
  - Supervised laboratory and research technicians, interns, and undergraduates for compliance with university standards for occupational safety, animal care use, dive safety, and attendance at university safety sessions.
  - Under my supervision on research projects and fieldwork involving SCUBA, the potentially hazardous working environment remained injury-free.
- 2005-2007 **Research Assistant**, Marine Science and Limnology Department, University of Alaska Fairbanks, Fairbanks, Alaska. Supervisor: Dr. Brenda Konar
- Assessed the importance of kelp habitat for crab management.
  - Ensured compliance with state collection permits and UAF standards for specimen collection, sample preservation, and occupational safety.
  - Used SCUBA and small inflatable boats throughout the year in adverse weather conditions.
  - Ensured fieldwork was in compliance with UAF and American Academy of Underwater Sciences (AAUS) dive safety standards resulting in a 100% safety record.
- 2005 **Commercial Diver**, City of Seldovia, Seldovia, Alaska  
Privately contracted: 6 week project duration, Supervisor: Michael Geagel
- Replaced and repaired ferry dock pilings under hazardous diving conditions.
  - Ensured all activities complied with state and local safety regulations resulting in a 100% safety record.
- 2004-2005 **Teaching Assistant**, Marine Science and Limnology Department, University of Alaska Fairbanks, Fairbanks, Alaska
- Taught the laboratory section of an introductory marine biology class, which included providing academic support, instructing laboratory procedures, and grading laboratory reports and exams.
  - Conducted safety sessions and ensured students used Personal Protective Equipment (PPE) during laboratory experiments involving hazardous materials resulting in a 100% safety record.
  - Resolved student conflicts and academic grievances.
- 2004 **Laboratory Technician**, Fish and Invertebrate Ecology Laboratory, Smithsonian Environmental Research Center, Edgewater, Maryland  
Supervisor: Dr. Anson Hines
- Assisted on a range of projects involving blue crab population ecology and stock enhancement using quantitative field sampling and laboratory behavioral experiments.
  - Maintained laboratory animals, implemented field collection techniques, analyzed benthic samples (invertebrate identification), monitored weirs (fish identification), and conducted light carpentry work.
  - Supervised and counseled interns during laboratory experiments and field sampling.

### **RESEARCH INTERESTS**

Conservation biology; ecosystem-based fisheries management; fisheries ecology; community ecology; population dynamics; trophic interactions; essential fish habitat; aquaculture; stock enhancement; restoration ecology; climate change; larval advection; marine invertebrates, aquatic biology.

## **PUBLICATIONS**

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- Daly, B.**, Armistead, C.E, Foy, R.J. draft. The 2016 eastern Bering Sea continental shelf bottom trawl survey: results for commercial crab species. U.S. Department of Commerce, NOAA Technical Memorandum.
- Daly, B.**, Armistead, C.E, Foy, R.J. 2015. The 2015 eastern Bering Sea continental shelf bottom trawl survey: results for commercial crab species. U.S. Department of Commerce, NOAA Technical Memorandum, NMFS-AFSC-308, 167 p.
- Daly, B.**, Armistead, C.E, Foy, R.J. 2015. The 2013 eastern Bering Sea continental shelf bottom trawl survey: results for commercial crab species. U.S. Department of Commerce, NOAA Technical Memorandum, NMFS-AFSC-295, 166 p.
- Daly, B.**, Armistead, C.E, Foy, R.J. 2014. The 2014 eastern Bering Sea continental shelf bottom trawl survey: results for commercial crab species. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-282, 167 p.
- Daly, B.**, Long, W.C., 2014. Inter-cohort cannibalism of early benthic phase blue king crabs (*Paralithodes platypus*): alternate foraging strategies in different habitats lead to different functional responses. PLoS ONE. 9, e88694.
- Copeman, L., **Daly, B.**, Eckert, G., Swingle, J., 2014. Storage and utilization of lipid classes and fatty acids during the early ontogeny of blue king crab, *Paralithodes platypus*. Aquaculture. 424-425: 86-94.
- Daly, B.**, Long, W.C., 2014. Intra-guild predation among early benthic phase red and blue king crabs: evidence for a habitat-mediated competitive advantage. J. Exp. Mar. Biol. Ecol. 451, 98-104.
- Daly, B.**, Swingle, J.S., 2013. High-density nursery culture of recently-settled blue king crabs (*Paralithodes platypus*): comparisons to red king crabs (*Paralithodes camtschaticus*). Aquaculture. 416-417, 196-200.
- Daly, B.**, Swingle, J., Eckert, G.L. 2013. Dietary astaxanthin supplementation for hatchery-cultured red king crab, *Paralithodes camtschaticus*, juveniles. Aquacult. Nutr. 19, 312-320.
- Daly, B.**, Eckert, G.L., White, T. 2013. Predation of hatchery-cultured juvenile red king crabs (*Paralithodes camtschaticus*) in the wild. Can. J. Fish. Aquat. Sci. 70, 358-366.
- Swingle, J., **Daly, B.**, Hetrick, J. 2013. Temperature effects on larval survival, larval period, and health of hatchery-reared red king crab, *Paralithodes camtschaticus*. Aquaculture. 384-387, 13-18.
- Daly, B.**, J. Swingle, Eckert, G.L. 2012. Increasing hatchery production of juvenile red king crabs (*Paralithodes camtschaticus*) through size grading. Aquaculture. 364-365, 206-211.
- Daly, B.**, Stoner, A.W., Eckert, G.L. 2012. Predator-induced behavioral plasticity of juvenile red king crabs (*Paralithodes camtschaticus*). J. Exp. Mar. Biol. Ecol. 429, 47-54.
- Copeman, L.A., Stoner, A.W., Ottmar, M.L., **Daly, B.**, Parrish, C.C., Eckert, G.L. 2012. Total lipids, lipid classes, and fatty acids of newly settled red king crab (*paralithodes camtschaticus*): comparison of hatchery-cultured and wild crabs. J. Shellfish Res. 31, 153-165.
- Herter, H., **Daly, B.**, Swingle, J., Lean, C. 2011. Morphometrics, fecundity, and hatch timing of blue king crabs (*Paralithodes platypus*) from the Bering Strait, Alaska, USA. J. Crust. Biol. 31, 304-312.
- Daly, B.** 2010. Feature article: King crab rehabilitation in Alaska. In: Bishop, G. (Ed) ONCORHYNCHUS, Newsletter of the Alaska Chapter, American Fisheries Society. Summer 2010, No.3.
- Daly, B.**, Konar, B. 2010. Temporal trends of two spider crabs (Brachyura, Majoidea) in nearshore kelp habitats in Alaska, USA. Crustaceana 83, 659-669.
- Persselin, S., **Daly, B.** 2010. Diet and water source effects on larval red king crab cultivation. In: G.H. Kruse, G.L. Eckert, R.J. Foy, R.N. Lipcius, B. Sainte-Marie, D.L. Stram, and D. Woodby (eds.), Biology and Management of Exploited Crab Populations under Climate Change. Alaska Sea Grant, University of Alaska Fairbanks.
- Daly, B.**, Swingle, J.S., Eckert, G.L. 2009. Effects of diet, stocking density, and substrate on survival and growth of hatchery-cultured red king crab (*Paralithodes camtschaticus*) juveniles in Alaska, USA. Aquaculture 293, 68-73.
- Daly, B.**, Konar, B. 2008. Effects of macroalgal structural complexity on nearshore larval and post-larval crab composition. Mar. Biol. 153, 155-164.

*In preparation*

- Daly, B.**, Eckert, G., Long, W.C., In prep. Benefits of phenotypic plasticity for crustacean stock enhancement. *Reviews in Aquaculture*.
- Eckert, G., **Daly, B.**, Hines A., In prep. Crab culture. In: Lovrich, G., and Theil, M (eds.), *Fisheries and Aquaculture*. Vol. 9. In: *The Natural History of the Crustacea*. Oxford University Press.
- Long, W.C, **Daly, B.**, in prep. Thermal tolerance of red and blue king crabs.

**PROFESSIONAL PRESENTATIONS**

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- North Pacific Fishery Management Council, Crab Plan Team Meeting, Anchorage, AK, May 2016  
Crab ecosystems indicators: report cards and SAFE chapter (presented remotely)
- Alaska Marine Science Symposium, Anchorage, AK, January 2016  
A biophysical modeling approach to understanding red king crab larval drift in Bristol Bay, Alaska
- North Pacific Fishery Management Council, Crab Plan Team Meeting, Anchorage, AK, January 2016  
Crab ecosystem consideration indicators
- North Pacific Fishery Management Council, Crab Plan Team Meeting, Seattle, WA, September 2015  
The 2015 eastern Bering Sea continental shelf bottom trawl survey: results for commercial crab species
- Bering Sea Crab Science Symposium, Seattle, WA, September 2015  
The 2015 eastern Bering Sea continental shelf bottom trawl survey: results for commercial crab species
- Alaska Marine Science Symposium, Anchorage, AK, January 2015  
Intra-guild predation among early benthic phase red and blue king crabs: evidence for a habitat-mediated competitive advantage
- Interagency Crab Meeting, Kodiak, AK, December 2014  
The importance of understanding larval advection in the eastern Bering Sea
- Kodiak Area Marine Science Symposium, Kodiak, AK, April 2014  
The first release of hatchery-cultured king crabs in Alaska: An introduction to a small-scale pilot study
- Kodiak Area Marine Science Symposium, Kodiak, AK, April 2014  
Predation of early benthic phase king crabs
- Interagency Crab Meeting, Anchorage, AK, December 2013  
Kodiak lab research update: Species interactions, aquaculture, and proposals
- Interagency Crab Meeting, Kodiak, AK, December 2012  
Predation of early benthic phase red king crabs
- American Fisheries Society, Alaska Chapter, Kodiak, AK, October 2012  
A responsible approach to king crab rehabilitation in Alaska
- National Shellfisheries Association Symposium, Seattle, WA, March 2012  
In situ predation and behavioral plasticity of juvenile red king crabs (*Paralithodes camtschaticus*)
- Interagency Crab Meeting, Anchorage, AK, December 2011  
In situ predation and behavioral plasticity of juvenile red king crabs (*Paralithodes camtschaticus*)
- Western Society of Naturalists, Vancouver, WA, November 2011  
In situ predation and behavioral plasticity of juvenile red king crabs (*Paralithodes camtschaticus*)
- Interagency Crab Meeting, Anchorage, AK, December 2010  
Evidence for predator-induced behavioral plasticity of juvenile red king crab (*Paralithodes camtschaticus*)
- Seward Rotary Club, Seward, AK, September 2010  
King crab aquaculture and stock enhancement in Alaska: recent developments in the Alaska King Crab Research Rehabilitation and Biology (AKCRRAB) program
- UAF American Fisheries Society Student Symposium, Juneau, AK, April 2010  
Effects of diet and size grading on survival, growth, and coloration of hatchery-cultured red king crab
- World Aquaculture Meeting, San Diego, CA, March 2010  
Effects of diet and size grading on survival, growth, and coloration of hatchery-cultured red king crab
- Alaska Marine Science Symposium, Anchorage, AK, January 2010  
Effects of diet and size grading on survival, growth, and coloration of hatchery-cultured red king crab
- Interagency Crab Meeting, Anchorage, AK, December 2009  
Effects of diet and size grading on survival, growth, and coloration of juvenile red king crab
- Alaska Sea Grant Advisory Board, Anchorage, AK, November 2009

Recent developments in the Alaska King Crab Research Rehabilitation and Biology (AKCRRAB) program  
National Shellfisheries Association Symposium, Savannah, GA, March 2009  
Effects of diet, stocking density, and substrate on growth and survival of hatchery-cultured red king crab,  
Award: Best student presentation (Honorable mention)  
Lowell Wakefield Symposium, Anchorage, AK, March 2009  
Effects of diet, stocking density, and substrate on growth and survival of hatchery-cultured red king crab  
Cook Inlet Aquaculture Association, Kenai, AK, February 2008  
King crab aquaculture in Alaska  
Alaska Hatchery Managers Meeting, ASLC, Seward, AK, January 2008  
King crab aquaculture in Seward, AK  
Interagency Crab Meeting, Anchorage, AK, December 2007  
King crab aquaculture and stock enhancement in Alaska  
Western Society of Naturalists, Ventura, CA, November 2007  
Effects of macroalgae on larval crab assemblages  
United Fishermen's Marketing Association Meeting, Kodiak, AK, October 2007  
King Crab Research: Juvenile habitat use and effects of density in larval rearing  
Alaska Marine Science Symposium, Anchorage, AK, January 2007  
Temporal and spatial variability of nearshore crab larvae in different habitats within Kachemak Bay, AK  
Western Society of Naturalists, Redmond, WA, November 2006  
The effects of macroalgal density on larval crab assemblages in Kachemak Bay, Alaska  
Islands and Oceans Visitor Center, Homer, AK, November 2006  
Habitat use by macroalgal associated crabs in Kachemak Bay, Alaska  
Institute of Marine Science Seminar, UAF, Fairbanks, AK, October 2006  
Effects of macroalgal density on larval crab assemblages in Kachemak Bay, Alaska  
Kachemak Bay Science Conference, Homer, AK, March 2006  
Effects of macroalgal density on larval crab assemblages in Kachemak Bay, Alaska  
Bermuda Institute of Ocean Sciences Symposium, St. George's, Bermuda, December 2003  
Effects of elevated CO<sub>2</sub> on phytoplankton community structure