Senate Commerce Committee Nominee Questionnaire, 117th Congress

Instructions for the nominees: The Senate Committee on Commerce, Science, and Transportation asks you to provide typed answers to each of the following questions. It is requested that the nominee type the question in full before each response. Do not leave any questions blank. Type "None" or "Not Applicable" if a question does not apply to the nominee. Return printed answers to Committee. Begin each section (i.e., "A", "B", etc.) on a new sheet of paper.

A. BIOGRAPHICAL INFORMATION AND QUALIFICATIONS

1. Name (Include any former names or nicknames used):

Sue Ellen Moore

2. Position to which nominated:

Commissioner, US Marine Mammal Commission

3. Date of Nomination:

25 May 2022

- 4. Address (List current place of residence and office addresses):
- 5. Date and Place of Birth:

10 August 1954; Columbus OH, USA

6. Provide the name, position, and place of employment for your spouse (if married) and the names and ages of your children (including stepchildren and children by a previous marriage).

P. Dee Boersma, Professor, Biology Department, University of Washington, Seattle WA 98144

No children

- 7. List all college and graduate degrees. Provide year and school attended.
 - 1997 Scripps Institution of Oceanography, Ph.D. in Biological Oceanography
 - 1979 San Diego State University, M.S. Biology (Behavioral Ecology)
 - 1976 University of California, San Diego, B.A. Biology (Mammalian Physiology)

8. List all post-undergraduate employment, and highlight all management- level jobs held and any non-managerial jobs that relate to the position for which you are nominated.

▲	Affiliate Professor, UW/Biology, Center for Ecosystem Sentinels
2006-2020	Affiliate Professor, UW/School of Aquatic Fishery Sciences
2012-2018	Senior Scientist, NOAA/Fisheries – Office of Science & Technology
2008-2012	Research Scientist, NOAA/Fisheries – Office of Science & Technology
2004-2008	Principal Oceanographer/Visiting Scholar, on detail from
	NOAA/AFSC to APL-UW
2002-2004	Director, NOAA/National Marine Mammal Laboratory (NMML)
1998-2002	Program Leader, NMML Cetacean Assessment & Ecology
1988-1998	Principal Investigator & Senior Scientist
	Science Applications International Corporation (SAIC -via contract)
	Arctic Whale Surveys and Assessment (MMS/DoI ¹)
	Cetacean Acoustic Monitoring and Mitigation (US Navy/DoD)
	Cetacean Acoustic Detection and Assessment (NOAA/SWFSC)
1978-1988	Program Manager & Field Team Leader
	SEACO, Incorporated (SEACO -via contract)
	Arctic Whale Surveys and Assessment (MMS/DoI)
	Cetacean Acoustics and Husbandry (US Navy/DoD)
1975-1978	Marine Technician, Scripps Institution of Oceanography

9. Attach a copy of your resume.

Resume attached

10. List any advisory, consultative, honorary, or other part-time service or positions with Federal, State, or local governments, other than those listed above, within the last ten years.

Science Advisor to the Marine Mammal Commission, 2005-present

11. List all positions held as an officer, director, trustee, partner, proprietor, agent, representative, or consultant of any corporation, company, firm, partnership, or other business, enterprise, educational, or other institution within the last ten years. **Not Applicable**

12. Please list each membership you have had during the past ten years or currently hold with any civic, social, charitable, educational, political, professional, fraternal, benevolent or religiously affiliated organization, private club, or other membership organization. (For this question, you do not have to list your religious affiliation or membership in a religious house of worship or institution.). Include dates of membership and any positions you have held with any organization. Please note whether any such club or organization restricts membership on the basis of sex, race, color, religion, national origin, age, or disability.

¹ Minerals Management Service (MMS)/US Department of Interior (DoI); US Department of Defense (DoD)

Active Memberships: Society for Marine Mammalogy (Charter Member), American Civil Liberties Union; Southern Poverty Law Center; Planned Parenthood; National Women's History Museum; Sierra Club; Defenders of Wildlife; Sound Generations/Seattle; Public Radio (KNKX) and Public Television (KCTS9); Woodland Park Zoo

Former Memberships: Ecological Society of America, Acoustical Society of America, Society for Conservation Biology, American Geophysical Union, Association for Women in Science, Amnesty International; Lambda Legal Defense Fund; Nature Conservancy; Ocean Conservancy, World Wildlife Fund; San Diego Zoo; National Organization for Women; Museum for Women in the Arts

I have held no leadership or staff positions in any of these organizations. None of these organizations restricts membership on the basis of sex, race, color, religion or national origin

13. Have you ever been a candidate for and/or held a public office (elected, non-elected, or appointed)? **NO** If so, indicate whether any campaign has any outstanding debt, the amount, and whether you are personally liable for that debt.

14. List all memberships and offices held with and services rendered to, whether compensated or not, any political party or election committee within the past ten years. If you have held a paid position or served in a formal or official advisory position (whether compensated or not) in a political campaign within the past ten years, identify the particulars of the campaign, including the candidate, year of the campaign, and your title and responsibilities. **Not Applicable**

15. Itemize all political contributions to any individual, campaign organization, political party, political action committee, or similar entity of \$500 or more for the past ten years.

Not Applicable

16. List all scholarships, fellowships, honorary degrees, honorary society memberships, military medals, and any other special recognition for outstanding service or achievements.

- 2020 Arctic Medal Recipient, International Arctic Science Committee (IASC)
- 2020 Elected to the Washington State Academy of Sciences (WSAS)
- 2019 Arctic Medal Finalist, International Arctic Research Science Committee (IASC)
- 2015 NOAA Gold Medal Award, NMFS-OAR Bering Sea Research Team
- 2006 Antarctica Service Medal, National Science Foundation
- 2005 United States Department of Commerce, Bronze Medal (Group Award)
- 1998 SAIC Outstanding Senior Scientist, SPAWAR Bio-Acoustic Program
- 1995 Hawaii Mariners Associations Graduate Student Award for Conservation of Pacific Cetaceans: Administered through Scripps Institution of Oceanography
- 1989 SAIC Outstanding Senior Scientist, Alaskan Arctic Field Program

17. Please list each book, article, column, Internet blog posting, or other publication you have authored, individually or with others. Include a link to each publication when possible. Also list

any speeches that you have given on topics relevant to the position for which you have been nominated. Do not attach copies of these publications unless otherwise instructed.

Please see Resume: PUBLICATIONS and PROFESSIONAL PRESENTATIONS

18. List all digital platforms (including social media and other digital content sites) on which you currently or have formerly operated an account, regardless of whether or not the account was held in your name or an alias. Include the name of an "alias" or "handle" you have used on each of the named platforms. Indicate whether the account is active, deleted, or dormant. Include a link to each account if possible. **I have no such accounts**

19. Please identify each instance in which you have testified orally or in writing before Congress in a governmental or non-governmental capacity and specify the date and subject matter of each testimony. **Not Applicable**

20. Given the current mission, major programs, and major operational objectives of the department/agency to which you have been nominated, what in your background or employment experience do you believe affirmatively qualifies you for appointment to the position for which you have been nominated, and why do you wish to serve in that position?

I have been nominated to become a Commissioner for the US Marine Mammal Commission (MMC). The central mission of the MMC is to ensure the best available science is applied to the conservation and management of marine mammal species and populations such that they remain significant functioning elements of the ecosystems of which they are a part.

Since 1978, I have conducted scientific research on marine mammal bioacoustics and ecology, and on the ocean environment in which they live. Most of my work has been directed toward cetaceans in the Pacific Arctic region, especially gray and bowhead whales which are hunted for subsistence by Siberian and Alaskan Indigenous people. This background makes me especially suited to contribute directly to four of the MMC's Priority Topic Areas, namely: Arctic Climate Change and Marine Mammal Co-Management with Indigenous Communities; Marine Mammal Health and Strandings; International Engagement; and Species of Concern.

A few examples of my contributions include my service as Chair of the Environmental Concerns Working Group of the International Whaling Commission (IWC) Scientific Committee, and contributions to IWC scientific meetings and workshops from 1987-2017. As a member of the Cetacean Specialist Group of the International Union for the Conservation of Nature (IUCN), I posted a notification of the increasing risk of ship strike for baleen whales near the Bering Strait <u>https://iucn-csg.org/baleen-whales-in-the-crosshairs-potential-for-increased-ship-strike-risk-in-and-near-bering-strait/.</u> I was NOAA's lead scientist at the initiation of the Distributed Biological Observatory in the Pacific Arctic and led NOAA's Synthesis of Arctic Research project. Currently, I serve as a Science Advisor to the <u>U. S. Marine Mammal Commission</u>, the <u>NOAA Marine Mammal Unusual</u> <u>Mortality Event (UME)</u> Working Group, and the <u>Washington State Academy of Sciences</u>. I was honored to receive the 2020 IASC Medal in recognition of my *Outstanding* Achievement in Understanding Marine Mammals as Ecosystem Sentinels and How Climate Change is Influencing the Phenology of Arctic Species. IASC medals are given for exceptional and sustained contributions to the understanding of the Arctic, with a single award made each year.

I wish to serve as a Commissioner to the MMC to apply my scientific expertise in marine mammal ecology and ocean health, as well as my experience in science and management leadership, to the stated goals of the Commission.

21. What do you believe are your responsibilities, if confirmed, to ensure that the department/agency has proper management and accounting controls, and what experience do you have in managing a large organization?

My responsibilities would be to work closely with the other Commissioners and with the MMC Executive Director and General Counsel to ensure the Commission has proper management and accounting controls. I served as the Director of the Marine Mammal Laboratory and as Program Manager of the Cetacean Assessment and Ecology Program at NOAA's Alaska Fisheries Science Center where my duties included the management of organizations both larger (~80 personnel) and roughly the same size (~20 personnel) as the MMC, respectively.

22. What do you believe to be the top three challenges facing the department/agency, and why?

1. Developing effective conservation and management plans for marine mammal species and populations in our current era of rapid global warming. <u>Why</u>: Marine mammals can act as ecosystem sentinels, but to do so research on their ecology and health must be included in multi-disciplinary science and management activities the results of which can support the development of dynamic ocean management protocols.

2. Fostering effective co-management of marine mammal populations with Arctic Indigenous Peoples, both in US waters and internationally. <u>Why:</u> It is essential that humans learn to communicate across cultures and political boundaries to act as effective stewards of the natural resources on our planet.

3. Maintaining effective communications with representatives in the US Congress and the public to keep them informed of how MMC is engaged in seeking effective and equitable ways to conserve and manage marine mammal species and populations. Why: When the MMC was established in step with the October 1972 passage of the Marine Mammal Protection Act it set for a national policy to prevent marine mammal species and population stocks from diminishing, as a result of human activities, beyond the point at which they cease to be significant *functioning elements of the ecosystems of which they are a part.* That remains at the heart the Commission's work and communication with the public and US Congress is key to achieving success.

B. POTENTIAL CONFLICTS OF INTEREST

1. Describe all financial arrangements, deferred compensation agreements, and other continuing dealings with business associates, clients, or customers. Please include information related to retirement accounts.

I have received a monthly annuity payment from the DoC/Agriculture since my retirement from NOAA/Fisheries in October 2018.

2. Do you have any commitments or agreements, formal or informal, to maintain employment, affiliation, or practice with any business, association or other organization during your appointment? If so, please explain.

I am a Science Advisor to the MMC for which I receive occasional payment, which is reported for tax purposes via an annual 1099.

3. Indicate any investments, obligations, liabilities, or other relationships which could involve potential conflicts of interest in the position to which you have been nominated. Explain how you will resolve each potential conflict of interest.

None. In connection with the nominations process, I have consulted with the Office of Government Ethics and the Marine Mammal Commission's designated agency ethics official to identify any potential conflicts of interest. Any potential conflicts of interest will be resolved in accordance with the terms of an ethics agreement that I have entered into with MMC's designated agency ethics official and that has been provided to this Committee. I am not aware of any potential conflicts of interest.

4. Describe any business relationship, dealing, or financial transaction which you have had during the last ten years, whether for yourself, on behalf of a client, or acting as an agent, that could in any way constitute or result in a possible conflict of interest in the position to which you have been nominated. Explain how you will resolve each potential conflict of interest.

None. In connection with the nominations process, I have consulted with the Office of Government Ethics and the Marine Mammal Commission's designated agency ethics official to identify any potential conflicts of interest. Any potential conflicts of interest will be resolved in accordance with the terms of an ethics agreement that I have entered into with MMC's designated agency ethics official and that has been provided to this Committee. I am not aware of any potential conflicts of interest.

5. Identify any other potential conflicts of interest, and explain how you will resolve each potential conflict of interest.

None. In connection with the nominations process, I have consulted with the Office of Government Ethics and the Marine Mammal Commission's designated agency

ethics official to identify any potential conflicts of interest. Any potential conflicts of interest will be resolved in accordance with the terms of an ethics agreement that I have entered into with MMC's designated agency ethics official and that has been provided to this Committee. I am not aware of any potential conflicts of interest.

6. Describe any activity during the past ten years, including the names of clients represented, in which you have been engaged for the purpose of directly or indirectly influencing the passage, defeat, or modification of any legislation or affecting the administration and execution of law or public policy.

I have not been involved in any such activities.

C. LEGAL MATTERS

1. Have you ever been disciplined or cited for a breach of ethics, professional misconduct, or retaliation by, or been the subject of a complaint to, any court, administrative agency, the Office of Special Counsel, professional association, disciplinary committee, or other professional group? **NO**

If yes: a. Provide the name of agency, association, committee, or group;

b. Provide the date the citation, disciplinary action, complaint, or personnel action was issued or initiated;

c. Describe the citation, disciplinary action, complaint, or personnel action;

d. Provide the results of the citation, disciplinary action, complaint, or personnel action.

- Have you ever been investigated, arrested, charged, or held by any Federal, State, or other law enforcement authority of any Federal, State, county, or municipal entity, other than for a minor traffic offense? NO If so, please explain.
- Have you or any business or nonprofit of which you are or were an officer ever been involved as a party in an administrative agency proceeding, criminal proceeding, or civil litigation? NO If so, please explain.
- 4. Have you ever been convicted (including pleas of guilty or *nolo contendere*) of any criminal violation other than a minor traffic offense? **NO.** If so, please explain.
- 5. Have you ever been accused, formally or informally, of sexual harassment or discrimination on the basis of sex, race, religion, or any other basis? **NO**. If so, please explain.
- 6. Please advise the Committee of any additional information, favorable or unfavorable, which you feel should be disclosed in connection with your nomination. N/A

D. RELATIONSHIP WITH COMMITTEE

1. Will you ensure that your department/agency complies with deadlines for information set by congressional committees, and that your department/agency endeavors to timely comply with requests for information from individual Members of Congress, including requests from members in the minority?

Yes.

2. Will you ensure that your department/agency does whatever it can to protect congressional witnesses and whistle blowers from reprisal for their testimony and disclosures?

Yes.

3. Will you cooperate in providing the Committee with requested witnesses, including technical experts and career employees, with firsthand knowledge of matters of interest to the Committee?

Yes.

4. Are you willing to appear and testify before any duly constituted committee of the Congress on such occasions as you may be reasonably requested to do so?

Yes

(Nominee is to include this signed affidavit along with answers to the above questions.)

F. AFFIDAVIT

Sue Ellen Moore being duly sworn, hereby states that he/she has read and signed the foregoing Statement on Biographical and Financial Information and that the information provided therein is, to the best of his/her knowledge, current, accurate, and complete.

Due Ellen Moore

Signature of Nominee

Subscribed and sworn before me this day of 2 June 2022.

State of Washington Commission # 192843 My Comm. Expires Jun 22, 2025

FERNANDO G FELICIANO Notary Public

Notary Public

SUE E. MOORE, PhD Affiliate Professor Center for Ecosystem Sentinels/Biology Department, University of Washington

SYNOPSIS

I hold a BA in Biology from the University of California, San Diego, a MS in Biology from San Diego State University, and a PhD in Biological Oceanography from Scripps Institution of Oceanography. I served as Cetacean Program Leader, then as Director, at the National Oceanographic and Atmospheric Administration (NOAA) Alaska Fisheries Science Center (AFSC) National Marine Mammal Laboratory, 1998-2004. From 2004-2008, I was a Visiting Scholar on detail to the Applied Physics Laboratory at the University of Washington (APL/UW) to develop, support and coordinate passive acoustic and Arctic-related research programs. In 2008, I returned to NOAA/Fisheries as a Research Scientist in the Office of Science & Technology, to provide leadership in both Arctic and underwater acoustic science. In 2012, I was promoted to the position of NOAA Senior Scientist and, until 2018, was the Lead Investigator on the Synthesis of Arctic Research (SOAR) program. The SOAR program resulted in two special issues, one in Progress in Oceanography (2015) and the other in Deep-Sea Research II (2018), each comprised of 16 peer-reviewed papers focused on impacts of climate change on Arctic ecosystems; I was the lead Editor of both volumes. In addition, I Chaired the US Interagency Arctic Research Policy Committee's Collaboration Team for the Distributed Biological Observatory (DBO), a novel ocean observatory focused on tracking biological shifts to changing ocean climate in the Pacific Arctic sector.

Since 2006, I have enjoyed a strong connection with the University of Washington (UW), as an Affiliate Professor in both the Department of Biology and the School of Aquatic and Fishery Sciences. I retired from NOAA in late 2018, in part to contribute to the further development of the Center for Ecosystem Sentinels in the Biology Department at UW. In addition, I continue to serve as a science advisor on a number of panels including: the US Marine Mammal Commission; the US Arctic Marine Biodiversity Observing Network; the International Whaling Commission Scientific Committee; the IUCN Cetacean Specialists Group and NOAA's Working Group on Unusual Mortality Events (see: https://ecosystemsentinels.org/sue-moore/).

RESEARCH FOCUS

My research focus is Arctic marine ecology, impacts of climate change on polar ecosystems and marine mammal bioacoustics. I have conducted research on whales in the Alaskan Arctic since 1981 and have authored or co-authored 126 peer reviewed publications. Current investigations include determining the effects of climate change on the feeding ecology of bowhead and gray whales, and creating mitigation scenarios to guard Arctic whales, walruses and seals from negative impacts associated commercial shipping and offshore oil and gas development. At the APL/UW, my work focused on the development of passive acoustic tools (autonomous sea gliders and recorders) for use in ocean observing systems. My overarching goal in all these endeavors is to contribute scientific leadership and coordination to multi-disciplinary marine research programs.

EDUCATION

- 1997 Scripps Institution of Oceanography, Ph.D. in Biological Oceanography
- 1979 San Diego State University, M.S. Biology (Behavioral Ecology)
- 1976 University of California, San Diego, B.A. Biology (Mammalian Physiology)

PROFESSIONAL HISTORY

2006-present	Affiliate Professor, UW/Biology, Center for Ecosystem Sentinels
2006-2020	Affiliate Professor, UW/School of Aquatic Fishery Sciences
2012-2018	Senior Scientist, NOAA/Fisheries – Office of Science & Technology
2008-2012	Research Scientist, NOAA/Fisheries – Office of Science & Technology
2004-2008	Principal Oceanographer/Visiting Scholar, on detail from NOAA/AFSC to
	APL-UW
2002-2004	Director, NOAA/National Marine Mammal Laboratory (NMML)
1998-2002	Program Leader, NMML Cetacean Assessment & Ecology
1988-1998	Principal Investigator & Senior Scientist
	Science Applications International Corporation (SAIC -via contract)
	Arctic Whale Surveys and Assessment (MMS/DoI ¹)
	Cetacean Acoustic Monitoring and Mitigation (US Navy/DoD)
	Cetacean Acoustic Detection and Assessment (NOAA/SWFSC)
1978-1988	Program Manager & Field Team Leader
	SEACO, Incorporated (SEACO -via contract)
	Arctic Whale Surveys and Assessment (MMS/DoI)
	Cetacean Acoustics and Husbandry (US Navy/DoD)

AWARDS and RESEARCH GRANTS

- 2020 Arctic Medal Recipient, International Arctic Science Committee (IASC)
- 2020 Elected to the Washington State Academy of Sciences (WSAS)
- 2019 NSF Distributed Biological Observatory, 5-year award (Co-PI)
- 2019 Arctic Medal Finalist, International Arctic Research Science Committee (IASC)
- 2017 NSF Distributed Biological Observatory, 3-year extension (Co-PI)
- 2015 NOAA Gold Medal Award, as member of the NMFS-OAR Bering Sea Research Team
- 2011 BOEM-NOAA Inter-Agency Agreement to support Arctic Synthesis (\$1.8M)
- 2010 NSF Distributed Biological Observatory, 5-year award (Co-PI)
- 2009 Minerals Management Service, COMIDA grant to NOAA/PMEL
- 2008 Navy Environmental Office (N45); annual funding for IPA to APL/UW (from 2004)
- 2007 North Pacific Research Board (NPRB): Co-Investigator on Oceanographic Correlates of the Occurrence of Endangered Whales in the Bering Sea
- 2006 Antarctica Service Medal of the United State of America, National Science Foundation
- 2005 United States Department of Commerce, Bronze Medal (Group Award) For developing and implementing novel research methods for monitoring the abundance, trends, distribution and movements of beluga whales.
- 2004 NPRB Research Grant: Co-Investigator on Using Autonomous Hydrophones to Monitor Large Whales in the Bering Sea

¹ Minerals Management Service (MMS)/US Department of Interior (DoI); US Department of Defense (DoD)

2003 NSF Research Grant: Collaborator on SNACS/Bowhead Whales @ Barrow, AK

- 2001 NSF Incubation Activity Grant: Co-PI on Biocomplexity in the Alaskan Arctic
- 1999 NSF Research Grant: Co-PI on Antarctic-GLOBEC Mysticete Whale Acoustics
- 1998 SAIC Outstanding Senior Scientist, SPAWAR Bio-Acoustic Program
- 1995 Hawaii Mariners Associations Graduate Student Award for Conservation of Pacific Cetaceans: Administered through Scripps Institution of Oceanography
- 1989 SAIC Outstanding Senior Scientist, Alaskan Arctic Field Program

PROFESSIONAL AFFILIATIONS and SERVICE

a. Professional Societies

Society for Marine Mammalogy (Charter Member) Ecological Society of America Acoustical Society of America Society for Conservation Biology American Geophysical Union Association for Women in Science

b. Advisory Service

International Whaling Commission, Scientific Committee (IWC)

1	
2016	Science Steering Committee, Anthropogenic Noise' Pre-Meeting
2014	Science Steering Committee, Arctic/Anthropogenic Impacts Workshop
2007	Science Steering Committee, 'Disease Workshop' Pre-Meeting
2006	Science Steering Committee, 'Seismic Workshop' Pre-Meeting
2005	Co-Chair and Coordinator, Sea Ice Symposium Pre-Meeting
2004	Coordinator, Environmental Concerns – Acoustic sub-Group
1999-2018	Annual Meetings of Scientific Committee, Member of the US Delegation
	Chair of Environmental Concerns Working Group (2008-2012)
	Co-Chair IWC/Antarctic Collaboration (2000-2005)
1996	Climate Change Symposium, Invited Scientist
1987-91	Annual Meetings of Scientific Committee, Invited Scientist

U.S. National Science Foundation

- 2012-present Co-Investigator: Arctic Observing Network/DBO
- 2007-12 SEARCH Science Steering Committee
- 2005-08 Science Advisory Committee: Barrow Arctic Science Consortium.
- 2004-07 Co-Investigator: Study of North Alaskan Coastal Systems (SNACS).
- 2003-05 Advisory Committee Member: Arctic Systems Science (ARCSS), SBI Program
- 2000-03 Co-Investigator: Southern-GLOBEC Antarctic Mysticete Whale Project.
- 2001-02 Collaborator: Western Whaling Project/Gambell Whalers Interviews.
- 2000-01 Co-Investigator: Arctic Biocomplexity Workshop Grant (IA).
- 1999-03 Science Steering Committee Member: ARCSS/SBI Program.
- 1999 Invited Scientist: ARCSS/Study of Environmental Arctic Change Workshop.

U.S. Marine Mammal Commission

2005-present Committee of Scientific Advisors

2020 Discussant - AAAS Marine Mammal Health Assessments Session

2004-07 Co-PI – Assessing the Impacts of Climate Change on Arctic Marine Mammals

- 2003 Invited Specialist Consultation on Future Directions in Marine Mammal Research
- 2000 Invited Specialist Impacts of Changes in Sea Ice and other Environmental Parameters

in the Arctic

c. Membership on Panels

International Committees for Arctic Research Planning

2011-present	Pacific Arctic Group (PAG) – advising on DBO-related activities
2008-10	SCAR/IASC Bi-Polar Action Group – advising on IPY legacy
2006-08	Arctic Marine Shipping Assessment Steering Group, Arctic Council
2004-05	ICARPII -WG5 & 6: Pan-Arctic Conference, November 2005
2004-05	IUCN Independent Scientific Review Panel for Western Gray Whales
2002-05	International Arctic Polynya Program - Science Coordinating Group

Service on Science Panels – Arctic Ecosystem & Marine Mammal Focus

2020-present	NOAA Biologically Important Areas II, Arctic Marine Mammal Working Group
2016-present	NOAA Marine Mammal Unusual Mortality Event (UME) Advisory Committee
2012-17	Chair, Interagency Arctic Research Policy Committee/DBO CT
2011-16	North Slope Borough/Shell Baseline Studies Program
2006-12	North Slope Science Initiative Science Technical Advisory Panel
2004-08	Barrow Arctic Science Consortium, Science Advisory Group
2003-05	Member Science Advisory Committee, Alaska Sea Life Center
2000-04	Invited Panelist: ARCUS Arctic Forum, Annual Meeting in Washington DC

Service on Science Panels – Acoustic Focus

2006-18	NOAA Passive Acoustics Ocean Observing Program – Steering Committee
2005	NEPTUNE Feasibility Workshop, University of Washington
2005	NSF/Barrow Cabled Observatory Workshop: Acoustic Monitoring Plan
2005	U.S. Navy/N45: Marine Mammals on Navy Training Ranges Workshop
2005	ORION Request for Assistance, Letter of Intent: Fisheries and Marine Mammals
2004	NOAA Workshop on Anthropogenic Sound and Marine Mammals
2003	NEPTUNE Science Planning Workshop: Regional Cabled Observatory
2002	NOAA Workshop on Future Directions for Acoustic Marine Mammal Surveys
2001	NOAA PR-Navy-MMS: Marine Mammals & Noise – Research and Mitigation
1992-98	U.S. Navy/N45: various panels and workshops on mitigation of the effects of
	underwater noise from military exercises and ship shock trials in the North Pacific
1982-91	U.S. Minerals Management Service: various panels, workshops and Information
	Transfer Meetings

d. Teaching and Mentoring

Affiliate Professor, University of Washington

2006-present Department of Biology, College of Arts and Sciences

2006-2020 School of Aquatic and Fishery Sciences (SAFS)

National Research Council Associates Program, National Academies

2003-2008 Advisor, post-doctoral positions at NOAA/AFSC

Associate Research Scientist, Scripps Institution of Oceanography

1999-2005 Marine Physical Laboratory: Co-PI, Southern-Ocean GLOBEC Project *Graduate Student Committees*

Amanda Warlick: University of Washington/SAFS – PhD (2022) Donna Hauser: University of Washington/SAFS – PhD (2016) Heather Smith: University of Washington/SAFS Ph.D. (2009) Julie Mocklin: University of Washington/Forestry M.S. (2009) Carole Durussel: University of Oldenburg (Germany) - M.S. (2009) Lisa Munger: Scripps Institution of Oceanography – Ph.D. (2007) Anna-Christina Cucknell: University of Wales, Bangor - M.S. (2007) Ana Sirovic: Scripps Institution of Oceanography – Ph.D. (2006) Erin Oleson: Scripps Institution of Oceanography – Ph.D. (2005) Dan Vos: University of Alaska-Anchorage/Biology - M.S. (2004) Sonya Meier: University of Victoria/Biology - M.S. (2003) Lori Mazzuca: University of Washington/School Marine Affairs - M.S. (2002) Kathleen Stafford: Oregon State University - Ph.D. (2001)

Courses Taught

1988-90	UCSD, Extension Program: <i>Marine Biology</i> (1 quarter/year)
1979-81	San Diego City College: Oceanography & Marine Biology (3 quarters/year)
1977-79	San Diego State University: Introductory Biology (2 semesters/year)

PUBLICATIONS

*Peer-reviewed publications: reverse chronological order; 1st authored papers appear first 2022-2017 (18)

- Moore, S.E., J.T. Clarke, S.R. Okkonen, J.M. Grebmeier, C.L. Berchok, K.M. Stafford. 2022. Changes in gray whale phenology and distribution related to prey variability and ocean biophysics in the northern Bering and eastern Chukchi seas. *PLoS ONE* 17(4): e0265934. OPEN ACCESS
- Gulland, F.M.D., J.D. Baker, M. Howe, E. LaBrecque, L. Leach, S.E. Moore, R.R. Reeves, P.O. Thomas. 2022. A review of climate change effects on marine mammals in United States waters: Past predictions, observed impacts, current research and conservation imperatives. *Climate Change Ecology* 3, 100054. OPEN ACCESS
- Stafford, K.M., H. Melling, S.E. Moore, C.L. Berchok. E.K. Braen, A.M. Brewer, B.M. Kimber. 2022. Marine mammal detections on the Chukchi Plateau 2009-2020. *Journal of the Acoustical Society of America* 151(4): 2521-2529.
- Moore, S.E., J.C. George and R.R. Reeves. 2021. Bowhead whale ecology in changing highlatitude ecosystems. pp. 417-428 *In* The Bowhead Whale, *Balaena mysticetus*, J.C. George and J.G.M. Thiwiesen, (eds) Elsevier.
- Ahonen, H., K.M. Stafford, C. Lyderson, C.L. Berchok, S.E. Moore and K.M. Kovacs. 2021. Interannual variability in acoustic detection of blue and fin whale calls in the Northeast Atlantic High Arctic between 2008 and 2019. *Endangered Species Research* 45: 209-224.

- George, J.C., S.E. Moore J.G.M. Thewissen. 2020. Bowhead whales: recent insights into their biology, status and resilience. Arctic Report Card 2020, R. L. Thoman, J. Richter-Menge, and M. L. Druckenmiller, Eds. <u>https://doi.org/10.25923/cppm-n265</u>
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- Moore, S.E. 1998. Cetacean habitat selection in the Alaskan Arctic during summer and autumn, 1982-91. *In:* D.J. St. Aubin (ed.), Arctic Seas: Currents of Change, An International Symposium in support of International Year of the Ocean, Mystic Aquarium, Mystic Connecticut (October).
- **Moore, S.E.** 1993. Environmental features and cetacean habitats in the Alaskan Arctic. Symposium on Cetacean Habitats, 10th Biennial Conference on the Biology of Marine Mammals, Galveston, Texas (November).
- Moore, S.E. and D.K. Ljungblad. 1987. Analysis of median water depth at bowhead whales sightings to assess the occurrence of potential shifts in the fall migration route across the Alaskan Beaufort Sea, 1979-1986. *In:* Fourth Conference on the Biology of the Bowhead Whale, *Balaena mysticetus*, Anchorage, Alaska (March).
- Moore, S.E., J.C. Bennett and D.K. Ljungblad. 1987. Preliminary results of an acoustic study conducted off Barter Island, Alaska during the 1986 fall bowhead whale migration. *In:* 4th Conference on the Biology of the Bowhead Whale, *Balaena mysticetus*, Anchorage, Alaska (January).
- Ljungblad, D., **S. Moore**, D.R. VanSchoik. 1985. Observed densities of bowhead whales in the Beaufort, Chukchi and Bering Seas from 1979 through 1983. 1985. *In:* 3rd Conference on the Biology of the Bowhead Whale, *Balaena mysticetus*, Anchorage, Alaska (January).

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- Reeves, R.R., R.L. Brownell, A. Burdin, J.C. Cooke, J.D. Darling, G.P. Donovan, F.M.D. Gulland, S.E. Moore, D.P. Nowacek, T.J. Ragen, R.G. Steiner, G.R. VanBlaricom, A. Vedenev and A.V. Yablokov 2005. Report of the Independent Scientific Review Panel on the Impacts of Sakhalin II, Phase 2 on Western North Pacific Gray Whale and Related Biodiversity. IUCN, Gland, Switzerland and Cambridge, 123 pp.
- Moore, S.E. 2002. Cetacean detection and assessment via passive acoustics. Appendix B *In*: Future Directions for Acoustic Marine Mammal Surveys: Stock Assessment and Habitat Use. D. Mellinger and J. Barlow (co-convenors), NOAA OAR Special Report No. 2557, 38 pp.
- Moore, S.E. 2000. Beluga distribution, movements and habitat selection in the Beaufort Sea, Alaska. *In*: Report of the Workshop on Bering-Chukchi-Beaufort Belugas. H.P. Huntington (ed), Seattle, Washington, 32 pp.
- Moore, S.E., M.E. Dahlheim, K.M. Stafford, C.G. Fox, H.W. Braham, M.A. McDonald and J. Thomason. 1999. Acoustic and visual detection of large whales in the eastern North Pacific Ocean. NOAA Tech. Memo. NMFS-AFSC-107.
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- Moore, S.E. 1990. Spotted dolphin bioacoustics. NOAA Admin. Rep. NMFS-SWFSC-LJ-90-24C.
- Moore, S.E. and J.T. Clarke. 1992. Distribution, abundance and behavior of endangered whales in the Alaskan Chukchi and western Beaufort Seas, 1991. OCS Study MMS-92-00 Final Report prepared by SEACO, Inc., 237 pp.
- Moore, S.E. and J.T. Clarke. 1991. Aerial surveys of endangered whales in the Alaskan Chukchi and western Beaufort Seas, 1990. OCS Study MMS 91-0017, Final Report by SEACO, Inc.

- Moore, S.E. and J.T. Clarke. 1990. Distribution, abundance and behavior of endangered whales in the Alaskan Chukchi and western Beaufort Sea, 1989. OCS Study MMS-90-0051, Final Report prepared by SEACO, Inc., 240 pp.
- Ljungblad, D.K., **S.E. Moore**, J.T. Clarke and J.C. Bennett. 1986. Aerial Surveys of Endangered Whales in the Northern Bering, Eastern Chukchi, and Alaskan Beaufort Seas, 1985: with a seven year review, 1979-85. Naval Ocean Systems Center (NOSC) Technical Report 1111.
- Ljungblad, D.K. S.E. Moore, J.T. Clarke, D.R. VanSchoik and J.C. Bennett. 1985 Aerial surveys of endangered whales in the northern Bering, eastern Chukchi and Alaskan Beaufort Seas, 1984: with a six year review, 1979-1984. NOSC Technical Report 1046.
- Ljungblad, D.K., **S.E. Moore** and D.R. VanSchoik. 1984. Aerial surveys of endangered whales in the northern Bering, eastern Chukchi and Alaskan Beaufort Seas 1983: with a five-year review 1979-1983. NOSC Technical Report 955.
- Moore, S.E., D.K. Ljungblad and D.R. Schmidt. 1984. Ambient, industrial and biological sounds recorded in the northern Bering, eastern Chukchi and Alaskan Beaufort Sead during the seasonal migrations of the bowhead whale (*Balaena mysticetus*), 1979-1982. Final Report prepared for the Minerals Management Service, Alaska Region, Prepared by SEACO Incorporated, San Diego, California.
- Ljungblad, D.K., **S.E. Moore** and D.R. VanSchoik. 1983. Aerial surveys of endangered whales in the Beaufort, Chukchi and northern Bering Seas, 1982. NOSC Technical Report 605.
- Ljungblad, D.K., **S.E. Moore**, D.R. VanSchoik and C.S. Winchell. 1982. Aerial surveys of endangered whales in the Beaufort, Chukchi and northern Bering Seas. NOSC Technical Report 286.

PROFESSIONAL PRESENTATIONS (partial list)

2021

- IASC Medal Lecture Marine Mammals as Sentinels of Ecosystem Variability in a Rapidly Warming Arctic (Arctic Science Summit Week)
- Invited Presentation Gray Whale Feeding Ecology in the Northern Bering and Eastern Chukchi Seas (NOAA/UME WG)

2020

AAAS Discussion Leader – Marine Mammal Health Session

Invited Presentation - Pacific and Arctic: Ocean Ecosystems Overview (NOAA/UME WG)

2019

- Invited Presentation Synthesis of Arctic Research (AMSS)
- Invited Presentation The Distributed Biological Observatory: a change detection array in the Pacific Arctic (Arctic Council: PAME Conference)
- Invited Presentation Including Underwater Sound in Arctic and Subarctic Integrated Ecosystem Assessments (Arctic Council: PAME Conference)

- Invited Presentation The Arctic Marine Pulses (AMP) Model as a Conceptual Framework for the Distributed Biological Observatory (Ocean Sciences Meeting)
- Invited Presentation Including Underwater Sound in Arctic and Subarctic Integrated Ecosystem Assessments (ESSAS)

Invited Presentation – The Distributed Biological Observatory (DBO): tracking ocean change offshore Alaska and beyond (Western Alaska Interdisciplinary Science Conference

2017

Plenary Presentation – Developing the Arctic Marine Pulses Model (AMSS)

Invited Presentation – Developing the Arctic Marine Pulses Model (ESSAS)

Invited Presentation – The DBO as an Ocean Observatory for the Beaufort Sea (US-CAN)

Invited Presentation - Upper Trophic Level Marine Time Series (Gordon Research

Conference: Polar Marine Science)

2016

Plenary Presentation – The Arctic Marine Pulses Model (AMSS)

Invited Presentation – The Arctic Marine Pulses Model (Ocean Sciences Meeting)

Invited Presentation – Distributed Biological Observatory, Implementation Plan (AOS)

2015

Plenary Presentation – SOAR Phase I & Phase II, Alaska Marine Science Symposium (AMSS) **Invited Presentation** – Arctic Marine Resource Governance Workshop, Reykjavik, Iceland **Plenary Presentation** – 21st Biennial Marine Mammal Society

2014

- Invited Presentation Marine Mammals and Oceanography in the 'New Normal' Pacific Arctic, The Big Thaw Session, 2014 AAAS Annual Meeting (February)
- Key Note Presentation Marine Mammals in the 'New Normal' Arctic, IWC Workshop on Impacts of Marine Activities on Cetaceans in the Arctic (March)
- **Key Note Presentation** *Marine Mammals and Climate Change*, Annual Meeting of the U.S. Marine Mammal Commission (May)

2013

- Plenary Presentation Synthesis of Arctic Research (SOAR): program update, PacMars-SOAR Open Science meeting – Alaska Marine Science Symposium (January)
- Plenary Presentation Marine Mammals and Sea Ice Loss in the Pacific Arctic: Tracking Ecosystem Responses to the 'New Normal – Linking Polar Observations, Processes and Models at Regional & Global Scales -- Gordon Research Conference (March)
- Key Note Presentation Marine Mammals and Sea Ice Loss in the Pacific Arctic: Tracking Ecosystem Responses to the 'New Normal' – Response of Arctic Marine Ecosystems to Climate Change – Wakefield Symposium (March)
- Invited Presentation Marine Mammals as Ecosystem Sentinels in the Pacific Arctic sector NOAA Arctic Science Days (May)
- Invited Presentation Marine Mammals and Climate Change in the Pacific Arctic: Impacts & Resilience. Biodiversity Resilience Symposium, University of Oxford UK (October)

- Plenary Presentation Marine Mammals and Sea Ice Loss in the Pacific Arctic: tracking ecosystem responses to the New Normal; Town Hall Introducing the Synthesis of Arctic Research (SOAR) project Alaska Marine Science Symposium (AMSS; January)
- **Invited Presentation** *Biological Responses to the New Normal marine environment in the Pacific Arctic Region* – Marine Mammal Commission, Annual Meeting (January)
- **Invited Presentation** *Two New Projects in the Pacific Arctic Region the DBO and SOAR NSSI* STAP meeting (February)
- Invited Presentation Marine Mammals and Sea Ice Loss in the Pacific Arctic: tracking

ecosystem response to the New Normal; **+Poster Presentation** Acoustic Monitoring of Marine Life using a Fiber-optic Ocean Observing System **+Town Hall Presentation** Higher Trophics/Local Communities – Linking Fish, Seabirds and Marine Mammals to DBO Sampling AGU/ASLO Ocean Science Meeting (February)

2011

- **Invited Symposia Presentation** *Marine mammals and sea ice loss in the Pacific Arctic: challenges and opportunities during a period of rapid climate change*; 25th International Congress for Conservation Biology (December)
- Invited Presentation Fish, Seabirds and Marine Mammal Observations during the 2010-2011 Pilot DBO project, IOS, Sidney BC (November)
- **Invited Plenary Presentation** *Science Partnerships in the Pacific arctic: the marine mammal nexus*; 2nd International Marine Conservation Congress, Victoria BC Canada (May)
- **Invited Presentation** *Listening to marine mammals at basin to local scales*; Acoustical Society of America, Ocean Observing Systems session: Acoustical Observations and Applications I (May)
- Invited Presentation Marine fishes, birds and mammals as sentinels of ecosystem change in the Pacific Arctic: putting some backbone in the DBO; Arctic Science Summit Week (April)

2010

- Plenary Presentation Marine Mammals and Sea Ice Loss in the Pacific Arctic Alaska Marine Science Symposium (January)
- Marine Mammal in the Pacific Arctic with comparisons to Atlantic Arctic fauna Arctic Council - SWIPA Workshop (February)
- **Invited Presentation** Development of a Distributed Biological Observatory for the Pacific Arctic, State of the Arctic Conference (March)
- Invited Presentation A Distributed Biological Observatory for the Pacific Arctic a contribution to NOAA's Arctic Vision & Strategy; North Pacific Research Board Science Panel & AFSC speaker series (April)

Additional Presentations:

- A Distributed Biological Observatory for the Pacific Arctic, part of NOAA's Arctic Vision & Strategy – North Pacific Research Board, Executive Board meeting (May)
- Use of Passive Acoustic tools to detect marine mammals on Navy training ranges NOAA-Navy Acoustics Workshop (July)
- Partnerships in marine mammal research in the Alaskan Arctic, North Slope Science Initiative STAP meeting (September)
- Development of a Distributed Biological Observatory for the Pacific Arctic PICES Open-Science meeting (October)
- *Ecological and biologically important areas for marine mammals in the Pacific Arctic* IUCN EBSA & World Heritage Workshop (November)

- Marine Mammals of the Pacific Arctic a presentation to the Arctic Council, Marine Expert Monitoring Group, Workshop I, Tromso, Norway (January)
- Acoustic Impacts of Anthropogenic Activities to Marine Mammal offshore Alaska a presentation to the Chukchi Sea Acoustic Workshop, Anchorage, AK (February)
- Marine Mammals as Ecosystem Sentinel in the Pacific Arctic; invited speaker, Gordon Research Conference on Polar Marine Science, Lucca Italy (March)

- Marine Mammals in the Pacific Arctic Impacts of Recent Sea Ice Loss; Arctic Science Summit week, Bergen Norway (March)
- Summary of Research Activities on Marine Mammals off the North Slope of Alaska an informal presentation to the North Slope Science Initiative Science Technical Panel, Fairbanks, AK (April)
- *Higher Trophics* overview presentation at the Biological Response to Reduced Sea Ice in the Pacific Arctic Region Workshop, Seattle, WA (May)
- Passive Acoustic Detection of Marine Mammals a presentation to the Bering Strait Observation Workshop, Eatonville, WA (May)
- *Workshop on Climate Change and Cetaceans* overview presentation to the Ecological Concerns Standing Working Group of the IWC, Madeira, Portugal (June)
- Marine Mammals as Ecosystem Sentinels in the Pacific Arctic 18th Biennial Conference 2008
- Marine Mammals and Anthropogenic Noise, UW School of Marine Affairs: SMA 500 (OCT)
- Marine Mammals: insight to climate change through surveys and song UW Biology (October)
- Climate Change and Anthropogenic Noise: potential impact to marine mammals in the Arctic. Arctic Council, Arctic Marine Shipping Assessment workshop (September)
- Potential impact of offshore human activities on gray whales. IUCN Western Gray Whale Range-wide Workshop; Tokyo, Japan (September)
- A goal for ocean-wide shipping noise reduction. IWC Scientific Committee Meeting; Santiago, Chile (June)
- Marine Mammals and Climate Change Invited Plenary Address, SOMEMMA (May) Marine Mammals and Noise – Current Challenges, Brief to NAVSEA Advisory Panel (April) Passive acoustic surveys: AFSC research overview OBIS-SEAMAP PAM Workshop (April) Are gray whales and walrus responding to 'tinping points' in seasonal sea ice artent? 2008
- Are gray whales and walrus responding to 'tipping points' in seasonal sea ice extent? 2008 AGU Ocean Sciences Meeting (March)
- Are Gray Whales Ecosystem Sentinels? UW Alumni Group (February)
- Cetacean habitats and behavior offshore northwestern Alaska: comparisons across two decades Alaska Marine Science Conference (January)

- Marine Mammals and Anthropogenic Noise, UW School of Marine Affairs: SMA 500 (OCT) Are Gray Whales Ecosystem Sentinels? Public Symposia at the San Diego Museum of Natural History (August)
- Marine Mammals and Noise, Brief to the Assistant Secretary of the Navy, Installations and Environment (July)
- Summary of Seismic Surveys in Alaska and Western Canada IWC SC (May)
- Overview of Arctic research and assessment activities IWC (SC) (May
- Bowhead whale 'SNACS' near Barrow, Alaska: a study of environmental and anthropogenic variability, Alaska Fisheries Science Center Symposium Series (March)
- *Listening for whales in offshore waters of Alaska,* Alaska Marine Science Conference (January) **2006**
- Arctic Marine Mammals and Climate Change: Impacts and Resilience UW Biology Seminar (November)
- Marine Mammals and IPY:Research Opportunities; and Arctic Marine Mammals as Sentinels & Icons 4th Shelf Basin Exchange (SBE) Pan-Arctic Meeting, Sopot, Poland (October)

Overview of planned seismic surveys offshore northern Alaska, July-October Presented to the North Slope Science Initiative, Science Technical Group (June).

- *Impacts of Climate Change on Marine Mammal Habitats*. Presented to the American Society of Mammalogists (June).
- Bowhead whales in the Beaufort Sea. Presented to the International Whaling Commission, Scientific Committee Symposia on Seismic Surveys and Cetaceans (May).
- *Five Years of Passive Acoustics @ AFSC: Listening for Large Whales offshore Alaska.* Presented to the NOAA National Workshop on Passive Acoustics (April).
- SNACS: Bowhead Whale Surveys, 2005. Presented to the NSF Arctic System Science (ARCSS) Synthesis Workshop (March).
- Acoustic Sampling: OE Survey and Long-Term Sampling. Presented to NOAA Workshop II: Bowhead Whale Stock Structure Studies (March).
- Trends in sea ice cover in bowhead whale habitats. American Geophysical Union, Open Science Meeting, Honolulu, Hawaii (February).
- Gray Whales as Sentinels of Alaskan Ecosystem Variability. Alaska Marine Science Symposium, Anchorage, Alaska (January).
- Marine Mammals as Arctic Ecosystem Sentinels. Presented to the US Arctic Research Commission, Seattle, Washington (January).

- *Trends in sea ice cover in bowhead whale habitats.* 16th Biennial Conference on the Biology of Marine Mammals, San Diego (December).
- Marine Mammals and Climate Change in the Western Arctic: Relevance to NOAA Climate & *Ecosystem Goals*. Presented to the NOAA Climate Board, (September).
- *Trends in Arctic Sea Ice: Relevance to Large Whale Habitats.* International Whaling Commission, Scientific Committee Joint Symposium on High Latitude Sea Ice Environments, Ulsan, Korea (May).
- Marine Mammal Habitats in the Western Arctic: Relevance to IPY, ICARPII, and AOOS Research Planning. Arctic Science Summit Week, Pacific Arctic Group Workshop, Kunming China, (April).
- Intense Aggregations of Higher Trophics: Marine Mammals and Seabirds in Arctic Polynyas. Arctic Science Summit Week, Polynya Symposium: From Sentinels to Circum-Arctic Expanses, Kunming, China (April).
- Marine Mammal Habitats in the Western Arctic. NSF Shelf-Basin Interaction, PI Meeting, Monterey California (March).
- Marine Mammals and Seabirds at Arctic Margins and Gateways. 2nd International Conference on Arctic Research Planning (ICARPII), Planning Meeting, Paris, France (February).