

CURRICULUM VITAE

NICHOLAS B. D. PHELPS

135 Skok Hall, 2003 Upper Bufford Circle

Department of Fisheries, Wildlife, and Conservation Biology

College of Food, Agriculture, and Natural Resource Sciences

University of Minnesota

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EDUCATION

PhD 2009 – 2012. University of Minnesota, College of Veterinary Medicine, St. Paul, MN.
Veterinary Medicine – Comparative Medicine and Pathology.

Dissertation title: Improved diagnosis and management for viral hemorrhagic septicemia in fish.

MS 2005 – 2007. University of Arkansas – Pine Bluff, Pine Bluff, AR. Fisheries/Aquaculture.

Thesis title: Vertical transmission of *Ovipleistophora ovariae* within the eggs of golden shiners.

BS 2001-2005. Bemidji State University, Bemidji, MN. Aquatic Biology.

Senior project: Development of a mortality cap management strategy for yellow perch.

PROFESSIONAL POSITIONS

2017 – Present Director. Minnesota Aquatic Invasive Species Research Center, University of Minnesota.

2016 – 2017 Co-Director. Minnesota Aquatic Invasive Species Research Center, University of Minnesota.

2016 – Present Assistant Professor. Department of Fisheries, Wildlife, and Conservation Biology, College of Food, Agriculture, and Natural Resource Sciences, University of Minnesota.

2013 – 2016 Assistant Professor. Veterinary Population Medicine Department, College of Veterinary Medicine, University of Minnesota.

2011 – 2013 Instructor: Aquaculture Research and Extension. Minnesota Veterinary Diagnostic Laboratory/Veterinary Population Medicine Department /Extension, College of Veterinary Medicine, University of Minnesota.

2007 – 2011 Scientist: Aquaculture Diagnostic Specialist. Minnesota Veterinary Diagnostic Laboratory, College of Veterinary Medicine, University of Minnesota.

2005 – 2007 Research Assistant. University of Arkansas – Pine Bluff, Fish Health Laboratory.

PROFESSIONAL CERTIFICATION

2008 – Present Fish Health Inspector, American Fisheries Society – Fish Health Section.

PUBLICATIONS

Peer-reviewed (*student/advisee)

1. Escobar, L. E. *, S. Mallez, M. McCartney, C. Lee, D. P. Zielinski, R. Ghosal, P. G. Bajer, C. Wagner*, B. Nash, M. Tomamichel, P. Venturelli, P. P. Mathai, A. Kokotovich, J. Escobar-Dodero*, N. B. D. Phelps. 2017. Aquatic invasive species in the Great Lakes region: An overview. *Reviews in Fisheries Science* doi:10.1080/23308249.2017.1363715.
2. Mor, S. K., N. B. D. Phelps, T. F. F. Ng, K. Subramaniam, A. Primus, A. G. Armien, R. McCann, C. Puzach, T. Waltzek. 2017. Genomic characterization of a novel calicivirus, FHMCV-2012, from baitfish in the USA. *Archives of Virology* doi:10.1007/s00705-017-3519-6.
3. Romero-Alvarez, D., L. E. Escobar*, S. Varela, D. J. Larkin, N. B. D. Phelps. 2017. Forecasting distributions of an aquatic invasive species (*Nitellopsis obtusa*) under future climate scenarios. *PLoS One* 12(7):e0180930.
4. Escobar, L. E. *, H. Qiao, C. Lee, N. B. D. Phelps. 2017. Novel methods in disease biogeography: A case study with Heterosporosis. *Frontiers in Veterinary Science* doi:10.3389/fvets.2017.00105.
5. Mor, S. K., N. B. D. Phelps. 2016. Molecular detection of a novel totivirus from golden shiner (*Notemigonus crysoleucas*) baitfish in the USA. *Archives of Virology* 161(8): 2227-2234.
6. Escobar, L. E. *, H. Qiao, N. B. D. Phelps, C. K. Wagner*, D. J. Larkin. 2016. Ecological niche expansion associated with the rare Eurasian charophyte (*Nitellopsis obtuse*) becoming invasive in North America. *Scientific Reports* doi:10.1038/srep29037.
7. Escobar, L. E. *, J. Escobar-Dodero*, G. Kurath, M. E. Craft, N. B. D. Phelps. 2016. Potential distribution of the viral hemorrhagic septicemia virus (VHSV) in the Great Lakes region. *Journal of Fish Diseases* doi:10.1111/jfd.12490.
8. Mor, S. K., N. B. D. Phelps. 2016. Detection and molecular characterization of a novel piscine myocarditis-like virus from baitfish in the USA. *Archives of Virology* 161:1925-1931.
9. Phelps, N. B. D., S. K. Mor*, A. Armien, K. Pelican, S. M. Goyal. 2015. Description of the microsporidian parasite, *Heterosporis sutherlandae* n. sp., infecting fish in the Great Lakes region, USA. *PLOS One* 10(8):e0132027.
10. Papenfuss, J. T., N. B. D. Phelps, D. Fullton, P. Venturelli. 2015. Smartphones reveal angler behavior: A case-study of a popular mobile fishing application in Alberta, Canada. *Fisheries* 40:318-327.
11. Mor, S. K. *, N. B. D. Phelps, M. Barbknecht, M. A. Hoffman, S. M. Goyal. 2015. A multiplex RT-PCR for the detection of fish picornaviruses. *Journal of Virological Methods* 211:131-134.

12. Bekele, A. Z., S. K. Mor*, N. B. D. Phelps, S. M. Goyal, A. G. Armien. 2015. A case report of *Nosema ceranae* infection in honey bees in Minnesota. *Veterinary Quarterly* DOI: 10.1080/01652176.2014.981766.
13. Warg, J. V., T. Clement, E. R. Cornwell, A. Cruz, R. G. Getchell, C. Giray, A. E. Goodwin, G. H. Groocock, M. Faisal, R. Kim, G. E. Merry, N. B. D. Phelps, M. M. Reising, I. Standish, Y. Zhang, K. Toohey-Kurth. 2014. Detection and surveillance of viral hemorrhagic septicemia virus using real-time RT-PCR. I. Initial comparison of four protocols. *Diseases of Aquatic Organisms* 111:1-13.
14. Warg, J. V., T. Clement, E. R. Cornwell, A. Cruz, R. G. Getchell, C. Giray, A. E. Goodwin, G. H. Groocock, M. Faisal, R. Kim, G. E. Merry, N. B. D. Phelps, M. M. Reising, I. Standish, Y. Zhang, K. Toohey-Kurth. 2014. Detection and surveillance of viral hemorrhagic septicemia virus using real-time RT-PCR. II. Diagnostic evaluation of two protocols. *Diseases of Aquatic Organisms* 111:15-22.
15. Phelps, N.B. D., M. E. Craft, D. Travis, K. Pelican, S. M. Goyal. 2014. Risk-based management of viral hemorrhagic septicemia virus (VHSV-IVb) in Minnesota. *North American Journal of Fisheries Management* 34:373-379.
16. Phelps, N. B. D., S. K. Mor, A. G. Armien, W. Batts, A. E. Goodwin, L. Hopper, R. McCann, T. F. F. Ng, C. Puzach, T. B. Waltzek, E. Delwart, J. Winton, S. Goyal. 2014. Characterization of the novel fathead minnow picornavirus. *PLOS One* 9:e87593.
17. Phelps, N. B. D., A. E. Goodwin, E. Marecaux, S. Goyal. 2013. Comparison of treatments to inactivate viral hemorrhagic septicemia virus in frozen baitfish. *Diseases of Aquatic Organisms* 102:211-216.
18. Phelps, N. B. D., A. Armien, S. K. Mor*, S. M. Goyal, J. V. Warg, R. Bhagyam, T. Monahan. 2012. Spring viremia of carp virus in the Minnehaha Creek, Minnesota. *Journal of Aquatic Animal Health* 24:232-237.
19. Phelps, N. B. D., D. Patnayak, Y. Jiang, S. M. Goyal. 2012. The use of a one-step real-time reverse transcriptase PCR (rRT-PCR) assay for the surveillance of viral hemorrhagic septicemia virus (VHSV) in Minnesota. *Journal of Aquatic Animal Health* 24:238-243.
20. Phelps, N. B. D., A. E. Goodwin. 2008. Vertical transmission of *Ovipleistophora ovariae* (Microspora) within the eggs of the Golden Shiner. *Journal of Aquatic Animal Health* 20:45-53.
21. Phelps, N. B. D., A. E. Goodwin. 2007. Validation of a quantitative PCR diagnostic method for detection of the microsporidian *Ovipleistophora ovariae* in the cyprinid fish *Notemigonus crysoleucas*. *Diseases of Aquatic Organisms* 76: 215-221.

Peer-review in progress (*student/adviser)

1. Short, G. *, C. Yue, N. Anderson, C. Russell, N. B. D. Phelps. In press. Consumer perceptions of aquaponics systems. *HortTechnology*.
2. Escobar, L. E. *, J. Escobar-Dodero*, N. B. D. Phelps. In review. Global ecology and geography of the infectious disease Viral Hemorrhagic Septicemia. *Fish and Fisheries*.
3. Kanankege, K. S. T. *, M. A. Alkhamis, A. M. Perez, N. B. D. Phelps. In review. Zebra mussel and Eurasian watermilfoil dispersal patterns in Minnesota. *Journal of Great Lakes Research*.

4. Phelps, N. B. D., I. Bueno*, D. A. Poo-Munoz, S. J. Knowles*, S. Massarani*, R. Rettkowski, L. Shen, H. Rantala, P. L. F. Phelps, L. E. Escobar. In review. Retrospective and predictive investigation of fish kills. *Journal of Aquatic Animal Health*.
5. Tomamichel, M. M.*, N. C. Hodgins, P. A. Venturelli, N. B. D. Phelps. In review. The prevalence and potential fisheries consequences of *Heterosporis sutherlandae* in Leech Lake, MN. *Journal of Aquatic Animal Health*.
6. Short, G.*, C. Yue, M. Abbey, N. O. Anderson, N. B. D. Phelps, M. Schermann, P. Venturelli, Z. Vickers. In review. Consumer preferences for aquaponic produce: Implications from an experimental auction.
7. Kanankege, K. S. T.*, M. A. Alkhamis, N. B. D. Phelps, A. M. Perez. In review. A probability co-kriging model to account for reporting bias and recognize areas at high risk for zebra mussel and Eurasian watermilfoil invasions in Minnesota. *Frontiers in Veterinary Science*.

Book Chapters/Manuals/Peer-reviewed Reports

1. Mor, S. K., N. B. D. Phelps. In press. Picornaviruses of fish. In: F. Kibenge and M. Godoy (eds), *Aquaculture Virology*. Elsevier Inc.
2. Rodger, H. D., N. B. D. Phelps. 2015. Percid fish health and disease. In: Kestemont and K. Dabrowski (eds) *Biology and Culture of Percid Fishes – Principles and Practices*. Springer.
3. Phelps, N. B. D. 2015. Learn the facts about *Heterosporis*.
4. Paterson, G., K. Myhre Errecaborde, N. Phelps. 2015. Seafood fraud in the United States: Current science and policy options. Issue brief, University of Minnesota Food Policy Research Center.
5. Knowels, S. K., S. Massarani, N. B. D. Phelps. 2015. Minnesota fish kill investigation manual.
6. Lee, J. O., M. Schermann, S. Driessen, K. Waters, N. B. D. Phelps. 2015. Aquaponics and food safety: Keeping aquaponics products safe.
7. Phelps, N. B. D. 2013. Minnesota fish health collector manual.
8. Phelps, N. B. D. 2013. Viral hemorrhagic septicemia. In: Gamble, K. C. and M. M. Clancy (eds) *Infectious Diseases of Concern to Captive and Free Ranging Animals in North America*, 2nd ed. 2013. Infectious Disease Committee, American Association of Zoo Veterinarians, Yulee, Florida.

Popular Media/Newsletters

- 2016 KSTP TV, interviewed on sustainable food production, October.
- 2016 WCCO TV, interviewed on seafood substitution, April.
- 2016 Minnesota Daily, interviewed at the opening of the Minnesota Aquatic Invasive Species Research Laboratory, March 10.
- 2016 KSTP TV, interviewed for the Governor's Water Summit, February 27.
- 2015 Numerous national, state, and local media including TV, radio, newspaper, and online coverage for research related to the fish parasite, *Heterosporis*.

- 2015 Minnesota Public Radio – Brains On, “How do animals breathe underwater?”, March 24.
- 2015 “Science below the surface”, Source Magazine, Summer 2015
- 2012 Wisconsin Public Radio, interviewed discussing the future of viral hemorrhagic septicemia in Lake Superior, July 27.
- 2012 “Minnows – one of Minnesota’s smallest, yet most important, fish”, author, From Shore to Shore, April – June Ed.
- 2012 “Healthy baitfish support Minnesota’s \$4.8 billion sport fishing industry”, author, University of Minnesota press release, numerous local newspapers.
- 2012 “Plenty of fish in the sea?”, author, From Shore to Shore, January – March Ed.
- 2010 WCCO TV, interviewed at Minnesota Veterinary Diagnostic Laboratory discussing viral hemorrhagic septicemia virus, May 16.
- 2010 YouTube video, produced by University of Minnesota Academic Health Center, available online: <http://www.vdl.umn.edu/ourservices/fish/home.html>.
- 2009 YouTube video, produced by University of Minnesota Academic Health Center, available online: <http://www.vdl.umn.edu/ourservices/fish/home.html>.
- 2008 Minnesota Bound, KARE 11 TV, interviewed at Minnesota Veterinary Diagnostic Laboratory and at a fish farm discussing viral hemorrhagic septicemia virus, August 30, 31.
- 2008 Radio K interview, discussed potential impacts of viral hemorrhagic septicemia virus to Minnesota, May 18.
- 2008 “Fish virus threatens lakes”, author, University of Minnesota press release, numerous local newspapers.
- 2008 “University to track emerging fish disease”, Minnesota Daily, May 8.
- 2008 “A threat to Minnesota fish”, UMNnews, May 8.

Websites

University of Minnesota Fish Health Program: <http://www.fishhealth.umn.edu>

Twitter: FishDoc_UMN; https://twitter.com/fishdoc_umn

GRANTS/FUNDING

Funded (Total = \$13,885,587; * = sub-award, not included in overall amount)

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|---|------------------|
| 1. Minnesota Aquatic Invasive Species Research Center | 7/1/17 – 6/30/19 |
| Role: Principal Investigator | \$172,465* |
| Title: Decision-making tool for optimal management of AIS | |

2. Environment and Natural Resource Trust Fund 7/1/17 – 6/30/21
Role: Principal Investigator \$2,700,000
Title: Using science to solve Minnesota’s AIS problems – Phase II
3. Environment and Natural Resource Trust Fund 7/1/17 – 6/30/20
Role: Co-Investigator \$400,000
Title: Chemicals of emerging concern in subsistence species used by Minnesota Chippewa
4. Minnesota Aquatic Invasive Species Research Center 2/1/17 – 6/30/19
Role: Principal Investigator \$445,210
Title: Phase II: Virus discovery and evaluation for use a potential biocontrol agents
5. University of Minnesota (OVPR) 7/1/17 – 6/30/19
Role: Co-Principal Investigator \$138,600
6. Title: Developing sustainable international collaborations on animal, public and environmental health in Ibero-America
7. US Department of Agriculture – North Central Regional Aquaculture Center 9/1/16 – 8/30/17
Role: Co-Principal Investigator \$24,596
Title: Metagenomic analysis of microbial populations in aquaponics systems
8. US Department of Agriculture – North Central Regional Aquaculture Center 9/1/16 – 8/30/17
Role: Co-Principal Investigator \$34,977
Title: Assessing the status of aquaculture associations in the North Central Region
9. Minnesota Aquatic Invasive Species Research Center 5/1/16 – 6/30/18
Role: Principal Investigator \$215,000*
Title: Eco-epidemiological model to assess AIS management
10. US Department of Agriculture – North Central Regional Aquaculture Center 9/1/16 – 8/30/18
Role: Co-Principal Investigator \$70,000
Title: Strengthening aquaculture associations in the North Central Region
11. Minnesota Department of Agriculture 5/1/16 – 10/31/18
Role: Co-Investigator \$218,811
Title: Sustainable protein for aquaculture from alfalfa
12. Institute on the Environment 2/1/16 – 4/30/16
Role: Principal Investigator \$3,000
Title: Disease modeling in aquatic ecosystems
13. MnDRIVE – Global Food Ventures 7/1/15 – 6/30/17
Role: Principal Investigator \$260,112
Title: Profitability and sustainability assessment of Minnesota’s rapidly expanding aquaponics industry
14. Minnesota Aquatic Invasive Species Research Center 7/1/15 – 6/30/17
Role: Co-Principal Investigator \$129,441*
Title: Impacts of Heterosporosis on the harvestable biomass of yellow perch in Minnesota
15. Michigan Department of Environmental Quality 7/1/15 – 6/30/17

Role: Co-Principal Investigator	\$79,814
Title: Towards ANS-free certification in fish and bait movement	
16. US Fish and Wildlife Service	11/1/14 – 2/28/15
Role: Principal Investigator	\$23,870
Title: Baitfish Health Survey	
17. MnDRIVE – Global Food Ventures	7/1/14 – 6/30/15
Role: Principal Investigator	\$105,338
Title: Proactively addressing food safety risks in Minnesota’s rapidly expanding aquaponic industry	
18. MnDRIVE – Transdisciplinary Research Program	7/1/14 – 6/30/16
Role: Co-Principal Investigator	\$500,000
Title: STEMMA: Science, technology, engineering, and mathematics for Minnesota advancement	
19. Department of Homeland Security	7/1/14 – 8/31/15
Role: Principal Investigator	\$134,293
Title: Fishy business: Economically motivated adulteration of fish in Minnesota retail markets	
20. Population Systems Signature Program, College of Veterinary Medicine	3/1/14 – 2/28/15
Role: Co-Principal Investigator	\$20,000
Title: Building a one health research collaboration between UMN and Grand Portage Indian Reservation	
21. Minnesota Department of Natural Resources	3/1/14 – 10/31/14
Role: Principal Investigator	\$23,870
Title: Baitfish Health Survey	
22. Minnesota Aquatic Invasive Species Research Center	2/1/14 – 6/30/19
Role: Principal Investigator	\$780,434*
Title: Understanding the virome of carp species in the Upper Midwest	
23. Environment and Natural Resource Trust Fund	7/1/13 – 6/30/19
Role: Co-Investigator	\$8,742,628
Title: An aquatic invasive species research center	
24. Humphrey School of Public Affairs, University of Minnesota	12/1/13 – 5/1/14
Role: Principal Investigator	~500hrs of graduate student effort
Title: Understanding rural advisory service models in East Africa	
25. US Department of Agriculture – North Central Regional Aquaculture Center	9/1/13 – 8/31/15
Role: Principal Investigator	\$7,400
Title: North central regional aquaculture extension project	
26. Minnesota Department of Natural Resources	9/26/13 – 6/30/14
Role: Principal Investigator	\$3,000
Title: Fish diagnostic service	
27. US Department of Agriculture – North Central Regional Aquaculture Center	9/1/12 – 8/31/14
Role: Co-Investigator	\$240,000
Title: Characterization of microbial communities in fish for the development of probiotics	

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| 28. Environment and Natural Resource Trust Fund
Role: Principal Investigator
Title: Viral hemorrhagic septicemia surveillance | 7/1/12 – 6/30/14
\$24,071 |
| 29. US Department of Agriculture, subcontract
Role: Principal Investigator
Title: White Earth Reservation viral hemorrhagic septicemia virus survey | 11/1/11 – 9/1/12
\$14,400 |
| 30. US Department of Agriculture, subcontract
Role: Principal Investigator
Title: Wisconsin Tribal Conservation Advisory Council viral hemorrhagic septicemia survey | 11/1/11 – 9/1/12
\$7,040 |
| 31. US Department of Agriculture, subcontract
Role: Principal Investigator
Title: Wisconsin Tribal Conservation Advisory Council viral hemorrhagic septicemia survey | 11/1/10 – 9/1/11
\$7,040 |
| 32. US Department of Agriculture – Animal and Plant Health Inspection Service
Role: Principal Investigator
Title: Viral hemorrhagic septicemia rRT-PCR assay evaluation | 9/1/10 – 8/31/11
\$76,516 |
| 33. Minnesota Rapid Agriculture Response Fund
Role: Co-Principal Investigator
Title: Preparing Minnesota for the viral hemorrhagic septicemia virus in fish | 7/1/09 – 6/30/11
\$100,000 |
| 34. Environment and Natural Resource Trust Fund
Role: Co-Principal Investigator
Title: Improving emerging fish disease surveillance in Minnesota | 7/1/09 – 6/30/11
\$80,000 |
| 35. Minnesota Board of Animal Health
Role: Co-Principal Investigator
Title: Veterinary Fish Health Assessment training course | 7/1/08 – 6/30/09
\$1,000 |

Pending (Total = \$375,000)

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| 1. NOAA – Sea Grant
Role: Co-Principal Investigator
Title: Focus on the future: Aquaculture/aquaponics for youth education | 7/1/18 – 6/30/21
Requested: \$375,000 |
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Not Funded (Total = \$9,004,912)

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| 1. US Department of Agriculture – North Central Regional Aquaculture Center
Role: Principal Investigator
Title: A big data approach to improve production of walleye in extensively reared pond systems | 9/1/17 – 8/30/19
Requested: \$197,850 |
| 2. USDA – NIFA
Role: Co-Investigator
Title: Molecular and biochemical characterization of the channel catfish virus and immunization of brood catfish leading to better disease management strategies | 9/15/17 – 9/15/19
Requested: \$197,329 |
| 3. Morris Animal Foundation
Role: Co-Principal Investigator | 7/1/17 – 6/30/19
Requested: \$99,360 |

Title: Forecasting fish mortalities worldwide under current and future climate scenarios

4. National Oceanic and Atmospheric Administration – Sea Grant 9/1/16 – 8/31/18
Role: Co-Principal Investigator Requested: \$295,000
Title: Economic viability of commercial aquaponics in the Great Lakes region
5. Environment and Natural Resource Trust Fund 7/1/17 – 6/30/20
Role: Co-Principal Investigator Requested: \$699,905
Title: Preventing fish kills by increasing understanding
6. Minnesota Futures 7/1/16 – 6/30/18
Role: Co-Investigator Requested: \$250,000
Title: Evaluating fish population health in association with anthropogenic micropollutants in waters and subsistence species used by Minnesota Chippewa
7. Minnesota Futures 7/1/16 – 6/30/18
Role: Co-Investigator Requested: \$248,483
Title: Detecting anomalies in disease occurrence for food protection, animal and environmental health
8. US Department of Agriculture – North Central Regional Aquaculture Center 9/1/16 – 8/30/18
Role: Co-Principal Investigator Requested: \$80,000
Title: A comprehensive outreach and training program to expand development of NCR aquaculture
9. National Oceanic and Atmospheric Administration – Sea Grant 2/1/16 – 1/31/18
Role: Principal Investigator Requested: \$203,502
Title: Implementation of a fish kill investigation program for fisheries sustainability and ecosystem health
10. Environmental and Natural Resource Trust Fund 7/1/16 – 6/30/18
Role: Principal Investigator Requested: \$264,141
Title: Modeling AIS spread to evaluate management options
11. Environmental and Natural Resource Trust Fund 7/1/16 – 6/30/18
Role: Co-Principal Investigator Requested: \$834,878
Title: Evaluation of anthropogenic micro pollutants in subsistence species used by the Grand Portage Band of Lake Superior Chippewa
12. Minnesota Futures 7/1/15 – 6/30/17
Role: Co-Principal Investigator Requested: \$250,000
Title: Profitability and sustainability assessment of Minnesota’s rapidly expanding aquaponics food industry
13. Minnesota Futures 7/1/15 – 6/30/17
Role: Co-Principal Investigator Requested: \$250,000
Title: One health technology for evaluating toxicant impacts on subsistence food in MN populations
14. Environmental and Natural Resource Trust Fund 7/1/15 – 6/30/17
Role: Principal Investigator Requested: \$236,526
Title: Small fish, big problem: Understanding Minnesota’s baitfish industry
15. Environmental and Natural Resource Trust Fund 7/1/15 – 6/30/18

- Role: Co-Principal Investigator Requested: \$260,147
Title: Unique partnership approach for protecting Minnesota's threatened ecosystems
16. Environmental and Natural Resource Trust Fund 7/1/15 – 12/31/17
Role: Co-Principal Investigator Requested: \$467,589
Title: Forecasting microbial invasions: Muskie pox and VHS virus
17. Environmental and Natural Resource Trust Fund 7/1/15 – 6/30/18
Role: Co-Principal Investigator Requested: \$322,633
Title: Using angler smartphone data to benefit aquatic resources
18. Institute on the Environment 7/1/14 – 6/30/16
Role: Principal Investigator Requested: \$98,019
Title: Mathematical models to protect Minnesota water resources from invasive species and emerging disease
19. Institute on the Environment 7/1/14 – 6/30/16
Role: Co-Investigator Requested: \$69,000
Title: SensLakes: Robotic chemical sensing station for continuous monitoring of lake water contaminants
20. MnDRIVE – Global Food Ventures 7/1/14 – 6/30/15
Role: Co-Investigator Requested: \$138,000
Title: Milk for 21st Century Society: CFANS Research and Education Partnership
21. MnDRIVE – Transdisciplinary Research Program 7/1/14 – 6/30/16
Role: Co-Investigator Requested: \$442,233
Title: Chemical sensor network for Minnesota lakes: Robotic monitoring of toxicants for ecosystem health
22. Environment and Natural Resource Trust Fund 7/1/14 – 6/30/16
Role: Co-Investigator Requested: \$658,928
Title: A baseline survey to identify and mitigate disease risks associated with Minnesota outdoor resources
23. Environment and Natural Resource Trust Fund 7/1/14 – 6/30/17
Role: Co-Principal Investigator Requested: \$138,229
Title: A smartphone application to benefit anglers and fish
24. National Oceanic and Atmospheric Administration – Sea Grant 2/1/14 – 1/31/16
Role: Principal Investigator Requested: \$206,000
Title: Investigating large-scale mortality events in Minnesota fish populations
25. US Department of Agriculture – National Institute of Food and Agriculture 10/1/13 – 9/30/16
Role: Co-Principal Investigator Requested: \$425,000
Title: Culturing fresh produce, fish, and food safety: Aquaponic food safety risk assessment
26. US Department of Agriculture – National Institute of Food and Agriculture 10/1/13 – 9/30/16
Role: Co-Principal Investigator Requested: \$497,835
Title: A practical approach to rapid aquaculture development across the Midwestern US rural communities

27. Great Lakes Fishery Trust 9/1/13 – 8/31/16
 Role: Co-Investigator Requested: \$499,998
 Title: Assessment of the impact of emerging viruses carried by baitfish on important Great Lake fish species
28. Emerging and Zoonotic Disease Signature Program, College of Veterinary Medicine 7/1/13 – 6/3-/14
 Role: Co-Investigator Requested: \$50,000
 Title: Microbiome genomics applied to tracking disease transmission across heterogeneous landscapes
29. Minnesota Rapid Agriculture Response Fund 7/1/13 – 6/30/15
 Role: Principal Investigator Requested: \$148,900
 Title: Novel viruses of farmed fish in Minnesota: Characterization, diagnosis, pathogenesis, and survey
30. Minnesota Agriculture Experiment Station 7/1/13 – 6/30/15
 Role: Co-Principal Investigator Requested: \$160,000
 Title: The role of land use change and habitat succession in wildlife disease dynamics and disease emergence
31. Population Systems Signature Program, College of Veterinary Medicine 7/1/13 – 6/30/15
 Role: Co-Principal Investigator Requested: \$49,750
 Title: Fecal microbial population structure and its modulation across heterogeneous landscapes for potential pathogen transmission
32. Animal Health Program, College of Veterinary Medicine 7/1/13 – 6/30/15
 Role: Principal Investigator Requested: \$50,000
 Title: Novel viruses of farmed fish in Minnesota: Detection, characterization, and pathogenesis
33. National Oceanic and Atmospheric Administration – Sea Grant 2/1/13 – 1/31/15
 Role: Co-Investigator Requested: \$240,000
 Title: Characterization and risk assessment of recently discovered viruses isolated from fish of the Great Lakes region
34. National Oceanic and Atmospheric Administration – Sea Grant 2/1/09 – 1/31/11
 Role: Co-Investigator Requested: \$49,907
 Title: Improving inter-agency capacity for monitoring fish health, disease, and mass die-offs in Minnesota
35. University of Minnesota Seed Grant Program 7/1/08 – 6/30/09
 Role: Co-Investigator Requested: \$24,500
 Title: Development of methods for the detection of viral hemorrhagic septicemia virus of fish in large volumes of water

PRESENTATIONS

International

1. Escobar, L., G. Kurath, J. Escobar-Dodero, M. Craft, N. Phelps. 2016. Potential distribution of the viral hemorrhagic septicemia virus (VHSV). International Conference on One Medicine One Science.
2. Escobar, L., M. Craft, N. Phelps. 2016. Potential distribution of the viral hemorrhagic septicemia virus. Congress of Transmissible Diseases.
3. Phelps, N., I. Bueno-Padilla, S. Massarani, S. Knowles, P. Phelps, L. Shen, M. Danks. 2014. Retrospective investigation of fish kill events in Minnesota. 7th International Symposium on Aquatic Animal Health.
4. Mor, S., Phelps, N., T. Waltzek, A. Armien, C. Puzach, S. Goyal. 2014. Isolation and molecular characterization of a novel calicivirus from fish. 7th International Symposium on Aquatic Animal Health.
5. Phelps, N. 2013. Important emerging diseases in USA aquaculture: Diagnostics, surveillance, and control. Instituto de Fomento Pesquero, Division de Investegacion en Acuicultura (Invited).
6. Phelps, N., E. Brown, K. Toohey-Kurth, R. Getchell, C. Giray, A. E. Goodwin, G. Grocock, R. Kim, J. Warg, Y. Zhang. 2011. A collaborative effort to evaluate the VHS virus real-time RT-PCR assays. American Fisheries Society – Fish Health Section Annual Meeting.
7. Goodwin, A., N. Phelps. 2007. The microsporidian parasite *Ovipleistophora ovariae* is vertically transmitted within the eggs of the cyprinid fish, *Notemigonus crysoleucas*. 13th International European Association of Fish Pathologists Conference.
8. Phelps, N., A. Goodwin. 2006. Validation of a quantitative PCR diagnostic method for the microsporidian *Ovipleistophora ovariae* in cyprinid fishes. 5th International Symposium on Aquatic Animal Health.

National

1. Mor, S., T. Knutson, A. Armien, A. Primus, S. Goyal, R. Porter, N. Phelps. 2017. Animal disease diagnosis using next generation sequencing. American Association of Veterinary Laboratory Diagnosticians.
2. Phelps, N. 2016. Fish Health: What you need to know as an aquaculture producer. National Aquaculture Association, Online Webinar (Invited).
3. Phelps, N., S. Mor. 2016. Diagnostic survey of golden shiners in retail baitshops. American Fisheries Society – Fish Health Section Annual Meeting.
4. Escobar, L., G. Kurath, J. Escobar-Dodero, M. Craft, N. Phelps. 2016. Potential distribution of the viral hemorrhagic septicemia virus (VHSV). American Fisheries Society – Fish Health Section Annual Meeting.
5. Tomamichael, M., N. Hodgins, P. Venturelli, N. Phelps. 2016. Prevalence and possible consequences of *Heterosporis sutherlandae* in Leech Lake, MN. American Fisheries Society – Fish Health Section Annual Meeting.

6. Primus, A., S. Knowles, N. Sylvestre, N. Anderson, P. Venturelli, N. Phelps. 2016. The use of hydrogen peroxide to control fish disease in an aquaponic system. American Fisheries Society – Fish Health Section Annual Meeting.
7. Escobar, L. N. Phelps. 2016. Next generation tools to map infectious diseases in fish. American Fisheries Society – Fish Health Section Annual Meeting.
8. Phelps, N. 2016. Aquaculture/Aquaponics. American College of Veterinary Preventive Medicine board preparatory course (Invited).
9. Phelps, N., A. Perez. 2015. Efforts towards early detection of viral hemorrhagic septicemia virus in Minnesota. American Fisheries Society – Fish Health Section Annual Meeting.
10. Everstine, K., K. Lopez, N. Phelps. 2015. A study of fish species fraud at Minnesota retail food facilities. International Association for Food Protection Conference.
11. Massarani, S., S. Knowles, M. Schwabenlander, N. Phelps. 2014. Advancing fish kill investigation protocols in Minnesota. Merial Summer Scholar Conference.
12. Phelps, N. 2014. Organisms in trade: Disease and pathogens. Great Lakes Briefs on Invasive Organisms Traded in Commerce Symposium (Invited).
13. Waltzek, T., W. Batts, J. Winton, N. Phelps, S. Mor, S. Goyal, C. Puzach, R. McCann, T. Ng, E. Delwart, S. Marcquenski, M. Babknecht, K. Rock, M. Hoffman. 2014. Genomic characterization of the first fish bunyavirus through next generation sequencing. Eastern Fish Health Workshop.
14. Phelps, N., S. Mor, T. Waltzek, W. Batts, J. Winton, A. Armien, L. Hopper, R. McCann, C. Puzach, S. Goyal. 2013. Characterization of the novel fathead minnow picornavirus. American Fisheries Society – Fish Health Section Annual Meeting.
15. Phelps, N., M. Craft, D. Travis, K. Pelican, S. Goyal. 2013. Risk-based management of viral hemorrhagic septicemia virus in Minnesota. Eastern Fish Disease Workshop.
16. Phelps, N., A. Goodwin, E. Marecaux, S. Goyal. 2012. Comparison of treatments to inactivate viral hemorrhagic septicemia virus in frozen baitfish. American Fisheries Society – Fish Health Section Annual Meeting.
17. Mor, S., N. Phelps, C. Puzach, R. McCann, A. Armien, S. Goyal. 2012. Isolation and molecular characterization of a novel picornavirus in farmed baitfish of Minnesota and Wisconsin. American Fisheries Society – Fish Health Section Annual Meeting.
18. Phelps, N., A. Armien, S. Mor, P. Miller, D. Ariyakumar, B. Lasee, D. Sutherland, S. Goyal. 2012. Description of two new microsporidian parasites, *Heterosporis sutherlandae* n. sp. and *H. superiorae*, infecting fish in the Great Lakes region, USA. American Fisheries Society – Fish Health Section Annual Meeting.
19. Weeks, C., N. Phelps, R. Kinnunen. 2012. Barriers to the expansion of the aquaculture industry in the Great Lakes region. Aquaculture America Annual Meeting.
20. Phelps, N. Risk-based fish health management. 2012. Veterinary Workshop on Fish Regulatory Medicine (Invited).

21. Warg, J., E. Brown, K. Toohey-Kurth, R. Getchell, C. Giray, A. Goodwin, G. Grocock, R. Kim, N. Phelps, Y. Zhang. 2011. A collaborative effort to evaluate the VHS virus real-time RT-PCR assays. Eastern Fish Disease Workshop.
22. Phelps, N. 2010. Evaluating the use of qPCR for surveillance of the VHSV virus in fish. United States Animal Health Association/American Association of Veterinary Laboratory Diagnosticians.
23. Phelps, N., A. Goodwin. 2007. Vertical transmission of *Ovipleistophora ovariae* (Microspora) within the eggs of the cyprinid fish, *Notemigonus crysoleucas*. American Fisheries Society – Fish Health Section Annual Meeting.
24. Phelps, N., A. Goodwin. 2007. Validation of a quantitative PCR diagnostic method for the microsporidian *Ovipleistophora ovariae* in cyprinid fishes and assessment of vertical transmission. Aquaculture 2007 – World Aquaculture Society.
25. Phelps, N. 2006. Validation of a quantitative PCR diagnostic method for the microsporidian *Ovipleistophora ovariae* in cyprinid fishes and assessment of vertical transmission. 6th Annual American Fisheries Society Student Colloquium.

Regional (primary presenter only)

1. Phelps, N. 2016. Understanding potential spread of AIS for prevention and early detection. Upper Midwest Invasive Species Conference.
2. Phelps, N. 2016. Understanding potential spread of AIS for prevention and early detection. Aquatic Invaders Summit.
3. Phelps, N. 2016. Regulations, biosecurity, and all that jazz. Advanced Aquaponics Workshop (Invited).
4. Phelps, N. 2016. Aquaculture/Aquaponics. Minnesota Veterinary Medical Association Annual Meeting (Invited).
5. Phelps, N., M. Tomamichael. 2015. Fish disease: Micro invaders with macro consequences. Minnesota Aquatic Invasive Species Research and Management Showcase.
6. Phelps, N., L. Escobar. 2015. Modeling: It's not just for the runway anymore. Predicting the spread of AIS and disease. Minnesota Aquatic Invasive Species Research and Management Showcase.
7. Phelps, N. 2015. Fish kills: Common annoyance or valuable indicator? Great Lakes Fish Health Committee (Invited).
8. Phelps, N. 2015. Efforts towards early detection of viral hemorrhagic septicemia virus in Minnesota. Minnesota Invasive Species Advisory Council (Invited).
9. Phelps, N. 2014. Fish get sick too: Invasive disease threats to fish health in Minnesota. Minnesota Aquatic Invasive Species Research and Management Showcase.
10. Phelps, N. 2014. Aquaculture and fish health threats in Minnesota. Minnesota Veterinary Medical Association Annual Meeting (Invited).

11. Phelps, N. 2014. What is the next VHSV? Minnesota Department of Natural Resources Fisheries Academy (Invited).
12. Phelps, N. 2014. Threats to the health of Minnesota fish populations. Brainerd Rotary Club (Invited).
13. Phelps, N. 2013. Aquatic invasive species in Minnesota: A UMN perspective. St. Paul Sunrise Rotary Club (Invited).
14. Phelps, N. 2013. Update from the University of Minnesota: The more we look, the more we find. Great Lakes Fisheries Commission, Fish Health Committee (Invited).
15. Phelps, N. 2013. Threats to the health of Minnesota fish populations. Minneapolis Rotary Club (Invited).
16. Phelps, N. 2012. Fish get sick too? More than ever fish diseases are affecting regulations, management, and your way of life. St. Paul Sunrise Rotary Club (Invited).
17. Phelps, N. 2011. Viral hemorrhagic septicemia virus: An ongoing fish disease in the Great Lakes region. North Central Conference of Veterinary Laboratory Diagnosticians (Invited).
18. Phelps, N. 2011. Viral hemorrhagic septicemia virus: An emerging fish disease in the Great Lakes region. Midwest Fisheries and Wildlife Conference (Invited).
19. Phelps, N. 2010. Viral hemorrhagic septicemia virus qRT-PCR. Veterinary Workshop on Fish Regulatory Medicine (Invited).
20. Phelps, N. 2010. Minnesota Veterinary Diagnostic Laboratory's work with veterinarians. Veterinary Workshop on Fish Regulatory Medicine (Invited).
21. Phelps, N. 2009. Polymerase Chain Reaction: The benefits to fish diagnostics. Association of Veterinary Microbiologists, Heartland Chapter Meeting (Invited).
22. Phelps, N. 2009. Fish health assessment for koi hobbyists. Upper Midwest Koi Club, monthly meeting (Invited).
23. Phelps, N. 2009. Fish get sick too? More than ever fish diseases are affecting regulations, management, and your way of life. Pine Valley Association, held at Minnesota Raptor Center (Invited).
24. Phelps, N. 2008. Koi health and disease. Upper Midwest Koi Club, monthly meeting (Invited).
25. Phelps, N., S. Mishra, S. Goyal. 2008. Viral hemorrhagic septicemia in fish: An emerging disease. Minnesota IGERT and Futures Symposium: Predicting Invasive Potential of Exotic Species.
26. Phelps, N., J. Neal. 2007. Solunar tables – fact of fiction? Southern Division of the American Fisheries Society Conference.
27. Phelps, N., A. Goodwin. 2006. Validation of a quantitative PCR diagnostic method for the microsporidian *Ovipleistophora ovariae* in cyprinid fishes and assessment of vertical transmission. Arkansas Aquaculture Field Day.

28. Jarnot, C., N. Phelps, D. Cloutman. 2005. Development and use of standard size-based mortality caps for northern pike, yellow perch, and walleye. Minnesota Chapter of the American Fisheries Society Annual Meeting.

University (primary presenter only)

1. Phelps, N. 2016. A research approach to Minnesota's AIS problems. University of Minnesota-Duluth, Water Resources Science Seminar Series.
2. Phelps, N. 2016. Predicting fish disease outbreaks in Minnesota without a crystal ball. University of Minnesota, Fisheries Wildlife and Conservations Biology Seminar Series.
3. Phelps, N. 2014. Mass mortality and fraud: Not your normal fish stories. Minnesota Veterinary Diagnostic Laboratory.
4. Phelps, N., A. Armien, S. Mor, P. Miller, D. Ariyakumar, B. Lasee, D. Sutherland, S. Goyal. 2012. Description of two new microsporidian parasites, *Heterosporis sutherlandae* n. sp. and *H. superiorae*, infecting fish in the Great Lakes region, USA. University of Minnesota College of Veterinary Medicine Research Day.
5. Phelps, N. 2011. Fish get sick too: More than ever fish diseases are affecting regulations, management, and your way of life. University of Minnesota, Department of Fisheries, Wildlife, and Conservation Biology Seminar.
6. Phelps, N., S. Mor, C. Puzak, A. Armien, S. Goyal. 2011. A novel picornavirus in farmed baitfish of Minnesota and Wisconsin. University of Minnesota College of Veterinary Medicine Research Day.
7. Phelps, N. 2010. Viral hemorrhagic septicemia virus in fish. University of Minnesota College of Veterinary Medicine Research Day.
8. Phelps, N. 2008. Fish, the VDL, and you! Minnesota Veterinary Diagnostic Laboratory.
9. Phelps, N. 2007. Current issues in fish health and the potential role of the University of Minnesota Veterinary Diagnostic Laboratory. Minnesota Veterinary Diagnostic Laboratory.
10. Phelps, N., A. Goodwin. 2007. A qPCR method to discover the mechanism of vertical transmission of *Ovipleistophora ovariae* in golden shiners. University of Arkansas – Pine Bluff Research Symposium.
11. Phelps, N., C. Jarnot. 2004. Establishing mortality caps for yellow perch, *Perca flavescens* and northern pike, *Esox lucius*. Bemidji State University Student Achievement Conference.

TEACHING

Courses and Contributed Lectures

- 2016 Agents of Disease II, CVM 6917, University of Minnesota
Non-Domestic Veterinary Medicine, CVM 6932, University of Minnesota.
Aquaponics, HORT 5601, University of Minnesota.
GOALE, CVM 6000, Veterinary student mentor program, University of Minnesota.
CFANS Undergraduate Mentor Program, University of Minnesota.

- 2015 Agents of Disease II, CVM 6917, University of Minnesota
 Non-Domestic Veterinary Medicine, CVM 6932, University of Minnesota.
 Health and Biodiversity, VPM 2850, University of Minnesota.
 Fish Physiology and Behavior, FW5401, University of Minnesota.
 Global Food Systems, PubH 7210, University of Minnesota.
 Aquaponics, HORT 4601, University of Minnesota.
 Veterinary Public Health, CVM 6500, University of Minnesota.
 Center for Animal Health and Food Safety resident rounds, University of Minnesota.
 GOALE, CVM 6000, Veterinary student mentor program, University of Minnesota.
 CFANS Undergraduate Mentor Program, University of Minnesota.
- 2014 Agents of Disease II, CVM 6917, University of Minnesota
 Non-Domestic Veterinary Medicine, CVM 6932, University of Minnesota.
 Health and Biodiversity, VPM 2850, University of Minnesota.
 Fish Physiology and Behavior, FW5401, University of Minnesota.
 Zoo and Exotic Animal Club, University of Minnesota.
 Animal Toxicology and the Environment, VPM 3101W, University of Minnesota.
 GOALE, CVM 6000, Veterinary student mentor program, University of Minnesota.
 CFANS Undergraduate Mentor Program, University of Minnesota.
- 2013 Companion Animals, AS 121, University of Wisconsin – River Falls.
 Non-Traditional Pets, CVM 6495, University of Minnesota.
 Virology, CVM 6204, University of Minnesota.
 Zoo and Exotic Animal Club, University of Minnesota.
 Fish Physiology and Behavior, FW5401, University of Minnesota.
 Veterinary Public Health, CVM 6500, University of Minnesota.
 Health and Biodiversity, VPM 2850, University of Minnesota.
 Non-Domestic Veterinary Medicine, CVM 6932, University of Minnesota.
 GOALE, CVM 6000, Veterinary student mentor program, University of Minnesota.
 CFANS Undergraduate Mentor Program, University of Minnesota.
- 2012 Health and Biodiversity, VPM 2850, University of Minnesota.
 Non-Domestic Veterinary Medicine, CVM 6932, University of Minnesota.
 Non-Traditional Pets, CVM 6495, University of Minnesota.
 Veterinary Public Health, CVM 6500, University of Minnesota.
 Virology, CVM 6204, University of Minnesota.
 GOALE, CVM 6000, Veterinary student mentor program, University of Minnesota.
 CFANS Undergraduate Mentor Program, University of Minnesota.
- 2011 Non-Traditional Pets, CVM 6495, University of Minnesota.
 Veterinary Public Health, CVM 6500, University of Minnesota.
 Virology, CVM 6204, University of Minnesota.
 GOALE, CVM 6000, Veterinary student mentor program, University of Minnesota.
- 2010 Ecosystem Health Club, University of Minnesota.
 Non-Traditional Pets, CVM 6495, University of Minnesota.
 Veterinary Public Health, CVM 6500, University of Minnesota.
 Virology, CVM 6204, University of Minnesota.
- 2009 Food Animal Disease and Diagnostics, CVM 6806, University of Minnesota.

- Non-Traditional Pets, CVM 6495, University of Minnesota.
 Veterinary Public Health, CVM 6500, University of Minnesota.
- 2008 Food Animal Disease and Diagnostics, CVM 6806, University of Minnesota.
 Non-Traditional Pets, CVM 6495, University of Minnesota.
 Veterinary Public Health, CVM 6500, University of Minnesota.
- 2007 Biology of Fishes, AQFI 2253, University of Arkansas – Pine Bluff.
- 2006 Introduction to Outdoor Recreation, AQFI 2301, University of Arkansas – Pine Bluff.

Other Teaching Activities

- 2013 Organizing committee to develop new University of Minnesota course on Animal Toxicology and the Environment (VPM 3101W). Offering date: Spring 2014.
- 2012-2013 Organizing committee to develop new University of Minnesota course on Aquaponics (HORT 4601 and HORT 5601). Offering date: Spring 2015

STUDENT AND RESEARCH ADVISING

Graduate Students

- 2016-present Timothy Martin, UMN-CB MS student. Committee member.
- 2016-present Joshua Poole, UMN-CB PhD student. Committee member.
- 2015-present Megan Tomamichael, UMN-CB PhD student. Co-Advisor.
 2016 Sniezko Student Travel Award
 2016 AFS-FHS Best Student Presentation Award
- 2014-present Kaushi Kanankege, UMN-VMED PhD student. Co-Advisor.
- 2014-present Irene Beuno-Padilla, UMN-CMB PhD student. Committee member.
- 2014-2015 James Lee, UMN-CAHFS MPH student. Graduated 2015. Advisor.

Professional and Undergraduate Students

- 2016 Rebecca Rettkowski, UMN veterinary student. CVM Summer Scholar Program.
- 2015-2016 Laura Hayes, UMN undergraduate. Honors Program.
- 2014 Sarah Massarani, UMN veterinary student. CVM Summer Scholar Program.
- 2014-2015 Karen Lopez, UMN veterinary public health resident. Researcher.
- 2014-present Sarah Knowles, UMN veterinary student. Mentor, reseracher.
- 2014 Irene Beuno-Padilla, UMN-CMB graduate student. CMB Graduate Program Rotation.
- 2013 Katie Neshek, UMN veterinary student. CVM Summer Scholar Program.

Post-Doctoral and Research Associates

- 2016 Alex Primus, Research associate.
- 2016 Joaquin Escobar-Dodero, Visiting scientist, Universidad Andres Bello (Chile).
- 2016 Daniel Romero-Alvarez, Visiting scientist, Universidad Central (Ecuador).
- 2015-present Luis Escobar, Post doctoral associate, Mentor.
- 2014-2016 Sunil Kumar, Post doctoral associate, Mentor.

Student Assistants

- 2016 Alyssa Gohr, UMN veterinary student. Student assistant.
- 2015 Nicole Sylvestre, UMN veterinary student. Student assistant.

2014-2015 Kari Madison, UMN undergraduate student. Student assistant.
2010-2011 Alex Primus, UMN veterinary student. Student assistant.

EXTENSION/OUTREACH EVENTS

1. Minnesota Aquaponics Symposium. 2016. St. Paul, MN.
Organized symposium on aquaponics in Minnesota. Seven hours, with scientific presentations, panel discussions, and student poster session.
85 participants.
2. Disease modeling in aquatic ecosystems. 2016. St. Paul, MN.
Developed workshop and mentored team of post docs and graduate students to offer workshop.
Three days, 4 hours per day.
15 participants.
3. Minnesota Aquaponics Symposium. 2015. St. Paul, MN.
Organized first-ever symposium on aquaponics in Minnesota. Seven hours, with scientific presentations, panel discussions, and student poster session.
115 participants.
4. Minnesota State Fair. 2015. St. Paul, MN
Invited to display an aquaponics system in the Miracle of Birth Building. In addition to education/outreach, conducted consumer awareness research surveys.
75,000+ visitors to the booth.
5. Aquatic Invasive Species – Hazard Analysis and Critical Control Points. 2014. Upper Midwest Invasive Species Conference, Duluth, MN.
Led day-long course to teach the importance and practice of AIS-HACCP plans for aquaculture, research and fisheries management activities.
13 participants.
6. Aquatic Invasive Species 101: An introduction to Minnesota’s aquatic invasive species. 2014.
Moderated a one-hour webinar on behalf of the Minnesota Aquatic Invasive Species Research Center for the Minnesota Association of Counties.
500+ participants.
7. Invasives and Tourism Workshop, Explore Minnesota Conference. 2013. Minneapolis, MN.
Co-led a half-day workshop on important invasive species affecting Minnesota tourism.
25 participants.
8. Midwest Sports Show. 2013. Minneapolis, MN
Represented the Minnesota Aquatic Invasive Species Research Center to educate the public on the threats of invasive species and research activities.
550+ visitors to the booth.
9. Aquatic Invasive Species – Hazard Analysis and Critical Control Points. Upper Midwest Science Center, United States Geological Survey.
Led day-long course to teach the importance and practice of AIS-HACCP plans for aquaculture.
19 participants.

10. Aquatic Invasive Species – Hazard Analysis and Critical Control Points. 2012. Oswald Fisheries. Led day-long course to teach the importance and practice of AIS-HACCP plans for aquaculture. 38 participants.
11. Minnesota State Fair. 2012. St. Paul, MN
Represented the University of Minnesota College of Veterinary Medicine to educate the public on common fish pathogens and current activities.
250+ visitors to the booth.
12. Fish Health Collector Certification Workshop. 2010. Minnesota Veterinary Diagnostic Laboratory. Led day-long continuing education course for Minnesota veterinarians. Information included: basic fish health, husbandry, regulatory issues, and current status of emerging fish diseases.
23 participants.
13. Fish Health Workshop. 2008. Minnesota Veterinary Diagnostic Laboratory. Led day-long continuing education course for Minnesota veterinarians. Information included: basic fish health, husbandry, regulatory issues, and current status of emerging fish diseases.
11 participants.

AWARDS

- 2012 Best Poster Award for Emerging and Zoonotic Diseases at the College of Veterinary Medicine, Points of Pride Research Day, St. Paul, MN.
- 2012 Best Oral Presentation Award at the American Fisheries Society – Fish Health Section annual meeting, La Crosse, WI.
- 2012 Best Poster Award at the American Fisheries Society – Fish Health Section annual meeting, La Crosse, WI.
- 2012 Student of the Semester, American Fisheries Society – Fish Health Section.
- 2008 Student of the Semester, American Fisheries Society – Fish Health Section.
- 2007 Snieszko Student Travel Award, 47th Annual Western Fish Disease Workshop/American Fisheries Society – Fish Health Section Annual Meeting, Jackson Hole, WY.
- 2006 Best Presentation Award at the 6th Annual American Fisheries Society Student Colloquium, Auburn University, Auburn, AL.
- 2006 Gamma Sigma Delta, Honor Society of Agriculture
- 2006 Arkansas Game and Fish Conservation Scholarship.
- 2006 Best Presentation Award for Graduate Level at the University of Arkansas at Pine Bluff Research Symposium, Pine Bluff, AR.
- 2005 – 2007 Dean’s List, University of Arkansas at Pine Bluff.

LEADERSHIP EXPERIENCE

- 2013 – Present American Fisheries Society, Fish Health Section, Technical Standards committee, Past-chair.
- 2011 – Present United States Department of Agriculture, North Central Regional Aquaculture Center, Executive committee.
- 2011 – 2014 National Aquatic Animal Pathogen Testing Network, Organizing committee.
- 2011 – Present American Fisheries Society – Fish Health Section, Recruitment and retention committee, Chair.
- 2010 – 2014 United States Department of Agriculture, Viral Hemorrhagic Septicemia Virus Working Group, Molecular Diagnostic committee, Chair.
- 2009 – 2012 Minnesota Veterinary Medical Association, Aquatic Health committee.
- 2009 – 2011 University of Minnesota Veterinary Medicine Graduate Program, Social committee, Chair.
- 2006 – 2011 American Fisheries Society – Fish Health Section, Student involvement committee, Chair.
- 2005 – 2007 University of Arkansas at Pine Bluff Student Subunit of the United States Aquaculture Society, President.
- 2005 – 2007 University of Arkansas at Pine Bluff Subunit of the American Fisheries Society, President.

PROFESSIONAL ASSOCIATION MEMBERSHIP

- 2007 – 2015 American Association of Veterinary Laboratory Diagnosticians; committees:
2007 – 2015 Aquaculture Committee
- 2007 – Present Upper Midwest Koi Club, Honorary Membership
- 2006 – 2008 World Aquaculture Society
- 2006 – Present American Fisheries Society; Sections/Chapters:
2009 – 2013 Fish Culture Section
2007 – 2013 Genetics Section
2005 – Present Fish Health Section
2013 – Present Technical Standards Committee, Chair
2011 – Present Recruitment and Retention Committee, Chair
2006 – 2011 Student Involvement Committee, Chair
2005 – 2007 Arkansas Chapter
2002 – Present Minnesota Chapter

PROFESSIONAL DEVELOPMENT

- 2016 Landscape Ecology and Modeling in Fish Health, American Fisheries Society – Fish Health Section. 6.0 CE hours.
- 2015 Collaborative Leadership in Higher Education, Academic Impressions. Two-day workshop.
- 2015 Leadership Essentials, University of Minnesota certificate program. Four-day workshop.
- 2015 Prevention of Infectious Diseases in Aquatic Animals: Management practices and vaccines, American Fisheries Society – Fish Health Section. 6.0 CE hours.
- 2014 Existing and Emerging Programs, Procedures, and Issues Involving Aquatic Animal Health and Welfare for the Practicing Aquatic Veterinarian, American Fisheries Society – Fish Health Section. 5.0 CE hours.
- 2014 College of Veterinary Medicine Teaching Academy. 8.0 CE hours.
- 2013 Freshwater and Marine Biotoxins, American Fisheries Society – Fish Health Section. 6.0 CE hours.
- 2013 Aquatic Animal Welfare and Ethics, Eastern Fish Disease Workshop. 6.0 CE hours.
- 2012 Molecular Diagnostics for Aquatic Animal Health, American Fisheries Society – Fish Health Section. 6.0 CE hours.
- 2011 Research Ethics for Principal Investigators, University of Minnesota, 4.0 CE hours.
- 2009 Teaching in Higher Education (GRAD8101), University of Minnesota. 3.0 semester credits.
- 2009 Applications of Bacterial Genomics to Fish Diagnostics, American Fisheries Society – Fish Health Section. 4.0 CE hours.
- 2009 Institutional animal use and care biomedical web training, University of Minnesota.
- 2008 Fish Toxicology, American Fisheries Society – Fish Health Section. 4.0 CE hours.
- 2008 Scientific Writing Development – Discussion and Title, University of Minnesota Academic Health Center. 1.5 CE hours.
- 2008 Scientific Writing Development – Methods and Results, University of Minnesota Academic Health Center. 1.5 CE hours.
- 2008 Scientific Writing Development – Manuscript Writing Principles, University of Minnesota Academic Health Center. 1.5 CE hours.
- 2007 Viral Hemorrhagic Septicemia Virus Symposium, University of Wisconsin – Madison. 5.4 CE hours.

2007 Viral Hemorrhagic Septicemia, American Fisheries Society – Fish Health Section. 4.0 CE hours.

OTHER ACTIVITIES

2015 – 2017 Coon Creek Watershed District, Board of Managers, Treasurer. Three-year term appointed by Anoka County Board of Commissioners.

2015 – 2016 STRIVE Mentor Program, Blaine High School, Program Leader.

2014 – Present Blaine/Ham Lake Rotary Club, Service Coordinator, President-elect.

2013 – 2014 Coon Creek Watershed District, Citizen Advisory Committee.

2013 – 2016 U.S. Seafood Verification Service LLC, Founder and CEO.

2010 – Present Nick and Joe’s Mow and Snow LLC, President.

2006 – Present Angry Beaver Broomball, Captain.

2002 – 2004 Bemidji State University Cross Country Ski Club, Captain.

2000 – 2001 Brainerd High School Cross Country Ski Team, Captain.

1997 PADI Certified

1996 – 2001 Boy Scouts of America, Various leadership roles, Rank: Eagle Scout.

Updated: August 21, 2017