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# **APPENDIX Of NCRAC Funded Research Publications**

## APPENDIX

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### AQUACULTURE DRUGS

#### *Publications in Print*

Barry, T.P., A. Marwah, and P. Marwah. 2007.

Stability of 17 $\alpha$ -methyltestosterone in fish feed. *Aquaculture* 271:523-529.

Cupp, A. R., Hartleb, C. F., Fredricks, K. T. and Gaikowski, M. P. 2014. , Effectiveness of eugenol sedation to reduce the metabolic rates of cool and warm water fish at high loading densities. *Aquaculture Research*. Published online at doi: 10.1111/are.12485

Grayson, J.D. 2015. Improvement of Yellow Perch Larvae Culture via Live Food Enrichment with Polyunsaturated Fatty Acids. M.Sc. Dissertation. Ohio State University, Columbus, 57 pp.

Johnson, T., Phelps, N. 2017. Bacterial community profiling of wild and farmed fish from the upper Midwestern US. *PLOS One* (in preparation)

Malison, J.A., J.A. Held, L.S. Procarione, and M.A.R. Garcia-Abiado. 1998. The production of monosex female populations of walleye from intersex broodstock. *Progressive Fish Culturist* 60(1):20-24.

Marwah, A., P. Marwah, and H. Lardy. 2005. Development and validation of a high performance liquid chromatography assay for 17 $\alpha$ -methyltestosterone in fish feed. *Journal of Chromatography B*:824:107-115.

Marwah, A., X. Nianzu, P. Marwah, and T.P. Barry. 2010. Development and validation of a high performance liquid chromatography-mass spectrometry method for 17 $\alpha$ -methyltestosterone in aquatic water systems. *Journal of Applied and Natural Science* 2:182-189.

Meinertz, J.R., T.M. Schreier, and J.A. Bernardy. 2008. Evaluation of a method for determining concentrations of an AQUI-S™ residue, isoeugenol, in fillet tissue from cold, cool, and warm water fish species. *Journal of the Association of Official Analytical Chemists International* 91:884-891.

#### *Reports*

Green, B.W. 1996. Direct review submission to Division of Toxicology and Environmental Science, Center for Veterinary Medicine, U.S.

Food and Drug Administration in support of the Tilapia 17  $\alpha$ -Methyltestosterone INAD (INAD #9647 A0000, January 24, 1996).

Kohler, C.C., A.M. Kelly, M.J. DeJesus, E.M. Carnevale, S.R. Syska, and W.M. Muhlach. 1998. The safety of 17  $\alpha$ -Methyltestosterone for induction of sex reversal in walleye. Final Report of the Safety Study for INAD 9647 E0009 and E0011. 602 pp.

Meinertz, J.R. 2010. Feed production report for study title, "Method transfer study for the analytical method to determine 17- $\alpha$ methyltestosterone concentrations in fish feed." Submitted to Rangen Inc. (Buhl, Idaho). 29 pp.

Meinertz, J.R. N. Wijewickreme, and B. Coates. 2010. Method transfer study for the analytical method to determine 17  $\alpha$ -methyltestosterone concentrations in fish feed. Final report submitted to the FDA's Center for Veterinary Medicine, December 20, 2010. 1089 pages.

Meinertz, J.R. and T.M. Schreier. 2008. Evaluation of a proposed determinative method for determining concentrations of isoeugenol in fillet tissue from cold, cool, and warm water fish species. Submitted to the Center for Veterinary Medicine, U.S. Food and Drug Administration for INAD 11-475. 3,292 pp.

#### *Manuscripts*

Barry, T.P., P. Marwah, and A. Marwah. 2011. Transformation of 17 $\alpha$ -methyltestosterone in aquatic-sediment systems. *Journal of Applied and Natural Science* 3(1): 1-9.

Cupp AR, Fredricks KT, Porcher SK, Smerud JR, Hartleb CF, and Gaikowski MP (2016b). Survival and behavioral responses of cool and warm water fish sedated with AQUI-S®20E (10% eugenol) at high loading densities. *Aquaculture Research*. DOI:10.1111/are.12992

Cupp AR, Hartleb CF, Fredricks KT, and Gaikowski MP (2016a). Effectiveness of eugenol sedation to reduce the metabolic rates of cool and warm water fish at high densities. *Aquaculture Research* 47:234-242. DOI: 10.1111/are.12485

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Cupp, A.R., T.M. Schreier and S.M. Schleis. Live transport of yellow perch (*Perca flavescens*) and Nile tilapia (*Oreochromis niloticus*) in AQUI-S® 20E (10% eugenol) at high loading densities. In journal review.

Marwah, A., X. Nianzu, P. Marwah, , and T.P. Barry. 2010. Development and validation of a liquid chromatography-mass spectrometry method for 17 $\alpha$ -methyltestosterone in aquatic water systems. *Journal of Applied and Natural Science* 2(2):182-189.

### **Oral Presentations:**

Cupp AR, Gaikowski MP, Fredricks KT, and Hartleb CF. Potential use of AQUI-S®20E light sedation for live transport. Presented at the MidContinent Warmwater Fish Culture Workshop in Council Bluffs, IA. February 2014.

Cupp AR, Gaikowski MP, Fredricks KT, and Hartleb CF. Effects of AQUI-S®20E sedation on yellow perch *Perca flavescens* and Nile tilapia *Oreochromis niloticus* during transport. Presented at the 19th Annual Drug Approval Workshop in Bozeman, MT. July 2013.

Cupp AR. Effects of AQUI-S®20E (10% eugenol) sedation on yellow perch *Perca flavescens* and Nile tilapia *Oreochromis niloticus* for transport. Thesis research presentation and defense. University of Wisconsin – Stevens Point, Stevens Point, WI. June 2013.

Cupp AR, Meinertz JR, Fredricks KT, Porcher SR, and Smerud JR. Effectiveness of AQUI-S® 20E for yellow perch *Perca flavescens* and tilapia *Oreochromis niloticus* for live transport. Presented at the 2012 Aquaculture Drug Approval Coordination Workshop. La Crosse, WI. July 2012.

Stiverson J. and Yu Z. 2015. Isolation and identification of probiotic bacteria from the gut of yellow perch, *Perca flavescens*, and evaluation of their probiotic potential against *Vibrio anguillarum*. Congress on Gastrointestinal Function, Chicago, April 13-15, 2015.

### **Peer-reviewed**

Treanor, H.B., Ray, A.M., Amberg, J.J., Gaikowski, M.P., Ilgen, J.E., Gresswell, R.E. and Webb, M.A.H. Submitted. Assessing carbon dioxide as

a tool for supplementing winter kill in natural rearing ponds. *Aquaculture*.

### **Posters**

Aaron Cupp, C.F. Hartleb, K.T. Fredricks and M.P. Gaikowski, M.S. March 2013. The effects of AQUI-S 20E (10% eugenol) sedation on yellow perch, *Perca flavescens*, and tilapia, *Oreochromis niloticus*, during transport. Poster presented at the 2013 Wisconsin Aquaculture Conference in Oconomowoc, WI. March 2013

### **Papers Presented**

Barry, T.P., A. Marwah, and P. Marwah. 2006. 17 $\alpha$ -methyltestosterone: product chemistry. 12<sup>th</sup> Annual Drug Approval Coordination Workshop, and National Aquaculture Drug Research Forum, La Crosse, Wisconsin, August 1-2, 2006.

Barry, T.P., A. Marwah, and P. Marwah. 2006. 17 $\alpha$ -methyltestosterone: environmental safety. 12<sup>th</sup> Annual Drug Approval Coordination Workshop, and National Aquaculture Drug Research Forum, La Crosse, Wisconsin, August 1-2, 2006.

Barry, T.P., A. Marwah, and P. Marwah. 2007. Measurement and stability of 17 $\alpha$ -methyltestosterone in fish feed. *Aquaculture* 2007, San Antonio, Texas, February 26-March 2, 2007.

Barry, T.P., A. Marwah, and P. Marwah. 2007. Fate of 17 $\alpha$ -methyltestosterone in water/sediment systems. *Aquaculture* 2007, San Antonio, Texas, February 26-March 2, 2007.

Barry, T.P., P. Marwah, and A. Marwah. 2007. 17 $\alpha$ -methyltestosterone: product chemistry. 13<sup>th</sup> Annual Drug Approval Coordination Workshop, and National Aquaculture Drug Research Forum, Bozeman, Montana, July 31-August 1, 2007.

Barry, T.P., P. Marwah, and A. Marwah. 2007. Fate of 17 $\alpha$ -methyltestosterone in water/sediment systems. 13<sup>th</sup> Annual Drug Approval Coordination Workshop, and National Aquaculture Drug Research Forum, Bozeman, Montana, July 31-August 1, 2007.

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- Cupp, A.R., M.P. Gaikowski, K.T. Fredricks and C.F. Hartleb. 2014. Potential use of AQUI-S®20E light sedation for live transport. Presented at the MidContinent Warmwater Fish Culture Workshop in Council Bluffs, IA. February 2014.
- Cupp, A.R., M.P. Gaikowski, K.T. Fredricks and C.F. Hartleb. 2013. Effects of AQUI-S®20E sedation on yellow perch *Perca flavescens* and Nile tilapia *Oreochromis niloticus* during transport. Presented at the 19th Annual Drug Approval Coordination Workshop in Bozeman, MT. July 2013.
- Cupp, A.R., J.R. Meinertz, C.F. Hartleb, K.T. Fredricks, S.T. Porcher, and J.R. Smerud. 2012. Effectiveness of AQUI-S® 20E for yellow perch *Perca flavescens* and tilapia *Oreochromis niloticus* for live transport. Presented at the 18th Annual Aquaculture Drug Approval Coordination Workshop. July 2012. La Crosse, WI.
- Gaikowski, M.P. 2011. Status of the method transfer study for determining 17  $\alpha$ -methyltestosterone concentrations in fish feed. Presented at the 17th Annual Aquaculture Drug Approval Coordination Workshop, Bozeman, Montana, August 2-4, 2011.
- Gaikowski, M.P. 2011. Status of the method transfer study for determining 17 $\alpha$ -methyltestosterone concentration in feed. 17th Annual Drug Approval Coordination Workshop, August 2-4, 2011, Bozeman, Montana.
- Gaikowski, M.P. 2011. Status of the method transfer study for determining 17  $\alpha$ -methyltestosterone concentrations in fish feed. Presented at the 17th Annual Aquaculture Drug Approval Coordination Workshop, Bozeman, Montana, August 2-4, 2011.
- Grayson, J.D., K. Kwasek, M. Wojno, N. Shabana, and K. Dabrowski. 2014. Improving yellow perch larvae culture by utilizing live food enrichment with PUFA. Aquaculture America WAS, Washington. February 9012, 2014.
- Kelly, A.M. 2006. Progress on the Target Animal Safety Study for 17 $\alpha$ -methyltestosterone. Aquaculture America 2006, February 13-16, 2006, Las Vegas, Nevada.
- Kohler, C.C., A.M. Kelly, E.M. Carnivale, and W.L. Muhlach. 1997. Target animal safety studies for aquaculture. 28th Annual Meeting of the World Aquaculture Society, Seattle, Washington, February 19-23, 1997.
- Kwasek, K., M. Wojno, A. Buentello and K. Dabrowski. 2014. Can replacement of 75% fish meal protein with soybean meal support optimal growth of yellow perch? Aquaculture America WAS, Washington. February 9012, 2014.
- Malison, J.A. 1997. Reproduction and sex reversal in yellow perch and walleye. 1997 North Central Aquaculture Conference, Indianapolis, Indiana, February 6-7, 1997.
- Marwah, A., P. Marwah, and H. Lardy. 2005. Validated LC-MS methods for the quantitation of 17 $\alpha$ -methyltestosterone in fish feed: application of multifactorial experimental design. American Society of Mass Spectroscopy, San Antonio, Texas, June 5-9, 2005 (poster presentation).
- Meinertz, J.R. 2009. Method transfer study for 17  $\alpha$ -methyltestosterone in feed. Presented at the 16th Annual Aquaculture Drug Approval Coordination Workshop, Bozeman, Montana, August 3-5, 2010.
- Meinertz, J.R. 2009. 17  $\alpha$ -methyltestosterone feed method transfer study. Presented at the 15th Annual Aquaculture Drug Approval Coordination Workshop, Little Rock, Arkansas, June 9-11, 2009.
- Meinertz, J.R. 2009. 17  $\alpha$ -methyltestosterone feed method transfer study. 15th Annual Aquaculture Drug Approval Coordination Workshop, Little Rock, Arkansas, June 9-11, 2009.
- Meinertz, J.R. 2010. Method transfer study for 17  $\alpha$ -methyltestosterone in feed. 16th Annual Drug Approval Coordination Workshop, Bozeman, Montana, August 3-5, 2010.
- Riche, M., and D.L. Garling, Jr. 1999. Digestibility and retention of nitrogen in tilapia (*Oreochromis niloticus*) fed phytase treated soybean meal in a recirculating system. 30th Annual Meeting of the World Aquaculture Society, Sydney, Australia, April 26-May 2, 1999.
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- Tuttle-Lau, M.T., and M.P. Gaikowski. 2009. UMESC Efforts to Approve TM-200® for Fish or Aquaflor® to Control Motile Aeromonad Septicemia. 15<sup>th</sup> Annual Aquaculture Drug Approval Workshop, June 9-11, 2009, Little Rock, Arkansas.
- Tuttle-Lau, M.T., A.R. Cupp, S.M. Schleis, and M.P. Gaikowski. 2011. Efficacy of TM-200® for Fish or Aquaflor® to Control Mortality from Motile Aeromonad Septicemia. 17<sup>th</sup> Annual Aquaculture Drug Approval Workshop, August 2-4, 2011, Bozeman, Montana.

### *Thesis*

- Aaron Cupp M.S. 2013. The effects of Aqual-S® 20E (10% eugenol) sedation on yellow perch, *Perca flavescens*, and Nile tilapia, *Oreochromis niloticus*, during transport. Master's Thesis Defense, UW-Stevens Point, Stevens Point, WI, June 27, 2013
- Grayson, J., 2014. Improvement of Yellow Perch larvae culture via live food enrichment with polyunsaturated fatty acids. Master's thesis, Ohio State University, Columbus, OH: Not available (November 24, 2014).
- Treanor, H.B., 2010. Investigating effects of the piscicide rotenone on amphibians in southwestern Montana through laboratory experiments and field trials. Master's Thesis. Montana State University, Bozeman, MT

## BAITFISH

### *Publications in Print*

- Bozwell, J.L., R.D. Clayton, and J.E. Morris. 2009. Use of hydrogen peroxide to improve golden shiner egg hatchability. *North American Journal of Aquaculture* 71:238-241.
- Meronek, T.G. 1994. Status of the bait industry in the North Central Region of the United States. Master's thesis. University of Wisconsin, Stevens Point.
- Meronek, T.G., F.A. Copes, and D.W. Coble. 1995. A summary of bait regulations in the north central United States. *Fisheries* 20(11):16-23.

### *Papers Presented*

- Copes, F.A. 1993. Aquaculture shortcourse. Sponsored by University of Wisconsin-Sea Grant and Wisconsin Department of Agriculture, Greenwood, Wisconsin, March 1993.
- Copes, F.A. 1995. Baitfish aquaculture. North Central Regional Aquaculture Conference/Ninth Annual Minnesota Aquaculture Conference, Minneapolis, Minnesota, February 1995.
- Kent, T., J.E. Morris, and R.D. Clayton. 2009. Feeding golden shiner fry commercial diets. Washington, February 15-18, 2009.
- Meronek, T.G. 1993. Survey of the bait industry in the north central United States. Annual Meeting of the Michigan Fish Farmers Association, Cadillac, Michigan, February 1993.
- Meronek, T.G. 1993. Survey of the bait industry in the north central United States. Seventh Annual Minnesota Aquaculture Conference, Alexandria, Minnesota, March 1993.
- Meronek, T.G. 1993. Survey of the bait industry in the north central United States. Illinois Fish Farmers Association, Pana, Illinois, March 1993.
- Meronek, T.G. 1994. Status of the bait industry in the North Central Region. Annual Meeting of the Wisconsin Chapter of the American Fisheries Society, Marinette, Wisconsin, January 1994.
- Meronek, T.G. 1994. Baitfish aquaculture and production. Governor's Conference: Wisconsin Aquaculture >94. University of Wisconsin, Stevens Point, February 1994.
- Morris, J.E. and T. Kent. 2008. New investigations into golden shiner culture. U.S. Trout Farmers/Midwest Aquaculture. Milwaukee, Wisconsin, September 18-20, 2008.
- Morris, J.E. 2010. NCRAC Baitfish workshop, La Crosse, Wisconsin, September 21, 2010.

### *Thesis*

- Kent, Thomas. 2009. New investigations into golden shiner culture. Master's Thesis, Iowa State University, Ames, Iowa. Available at <http://lib.dr.iastate.edu/etd/12251/> (February 2015).

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### CONFERENCES/WORKSHOPS/ SYMPOSIA

#### Environmental Strategies for Aquaculture Symposium

##### CD-ROM

Kinnunen, R. 2002. Environmental Strategies for Aquaculture Symposium proceedings. NCRAC CD-ROM Series #102, NCRAC Publications Office, Iowa State University, Ames.

#### National Aquaculture Extension Workshop/Conferences

##### Publications in Print

Flimlin, G. 2011. NAEC 2011 Agenda and Abstracts. 5<sup>th</sup> National Aquaculture Extension Conference, Memphis, Tennessee, June 5-7, 2011.

National Aquaculture Extension Conference: A Program Summary of Presentations, Posters and Aquaculture Short Courses. 1997. National Extension Aquaculture Conference, Annapolis, Maryland, April 8-12, 1997. Maryland Sea Grant Extension Publication Number UM-SG-MAP-97-01, College Park, Maryland. (Also available electronically at: <http://www.mdsg.umd.edu:80/extensionconf/summary.html>).

Proceedings of the National Extension Aquaculture Workshop. 1992. National Extension Aquaculture Workshop, Ferndale, Arkansas, March 3-7, 1992.

#### North Central Regional Aquaculture Conferences

##### Proceedings

Morris, J.E., editor. 1999. Aquaculture at the crossroads: linking the past to the future. Compilation of abstracts, papers, and supporting articles for the Fourth North Central Regional Aquaculture Conference, Columbia, Missouri, February 24-26, 1999.

Proceedings of the North Central Regional Aquaculture Conference. 1991. First North Central Regional Aquaculture Conference, Kalamazoo, Michigan, March 18-21, 1991.

### Percis III

##### Publication in Print

Barry, T.P., and J.A. Malison, editors. 2004. Proceedings of the Percis III: The Third International Percid Fish Symposium. University of Wisconsin Sea Grant Institute, Madison.

### CRAYFISH

##### Publications in Print

Brown, P., and J. Gunderson, editors. 1997. Culture potential of selected crayfishes in the North Central Region. NCRAC Technical Bulletin Series #112, NCRAC Publications Office, Iowa State University, Ames.

Fetzner, J.W., Jr., R.J. Sheehan, and L.W. Seeb. 1997. Genetic implications of broodstock selection for crayfish aquaculture in the Midwestern United States. *Aquaculture* 154:39-55.

Gunderson, J.L. 1995. Rusty crayfish: a nasty invader, the biology, identification, and impacts of the rusty crayfish. Minnesota Sea Grant Extension Publication, University of Minnesota, Duluth.

Richards, C., J.L. Gunderson, P. Tucker, and M. McDonald. 1995. Crayfish and baitfish culture in wild rice paddies. Technical Report No. NRRI/TR-95/39. Natural Resources Research Institute, Duluth, Minnesota.

##### Papers Presented

Brown, P.B. 1994. Pond production of crayfish. Workshop on Getting Started in Commercial Aquaculture Raising Crayfish and Yellow Perch, Jasper, Indiana, October 14-15, 1994.

Brown, P.B. 1994. Crayfish and aquatics: raising fish for profit. Indiana Horticultural Congress, Indianapolis, Indiana.

Brown, P.B. 1995. Crayfish aquaculture in the north. Nebraska Aquaculture Conference, North Platte, Nebraska, March 25, 1995.

Gunderson, J.L. 1994. Raising crayfish commercially. Development 94, Detroit Lakes, Minnesota, February 18, 1994.

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- Gunderson, J.L. 1994. Softshell crayfish production. Aqua >94, 8<sup>th</sup> Annual Minnesota Aquaculture Conference, Alexandria, Minnesota, March 4, 1994.
- Gunderson, J.L. 1994. Outdoor culture systems and crayfish production. Minnesota Extension Service Aquaculture Seminar, Thief River Falls, Minnesota, April 25, 1994.
- Gunderson, J.L. 1994. Softshell crayfish production. Workshop on Getting Started in Commercial Aquaculture Raising Crayfish and Yellow Perch, Jasper, Indiana, October 14-15, 1994.
- Gunderson, J.L. 1995. Diversity in aquaculture–crawfish. Wisconsin Aquaculture >95, Stevens Point, Wisconsin, March 17, 1995.
- ECONOMICS/MARKETING**
- Publications in Print***
- Aubineau, C.M. 1996. Characterization of the supply of walleye fingerlings in the north central region of the U.S. Master's thesis. Illinois State University, Normal.
- Brown, G.J. 1994. Cost analysis of trout production in the North Central states. Master's thesis. Ohio State University, Columbus.
- Edon, A.M.T. 1994. Economic analysis of an intensive recirculating system for the production of advanced walleye fingerlings in the North Central Region. Master's thesis. Illinois State University, Normal.
- Floyd, D.W., and R.M. Sullivan. 1990. Natural resources and aquaculture: the policy environment in the North Central states. Proceedings of the Third Symposium on Social Science and Resource Management, Texas A&M University, College Station, Texas.
- Floyd, D.W., R.M. Sullivan, R.L. Vertrees, and C.F. Cole. 1991. Natural resources and aquaculture: emerging policy issues in the North Central states. *Society and Natural Resources* 4:123-131.
- Gleckler, D.P. 1991. Distribution channels for wild-caught and farm-raised fish and seafood: a survey of wholesale and retail buyers in six states of the North Central Region. Master's thesis. Ohio State University, Columbus.
- Hushak, L.J. 1993. North Central Regional aquaculture industry situation and outlook report, volume 1 (revised October 1993). NCRAC Publications Office, Iowa State University, Ames.
- Hushak, L., C. Cole, and D. Gleckler. 1993. Survey of wholesale and retail buyers in the six southern states of the North Central Region. NCRAC Technical Bulletin Series #104, NCRAC Publications Office, Iowa State University, Ames.
- Hushak, L.J., D.W. Floyd, and R.L. Vertrees. 1992. Aquaculture: a competitive industry in North Central states? *Ohio's Challenge* 5:3-5.
- Makowiecki, E.M.M. 1995. Economic analysis of an intensive recirculating system for the production of walleye from fingerling to food size. Master's thesis. Illinois State University, Normal.
- O'Rourke, P.D. 1996. Economic analysis for walleye aquaculture enterprises. Pages 135-145 in R.C. Summerfelt, editor. *Walleye culture manual*. NCRAC Culture Series #101, NCRAC Publications Office, Iowa State University, Ames.
- O'Rourke, P.D. 1996. The economics of recirculating aquaculture systems. *In Proceedings of successes and failures in commercial recirculating aquaculture*, Roanoke, Virginia, July 19-21, 1996.
- Riepe, J.R. 1997. Costs for pond production of yellow perch in the North Central Region, 1994-95. NCRAC Fact Sheet Series #111, NCRAC Publications Office, Iowa State University, Ames.
- Riepe, J.R. 1997. Enterprise budgets for yellow perch production in cages and ponds in the North Central Region, 1994/95. NCRAC Technical Bulletin Series #111, NCRAC Publications Office, Iowa State University, Ames.
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- Riepe, J.R. 1997. Yellow perch markets in the North Central Region: results of a 1996/97 survey. Office of Agricultural Research Programs, Department of Agricultural Economics, Purdue University, West Lafayette, Indiana.
- Thomas, S.K. 1991. Industry association influence upon state aquaculture policy: a comparative analysis in the North Central Region. Master's thesis. Ohio State University, Columbus.
- Thomas, S.K., D.W. Floyd, and R.L. Vertrees. 1993. Industry association influence upon state aquaculture policy in the North Central Region. *The Ohio Journal of Science* 93(1):19-26.
- Thomas, S.K., R.L. Vertrees, and D.W. Floyd. 1991. Association influence upon state aquaculture policy: a comparative analysis in the North Central Region. *The Ohio Journal of Science* 91(2):54.
- Thomas, S.K., R.L. Vertrees, and D.W. Floyd. 1993. Aquacultural marketing law: assessing state-level regulatory approaches in the North Central Region. *Journal of Applied Aquaculture* 2(1):65-84.
- Thomas, S.K., R.M. Sullivan, R.L. Vertrees, and D.W. Floyd. 1992. Aquaculture law in the North Central states: a digest of state statutes pertaining to the production and marketing of aquacultural products. NCRAC Technical Bulletin Series #101, NCRAC Publications Office, Iowa State University, Ames.
- Tudor, K., and P.D. O'Rourke. 2002. Potential wholesale demand for farm-raised sunfish and walleye hybrids in Illinois. Pages 228-232 in *Proceedings of the Fourth International Conference on Recirculating Aquaculture*, Roanoke, Virginia, July 18-21, 2002.
- Tudor, K.W., R.R. Rosati, P.D. O'Rourke, Y.V. Wu, D. Sessa, and P. Brown. 1996. Technical and economical feasibility of on-farm fish feed production using fishmeal analogs. *Aquacultural Engineering* 15(1):53-65.
- Aquaculture Conference, Kalamazoo, Michigan, March 18-21, 1991.
- Foley, P., R. Rosati, P.D. O'Rourke, and K. Tudor. 1994. Combining equipment components into an efficient, reliable, and economical commercial recirculating aquaculture system. 25<sup>th</sup> Annual Meeting of the World Aquaculture Society, New Orleans, Louisiana, January 12-18, 1994.
- Gleckler, D.P., L.J. Hushak, and M.E. Gerlow. 1991. Distribution channels for wild-caught and farm-raised fish and seafood. First North Central Regional Aquaculture Conference, Kalamazoo, Michigan, March 18-21, 1991.
- Kinnunen, R. and R. Palmer. 2003. Marketability of hybrid walleye: preliminary results of industry and consumer surveys. NCRAC Hybrid Walleye Workshop, Cape Girardeau, Missouri, March 5, 2003.
- Kohler, S.T. 1995. Hybrid striped bass cost of production. North Central Regional Aquaculture Center Hybrid Striped Bass Workshop, Champaign, Illinois, November 2-4, 1995.
- O'Rourke, P.D. 1995. Profitability and volume-cost business analysis tools for the aquaculture enterprise. Presented at Illinois-Indiana Aquaculture Conference and North Central Regional Aquaculture Center Hybrid Striped Bass Workshop, Champaign, Illinois, November 2-4, 1995.
- O'Rourke, P.D. 1996. The economics of recirculating aquaculture systems. Conference on Successes and Failures in Commercial Recirculating Aquaculture, Roanoke, Virginia, July 19-21, 1996.
- O'Rourke, P.D., and A.M.T. Edon. 1995. Economic analysis of advanced walleye fingerling production in an intensive recirculating system. Combined North Central and Ninth Annual Minnesota Aquaculture Conference and Tradeshow (Second North Central Regional Aquaculture Conference), Minneapolis, Minnesota, February 17-18, 1995.
- Papers Presented**
- Brown, G.J., and L.J. Hushak. 1991. The NCRAC producers survey and what we have learned: an interim report. First North Central Regional



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- O'Rourke, P.D., K. Tudor, and R. Rosati. 1994. The selection and use of economic tools in the aquacultural engineering decision making process to determine the comparative costs of alternate technical solutions. 25<sup>th</sup> Annual Meeting of the World Aquaculture, New Orleans, Louisiana, January 12-18, 1994.
- O'Rourke, P.D., K. Tudor, and R. Rosati. 1994. Economic risk analysis of production of tilapia (*Oreochromis niloticus*) in a modified Red Ewald-style recirculating system operated under commercial conditions. 25<sup>th</sup> Annual Meeting of the World Aquaculture Society Silver Anniversary Meeting, New Orleans, Louisiana, January 12-18, 1994.
- Palmer, R. 2002. Marketability of hybrid walleye: preliminary results of industry and consumer surveys. NCRAC Hybrid Walleye Workshop, Cadillac, Michigan, February 7, 2002.
- Riepe, J.R. 1994. Production economics of species cultured in the North Central Region. Animal Science, AS-495, one-week summer course AAquaculture in the Midwest, @ Purdue University, West Lafayette, Indiana, June 13-17, 1994.
- Riepe, J.R. 1994. Getting started in commercial aquaculture: economics. Workshop on Getting Started in Commercial Aquaculture Raising Crayfish and Yellow Perch, Jasper, Indiana, October 14-15, 1994.
- Riepe, J.R. 1997. Revisiting retail and wholesale markets (walleye and yellow perch). Third North Central Regional Aquaculture Conference, Indianapolis, Indiana, February 6-7, 1997.
- Riepe, J.R., J. Ferris, and D. Garling. 1995. Economic considerations in yellow perch aquaculture. Yellow Perch Aquaculture Workshop, Spring Lake, Michigan, June 15-16, 1995.
- Robinson, M., D. Zepponi, and B.J. Sherrick. 1991. Assessing market potential for new and existing species in the North Central Region. First North Central Regional Aquaculture Conference, Kalamazoo, Michigan, March 18-21, 1991.
- Rosati, R., P.D. O'Rourke, K. Tudor, and P. Foley. 1994. Production of tilapia (*Oreochromis niloticus*) in a modified Red Ewald-style recirculating system when operated under commercial conditions. 25<sup>th</sup> Annual Meeting of the World Aquaculture Society, New Orleans, Louisiana, January 12-18, 1994.
- Rosati, R., P.D. O'Rourke, K. Tudor, and P. Foley. 1994. Technical and economical considerations for the selection of oxygen incorporation devices in a recirculating aquaculture system. 25<sup>th</sup> Annual Meeting of the World Aquaculture Society, New Orleans, Louisiana, January 12-18, 1994.
- Tudor, K., R. Rosati, P.D. O'Rourke, Y.V. Wu, D. Sessa, and P. Brown. 1994. Technical and economical feasibility of on-farm fish feed production using fishmeal analogs. 25<sup>th</sup> Annual Meeting of the World Aquaculture Society, New Orleans, Louisiana, January 12-18, 1994.

## EXTENSION

### *NCRAC Extension Fact Sheet Series*

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- Colyn, J., G. Boersen, B. Knudsen and C.T. Weeks (ed). 2014. A strategic plan for a thriving and sustainable Michigan aquaculture; Michigan Sea Grant Integrated Assessment Final Report. Michigan Sea Grant, Ann Arbor, MI.
- Quagraine, K. A Guide to Marketing for Small-Scale Aquaculture Producers. 2014 (Available: [http://www.iisgcp.org/catalog/downloads\\_09/EC-738\\_Aqua.pdf](http://www.iisgcp.org/catalog/downloads_09/EC-738_Aqua.pdf))
- Quagraine, K. Profitability of Indoor Production of Pacific White Shrimp (*Litopenaeus vannamei*): A Case Study of the Indiana Industry. 2015 (<https://extension.purdue.edu/extmedia/EC/EC-797-W.pdf>)
- Quagraine, K. Profitability of Hybrid Striped Bass Cage Aquaculture in the Midwest. 2015 ([https://www.edustore.purdue.edu/item.asp?Item\\_Number=EC-798-W#.VpbAFcYrK70](https://www.edustore.purdue.edu/item.asp?Item_Number=EC-798-W#.VpbAFcYrK70))
- Pattillo, D.A. *In Review*. An Overview of Aquaponic Systems: Hydroponic Components. North Central Regional Aquaculture Center Pub # XXX.
- Pattillo, D.A. *In Review*. An Overview of Aquaponic Systems: Aquaculture Components. North Central Regional Aquaculture Center Pub # XXX.
- Weeks C.T. 2013. Sustainable aquaculture in the north central region US - review of perceptions and recommendations from the aquaculture community. Journal of Extension v51 no.2 - 2COM1.
- Workshops/Conferences/Symposia/Papers Presented**
- 1<sup>st</sup> National Aquaculture Extension Workshop, Ferndale, Arkansas, March 3-7, 1992. (Joseph E. Morris, Steering Committee)
- 1<sup>st</sup> North Central Regional Aquaculture Conference, Kalamazoo, Michigan, March 18-21, 1991. (Donald L. Garling, Lead; David J. Landkamer, Joseph E. Morris and Ronald Kinnunen, Steering Committee)
- 2<sup>nd</sup> North Central Regional Aquaculture Conference, Minneapolis, Minnesota, February 17-18, 1995. (Jeffrey L. Gunderson, Lead; Fred P. Binkowski, Donald L. Garling, Terrence B. Kayes, Ronald E. Kinnunen, Joseph E. Morris, and LaDon Swann, Steering Committee)
- 3<sup>rd</sup> North Central Regional Aquaculture Conference, Indianapolis, Indiana, February 6-7, 1997. (LaDon Swann)
- 4<sup>th</sup> North Central Regional Aquaculture Conference, Columbia, Missouri, February 24-26, 1999. (Robert A. Pierce and Joseph E. Morris).
- AIS-HACCP Training Workshop, American Fisheries Society Annual Conference, Lake Placid, New York, September 10, 2006. (Ronald E. Kinnunen)
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- AIS-HACCP Train-the-Trainer Workshop, Columbus, Ohio, February 9, 2007. (Ronald E. Kinnunen and Jeff Gunderson)
- ANS-HACCP Approach: Reducing the Risk of Spreading Aquatic Nuisance Species, Aquaculture America 2003, Louisville, Kentucky, February 18-21, 2003. (Ronald E. Kinnunen)
- AIS-HACCP Training Workshop, Clare, Michigan, July 30, 2007. (Ronald E. Kinnunen)
- AIS-HACCP Training Workshop, Rogers, Minnesota, September 6, 2007. (Ronald E. Kinnunen and Jeff Gunderson)
- AIS-HACCP Training Workshop, Stevens Point, Wisconsin, October 26, 2007. (Ronald E. Kinnunen and Phil Moy)
- AIS-HACCP Training Workshop, Pierre, South Dakota, January 4, 2008. (Ronald E. Kinnunen and Jeff Gunderson)
- AIS-HACCP Use in the Baitfish and Aquaculture Industries, Organisms in Trade Workshop, Great Lakes Commission, Romulus, Michigan, June 10, 2008. (Ronald E. Kinnunen)
- AIS-HACCP Training Workshop, Indianapolis, Indiana, July 23, 2008. (Ronald E. Kinnunen and Kristin TePas)
- AIS-HACCP Training Workshop, Ashland, Nebraska, October 15, 2009. (Ronald E. Kinnunen and Richard Clayton)
- AIS-HACCP Training Workshop, Spirit Lake, Iowa, June 16, 2010. (Ronald E. Kinnunen and Joseph Morris)
- American Fisheries Society Annual Conference, North Central Regional Aquaculture Center VHS Project, St. Paul, Minnesota, August 20, 2012. (R.E. Kinnunen, M.P. Gaikowski, M.T. Tuttle-Lau, J.J. Rach, J.A. Malison, J.A. Held, R.E. Johnson, S.E. Kaatz, G.D. Dvorak)
- American Fisheries Society Fish Health Section Annual Conference, North Central Regional Aquaculture Center VHS Project, La Crosse, Wisconsin, August 1, 2012. (R. E. Kinnunen, M.P. Gaikowski, M.T. Tuttle-Lau, J.J. Rach, J.A. Malison, J.A. Held, R.E. Johnson, S.E. Kaatz, G.D. Dvorak)
- G.D. Dvorak)
- An Overview of Aquaculture. NCR-SARE Aquaculture, Hydroponics, and Aquaponics Train the Trainer Workshop. September 3, 2014. (D. A. Pattillo)
- Applications of HACCP in Aquaculture, Aquaculture America 2003, Louisville, Kentucky, February 18-21, 2003. (Ronald E. Kinnunen)
- Aquaculture in the Age of the Information Highway (World Aquaculture Society special session), San Diego, California, February 7, 1995. (LaDon Swann)
- Aquaculture in the Age of the Information Highway. Multimedia session, 18 month meeting of the Sea Grant Great Lakes Network, Niagara Falls, Ontario, May 6, 1995. (LaDon Swann)
- AquaNIC. Annual Meeting of the Aquaculture Association of Canada, Nanaimo, British Columbia, June 5, 1995. (LaDon Swann)
- Aquaculture Biosecurity/AIS-HACCP Workshop, Ellendale, Minnesota, July 12, 2012. (Ronald E. Kinnunen and Nick Phelps)
- Aquaculture Biosecurity/AIS-HACCP Workshop, La Crosse, Wisconsin, July 30, 2012. (Ronald E. Kinnunen and Nick Phelps)
- Aquaculture Biosecurity/AIS-HACCP Workshop, Dundee, Michigan, August 6, 2012. (Ronald E. Kinnunen and Chris Weeks)
- Aquaculture Field Day, Lincoln University Carver Farm, Missouri, October 2004. (Robert A. Pierce)
- Aquaculture in Michigan – A Brief Overview of Status, Regulatory Structures and Impacting Factor, Lansing, Michigan, January 22, 2010. (Christopher T. Weeks)
- Aquaculture Leader Training for Great Lakes Sea Grant Extension Agents, Manitowoc, Wisconsin, October 23, 1990. (David J. Landkamer and LaDon Swann)
- Aquaculture Leader Training, Alexandria, Minnesota, March 6, 1993. (Jeffrey L. Gunderson and Joseph E. Morris)

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- Aquaculture Overview, National Farm and Ranch Business Management Education Association Annual Conference, Wooster, Ohio, June 13, 2005. (Laura G. Tiu)
- Aquaponics System Design and Management. Tristate Forestry Conference. March 8, 2014. (D. A. Pattillo)  
([http://www.extension.iastate.edu/forestry/tristate/tristate\\_2014/talks/PDFs/Aquaponic\\_System\\_Design\\_and\\_Management.pdf](http://www.extension.iastate.edu/forestry/tristate/tristate_2014/talks/PDFs/Aquaponic_System_Design_and_Management.pdf)) Aquaculture: Technical Issues – SOP Considerations (2014) Available: [https://www.youtube.com/watch?v=mu6FbnGDIHc&feature=youtu.be&list=PLmvGnzBqbDXyYPb7YRcORn2i4\\_tEE2nbT](https://www.youtube.com/watch?v=mu6FbnGDIHc&feature=youtu.be&list=PLmvGnzBqbDXyYPb7YRcORn2i4_tEE2nbT)  
Aquaculture: Market and Industry Trends Panel (2014) Available: [https://www.youtube.com/watch?v=T-L8Z4x4MW0&feature=youtu.be&list=PLmvGnzBqbDXyYPb7YRcORn2i4\\_tEE2nbT](https://www.youtube.com/watch?v=T-L8Z4x4MW0&feature=youtu.be&list=PLmvGnzBqbDXyYPb7YRcORn2i4_tEE2nbT))
- Aquaponics System Design and Management. NCR-SARE Aquaculture, Hydroponics, and Aquaponics Train the Trainer Workshop. September 3, 2014. (D. A. Pattillo)
- Aquaponics System Design and Management. North Central Regional Aquaculture Conference March 12, 2016. Pattillo, D. A. Iowa State University. Available: [http://www.ncrac.org/files/presentation/file/Aquaponic%20System%20Design%20and%20Management\\_Pattillo.pdf](http://www.ncrac.org/files/presentation/file/Aquaponic%20System%20Design%20and%20Management_Pattillo.pdf) Accessed 11/4/2016.
- Baitfish Regulations and State Industry Contacts, NCRAC Baitfish Workshop, La Crosse, Wisconsin, September 21, 2010. (Christopher T. Weeks)
- Biosecurity and VHS Virus Update, NCRAC Baitfish Workshop, La Crosse, Wisconsin, September 21, 2010. (Ronald E. Kinnunen)
- Certified Pesticide Applicators Workshop, Aquatic Plant Identification and Control, Wetmore, Michigan, March 19, 2010. (Ronald E. Kinnunen and Jim Islieb)
- Channel Catfish Culture in Midwestern Plastic-Lined Ponds, American Fisheries Society Annual Meeting, Madison, Wisconsin, August 25, 2004. (Joseph E. Morris)
- Commercial Aquaculture Recirculation Systems, Piketon, Ohio, July 10, 1993. (James E. Ebeling)
- Conversion of Livestock Barns into Fish Production Facilities IP Videoconference, Purdue University, West Lafayette, Indiana, March 8, 2007. (Kwamena K. Quagrainie)
- Crayfish Symposium, Carbondale, Illinois, March 23-24, 1991. (Daniel A. Selock and Christopher C. Kohler)
- Deliverables for NCRAC Funded Projects. 2013 NCRAC Annual Meeting, February 18, 2013.
- Description of the Aquaculture and Bait Fish Industries: Threat Evaluation and Identification of Critical Control Points, International Joint Commission Workshop on Exotic Policy, Milwaukee, Wisconsin, September 22-26, 1999. (Jeffrey L. Gunderson)
- Early Spawning and Associated Laboratory Practices of Golden Shiners, NCRAC Baitfish Workshop, La Crosse, Wisconsin, September 21, 2010. (Joseph E. Morris)
- Economics of Aquaculture Production. North Central Regional Aquaculture Conference March 12, 2016. Quagrainie, K. Purdue University. Available: <http://www.ncrac.org/files/presentation/file/Aquaculture%20Economics%2C%20Quagrainie.pdf> Accessed 11/4/2016.
- Extension Program Assessment: An Extension Specialist's View, 3<sup>rd</sup> National Aquaculture Extension Conference, Tucson, Arizona, April 7-11, 2003. (Joseph E. Morris)
- Extension Programming in the North Central Region, SERA-IEG-9, Frankfort, Kentucky, March 14-16, 1999. (Joseph E. Morris)
- Fish Health: What you need to know (about regulatory inspections). North Central Regional Aquaculture Conference March 12, 2016. Phelps, N. University of Minnesota. Available: <http://www.ncrac.org/files/presentation/file/Fish%20Health%20What%20you%20need%20to%20know%2C%20Phelps.pdf> Accessed 11/4/2016.

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- Fish Transportation Workshops, Marion, Illinois, April 6, 1991 and West Lafayette, Indiana, April 20, 1991. (LaDon Swann and Daniel A. Selock)
- Fisheries Management in the North Central Region, 9<sup>th</sup> National Extension Wildlife, Fisheries, and Aquaculture Conference, Portland, Maine, September 29-October 2, 1999. (Joseph E. Morris, and S.K. Whitcomb)
- Food Safety Issues Related to Aquaculture, Aquaculture America 2003, Louisville, Kentucky, February 18-21, 2003. (Ronald E. Kinnunen)
- Freshwater Prawn Production Workshop, Sellersburg, Indiana, April 14, 2007. (Kwamena K. Quagraine)
- Great Lakes Native American Involvement in Fisheries Extension Programs, 3<sup>rd</sup> National Aquaculture Extension Conference, Tucson, Arizona, April 7-11, 2003. (Ronald E. Kinnunen and Charles Pistis)
- Great Lakes Native American Involvement in Fisheries Extension Programs, American Fisheries Society Annual Meeting, Madison, Wisconsin, August 25, 2004. (Ronald E. Kinnunen)
- Great Lakes Native American Involvement in Fisheries Extension Programs, International Association of Great Lakes Research Conference, Ann Arbor, Michigan, May 24, 2005. (Ronald E. Kinnunen and Charles Pistis)
- Growing Power Conference, Fish Processing, Milwaukee, Wisconsin, September 11, 2010. (Ronald E. Kinnunen)
- HACCP Approach to Prevent the Spread Of Aquatic Invasive Species by Aquaculture and Baitfish Operations, 4<sup>th</sup> National Aquaculture Extension Conference, Cincinnati, Ohio, May 1-3, 2007. (Ronald E. Kinnunen)
- HACCP Approach to Prevent the Spread of Aquatic Invasive Species by Aquaculture and Baitfish Operations, 92<sup>nd</sup> Annual Meeting and Professional Improvement Conference, Association of County Agricultural Agents, Grand Rapids, Michigan, July 17, 2007. (Ronald E. Kinnunen)
- Hazard Analysis Critical Control Point (HACCP) Training for Commercial Fish Processors (poster), International Association of Great Lakes Research Conference, Ann Arbor, Michigan, May 24, 2005. (Ronald E. Kinnunen)
- Hybrid Walleye Workshop, Jackson, Missouri, March 5, 2003. (Ronald E. Kinnunen and Robert A. Pierce II)
- In-Service Training for CES and Sea Grant Personnel, Gretna, Nebraska, February 9, 1993. (Terrence B. Kayes and Joseph E. Morris)
- International Conference on Aquatic Invasive Species, The HACCP Approach to Prevent the Spread of Aquatic Invasive Species by Aquaculture and Baitfish Operations, Niagara Falls, Ontario, April 24, 2013. (R. E. Kinnunen and J. Gunderson)
- Internet Resources for Aquaculture Education and Communications: Present and Future, 9<sup>th</sup> National Extension Wildlife, Fisheries, and Aquaculture Conference, Portland, Maine, September 29-October 2, 1999. (LaDon Swann)
- Interstate Movement of Live Fish Regulations in the North Central U.S., Workshop for Veterinarians, Frankfort, Indiana, September 30, 2010. (Christopher T. Weeks)
- Introduction to Recirculating Aquaculture Workshop, Bellevue, Ohio, March 20, 2004. (Laura G. Tiu)
- Interstate Movement of Live Fish Regulations in the North Central U.S., Workshop for Veterinarians, Madison, Wisconsin, April 26-27, 2010. (Christopher T. Weeks)
- Investing in Freshwater Aquaculture, Satellite Videoconference, Purdue University, April 10, 1993. (LaDon Swann)
- Live Haul Aquaculture Marketing & Advantages of Collective Sales. North Central Regional Aquaculture Conference March 12, 2016. Hitchens, P. Southern Illinois University – Carbondale. Available: <http://www.ncrac.org/files/presentation/file/Live%20Haul%20Marketing%20%26%20Collective%20Sales%2C%20Hitchens.pdf> Accessed 11/4/2016.

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- Logic Model and Impact Statements for NCRAC. 2013 NCRAC Annual Meeting, February 18, 2013. (J. E. Morris, S. Brown and D.A. Pattillo)
- Marketing for Aquaculture. 2013 NCRAC Annual Meeting, February 18, 2013. (D. Burden and D. A. Pattillo)
- MarketMaker, Michigan Aquaculture Association Annual Conference, Clare, Michigan, February 12, 2008. (Ronald E. Kinnunen)
- Michigan Aquaculture Association, Aquaculture Biosecurity/AIS-HACCP Update, Mt. Pleasant, Michigan, February 25, 2010. (Ronald E. Kinnunen)
- Michigan Aquaculture and Salmonid Aquaculture in the North Central Region, Great Lakes Sea Grant Network Conference, Chicago, Illinois, September 18, 2007. (Ronald E. Kinnunen)
- Michigan Aquaculture Association Annual Conference, Aquaculture Biosecurity/AIS-HACCP/Seafood HACCP/Fish Processing and Marketing, Tustin, Michigan, February 7, 2012 (Ronald E. Kinnunen)
- Midwest Regional Cage Fish Culture Workshop, Jasper, Indiana, August 24-25, 1990. (LaDon Swann)
- Missouri Aquaculture – Status, Progress, Priorities, Information Access and Concerns. Missouri Aquaculture Association Annual Meeting, Lincoln University Carver Farm, January 10, 2011. (Christopher T. Weeks)
- National Extension Wildlife and Fisheries Workshop, Kansas City, Missouri, April 29-May 2, 1993. (Joseph E. Morris)
- NCRAC Baitfish Workshop, La Crosse, Wisconsin, September 21, 2010. (Jeff Gunderson, Joseph E. Morris and Ronald E. Kinnunen)
- Netpen Aquaculture. North Central Regional Aquaculture Conference March 12, 2016. Weeks, C. Michigan State University. Available: <http://www.ncrac.org/files/presentation/file/Michigan%20Netpen%20Aquaculture%2C%20Weeks.pdf> Accessed 11/4/2016.
- North Central Regional Aquaculture Center Hybrid Striped Bass Workshop, Champaign, Illinois, November 2-4, 1995. (Christopher C. Kohler, LaDon Swann, and Joseph E. Morris)
- North Central Regional Aquaculture Center VHS Project, Michigan Aquaculture Association Annual Conference, Clare, Michigan, February 12, 2008. (Ronald E. Kinnunen)
- North Central Regional Aquaculture Center Seeks Input from the Missouri Aquaculture Industry, Missouri Aquaculture Association Meeting and Biosecurity Workshop, Jefferson City, Missouri, January 23, 2009. (Christopher T. Weeks)
- Ohio State University Bluegill Aquaculture Workshop, Columbus, Ohio, February 11, 2011. (Charles Hicks, Laura Tiu)
- On Farm Demonstration of Freshwater Shrimp Culture in Southern Ohio, 3<sup>rd</sup> National Aquaculture Extension Conference, Tucson, Arizona, April 7-11, 2003. (Laura G. Tiu)
- Online fish health program for fish farmers. The 35<sup>th</sup> Annual Eastern Fish Health Workshop, Shepherdstown, Shepherdstown, West Virginia, May 24-28, 2010. (Myron J. Kebus)
- Organic Aquaculture Standards Workshop, Minneapolis, Minnesota, June 23-24, 2000. (Anne R. Kapuscinski)
- Overviews on Production, Nutrition, Economics, and Fish Health Management for Yellow Perch, *Perca flavescens*, Aquaculture America 2003, Louisville, Kentucky, February 18-21, 2003. (Fred P. Binkowski, Ronald E. Kinnunen, and Geoffrey Wallat)
- Pond Fertilization Strategies for Northern Climates, NCRAC Baitfish Workshop, La Crosse, Wisconsin, September 21, 2010. (Joseph E. Morris)
- Potential Recovery and Beneficial Use of Aquaculture Effluents and Waste By-Products, Aquaculture 2004, Honolulu, Hawaii, March 1-4, 2004. (Joseph E. Morris and Fred P. Binkowski)

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- Power Conference, Fish Handling, Processing, Seafood HACCP, and Fish Marketing, Milwaukee, Wisconsin, September 8, 2012.
- Rainbow Trout Production: Indoors/Outdoors, Piketon, Ohio, July 8, 1995. (James E. Ebeling)
- Regional Workshop on Commercial Fish Culture Using Water Recirculating Systems, Normal, Illinois, November 15-16, 1991. (LaDon Swann)
- Regional Workshop of Commercial Fish Culture Using Water Reuse Systems, Normal, Illinois, November 2-3, 1990. (LaDon Swann)
- Regional Workshop on Commercial Fish Culture Using Water Recirculating Systems, Normal, Illinois, November 19-20, 1992. (LaDon Swann)
- Salmonid Culture, East Lansing, Michigan, March 23-24, 1990. (Donald L. Garling)
- Seafood HACCP Training Workshop, Bay Mills, Michigan, December 9-11, 2008. (Ronald E. Kinnunen)
- Seafood HACCP Training Workshop, Baraga, Michigan, February 15-18, 2011. (Ronald E. Kinnunen)
- Seafood HACCP Training Workshop, Baraga, Michigan, December 10-12, 2013. (Ronald E. Kinnunen)
- Seafood HACCP Training Workshop, Bay Mills, Michigan, March 9-11, 2010. (Ronald E. Kinnunen)
- Seafood HACCP Training Workshop, Bay Mills, Michigan, December 4-6, 2012.
- Seafood HACCP Training Workshop, Petoskey, Michigan, December 6-8, 2011. (Ronald E. Kinnunen)
- The Role of the North Central Regional Aquaculture Center in Addressing Challenges Facing Regional Aquaculture Development Using Extension and Research Partnerships. Aquaculture 2013, Nashville, TN. February 24, 2013. (J.E. Morris, D.A. Pattillo and C. Weeks)
- Tri-State Aquaculture Conference/Workshop. Ashland, Nebraska, March 17, 2007. (Fred B. Binkowski and Joseph E. Morris)
- Upper Midwest Invasive Species Conference, Aquatic and Terrestrial Invasive Species-Hazard Analysis Critical Control Point (HAACP) Workshop, La Crosse, Wisconsin, October 29, 2012.
- Use of Natural Ponds for Fish and Baitfish Production, Aquaculture America 2003, Louisville, Kentucky, February 18-21, 2003. (Ronald E. Kinnunen)
- Using Sensory Analysis to Better Position a Fish Product in the Market Place, 4<sup>th</sup> National Aquaculture Extension Conference, Cincinnati, Ohio, May 1-3, 2007. (Ronald E. Kinnunen)
- VHS Virus in the Great Lakes Region, 92<sup>nd</sup> Annual Meeting and Professional Improvement Conference, National Association of County Agricultural Agents, Grand Rapids, Michigan, July 17, 2007. (Ronald E. Kinnunen)
- VHS: a Regional Industry Perspective, Illinois VHS Conference and Workshop, Rend Lake, Indiana, April 26, 2008 (Christopher T. Weeks)
- Yellow Perch and Hybrid Striped Bass Aquaculture Workshop, Piketon, Ohio, July 9, 1994. (James E. Ebeling and Christopher C. Kohler)
- Walleye Culture. 2012 eXtension Virtual Aquaculture Workshop. November 14, 2012. [http://www.extension.org/sites/default/files/Walleye\\_Culture\\_Pattillo\\_eXtension\\_11-2012.pdf](http://www.extension.org/sites/default/files/Walleye_Culture_Pattillo_eXtension_11-2012.pdf)
- Workshop on Getting Started in Commercial Aquaculture Raising Crayfish and Yellow Perch, Jasper, Indiana, October 14-15, 1994. (LaDon Swann)
- Walleye Culture Workshop, Minneapolis, Minnesota, February 17-18, 1995. (Jeffrey L. Gunderson)
- Why AIS-HACCP? Overview and Rationale, International Association of Great Lakes Research Conference, Ann Arbor, Michigan, May 24, 2005. (Ronald E. Kinnunen and Jeffery L. Gunderson)
- Why Aquaponics? FarmTek's Fall 2013 Controlled Environment Agriculture School. (D. A. Pattillo)
- Yellow Perch Aquaculture Workshop, Spring Lake, Michigan, June 15-16, 1995. (Donald L. Garling)

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Yellow Perch Producers' Forum, Hudson, Wisconsin, January 21-22, 2000. (Joseph E. Morris and Jeffrey L. Gunderson)

Yellow Perch Aquaculture Workshop, Bad River Tribal Hatchery Program, Milwaukee, Wisconsin, December 2004. (Fred P. Binkowski)

Yellow Perch and Lake Sturgeon Workshop, Lac du Flambeau Tribal Hatchery, Milwaukee, Wisconsin, February 2005. (Fred P. Binkowski)

Yellow Perch Aquaculture Workshop, Kearney, Nebraska, February 26, 2005. (Fred B. Binkowski)

Yellow Perch Spawning Workshop, Milwaukee, Wisconsin, November 2, 2006. (Fred B. Binkowski).

### **Proceedings**

Gunderson, J., editor. 1995. Proceedings of the Combined North Central and Ninth Annual Minnesota Aquaculture Conference and Tradeshow. 2<sup>nd</sup> North Central Regional Aquaculture Conference, Minneapolis, Minnesota, February 17-18, 1995.

Morris, J.E., editor. 1999. Aquaculture at the crossroads: linking the past to the future. Compilation of abstracts, papers, and supporting articles for the 4<sup>th</sup> North Central Regional Aquaculture Conference, Columbia, Missouri, February 24-26, 1999.

Proceedings of the North Central Regional Aquaculture Conference. 1991. 1<sup>st</sup> North Central Regional Aquaculture Conference, Kalamazoo, Michigan, March 18-21, 1991.

Swann, L., editor. 1997. Proceedings of the 1997 North Central Regional Aquaculture Conference. 3<sup>rd</sup> North Central Regional Aquaculture Conference, Indianapolis, Indiana, February 6-7, 1997. Illinois-Indiana Sea Grant Program, Publication CES-305. (Also available electronically at: <http://ag.ansc.purdue.edu/aquanic/publicat/state/i1-in/ces-305.htm>)

## FEED TRAINING CARNIVOROUS FISH

### **Publication in Print**

Sims, D.W. 2007. Effects of feed training methods and light intensity on survival and feed training success of largemouth bass *Micropterus salmoides* and effectiveness of new bird repellent devices in a commercial aquaculture setting. Master's thesis. Southern Illinois University-Carbondale.

### **Paper Presented**

Sims, D.W., and A.M. Kelly. 2007. Effects of different feed training methods on survival and feed training success of largemouth bass *Micropterus salmoides*. Aquaculture America 2007, San Antonio, Texas, February 26-March 2, 2007.

## HYBRID STRIPED BASS

### **Publications in Print**

Allyn, M.L., R.J. Sheehan, and C.C. Kohler. 2001. The effects of capture and transportation stress on white bass semen osmolality and their alleviation via sodium chloride. Transactions of the American Fisheries Society 130:706-711.

Anonymous. 1995. Proceedings of the NCRAC Hybrid Striped Bass Workshop. NCRAC Publications Office, Iowa State University, Ames.

Brown, P.B., R. Twibell, Y. Jonker, and K.A. Wilson. 1997. Evaluation of three soybean products in diets fed to juvenile hybrid striped bass *Morone saxatilis* H M. *chrysops*. Journal of the World Aquaculture Society 28:215-223.

Brown, P.B., B.J. Brown, S. Hart, J. Curry, and A. Hittle-Hutson. 2008. Comparison of soybean-based practical diets containing 32, 36, or 40% crude protein fed to hybrid striped bass in earthen culture ponds. North American Journal of Aquaculture 70:128-131.

Kasper, C.S., and C.C. Kohler. 2004. Use of finishing diets in indoor hybrid striped bass culture reduces production costs. Pages 507-513 in T. Rakestraw, L.S. Douglas, and G.J. Flick, editors.

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- Proceedings of the Fifth International Conference on Recirculating Aquaculture. Virginia Polytechnic Institute and State University, Roanoke, Virginia.
- Kelly, A.M., and C.C. Kohler. 1996. Sunshine bass performance in ponds, cages, and indoor tanks. *Progressive Fish-Culturist* 58:55-58.
- Kelly, A.M., and C.C. Kohler. 1999. Cold tolerance and fatty acid composition in striped bass, white bass and their hybrids. *North American Journal of Aquaculture* 61:278-285.
- Kemeh, S., and P.B. Brown. 2001. Evaluation of different stocking densities for hybrid striped bass in small-scale recirculation systems. *North American Journal of Aquaculture* 63:234-237.
- Kohler, C.C. 1997. White bass production and broodstock development. Pages 169-185 in R.M. Harrell, editor. *Striped bass and other Morone culture*. Elsevier Press, Amsterdam.
- Kohler, C.C. 2000. Striped bass and hybrid striped bass culture. Pages 898-907 in R.R. Stickney, editor. *Encyclopedia of aquaculture*. John Wiley & Sons, Inc., New York.
- Kohler, C.C., R.J. Sheehan, C. Habicht, J.A. Malison, and T.B. Kayes. 1994. Habituation to captivity and controlled spawning of white bass. *Transactions of the American Fisheries Society* 123:964-974.
- Kohler, C.C., R.J. Sheehan, J.J. Myers, J.B. Rudacille, M.L. Allyn, and A.V. Suresh. 2001. Performance comparison of geographic strains of white bass (*Morone chrysops*) to produce sunshine bass. *Aquaculture* 202:351-357.
- Lane, R.L., and C.C. Kohler. 2006. Effects of dietary lipid and fatty acids on white bass reproductive performance, egg hatchability, and overall quality of progeny. *North American Journal of Aquaculture* 68:141-150.
- Lane, R.L., and C.C. Kohler. 2007. Influence of organic fertilizer source on fatty acid composition of zooplankton and sunshine bass fingerlings. *North American Journal of Aquaculture* 69:413-418.
- Lane, R.L., J.T. Trushenski, and C.C. Kohler. 2006. Modification of fillet composition and evidence of differential fatty acid turnover in sunshine bass *Morone chrysops* × *M. saxatilis* following change in dietary lipid source. *Lipids* 41:1029-1038.
- Lewis, H.A., and C.C. Kohler. 2008. Corn gluten meal partially replaces fish meal without compromising growth or fatty acid composition of sunshine bass. *North American Journal of Aquaculture* 70:50-60.
- Lewis, H.A., and C.C. Kohler. 2008. Minimizing fish oil and fish meal with plant-based alternatives in sunshine bass diets without negatively impacting growth and muscle fatty acid profile. *Journal of the World Aquaculture Society* 39:573-585.
- Morris, J.E., C.C. Kohler, and C.C. Mischke. 1999. Pond culture of hybrid striped bass in the North Central Region. NCRAC Fact Sheet Series #107, NCRAC Publications Office, Iowa State University, Ames.
- Myers, J.J. 1999. Acute responses to salinity for sunshine bass and palmetto bass. Master's thesis. Southern Illinois University-Carbondale.
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- Schnick, R.A. 1995. FWS/INAD Coordination Workshop. Presenter and coordinator, Bozeman, Montana, August 1-4, 1995.
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- Schnick, R.A. 1996. Status of aquaculture INADs and NADAs. Presenter and coordinator, Midcontinent Warmwater Fish Culture Workshop and INAD/NADA Coordination Meetings, Council Bluffs, Iowa, February 6-8, 1996.
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- Schnick, R.A. 1996. Overview of NADA Coordinator activities, International Project update, short-term INAD/NADA needs. FWS INAD Coordination Workshop, Bozeman, Montana, August 14-15, 1996.
- Schnick, R.A. 1996. The procedures and responsibilities related to the amoxicillin INAD. Meeting of the Fish Growers of America, Memphis, Tennessee, October 2, 1996.
- Schnick, R.A. 1996. Overview of pivotal study protocol requirements. Chloramine-T Pivotal Efficacy Protocol Development Workshop, Kansas City, Missouri, November 7-8, 1996.
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- Schnick, R.A. 1997. Overview of partnerships for aquaculture drug approvals. Partnerships for Aquaculture Drug Approvals: Models for Success. Chair of Special Session at 28<sup>th</sup> Annual Meeting of the World Aquaculture Society, Seattle, Washington, February 19-23, 1997.
- Schnick, R.A. 1997. Current status and future needs for drugs in aquaculture: regional needs. Workshop on International Harmonization for Drugs and Biologics, Seattle, Washington, February 24, 1997.
- Schnick, R.A. 1997. Aquaculture drug approval progress for the catfish industry. Catfish Farmers of America 1997 National Convention, Nashville, Tennessee, February 27-March 1, 1997.
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- Schnick, R.A. 1997. History of the IAFWA drug approval project; review of FDA's decisions on drug use in aquaculture; and negotiations by NADA coordinator. First Meeting of the IAFWA Drug Approval Oversight Subcommittee, Hot Springs, Arkansas, May 5, 1997.
- Schnick, R.A. 1997. Review of the November 1996 chloramine-T data requirements; Data call-in. Chloramine-T INAD Coordination Workshop, Bozeman, Montana, August 5, 1997.
- Schnick, R.A. 1997. Overview of NADA Coordinator activities. FWS-INAD Coordination Workshop, Bozeman, Montana, August 7, 1997.
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- Schnick, R.A. 1998. Priorities subcommittee report. Workshop on International Harmonization of Aquaculture Drugs and Biologics, Las Vegas, Nevada, February 15, 1998.
- Schnick, R.A. 1998. Upcoming successes for aquaculture drug approvals in the United States through unique partnerships. Special Session, Aquaculture drug approvals success story about to happen, @ 29<sup>th</sup> Annual Meeting of the World Aquaculture Society, Las Vegas, Nevada, February 15-19, 1998.
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- Schnick, R.A. 1998. Overview of IAFWA Project Status. Coordination meeting for IAFWA Aquaculture Drug Approval Project, La Crosse, Wisconsin, November 19-20, 1998.
- Schnick, R.A. 1998. Overview of the international aspects of antimicrobial sensitivity determination and the need for harmonization in aquaculture drugs. Workshop on MIC Methodology (EU Concerted Action - Fair-CT97-3760), Weymouth, England, November 24-27, 1998.
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### SOME COMMONLY USED ABBREVIATIONS AND ACRONYMS

×	cross, by, or times
AIS	aquatic invasive species
anamnox	anaerobic ammonium oxidizing bacteria
AOA	ammonia oxidizing archaea
AOB	ammonia oxidizing bacteria
APHIS	Animal and Plant Health Inspection Service
AREF	Aquaculture Regional Extension Facilitator
AquaNIC	Aquaculture Network Information Center
BOD	Board of Directors
BW	body weight
EC	degrees Celsius
CES	Cooperative Extension Service
COD	chemical oxygen demand
CSFPH	Center for Food Security and Public Health
CVM	Center for Veterinary Medicine
EPC	epithelioma papulosum cyprini
EF	degrees Fahrenheit
FSR	final study report
ft, ft <sup>2</sup> , ft <sup>3</sup>	foot, square foot, cubic foot
FY	fiscal year
g	gram(s)
gal	gallon(s)
h	hour(s)
ha	hectare(s)
HACCP	Hazard Analysis and Critical Control Point
HCG	human chorionic gonadotropin
IAC	Industry Advisory Council
in	inch(es)
INAD	investigational new animal drug
ISU	Iowa State University
KAA	Kansas Aquaculture Association
kg	kilogram(s)
L	liter(s)
lb	pound(s)
LU	Lincoln University
m, m <sup>2</sup> , m <sup>3</sup>	meter(s), square meter, cubic meter
MAI	motile <i>Aeromonas</i> infection
MAS	motile <i>Aeromonas</i> septicemia
MDNRE	Michigan Department of Natural Resources and Environment
μg	microgram(s)
mg	milligram(s)
MC	Mill Creek
min	minute(s)

mL	milliliter(s)
mm	millimeter(s)
MSU	Michigan State University
MT	methyltestosterone
N	number
NAA	National Aquaculture Association
NADA	new animal drug application
NASAC	National Association of State Aquaculture Coordinators
NCC	National Coordinating Council
NCR	North Central Region
NCRAC	North Central Regional Aquaculture Center
NIFA	National Institute of Food and Agriculture
NOB	nitrite oxidizing bacterial
OCARD	Ohio Center for Aquaculture Research and Development
OSU	Ohio State University
oz	ounce(s)
PAH	Phibro Animal Health
PCR	polymerase chain reaction
PFU	plaque-forming units
POW	Plan of Work
ppm, ppt	parts per million, parts per trillion
Purdue	Purdue University
RAC(s)	Regional Aquaculture Center(s)
RAES	Regional Aquaculture Extension Specialist
RAET	Regional Aquaculture Extension Team
RAS	recirculating aquaculture system
RS	Rimler-Stotts
SPAH	Schering-Plough Animal Health
TC	Technical Committee (TC/E = Technical Committee/Extension; TC/R = Technical Committee/Research)
™	trademark
TSA	Tryptic Soy Agar
UMESC	Upper Midwest Environmental Sciences Center
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
UW-Madison	University of Wisconsin-Madison
UW-Milwaukee	University of Wisconsin-Milwaukee
VHS	viral hemorrhagic septicemia
VHSv	viral hemorrhagic septicemia virus
WATER	Wisconsin Aquatic Technology and Environmental Research