APPENDIX:
Published Reports in Peer-Reviewed Journals Based on NOAA Chesapeake Bay Office-Funded Research Related to Non-native Oysters

(If no publications are listed after a project, none were found; list updated June 2012)

1) **A histological investigation of oyster parasites and pathology in three Chinese estuaries containing varying mixtures of coexisting oyster species including *C. ariakensis*.** NA04NMF4570427; Primary investigators (PIs): Bushek, Ford, Guo. Project dates: 12/04-11/07.

2) **Assessing levels of genetic variation within and among native populations of hatchery stocks of the Suminoe oyster *C. ariakensis* using a suite of molecular markers.** NA04NMF4570432. PIs: Cordes, Reece; Project dates: 10/04-3/07.
   - Cordes, J.F., J. Xiao, and K.S. Reece. 2008. Discrimination of oyster species (*Crassostrea*: *Mollusca*) based on restriction fragment-length polymorphism (RFLP) analysis of nuclear and mitochondrial DNA markers. *J. Shellfish Res*. 27:1155-1161.
   - Reece, K.S., J.F. Cordes, J.B. Stubbs, E. Francis, and K. Hudson. 2008. Molecular phylogeny of *Crassostrea* spp. as inferred from mitochondrial and nuclear DNA sequences. *Mar. Biol*. 153(4): 709-721.
   - Xiao, J., J.F. Cordes, K.C. Jones, S.K. Allen, Jr., and K.S. Reece. 2008. Characterization and inheritance of microsatellite loci in the Suminoe oyster *Crassostrea ariakensis*. *Mol. Ecol*. Notes 8:843-845.
   - Xiao, J., J.F. Cordes, and K.S. Reece. 2010. Population genetic differentiation in the Asian oyster *Crassostrea ariakensis* inferred from nuclear microsatellite loci. *Mar. Biol*. 157:1767-1781.
   - Zhang, Q., Allen, S.K., Jr. and Reece, K.S. (2005) Genetic variation in wild and hatchery stocks of the Suminoe oyster (*Crassostrea ariakensis*) assessed by PCR-RFLP and microsatellite markers. *Mar. Biotechnol*. 7(6):588-599.

3) **Genetic and ecological structure of oyster estuaries in China and factors affecting success of *C. ariakensis*.** NA04NMF4570424 PIs: Guo Project dates: 12/1/04- 11/30/2008
   - Wang, H. X. Guo, G. Zhang and F. Zhang. 2004. Classification of jinjiang oysters *Crassostrea rivularis* (Gould, 1861) from China, based on morphology and phylogenetic analysis. *Aquaculture*, 242:137-155.
   - Wang, H., L. Qian, G. Zhang, X. Liu, A. Wang, Y. Shi, N. Jiao & X. Guo. 2006. Distribution of *C. ariakensis* in China. *J. Shellfish Res.* 23(2):789-790.
   - Wang, H. and X. Guo. 2008. Identification of *Crassostrea ariakensis* and related oysters by multiplex species-specific PCR. *J. Shellfish Res.* 27(3):481-487.
   - Wang, Y. and X. Guo. 2008. ITS length polymorphism in oysters and its potential use in species identification. *J. Shellfish Res.*, 27(3):489-493.
   - Wang, H., G. Zhang, X. Liu and X. Guo. 2008. Classification of common oysters from north China. *J. Shellfish Res*. 27(3):495-503.

4) **Long-term mesocosm studies of competitive interactions between diploid *C. virginica* and *C. ariakensis*.** NA04NMF4570414, NA04NMF4570417, NA04NMF4570418, NA04NMF4570419. PIs: Newell, Luckenbach, Breitburg, Dungan. Project dates: 3/05- 2/09.

5) **Comparative performance of triploid *C. ariakensis* and *C. virginica* in bottom habitats in Virginia and Maryland.** NA05NMF4571240. PIs: Luckenbach, Allen, Kingsley-Smith, Paynter, Meritt. Project dates: 7/05-12/08.
   - Harwell HD, Kingsley-Smith P. R., M Lisa Kellogg, Steven M Allen, Standish K Allen, Donald W Meritt, Kennedy T Paynter, Mark W Luckenbach. 2010. A Comparison of *Crassostrea virginica* and *C. ariakensis* in Chesapeake Bay: Does Oyster Species Affect Habitat Function? *J. Shellfish Res.* 29:253-269. Accessed 6/12/12 from http://www.life.umd.edu/biology/paynterlab/labpub/253.pdf
   - Kingsley-Smith P. R., H. D. Harwell, M. L. Kellogg, S. M. Allen, S. K. Allen, Jr., D. W. Meritt, K. T. Paynter, Jr. & M. W. Luckenbach. 2009. Survival and growth of triploid *Crassostrea virginica* (Gmelin, 1791) and *C. ariakensis*

(Fujita, 1913) in bottom environments of Chesapeake Bay: implications for an introduction. *J. Shellfish Res.* 28: 169-184.

- Paynter, K.T., Jacob D. Goodwin, Marcy E. Chen, Nancy J. Ward, Mark W. Sherman, Donald W. Meritt, and Standish K. Allen. 2008. *Crassostrea ariakensis* in Chesapeake Bay: Growth, Disease and Mortality in Shallow Subtidal Environments. *J. Shellfish Res.* 27: 509–515.

6) **Comparative post-settlement growth and survival in the Suminoe oyster *C. ariakensis* exposed to intertidal emersion.** NA04NMF4570429. PIs: Luckenbach, Kingsley-Smith. Project dates: 4/05-3/06.
   - Kingsley-Smith, P. R. and M. W. Luckenbach. 2008. Post-settlement survival and growth of the Suminoe oyster, *Crassostrea ariakensis*, exposed to simulated emersion regimes. *Journal of Shellfish Research* 27: 609-618.
   - Luckenbach M. W. and A. G. Curry, Jr. (In Prep). Interspecific competition for space between a native and an exotic species: implications for a proposed introduction. *Ecology* (?)

7) **Oxygen tolerance of native and non-native oysters.** NA05NMF4571237. PI: Paynter. Project dates: 7/05-6/06. (**no final report in Grants Online)**

8) **Predation by polyhaline invertebrate predators on young non-native oysters, *C. ariakensis*, in Chesapeake Bay.** NA04NMF4570425. PIs: Kennedy, Newell. Project dates: 3/05-3/08.
   - Newell. R.I.E., V.S. Kennedy, and K.S. Shaw (2007). Comparative vulnerability to predators, and induced defense responses, of eastern oysters *Crassostrea virginica* and non-native *Crassostrea ariakensis* oysters in Chesapeake Bay. *Marine Biology* 152:449–460.
   - Kennedy, V. S., K.S. Shaw and R.I.E. Newell (in prep). Predation by two oyster drill species and a seastar on eastern oysters *Crassostrea virginica* and non-native Suminoe oysters *C. ariakensis*. To be submitted to *Biological Bulletin*. (?)

9) **Will predation mortality differ for larvae of native and non-native oysters?** NA05NMF4571232. PIs: Breitburg, Fulford, Luckenbach, Newell. Project dates: 3/06-2/08

10) **Behavior, substrate selection and survival of *C. ariakensis* pediveliger larvae and juveniles to variation in environmental conditions.** NA04NMF4570420. PIs: Tamburri, Luckenbach, Breitburg. Project dates: 3/05-2/07.
    - Tamburri, M. N., M. W. Luckenbach, D. L. Breitburg and S. M. Bonniwell. 2008. Settlement of *Crassostrea ariakensis* larvae: Effects of substrate, biofilms, sediment and adult chemical cues. *Journal of Shellfish Research* 27: 601-608.

11) **Quantifying the response of different strains of *C. ariakensis* larvae to environmental change under spatially realistic conditions.** NA04NMF4570423. PIs: Newell, Kennedy, Manuel. Project dates: 3/05-2/08.

12) **The use of non-native oysters in the restoration of Chesapeake Bay oyster populations and the potential threats posed by harmful algae.** NA05NMF4571234. PIs: Glibert, Meritt, Stoecker. Project dates: 10/05-9/08.
    - Alexander, J.A. D. K. Stoecker, D. W. Meritt, S. T. Alexander, A. Padeletti, D. Johns, L. Van Heukelem and P. M. Glibert. 2007. Differential Production of Feces and Pseudofeces by the Oyster *Crassostrea ariakensis* When Exposed to Diets Containing Harmful Dinoflagellate and Raphidophyte Species. *J. Shellfish Res.* 27(3), 567–579.
    - Stoecker, D.K., J.E. Adolf, A.R. Place, P.M. Glibert, and D. Meritt. 2008. Effects of the dinoflagellates *Karlodinium veneficum* and *Prorocentrum minimum* on early life history stages of the Eastern Oyster, *Crassostrea virginica*. *Marine Biology* 154: 81-90. Accessed 6/20/12 from http://dx.doi.org/10.1007/s00227-007-0901-z
    - Glibert, P.M., J. Alexander, D.W. Meritt, E.W. North, and D.K. Stoecker. 2007. Harmful algae pose additional challenges to oyster restoration: Impacts of the harmful algae *Karlodinium veneficum* and *Prorocentrum minimum* on early life stages of the oysters *Crassostrea virginica* and *Crassostrea ariakensis*. *J. Shellfish Res.* 26(4) 1-7.
    - Glibert, P., D. Stoecker, D. Meritt, J. Alexander, S. Alexander, D. Johns, and A. Padeletti. Oyster recruitment failure due to toxic dinoflagellates. *Aquatic Biology*. (?)

13) **Developing a Relationship between Gamete Concentration, Turbulent Mixing and Fertilization Efficiency in *Crassostrea*.** NA06NMF4570246. PIs: Luckenbach, Mann, North. Project dates: 7/06-6/08

14) **Fertilization interference between *C. ariakensis* and *C. virginica*.** NA04NMF4570428. PIs: Bushek, Guo, DeBrosse, Quinlan. Project dates: 12/04-11/06.
   - Bushek, D., A. Kornbluh, H. Wang, X. Guo, G. DeBrosse and J. Quinlan. (2008) Fertilization interference between *Crassostrea ariakensis* and *Crassostrea virginica*: a gamete sink. *Journal of Shellfish Research* 27(3):593-600.

15) **Growth and Reproduction of the Suminoe Oyster in a U.S. Sub-Tropical Environment: EIS Ramifications?** NA06NMF4570245. PIs: Scarpa, Newell, Laramore, Dungan. Project dates: 10/06-9/08.

16) **Developing the capacity for fisheries use of the non-native oyster, *Crassostrea ariakensis*.** NA03NMF4520274 (grant from NOAA Fisheries Southeast Regional Office to NC Dept of Environment and Natural Resources, Division of Marine Fisheries). PIs: Peterson, Bishop. Project dates: 12/02-5/05.
   - Grabowski JH, Peterson CH, Bishop MJ, Conrad R (2007). The bioeconomic feasibility of culturing *Crassostrea ariakensis* in North Carolina. *Journal of Shellfish Research* 26:529-542.
   - Bishop MJ, Peterson CH (2006). Direct effects of physical stress can be counteracted by indirect benefits: Oyster growth on a tidal elevation gradient. *Oecologia* 147:426-433
   - Bishop MJ, Peterson CH (2006). Constraints to *Crassostrea ariakensis* aquaculture: Season and method of culture strongly influence success of grow-out. *Journal of Shellfish Research* 24:994-1006.
   - Bishop MJ, Peterson CH (2006). When r-selection may not predict introduced-species proliferation: Predation of a non-native oyster. *Ecological Applications* 16:718-730.
   - Bishop, M.J. & Hooper, P.J. (2005). Flow, stocking density and treatment against *Polydora* spp.: Influences on nursery growth and mortality of the oysters *Crassostrea virginica* and *C. ariakensis*. *Aquaculture* 246:251-261.
   - Bishop MJ, Peterson CH (2005). Consumer ratings of the Suminoe oyster, *Crassostrea ariakensis*, during home cooking. *Journal of Shellfish Research* 24:497-502.
   - Grabowski, JH, SP Powers, CH Peterson, MJ Powers, DP Green (2003). Consumer ratings of non-native (*Crassostrea gigas* and *Crassostrea ariakensis*) vs. native (*Crassostrea virginica*) oysters. *Journal of Shellfish Research* 22:21-30.
   - Grabowski, J.H., Peterson, C.H., Powers, S.P., Gaskill, D. & Summerson, H.C. (2004). Growth and survivorship of non-native (*Crassostrea gigas* and *Crassostrea ariakensis*) vs. native eastern oysters (*Crassostrea virginica*). *Journal of Shellfish Research* 23:781-793.

17) **Assessing Asian oyster dispersion and potential risk of reproduction using a Chesapeake Bay hydrodynamic model with age-distribution functions.** NA04NMF4570361. PIs: Mann, Moore, Shen, Snyder, Southworth, Hudson, Erskine. Project dates: 10/04-9/05.

18) **Pathogenic *Bonamia* species from North Carolina.** NA04NMF4570421 & NA04NMF4570422. PIs: Ryan Carnegie, Gene Burreson, Audemard, Peterson. Project dates: 10/04-9/07.
   - Audemard, C., R. B. Carnegie, N. A. Stokes, M. J. Bishop, C. H. Peterson, E. M. Burreson. 2008. Effects of salinity on *Bonamia* sp. survival in the Asian oyster *Crassostrea ariakensis*. *Journal of Shellfish Research* 27: 535-540.
   - Audemard, C., R. B. Carnegie, M. J. Bishop, C. H. Peterson, E. M. Burreson. 2008. Interacting effects of temperature and salinity on *Bonamia* sp. parasitism in the Asian oyster *C. ariakensis*. *Journal of Invertebrate Pathology* 98: 344-350.
   - Bishop, M.J., R.B. Carnegie, N.A. Stokes, C.H. Peterson, and E.M. Burreson (2006). Predicting the outcome of a non-native oyster introduction: facilitation of an enzootic parasite. *Marine Ecology Progress Series* 325: 145-152.
   - Burreson, E.M., Stokes, N.A., Carnegie, R.B. & Bishop, M.J. (2004). *Bonamia* sp. (*Haplosporidia*) found in non-native oysters, *Crassostrea ariakensis*, in Bogue Sound, North Carolina. *Journal of Aquatic Animal Health*. 16:1-9.

- Carnegie, R.B., E.M. Burreson, P.M. Hine, N.A. Stokes, C. Audemard, M.J. Bishop, and C.H. Peterson (2006). *Bonamia perspora* n. sp. (*Haplosporidia*), a parasite of the oyster *Ostreola equestris*, is the first *Bonamia* species known to produce spores. *Journal of Eukaryotic Microbiology* 53(4): 232-245.
- Carnegie, R.B., N.A. Stokes, C. Audemard, M.J. Bishop, C.H. Peterson, A.E. Wilbur, T.D. Alphin, M.H. Posey, and E.M. Burreson. *Bonamia* sp. parasitism may limit invasion of euhaline waters by introduced *Crassostrea ariakensis*. In preparation. (?)
- Carnegie, R.B., N.A. Stokes, C. Audemard, M.J. Bishop, C.H. Peterson, A.E. Wilbur, T.D. Alphin, M.H. Posey, L.D. Coen, and E.M. Burreson. An introduced pathogen acquires a native oyster host: *Bonamia* sp. infection in *Ostreola equestris* on the southern Atlantic coast of the USA. In preparation. (?)

19) **Susceptibility of C. ariakensis to Bonamia species: Potential for increased disease transmission between oyster species.** NA05NMF4571242. PIs: Vasta, Robledo. Project dates: 7/05-7/07.
    - Eric J. Schott, José A. Fernández-Robledo, Mohammad R. Alavi, and Gerardo R. Vasta (2008) Susceptibility of *Crassostrea ariakensis* (Fujita 1913) to *Bonamia* and *Perkinsus* spp. infections: potential for disease transmission between oyster species. *J. Shellfish Res.* 27: 541-549.

20) **Potential for C. ariakensis to serve as a vector for exotic pathogens in Chesapeake Bay.** NA04NMF4570431. PIs: Reece, Carnegie, Burreson, Moss, Dungan. Project dates: 10/04-3/08.
    - Moss, J.A., E.M. Burreson and K.S. Reece. (2006) Advanced *Perkinsus marinus* infections in *Crassostrea ariakensis* maintained under laboratory conditions. *J. Shellfish. Res.* 25(1):65-72.
    - Moss, J.A., Xiao, J., Dungan, C.F. & Reece, K.S. (2008). Description of *Perkinsus beihaiensis* n. sp., a new *Perkinsus* sp. parasite in oysters of Southern China. *Journal of Eukaryotic Microbiology* 55(2): 117-130.
    - Moss, J.A., Burreson, E.M., Corder, J.F., Dungan, C.F., Brown, G.D., Wang, A., Wu, X. and Reece, K.S. In press. Pathogens in *Crassostrea ariakensis* and other Asian oyster species: Implications for non-native oyster introduction to Chesapeake Bay. *Dis. Aquat. Org.* (?)

21) **Potential for C. ariakensis to harbor pathogens of humans and shellfish: Potential for increased disease transmission between oyster species.** NA05NMF4571243. PIs: Vasta, Schott, Breitburg, Hines. Project dates: 7/05-7/08
    - Mohammad R. Alavi, Eric J. Schott, Keiko Saito, and Gerardo R. Vasta (2008). Application of Molecular Tools for the Survey of Bacterial Pathogens Associated with *Crassostrea virginica* (Gmelin 1791) and *Crassostrea ariakensis* (Fujita 1913). *J. Shellfish Res.* 27: 551-558.
    - Mohammad R. Alavi, José Antonio Fernández-Robledo, and Gerardo R. Vasta. 2009. Development of an in Vitro Assay to Examine In vitro intracellular survival of *Perkinsus marinus* trophozoites upon phagocytosis by oyster (*Crassostrea virginica* and *Crassostrea ariakensis*) hemocytes. *J. Parasitol.*, 95(4): 900–907.
    - (no authors listed) AN EXPERIMENTAL FIELD TEST OF PERKINSUS MARINUS TRANSMISSION IN THE FIELD: IMPLICATIONS FOR THE PROPOSED INTRODUCTION OF *C. ARIAKENSIS* AND THE EFFICACY OF BAR CLEANING which included data on growth rates in the Rhode River. Sent to MES for peer review. (?)

22) **Does *C. ariakensis* accumulate more microbial pathogens from *C. virginica* increasing the pathogenic risk for human consumption?** NA05NMF4571230**.** PI: Mitchelmore**.** Project dates: 7/05- 6/07

23) **Comparing microbiological characteristics of *C. ariakensis* and *C. virginica* with respect to uptake and elimination of bacterial and viral pathogens in situ.** NA06NMF4570248. PIs: Kator, Reece , Audemard, Rhodes, Paynter**.** Project dates: 10/06- 9/08.

24) **Environmental tolerance-dependent competition between adult *C. ariakensis* and *C. virginica* in recovering and retaining waterborne disease agents in relation to water salinity.** NA04NMF4570426**.** PI: Graczyk**.** Project dates: 4/05-3/06.

- Graczyk, T.K., A.S. Girouard, L. Tamang, S.P. Nappier, and K. J. Schwab. 2006. Recovery, Bioaccumulation, and Inactivation of Human Waterborne Pathogens by the Chesapeake Bay Nonnative Oyster, *Crassostrea ariakensis*. *Applied and Environmental Microbiology*. 72(5): 3390–3395.

25) **Human pathogen uptake and retention comparison between *C. ariakensis* and *C. virginica* under wild and laboratory conditions.** (Funded by NCCOS, Beaufort, NC). PIs: Govoni, Morris. Project dates: 1/05-9/05
   - Bean, T., J.A. Morris, Jr., R.T. Noble, P.K. Fowler. 2006. Comparative Microbial Dynamics in *Crassostrea virginica* and *Crassostrea ariakensis*. NOAA Technical Memorandum NOA NCCOS 25. 32 pp.

26) **Biosecurity and comparative field trials of triploid *Crassostrea ariakensis* with *C. virginica*.** NA03NMF4570379 (grant to the Virginia Center for Innovative Technology)**.** PI's: Allen, Reece, Burreson**.** Project dates: 7/03-3/05.

27) **Comparative economic evaluation of triploid *C. ariakensis* and triploid disease-resistant *C. virginica*: Companion trial to 2005 VSC deployment.** NA05NMF4571241. PIs: Allen, Hudson, Fisher. Project dates: 10/05-9/07.

28) **The potential for using triploid *C. virginica* for on bottom culture in Chesapeake Bay.** NA05NMF4571235**.** PIs: Southworth, Mann, Leggett, Erskine**.** Project dates: 7/05- 6/08.
   - Southworth, M, AT Legget, AJ Erskine, R Mann. IN PREP. Evaluation of triploid *Crassostrea virginica* for on bottom culture in Chesapeake Bay. (?)

29) **Feasibility study on one-year grow-out of market size triploid *Crassostrea ariakensis*.** NA06NMF4570004. PI: Michael Congrove, VSC. Project dates: 06/01/05 - 06/01/06

30) **Supply and management of oyster harvests in the Chesapeake Bay: An examination of historical factors and their implications for introduction of non-native oysters and targeted alternatives.** NA05NMF4571231. PI: Wieland. Project dates: 8/05-6/08.
   - Kasperski, S., and R. Wieland. 2009. When is it Optimal to Delay Harvesting? The Role of Ecological Services in the Northern Chesapeake Bay Oyster Fishery. *Marine Resource Economics* 24: 361-385. Accessed 5/7/12 from http://mainstreeteconomics.com/docs/09MREWhenisitOptimal.pdf

31) **Biological material support for studies on *C. ariakensis*.** NA04NMF4570433. PI: Allen**.** Project dates: 10/04-9/08.

32) **NA05NMF4571239**

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See list from *Journal of Shellfish Research* dedicated issue at http://www.bioone.org/toc/shre/27/3

Also see Luckenbach, M. W., R. B. Carnegie, L. D. Coen, K. T. Paynter, Jr. & K. S. Reece. 2005. Observations on the ecology of *Crassostrea ariakensis*. *J. Shellfish Res*. 24:326-327.